APPENDIX E
BIOINFORMATICS ANALYSIS REGARDING ALLERGENICITY OF SILKWORMS (DR. GOODMAN REPORT)

Study Title

Bioinformatics analysis of potential allergy of the four fibroin proteins and controls using SVM and other methods

Author

Richard E. Goodman

Study Completed On

27 September 2020

Performed by

Richard E. Goodman
RE Goodman Consulting, LLC
8110 Dougan Circle
Lincoln, NE 68516

Laboratory Project ID

Study Number: REG-CC-Fibroin-SVM

Summary

Cambridge Crops, Inc. has developed a process for extracting the fibroin of silkworm cocoons and processing the primary proteins to allow reformation of a protective fibroin layer over fruits, vegetables, meat and other food products for prolonged shelf-life with reduced opportunities for spoilage. They have commissioned studies to evaluate for possible risks of allergenicity and toxicity. This report presents information on evaluation of possible risks of allergy and toxicity from naturally produced and processed fibroin proteins.

The first steps of evaluation were learning about and understanding what is known about the allergenicity and toxicity of the silkworm cocoons of the *Bombyx mori* silkworm and understanding the processing of the silkworm cocoons for production of the fibroin proteins. Silkworms have been cultured for production of silk as well as the pupae for food for approximately 5,000 years. The silk fibers have been used for production of cloth and other materials used in medical applications and foods. Literature searches were performed using keywords to find published information about potential allergy and toxicity as well as the sequence and structure of the primary proteins in silk. The NCBI PubMed was the primary targets of inquiry. Reference downloads were searched for allergy and allergenicity as well as toxicity. Primary publications were examined from those published in English, and the abstracts were evaluated for all identified publications. There is clear evidence that consumption of the pupae of silkworm has caused allergic reactions in a number of consumers, but few allergens have been identified.

That said, silk cocoons that are cleared of the pupae have not been identified as sources of allergic reactions.

References were identified that reported protein identification of proteins in silk and in cocoons. Additionally, references describing the use of fibroin from the cocoons to produce surgical materials from the processed cocoon materials were identified. The AllergenOnline.org database at the University of Nebraska-Lincoln and the WHO/IUIS allergen nomenclature database only identified one allergen (arginine kinase) from *Bombyx mori* silkworm. Yet a search of PubMed suggests there may well be 3 other allergens within the silkworm itself, including reports for tropomyosin, paramyosin and chitinase proteins. Published reports were examined to understand the evidence and the protein sequences of implicated materials.

There are gaps in the knowledge of bioinformatics methods that might accurately predict possible risks of allergy. Our previous bioinformatics study used AllergenOnline.org version 20 and the NCBI Protein database in April 2020. If matches of >35% identity are found compared to the AllergenOnline.org database, it is important to evaluate the proteins further and possibly do serum IgE binding tests. No risks of food allergy were apparent although there were minor 80 amino acid sliding window matches for two of the proteins that were considered further.

Cambridge Crops had protein materials from pupae, cocoons, and processed fibroin as well as their intended food coating product, called Mori Silk, tested for residual allergenic and putative allergenic proteins. The identification of potential allergens described in this report was used to focus the analysis of proteins that was performed by the proteomics lab at Harvard and was also

analyzed by Dr. Philip Johnson of the Food Science and Technology Department at the University of Nebraska. The targeted proteins and the results of the tests are described here.

In addition to the above, I understand that a representative of the FDA CFSAN suggested that the sequences should be evaluated further with SVM (Server Machine Learning) and Auto-Cross Covariance (ACC) predictions to ensure that the previous evaluation was complete. This report presents the results of those tests. In addition, Peptide Cutter was used to identify longer predicted peptides following pepsin digestion of the four proteins for pH 1.3 and pH 2, and compare those peptides with the bioinformatics tools.

There have been a few different SVM or similar evaluation methods developed and published since 2006. All of them rely on the database of protein sequences considered to be allergens and other proteins assumed not to be allergens. The Algpred database allows the user to submit their sequences under different algorithms however, there has not been validation and no clear explanation of the tool or interpretation of the output. The most thorough recent SVM, AllergenFP 1.0 was developed at a university in Sofia, Bulgaria and was tested by me to complete this study. Notably, AllergenFP 1.0 uses auto-cross co-variance (ACC) transformation. None of those methods have been robustly tested to validate predictions against serum IgE tests or biological assays. An important aspect is that each website depends on selection of the allergens and non-allergens used in the evaluations. The websites of the bioinformatics tools were evaluated along with associated publications. And a final bioinformatics tool, AllerCATPro that includes using five databases in combination (with inclusive dates) was tested and results are similar to those from AllergenOnline.org. The predicted peptides from Peptide Cutter did not provide better risk assessment than using full length proteins as discussed here. Results of the full investigation are included here.

In conclusion from this evaluation, I find there are no added risks from the fibroin proteins from Cambridge Crops (Mori Silk) based on these additional searches. Predicting peptides from pepsin digestion and re-evaluating significant length peptides against either the AllergenOnline.org database or the alternative databases did not alter the prediction.

Study Number: REG-CC-Fibroin-SVM

Bioinformatics analysis of potential allergy of the four fibroin proteins and controls using SVM and other methods

Facility: RE Goodman Consulting LLC
8110 Dougan Circle
Lincoln, NE 68516
USA

Principle Investigator: Richard E. Goodman
Tel: +1 (402) 417-5549

Study Start Date: 20 September 2020

Study Completion Date: 27 September 2020

Records Retention: All study specific raw data and a copy of the final report will be retained by Richard E. Goodman.

Signature of Final Report Approval:

(b) (4)

27 September 2020

Principle Investigator: Richard E. Goodman Date

Table of Contents

Tables

Abbreviations and Definitions

aa	Amino acid
AK	Arginine kinase
AOL v20	http://www.AllergenOnline.com/ database version 20
Ara h 2	*Arachis hypogaea* 2S albumin from peanut that is a major allergen of peanut
BLASTP	Algorithm used to find local high scoring alignments between a pair of protein sequences (using databases on Entrez)
CT	Chitinase
Entrez NCBI	A public genetic database maintained by the National Center for Biotechnology Information (NCBI) at the National Institutes of Health, Bethesda, MD. Protein entries in the Entrez search and retrieval system are maintained by the NCBI of the National Institutes of Health (U.S.A.)
FARRP	Food Allergy Research and Resource Program, University of Nebraska
FASTA3	Algorithm used to find local high scoring alignments between a pair or protein sequences (using the AllergenOnline database)
GI	A unique identification number assigned by NCBI to each sequence in the database
PM	Paramyosin
PubMed	A public information database of scientific journal articles and abstracts maintained by the National Library of Medicine, National Institutes of Health (U.S.A.)
TM	Tropomyosin
TR	Thioredoxin
8mer	Exact word search for segments of eight amino acid matches between the query protein and proteins in AllergenOnlin.org
80mer	Sliding window of 80 amino acids of query protein are compared to AOL v 20 by FASTA

1.0 Introduction. Silkworm (*Bombyx mori*) is a Lepidopteran moth that has been cultured for nearly 5,000 years to produce cocoons made from the silk fiber secreted by glands in the immature larvae that is used to cover the body as it prepares to metamorphize to adulthood. Pupae of the silkworm have been consumed by humans in China for more than 2,000 years. However, there are at least five reports of anaphylaxis following consumption (Feng et al., 2018). Most consumers do not experience allergy from consuming the pupae as identified using keyword searches in PubMed in March 2020. Additionally, the pupa of silkworm is not known to cause toxic responses for consumers.

Generally, the silk fibers are predominantly made of polymers of fibroin proteins bonded by adhesive sericin proteins (Inoue et al., 2000; Zhang et al., 2015). The cocoon itself is made in layers of silk fiber from specific glands in the pupae and the composition of the layers differ a bit in protein composition (Zurovec et al., 1998; Zhang et al. 2015). As described by Rockwood et al. (2013), silk fibroin is isolated from raw silk of the cocoons by a process of physically removing the pupae, then boiling the cocoons to remove most of the sericin and then denaturing the fibroin proteins (heavy chain and light chain proteins) and finally forming gels under controlled conditions to form a variety of surgical constructs or even a soluble coating for perishable foods (Marelli et al., 2016).

Based on literature searches, it is clear that processed silk from the cocoons of *Bombyx mori* has been used to produce surgical implant devices and sutures that remain safely in human recipients for years without allergic reactions or other adverse health effects. Certain silk implants have caused short-lived inflammatory responses, such as subcutaneous silk-gels (4-week inflammatory response) and woven silk meshes (7-day inflammatory response) (Thurber et al., 2015). This inflammatory response is not expected to be relevant to Cambridge Crops' application of ingested proteins. The process of forming edible coatings for fruits, vegetables, and other perishable food items as described by Marelli et al. is roughly the same process Cambridge Crops uses to isolate the firoin proteins (removing the pupae, boiling the cocoons, denaturing the fibroin proteins to make them soluble). The proteins in this solution includes primarily heavy chain fibroin, light chain fibroin, fibroin P25 and sericin (Dong et al., 2013).

The purpose of this study is to provide the target proteins that are to be used to identify possible allergenic proteins in the final fibroin powder used to coat edible foods. Searches were performed to identify the proteins in the pupae or in silk that have been identified as having any potentially allergenic properties. Furthermore, this study was conducted to compare proteins that have been identified as being present in fibroin to those of known and putative allergens using guidelines of the CODEX Alimentarius Commission for genetically modified plants to identify possible risks (Codex, 2003 as modified and re-published in 2009). Aalberse (2000) provided the basic argument for this cutoff that was accepted by CODEX. Examples of this approach are outlined for a genetically modified mustard (Siruguri et al., 2015) and a GM banana (Jin et al., 2017). In addition, a search was performed for possible toxic proteins in the species *Bombyx mori*. The Codex guidelines recommend looking for proteins with more than 35% identity to segments of 80 or more amino acids of allergens or putative allergens. Since the www.allergenonline.org database may not have every possible allergen identified, an additional search of the

complete protein database of NCBI using BLASTP searches looking for high identity matches to "allergens" or "allergenic proteins" is used as a double check.

I understand that representatives of FDA CFSAN asked for additional searches of the proteins using SVM computer prediction methods and to use predicted proteins from pepsin digestion in the searches. The Peptide Cutter of Expasy Tools was used for predicting possible residual peptides. Whole proteins and predicted peptides were used to search specific databases as well as AllergenOnline. Some additional control proteins including ricin from caster bean and a partial Ara h 2 protein of peanut were used to evaluate the database searches as a double check on the systems.

2.0 Purpose. The purpose of this study is to perform an evaluation of the potential allergenicity and toxicity of the fibroin protein product developed by Cambridge Crops, Inc.

3.0 Methods. The evaluation for potential food risks typically includes a careful search of scientific literature for relevant peer-reviewed studies to evaluate the safety of the gene donor as well as the safety of the proteins encoded by any transferred genes. In addition, computer searches (bioinformatics) are used to evaluate the potential similarity of the encoded protein to any known allergen or toxin by comparisons to those in appropriate databases.

3.1 Scientific literature search strategies. The PubMed database (http://www.ncbi.nlm.nih.gov/pubmed) maintained by the U.S. National Library of Medicine was used as the primary data source for scientific literature on allergy and toxicity. The primary question is whether the source of the gene is a common cause of allergy or toxicity. The data (authors, publication, date and abstracts) from searches were saved to files for review. All publication abstracts were manually reviewed and any likely relevant publications suggesting adverse health risks were investigated further by reading the journal articles.

3.1.1 Search for allergenicity. A search was performed using the terms "*Bombyx mori*" AND "allergen" as well as "allergy". The searches were repeated with the terms "silkworm" AND "allergy" and replacing "allergy" with "allergen". These searches are expected to include *Bombyx mori* pupae, *Bombyx mori* cocoons, and any other component of *Bombyx mori* silkworms.

3.1.2 Search for toxicity. A search was performed using the terms "*Bombyx mori*" AND "toxin" as well as "toxic". The searches were repeated with the terms "silkworm" AND "toxin" and replacing "toxin" with "toxic". These searches are expected to include *Bombyx mori* pupae, *Bombyx mori* cocoons, and any other component of *Bombyx mori* silkworms.

3.2 Amino acid sequence of query proteins. The four primary proteins in fibroin: fibroin heavy chain, fibroin light chain, P25 and sericin protein amino acid sequences were used to search for identity matches to allergens and for toxins, and the sequence of Ber e 1

from *Bertholletia excelsa* was used as an allergen control, and the complete ricin protein from *Ricinus communis* was used as a control for the toxin searches with the sequences shown in Table 1.

Table 1 Amino acid sequences of the native Fibroin proteins. The Fibroin heavy chain, Fibroin light chain, P25 and sericin were compared to allergens in AllergenOnline.org version 20. Sequences shown in this table were used in the bioinformatics searches for allergens and toxins. A positive control for allergen is Ber e 1. A positive control for toxin is Ricin, which was also tested by prediction for allergy. A partial (77 amino acid) sequence of peanut allergen Ara h 2 was also used as a control.

Gene source Common name of *Latin name*	**Protein name** Protein length (aa) [GI:#]	**Protein sequence (supplied by IITA and confirmed as matching the NCBI entries for the GI#)** Underlined segment is the probable signal peptide
Silkworm *Bombyx mori*	**Fibroin heavy chain** 5263 amino acids NP_001106733.1	>NP_001106733.1 fibroin heavy chain precursor [Bombyx mori] MRVKTFVILCCALQYVAYTNANINDFDEDYFGSDVTVQSSNTTDEIIRDASGAVIEEQITTKKMQRKNKN HGILGKNEKMIKTFVITTDSDGNESIVEEDVLMKTLSDGTVAQSYVAADAGAYSQSGPYVSNSGYSTHQG YTSDFSTSAAVGAGAGAGAAAGSGAGAGAGYGAASGAGAGAGAGAGAGYGTGAGAGAGAGYGAGAGAGAG AGYGAGAGAGAGAGYGAGAGAGAGAGYGAGAGAGAGAGYGAGAGAGAGAGYGAASGAGAGAGYGQGVGSG AASGAGAGAGAGSAAGSGAGAGAGTGAGAGYGAGAGAGAGAGYGAAASGTGAGYGAGAGAGYGGASGAGAG AGAGAGAGAGAGYGTGAGYGAGAGAGAGAGAGAGYGAGAGAGYGAGYGVGAGAGYGAGYGAGAGSGAASG AGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGTGAGSGAGAGYGAGAGAG YGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGAGAGYGAGAGAGYGAGAGVG YGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGVG YGAGVGAGYGAGYGAGAGAGYGAGAGSGAASGAGAGAGAGAGTGSSGFGPYVANGGYSRSDGYEYAWSSD FGTGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVGVGYGAGYGAGAGAGYGAGAGSGAA SGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGVGSGAG AGSGAGAGVGYGAGAGVGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAG SGAGAGSGAGAGSGAGVGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAG AGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGAGAGYGAGYGAGAGAG YGAGAGSGAASGAGSGAGAGSGAGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVG AGYGAGYGAGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAG VGYGAGYGAGAGAGYGAGAGSGAASGAGAGAGAGAGTGSSGFGPYVAHGGYSGYEYAWSSESDFGTGSGA GAGSGAGAGSGAGAGSGAGAGSGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGA GAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGA GAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAGS GAGAGSGAGAGSGAGAGSGAGVGSGAGAGSGAGACSGAGAGSGAGAGYGAGYGAGAGAGYGAGAGSGAGS GAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGVGYGAGVGAGYGAGYGAGAGAGYGA GAGSGAASGAGAGAGAGAGTGSSGFGPYVANGGYSGYEYAWSSESDFGTGSGAGAGSGAGAGSGAGAGSG AGAGSGAGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSG AGAGSGAGSGSGAGAGSGAGAGSGAGAGYGAGVGAGYGVGYGAGAGAGYGAGAGSGAASGAGAGAGAGAG TGSSGFGPYVAHGGYSGYEYAWSSESDFGTGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGA GAGYGAGVGAGYGAAYGAGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGS GAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGA

		GSGAGAGSGAGSGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGA GAGYGAGAGAGYGAGYGAGAGAGYGAGAGTGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGS GAGSGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGAGAGYGAGYGAGAGAGYGAGAGSGA GSGAGAGSGAGAGSGAGAGSGAGAGYGAGYGAGAGSGAASGAGAGAGAGAGTGSSGFGPYVAHGGYSGYE YAWSSESDFGTGSGAGAGSGAGAGAGAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGTGSGAG AGSGAGAGYGAGVGAGYGAGAGSGAAFGAGAGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAG YGAGVGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAG AGAGYGAGAGSGAASGAGAGSGAGAGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGAGYG AGAGSGAASGAGAGAGAGAGTGSSGFGPYVANGGYSGYEYAWSSESDFGTGSGAGAGSGAGAGSGAGAGS GAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGA GSGAGAGSGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGV GAGYGVGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGA GSGAGSGAGAGSGAGAGYGVGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGSGA GAGSGAGAGSGAGAGYGAGVGAGYGVGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGS GAGAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGA GAGYGAGVGAGYGVGYGAGVGAGYGAGAGSGAASGAGAGSGAGAGAGSGAGAGSGAGAGSGAGAGSGAGA GSGAGAGSGAGAGYGAGYGAGVGAGYGAGAGVGYGAGAGAGYGAGAGSGAASGAGAGAGSGAGAGTGAGA GSGAGAGYGAGAGSGAASGAGAGAGAGAGTGSSGFGPYVANGGYSGYEYAWSSESDFGTGSGAGAGSGAG AGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYG AGAGSGTGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGVGAGYGVGYGAGAGAGYGVGYGAG AGAGYGAGAGSGTGSGAGAGSGAGAGSGAGAGSGAGAGSGAGACSGAGAGSGAGAGYGAGVGAGYGVGYG AGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGSGAG AGSGAGAGYGVGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGAG SGAGAGYGAGVGAGYGVGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAG AGSGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVGAGYGVGYGAGAGAGYGAGAGSGAASGAG AGAGAGAGTGSSGFGPYVANGGYSGYEYAWSSESDFGTGSGAGAGSGAGAGSGAGAGYGAGYGAGVGAGY GAGAGVGYGAGAGAGYGAGAGSGAASGAGAGAGAGAGSGAGAGSGAGAGAGSGAGAGYGAGYGIGVGAGY GAGAGVGYGAGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGA GYGAGVGAGYGAGAGVGYGAGAGAGYGAGAGSGAASGAGAGAGAGAGAGSGAGAGSGAGAGSGAGAGSGA GAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGACVGAGYGAGYGGAGAGYGAGAGSGAASGAGAGSG AGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGAGSGAASGAGAGAGAGAGTGSSGFGPYVNGGYSGYEYA WSSESDFGTGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAASGAGAGSGAGAG SGAGAGSGAGAGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAGAG AGYGAGAGSGAASGAGAGSGAGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGSGAG AGYGAGYGAGVGAGYGAGAGVGYGAGAGAGYGAGAGSGAASGAGAGSGSGAGSGAGAGSGAGAGSGAGAG AGSGAGAGSGAGAGSGAGAGYGAGYGAGAGSGAASGAGAGAGACACTGSSGFGPYVANGGYSGYEYAWSS ESDFGTGSGAGAGSGAGAGSGAGAGYGAGVGAGYGAGYGAGAGAGYGAGAGSGAGSGAGAGSGAGAGSGA GAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGYGAGAGAGYGAGAGVGYGAGAGAGYGAGAGSGA GSGAGAGSGSGAGAGSGSGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGAGYGAGYGI GVGAGYGAGAGVGYGAGAGAGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGSGA

		GAGSGAGAGSGAGAGSGAGAGYGAGAGVGYGAGAGSGAASGAGAGSGAGAGSGAGAGSGAGAGSGAGAGS GAGAGSGAGAGSGAGSGAGAGSGAGAGYGAGYGAGVGAGYGAGAGYGAGYGVGAGAGYGAGAGSGAGSGA GAGSGAGAGSGAGAGSGAGAGSGAGAGSGAGSGAGAGYGAGAGAGYGAGAGAGYGAGAGSGAASGAGAGA GAGSGAGAGSGAGAGSGAGSGAGAGSGAGAGYGAGAGSGAASGAGAGSGAGAGAGAGAGAGSGAGAGSGA GAGYGAGAGSGAASGAGAGAGAGTGSSGFGPYVANGGYSRREGYEYAWSSKSDFETGSGAASGAGAGAGS GAGAGSGAGAGSGAGAGSGAGAGGSVSYGAGRGYGQGAGSAASSVSSASSRSYDYSRRNVRKNCGIPRRQ LVVKFRALPCVNC
Silkworm *Bombyx mori*	**Fibroin light chain** 262 amino acids NP_001037488.1	>NP_001037488.1 fibroin light chain precursor [Bombyx mori] MKPIFLVLLVATSAYAAPSVTINQYSDNEIPRDIDDGKASSVISRRWDYVDDTDKSIAILNVQEILKDMA SQGDYASQASAVAQTAGIIAHLSAGIPGDACAAANVINSYTDGVRSGNFAGFRQSLGPFFGHVGQNLNLI NQLVINPGQLRYSVGPALGCAGGGRIYDFEAAWDAILASSDSSFLNEEYCIVKRLYNSRNSQSNNIAAYI TAHLLPPVAQVFHQSAGSITDLLRGVGNGNDATGLVANAQRYIAQAASQVHV
Silkworm *Bombyx mori*	**Fibroin P25** CAA27804.1	>CAA27804.1 P25 [Bombyx mori] MLARCLAVAAVAVLASAGPPSPIYRPCYLDDYKCISDHLAANSKCIPGRGQIPSQYEIPVFQFEIPYFNA TYVDHNLITRNHDQCRVSEFYDNVRTLKTVLTVDCPWLNFESNRTLAQHMSFKEDVVLSFYINGSYPLIR LTTVFDKGNNFDLCSAFTFADLAGGLPIFHINPNDQRTAQWLSKDLTLLHIYEREHIFGKRNWLARSFIS RTLCDFGCQH
Silkworm *Bombyx mori*	**Sericin** P07856.2	>sp|P07856.2|SERI1_BOMMO RecName: Full=Sericin 1; AltName: Full=Silk gum protein; Flags: Precursor MRFVLCCTLIALAALSVKAFGHHPGNRDTVEVKNRKYNAASSESSYLNKDNDSISAGAHRAKSVEQSQDK SKYTSGPFGVSYSGRSQNYKDSKQAYADYHSDPNGGSASAGQSRDSSLRERNVHYVSDGEAVAASSDARD ENRSAQQNAQANWNADGSYGVSADRSGSASSRRRQANYYSDKDITAASKDDSRADSSRRSNAYYNRDSDG SESAGLSDRSASSSKNDNVFVYRTKDSIGGQAKSSRSSHSQESDAYYNSSPDGSYNAGTRDSSISNKKKA SSTIYADKDQIRAANDRSSSKQLKQSSAQISSGPFGTSVSSKDRQYSNDKRSKSDAYVGRDGTVAYSNKD SEKTSRQSNTNYADQNSVRSDSAASDQTSKSYDRGYSDKNIVAHSSGSRGSQNQKSSSYRADKDGFSSST NTFKSKFSSSNSVVETSDGASASRESSAEDTKSSNSNVQSDEKSASQSSSSRSSQESASYSSSSSSSTLS EDSSEVDIDLGNLGWWWNSDNKVQRAAGGATKSGASSSTQATTVSGADDSADSYTWWWNPRRSSSSSSSA SSSSSGSNVGGSSQSSGSSTSGSNARGHLGTVSSTGSTSNTDSSSKSAGSRTSGGSSTYGYSSSHRGGSV SSTGSSSNTDSSTKNAGSSTSGGSSTYGYSSSHRGGSVSSTGSSSNTDSSTKSAGSSTSGGSSTYGYSSR HRGGRVSSTGSSSTTDASSNSVGSSTSGGSSTYGYSSNSRDGSVSSTGSSSNTDSNSNSAGSSTSGGSST YGYSSNSRDGSVSSTGSSSNTDSNSNSAGSSTSGGSSTYGYSSNSRDGSVSSTGSSSNTDASTDLTGSST SGGSSTYGYSSDSRDGSVSSTGSSSNTDASTDLAGSSTSGGSSTYGYSSDCGDGSVSSTGSSSNTDASTD LAGSSTSGGSSTYGYSSDSRDGSVSSTGSSSNTDASTDLAGSSTSGGSSTYGYSSNSRDGSVSSTGSSSN

		TDASTDLTGSSTSGGSSTYGYSSSNRDGSVLATGSSSNTDASTTEESTTSAGSSTEGYSSSSHDGSVTST DGSSTSGGASSSSASTAKSDAASSEDGFWWWWNRRKSGSGHKSATVQSSTTDKTSTDSASSTDSTSSTSGA STTTSGSSSTSGGSSTSDASSTSSSVSRSHHSGVNRLLHKPGQGKICLCFENIFDIPYHLRKNIGV
Bertholletia excelsa Brazil nut 2S albumin	**Ber e 1** 146 amino acids Accession P04403	>Positive allergen control Ber e 1 MAKISVAAAALLVLMALGHATAFRATVTTTVVEEENQEECREQMQRQQMLSHCRMYMRQQMEESPYQTMP RRGMEPHMSECCEQLEGMDESCRCEGLRMMMMRMQQEEMQPRGEQMRRMMRLAENIPSRCNLSPMRCPMG GSIAGF
Ricinus communis Jack bean Chain A and Chain B	**Ricin** 576 amino acids Accession P02879.1	>Positive toxin control Ricin MKPGGNTIVIWMYAVATWLCFGSTSGWSFTLEDNNIFPKQYPIINFTTAGATVQSYTNFIRAVRGRLTTG ADVRHEIPVLPNRVGLPINQRFILVELSNHAELSVTLALDVTNAYVVGYRAGNSAYFFHPDNQEDAEAIT HLFTDVQNRYTFAFGGNYDRLEQLAGNLRENIELGNGPLEEAISALYYYSTGGTQLPTLARSFIICIQMI SEAARFQYIEGEMRTRIRYNRRSAPDPSVITLENSWGRLSTAIQESNQGAFASPIQLQRRNGSKFSVYDV SILIPIIALMVYRCAPPPSSQFSLLIRPVVPNFNADVCMDPEPIVRIVGRNGLCVDVRDGRFHNGNAIQL WPCKSNTDANQLWTLKRDNTIRSNGKCLTTYGYSPGVYVMIYDCNTAATDATRWQIWDNGTIINPRSSLV LAATSGNSGTTLTVQTNIYAVSQGWLPTNNTQPFVTTIVGLYGLCLQANSGQVWIEDCSSEKAEQQWALY ADGSIRPQQNRDNCLTSDSNIRETVVKILSCGPASSGQRWMFKNDGTILNLYSGLVLDVRASDPSLKQII LYPLHGDPNQIWLPLF
Arachis hypogaea Peanut 2S albumin AA 1-77	**Ara h 2 partial** 77 amino acids AAN77576.1	>Positive allergen control Ara h 2 partial sequence MAKLTILVALALFLLAAHASARQQWELQGDRRCQSQLERANLRPCEQHLMQKIQRDEDSYGRDPYSPSQD PYSPSQD

3.3 Sequence database search strategies. The AllergenOnline version 20 (http://www.allergenonline.org/) and the NCBI Entrez Protein (http://www.ncbi.nlm.nih.gov/BLAST/) databases were used as the primary protein amino acid data sources and search algorithms for the sequence comparisons for allergens and toxins respectively. The AllergenOnline database was updated on 10 February 2020 and is maintained by the Food Allergy Research and Resource Program of the University of Nebraska. Protein entries in the Entrez search and retrieval system is compiled and maintained by the NCBI of the National Institutes of Health (U.S.A.). The database is potentially updated or modified daily, and therefore the date of sequence searches by BLASTP is relevant to the dataset used in the BLASTP searches. BLASTP and FASTA3 are unique computer algorithms that provide similar local alignments and results if the appropriate scoring matrices and criteria are used.

3.3.1 FASTA3 overall search of AllergenOnline.org. The primary amino acid sequences of the silk Fibroin four proteins and of Ber e 1 were entered in the Search Entry query box of http://www.allergenonline.org/databasefasta.shtml. The search was performed as Full FASTA version 35.04 with default setting of *E*-value of 1, using a BLOSUM 50 scoring matrix. The overall alignment provides the most likely estimate of potential allergic cross-reactivity and is unlikely if identity matches of less than 50% occur for most of the length of the aligned proteins.

3.3.2 FASTA3 of AllergenOnline.org by 80 aa segments. This short segment search with AllergenOnline.org version 20 is based on the recommendation of Codex (2003). The rationale is that this might help in identifying structural motifs, much shorter than the intact protein, which might contain a conformational IgE binding epitope. It should also help to identify potentially cross-reactive proteins that are not true homologues of an allergen that have significant local identities that might provide an immunological target for IgE antibodies in those with allergies to the matched allergen. Only matches >35% are listed in the output table. The search starts at AA 1-80, then 2-81 to the end of the search sequence. The *E* score is set to 1,000 to eliminate limitations of short searching query sequences.

3.3.3 Exact 8 contiguous amino acid match. The eight amino acid matching searches were performed using word search algorithm of the query sequences against all proteins in AllergenOnline.org version 20.

3.3.4 BLASTP of NCBI Entrez without a keyword limit. The BLASTP is available on the NCBI Entrez website (http://www.ncbi.nlm.nih.gov/BLAST/). The current version is BLASTP +2.10.0 (22 March 2020). A BLASTP search was used comparing the Fibroin four proteins and control proteins Ber e 1, and Ricin sequences against the entire Entrez Protein database. Since the NCBI removed the option for a keyword limit, the entire matched sequences must be reviewed to understand potential risks. The purpose of this BLASTP search is to ensure that a significant match with a newly discovered allergenic sequence that has not yet been entered into AllergenOnline.org is not overlooked and also for toxins since

there is no dedicated single toxin database. Evaluation of the *E* value, the length of the alignment and the percent identity of any identified match is necessary to judge the significance of any alignment using BLASTP. Default BLASTP parameters were used, with Word size = 6, Expect value =10, Gapcosts = 11,1, Matrix = BLOSUM 62, Threshold =21.

3.4 Peptide Cutter, SVM, and other bioinformatics searches for allergens. At the request of the FDA CFSAN we investigated the use of different SVM algorithms and websites to provide a different perspective than FASTA and BLASTP searches. The previously available website, AlgPred at the Bioinformatics Centre, Indian Institute of microbial Technology (Saha and Raghava, 2006), has not been updated since 2006 and therefore was not used. AlgPred has a number of different search strategies that are not well explained and scoring and interpretation there are not scientifically reliable. One SVM method was published in 2014 by Li et al., (2014) in PLoS One. However, the database is not available on the listed web address, thus it could not be used in 2020. An SVM website and database called AllergenFP version 1.0 is available and was searched (Dimitrov et al., 2014). That website uses two databases, one of "allergens" and one of "non-allergens" to score each searched protein using a hierarchy of classifying based on the amino acids in close proximity. While that search method was used here, close inspection of the databases indicated that their selection of allergens and non-allergens is highly biased. Nearly three quarters of the non-allergens are human proteins, but some human proteins that are very similar to allergens, such as tropomyosin, are not included in either database. In addition, another protein, ricin from castor bean (*Ricinus communis*), is included as an allergen, however it is not in any other allergen database and a PubMed search failed to find clear data that it is an allergen in humans. Tests were made with AllergenFP database (Dimitrov et al, 2014) with the four proteins from silk fibroin as well as the control proteins. In addition, peptide fragments of fibroin proteins were predicted by Peptide Cutter using pepsin at pH 1.3. Those over 16 AA in length were also tested. The results are listed in section 4. The AllerCATPro database from Singapore (Maurer-Stroh et al, 2019) which include a compilation of five allergen databases and use multiple alignment and prediction algorithms was also used to test the four protein sequences from fibroin as well as control proteins. Krutz et al.(2019) performed complex comparisons using AllerCATPro with predicted proteins from a variety of food sources where the proteins used are unlikely to be allergens, based in part on low levels of abundance in the foods. The Kutrz et al. (2019) study was a fairly extensive evaluation, but it did not broadly test likely food allergens. It is important to note that the FASTA prediction of AllerCATPro with the 80 AA search also does not test sequences of less than 80 AA, similar to the COMPARE database that it compiled along with four other datasets to provide their allergen list. The AllergenOnline.org website is the only database that tests proteins less than 80 AA with the same algorithm to identify proteins like the 77 AA sequence of Ara h 2 for possible matches. Inclusion of the 77 AA segment of Ara h 2 into rice is highly likely to cause allergic reactions in peanut allergic subjects who have IgE to Ara h 2.

4.0 Results and Discussion. The summary results for the PubMed search using the various protein sources and search terms, and the amino acid sequences of the Cambridge Crops four Fibroin sequences and control proteins Ber e 1 and Ricin are presented.

4.1 PubMed Searches. The PubMed scientific literature database was searched for evidence that the proteins of *Bombyx mori* (silkworm) are linked to allergy or toxicity. The search demonstrated that there is published literature for allergy related to consumption of the pupae from silkworm and four proteins (arginine kinase, tropomyosin, chitinase and paramyosin) have published evidence of allergy or at least IgE binding using sera from subjects claiming allergy to consumption of silkworm pupae. However, no evidence was found to suggest that the silk fibroin proteins (Fibroin heavy chain, Fibroin light chain, Fibroin P25 or Sericin) are allergens or that they bind IgE from allergic subjects. In addition, no evidence was found for toxic proteins from the silkworm. There is one report from Thailand that silkworm pupae are sometimes contaminated with histamine and that can cause allergic-like symptoms. The results are compiled in PDF documents that are shared with Cambridge Crops, Inc.

4.1.1 Allergen and allergy. The search phrase "*Bombyx mori*" and alternatively, "silkworm" AND "allergen" as well as "allergy" were used to search PubMed for evidence of allergy from the protein.

For "allergen" with "silkworm," 38 references were found. One publication described and characterized the presence of the allergen arginine kinase, (AK) with UniProt accession Q2F5T5 as an allergen (Liu et al., 2009). One publication described tropomyosin (TM) in UniProt accession Q1HQ0 as the allergen (Jeong et al., 2017). One publication described the identification of both paramyosin (PM) UniProt accession B3VTP0 and chitinase (CT) UniProt accession Q869E2 by 2D-immunoblot using (1) a pool of sera from patients with symptoms indicating severe allergy upon consumption of silkworm pupae and (2) mass spectrometry to identify the protein sequence, matched to genomic sequences (Zhao et al., 2015). A review paper by de Grier and Verhoeckx (2018) discussed that paper, however they mislabeled the chitinase as chitin, which is the carbohydrate shell of insects and crustacea. The four proteins: arginine kinase, tropomyosin, paramyosin and chitinase were used as targets in the proteomics evaluation of Harvard Proteomics facility, performed by Dr. Philip Johnson of the University of Nebraska-Lincoln. Thioredoxin was used as a control protein by Dr. Johnson as it has been identified as a minor allergen, with IgE binding in one subject to allergic to moths, using *Plodia interpunctella,* Indian meal moth (Hoflehner et al., 2012).

A search for "allergens" with "*Bombyx mori*" identified only 34 papers, otherwise replicating the list from silkworm. One paper by Jeong et al. (2016) describes characterization of a 27 kDa glycoprotein as if it is an allergen, but their inhibition results and the authors' conclusion was that it was not able to inhibit binding and thus was not an allergen.

A search for allergy using silkworm identified 66 publications. When *Bombyx mori* was used, only 56 publications were found, with essentially an overlap of papers. Most publications described case reports of allergy to consumption of pupae although there were publications of worker exposure and asthma, or to individuals reacting to exposure to "wild-silk" scarves or sweaters. The full text articles described "wild-silk" usually as a mixture of silks that were not of cleaned, industrial type silk, but more of crude fibers that likely had other contaminants. No individual proteins were described for those studies.

The conclusion of the literature searches indicates that consumption of the pupae of silkworms does cause allergy in some consumers, reported mostly from China and Japan. The only allergens (IgE binding proteins) that were conclusively identified were: arginine kinase (AK), tropomyosin (TM), paramyosin (PM) and chitinase (CN). There were no publications indicating allergy to the four proteins of the silkworm fibroin product (fibroin heavy chain, fibroin light chain, fibroin P25 or sericin).

Importantly, Cambridge Crops asked Dr. Philip Johnson of the University of Nebraska-Lincoln to evaluate the mass spectrum data from Harvard University Proteomic facility to determine whether those allergens were present in the Fibroin powder product. The protocol is described further in Dr. Johnson's report. In sum, Cambridge Crops sent samples of the pupa, the cocoon, and their fibroin powder product (which they call Mori Silk) to undergo mass spectrometry. This was done to ensure that the allergens identified from pupae of *Bombyx mori* are not present in the cocoon or the fibroin powder product itself.

While the four allergens were identifiable in the sample of the pupae, there were no allergens that could be conclusively identified in the cocoon sample or in the samples of fibroin powder.

To be more precise: TM, AK, CN and PM were readily identifiable in the samples of pupae, there was a single peptide of TM identified in a single powder sample. However, a single detection of one peptide in a sample is not sufficient to be considered a "positive identification" under the commonly accepted Human Proteome Organization (HUPO)—Proteomic Standards Initiative.

4.1.2 Toxicity. A search of PubMed using the protein name "*Bombyx mori*" or "silkworm" AND "toxin" or "toxic" did not identify any proteins as having toxic reactions to humans or other mammals. The only report of toxicity was reactions to histamine by consumption of silkworm pupae that have residual, heat stable compounds, presumably due to bacterial contamination (Chomchai and Chomchai, 2017). The conclusion is that there are no reports of toxicity from preparations of silk fiber or from the proteins in Fibroin.

4.2 Sequence comparison of Fibroin four proteins and control proteins. The amino acid sequences of four silk proteins that dominate silk structure of natural Fibroin were searched in AllergenOnline.org, NCBI Protein by BLASTP and in other sequence databases with different algorithms. Control protein sequences were also tested including the allergen Ber e 1, a 77 AA partial sequence of the peanut allergen Ara h 2 and a non-allergen Ricin are listed in Table 1. These were compared to all known and putative allergens in AllergenOnline.org version 20 using a full-length FASTA alignment search and a sliding window of 80 comparison as well as an eight contiguous amino acid match. The BLASTP search was performed against the NCBI database without a keyword limit as the public website no longer recognizes limits. Other websites that were searched focused on AllergenFP version 1 and AllerCATPro. It is important to note that sericin is of very low abundance in the fibroin powder based on production steps, and that is backed up by the proteomic assay of fibroin powder. Since FDA CFSAN requested searches with predicted peptides >16 AA from the Expasy tools Peptide Cutter algorithm using Pepsin at pH 1.3 and Pepsin at pH 2, those were calculated and because of the longer predicted peptides from pH 1.3, those were also searched in AllergenFP, which is an SVM program.

4.2.1 Full length FASTA3 vs. AllergenOnline.org with the four Fibroin proteins. Results of the full-length FASTA3 searches of the Fibroin proteins are presented in Table 2. None of them produced any identified matches of >50% identity over any extended AA length, with any allergen with an *E* score less than 1. The low identity matches to the two putative (unproven) allergens does not raise concerns of potential cross-reactivity (Aalberse, 2000; Goodman, 2006; Goodman et al., 2008).

4.2.2 Full length FASTA3 vs. AllergenOnline with Allergen Positive Control Ber e 1. Results of the full length FASTA3 searches of the Ber e 1 protein against AllergenOnline.org version 20 identified a 100% identity match to Ber e 1 as expected, and more than 15 alignments with other putative or proven allergens. Some of these matches were more than 40% identity, but 138 or more AA, and only two proteins to Hazelnut (*Corylus avellana)*, allergens were found at >40% identity. Scoring results for the Ber e 1 showed one alignment to itself, Ber e 1, with an *E* score of 8e-20 and 100% identity. Matching patterns such as that would require serum IgE tests using sera from subjects allergic to the matched sources as some would likely demonstrate IgE cross-reactivity.

Table 2. Full-length FASTA3 alignments to AllergenOnline.org version 20, with highest scoring 3 alignments shown. The identity, *E* scores, Identity % and AA length of the alignment are shown. Control, Ber e 1 showed significant matches as did the 77AA of Ara h 2.02 while Ricin showed no matches.

Fibroin Heavy Chain – 5301 AA			
Identity of match	***E* score**	**ID %**	**Length of alignment**
GI:27806257 Collagen	1.9e-26	26.1%	1082AA
GI:71084277 HMW gluten	5.3e-11	25.7%	654 AA
GI:736319 gluten Triticum	1.5e-8	26.1%	710 AA
Fibroin Light Chain – 262 AA			
GI:1707911 Globin CTT-IX	0.14	30.8%	78 AA
GI:155676684 SXP/RAL-2	0.98	24.8%	153 AA
GI:155676636 SXP/RAL-2	0.98	24.8%	153 AA
Fibroin P25 – 220 AA			
GI:51093373 Sol I 1	0.89	26.1%	115 AA
Sericin – 560 AA			
GI:1871444 Gal g 6.0101	5.7e-10	27.9%	330 AA
GI:85701160 Disulfide isomerase	0.98e-2	30.8%	104 AA
GI:980951555 Conglutin beta	0.02	18.8%	415 AA
Ber e 1 Control Proteins – 560 AA			
GI:112754 2S Ber e 1	4.1e-31	100%	146AA
GI:226437844 2S Corylus avellana	3.5e-11	45.9%	146AA
GI:1794252 Albumin precur	7.3e-10	76.1%	138AA
Ara h 2 – 77 amino acids			
GI:26245447 Allergen Ara h 2.02	4.5e-32	100%	77AA
GI:224747150 Ara h 2.01	4.5e-29	98.6%	72AA
GI:75114094 Conglutin, Ara h 6	8.9e-10	52%	75AA
Ricin *Ricinus communis* -576 AA			
No matches	N/A	N/A	N/A

4.2.3 Sliding 80-amino acid window FASTA3 vs. AllergenOnline.org database with Fibroin proteins. Results of the comparison of the four Fibroin protein amino acid sequences were tested against the sequences in Allergenonline.org version 20 (Table 3). The comparison did identify a few matches for Fibroin and to Sericin may be considered significant based on CODEX standards (>35% identity over 80 AA), but given the overall short alignments and level of identity matches, it is clear these are dissimilar and unlikely to share IgE epitopes for productive binding and stimulation of cross-reactive IgE binding and resulting allergic reactions. The low identity matches of the level seen in these alignments does not raise concerns of potential cross-reactivity (Aalberse, 2000; Goodman, 2006; Goodman et al., 2008).

Details of the sixteen allergens from AllergenOnline.org version 20 were found to have identity matches of >35% over 80 or more amino acids as seen is Table 3. A detailed analysis was performed looking at individual alignments for each of the 16 allergens to determine where in the 5263 AA of Fibroin matches were occurring and to evaluate the apparent sequence homology. Surprisingly the matches were all from the repetitive long internal segment of Fibroin with semi-repeated AA (GAGSGAGAGSGAGYA with occasional P. E and L). It was rare to see three or four AA identity matches in a row, and not uncommon to have gaps of matches or gaps in sequence of from one to four AA. The details of individual segment alignments are shown in Annex 2. The Sericin protein had two matches (*Gallus gallus* Gal g 6 and *Fusarium culmorum* helix-loop-helix protein) that were very low in overall identity (29% and 22% respectively), but above 35% identity over 80 for short segments. The detailed alignments are not shown as the *E* scores for each were larger than 1,000 and considered irrelevant.

Table 3. Sliding 80mer alignments of FASTA3 to AllergenOnline.org version 20, with highest scoring 3 alignments shown. The identity, *E* scores, Identity % and AA length of the alignment are shown. Ber e 1 showed clearly significant matches. Fibroin heavy chain had matches over 35% ID but considering the overall length they are not likely to be cross-reactive. Sericin had one match over 35% ID but considering the length of the alignment and overall identity, it is unlikely to be important. The Ber e 1 control protein matched itself 100%, the 77AA-Ara h 2.02 matched itself with 96.3% adjusted identity and Ricin did not have any matches.

Fibroin Heavy Chain – 5301 AA			
Identity of match	**Best 80mer % ID**	**# 80mers >35% ID out of 5222 segments of 80 AA in Fibroin**	**Overall ID%**
GI:291482310 Ragweed Art v 1 pollen homologue	45%	4358/5222	37.9%
GI:291197394 Ragweed Art v 1 pollen homologue	44.4%	3442/5222	42.4%
GI:285005079 Ragweed Art v 1 pollen homologue	44.4%	3442/5222	40.7%
GI:291482308 Ragweed	42.5%	3392/5222	40.7%

Art v 1 pollen homologue			
GI:817033923 *Parthenium hysterophorus* pollen allergen	41.3%	1549/5222	37.8%
GI:27806257 *Bos taurus* collagen alpha-2	38.2%	119/5222	26.1%
GI:240254706 *Glycine max* seed biotinylated protein	37.8%	5/5222	26.3%
GI:56550550 *Cryptomeria japonica* chitinase	37.5%	74/5222	37%
GI:168576 *Zea mays* phospholipid transfer protein	36.6%	48/5222	36.4%
GI:193507493 *Cochliobolus lunatus* subtilisin like protease	36.2%	5/5222	24.7%
Gi:260401081 *Zea mays* chitinase	36.2%	84/5222	30.8%
GI:323575361 *Anisakis simplex* Ani s 11 allergen	36.2%	10/5222	28.6%
GI:71084277 HMW glutenin	35.8%	13/5222	25/7%
GI:116329 *Zea mays* endochitinase A	35.7%	5/5222	33.7%
GI:21751 *Triticum aestivum* HMW glutenin	35%	2/5222	25.4%
GI:21779 *Triticum aestivum* HMW glutenin	35%	2/5222	24.8%
Fibroin Light Chain – 262 AA			
No matches	No matches	No matches	No matches
Fibroin P25 – 220 AA			
No matches	No matches	No matches	No matches
Sericin – 560 AA			
GI:1871444 Gal g 6.0101	46.2%	64	27.9%
Ber e 1 Control Proteins – 560 AA			
GI:112754 2S Ber e 1	100%	94	100%
GI:226437844 2S Corylus avellana	51.2%	92	45.9%
GI:1794252 Albumin precur	48.8%	79	42%
Ara h 2 – 77 AA			
GI:26245447 Allergen Ara h 2.02	96.3%	77	100%

Ricin – *Ricinus communis*-576 AA			
No Matches	N/A	N/A	N/A

4.2.4 Eight amino acid match search. Some countries still require a search for any exact match of 8 or more contiguous amino acids between the GM protein and any known allergen even though the criteria have not been shown to be predictive. In addition, 8mer matches for long proteins, especially with repeating sequence segments is unlikely to be useful. This search was performed out of an abundance of caution. None of the Fibroin proteins had a match of 8 AA to any allergen in version 20 of AllergenOnline.org. The positive Control Ber e 1 did have 139 matches from the 139 AA proteins as this query sequence is in AllergenOnline.org ver 20 database. The results of the 8 AA match did not identify any 8 AA identity matches for Heavy Chain Fibroin, Light Chain Fibroin, Fibroin P25 and Sericin to any allergens.

4.2.5 BLASTP of the four Fibroin proteins to NCBI Protein Entrez. The full-length amino acid sequences of the four Fibroin proteins were tested using the BLASTP search algorithm on NCBI Protein on 22 March 2020. It is not possible to use a keyword limit, thus the first 100 matches were to the most closely related proteins that had to be manually visualized to look for allergens or common proteins.

The BLASTP algorithm would not accept the full-length sequence of Fibroin Heavy Chain 5263 AA protein. The N-terminal 402 AA of Fibroin Heavy Chain was used in the search and only matched Fibroin sequences including the full-length of NP_001106733.1 and some partial sequences of Fibroin were matched. No other proteins were identity matched. The C-terminal 409 AA of the Fibroin Heavy Chain protein was also used and again, matches were to fibroin full length and partial sequences. There do not appear to be any other relevant matches to this protein in any protein sequences which would include both allergens and toxins.

The Fibroin Light Chain did have matches to many fibroin sequences of various *Bombyx* species and those of many other Lepidopteran species. All matched proteins were viewed as homologues of the intended sequence. There were no matches to proteins that were labeled as allergens or toxins.

Fibroin P25, also identified homologues from *Bombyx* and proteins of other Lepidopteran species with high identities and very small *E* scores. No matches were found that were labeled as allergens or toxins.

Sericin also had matches to many homologous proteins from *Bombyx* sp. and to various other Lepidoptera species. No sequences labeled as allergens or toxins were found.

The toxin control protein, Ricin, matched many proteins labeled as ricin. No other proteins or species were identified with high scoring matches. This demonstrates that the BLASP for identifying allergens and toxins was working.

4.3 Bioinformatics summary for Cambridge Crops fibroin proteins using standard CODEX criteria. The literature searches for evidence of allergy and toxicity to silkworm and Bombyx mori as well as the Fibroin proteins helps to demonstrate that there is no expected risk of allergy or toxicity associated with the Fibroin prepared proteins. The AA sequence comparisons of the four Fibroin proteins, three of which (Fibroin heavy chain, Fibroin light chain and Fibroin P25) form the majority of the powdered product, were searched against known and putative allergen sequences and did not uncover matches that suggest any reasonable level of possible risks.

4.4 Peptide Cutter, SVM and other Bioinformatics searches for allergens. The following results go beyond the standard CODEX Alimentarius guidelines of 2003.

4.4.1 Peptide Cutter predictions. The website https://web.expasy.org/cgi-bin/peptide_cutter/, allows amino acid sequences of query proteins to be searched for probable peptide cleavages using one, or multiple, proteases. Each of the fibroin protein sequences listed in Table 1 were evaluated using Pepsin (pH 1.3) and Pepsin (pH 2). Since pH 2 predicts many more cleavages (152 compared to 49 for pH 1.3 for Sericin), the peptides predicted from pH 1.3 were used to search the SVM system (AllergenFP). That provides the largest range of possible peptides for comparison to allergens. Since the program does not list the individual peptides, the diagrammatic output was manually viewed and peptides predicted to be >16 AA were selected for each of the proteins, using the peptide following the predicted cut toward the amino end of the protein, through the amino acid following the more carboxy end for the contiguous length to represent the end of the likely peptide fragment. Those peptides were then compared to the SVM program in AllergenFP version 1.

4.4.2 AllergenFP. The AllergenFP website was developed in Sophia, Bulgaria as a third version of SVM to evaluate possible allergenicity of proteins. It is dependent to a great extent on comparisons of proteins identified as Allergens and those that are identified as Non-Allergens. Based on the description in Dimitrov et al, 2014, they used designations of the proteins as allergens in the UniProt database, but did not evaluate peer-reviewed publications for verification. Approximately three-quarters of the Non-Allergens were human proteins, but it does not appear that they included any sequences that are similar to allergens from other sources, like tropomyosin. The algorithms are described in the Dimitrov et al., 2014 paper, although it is not clear how the searches have been validated. I used the full-sequences of the four fibroin proteins in this search, as well as peptides of >16 AA that were predicted by Peptide

Cutter for Pepsin at pH 1.3. Scoring is based on calculated Tanimoto Similarity Ind, with 1.0 equaling 100% probability of correctly identifying the protein as an Allergen or a Non-Allergen. Individual best matched proteins are shown by UniProtKB accession number. Those were viewed and recorded in an Excel File (Supplemental File 1). It is clear that some issues are obvious, the toxin protein Ricin of *Ricinus communis* are listed as an allergen in the database. No other allergen database lists this protein as an allergen. Looking at scores of the whole protein sequence vs. peptides from the Peptide Cutter showed great differences, with the designation of the full-length proteins as Non-Allergens, yet a number of predicted peptides were designated as "Allergens" by the scoring system. It is not at all clear how these results could be evaluated. Interestingly the four fibroin proteins were not evaluated as allergens by the CODEX Alimentarius guidelines based on AllergenOnline.org searches.

4.4.3 AllerCATPro searches. AllerCATPro combines "allergenic" sequences from five databases as discussed by Maurer-Stroh et al., 2019. The algorithm includes evaluation based on CODEX criteria, however, there is a strict limit to the query protein length at 80 AA. In addition, there is a 3-dimensional evaluation that is not fully explained for predicting 3-dimensional potential epitopes. There are claims of very high predictive values. The database includes proteins that are judged as allergen by the WHO/IUIS Allergen Nomenclature database that does not require clinical proof of allergy. It includes allergens from AllergenOnline.org and from COMPARE, as well as the Allergome database. It includes protein sequences that are listed as "allergens" by the UniProt database. So far only the AllergenOnline.org database provide clear descriptors of allergy, and as explained by Goodman et al., 2016, there are proteins identified as only having IgE binding and those that also have demonstrated biological activity (skin prick tests or basophil activation). By limiting the sliding 80mer evaluation to query proteins of 80 or more amino acids, they miss possible proteins like the 77 AA segment of Ara h 2 that includes multiple IgE epitopes and could cause clinical reactions. Clearly the AllerCATPro databased score is similar to AllergenOnline.org for most proteins. Ricin was seen as weak evidence of allergenicity. Ber e 1 was predicted as having strong evidence of allergy. Fibroin heavy chain was predicted to have no evidence of allergy, as was true for fibroin light chain, P25 and Sericin. Full-length Ara h 2 was judged as having strong evidence of allergy while the 77 AA asparagine end of Ara h 2 was judged as having no 80 AA acid match, but did indicate strong evidence based on overall FASTA and 3D epitope prediction. Thus, the AllerCATPro has some limitation of predictions, but is more in-line with AllergenOnline.org.

5.0 Conclusions

In using the criteria recommended by the Codex Alimentarius Commission for food safety (2003 and 2009), I find that there are no added risks from the consumption of Cambridge Crops' Mori Silk fibroin proteins that are expected to be used for food preservation. Clearly a strict application of the rule of >35% identity over 80 AA would lead to a conclusion that serum IgE tests are necessary, but given the overall low identity matches and dissimilarity of proteins, there are no clear risks for those allergic to the matched allergens.

Furthermore, comparisons by SVM and other programs, with and without the use of predicted pepsin fragments, do not provide information that shows any additional possible risks.

6.0 References

Aalberse RC. (2000). Structural biology of allergens. *J Allergy Clin Immunol* 106:228-238.

Cao Y, Wang B. (2009). Biodegradation of silk biomaterials. *Int J Mol Sci* 10:1514-1524.

Chen R, Zhou L, Yang H, Zheng H, Zhou Y, Hu Z, Wang B. (2019). Degradation behaviour and immunological detection of silk fibroin exposure to enzymes. *Anal Sci* 35:1253-1249.

Codex Alimentarius Commission. (2003). Alinorm 03/34: Joint FAO/WHO Food Standard Programme, Codex Alimentarius Commission, Twenty-Fifth Session, Rome, Italy 30 June-5 July 2003. Appendix III, Guideline for the conduct of food safety assessment of foods derived from recombinant-DNA plants and Appendix IV, Annex on the assessment of possible allergenicity, pp. 47-60.

De Gier S, Verhoeckx K. (2018). Insect (food) allergy and allergens. *Mol Immunol* 100:82-106.

Dimitrov I, Naneva L, Doytchinova I, Bangov I. (2014). AllergenFP: allergenicity prediction by descriptor fingerprints. Bioinformatics 30(6):846-851.

Dong Z, Zhao P, Wang C, Zhang Y, Chen J, Wang X, Lin Y, Xia Q. (2020). Changes of *Bombyx* mori silk proteins spun from different developmental stages. J Proteome Res 12:5213-5222.

Feng Y, Chen X-M, Zhao M, He Z, Sun L, Wang C-Y, Ding W-F. (2018). Edible insects in China: Utilization and prospects. *Insect Science* 25:184-198.

Goodman RE, Vieths S, Sampson HA, Hill D, Ebisawa M, Taylor SL, van Ree R. (2008). Allergenicity assessment of genetically modified crops—what makes sense? *Nat Biotechnol* 26(1):73-81.

Goodman RE. (2006). Practical and predictive bioinformatics methods for the identification of potentially cross-reactive protein matches. *Mol Nutr Food Res* 50:655-660.

Goodman RE. (2008). Performing IgE serum testing due to bioinformatics matches in the allergenicity assessment of GM crops. *Food Chem Toxicol* 46:S24-S34

Goodman RE, Ebisawa M, Ferreira F, Sampson HA, van Ree R, Vieths S, Baumert JL, Bohle B, Latlithambika S, Wise J, Taylor S. (2016). AllergenOnline: A peer-reviewed, curated allergen database to assess novel food proteins for potential cross-reactivity. *Mol Nutr Food Res* 60(5):1183-1198.

Hoflehner E, Binder M, Hemmer W, Mahler V, Panzani RC, Jarisch R, Wiedermann U, Duchene M. (2012). Thioredoxin from the Indianmeal moth *Plodia interpunctella*: cloning and test of the allergenic potential in mice. PLoS One. 7(7): doi: 10.1371/journal.pone.0042026.

Inoue S, Tanaka K, Arisakas F, Kimura S, Ohtomo K, Mizuno S. (2000). Silk fibroin of *Bombyx mori* is secreted, assembling a high molecular mass elementary unit consisting of H-chain, L-chain, and P25, with a 6:6:1 molar ratio. *J Biol Chem* 275(51):40517-40528.

Jin Y, Goodman RE, Tetteh AO, Lu M, Tripathi L. (2017). Bioinoformatics analysis to assess potential risks of allergenicity and toxicity of HRAP and PFLP proteins in genetically modified bananas resistant to Xanthomonas wilt disease. *Food Chem Toxicol* 109(Pt 1):81-89.

Joung JA, Park MN, You JY, Song BJ, Choi JH. (2018). Application of food-grade proteolytic enzyme for the hydrolysis of regenerated silk fibroin from *Bombyx mori*. *J Chemistry* 9 pages DOI. 10.1155/2018/1285823.

Kawamoto M, Jouraku A, Toyoda A, Yokoi K, Minakuchi Y, Katsuma S, Fuhiyama A, Kiuchi T, Yamamoto K, Shimada T. (2019). High-quality genome assembly of the silkworm, Bombyx mori. Insect Biochem Mol Biol 107:53-62.

Krutz NL, Winget J, Ryan CA, Wimalasena R, Sebastian Maurer-Stroh, Dearman RJ, Kimber I, Gerberick GF. (2019). Proteomic and bioinoformatic analyses for identification of proteins with low allergenic potential for hazard assessment. Tox Sci 170(1):210-222.

Li YH, Xu JY, Tao L, Li XF, Li S, Zeng X, Chen SY, Zhang P, Qin C, Zhang C, Chen Z, Zhu F, Chen YZ. (2016). SVM-Prot 2016: A web-server for machine leaning prediction of protein functional families from sequence irrespective of similarity. PLoS One 11(8):doi: 10.1371/journal.pone.0155290. 14 pages.

Liu J, Li F, Liang L, Jiang Y, Chen J. (2019). Fibroin delays chilling injury of postharvest banana fruit via enhanced antioxidant capability during cold storage. *Metabolites* 9:0152. DOI: 10.339/metab9070152.

Maurer-Stroh S, Krutz NL, Kern PS, Gunalan V, Nguyen MN, Limviphuvadh V, Eisenhaber F, Gerberick GF. (2019). AllerCATPro-predition of protein allergenicity potential from the protein sequence. Bioinformatics 35(17):3020-3027.

Marelli B, Brenckle MA, Kaplan DL, Omenetto FG. (2016). Silk fibroin as edible coating for perishable food preservation. *Sci Reports* 6:25263. DOI: 10.1038/srep25263.

Marconi F, Sansoni L, Coli S. (1951). Clinical aspects of a special allergy produced by the silkworm moth. *Athena* 17(3-4):84-90.

Peterson DD. (2011). Common plant toxicology: A comparison of national and Southwest Ohio data trends in plant poisonings in the 21st century. *Toxicol Appl Pharmacol* 254:148-153.

Rockwood DN, Preda R, Yucel T, Want X, Lovett ML, Kaplan DL. (2013). Materials fabrication from *Bombyx mori* silk fibroin. *Nat Protoc* 6(10):doi: 10.1038/nprot.2011.379.

Saha S, Raghava GPS. (2006). AlgPred: prediction of allergenic proteins and mapping of IgE epitopes. Nucleic Acids Res 34(Web Server issue):W202-9. Doi: 10.1093/nar/gkl343.

Siruguri V, Bharatraj DK, Vankudavath RN, Mendu VV, Gupta V, Goodman RE. (2015). Evaluation of Bar, Barnase, and Barstar recombinant proteins expressed in genetically

engineered Brassica juncea (Indian mustard) for potential risks of food allergy using bioinformatics and literature searches. *Food Chem Toxicol* 83:93-102.

Thurber AE, Omenetto FG, Kaplan DL. (2015). *In vivo* bioresponses to silk proteins. *Biomaterials* 71:145-157.

Zhang Y, Zhao P, Dong Z, Wang D, Guo P, Guo X, Song Q, Zhang W, Xia Q. (2015). Comparative proteome analysis of multi-layer cocoon of silkworm, *Bombyx mori*. *PLOS One* DOI: 10.1371/journal.pone.0123403.

Zhao X, Li L, Kuang Z, Luo G, Li B. (2015). Proteomic and immunological identification of two new allergens from silkworm (*Bombyx mori* L.) pupae. *Centr Eur J Immunol* 40(1):30-34.

Zurovec M, Yang C, Kodrik D, Sehnal F. (1998). Identification of a novel type of silk protein and regulation of its expression. *J Biol Chem* 273(25):15423-15428.

7.0 Appendix: Allergenonline.org database, version 20 10 February 2020

Species	Common	IUISÄ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Acarus siro	Mite	Aca s 13	Aero Mite	Acarus Aca s 13	IgE but no biological test	131	ABL09307.1	118638268	9
Acarus siro	Mite	Unassigned	Aero Insect	Acarus siro Group 4 allergen	IgE but no biological test	517	ABL09312.1	118638278	9
Actinidia arguta	Hardy Kiwi	Unassigned	Food Plant	Actinidia arguta kiwellin	IgE but no biological test	213	AGC39172.1	441482362	14
Actinidia arguta	Hardy Kiwi	Unassigned	Food Plant	Actinidia arguta kiwellin	IgE but no biological test	213	AGC39173.1	441482364	14
Actinidia arguta	Hardy Kiwi	Unassigned	Food Plant	Actinidia arguta kiwellin	IgE but no biological test	213	AGC39174.1	441482366	14
Actinidia chinensis	Kiwi	Unassigned	Food Plant	Actinidia Act c 1 Act d 1 Actinidin	IgE plus basophil+ or SPT+	380	P00785.4	190358935	9
Actinidia chinensis	Kiwi	Unassigned	Food Plant	Actinidia Act c 1 Act d 1 Actinidin	IgE plus basophil+ or SPT+	380	BBA83994.1	1373811525	19
Actinidia chinensis	Kiwi	Act c 10	Food Plant	Actinidia Act c 10 LTP	IgE plus basophil+ or SPT+	15	P85204.1	378548410	13
Actinidia chinensis	Kiwi	Act c 5.0102	Food Plant	Actinidia Act c 5 kiwellin	IgE but no biological test	213	AGC39166.1	441482354	14
Actinidia chinensis	Kiwi	Act c 8.0101	Food Plant	Actinidia Act c 8 Act d 8 PR-10	IgE but no biological test	159	CAM31908.1	281552896	11
Actinidia chinensis	Kiwi	Act d 12.0102	Food Plant	Actinidia Act d 12	IgE plus basophil+ or SPT+	462	ABB77213.1	82469930	16
Actinidia chinensis	Kiwi	Unassigned	Food Plant	Actinidia Act d 2 thaumatin like protein	IgE plus basophil+ or SPT+	20	P83958.1	68064399	7
Actinidia chinensis	Kiwi	Unassigned	Food Plant	Actinidia Act d 2 thaumatin like protein	IgE plus basophil+ or SPT+	225	AGC39176.1	441482370	14
Actinidia deliciosa	Kiwi	Act d 1.0101	Food Plant	Actinidia Act c 1 Act d 1 Actinidin	IgE plus basophil+ or SPT+	380	CAA34486.1	15984	7
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act c 1 Act d 1 Actinidin	IgE plus basophil+ or SPT+	380	AAA32629.1	166317	7
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act c 1 Act d 1 Actinidin	IgE plus basophil+ or SPT+	380	A5HII1.1	193806686	12
Actinidia deliciosa	Kiwi	Act d 8.0101	Food Plant	Actinidia Act c 8 Act d 8 PR-10	IgE but no biological test	157	CAM31909.1	281552898	11
Actinidia deliciosa	Kiwi	Act d 10.0201	Food Plant	Actinidia Act d 10 LTP	IgE plus basophil+ or SPT+	92	P85206.1	378548411	13
Actinidia deliciosa	Kiwi	Act d 10.0101	Food Plant	Actinidia Act d 10 LTP	IgE plus basophil+ or SPT+	92	P86137.2	378405189	13
Actinidia deliciosa	Kiwi	Act d 11.0101	Food Plant	Actinidia Act d 11 Kirola MLP	IgE but no biological test	150	P85524.1	332319679	12
Actinidia deliciosa	Kiwi	Act d 2.0101	Food Plant	Actinidia Act d 2 thaumatin like protein	IgE plus basophil+ or SPT+	225	CAI38795.2	71057064	7
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 2 thaumatin like protein	IgE plus basophil+ or SPT+	201	ABQ42566.1	146737976	9
Actinidia deliciosa	Kiwi	Act d 4.0101	Food Plant	Actinidia Act d 4 Phytocystatin	IgE plus basophil+ or SPT+	116	AAR92223.1	40807635	7
Actinidia deliciosa	Kiwi	Act d 5.0101	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	189	P84527.1	85701136	7
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	213	AGC39164.1	441482346	14
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	213	AGC39165.1	441482348	14
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	213	AGC39166.1	441482350	14
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	213	AGC39167.1	441482352	14
Actinidia deliciosa	Kiwi	Unassigned	Food Plant	Actinidia Act d 5 kiwellin	IgE but no biological test	189	4X9U_B	906848988	17
Actinidia deliciosa	Kiwi	Act d 9.0101	Food Plant	Actinidia Act d 9, profilin	IgE but no biological test	109	C0HL99.1	1407892581	19
Actinidia eriantha	Climber (plant)	Unassigned	Food Plant	Actinidia eriantha kiwellin	IgE but no biological test	213	AGC39169.1	441482358	14
Actinidia eriantha	Climber (plant)	Unassigned	Food Plant	Actinidia eriantha kiwellin	IgE but no biological test	213	AGC39170.1	441482358	14
Actinidia eriantha	Climber (plant)	Unassigned	Food Plant	Actinidia eriantha kiwellin	IgE but no biological test	213	AGC39171.1	441482360	14
Aedes aegypti	Yellow fever mosquito	Aed a 1.0101	Venom or Salivary	Aedes Aed a 1 apyrase	IgE plus basophil+ or SPT+	562	AAC37218.1	556272	7
Aedes aegypti	Yellow fever mosquito	Unassigned	Venom or Salivary	Aedes Aed a 1 apyrase	IgE plus basophil+ or SPT+	562	P50635.2	193806340	10
Aedes aegypti	Yellow fever mosquito	Aed a 11	Venom or Salivary	Aedes Aed a 11 Lysosomal protease	IgE but no biological test	387	XP_001657556.2	1218215859	18
Aedes aegypti	Yellow fever mosquito	Aed a 2	Venom or Salivary	Aedes Aed a 2	IgE plus basophil+ or SPT+	321	P18153.2	205525919	9
Aedes aegypti	Yellow fever mosquito	Aed a 3.0101	Venom or Salivary	Aedes Aed a 3	IgE plus basophil+ or SPT+	253	AAB58417.1	2114497	7
Aedes aegypti	Yellow fever mosquito	Unassigned	Venom or Salivary	Aedes Aed a 3	IgE plus basophil+ or SPT+	273	ABF18122.1	94468546	7
Aedes aegypti	Yellow fever mosquito	Aed a 5.0101	Venom or Salivary	Aedes Aed a 5 Sarcoplasmic Ca+ bind	IgE but no biological test	191	XP_001653462.1	157119961	17
Aedes aegypti	Yellow fever mosquito	Aed a 7.0101	Venom or Salivary	Aedes Aed a 7	IgE but no biological test	204	XP_001654291.1	157125324	17
Aedes aegypti	Yellow fever mosquito	Aed a 8.0101	Venom or Salivary	Aedes Aed a 8 HSP70	IgE but no biological test	655	ABF18258.1	94468818	17
Aedes aegypti	Yellow fever mosquito	Aed a 10.0201	Venom or Salivary	Aedes aegypti Aed a 10	IgE but no biological test	284	XP_001655948.1	157131813	16
Aedes aegypti	Yellow fever mosquito	Aed a 10.0101	Venom or Salivary	Aedes aegypti Aed a 10	IgE but no biological test	285	XP_001655954.1	157131825	16
Aedes aegypti	Yellow fever mosquito	Aed a 4.0101	Venom or Salivary	Aedes aegypti Aed a 4 alpha glucosidase	IgE but no biological test	579	P13080.1	126713	17
Agrostis alba	Bent grass	Unassigned	Aero Plant	Agrostis Agr a 1	IgE but no biological test	26	E37396	320606	7
Agrostis alba	Bent grass	Unassigned	Aero Plant	Agrostis Agr a 1	IgE but no biological test	35	Q7M1X7	75139987	7
Agrostis alba	Bent grass	Unassigned	Aero Plant	Agrostis Agr a 1	IgE but no biological test	35	Q7M1X9	75139989	7
Alnus glutinosa	Alder	Aln g 1.0101	Aero Plant	Alnus Aln g 1	IgE plus basophil+ or SPT+	160	AAB24432.1	261407	7
Alnus glutinosa	Alder	Aln g 4.0101	Aero Plant	Alnus Aln g 4	IgE plus basophil+ or SPT+	85	CAA76831.1	3319651	7
Alternaria alternata	Fungus	Alt a 1.0101	Aero Fungi	Alternaria Alt a 1	IgE plus basophil+ or SPT+	157	AAB47552.1	1842045	7
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 1	IgE plus basophil+ or SPT+	115	AAM77471.1	21913174	7
Alternaria alternata	Fungus	Alt a 1.0102	Aero Fungi	Alternaria Alt a 1	IgE plus basophil+ or SPT+	157	AAS75297.1	45680856	7
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 1	IgE plus basophil+ or SPT+	133	3V0R_A	390980892	13
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 1	IgE plus basophil+ or SPT+	130	4AUD_B	508123617	15
Alternaria alternata	Fungus	Alt a 10.01	Aero Fungi	Alternaria Alt a 10 ADH	IgE but no biological test	497	CAA55071.2	76666767	7

Species	Common	IUISÂ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Alternaria alternata	Fungus	Alt a 12.0101	Aero Fungi	Alternaria Alt a 12 Ribosomal BP P1	IgE but no biological test	110	P49148.1	1350779	7
Alternaria alternata	Fungus	Alt a 13.0101	Aero Fungi	Alternaria Alt a 13	IgE plus basophil+ or SPT+	231	Q6R4B4.1	74611808	10
Alternaria alternata	Fungus	Alt a 3.0101	Aero Fungi	Alternaria Alt a 3 HSP	IgE but no biological test	152	P78983.2	14423730	7
Alternaria alternata	Fungus	Alt a 4.0101	Aero Fungi	Alternaria Alt a 4 thioredoxin	IgE but no biological test	436	Q00002.2	85701160	7
Alternaria alternata	Fungus	Alt a 5.0101	Aero Fungi	Alternaria Alt a 5 ribosomal P2	IgE but no biological test	113	AAB48041.1	1850540	7
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 5 ribosomal P2	IgE but no biological test	113	P42037.1	1173071	10
Alternaria alternata	Fungus	Alt a 6.0101	Aero Fungi	Alternaria Alt a 6 enolase	IgE but no biological test	438	Q9HDT3.2	14423684	7
Alternaria alternata	Fungus	Alt a 7.0101	Aero Fungi	Alternaria Alt a 7 flavodoxin	IgE but no biological test	204	P42058.1	1168402	9
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 7 flavodoxin	IgE but no biological test	261	OWY50380.1	1213711549	18
Alternaria alternata	Fungus	Alt a 8.0101	Aero Fungi	Alternaria Alt a 8 (mannitol dehydrogenase)	IgE plus basophil+ or SPT+	266	AAO91800.1	37780013	8
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Alt a 8 (mannitol dehydrogenase)	IgE plus basophil+ or SPT+	266	P0C0Y4.2	118595439	8
Alternaria alternata	Fungus	Alt a 14.0101	Aero Fungi	Alternaria MnSOD Alt a 14	IgE but no biological test	191	AGS80276.1	529279957	15
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria Nuc Transport 2	IgE plus basophil+ or SPT+	124	CAD38167.1	21748153	7
Alternaria alternata	Fungus	Unassigned	Aero Fungi	Alternaria TCTP IgE binding	IgE but no biological test	169	ABI26088.1	112824341	11
Amaranthus retroflexus	Common Amaranth	Ama r 2.0101	Aero Plant	Amaranthus Ama r 2 Profilin	IgE plus basophil+ or SPT+	133	ACP43298.1	227937304	10
Amaranthus retroflexus	Common Amaranth	Ama r 1.0101	Aero Plant	Amaranthus retroflexus Ama r 1	IgE but no biological test	168	AKV72168.1	914410010	16
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0101	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	396	P27759.1	113475	7
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0201	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	398	P27760.1	113476	7
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0301	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	P27761.1	113477	7
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0401	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	392	P28744.1	113478	7
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0303	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	AAA32669.1	166443	7
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0501	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	AAA32671.1	166447	11
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	396	CBW30986.1	302127810	12
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0202	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	398	CBW30987.1	302127812	12
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0304	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30988.1	302127814	12
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0305	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30989.1	302127816	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30990.1	302127818	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30991.1	302127820	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30992.1	302127822	12
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0402	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	387	CBW30993.1	302127824	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30994.1	302127826	12
Ambrosia artemisiifolia	Short ragweed	Amb a 1.0502	Aero Plant	Ambrosia Amb a 1	IgE plus basophil+ or SPT+	397	CBW30995.1	302127828	12
Ambrosia artemisiifolia	Short ragweed	Amb a 10.0101	Aero Plant	Ambrosia Amb a 10	IgE but no biological test	160	AAX77686.1	62249491	7
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	164	CBJ24286.1	285005079	11
Ambrosia artemisiifolia	Short ragweed	Amb a 4.0101	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	164	CBK52317.1	291197394	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	111	CBK52693.1	291482306	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	140	CBK52694.1	291482308	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	134	CBK52695.1	291482310	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	96	CBK52697.1	291482314	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	110	CBK52698.1	291482316	12
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 4	IgE but no biological test	116	CBK52699.1	291482318	12
Ambrosia artemisiifolia	Short ragweed	Amb a 6.0101	Aero Plant	Ambrosia Amb a 6	IgE but no biological test	116	O04004.1	14285595	7
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	133	AAP15203.1	34851182	7
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	131	AAP15202.1	34851180	7
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	131	AAP15201.1	34851178	7
Ambrosia artemisiifolia	Short ragweed	Amb a 8.0101	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	133	AAX77687.1	62249502	7
Ambrosia artemisiifolia	Short ragweed	Amb a 8.0102	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	133	AAX77688.1	62249512	7
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	135	5EM1_A	1035439203	18
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia Amb a 8 profilin	IgE plus basophil+ or SPT+	134	5EV0_B	1035439209	18
Ambrosia artemisiifolia	Short ragweed	Amb a 9.0101	Aero Plant	Ambrosia Amb a 9	IgE plus basophil+ or SPT+	83	AAX77684.1	62249470	7
Ambrosia artemisiifolia	Short ragweed	Amb a 9.0102	Aero Plant	Ambrosia Amb a 9	IgE plus basophil+ or SPT+	83	AAX77685.1	62249481	7
Ambrosia artemisiifolia	Short ragweed	Amb a 11.0101	Aero Plant	Ambrosia artemisiifolia Amb a 11	IgE plus basophil+ or SPT+	386	AHA56102.1	558482540	15
Ambrosia artemisiifolia	Short ragweed	Unassigned	Aero Plant	Ambrosia artemisiifolia Amb a 11	IgE plus basophil+ or SPT+	385	5EGW_B	1023176264	17
Ambrosia artemisiifolia (elatior)	Short ragweed	Amb a 3.0101	Aero Plant	Ambrosia Amb a 3	IgE plus basophil+ or SPT+	101	P00304.2	416636	7

Species	Common	IUISÀ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Ambrosia artemisiifolia (elatior)	Short ragweed	Amb a 5.0101	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	45	P02878.1	114090	7
Ambrosia psilostachya	Western ragweed	Amb p 5.0101	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	77	AAA20065.1	515953	7
Ambrosia psilostachya	Western ragweed	Unassigned	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	77	AAA20067.1	515954	7
Ambrosia psilostachya	Western ragweed	Amb p 5.0201	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	77	AAA20064.1	515955	7
Ambrosia psilostachya	Western ragweed	Unassigned	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	77	AAA20066.1	515956	7
Ambrosia psilostachya	Western ragweed	Unassigned	Aero Plant	Ambrosia Amb a 5 Ra5 Amb p 5	IgE plus basophil+ or SPT+	77	AAA20068.1	515957	7
Ambrosia trifida	Giant ragweed	Amb t 5.0101	Aero Plant	Ambrosia Amb t 5 Ra5G	IgE but no biological test	73	P10414.2	114091	7
Amphioctopus fangsiao	Octopus	Unassigned	Food Animal	Amphioctopus arginine kinase	IgE but no biological test	348	AEK65120.1	340742817	12
Anacardium occidentale	Cashew	Ana O 1.0102	Food Plant	Anacardium Ana o 1	IgE plus basophil+ or SPT+	536	AAM73729.1	21666498	7
Anacardium occidentale	Cashew	Ana O 1.0101	Food Plant	Anacardium Ana o 1	IgE plus basophil+ or SPT+	538	AAM73730.2	21914823	7
Anacardium occidentale	Cashew	Ana o 2.0101	Food Plant	Anacardium Ana o 2	IgE plus basophil+ or SPT+	457	AAN76862.1	25991543	7
Anacardium occidentale	Cashew	Ana o 3.0101	Food Plant	Anacardium Ana o 3	IgE but no biological test	138	AAL91665.1	24473800	7
Ananas comosus	Pineapple	Ana c 2.0101	Aero Plant	Ananas Ana c 2 Bromelain precursor	IgE plus basophil+ or SPT+	351	O23791.1	75277440	7
Ananas comosus	Pineapple	Ana c 1.0101	Food Plant	Ananas profilin Ana c 1	IgE but no biological test	131	Q94JN2.1	75306610	10
Anisakis pegreffii	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60026.1	442577845	14
Anisakis pegreffii	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60027.1	442577847	14
Anisakis pegreffii	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60028.1	442577849	14
Anisakis pegreffii	Parasitic fish worm	Unassigned	Important Worm (parasite)	Anisakis Ani s 2 paramyosin	IgE but no biological test	869	AGC60020.1	442577833	14
Anisakis simplex	Parasitic fish worm	Ani s 1.0101	Food Animal	Anisakis Ani s 1 protease inhibitor	IgE plus basophil+ or SPT+	194	Q7Z1K3.1	47605452	7
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 1 protease inhibitor	IgE plus basophil+ or SPT+	163	AGC60035.1	442577863	14
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 1 protease inhibitor	IgE plus basophil+ or SPT+	163	AGC60036.1	442577865	14
Anisakis simplex	Parasitic fish worm	Ani s 10.0101	Food Animal	Anisakis Ani s 10	IgE but no biological test	231	ACZ95445.1	272574378	11
Anisakis simplex	Parasitic fish worm	Ani s 11.0101	Food Animal	Anisakis Ani s 11	IgE but no biological test	307	BAJ78220.1	323575361	12
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 11	IgE but no biological test	180	BAJ78221.1	323575363	12
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 11	IgE but no biological test	287	BAJ78222.1	323575365	12
Anisakis simplex	Parasitic fish worm	Ani s 12.0101	Food Animal	Anisakis Ani s 12	IgE but no biological test	295	BAJ78223.1	323575367	12
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60029.1	442577851	14
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60030.1	442577853	14
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 12	IgE but no biological test	264	AGC60031.1	442577855	14
Anisakis simplex	Parasitic fish worm	Ani s 14.0101	Food Animal	Anisakis Ani s 14	IgE but no biological test	217	BAT62430.1	957554293	17
Anisakis simplex	Parasitic fish worm	Ani s 2.0101	Food Animal	Anisakis Ani s 2 paramyosin	IgE but no biological test	473	AAF75225.1	8453086	7
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 2 paramyosin	IgE but no biological test	869	Q9NJA9.1	42559536	9
Anisakis simplex	Parasitic fish worm	Ani s 3.0101	Food Animal	Anisakis Ani s 3 tropomyosin	IgE plus basophil+ or SPT+	284	Q9NAS5.1	14423976	7
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 3 tropomyosin	IgE plus basophil+ or SPT+	284	AEQ28167.1	350285785	13
Anisakis simplex	Parasitic fish worm	Ani s 4.0101	Food Animal	Anisakis Ani s 4	IgE plus basophil+ or SPT+	14	P83885.1	47605398	7
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 4	IgE plus basophil+ or SPT+	115	CAK50389.1	110346534	8
Anisakis simplex	Parasitic fish worm	Ani s 5.0101	Food Animal	Anisakis Ani s 5 SXP/RAL-2 family protein	IgE but no biological test	152	BAF43534.1	121308678	8
Anisakis simplex	Parasitic fish worm	Ani s 7.0101	Food Animal	Anisakis Ani s 7 UA3-recognized allergen	IgE but no biological test	1096	ABL77410.1	119524036	9
Anisakis simplex	Parasitic fish worm	Ani s 8.0101	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75681.1	155676636	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75704.1	155676682	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75705.1	155676684	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75706.1	155676686	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75707.1	155676688	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75708.1	155676690	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75709.1	155676692	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75710.1	155676694	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75711.1	155676696	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis Ani s 8 SXP/RAL-2 family protein 2	IgE but no biological test	150	BAF75712.1	155676698	9

Species	Common	IUISÄ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Anisakis simplex	Parasitic fish worm	Ani s 9.0101	Food Animal	Anisakis Ani s 9	IgE but no biological test	147	ABV55106.1	157418806	9
Anisakis simplex	Parasitic fish worm	Unassigned	Food Animal	Anisakis simplex troponin-like	IgE but no biological test	161	CAB58171.1	6065738	7
Anthoxanthum odoratum	Sweet vernal grass	Unassigned	Aero Plant	Anthoxanthum Ant o 1	IgE but no biological test	26	G37396	320607	7
Anthoxanthum odoratum	Sweet vernal grass	Ant o 1.0101	Aero Plant	Anthoxanthum Ant o 1	IgE but no biological test	32	Q7M1X6	75139986	7
Anthoxanthum odoratum	Sweet vernal grass	Unassigned	Aero Plant	Anthoxanthum Ant o 1	IgE but no biological test	32	Q7M1Y0	75139990	7
Apis cerana	Indian honeybee	Unassigned	Venom or Salivary	Apis Api m 1 Api d 1 Api c 1	IgE plus basophil+ or SPT+	134	A59055	7435005	7
Apis cerana cerana	Indian honeybee	Api d 1	Venom or Salivary	Apis Api m 1 Api d 1 Api c 1	IgE plus basophil+ or SPT+	134	AAK09361.1	12958583	15
Apis dorsata	Giant honeybee	Api d 1.0101	Venom or Salivary	Apis Api m 1 Api d 1 Api c 1	IgE plus basophil+ or SPT+	134	Q7M4I5.1	47117012	7
Apis dorsata	Giant honeybee	Unassigned	Venom or Salivary	Apis Api m 4 Melittin	IgE but no biological test	26	P01502.1	126955	7
Apis mellifera	Honeybee	Api m 1.0101	Venom or Salivary	Apis Api m 1 Api d 1 Api c 1	IgE plus basophil+ or SPT+	167	P00630.3	24418862	7
Apis mellifera	Honeybee	Unassigned	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	223	ABF21077.1	94471622	7
Apis mellifera	Honeybee	Api m 10.0101	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	175	ABF21078.1	94471624	7
Apis mellifera	Honeybee	Api m 2.0101	Venom or Salivary	Apis Api m 2	IgE plus basophil+ or SPT+	382	Q08169.1	585279	7
Apis mellifera	Honeybee	Unassigned	Venom or Salivary	Apis Api m 3 acid phosphatase	IgE but no biological test	388	ACI25605.1	208342441	10
Apis mellifera	Honeybee	Api m 3.0101	Venom or Salivary	Apis Api m 3 acid phosphatase	IgE but no biological test	388	Q5BLY5.1	74835477	12
Apis mellifera	Honeybee	Api m 4.0101	Venom or Salivary	Apis Api m 4 Melittin	IgE but no biological test	70	CAA26038.1	5622	7
Apis mellifera	Honeybee	Unassigned	Venom or Salivary	Apis Api m 4 Melittin	IgE but no biological test	27	MEHB2	69552	7
Apis mellifera	Honeybee	Api m 5.0101	Venom or Salivary	Apis Api m 5 dipeptidylpeptidase	IgE plus basophil+ or SPT+	775	NP_001119715.1	187281543	15
Apis mellifera	Honeybee	Api m 6.01	Venom or Salivary	Apis Api m 6	IgE but no biological test	92	NP_001035360.1	94400907	7
Apis mellifera	Honeybee	Unassigned	Venom or Salivary	Apis Api m 6	IgE but no biological test	94	ABD51779.1	88770352	10
Apis mellifera	Honeybee	Api m 11.0101	Venom or Salivary	Apis mellifera Api m 11	IgE but no biological test	416	NP_001011564.1	58585070	15
Apis mellifera	Honeybee	Api m 11.0201	Venom or Salivary	Apis mellifera Api m 11	IgE but no biological test	423	AAY21180.1	62910925	15
Apis mellifera	Honeybee	Api m 12.0101	Venom or Salivary	Apis mellifera Api m 12	IgE but no biological test	1770	CAD56944.1	29329817	15
Apis mellifera carnica	Honeybee	Unassigned	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	12	AHM25038.1	594708629	16
Apis mellifera carnica	Honeybee	Unassigned	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	19	AHM25037.1	594708627	16
Apis mellifera carnica	Honeybee	Unassigned	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	25	AHM25036.1	594708625	16
Apis mellifera carnica	Honeybee	Unassigned	Venom or Salivary	Apis Api m 10 icarapin	IgE but no biological test	41	AHM25035.1	594708623	16
Apium graveolens	Celery	Api g 1.0101	Food Plant	Apium Api g 1	IgE plus basophil+ or SPT+	154	P49372.1	1346568	7
Apium graveolens	Celery	Api g 1.0201	Food Plant	Apium Api g 1	IgE plus basophil+ or SPT+	159	P92918.1	14423846	9
Apium graveolens	Celery	Api g 2.0101	Food Plant	Apium Api g 2	IgE plus basophil+ or SPT+	118	ACV04796.1	256600126	12
Apium graveolens	Celery	Api g 4.0101	Food Plant	Apium Api g 4	IgE plus basophil+ or SPT+	134	AAD29409.1	4761578	7
Apium graveolens	Celery	Api g 5.0101	Food Plant	Apium Api g 5	IgE but no biological test	86	P81943.3	33300920	10
Apium graveolens Rapaceum Group	Celery	Api g 6.0101	Food Plant	Apium graveolens Api g 6 LTP 2	IgE but no biological test	67	P86809.1	550540827	15
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Agglutinin (lectin)	IgE but no biological test	273	AAB22817.1	253289	7
Arachis hypogaea	Peanut	Ara h 1	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	614	P43237.1	1168390	7
Arachis hypogaea	Peanut	Ara h 1.0101	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	626	P43238.1	1168391	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	299	AAT00595.1	46560474	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	303	AAT00594.1	46560472	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	428	AAT00596.1	46560476	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	619	ADQ53858.1	312233063	12
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	418	3SMH_A	375332427	13
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 1	IgE plus basophil+ or SPT+	418	3S7E_A	347447588	13
Arachis hypogaea	Peanut	Ara h 12.0101	Food Plant	Arachis Ara h 12	IgE but no biological test	71	B3EWP3.1	1018736824	17
Arachis hypogaea	Peanut	Ara h 13.0102	Food Plant	Arachis Ara h 13 defensin	IgE but no biological test	72	C0HJZ1.1	1018736837	17
Arachis hypogaea	Peanut	Ara h 13.0101	Food Plant	Arachis Ara h 13 defensin	IgE but no biological test	79	B3EWP4.1	1018736830	17
Arachis hypogaea	Peanut	Ara h 2.0201	Food Plant	Arachis Ara h 2	IgE plus basophil+ or SPT+	172	AAN77576.1	26245447	7
Arachis hypogaea	Peanut	Ara a 2	Food Plant	Arachis Ara h 2	IgE plus basophil+ or SPT+	169	AAM78596.1	31322017	7
Arachis hypogaea	Peanut	Ara h 2.0101	Food Plant	Arachis Ara h 2	IgE plus basophil+ or SPT+	156	AAK96887.1	15418705	10
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 2	IgE plus basophil+ or SPT+	158	ACN62248.1	224747150	10
Arachis hypogaea	Peanut	Ara h 3.0101	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	507	AAC63045.1	3703107	7
Arachis hypogaea	Peanut	Ara h 3.0201	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	530	AAD47382.1	5712199	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	538	AAM46958.1	21314485	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	219	AAM93157.1	22135348	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	512	ABI17154.1	112360623	8
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	530	ACH91862.1	199732457	10

Species	Common	IUISÂ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	510	3C3V_A	224036293	10
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 3 Glycinin	IgE plus basophil+ or SPT+	512	ADQ53859.1	312233065	12
Arachis hypogaea	Peanut	Ara h 5.0101	Food Plant	Arachis Ara h 5	IgE plus basophil+ or SPT+	131	AAD55587.1	5902968	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 5	IgE plus basophil+ or SPT+	131	ADB96066.1	284810529	11
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 5	IgE plus basophil+ or SPT+	131	AGA84056.1	431812555	14
Arachis hypogaea	Peanut	Ara h 6.0101	Food Plant	Arachis Ara h 6	IgE plus basophil+ or SPT+	129	AAD56337.1	5923742	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 6	IgE plus basophil+ or SPT+	144	AAL37561.1	17225991	7
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 6	IgE plus basophil+ or SPT+	127	1W2Q_A	159163254	9
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 6	IgE plus basophil+ or SPT+	145	Q647G9.1	75114094	10
Arachis hypogaea	Peanut	Ara h 7.0201	Food Plant	Arachis Ara h 7	IgE but no biological test	164	ABW17159.1	158121995	10
Arachis hypogaea	Peanut	Ara h 8.0101	Food Plant	Arachis Ara h 8	IgE plus basophil+ or SPT+	157	AAQ91847.1	37499626	7
Arachis hypogaea	Peanut	Ara h 8.0201	Food Plant	Arachis Ara h 8	IgE plus basophil+ or SPT+	153	ABP97433.1	145904610	9
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 8	IgE plus basophil+ or SPT+	157	ACA79908.1	169786740	9
Arachis hypogaea	Peanut	Unassigned	Food Plant	Arachis Ara h 8	IgE plus basophil+ or SPT+	157	ABG85155.1	110676574	12
Arachis hypogaea	Peanut	Ara h 9.0101	Food Plant	Arachis Ara h 9 LTP isoallergens	IgE but no biological test	116	ABX56711.1	161087230	10
Arachis hypogaea	Peanut	Ara h 9.0201	Food Plant	Arachis Ara h 9 LTP isoallergens	IgE but no biological test	92	ABX75045.1	161610580	10
Arachis hypogaea	Peanut	Ara h 10.0101	Food Plant	Arachis hypogaea Ara h 10	IgE but no biological test	169	AAU21499.2	113200509	15
Arachis hypogaea	Peanut	Ara h 10.0102	Food Plant	Arachis hypogaea Ara h 10	IgE but no biological test	150	AAU21500.1	52001239	15
Arachis hypogaea	Peanut	Ara h 11.0101	Food Plant	Arachis hypogaea Ara h 11	IgE but no biological test	137	AAZ20276.1	71040655	15
Arachis hypogaea	Peanut	Ara h 11.0102	Food Plant	Arachis hypogaea Ara h 11	IgE but no biological test	137	Q45W66	122218540	16
Arachis hypogaea	Peanut	Ara h 15.0101	Food Plant	Arachis hypogaea oleosin Ara h 15	IgE plus basophil+ or SPT+	166	AAU21501.1	52001241	15
Argas reflexus	European pigeon tick	Arg r 1.0101	Venom or Salivary	Argas Arg r 1	IgE plus basophil+ or SPT+	159	CAC26895.1	58371884	7
Argas reflexus	European pigeon tick	Unassigned	Venom or Salivary	Argas Arg r 1	IgE plus basophil+ or SPT+	144	2X45_A	322812205	12
Artemisia absinthium		Unassigned	Aero Plant	Artemisia vulgaris like Art v 1	IgE but no biological test	108	AHF71021.1	573005946	17
Artemisia annua		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16437.1	1190354092	19
Artemisia annua		Unassigned	Aero Plant	Artemisia vulgaris like Art v 1	IgE but no biological test	132	ANC85007.1	1026259951	18
Artemisia annua		Unassigned	Aero Plant	Artemisia vulgaris like Art v 1	IgE but no biological test	132	ANC85006.1	1026259949	18
Artemisia argyi		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16436.1	1190354094	19
Artemisia capillaris		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16439.1	1190354096	19
Artemisia gmelinii		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16440.1	1190354098	19
Artemisia lavandulifolia		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16441.1	1190354100	19
Artemisia ludoviciana		Unassigned	Aero Plant	Artemisia vulgaris like Art v 1	IgE but no biological test	108	AHF71025.1	573005954	17
Artemisia sieversiana		Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	595	ARQ16442.1	1190354102	19
Artemisia tridentata		Unassigned	Aero Plant	Artemisia vulgaris like Art v 1	IgE but no biological test	108	AHF71026.1	573005956	17
Artemisia vulgaris	Mugwort	Unassigned	Aero Plant	Art an 7 putative galactose oxidase	IgE but no biological test	594	ARQ16443.1	1190354104	19
Artemisia vulgaris	Mugwort	Art v 1.0101	Aero Plant	Artemisia Art v 1	IgE plus basophil+ or SPT+	132	AAO24900.1	27818335	7
Artemisia vulgaris	Mugwort	Art v 2.0101	Aero Plant	Artemisia Art v 2	IgE but no biological test	162	CAK50634.1	148887203	9
Artemisia vulgaris	Mugwort	Art v 3.0101	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	37	P0C088.1	73621307	7
Artemisia vulgaris	Mugwort	Art v 3.0201	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	114	ACE07186.1	189544578	11
Artemisia vulgaris	Mugwort	Art v 3.0202	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	116	ACE07187.1	189544584	11
Artemisia vulgaris	Mugwort	Art v 3.0301	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	117	ACE07188.1	189544590	11
Artemisia vulgaris	Mugwort	Unassigned	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	117	ACE07189.1	189544595	11
Artemisia vulgaris	Mugwort	Unassigned	Aero Plant	Artemisia Art v 3	IgE plus basophil+ or SPT+	92	6FRR_A	1595430506	20
Artemisia vulgaris	Mugwort	Art v 4.0101	Aero Plant	Artemisia Art v 4	IgE but no biological test	133	CAD12861.1	25955969	15
Artemisia vulgaris	Mugwort	Art v 4.0201	Aero Plant	Artemisia Art v 4	IgE but no biological test	133	CAD12862.1	25955971	15
Artemisia vulgaris	Mugwort	Unassigned	Aero Plant	Artemisia Art v 4	IgE but no biological test	135	5EM0_A	1035439202	18
Artemisia vulgaris	Mugwort	Unassigned	Aero Plant	Artemisia Art v 4	IgE but no biological test	136	6B6J_A	1486941865	20
Artemisia vulgaris	Mugwort	Art v 6.0101	Aero Plant	Artemisia Art v 6 pectate lyase	IgE but no biological test	396	AAX85388.1	62530263	8
Artemisia vulgaris	Mugwort	Art v 5.0101	Aero Plant	Artemisia mugwort Art v 5	IgE plus basophil+ or SPT+	82	AAX85389.1	62530265	15
Arthroderma benhamiae	Fungus	Unassigned	Contact	Trichophyton (Arthroderma) Tri m 4	IgE plus basophil+ or SPT+	726	CAD23611.1	23894232	7
Arthroderma benhamiae	Fungus	Unassigned	Contact	Trichophyton (Arthroderma) Tri r 2	IgE plus basophil+ or SPT+	292	CAD23613.1	23894240	7
Arthroderma benhamiae	Fungus	Unassigned	Contact	Trichophyton (Arthroderma) Tri r 2	IgE plus basophil+ or SPT+	404	CAD23614.1	23894244	7
Arthroderma vanbreuseghemii	Fungus	Unassigned	Contact	Trichophyton (Arthroderma) Tri m 4	IgE plus basophil+ or SPT+	726	BAH09367.1	219687753	10
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	AAD13644.1	2735096	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	AAD13645.1	2735098	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	133	AAD13647.1	2735102	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	133	AAD13649.1	2735106	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	267	AAD13650.1	2735108	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	267	AAD13651.1	2735110	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	267	AAD13652.1	2735112	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	AAB93837.1	2735114	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	AAB93839.1	2735118	7
Ascaris lumbricoides	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	AAD13646.1	2735100	7
Ascaris lumbricoides	Parasitic roundworm	Asc l 3.0101	Worm (parasite)	Ascaris tropomyosin Asc l 3	IgE but no biological test	287	ACN32322.1	224016002	10
Ascaris suum	Parasitic roundworm	Asc s 1	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	68	AAB26195.1	299550	7
Ascaris suum	Parasitic roundworm	Asc s 1.0101	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	1365	Q06811.2	77416849	7
Ascaris suum	Parasitic roundworm	Unassigned	Worm (parasite)	Ascaris Asc s 1	IgE but no biological test	134	2XV9_A	343197079	12
Ascaris suum	Parasitic roundworm	Asc s 13.0101	Worm (parasite)	Ascaris lumbricoides/suum Glutathione S-transfera	IgE plus basophil+ or SPT+	206	P46436.3	1170109	15
Aspergillus flavus	Fungus	Unassigned	Aero Fungi	Aspergillus Oryzin Asp o 13, fl 13	IgE but no biological test	403	Q9UVU3	74665726	7
Aspergillus fumigatus	Fungus	Asp f 1	Aero Fungi	Aspergillus Asp f 1	IgE plus basophil+ or SPT+	125	CAA06305.1	3021324	7
Aspergillus fumigatus	Fungus	Asp f 1	Aero Fungi	Aspergillus Asp f 1	IgE plus basophil+ or SPT+	150	AAF86369.1	9280360	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 1	IgE plus basophil+ or SPT+	176	P67875.1	54039254	7
Aspergillus fumigatus	Fungus	Asp f 10.0101	Aero Fungi	Aspergillus Asp f 10	IgE but no biological test	395	CAA59419.1	963013	7
Aspergillus fumigatus	Fungus	Asp f 11.0101	Aero Fungi	Aspergillus Asp f 11	IgE plus basophil+ or SPT+	178	CAB44442.1	5019414	7
Aspergillus fumigatus	Fungus	Asp f 18.0101	Aero Fungi	Aspergillus Asp f 18 and Asp n 18	IgE but no biological test	495	CAA73782.1	2143220	7
Aspergillus fumigatus	Fungus	Asp f 2	Aero Fungi	Aspergillus Asp f 2	IgE but no biological test	250	AAB07620.1	684852	7
Aspergillus fumigatus	Fungus	Asp f 2.0101	Aero Fungi	Aspergillus Asp f 2	IgE but no biological test	310	P79017.2	83300352	7
Aspergillus fumigatus	Fungus	Asp f 22.0101	Aero Fungi	Aspergillus Asp f 22	IgE but no biological test	438	AAK49451.1	13925873	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 22	IgE but no biological test	438	Q96X30.3	83288046	7
Aspergillus fumigatus	Fungus	Asp f 23.0101	Aero Fungi	Aspergillus Asp f 23	IgE but no biological test	392	AAM43909.1	21215170	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 23	IgE but no biological test	392	Q8NKF4.2	83305621	7
Aspergillus fumigatus	Fungus	Asp f 27.0101	Aero Fungi	Aspergillus Asp f 27	IgE but no biological test	163	CAI78448.1	91680605	7
Aspergillus fumigatus	Fungus	Asp f 28.0101	Aero Fungi	Aspergillus Asp f 28	IgE but no biological test	108	CAI78449.1	91680607	7
Aspergillus fumigatus	Fungus	Asp f 29.0101	Aero Fungi	Aspergillus Asp f 29	IgE but no biological test	110	CAI78450.1	91680609	7
Aspergillus fumigatus	Fungus	Asp f 3.0101	Aero Fungi	Aspergillus Asp f 3	IgE plus basophil+ or SPT+	168	AAB95638.1	2769700	7
Aspergillus fumigatus	Fungus	Asp f 34.0101	Aero Fungi	Aspergillus Asp f 34	IgE plus basophil+ or SPT+	185	CAM54066.1	133920236	8
Aspergillus fumigatus	Fungus	Asp f 4.0101	Aero Fungi	Aspergillus Asp f 4	IgE plus basophil+ or SPT+	286	CAA04959.1	3005839	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 4	IgE plus basophil+ or SPT+	322	O60024.2	83300369	7
Aspergillus fumigatus	Fungus	Asp f 5.0101	Aero Fungi	Aspergillus Asp f 5	IgE but no biological test	634	CAA83015.1	3776513	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 5	IgE but no biological test	634	P46075.3	85541646	11
Aspergillus fumigatus	Fungus	Asp f 6.0101	Aero Fungi	Aspergillus Asp f 6	IgE plus basophil+ or SPT+	221	AAB60779.1	1648970	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 6	IgE plus basophil+ or SPT+	210	Q92450.3	83305645	7
Aspergillus fumigatus	Fungus	Asp f 7.0101	Aero Fungi	Aspergillus Asp f 7	IgE but no biological test	270	O42799.2	83300389	7
Aspergillus fumigatus	Fungus	Asp f 8.0101	Aero Fungi	Aspergillus Asp f 8	IgE plus basophil+ or SPT+	111	CAB64688.1	6686524	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 8	IgE plus basophil+ or SPT+	111	Q9UUZ6.2	83305635	7
Aspergillus fumigatus	Fungus	Asp f 9.0101	Aero Fungi	Aspergillus Asp f 9	IgE but no biological test	302	CAA11266.1	2879890	7
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus Endo-chitosanase	IgE but no biological test	238	Q87519.1	74629604	16
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus fumigatus Asp f 13	IgE but no biological test	403	CAA77666.1	2295	15
Aspergillus fumigatus	Fungus	Unassigned	Aero Fungi	Aspergillus fumigatus Asp f 13	IgE but no biological test	341	CAA75805.1	3549630	16
Aspergillus fumigatus Af293	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 2	IgE but no biological test	304	EAL89830.1	66849502	7
Aspergillus fumigatus Af293	Fungus	Unassigned	Aero Fungi	Aspergillus Endo-chitosanase	IgE but no biological test	242	Q4WB37.1	74666748	16
Aspergillus fumigatus var. RP 2014	Fungus	Unassigned	Aero Fungi	Aspergillus Aap f 4	IgE plus basophil+ or SPT+	322	KEY81716.1	666434194	16
Aspergillus fumigatus var. RP 2014	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 7	IgE but no biological test	270	KEY78748.1	666431137	16
Aspergillus niger	Fungus	Unassigned	Aero Fungi	Aspergillus Asp f 18 and Asp n 18	IgE but no biological test	533	AAA32702.1	289172	7
Aspergillus niger	Fungus	Asp n 14	Aero Fungi	Aspergillus Asp n 14	IgE but no biological test	804	CAB06417.1	2181180	7
Aspergillus niger	Fungus	Asp n 14.0101	Aero Fungi	Aspergillus Asp n 14	IgE but no biological test	804	AAD13106.1	4235093	7
Aspergillus oryzae	Fungus	Asp o 21	Aero Fungi	Aspergillus Asp o 21	IgE plus basophil+ or SPT+	499	P0C1B3.1	94706935	7
Aspergillus oryzae	Fungus	Asp o 21.0101	Aero Fungi	Aspergillus Asp o 21	IgE plus basophil+ or SPT+	499	AAA32706.1	166531	15

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Aspergillus oryzae	Fungus	Asp f o 13.0101	Aero Fungi	Aspergillus Oryzin Asp o 13, fl 13	IgE but no biological test	403	P12547.2	129235	7
Aspergillus versicolor	Fungus	Asp v 13.0101	Aero Fungi	Aspergillus versicolor serine protease	IgE but no biological test	403	ADE74975.1	294441150	16
Bacillus lentus	Bacteria	Unassigned	Bacteria airway	Bacillus lentus subtilisin	IgE but no biological test	269	P29600.1	267048	9
Bacillus licheniformis	Bacteria	Unassigned	Bacteria airway	Bacillus licheniformis subtilisin	IgE plus basophil+ or SPT+	379	P00780.1	135016	9
Bacillus licheniformis	Bacteria	Unassigned	Bacteria airway	Bacillus licheniformis subtilisin	IgE plus basophil+ or SPT+	374	AAG31026.1	11127680	9
Bacillus sp.	Bacteria	Unassigned	Bacteria airway	Bacillus lentus Esperase	IgE but no biological test	361	BAA05540.1	1225905	9
Balanus rostratus	Crustacean	Unassigned	Food Animal	Balanus r tropomyosin	IgE but no biological test	284	BAF46896.1	125659386	9
Bassia scoparia	summer cypress	Koc s 1.0101	Aero Plant	Kochia scoparia Koc s 1	IgE but no biological test	167	AKV72169.1	914410012	16
Bassia scoparia	summer cypress	Koc 2 2.0101	Aero Plant	Kochia scoparia Koc s 2.01	IgE but no biological test	133	AIV43661.1	701225194	17
Batillus cornutus	Japanese turban shell	Unassigned	Food Animal	Batillus Tur c1	IgE but no biological test	284	BAH10149.1	219806588	10
Bertholletia excelsa	Brazil nut	Ber e 1.0101	Food Plant	Bertholletia Ber e 1	IgE plus basophil+ or SPT+	146	P04403.2	112754	7
Bertholletia excelsa	Brazil nut	Ber e 2.0101	Food Plant	Bertholletia Ber e 2	IgE but no biological test	465	AAO38859.1	30313867	7
Bertholletia excelsa	Brazil nut	Unassigned	Food Plant	Bertholletia Ber e 2	IgE but no biological test	426	6B4S_A	1534918238	20
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	51	A45786	320545	7
Betula pendula	European white birch	Bet v 1.0301	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54696.1	534898	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA54695.1	534900	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54694.1	534910	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96546.1	1321714	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96539.1	1321716	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96540.1	1321718	7
Betula pendula	European white birch	Bet v 1.0205	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96541.1	1321720	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96542.1	1321722	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96543.1	1321724	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96544.1	1321726	7
Betula pendula	European white birch	Bet v 1.0115	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96547.1	1321728	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	P43186.2	1168710	7
Betula pendula	European white birch	Bet v 1.0108	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02155.1	1542861	7
Betula pendula	European white birch	Bet v 1.0109	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02156.1	1542863	7
Betula pendula	European white birch	Bet v 1.0110	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02157.1	1542865	7
Betula pendula	European white birch	Bet v 1.0111	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02158.1	1542867	7
Betula pendula	European white birch	Bet v 1.0117	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02159.1	1542869	7
Betula pendula	European white birch	Bet v 1.0113	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02160.1	1542871	7
Betula pendula	European white birch	Bet v 1.0114	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAB02161.1	1542873	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA96545.1	2414158	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA05186.1	2564220	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA05187.1	2564222	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA05188.1	2564224	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA05190.1	2564226	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07318.1	4006928	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07319.1	4006945	7
Betula pendula	European white birch	Bet v 1.0117	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07323.1	4006953	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07324.1	4006955	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07325.1	4006957	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07326.1	4006959	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07327.1	4006961	7
Betula pendula	European white birch	Bet v 1.0118	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07329.1	4006965	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA07330.1	4006967	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA04823.1	4376216	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA04826.1	4376219	7
Betula pendula	European white birch	Bet v 1.0116	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA04827.1	4376220	7
Betula pendula	European white birch	Bet v 1.0205	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA04828.1	4376221	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	CAA04829.1	4376222	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	AAD26560.1	4590392	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	AAD26561.1	4590394	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	AAD26562.1	4590396	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	P43180.2	1168706	7

Species	Common	IUISA Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	1QMR_A	11514622	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	21	AAP37482.1	30908931	7
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	1LLT_A	38492423	7
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	43	AAB20452.1	239734	7
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	120	CAA07328.1	4006963	7
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	120	CAA07320.1	4006947	7
Betula pendula	European white birch	Bet v 1.0203	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54488.1	452742	8
Betula pendula	European white birch	Bet v 1.0207	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	ABC41592.1	83722317	8
Betula pendula	European white birch	Bet v 1.0119	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	ABC41615.1	83722364	8
Betula pendula	European white birch		Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	1B6F_A	159162087	9
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4BK7_A	560188693	15
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4B9R_A	550544347	15
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	4BKC_A	565807648	15
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4BKD_A	560188694	15
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4BK6_B	560188692	15
Betula pendula	European white birch	Bet v 1.0101	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA33887.1	17938	15
Betula pendula	European white birch	Bet v 1.0102	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54482.1	452732	15
Betula pendula	European white birch	Bet v 1.0103	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54483.1	452734	15
Betula pendula	European white birch	Bet v 1.0104	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54484.1	452736	15
Betula pendula	European white birch	Bet v 1.0105	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54487.1	452740	15
Betula pendula	European white birch	Bet v 1.0107	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54489.1	452744	15
Betula pendula	European white birch	Bet v 1.0201	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54421.1	450885	15
Betula pendula	European white birch	Bet v 1.0202	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	CAA54481.1	452730	15
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4BTZ_A	661918055	16
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	159	4Z3L_D	955264732	17
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 1b	IgE plus basophil+ or SPT+	51	B45786	320546	7
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 2	IgE plus basophil+ or SPT+	133	1CQA_A	157830684	9
Betula pendula	European white birch	Bet v 2.0101	Aero Plant	Betula Bet v 2	IgE plus basophil+ or SPT+	133	AAA16522.1	166953	11
Betula pendula	European white birch	Unassigned	Aero Plant	Betula Bet v 2	IgE plus basophil+ or SPT+	133	A4K9Z6.1	576017922	15
Betula pendula	European white birch	Bet v 3.0101	Aero Plant	Betula Bet v 3	IgE but no biological test	205	CAA55854.1	488605	15
Betula pendula	European white birch	Bet v 4.0101	Aero Plant	Betula Bet v 4	IgE but no biological test	85	CAA80626.1	809536	15
Betula pendula	European white birch	Bet v 6.0102	Aero Plant	Betula Bet v 6	IgE but no biological test	308	AAG22740.1	10764491	7
Betula pendula	European white birch	Bet v 7.0101	Aero Plant	Betula Bet v 7	IgE but no biological test	173	CAC84116.1	21886603	7
Betula pendula	European white birch	Bet v 8.0101	Aero Plant	Betula Bet v 8 glutathione S-transferase	IgE plus basophil+ or SPT+	237	AHF71027.1	573005958	16
Betula platyphylla	Japanese white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	BAB21489.1	12583681	7
Betula platyphylla	Japanese white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	BAB21490.1	12583683	7
Betula platyphylla	Japanese white birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	160	BAB21491.1	12583685	7
Betula sp.	Birch	Unassigned	Aero Plant	Betula Bet v 1	IgE plus basophil+ or SPT+	51	AAB25850.1	298736	7
Betula sp.	Birch	Unassigned	Aero Plant	Betula Bet v 1b	IgE plus basophil+ or SPT+	51	AAB25851.1	298737	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella chymotrypsin-like	IgE but no biological test	252	AJO53282.1	757943154	16
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella 36 kDa allergen	IgE but no biological test	20	AAB29344.1	544618	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella 36 kDa allergen	IgE but no biological test	25	AAB29345.1	544619	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella arginine kinase Bla g 9	IgE but no biological test	356	ACM24358.1	221602737	10
Blattella germanica	German cockroach	Bla g 9.0101	Aero Insect	Blattella arginine kinase Bla g 9	IgE but no biological test	356	ABC86902.1	86160922	18
Blattella germanica	German cockroach	Bla g 1.0201	Aero Insect	Blattella Bla g 1	IgE plus basophil+ or SPT+	492	AAD13531.1	4240395	7
Blattella germanica	German cockroach	Bla g 1.0101	Aero Insect	Blattella Bla g 1	IgE plus basophil+ or SPT+	412	AAD13530.2	4572592	7
Blattella germanica	German cockroach	Bla g 11.0101	Aero Insect	Blattella Bla g 11 alpha Amylase	IgE but no biological test	515	ABC68516.1	85002763	15
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 2	IgE plus basophil+ or SPT+	330	1YG9_A	62738637	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 2	IgE plus basophil+ or SPT+	352	ABP35603.1	145105726	9
Blattella germanica	German cockroach	Bla g 2.0101	Aero Insect	Blattella Bla g 2	IgE plus basophil+ or SPT+	352	AAA88744.1	1176397	11
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 2	IgE plus basophil+ or SPT+	334	3LIZ_A	315113421	12
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 3	IgE but no biological test	657	ACY40650.1	262272875	11
Blattella germanica	German cockroach	Bla g 3.0101	Aero Insect	Blattella Bla g 3	IgE but no biological test	657	ACY40651.1	262272877	11
Blattella germanica	German cockroach	Bla g 4.0101	Aero Insect	Blattella Bla g 4	IgE plus basophil+ or SPT+	182	AAA87851.1	1166573	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 4	IgE plus basophil+ or SPT+	182	ABP04043.1	144952778	9
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 4	IgE plus basophil+ or SPT+	181	ACJ37389.1	212675308	10

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 4	IgE plus basophil+ or SPT+	191	ACF53836.1	194350815	11
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 4	IgE plus basophil+ or SPT+	190	ACF53837.1	194350817	11
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella Bla g 5	IgE plus basophil+ or SPT+	200	ABP04044.1	144952780	9
Blattella germanica	German cockroach	Bla g 5.0101	Aero Insect	Blattella Bla g 5	IgE plus basophil+ or SPT+	200	AAB72147.1	2326190	11
Blattella germanica	German cockroach	Bla g 6.0101	Aero Insect	Blattella Bla g 6	IgE but no biological test	151	ABB89296.1	82704032	8
Blattella germanica	German cockroach	Bla g 6.0201	Aero Insect	Blattella Bla g 6	IgE but no biological test	151	ABB89297.1	82704034	8
Blattella germanica	German cockroach	Bla g 6.0301	Aero Insect	Blattella Bla g 6	IgE but no biological test	154	ABB89298.1	82704036	8
Blattella germanica	German cockroach	Bla g 7.0101	Aero Insect	Blattella Bla g 7	IgE but no biological test	284	AAF72534.1	8101069	7
Blattella germanica	German cockroach	Unassigned	Aero Insect	Blattella delta GST	IgE but no biological test	216	ABX57814.1	161137518	11
Blomia tropicalis	Mite	Blo t 1.0101	Aero Mite	Blomia Blo t 1.01	IgE but no biological test	221	AAK58415.1	14276828	7
Blomia tropicalis	Mite	Blo t 1.0201	Aero Mite	Blomia Blo t 1.02	IgE but no biological test	333	AAQ24541.1	33867928	8
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 1.02	IgE but no biological test	333	5JT8_B	1199299190	18
Blomia tropicalis	Mite	Blo t 10.0101	Aero Mite	Blomia Blo t 10	IgE plus basophil+ or SPT+	284	ABU97466.1	156938889	9
Blomia tropicalis	Mite	Blo t 11.0101	Aero Mite	Blomia Blo t 11	IgE plus basophil+ or SPT+	875	AAM83103.1	21954740	7
Blomia tropicalis	Mite	Blo t 12.0101	Aero Mite	Blomia Blo t 12	IgE plus basophil+ or SPT+	144	AAA78904.1	902012	7
Blomia tropicalis	Mite	Unassigned	Aero Insect	Blomia Blo t 12	IgE plus basophil+ or SPT+	69	2MFK_A	723586656	16
Blomia tropicalis	Mite	Blo t 13.0101	Aero Mite	Blomia Blo t 13.01	IgE but no biological test	130	AAC80579.1	1377859	7
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 21	IgE plus basophil+ or SPT+	129	ABH06350.1	111120432	8
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 21	IgE plus basophil+ or SPT+	129	ABH06347.1	111494253	8
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 21	IgE plus basophil+ or SPT+	129	ABH06346.1	111120424	8
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 21	IgE plus basophil+ or SPT+	129	ABH06348.1	111120428	8
Blomia tropicalis	Mite	Blo t 21.0101	Aero Insect	Blomia Blo t 21	IgE plus basophil+ or SPT+	129	AAX34047.1	60679570	9
Blomia tropicalis	Mite	Blo t 3.0101	Aero Mite	Blomia Blo t 3	IgE but no biological test	266	AAM10779.1	25989482	7
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 3	IgE but no biological test	266	AAQ24542.1	33867930	8
Blomia tropicalis	Mite	Blo t 4.0101	Aero Insect	Blomia Blo t 4 alpha amylase	IgE plus basophil+ or SPT+	506	AAQ24543.1	33867932	8
Blomia tropicalis	Mite	Blo t 5.0101	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	134	AAD10850.1	4204917	7
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	134	ABH06352.1	111120436	9
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	134	ABH06359.1	111120450	9
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	119	2JMH_A	160285626	9
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	135	APU87558.1	1131385191	18
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	133	APU87557.1	1131385189	18
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	135	APU87556.1	1131385187	18
Blomia tropicalis	Mite	Unassigned	Aero Mite	Blomia Blo t 5	IgE plus basophil+ or SPT+	134	APU87554.1	1131385183	18
Blomia tropicalis	Mite	Unassigned	Aero Insect	Blomia Blo t 7	IgE but no biological test	192	AAQ24545.1	33867936	8
Blomia tropicalis	Mite	Blo t 7.0101	Aero Mite	Blomia Blo t 7	IgE but no biological test	195	ASX95436.1	1241067909	18
Blomia tropicalis	Mite	Unassigned	Aero Insect	Blomia Blo t 8	IgE but no biological test	236	AAP35069.1	37958149	8
Blomia tropicalis	Mite	Blo t 8.0101	Aero Insect	Blomia Blo t 8	IgE but no biological test	236	ACV04860.1	256665455	11
Bombus pennsylvanicus	Bumblebee	Bom p 1.0101	Venom or Salivary	Bombus Bom p 1	IgE but no biological test	136	Q7M4I6.1	47117013	12
Bombus pennsylvanicus	Bumblebee	Bom p 4.0101	Venom or Salivary	Bombus Bom p 4 protease	IgE but no biological test	243	Q7M4I3.1	75009997	12
Bombus terrestris	Bumblebee	Bom t 1.0101	Venom or Salivary	Bombus Bom t 1	IgE but no biological test	136	P82971.1	14423832	7
Bombus terrestris	Bumblebee	Bom t 4.0101	Venom or Salivary	Bombus Bom t 4 protease	IgE but no biological test	20	P0CH88.1	313471465	12
Bombyx mori	Silkworm	Bomb m 1.0101	Aero Insect	Bombyx Bomb m 1	IgE but no biological test	355	ABB88514.1	82658675	15
Bos grunniens mutus	Yak	Bos d 11.0101	Food Animal	Bos Bos d 11 beta casein	IgE plus basophil+ or SPT+	259	XP_005902099.2	942073448	16
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	93	AAA62707.1	162650	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	214	AAA30429.1	162794	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	76	AAA30478.1	162927	7
Bos taurus	Bovine	Bos d 9.0101	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	214	NP_851372.1	30794348	8
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	205	ABW98943.1	159793197	9
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	172	ABW98945.1	159793201	9
Bos taurus	Bovine	Unassigned	Food Animal	Bos Alpha-s1 casein	IgE plus basophil+ or SPT+	129	ABW98953.1	159793217	9
Bos taurus	Bovine	Bos d 10.0101	Food Animal	Bos Bos d 10	IgE plus basophil+ or SPT+	222	NP_776953.1	27806963	15
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 11 beta casein	IgE plus basophil+ or SPT+	224	AAA30430.1	162797	7
Bos taurus	Bovine	Bos d 11.0101	Food Animal	Bos Bos d 11 beta casein	IgE plus basophil+ or SPT+	224	AAA30431.1	162805	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 11 beta casein	IgE plus basophil+ or SPT+	224	AAB29137.1	459292	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 12	IgE plus basophil+ or SPT+	190	AAA30433.1	162811	7
Bos taurus	Bovine	Bos d 12.0101	Food Animal	Bos Bos d 12	IgE plus basophil+ or SPT+	190	NP_776719.1	27881412	15

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Bos taurus	Bovine	Bos d 2.0101	Aero Animal	Bos Bos d 2	IgE but no biological test	172	AAB08720.1	886215	7
Bos taurus	Bovine	Bos d 3.0101	Aero Animal	Bos Bos d 3	IgE but no biological test	101	Q28050.1	2493414	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 4	IgE plus basophil+ or SPT+	142	CAA29664.1	295774	7
Bos taurus	Bovine	Bos d 4.0101	Food Animal	Bos Bos d 4	IgE plus basophil+ or SPT+	142	AAA30615.1	163283	15
Bos taurus	Bovine	Bos d 5.0101	Food Animal	Bos Bos d 5	IgE plus basophil+ or SPT+	176	CAA32835.1	520	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 5	IgE plus basophil+ or SPT+	178	P02754.3	125910	9
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 5	IgE plus basophil+ or SPT+	178	ACG59280.1	195957138	10
Bos taurus	Bovine	Bos d 6.0101	Food Animal	Bos Bos d 6	IgE plus basophil+ or SPT+	607	AAA51411.1	162648	7
Bos taurus	Bovine	Unassigned	Food Animal	Bos Bos d 6	IgE plus basophil+ or SPT+	607	CAA76847.1	3336842	7
Bos taurus	Bovine	Unassigned	Vaccine	Bos collagen alpha2	IgE plus basophil+ or SPT+	1364	NP_776645.1	27806257	11
Bos taurus	Bovine	Unassigned	Food Animal	Bos lactotransferrin	IgE but no biological test	708	NP_851341.1	30794292	8
Brassica juncea	Mustard	Bra j 1.0101	Food Plant	Brassica Bra j 1 2S albumin	IgE but no biological test	129	P80207.1	32363444	9
Brassica napus	Rape	Bra n 1.0101	Food Plant	Bra n 1	IgE but no biological test	125	P80208.1	75107016	9
Brassica napus	Rape	Unassigned	Aero Plant	Bra n Bra r 2	IgE but no biological test	83	S65144	2129801	7
Brassica napus	Rape	Unassigned	Aero Plant	Bra n Bra r 2	IgE but no biological test	83	S65145	2129802	7
Brassica napus	Rape	Unassigned	Food Plant	Brassica napus 2S albumin	IgE but no biological test	109	AAN86249.1	26985163	7
Brassica oleracea var. oleracea	Wild cabbage	Bra o 3.0101	Aero Plant	Brassica Bra o 3 LTP full length	IgE plus basophil+ or SPT+	112	XP_013623213.1	922434456	15
Brassica rapa	Turnip	Unassigned	Aero Plant	Bra n Bra r 2	IgE but no biological test	80	S65143	2129805	7
Brassica rapa	Turnip	Bra r 1.0101	Food Plant	Brassica Bra r 1	IgE but no biological test	178	CAA46782.1	17697	9
Brassica rapa	Turnip	Bra r 5.0101	Food Plant	Brassica Calcim binding protein Group I	IgE but no biological test	79	BAA09634.1	1255540	15
Brassica rapa subsp. rapa	Turnip	Unassigned	Aero Plant	Bra n Bra r 2	IgE but no biological test	83	P69199.1	59800146	7
Brassica rapa subsp. rapa	Turnip	Bra r 2.0101	Contact	Brassica Bra r 2	IgE but no biological test	91	P81729.1	32363456	9
Candida albicans	Yeast	Cand a 1.0101	Contact	Candida Cand a 1 Alcohol dehydrogenase	IgE but no biological test	350	CAA57342.1	608690	15
Candida albicans	Yeast	Cand a 3.0101	Contact	Candida Cand a 3 Peroxysomal protein	IgE but no biological test	236	AAN11300.1	37548637	7
Candida albicans	Yeast	Unassigned	Contact	Candida Enolase 1	IgE plus basophil+ or SPT+	440	P30575.1	232054	7
Canis familiaris	Dog	Can f 1.0101	Aero Animal	Canis Can f 1 Lipocalin	IgE plus basophil+ or SPT+	174	AAC48794.1	2598974	11
Canis familiaris	Dog	Can f 2	Aero Animal	Canis Can f 2 Lipocalin	IgE plus basophil+ or SPT+	177	CAD82911.1	29292272	7
Canis familiaris	Dog	Can f 2	Aero Animal	Canis Can f 2 Lipocalin	IgE plus basophil+ or SPT+	179	CAD82912.1	29292274	7
Canis familiaris	Dog	Can f 2.0101	Aero Animal	Canis Can f 2 Lipocalin	IgE plus basophil+ or SPT+	180	AAC48795.1	2598976	11
Canis familiaris	Dog	Can f 3	Aero Animal	Canis Can f 3 Serum albumin	IgE plus basophil+ or SPT+	255	AAB30434.1	633938	7
Canis familiaris	Dog	Can f 3	Aero Animal	Canis Can f 3 Serum albumin	IgE plus basophil+ or SPT+	585	CAA76841.1	3319897	7
Canis familiaris	Dog	Can f 3.0101	Aero Animal	Canis Can f 3 Serum albumin	IgE plus basophil+ or SPT+	608	BAC10663.1	22531688	15
Canis familiaris	Dog	Can f 4.0101	Aero Animal	Canis Can f 4 epithelial 18 kDa	IgE but no biological test	174	ACY38525.1	262232390	12
Canis familiaris	Dog	Unassigned	Aero Animal	Canis Can f 4 epithelial 18 kDa	IgE but no biological test	174	AHY24648.1	625295108	16
Canis familiaris	Dog	Can f 5.0101	Aero Animal	Canis Can f 5	IgE but no biological test	260	CAA68720.1	868	15
Canis familiaris	Dog	Can f 6.0101	Aero Animal	Canis Can f 6 Lipocalin	IgE but no biological test	190	CCF72371.1	374092884	13
Canis familiaris	Dog	Unassigned	Aero Animal	Canis Can f 6 Lipocalin	IgE but no biological test	177	5X7Y_D	1374502923	19
Canis familiaris	Dog	Can f 7.0101	Aero Animal	Canis familiarisCan f 7	IgE but no biological test	149	AAB34263.1	945179	16
Cannabis sativa	Hemp	Can s 3.0101	Aero Plant	Cannabis LTP Can s 3	IgE plus basophil+ or SPT+	91	CCK33472.1	571256597	15
Capsicum annuum	Bell pepper	Cap a 1.0101	Food Plant	Capsicum Cap a 1	IgE but no biological test	246	CAC34055.2	16609959	7
Capsicum annuum	Bell pepper	Cap a 2.0101	Food Plant	Capsicum Cap a 2	IgE but no biological test	131	CAD10376.1	16555785	7
Carica papaya	Papaya	Car p 1.0101	Food Plant	Car p 1.0101 endo polygalacturonase	IgE plus basophil+ or SPT+	494	ACV85695.1	258640138	18
Carica papaya	Papaya		Aero Plant	Carica papain (Car p 1 not IUIS)	IgE plus basophil+ or SPT+	345	AAB02650.1	167391	7
Carpinus betulus	Hornbeam	Car b 1.0102	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	159	CAA47357.1	402745	7
Carpinus betulus	Hornbeam	Car b 1.0103	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02206.1	1545875	7
Carpinus betulus	Hornbeam	Car b 1.0104	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02207.1	1545877	7
Carpinus betulus	Hornbeam	Car b 1.0105	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02208.1	1545879	7
Carpinus betulus	Hornbeam	Car b 1.0108	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02215.1	1545893	7
Carpinus betulus	Hornbeam	Car b 1.0301	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	161	CAB02216.1	1545895	7
Carpinus betulus	Hornbeam	Car b 1.0302	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	161	CAB02217.1	1545897	7
Carpinus betulus	Hornbeam	Unassigned	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	40	AAB20453.1	239735	7
Carpinus betulus	Hornbeam	Car b 1.0113	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	ABZ81044.1	187472845	10
Carpinus betulus	Hornbeam	Car b 1.0109	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	ABZ81040.1	187472837	10
Carpinus betulus	Hornbeam	Car b 1.0112	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	ABZ81043.1	187472843	10
Carpinus betulus	Hornbeam	Car b 1.0111	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	ABZ81042.1	187472841	10

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Carpinus betulus	Hornbeam	Car b 1.0110	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	ABZ81041.1	167472839	10
Carpinus betulus	Hornbeam	Unassigned	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	80	AAB34907.1	1008578	12
Carpinus betulus	Hornbeam	Unassigned	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	80	AAB34908.1	1008579	12
Carpinus betulus	Hornbeam	Unassigned	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	80	AAB34909.1	1008580	12
Carpinus betulus	Hornbeam	Car b 1.0101	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	159	CAA47366.1	402743	15
Carpinus betulus	Hornbeam	Car b 1.0106	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02209.1	1545881	15
Carpinus betulus	Hornbeam	Car b 1.0107	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	160	CAB02213.1	1545889	15
Carpinus betulus	Hornbeam	Car b 1.0201	Aero Plant	Carpinus Car b 1	IgE plus basophil+ or SPT+	159	CAA47367.1	402747	15
Carya illinoinensis	Pecan	Car i 1.0101	Food Plant	Carya Car i 1 Seed storage protein	IgE but no biological test	143	AAO32314.1	28207731	7
Carya illinoinensis	Pecan	Car i 4.0101	Food Plant	Carya Car i 4 11s legumin	IgE but no biological test	505	ABW86978.1	158998780	14
Carya illinoinensis	Pecan	Unassigned	Food Plant	Carya Car i 4 11s legumin	IgE but no biological test	505	ABW86979.1	158998782	14
Carya illinoinensis	Pecan	Car i 2.0101	Food Plant	Carya i Car i 2.0101 vicilin	IgE but no biological test	792	ABV49590.1	157384600	15
Carya illinoinensis	Pecan		Food Plant	Carya i Car i 2.0101 vicilin	IgE but no biological test	426	5E1R_F	1052244924	18
Caryota mitis	Fishtail Palm	Unassigned	Aero Plant	Caryota profilin	IgE but no biological test	131	ABM53030.1	121277849	8
Castanea sativa	European chestnut		Aero Plant	Castanea Cas s 1	IgE but no biological test	160	CAD10374.1	16555781	7
Castanea sativa	European chestnut	Unassigned	Aero Plant	Castanea Cas s 1	IgE but no biological test	159	ACJ23862.1	212291466	10
Castanea sativa	European chestnut	Cas s 1.0101	Aero Plant	Castanea Cas s 1	IgE but no biological test	159	ACJ23861.1	212291464	10
Castanea sativa	European chestnut	Unassigned	Aero Plant	Castanea Cas s 1	IgE but no biological test	159	ACJ23863.1	212291468	10
Castanea sativa	European chestnut	Cas s 5.0101	Food Plant	Castanea Cas s 5	IgE plus basophil+ or SPT+	316	CAA64868.1	1359600	7
Castanea sativa	European chestnut	Unassigned	Food Plant	Castanea Cas s 5	IgE plus basophil+ or SPT+	298	ADN39439.1	307159110	12
Catharanthus roseus	Madagascar periwinkle	Cat r 1.0101	Aero Plant	Catharanthus cyclophilin	IgE plus basophil+ or SPT+	172	CAA59468.1	1220142	13
Cavia porcellus	Domestic guinea pig	Cav p 1.0101	Aero Animal	Cavia Cav p 1	IgE but no biological test	166	VEV85353.1	1604536255	20
Cavia porcellus	Domestic guinea pig	Cav p 1.0102	Aero Animal	Cavia Cav p 1	IgE but no biological test	166	VEV85354.1	1604536257	20
Cavia porcellus	Domestic guinea pig	Cav p 2.0101	Aero Animal	Cavia Cav p 2	IgE plus basophil+ or SPT+	170	CAX62129.1	325910590	12
Cavia porcellus	Domestic guinea pig	Cav p 3.0101	Aero Animal	Cavia Cav p 3 lipocalin	IgE plus basophil+ or SPT+	170	CAX62130.1	325910592	12
Chamaecyparis obtusa	Japanese cypress	Cha o 1.0101	Aero Plant	Chamaecyparis Cha o 1	IgE but no biological test	375	BAA08246.1	1514943	7
Chamaecyparis obtusa	Japanese cypress	Cha o 2.0101	Aero Plant	Chamaecyparis Cha o 2	IgE but no biological test	514	Q7M1E7.1	47606004	7
Chamaecyparis obtusa	Japanese cypress	Unassigned	Aero Plant	Chamaecyparis Cha o 2	IgE but no biological test	419	BAF32143.1	114841683	8
Chamaecyparis obtusa	Japanese cypress	Cha o 3.0101	Aero Plant	Chamaecyparis obtusa Cha o 3	IgE plus basophil+ or SPT+	556	C0HLA0.1	1407868342	19
Charybdis feriatus	Crab	Cha f 1.0101	Food Animal	Charybdis Cha f 1	IgE but no biological test	264	AAF35431.1	7024506	7
Chenopodium album	Pigweed	Che a 1.0101	Aero Plant	Chenopodium Che a 1	IgE but no biological test	168	AAL07319.1	22074345	7
Chenopodium album	Pigweed	Che a 2.0101	Aero Plant	Chenopodium Che a 2	IgE plus basophil+ or SPT+	131	AAL92870.1	29465666	7
Chenopodium album	Pigweed	Unassigned	Aero Plant	Chenopodium Che a 2	IgE plus basophil+ or SPT+	133	ACR77509.1	238886048	11
Chenopodium album	Pigweed	Che a 3.0101	Aero Plant	Chenopodium Che a 3	IgE but no biological test	86	AAL92871.1	29465668	7
Chionoecetes opilio	Snow Crab	Unassigned	Food Animal	Chionoecetes tropomyosin	IgE but no biological test	284	A2V735.1	308191588	12
Chironomus kiiensis	Midge	Chi k 10.0101	Aero Insect	Chironomus Chi k 10	IgE but no biological test	285	CAA09938.2	7321108	7
Chironomus thummi thummi	Midge	Chi t 1.0101	Aero Insect	Chironomus Chi t 1	IgE but no biological test	151	P02229.2	121219	7
Chironomus thummi thummi	Midge	Chi t 1.0201	Aero Insect	Chironomus Chi t 1	IgE but no biological test	151	P02230.1	121227	7
Chironomus thummi thummi	Midge	Chi t 2.0101	Aero Insect	Chironomus Chi t 2	IgE but no biological test	158	P02221.2	2506460	7
Chironomus thummi thummi	Midge	Chi t 3.0601	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P84296.1	56405052	7
Chironomus thummi thummi	Midge	Chi t 3.0901	Aero Insect	Chironomus Chi t 3	IgE but no biological test	151	P02227.1	121237	7
Chironomus thummi thummi	Midge	Chi t 3.0501	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P12548.1	121244	7
Chironomus thummi thummi	Midge	Chi t 3.0701	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P84298.1	56405054	7
Chironomus thummi thummi	Midge	Chi t 3.0702	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P12549.1	121248	7
Chironomus thummi thummi	Midge	Chi t 3.0801	Aero Insect	Chironomus Chi t 3	IgE but no biological test	162	P12550.1	121249	7
Chironomus thummi thummi	Midge	Chi t 3.0301	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P02226.2	56405306	7
Chironomus thummi thummi	Midge	Chi t 3.0101	Aero Insect	Chironomus Chi t 3	IgE but no biological test	160	P02222.2	1707908	7
Chironomus thummi thummi	Midge	Chi t 3.0401	Aero Insect	Chironomus Chi t 3	IgE but no biological test	161	P02223.2	1707911	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Chironomus thummi thummi	Midge	Chi t 3.0201	Aero Insect	Chironomus Chi t 3	IgE but no biological test	162	P02224.2	2506461	7
Chironomus thummi thummi	Midge	Chi t 4.0101	Aero Insect	Chironomus Chi t 4	IgE but no biological test	151	P02231.1	121256	7
Chironomus thummi thummi	Midge	Chi t 9.0101	Aero Insect	Chironomus Chi t 9	IgE but no biological test	151	P02228.1	121259	7
Chortoglyphus arcuatus		Unassigned	Aero Mite	Cho a 10.0101	IgE but no biological test	284	AEX31649.1	371500680	13
Citrullus lanatus		Citr l 2.0101	Food Plant	Citrullus lanatus Citr l 2	IgE plus basophil+ or SPT+	131	AAU43733.1	52352489	17
Citrus limon	Lemon	Cit l 3.0101	Food Plant	Citrus LTP Cit s 3/Cit l 3	IgE plus basophil+ or SPT+	20	P84160.1	52783176	7
Citrus sinensis	Navel orange	Cit s 1.0101	Food Plant	Citrus Cit s 1	IgE plus basophil+ or SPT+	25	P84159.1	52782810	7
Citrus sinensis	Navel orange	Cit s 2.0101	Food Plant	Citrus Cit s 2	IgE plus basophil+ or SPT+	131	CAI23765.1	56000996	7
Citrus sinensis	Navel orange	Cit s 3.0101	Food Plant	Citrus LTP Cit s 3/Cit l 3	IgE plus basophil+ or SPT+	20	P84161.1	52783177	7
Citrus sinensis	Navel orange	Cit s 3.0102	Food Plant	Citrus LTP Cit s 3/Cit l 3	IgE plus basophil+ or SPT+	91	CAH03799.1	50199132	7
Citrus sinensis	Navel orange	Cit s 7	Food Plant	Citrus sinensis Cit s 7	IgE plus basophil+ or SPT+	88	XP_006472264.1	568836465	20
Cladosporium cladosporioides	Fungus	Cla c 14.0101	Aero Fungi	Cladosporium Cla c 14	IgE but no biological test	325	ADK47394.1	301015198	15
Cladosporium cladosporioides	Fungus	Cla c 9.0101	Aero Fungi	Cladosporium Cla c 9 Davidiella	IgE but no biological test	386	ABQ59329.1	148361511	11
Clupea harengus	Atlantic herring	Clu h 1.0101	Food Animal	Clupea Clu h 1	IgE but no biological test	109	CAQ72970.1	242253963	11
Clupea harengus	Atlantic herring	Clu h 1.0201	Food Animal	Clupea Clu h 1	IgE but no biological test	110	CAQ72971.1	242253965	11
Clupea harengus	Atlantic herring	Clu h 1.0301	Food Animal	Clupea Clu h 1	IgE but no biological test	109	CAQ72972.1	242253967	11
Cochliobolus lunatus	Fungus	Cur l 2.0101	Aero Fungi	Curvularia lunata enolase Cur l 2.01 Cochliobolus	IgE but no biological test	440	AAK67491.1	14585753	8
Cochliobolus lunatus	Fungus	Cur l 3.0101	Aero Fungi	Curvularia lunatus Cur l 3 Cochliobolus	IgE plus basophil+ or SPT+	108	AAK67492.1	14585755	15
Cochliobolus lunatus	Fungus	Cur l 4.0101	Aero Fungi	Curvularia Cur l 4	IgE plus basophil+ or SPT+	506	ACF19589.1	193507493	15
Cochliobolus lunatus	Fungus	Unassigned	Aero Fungi	Curvularia lunata alcohol dehydrogenase	IgE but no biological test	352	ABC88428.1	86278351	17
Coffea arabica	Coffee	Cof a 3.0101	Food Plant	Coffea Cof a 3	IgE but no biological test	65	AGL34968.1	494319676	15
Coffea arabica	Coffee	Cof a 1.0101	Food Plant	Coffea Cof a 1	IgE but no biological test	263	ADH10372.1	296399179	15
Coffea arabica	Coffee	Cof a 2.0101	Food Plant	Coffea Cof a 2	IgE but no biological test	80	AGL34967.1	494319674	15
Coprinus comatus	Shaggy mane	Cop c 1.0101	Food Fungi	Coprinus Cop c 1	IgE but no biological test	81	CAB39376.1	4538529	7
Coptotermes formosanus		Unassigned	Food Animal	Coptotermes Copt f 7	IgE but no biological test	256	AGM32377.1	506968067	19
Corylus avellana	European hazelnut	Cor a 1.0103	Aero Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA50325.1	22684	7
Corylus avellana	European hazelnut	Cor a 1.0104	Aero Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA50326.1	22686	7
Corylus avellana	European hazelnut	Cor a 1.0102	Aero Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA50328.1	22690	7
Corylus avellana	European hazelnut	Cor a 1.0201	Aero Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA96548.1	1321731	7
Corylus avellana	European hazelnut	Cor a 1.0301	Aero Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA96549.1	1321733	7
Corylus avellana	European hazelnut	Cor a 1.0401	Food Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	161	AAD48405.1	5726304	7
Corylus avellana	European hazelnut	Cor a 1.0402	Food Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	161	AAG40329.1	11762102	7
Corylus avellana	European hazelnut	Cor a 1.0403	Food Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	161	AAG40330.1	11762104	7
Corylus avellana	European hazelnut	Cor a 1.0404	Food Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	161	AAG40331.1	11762106	7
Corylus avellana	European hazelnut	Cor a 1.0101	Food Plant	Corylus Cor a 1	IgE plus basophil+ or SPT+	160	CAA50327.1	22688	15
Corylus avellana	European hazelnut	Cor a 11.0101	Food Plant	Corylus Cor a 11	IgE plus basophil+ or SPT+	448	AAL86739.1	19338630	7
Corylus avellana	European hazelnut	Cor a 12.0101	Food Plant	Corylus Cor a 12	IgE plus basophil+ or SPT+	159	AAO67349.2	49617323	15
Corylus avellana	European hazelnut	Cor a 13.0101	Food Plant	Corylus Cor a 13 Oleosin	IgE but no biological test	140	AAO65960.1	29170509	7
Corylus avellana	European hazelnut	Cor a 14.0101	Food Plant	Corylus Cor a 14 2S albumin	IgE plus basophil+ or SPT+	147	ACO56333.1	226437844	11
Corylus avellana	European hazelnut	Cor a 2.0101	Aero Plant	Corylus Cor a 2 profilins	IgE but no biological test	131	AAK01235.1	12659206	7
Corylus avellana	European hazelnut	Cor a 2.0102	Aero Plant	Corylus Cor a 2 profilins	IgE but no biological test	131	AAK01236.1	12659208	7
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	131	A4KA41.1	576017879	15
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	133	A4KA40.1	576017878	15
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	133	A4KA44.1	576017819	15
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	131	A4KA43.1	576017779	15
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	133	A4KA45.1	576017777	15
Corylus avellana	European hazelnut	Unassigned	Food Plant	Corylus Cor a 2 profilins	IgE but no biological test	133	A4KA39.1	576017776	15
Corylus avellana	European hazelnut	Cor a 8.0101	Food Plant	Corylus Cor a 8	IgE but no biological test	115	AAK28533.1	13507262	7
Corylus avellana	European hazelnut	Cor l 9.0101	Food Plant	Corylus Cor a 9	IgE plus basophil+ or SPT+	515	AAL73404.1	18479092	7
Corylus avellana	European hazelnut	Unassigned	Aero Plant	Corylus Cor a 9	IgE plus basophil+ or SPT+	514	AHA36627.1	557792009	16
Crangon crangon	Shrimp	Cra c 1.0101	Food Animal	Crangon Cra c 1 tropomyosin	IgE but no biological test	284	ACR43473.1	238477263	12
Crangon crangon	Shrimp	Cra c 2.0101	Food Animal	Crangon Cra c 2 arginine kinase	IgE but no biological test	356	ACR43474.1	238477265	12

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Crangon crangon	Shrimp	Cra c 4.0101	Food Animal	Crangon Cra c 4 sarcoplasmic calcium-binding prote	IgE but no biological test	193	ACR43475.1	238477327	12
Crangon crangon	Shrimp	Cra c 5.0101	Food Animal	Crangon Cra c 5 myosin light chain	IgE but no biological test	153	ACR43477.1	238477331	12
Crangon crangon	Shrimp	Cra c 6.0101	Food Animal	Crangon Cra c 6 troponin C	IgE but no biological test	150	ACR43478.1	238477333	12
Crangon crangon	Shrimp	Cra c 8.0101	Food Animal	Crangon Cra c 8 triosephosphate isomerase	IgE but no biological test	249	ACR43476.1	238477329	12
Crassostrea gigas	American oyster	Cra g 1.0102	Food Animal	Crassostrea Tropomyosin Cra g 1	IgE but no biological test	284	BAH10152.1	219806594	10
Crassostrea gigas	American oyster	Cra g 1.0101	Food Animal	Crassostrea Tropomyosin Cra g 1	IgE but no biological test	284	ARX70262.1	1203820203	18
Crassostrea virginica	Eastern oyster	Unassigned	Food Animal	Crassostrea Tropomyosin Cra g 1	IgE but no biological test	160	AAC61869.1	3668408	7
Crocus sativus	Saffron crocus	Cro s 1.0101	Aero Plant	Crocus Cro s 1	IgE but no biological test	168	AAX93750.1	62720370	7
Crocus sativus	Saffron crocus	Cro s 2.0101	Aero Plant	Crocus profilin Cro s 2	IgE but no biological test	131	AAW61034.1	58700651	7
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria class IV chitinase	IgE but no biological test	281	BAD77932.1	56550550	7
Cryptomeria japonica	Japanese cedar	Cry j 1.0102	Aero Plant	Cryptomeria Cry j 1	IgE but no biological test	374	BAA05543.1	493634	8
Cryptomeria japonica	Japanese cedar	Cry j 1.0101	Aero Plant	Cryptomeria Cry j 1	IgE but no biological test	374	BAA05542.1	493632	15
Cryptomeria japonica	Japanese cedar	Cry j 1.0103	Aero Plant	Cryptomeria Cry j 1	IgE but no biological test	374	BAA07020.1	516728	15
Cryptomeria japonica	Japanese cedar		Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	P43212.1	1171004	7
Cryptomeria japonica	Japanese cedar		Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAC23082.1	24898904	7
Cryptomeria japonica	Japanese cedar		Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAC23083.1	24898906	7
Cryptomeria japonica	Japanese cedar		Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAC23084.1	24898908	7
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32105.1	114841607	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32110.1	114841617	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32116.1	114841629	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32119.1	114841635	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32122.1	114841641	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32128.1	114841653	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32130.1	114841657	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32133.1	114841663	8
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAF32134.1	114841665	8
Cryptomeria japonica	Japanese cedar	Cry j 2.0101	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	514	BAA06172.1	506858	9
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria Cry j 2	IgE plus basophil+ or SPT+	65	BAF45320.1	123299282	9
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria isoflavone reductase-like protein	IgE but no biological test	306	AAK27264.1	19847822	7
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria pollen allergen CJP-8	IgE but no biological test	165	BAI94503.1	291621332	12
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria pollen allergen CPA63	IgE but no biological test	472	BAJ04354.1	293329689	12
Cryptomeria japonica	Japanese cedar	Unassigned	Aero Plant	Cryptomeria thaumatin like Cry j 3.8	IgE plus basophil+ or SPT+	225	BAF51970.1	139002766	8
Cucumis melo	Muskmelon	Cuc m 1.0101	Food Plant	Cucumis Cuc m 1	IgE but no biological test	731	BAA06905.1	807698	7
Cucumis melo	Muskmelon	Unassigned	Food Plant	Cucumis Cuc m 2	IgE plus basophil+ or SPT+	131	CAD92656.1	31559374	7
Cucumis melo	Muskmelon	Cuc m 2.0101	Food Plant	Cucumis Cuc m 2	IgE plus basophil+ or SPT+	131	AAW69549.1	58263793	7
Cucumis melo	Muskmelon	Cuc m 3.0101	Food Plant	Cucumis Cuc m 3	IgE plus basophil+ or SPT+	41	P83834.1	46396595	9
Cucumis melo var. inodorus	Muskmelon	Unassigned	Food Plant	Cucumis Cuc m 3	IgE plus basophil+ or SPT+	151	ACB45874.1	171464770	9
Cucumis melo var. reticulatus	Netted muskmelon	Unassigned	Food Plant	Cucumis Cuc m 2	IgE plus basophil+ or SPT+	131	AAP13533.2	57021110	7
Culicoides nubeculosus	Farmyard midge	Unassigned	Venom or Salivary	Culicoides antigen 5 by similarity	IgE but no biological test	283	ACM40909.1	221768795	10
Culicoides nubeculosus	Farmyard midge	Unassigned	Venom or Salivary	Culicoides antigen 5 by similarity	IgE but no biological test	219	ACM40888.1	221768626	10
Cupressus arizonica	Arizona Cypress	Cup a 1.0101	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	346	CAB62551.1	6562326	7
Cupressus arizonica	Arizona Cypress		Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	CAC37790.2	19069497	7
Cupressus arizonica	Arizona Cypress	Unassigned	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	347	ABK78766.1	118197955	8
Cupressus arizonica	Arizona Cypress	Unassigned	Aero Plant	Cupressus Cup a 4	IgE but no biological test	165	ACY01951.1	261865475	11
Cupressus arizonica	Arizona Cypress	Unassigned	Aero Plant	Cupressus Cup s 3	IgE but no biological test	199	CAC05258.1	9929163	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 1.0101	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	AAF72625.1	8101711	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 1.0102	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	AAF72628.1	8101713	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 1.0103	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	AAF72627.1	8101715	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 1.0104	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	AAF72629.1	8101717	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 1.0105	Aero Plant	Cupressus Cup a 1/Cup s 1	IgE plus basophil+ or SPT+	367	AAF72629.1	8101719	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 3.0102	Aero Plant	Cupressus Cup s 3	IgE but no biological test	225	AAR21074.1	38456228	7
Cupressus sempervirens	Mediterranean Cypress	Cup s 3.0101	Aero Plant	Cupressus Cup s 3	IgE but no biological test	225	AAR21073.1	38456226	11
Cynodon dactylon	Bermuda grass		Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	25	AAB28566.1	451274	7

Species	Common	IUISÃ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Cynodon dactylon	Bermuda grass		Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	38	AAB28567.1	451275	7
Cynodon dactylon	Bermuda grass		Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	34	AAB32317.1	691726	7
Cynodon dactylon	Bermuda grass	Cyn d 1.0204	Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	244	AAF80379.2	10314021	7
Cynodon dactylon	Bermuda grass	Cyn d 1.0201	Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	244	AAK96255.1	15384338	7
Cynodon dactylon	Bermuda grass	Cyn d 1.0202	Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	262	AAL14077.1	16076693	7
Cynodon dactylon	Bermuda grass		Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	262	AAL14078.1	16076695	7
Cynodon dactylon	Bermuda grass	Cyn d 1.0203	Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	262	AAL14079.1	16076697	7
Cynodon dactylon	Bermuda grass	Cyn d 1.0101	Aero Plant	Cynodon Cyn d 1	IgE plus basophil+ or SPT+	246	AAB50734.2	7687901	10
Cynodon dactylon	Bermuda grass	Cyn d 12.0101	Aero Plant	Cynodon Cyn d 12	IgE but no biological test	131	CAA69670.1	2154730	7
Cynodon dactylon	Bermuda grass	Unassigned	Aero Plant	Cynodon Cyn d 7	IgE but no biological test	71	CAA01909.1	1247373	7
Cynodon dactylon	Bermuda grass	Unassigned	Aero Plant	Cynodon Cyn d 7	IgE but no biological test	73	CAA01910.1	1247375	7
Cynodon dactylon	Bermuda grass	Cyn d 7.0101	Aero Plant	Cynodon Cyn d 7	IgE but no biological test	82	CAA62634.1	1871507	7
Cynodon dactylon	Bermuda grass	Unassigned	Aero Plant	Cynodon Group 4 like-allergen FAD-linked oxidoredu	IgE but no biological test	522	AAS02108.1	41393750	7
Cyprinus carpio	Carp	Cyp c 1.0101	Food Animal	Cyprinus Cyp c 1 Parvalbumin	IgE plus basophil+ or SPT+	109	CAC83658.1	17977825	7
Cyprinus carpio	Carp	Cyp c 1.0201	Food Animal	Cyprinus Cyp c 1 Parvalbumin	IgE plus basophil+ or SPT+	109	CAC83659.1	17977827	7
Dactylis glomerata	Orchard grass		Aero Plant	Dactylis Dac g 1	IgE plus basophil+ or SPT+	264	CAD20406.1	18093991	7
Dactylis glomerata	Orchard grass	Dac g 1.0101	Aero Plant	Dactylis Dac g 1	IgE plus basophil+ or SPT+	240	AAP96759.1	33149333	7
Dactylis glomerata	Orchard grass	Dac g 2.0101	Aero Plant	Dactylis Dac g 2	IgE but no biological test	196	2103117A	1093120	7
Dactylis glomerata	Orchard grass		Aero Plant	Dactylis Dac g 2	IgE but no biological test	122	CAA10345.1	4007040	7
Dactylis glomerata	Orchard grass	Dac g 3.0101	Aero Plant	Dactylis Dac g 3	IgE but no biological test	96	AAB42200.1	1825459	7
Dactylis glomerata	Orchard grass	Dac g 4.0101	Aero Plant	Dactylis Dac g 4	IgE but no biological test	55	P82946.1	32363463	9
Dactylis glomerata	Orchard grass		Aero Plant	Dactylis Dac g 5	IgE but no biological test	290	AAK62278.1	14423124	7
Dactylis glomerata	Orchard grass		Aero Plant	Dactylis Dac g 5	IgE but no biological test	265	CAD20405.1	18093971	7
Daucus carota	Carrot	Unassigned	Food Plant	Daucus cyclophilin	IgE but no biological test	171	AEY79726.1	373939374	13
Daucus carota	Carrot	Dau c 1.0101	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	168	AAB01092.1	1335877	7
Daucus carota	Carrot	Dau c 1.0102	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	BAA13604.1	1663522	7
Daucus carota	Carrot	Dau c 1.0103	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	CAB03715.1	2154732	7
Daucus carota	Carrot	Dau c 1.0104	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	CAB03716.1	2154734	7
Daucus carota	Carrot	Dau c 1.0105	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	CAB06416.1	2154736	7
Daucus carota	Carrot	Dau c 1.0201	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	AAL76932.1	18652047	7
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	BAB88129.1	19912791	7
Daucus carota	Carrot	Dau c 1.0301	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32660.1	302379147	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32661.1	302379149	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32662.1	302379151	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32663.1	302379153	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32664.1	302379155	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32665.1	302379157	12
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 1	IgE plus basophil+ or SPT+	154	ADL32666.1	302379159	12
Daucus carota	Carrot	Dau c 4.0101	Food Plant	Daucus Dau c 4	IgE plus basophil+ or SPT+	134	AAL76933.1	18652049	7
Daucus carota	Carrot	Dau c 5.0101	Food Plant	Daucus Dau c 5 isoflavone reductase	IgE but no biological test	306	AEY79728.1	373939378	13
Daucus carota	Carrot	Unassigned	Food Plant	Daucus Dau c 5 isoflavone reductase	IgE but no biological test	306	AEY79727.1	373939376	13
Davidiella tassiana	Fungus	Cla h 10.0101	Aero Fungi	Cladosporium / Davidiella Cla h 10	IgE but no biological test	496	CAA55072.2	76666769	7
Davidiella tassiana	Fungus	Cla h 5.0101	Aero Fungi	Cladosporium / Davidiella Cla h 5	IgE but no biological test	111	CAA55067.2	5777795	10
Davidiella tassiana	Fungus	Cla h 6.0101	Aero Fungi	Cladosporium / Davidiella Cla h 6	IgE but no biological test	440	CAA55070.1	467660	7
Davidiella tassiana	Fungus		Aero Fungi	Cladosporium / Davidiella Cla h 6	IgE but no biological test	440	P42040.2	6015094	7
Davidiella tassiana	Fungus	Cla h 7.0101	Aero Fungi	Cladosporium / Davidiella Cla h 7	IgE but no biological test	204	CAA55068.1	467629	10
Davidiella tassiana	Fungus	Cla h 8.0101	Aero Fungi	Cladosporium / Davidiella Cla h 8	IgE plus basophil+ or SPT+	267	AAO91801.1	37760015	8
Davidiella tassiana	Fungus	Cla h 9.0101	Aero Fungi	Cladosporium / Davidiella Cla h 9 vacuolar serine	IgE but no biological test	518	AAX14379.1	60116876	10
Davidiella tassiana	Fungus	Unassigned	Aero Fungi	Cladosporium / Davidiella Heat shock 70 kDa protei	IgE but no biological test	643	P40918.1	729764	7
Davidiella tassiana	Fungus	Unassigned	Aero Fungi	Cladosporium / Davidiella Hydrophobin	IgE plus basophil+ or SPT+	105	CAD42710.1	22796153	7
Davidiella tassiana	Fungus	Unassigned	Aero Fungi	Cladosporium / Davidiella putative hydrolase	IgE but no biological test	274	ABA42918.1	76446100	10
Davidiella tassiana	Fungus	Unassigned	Aero Fungi	Cladosporium / Davidiella Putative nuclear transpo	IgE plus basophil+ or SPT+	125	CAD38168.1	21748151	7
Davidiella tassiana	Fungus	Unassigned	Aero Fungi	Cladosporium Davidiella TCTP	IgE but no biological test	169	A1KXP4.1	1679357707	20

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Der f 36 from Proteome	IgE but no biological test	229	ATI08931.1	1250175279	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Der f alpha actinin	IgE plus basophil+ or SPT+	885	L7UZ85.1	1160577980	18
Dermatophagoides farinae	House dust mite	Der f 13.0101	Aero Mite	Dermatophagoides Der f 13	IgE plus basophil+ or SPT+	131	AAP35078.1	37958167	11
Dermatophagoides farinae	House dust mite	Der f 15.0101	Aero Mite	Dermatophagoides Der f 15 Der p 15	IgE but no biological test	555	AAD52672.1	5815436	7
Dermatophagoides farinae	House dust mite	Der f 16.0101	Aero Mite	Dermatophagoides Der f 16	IgE but no biological test	460	AAM64112.1	21591547	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 20 / Der p 20	IgE but no biological test	356	AAP57094.1	37785884	8
Dermatophagoides farinae	House dust mite	Der f 20.0201	Aero Mite	Dermatophagoides Der f 20 / Der p 20	IgE but no biological test	356	ABU97470.1	158938897	9
Dermatophagoides farinae	House dust mite	Der f 20.0101	Aero Mite	Dermatophagoides Der f 20 / Der p 20	IgE but no biological test	356	AIO08850.1	685432792	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 23 like	IgE plus basophil+ or SPT+	174	ALU66112.1	970836006	17
Dermatophagoides farinae	House dust mite	Der f 24.0101	Aero Mite	Dermatophagoides Der f 24 and Der p 24 Ubiquinol	IgE but no biological test	118	AGI78542.1	477541860	14
Dermatophagoides farinae	House dust mite	Der f 25.0101	Aero Mite	Dermatophagoides Der f 25	IgE but no biological test	247	AGC56216.1	442565872	14
Dermatophagoides farinae	House dust mite	Der f 25.0201	Aero Mite	Dermatophagoides Der f 25	IgE but no biological test	247	AIO08860.1	685432812	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 27	IgE plus basophil+ or SPT+	427	AAP35082.1	37958175	8
Dermatophagoides farinae	House dust mite	Der p 1.0102	Aero Mite	Dermatophagoides Der f 27	IgE plus basophil+ or SPT+	427	AIO08851.1	685432794	15
Dermatophagoides farinae	House dust mite	Der f 28.0101	Aero Mite	Dermatophagoides Der f 28	IgE but no biological test	659	AGC56218.1	442565876	14
Dermatophagoides farinae	House dust mite	Der f 28.0201	Aero Mite	Dermatophagoides Der f 28	IgE but no biological test	654	AIO08848.1	685432788	15
Dermatophagoides farinae	House dust mite	Der f 29.0101	Aero Mite	Dermatophagoides Der f 29	IgE plus basophil+ or SPT+	164	AAP35065.1	37958141	8
Dermatophagoides farinae	House dust mite	Der f 30.0101	Aero Mite	Dermatophagoides Der f 30	IgE plus basophil+ or SPT+	171	AGC56219.1	442565878	14
Dermatophagoides farinae	House dust mite	Der f 31.0101	Aero Mite	Dermatophagoides Der f 31	IgE plus basophil+ or SPT+	148	AIO08870.1	685432832	15
Dermatophagoides farinae	House dust mite	Der f 33.0101	Aero Mite	Dermatophagoides Der f 33	IgE but no biological test	461	AIO08861.1	685432814	15
Dermatophagoides farinae	House dust mite	Der f 35.0101	Aero Mite	Dermatophagoides Der f 35	IgE but no biological test	143	BAX34757.1	1187443130	18
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	BAE45865.1	76880188	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	AAP35068.1	37958147	8
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	ABO84970.1	140089345	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	ABO84971.1	140089347	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	ABO84972.1	140089349	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 5-like	IgE but no biological test	132	ABO84973.1	140089351	9
Dermatophagoides farinae	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	P16311.2	730035	7
Dermatophagoides farinae	House dust mite	Der f 1.0101	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	BAC53948.1	27530349	7
Dermatophagoides farinae	House dust mite	Der f 1.0102	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	276	ABA39436.1	76097507	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	ABU49605.1	156106765	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	253	AAP35075.1	37958161	12
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	305	AFJ68066.1	387178006	13
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	303	ADM52184.1	305387429	15
Dermatophagoides farinae	House dust mite	Der f 1.0108	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	ABL84749.1	119633260	15
Dermatophagoides farinae	House dust mite	Der f 1.0109	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	ABL84750.1	119633262	15
Dermatophagoides farinae	House dust mite	Der f 1.0110	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	321	ABL84751.1	119633264	15
Dermatophagoides farinae	House dust mite	Der f 10.0101	Aero Mite	Dermatophagoides Der p 10 / Der f 10	IgE plus basophil+ or SPT+	299	BAA04557.1	1359436	7
Dermatophagoides farinae	House dust mite	Der f 11.0101	Aero Mite	Dermatophagoides Der p 11 / Der f 11	IgE plus basophil+ or SPT+	692	AAK39511.1	13785807	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 11 / Der f 11	IgE plus basophil+ or SPT+	876	AIO08864.1	685432820	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 14 / Der f 14	IgE but no biological test	341	P39673.1	729979	7
Dermatophagoides farinae	House dust mite	Der f 14.0101	Aero Mite	Dermatophagoides Der p 14 / Der f 14	IgE but no biological test	349	BAA04558.1	1545803	7
Dermatophagoides farinae	House dust mite	Der f 2.0102	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	BAA01240.1	217306	7
Dermatophagoides farinae	House dust mite	Der f 2.0103	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	138	BAA01241.1	217308	7
Dermatophagoides farinae	House dust mite	Der f 2.0105	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	AAL47677.1	17978844	7
Dermatophagoides farinae	House dust mite	Der f 2.0108	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	CAI05850.1	55859470	7
Dermatophagoides farinae	House dust mite	Der f 2.0107	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	CAI05849.1	55859468	7
Dermatophagoides farinae	House dust mite	Der f 2.0106	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	CAI05848.1	55859466	7
Dermatophagoides farinae	House dust mite	Der f 2.0109	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	ABA39438.1	76097511	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	BAD74060.2	256631558	11
Dermatophagoides farinae	House dust mite	Der f 2.0112	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	140	AAP35073.1	37958157	12
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	AFJ68072.1	387178018	13
Dermatophagoides farinae	House dust mite	Der f 2.0101	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	138	BAA01239.1	217304	15
Dermatophagoides farinae	House dust mite	Der f 2.0116	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	ABN14313.1	124696217	15
Dermatophagoides farinae	House dust mite		Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	232	AAA99805.1	1314736	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	259	ABY28115.1	163638970	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	259	ACK76291.1	218203815	10
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	259	ACK76292.1	218203818	10
Dermatophagoides farinae	House dust mite	Der f 3.0101	Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	259	BAA09920.1	1311457	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 6 / Der f 6	IgE but no biological test	20	AAB27594.1	404371	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 6 / Der f 6	IgE but no biological test	279	ACK76296.1	218203826	10
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 6 / Der f 6	IgE but no biological test	279	ACK76297.1	218203828	10
Dermatophagoides farinae	House dust mite	Der f 6.0101	Aero Mite	Dermatophagoides Der p 6 / Der f 6	IgE but no biological test	279	AAF28423.1	6808530	11
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	213	AAP35077.1	37958165	8
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	213	ACK76299.1	218203832	10
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	213	AIC08853.1	685432798	16
Dermatophagoides farinae	House dust mite	Der f 18.0101	Aero Mite	Dermatophagoides farinae Der f 18 Der p 18	IgE but no biological test	462	AAM19082.1	27550039	7
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84963.1	140089314	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84964.1	140089316	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84966.1	140089320	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84967.1	140089322	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84968.1	140089324	9
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	ABO84969.1	140089326	9
Dermatophagoides farinae	House dust mite	Der f 21.0101	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	136	AHC94806.1	567768173	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	118	5YNX_A	1595430102	20
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	118	5YNX_B	1595430103	20
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	128	5YNY_A	1595430105	20
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	128	5YNY_B	1595430106	20
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	128	5YNY_C	1595430107	20
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 21 Chew	IgE but no biological test	128	5YNY_D	1595430108	20
Dermatophagoides farinae	House dust mite	Der f 34.0101	Aero Mite	Dermatophagoides farinae Der f 34	IgE but no biological test	128	BAV90601.1	1098871171	17
Dermatophagoides farinae	House dust mite	Der f 4.0101	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AHX03180.1	612487835	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86946.1	685848330	15
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86945.1	685848328	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86944.1	685848326	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86943.1	685848324	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86942.1	685848322	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86941.1	685848320	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86940.1	685848318	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AIP86939.1	685848316	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Der f 4	IgE but no biological test	525	AJF93907.1	751425403	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Pseudo-Der f 8	IgE but no biological test	219	AAP35080.1	37958171	12
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides farinae Pseudo-Der f 8	IgE but no biological test	221	AIC08867.1	685432826	16
Dermatophagoides farinae	House dust mite	Unassigned	Aero Mite	Dermatophagoides Profilin	IgE but no biological test	130	AIC08866.1	685432824	16
Dermatophagoides microceras	House dust mite	Der m 1.0101	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	30	P16312.1	127205	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Der p 36	IgE but no biological test	227	ATI08932.1	1250175281	18
Dermatophagoides pteronyssinus	House dust mite	Der p 15.0101	Aero Mite	Dermatophagoides Der f 15 Der p 15	IgE but no biological test	632	AAY84565.1	67975089	7
Dermatophagoides pteronyssinus	House dust mite	Der p 15.0102	Aero Mite	Dermatophagoides Der f 15 Der p 15	IgE but no biological test	556	AAY84564.2	78128018	7
Dermatophagoides pteronyssinus	House dust mite	Der p 20.0101	Aero Mite	Dermatophagoides Der f 20 / Der p 20	IgE but no biological test	356	ACD50650.1	188485735	10
Dermatophagoides pteronyssinus	House dust mite	Der p 24.0101	Aero Mite	Dermatophagoides Der f 24 and Der p 24 Ubiquinol	IgE but no biological test	118	ALA65345.1	922664427	16
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 30	IgE plus basophil+ or SPT+	180	AAG02250.1	15072346	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 33	IgE but no biological test	460	AUX14773.1	1338184716	19
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der f 35	IgE but no biological test	143	ATI08948.1	1250329008	19

Species	Common	IUISA Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38361.1	21725560	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38362.1	21725562	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38363.1	21725564	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38364.1	21725566	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38365.1	21725568	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38366.1	21725570	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38367.1	21725572	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38368.1	21725574	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38369.1	21725576	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38370.1	21725578	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	CAD38371.1	21725580	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	216	AAX47076.1	61608445	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	2AS8_B	83754033	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	223	ABV66255.1	157696052	9
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	222	3F5V_B	223365887	10
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	320	ACG58378.1	195933901	10
Dermatophagoides pteronyssinus	House dust mite	Der p 1.0124	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	302	CAQ68250.1	256095986	11
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	96	AAA28296.1	387592	11
Dermatophagoides pteronyssinus	House dust mite	Der p 1.0101	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	320	AAB60215.1	511953	12
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	304	AFJ68065.1	387178004	13
Dermatophagoides pteronyssinus	House dust mite	Der p 1.0113	Aero Mite	Dermatophagoides Der p 1 Der f 1 Der m 1	IgE plus basophil+ or SPT+	302	ABA39435.1	76097505	15
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 10 / Der f 10	IgE plus basophil+ or SPT+	284	AAB69424.1	2353266	7
Dermatophagoides pteronyssinus	House dust mite	Der p 10.0101	Aero Mite	Dermatophagoides Der p 10 / Der f 10	IgE plus basophil+ or SPT+	284	CAA75141.1	2440053	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 10 / Der f 10	IgE plus basophil+ or SPT+	281	ABB52642.1	80553470	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 10 / Der f 10	IgE plus basophil+ or SPT+	284	ACI32128.1	208970286	10
Dermatophagoides pteronyssinus	House dust mite	Der p 11.0101	Aero Mite	Dermatophagoides Der p 11 / Der f 11	IgE plus basophil+ or SPT+	875	AAO73464.1	37778944	7
Dermatophagoides pteronyssinus	House dust mite	Der p 13.0101	Aero Mite	Dermatophagoides Der p 13	IgE but no biological test	131	ADK92390.1	302035350	12
Dermatophagoides pteronyssinus	House dust mite	Der p 14.0101	Aero Mite	Dermatophagoides Der p 14 / Der f 14	IgE but no biological test	1662	AAM21322.1	20385544	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	1KTJ_A	21465915	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38372.1	21725582	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38373.1	21725584	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38374.1	21725586	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38375.1	21725588	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38376.1	21725590	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38377.1	21725592	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38378.1	21725594	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38379.1	21725596	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38381.1	21725600	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38382.1	21725602	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAD38383.1	21725604	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	ABA39437.1	76097509	7
Dermatophagoides pteronyssinus	House dust mite	Der p 2.0114	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	CAK22338.1	99644635	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	130	ABG76196.1	110560872	9
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	1A9V_A	157829757	9
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	145	ABY53034.1	164415595	9
Dermatophagoides pteronyssinus	House dust mite	Der p 2.0101	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	145	AAF86462.1	9280543	10
Dermatophagoides pteronyssinus	House dust mite	Der p 2.0110	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	CAQ68248.1	256095984	11
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	AFJ68070.1	387178014	13
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	129	AFJ68067.1	387178008	13
Dermatophagoides pteronyssinus	House dust mite	Der p 21.0101	Aero Mite	Dermatophagoides Der p 21	IgE plus basophil+ or SPT+	140	ABC73706.1	85687540	7
Dermatophagoides pteronyssinus	House dust mite	Der p 23.0101	Aero Mite	Dermatophagoides Der p 23 Peritrophin-like protein	IgE plus basophil+ or SPT+	90	ACB46292.1	171466145	14
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 23 Peritrophin-like protein	IgE plus basophil+ or SPT+	50	4ZCE_A	955264737	17
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 23 Peritrophin-like protein	IgE plus basophil+ or SPT+	99	ALA22869.1	920684621	17
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 23 Peritrophin-like protein	IgE plus basophil+ or SPT+	98	ALA22868.1	920684619	17
Dermatophagoides pteronyssinus	House dust mite	Der p 3.0101	Aero Mite	Dermatophagoides Der p 3 / Der f 3	IgE but no biological test	261	AAA19973.1	511476	7
Dermatophagoides pteronyssinus	House dust mite	Der p 4.0101	Aero Mite	Dermatophagoides Der p 4	IgE but no biological test	496	AAD38942.1	5059162	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 4	IgE but no biological test	19	P49274.1	1351935	7
Dermatophagoides pteronyssinus	House dust mite	Der p 5.0102	Aero Mite	Dermatophagoides Der p 5	IgE plus basophil+ or SPT+	132	AAB32842.1	913285	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 5	IgE plus basophil+ or SPT+	132	CAD69036.1	28798085	7
Dermatophagoides pteronyssinus	House dust mite	Der p 5.0101	Aero Mite	Dermatophagoides Der p 5	IgE plus basophil+ or SPT+	148	CAA35892.1	9072	15
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 6 / Der f 6	IgE but no biological test	20	P49277.1	1352239	7
Dermatophagoides pteronyssinus	House dust mite	Der p 7.0101	Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	215	AAA80264.1	1045602	7
Dermatophagoides pteronyssinus	House dust mite		Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	215	CAC09234.1	10189811	7
Dermatophagoides pteronyssinus	House dust mite	Der f 7.0101	Aero Mite	Dermatophagoides Der p 7 / Der f 7	IgE plus basophil+ or SPT+	213	AAB35977.1	1311689	10
Dermatophagoides pteronyssinus	House dust mite	Der p 8.0101	Aero Mite	Dermatophagoides Der p 8	IgE but no biological test	219	AAB32224.1	807138	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 8	IgE but no biological test	219	AAX37326.1	60920878	7

Species	Common	IUISÀ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Dermatophagoides pteronyssinus	House dust mite	Der p 18.0101	Aero Mite	Dermatophagoides farinae Der f 18 Der p 18	IgE but no biological test	462	AAY84563.1	67975085	7
Dermatophagoides pteronyssinus	House dust mite	Unassigned	Aero Mite	Dermatophagoides Profilin	IgE but no biological test	130	AUX14776.1	1338184722	19
Dermatophagoides siboney	House dust mite	Unassigned	Aero Mite	Dermatophagoides Der p 2 / Der f 2	IgE plus basophil+ or SPT+	146	ABC96702.1	86450747	7
Dolichovespula arenaria	Yellow jacket		Venom or Salivary	Dolichovespula Venom allergen 5	IgE plus basophil+ or SPT+	203	AAA28303.1	156719	11
Dolichovespula maculata	Whiteface hornet	Dol m 1.02	Venom or Salivary	Dolichovespula Dol m 1 Phospholipase A1B	IgE plus basophil+ or SPT+	303	P53357.1	1709542	7
Dolichovespula maculata	Whiteface hornet	Dol m 1.0101	Venom or Salivary	Dolichovespula Dol m 1 Phospholipase A1B	IgE plus basophil+ or SPT+	317	CAA47341.1	288917	8
Dolichovespula maculata	Whiteface hornet	Dol m 2.0101	Venom or Salivary	Dolichovespula Dol m 2 Hyaluronidase	IgE plus basophil+ or SPT+	331	AAA68279.1	511604	11
Dolichovespula maculata	Whiteface hornet	Dol m 5.0101	Venom or Salivary	Dolichovespula Venom allergen 5	IgE plus basophil+ or SPT+	227	AAA28301.1	156715	11
Dolichovespula maculata	Whiteface hornet	Dol m 5.02	Venom or Salivary	Dolichovespula Venom allergen 5	IgE plus basophil+ or SPT+	212	AAA28302.1	552080	11
Epicoccum nigrum	Fungus	Epi p 1.0101	Aero Fungi	Epicoccum Epi p 1	IgE plus basophil+ or SPT+	18	P83340.1	24636820	9
Equus asinus		Equ a 6	Food Animal	Equus asinus / caballus Equ a 6 Equ c 6 lysozyme	IgE plus basophil+ or SPT+	148	XP_014705584.1	958727973	18
Equus caballus	Horse	Equ c 6	Food Animal	Equus asinus / caballus Equ a 6 Equ c 6 lysozyme	IgE plus basophil+ or SPT+	129	P11376.1	126614	18
Equus caballus	Horse	Equ c 1.0101	Aero Animal	Equus Equ c 1	IgE but no biological test	187	AAC48691.1	1575778	11
Equus caballus	Horse	Equ c 2.0101	Aero Animal	Equus Equ c 2	IgE but no biological test	29	P81216.1	3121755	7
Equus caballus	Horse	Equ c 2.0102	Aero Animal	Equus Equ c 2	IgE but no biological test	19	P81217.1	3121756	7
Equus caballus	Horse	Unassigned	Aero Animal	Equus Equ c 2	IgE but no biological test	174	AYL64456.1	1492010380	20
Equus caballus	Horse	Equ c 3.0101	Aero Animal	Equus Equ c 3	IgE plus basophil+ or SPT+	607	CAA52194.1	399672	7
Equus caballus	Horse	Equ c 4.0101	Aero Animal	Equus Equ c 4 and Equ c 5	IgE but no biological test	228	AAM09530.3	126514234	8
Erimacrus isenbeckii	Horsehair crab	Unassigned	Food Animal	Erimacrus tropomyosin	IgE but no biological test	284	BAF47268.1	125985169	8
Erimacrus isenbeckii	Horsehair crab	Unassigned	Food Animal	Erimacrus tropomyosin	IgE but no biological test	284	BAF47269.1	125985171	8
Eriocheir sinensis	Chinese mitten crab	Eri s 2.0101	Food Animal	Eriocheir sinensis Eri s 2	IgE plus basophil+ or SPT+	252	AAO73305.1	37778438	16
Eriocheir sinensis	Chinese mitten crab	Unassigned	Food Animal	Eriocheir tropomyosin	IgE but no biological test	284	ABO71783.1	134305330	8
Euphausia pacifica	North Pacific Krill	Unassigned	Food Animal	Euphausia	IgE plus basophil+ or SPT+	284	BAF76431.1	156712754	9
Euphausia superba	Krill	Unassigned	Food Animal	Euphausia	IgE plus basophil+ or SPT+	284	BAF76430.1	156712752	9
Euroglyphus maynei	House dust mite	Eur m 1.0101	Aero Mite	Euroglyphus Eur m 1	IgE but no biological test	321	AAC82351.1	3941388	7
Euroglyphus maynei	House dust mite	Unassigned	Aero Mite	Euroglyphus Eur m 1	IgE but no biological test	327	AAC82352.1	3941390	7
Euroglyphus maynei	House dust mite	Eur m 2.0102	Aero Mite	Euroglyphus Eur m 2	IgE but no biological test	135	AAC82350.1	3941386	7
Euroglyphus maynei	House dust mite	Eur m 2.0101	Aero Mite	Euroglyphus Eur m 2	IgE but no biological test	145	AAC82349.1	3941384	11
Evynnis japonica	Crimson seabream	Unassigned	Food Animal	Evynnis parvalbumin	IgE but no biological test	109	BAK09233.1	327342663	12
Evynnis japonica	Crimson seabream	Unassigned	Food Animal	Evynnis parvalbumin	IgE but no biological test	108	BAK09232.1	327342661	12
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum BW 8 kDa protein	IgE but no biological test	133	BAB79444.1	17907758	7
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum esculentum 13S globulins IgE binding	IgE but no biological test	463	BAO50872.1	584592120	15
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum esculentum 13S globulins IgE binding	IgE but no biological test	453	BAO50870.1	584592116	15
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum Fag e 2 Fag t 2	IgE but no biological test	127	AAX57578.1	61970231	7
Fagopyrum esculentum	Buckwheat	Fag e 2.0101	Food Plant	Fagopyrum Fag e 2 Fag t 2	IgE but no biological test	149	ABC18306.1	83416591	7
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum Legumin-like protein	IgE but no biological test	565	O23878.1	29839254	9
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum Legumin-like protein	IgE but no biological test	504	O23880.1	29839255	9
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum Legumin-like protein	IgE but no biological test	538	Q9XFM4.1	29839419	9
Fagopyrum esculentum	Buckwheat	Fag e 3.0101	Food Plant	Fagopyrum vicilin-like Fag e 3	IgE but no biological test	136	ABQ10636.1	148217148	9
Fagopyrum esculentum	Buckwheat	Unassigned	Food Plant	Fagopyrum vicilin-like Fag e 3	IgE but no biological test	136	BAT21117.1	938106201	17
Fagopyrum tataricum	Buckwheat	Unassigned	Food Plant	Fagopyrum BW 8 kDa protein	IgE but no biological test	133	ABO93594.1	144226127	8
Fagopyrum tataricum	Buckwheat	Fag t 2.0101	Food Plant	Fagopyrum Fag e 2 Fag t 2	IgE but no biological test	149	ADW27428.1	320445237	12
Fagopyrum tataricum	Buckwheat	Unassigned	Food Plant	Fagopyrum Legumin-like protein	IgE but no biological test	515	ABI32184.1	113200131	9
Fagus sylvatica	European Beech	Unassigned	Aero Plant	Fagus Fag s 1	IgE plus basophil+ or SPT+	160	ACJ23865.1	212291472	10
Fagus sylvatica	European Beech	Fag s 1.0101	Aero Plant	Fagus Fag s 1	IgE plus basophil+ or SPT+	160	ACJ23864.1	212291470	10
Fagus sylvatica	European Beech	Unassigned	Aero Plant	Fagus Fag s 1	IgE plus basophil+ or SPT+	160	ACJ23866.1	212291474	10
Farfantepenaeus aztecus	Brown shrimp	Pen a 1.0101	Food Animal	Farfantepenaeus Pen a 1	IgE plus basophil+ or SPT+	284	AAZ76743.1	73532979	7
Felis catus	Cat		Aero Animal	Felis Fel d 1 Chain 1	IgE plus basophil+ or SPT+	88	CAA44343.1	1364212	7
Felis catus	Cat		Aero Animal	Felis Fel d 1 Chain 1	IgE plus basophil+ or SPT+	92	CAA44344.1	1364213	7
Felis catus	Cat		Aero Animal	Felis Fel d 1 Chain 1	IgE plus basophil+ or SPT+	92	P30438.2	1169665	7
Felis catus	Cat	Fel d 1.0101	Aero Animal	Felis Fel d 1 Chain 1	IgE plus basophil+ or SPT+	92	AAC37318.1	163825	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Felis catus	Cat	Unassigned	Aero Animal	Felis Fel d 1 Chain 1	IgE plus basophil+ or SPT+	88	NP_001041618.1	114326420	8
Felis catus	Cat	Unassigned	Aero Animal	Felis Fel d 1 chain 2	IgE plus basophil+ or SPT+	107	CAA44345.1	395407	8
Felis catus	Cat	Fel d 1.0101	Aero Animal	Felis Fel d 1 chain 2	IgE plus basophil+ or SPT+	109	AAC41616.1	163823	12
Felis catus	Cat	Fel d 2.0101	Aero Animal	Felis Fel d 2	IgE but no biological test	608	CAA59279.1	886485	7
Felis catus	Cat	Fel d 3.0101	Aero Animal	Felis Fel d 3	IgE but no biological test	98	AAL49391.1	17939981	7
Felis catus	Cat	Fel d 4.0101	Aero Animal	Felis Fel d 4	IgE but no biological test	186	AAS77253.1	45775300	7
Felis catus	Cat	Fel d 7.0101	Aero Animal	Felis Fel d 7	IgE but no biological test	180	ADK56160.1	301072397	12
Felis catus	Cat	Fel d 8.0101	Aero Animal	Felis Fel d 8 latherin-like	IgE but no biological test	228	ADM15668.1	303387468	12
Fenneropenaeus chinensis	Chinese white shrimp	Unassigned	Food Animal	Fenneropenaeus Arginine kinase	IgE but no biological test	53	AAS98889.1	46486948	9
Fenneropenaeus chinensis	Chinese white shrimp	Unassigned	Food Animal	Fenneropenaeus Arginine kinase	IgE but no biological test	53	AAS98890.1	46486951	9
Fenneropenaeus chinensis	Chinese white shrimp	Unassigned	Food Animal	Penaeus chinensis allergen	IgE plus basophil+ or SPT+	365	QBO59887.1	1595306288	20
Fenneropenaeus merguiensis	Banana Prawn	Unassigned	Food Animal	Fenneropenaeus hemocyanin banana shrimp	IgE but no biological test	661	AGT20779.1	530340505	15
Fenneropenaeus merguiensis	Banana Prawn	Unassigned	Food Animal	Fenneropenaeus enolase	IgE but no biological test	117	AEM69226.1	344049993	15
Forcipomyia taiwana	biting midges	For t 1.0101	Venom or Salivary	Forcipomyia For t 1	IgE but no biological test	118	ACD65080.1	188572341	10
Forcipomyia taiwana	biting midges	For t 1.0101	Venom or Salivary	Forcipomyia For t 2	IgE but no biological test	325	ACD65081.1	188572343	10
Fragaria x ananassa	Strawberry		Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	CAJ85646.1	90185692	7
Fragaria x ananassa	Strawberry		Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	159	CAJ85644.1	90185688	7
Fragaria x ananassa	Strawberry	Fra a 1	Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	CAJ85642.1	90185684	7
Fragaria x ananassa	Strawberry		Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	CAJ85641.1	90185682	7
Fragaria x ananassa	Strawberry	Fra a 1.0102	Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	ABD39049.1	88082485	7
Fragaria x ananassa	Strawberry	Unassigned	Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	ACX47057.1	260600660	11
Fragaria x ananassa	Strawberry	Unassigned	Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	159	ACX47058.1	260600662	11
Fragaria x ananassa	Strawberry	Unassigned	Food Plant	Fragaria Fra a 1	IgE plus basophil+ or SPT+	160	BBE27860.1	1394298081	19
Fragaria x ananassa	Strawberry	Fra a 3.0101	Food Plant	Fragaria Fra a 3	IgE plus basophil+ or SPT+	117	CAC86258.1	18477856	15
Fragaria x ananassa	Strawberry	Fra a 3.0102	Food Plant	Fragaria Fra a 3	IgE plus basophil+ or SPT+	117	AAY83342.1	67937767	15
Fragaria x ananassa	Strawberry	Fra a 3.0201	Food Plant	Fragaria Fra a 3	IgE plus basophil+ or SPT+	117	AAY83341.1	67937765	15
Fragaria x ananassa	Strawberry	Fra a 3.0202	Food Plant	Fragaria Fra a 3	IgE plus basophil+ or SPT+	117	AAY83345.1	67937773	15
Fraxinus excelsior	European ash	Unassigned	Aero Plant	Fraxinus excelsior polcalcinnot WHO IUIS	IgE but no biological test	84	AHL24661.1	589912891	15
Fraxinus excelsior	European ash	Unassigned	Aero Plant	Fraxinus excelsior profilin not in WHO IUIS	IgE but no biological test	134	AHL24660.1	589912889	15
Fraxinus excelsior	European ash	Fra e 1.0201	Aero Plant	Fraxinus Fra e 1	IgE plus basophil+ or SPT+	146	AAQ83588.1	34978692	7
Fraxinus excelsior	European ash	Fra e 1.0102	Aero Plant	Fraxinus Fra e 1	IgE plus basophil+ or SPT+	145	AAV74343.1	56122438	7
Fraxinus excelsior	European ash	Fra e 1.0101	Aero Plant	Fraxinus Fra e 1	IgE plus basophil+ or SPT+	145	AAQ08947.1	33327133	7
Fulvia mutica	Mollusc	Unassigned	Food Animal	Fulvia tropomyosin	IgE but no biological test	284	BAH10153.1	219806596	10
Fusarium culmorum	Fungus	Unassigned	Aero Fungi	Fusarium claimed Fus c 3	IgE but no biological test	450	AAN73248.1	25361513	7
Fusarium culmorum	Fungus	Fus c 1.0101	Aero Fungi	Fusarium Fus c 1	IgE plus basophil+ or SPT+	109	AAL79930.1	19879657	7
Fusarium culmorum	Fungus	Fus c 2.0101	Aero Fungi	Fusarium Fus c 2	IgE but no biological test	121	AAL79931.1	19879659	7
Fusarium proliferatum	Fungus	Fus p 4.0101	Aero Fungi	Fusarium Fus p 4	IgE but no biological test	323	AHY02994.1	619498167	15
Fusarium proliferatum	Fungus	Fus p 9	Aero Fungi	Fusarium proliferatum Fus p 9	IgE but no biological test	386	AJA79001.1	739057410	17
Gadus callarias	Baltic cod	Gad c 1.0101	Food Animal	Gadus Gad c 1 Gad m 1	IgE plus basophil+ or SPT+	113	P02622.1	131112	7
Gadus morhua	Atlantic cod	Gad m 1.0101	Food Animal	Gadus Gad c 1 Gad m 1	IgE plus basophil+ or SPT+	109	AAK63085.1	14531014	7
Gadus morhua	Atlantic cod	Gad m 1.0201	Food Animal	Gadus Gad c 1 Gad m 1	IgE plus basophil+ or SPT+	109	AAK63087.1	14531016	7
Gadus morhua	Atlantic cod	Gad m 1.0102	Food Animal	Gadus Gad c 1 Gad m 1	IgE plus basophil+ or SPT+	109	CAM56785.1	148356691	9
Gadus morhua	Atlantic cod	Gad m 1.0202	Food Animal	Gadus Gad c 1 Gad m 1	IgE plus basophil+ or SPT+	109	CAM56786.1	148356693	9
Gadus morhua	Atlantic cod	Gad m 2.0101	Food Animal	Gadus Morhua Gad m 2	IgE but no biological test	11	B3A0L6.1	576011130	15
Gadus morhua	Atlantic cod		Food Animal	Gadus morhua Gad m 3	IgE but no biological test	15	P86980.1	576011086	15
Gallus gallus	Chicken	Gal d 9.0101	Food Animal	Gallus enolase Gal d 9	IgE plus basophil+ or SPT+	434	NP_990450.1	46048765	18
Gallus gallus	Chicken	Gal d 1.0101	Food Animal	Gallus Gal d 1	IgE plus basophil+ or SPT+	210	P01005.1	124757	7
Gallus gallus	Chicken	Unassigned	Food Animal	Gallus Gal d 1	IgE plus basophil+ or SPT+	210	ACJ04729.1	209979542	10
Gallus gallus	Chicken		Food Animal	Gallus Gal d 2	IgE plus basophil+ or SPT+	155	CAA23681.1	63052	7
Gallus gallus	Chicken	Gal d 2.0101	Food Animal	Gallus Gal d 2	IgE plus basophil+ or SPT+	386	P01012.2	129293	7
Gallus gallus	Chicken		Food Animal	Gallus Gal d 2	IgE plus basophil+ or SPT+	386	CAA23682.1	808969	7
Gallus gallus	Chicken		Food Animal	Gallus Gal d 2	IgE plus basophil+ or SPT+	385	1JTI_A	15826578	7
Gallus gallus	Chicken	Unassigned	Food Animal	Gallus Gal d 2	IgE plus basophil+ or SPT+	385	1UHG_D	34811333	7
Gallus gallus	Chicken	Gal d 3.0101	Food Animal	Gallus Gal d 3	IgE plus basophil+ or SPT+	705	CAA26040.1	757851	7

Species	Common	IUISA Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Gallus gallus	Chicken		Food Animal	Gallus Gal d 3	IgE plus basophil+ or SPT+	705	P02789.2	1351295	7
Gallus gallus	Chicken		Food Animal	Gallus Gal d 4	IgE plus basophil+ or SPT+	147	P00698.1	126606	7
Gallus gallus	Chicken		Food Animal	Gallus Gal d 4	IgE plus basophil+ or SPT+	24	AAA48944.1	212279	7
Gallus gallus	Chicken	Gal d 4.0101	Food Animal	Gallus Gal d 4	IgE plus basophil+ or SPT+	147	CAA23711.1	63581	15
Gallus gallus	Chicken	Gal d 5.0101	Food Animal	Gallus Gal d 5	IgE plus basophil+ or SPT+	615	CAA43098.1	63748	7
Gallus gallus	Chicken	Gal d 6	Food Animal	Gallus Gal d 6 YGP42	IgE but no biological test	284	manual	1871444	14
Gallus gallus	Chicken		Food Animal	Gallus gallus Gal d 7	IgE but no biological test	192	P02604.3	55584149	16
Gallus gallus	Chicken	Gal d 8.0101	Food Animal	Gallus parvalbumin Gal d 8	IgE plus basophil+ or SPT+	110	CAX32963.1	225877920	10
Glossina morsitans morsitans	Tsetse fly	Unassigned	Venom or Salivary	Glossina Glo m 5	IgE but no biological test	258	ADD18879.1	289740263	11
Glossina morsitans morsitans	Tsetse fly	Unassigned	Venom or Salivary	Glossina Glo m 5	IgE but no biological test	259	ADD19985.1	289742475	11
Glossina morsitans morsitans	Tsetse fly	Unassigned	Venom or Salivary	Glossina Glo m 5	IgE but no biological test	222	ADD19989.1	289742483	11
Glossina morsitans morsitans	Tsetse fly	Glo m 5.0101	Venom or Salivary	Glossina Glo m 5	IgE but no biological test	259	AAF82096.1	8927462	11
Glycine max	Soybean	Gly m 7.0101	Food Plant	Glycine 68kDa biotinylated protein	IgE plus basophil+ or SPT+	643	ACS49840.1	240254706	11
Glycine max	Soybean	Gly m 1.0101	Aero Plant	Glycine Gly m 1	IgE but no biological test	80	P24337.1	123506	12
Glycine max	Soybean	Gly m 3.0102	Food Plant	Glycine Gly m 3	IgE but no biological test	131	CAA11755.1	3021373	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 3	IgE but no biological test	131	ABU97472.1	156938901	9
Glycine max	Soybean	Gly m 3.0101	Food Plant	Glycine Gly m 3	IgE but no biological test	131	CAA11756.1	3021375	15
Glycine max	Soybean	Gly m 4.0101	Food Plant	Glycine Gly m 4	IgE plus basophil+ or SPT+	158	CAA42646.1	18744	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0101 alpha subunit beta congl	IgE but no biological test	605	CAA35691.1	18536	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0101 alpha subunit beta congl	IgE but no biological test	218	AAA33947.1	169927	7
Glycine max	Soybean	Gly m 5.0101	Food Plant	Glycine Gly m 5.0101 alpha subunit beta congl	IgE but no biological test	543	BAA23360.2	9967357	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0201 alpha prime beta congly	IgE but no biological test	639	AAB01374.1	169929	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0201 alpha prime beta congly	IgE but no biological test	621	BAB64303.1	15425631	15
Glycine max	Soybean	Gly m 5.0201	Food Plant	Glycine Gly m 5.0201 alpha prime beta congly	IgE but no biological test	559	BAA74452.2	9967361	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0301 beta sub unit beta congl	IgE but no biological test	439	BAB64306.1	15425637	15
Glycine max	Soybean	Gly m 5.0301	Food Plant	Glycine Gly m 5.0301 beta sub unit beta congl	IgE but no biological test	439	P25974.1	121282	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 5.0301 beta sub unit beta congl	IgE but no biological test	439	F7J077.1	1559988709	20
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0101	IgE but no biological test	495	CAA26723.1	18615	7
Glycine max	Soybean	Gly m 6.0101	Food Plant	Glycine Gly m 6.0101	IgE but no biological test	495	AAA33966.1	169973	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0201	IgE but no biological test	485	CAA26575.1	18609	7
Glycine max	Soybean	Gly m 6.0201	Food Plant	Glycine Gly m 6.0201	IgE but no biological test	485	BAA00154.1	218265	15
Glycine max	Soybean	Gly m 6.0301	Food Plant	Glycine Gly m 6.0301	IgE but no biological test	481	CAA33217.1	18639	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0401	IgE but no biological test	562	CAA37044.1	18641	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0401	IgE but no biological test	562	CAA26478.1	732706	7
Glycine max	Soybean	Gly m 6.0401	Food Plant	Glycine Gly m 6.0401	IgE but no biological test	563	BAA74953.1	4249568	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0501	IgE but no biological test	516	AAA33964.1	169969	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0501	IgE but no biological test	240	AAA33965.1	169971	7
Glycine max	Soybean	Gly m 6.0501	Food Plant	Glycine Gly m 6.0501	IgE but no biological test	517	BAB15802.1	10566449	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m 8 2s albumin	IgE but no biological test	155	AAD09630.1	4097894	14
Glycine max	Soybean	Gly m 8.0101	Food Plant	Glycine Gly m 8 2s albumin	IgE but no biological test	158	NP_001238443.1	351727517	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 28K	IgE but no biological test	373	ACD36976.1	187766751	10
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 28K	IgE but no biological test	373	ACD36975.1	187766749	10
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 28K	IgE but no biological test	373	ACD36974.1	187766747	10
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 28K	IgE but no biological test	455	ACD36978.1	187766755	10
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 28K	IgE but no biological test	476	BAB21619.2	410067729	15
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 30 kDa	IgE but no biological test	379	P22895.1	129353	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 30 kDa	IgE but no biological test	379	AAB09252.1	1199563	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Glycine max	Soybean	Unassigned	Food Plant	Glycine Gly m Bd 30 kDa	IgE but no biological test	379	BAA25899.1	3097321	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Major Gly 50 kDa allergen	IgE but no biological test	17	P82947.1	85681057	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	217	CAA45777.1	18770	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	217	CAA45778.1	18772	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	216	AAB23464.1	256429	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	203	AAB23482.1	256635	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	204	AAB23483.1	256636	7
Glycine max	Soybean	Unassigned	Food Plant	Glycine Trypsin inhibitor	IgE but no biological test	208	CAA56343.1	510515	7
Glycine soja	Soybean	Unassigned	Food Plant	Glycine Gly m 6.0401	IgE but no biological test	563	CAA60533.1	806556	7
Glycyphagus domesticus	Storage mite	Gly d 2.0101	Aero Mite	Glycyphagus Gly d 2	IgE but no biological test	128	CAB59976.1	6179520	7
Glycyphagus domesticus	Storage mite	Gly d 2.0201	Aero Mite	Glycyphagus Gly d 2	IgE but no biological test	125	CAB76459.1	7160811	7
Glycyphagus domesticus	Storage mite	Unassigned	Aero Mite	Glycyphagus Gly d 2	IgE but no biological test	141	AAQ54603.1	33772588	7
Haliotis discus discus	Disk abalone	Unassigned	Food Animal	Haliotis Hal m 1 tropomyosin	IgE but no biological test	284	BAH10148.1	219806586	10
Haliotis discus discus	Disk abalone	Unassigned	Food Animal	Haliotis paramyosin	IgE but no biological test	860	BAJ61596.1	318609972	12
Haliotis diversicolor	Abalone	Unassigned	Food Animal	Haliotis Hal m 1 tropomyosin	IgE but no biological test	284	AAG08987.1	9954249	7
Haliotis laevigata x Haliotis rubra		Hal l 1.0101	Food Animal	Haliotis Hal m 1 tropomyosin	IgE but no biological test	284	APG42675.1	1109557549	18
Helianthus annuus	Sunflower	Hel a 6	Aero Plant	Hel a 6	IgE but no biological test	394	OTF85892.1	1191633749	18
Helianthus annuus	Sunflower	Hel a 2.0101	Aero Plant	Helianthus Hel a 2	IgE but no biological test	133	CAA75506.1	3581965	7
Helianthus annuus	Sunflower	Hel a 3.0101	Food Plant	Helianthus Hel a 3	IgE but no biological test	116	AAP47226.1	31324341	15
Helianthus annuus	Sunflower	Unassigned	Food Plant	Helianthus Seed 2S albumin	IgE but no biological test	141	P23110.1	112745	9
Helix aspersa	Brown garden snail	Hel as 1.0101	Food Animal	Helix Hel as 1 tropomyosin	IgE but no biological test	284	CAB38044.1	4468224	7
Hevea brasiliensis	Para rubber tree	Hev b 1.0101	Contact	Hevea Hev b 1	IgE plus basophil+ or SPT+	138	CAA39880.1	18839	15
Hevea brasiliensis	Para rubber tree	Hev b 10.0101	Contact	Hevea Hev b 10	IgE but no biological test	233	AAA16792.1	348137	7
Hevea brasiliensis	Para rubber tree	Hev b 10.0102	Contact	Hevea Hev b 10	IgE but no biological test	205	CAB53458.1	5777414	7
Hevea brasiliensis	Para rubber tree	Hev b 10.0103	Contact	Hevea Hev b 10	IgE but no biological test	205	CAC13961.1	10862818	7
Hevea brasiliensis	Para rubber tree	Hev b 11.0101	Contact	Hevea Hev b 11	IgE but no biological test	295	CAC42881.1	14575525	7
Hevea brasiliensis	Para rubber tree	Hev b 12.0101	Contact	Hevea Hev b 12	IgE but no biological test	115	AAL25839.1	20135538	7
Hevea brasiliensis	Para rubber tree	Hev b 13.0101	Contact	Hevea Hev b 13	IgE but no biological test	391	AAP37470.1	30909057	7
Hevea brasiliensis	Para rubber tree	Hev b 14.0101	Contact	Hevea Hev b 14 hevamine	IgE but no biological test	208	ADR82196.1	313870530	12
Hevea brasiliensis	Para rubber tree	Hev b 15.0101	Contact	Hevea Hev b 15	IgE but no biological test	70	CCW27997.1	571257122	15
Hevea brasiliensis	Para rubber tree	Hev b 2.0101	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	AAA87456.1	1184668	7
Hevea brasiliensis	Para rubber tree		Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	AAP87281.1	32765543	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ABN03965.1	124294783	8
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ABN03966.1	124294785	8
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ABN09653.1	124365249	8
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ABN09654.1	124365251	8
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ABN09655.1	124365253	8
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ACY91851.1	268037674	11
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	ACZ74826.1	270315180	11
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	373	AEV41413.1	359359690	13
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	AFJ97275.1	387778882	13
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 2	IgE plus basophil+ or SPT+	374	AFJ97274.1	387778880	13
Hevea brasiliensis	Para rubber tree	Hev b 3.0101	Contact	Hevea Hev b 3	IgE plus basophil+ or SPT+	204	AAC82355.1	3818475	11
Hevea brasiliensis	Para rubber tree	Hev b 4.0101	Contact	Hevea Hev b 4	IgE but no biological test	366	AAR98518.1	46410859	7
Hevea brasiliensis	Para rubber tree	Hev b 5.0101	Contact	Hevea Hev b 5	IgE plus basophil+ or SPT+	151	AAC49447.1	1480457	7
Hevea brasiliensis	Para rubber tree		Contact	Hevea Hev b 6	IgE plus basophil+ or SPT+	187	CAA05978.1	2832430	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 6	IgE plus basophil+ or SPT+	43	1WKX_A	73535415	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 6	IgE plus basophil+ or SPT+	204	ABW34946.1	158342650	9
Hevea brasiliensis	Para rubber tree	Hev b 7.01	Contact	Hevea Hev b 7	IgE plus basophil+ or SPT+	388	AAC27724.1	1916805	7
Hevea brasiliensis	Para rubber tree	Hev b 7.02	Contact	Hevea Hev b 7	IgE plus basophil+ or SPT+	388	CAA11041.1	3087805	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 7	IgE plus basophil+ or SPT+	388	CAA11042.1	3288200	7
Hevea brasiliensis	Para rubber tree		Contact	Hevea Hev b 7	IgE plus basophil+ or SPT+	388	AAF25553.1	6707018	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 7	IgE plus basophil+ or SPT+	387	CAE85467.1	41581137	7
Hevea brasiliensis	Para rubber tree	Hev b 8.0101	Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	CAA75312.1	3183706	7
Hevea brasiliensis	Para rubber tree		Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	1G5U_A	11513601	7

Species	Common	IUISÀ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Hevea brasiliensis	Para rubber tree	Hev b 8.0201	Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	AAF34341.1	6979167	11
Hevea brasiliensis	Para rubber tree	Hev a 9.0101	Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	AAF34342.1	6979169	11
Hevea brasiliensis	Para rubber tree	Hev b 8.0203	Aero Mite	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	AAF34343.1	6979171	11
Hevea brasiliensis	Para rubber tree	Hev b 8.0102	Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	CAB51914.1	5689740	15
Hevea brasiliensis	Para rubber tree	Hev b 8.0204	Contact	Hevea Hev b 8	IgE plus basophil+ or SPT+	131	CAB96215.1	8919948	15
Hevea brasiliensis	Para rubber tree	Hev a 9.0101	Contact	Hevea Hev b 9	IgE but no biological test	445	CAC00532.1	9581744	7
Hevea brasiliensis	Para rubber tree	Unassigned	Contact	Hevea Hev b 9	IgE but no biological test	445	Q9LEI9.1	14423687	9
Hevea brasiliensis subsp. brasiliensis	Para rubber tree	Hev b 11.0102	Contact	Hevea Hev b 11	IgE but no biological test	295	CAD24068.1	27526732	7
Holcus lanatus	Velvet grass	Hol l 1.0101	Aero Plant	Holcus Hol l 1	IgE but no biological test	265	CAA81610.1	414703	7
Holcus lanatus	Velvet grass	Hol l 1.0102	Aero Plant	Holcus Hol l 1	IgE but no biological test	248	CAA93121.1	1167836	7
Holcus lanatus	Velvet grass	Unassigned	Aero Plant	Holcus Hol l 1	IgE but no biological test	283	CAA10140.1	3860384	7
Holcus lanatus	Velvet grass	Unassigned	Aero Plant	Holcus Hol l 5	IgE plus basophil+ or SPT+	20	Q7M262	75140046	7
Holcus lanatus	Velvet grass	Hol l 5.0201	Aero Plant	Holcus Hol l 5	IgE plus basophil+ or SPT+	240	CAB10766.1	2266623	7
Holcus lanatus	Velvet grass	Hol l 5.0101	Aero Plant	Holcus Hol l 5	IgE plus basophil+ or SPT+	264	CAB10765.1	2266625	7
Holcus lanatus	Velvet grass	Unassigned	Aero Plant	Holcus Hol l 5	IgE plus basophil+ or SPT+	296	AAG42255.1	11991229	7
Homarus americanus	American lobster	Hom a 1.0102	Food Animal	Homarus Hom a 1	IgE plus basophil+ or SPT+	284	AAC48288.1	2660868	7
Homarus americanus	American lobster	Hom a 1.0101	Food Animal	Homarus Hom a 1	IgE plus basophil+ or SPT+	284	AAC48287.1	2660866	15
Hordeum vulgare	Barley	Unassigned	Aero Plant	Hordeum Alpha-amylase inhibitor component CMb	IgE plus basophil+ or SPT+	149	P32936.2	585290	7
Hordeum vulgare	Barley	Unassigned	Food Plant	Hordeum Hor v 20	IgE plus basophil+ or SPT+	289	P80198.1	1708280	15
Hordeum vulgare	Barley	Hor v 20.0101	Food Plant	Hordeum Hor v 20	IgE plus basophil+ or SPT+	286	CAA51204.1	288709	15
Hordeum vulgare	Barley	Unassigned	Food Plant	Hordeum LTP 1	IgE but no biological test	134	CAA42832.1	19039	7
Hordeum vulgare	Barley	Unassigned	Aero Plant	Hordeum LTP 1	IgE but no biological test	117	AAA32970.1	167077	7
Hordeum vulgare	Barley	Unassigned	Aero Plant	Hordeum Trypsin inhibitor CMe	IgE plus basophil+ or SPT+	144	CAA35188.1	1405736	7
Hordeum vulgare subsp. vulgare	Barley	Unassigned	Aero Plant	Hordeum Alpha-amylase inhibitor BDAI-1	IgE plus basophil+ or SPT+	152	CAA08836.1	3367714	7
Hordeum vulgare subsp. vulgare	Barley	Unassigned	Aero Plant	Hordeum Alpha-amylase inhibitor component Cma	IgE plus basophil+ or SPT+	144	CAA41956.1	18955	7
Hordeum vulgare subsp. vulgare	Barley	Unassigned	Aero Plant	Hordeum Alpha-amylase inhibitor component Cma	IgE plus basophil+ or SPT+	145	CAA49555.1	439275	7
Hordeum vulgare subsp. vulgare	Barley	Hor v 15.0101	Food Plant	Hordeum Hor v 15	IgE plus basophil+ or SPT+	146	CAA45085.1	19003	15
Hordeum vulgare subsp. vulgare	Barley	Unassigned	Aero Plant	Hordeum Trypsin inhibitor CMe	IgE plus basophil+ or SPT+	148	CAA46705.1	19009	7
Humulus japonicus	Japanese hop	Hum j 1.0101	Aero Plant	Humulus Humj1	IgE but no biological test	155	AAP84213.1	33113263	7
Humulus scandens	Japanese hop	Unassigned	Aero Plant	Humulus profilin-like protein	IgE but no biological test	131	AAP15200.1	34851176	7
Humulus scandens	Japanese hop	Unassigned	Aero Plant	Humulus profilin-like protein	IgE but no biological test	131	AAP15199.1	34851174	7
Juglans nigra	Black walnut	Jug n 1.0101	Food Plant	Juglans Jug r 1 Jug n 1	IgE but no biological test	181	AAM54365.1	31321942	7
Juglans nigra	Black walnut	Jug n 2.0101	Food Plant	Juglans Jug r 2	IgE but no biological test	481	AAM54366.1	31321944	7
Juglans nigra	Black walnut	Jug n 4.0101	Food Plant	Juglans nigra Jug n 4 legumin	IgE but no biological test	510	APR62629.1	1126299828	18
Juglans regia	English walnut	Jug r 1.0101	Food Plant	Juglans Jug r 1 Jug n 1	IgE but no biological test	139	AAB41308.1	1794252	7
Juglans regia	English walnut		Food Plant	Juglans Jug r 2	IgE but no biological test	593	AAF18269.1	6580762	7
Juglans regia	English walnut	Jug r 3.0101	Food Plant	Juglans Jug r 3	IgE but no biological test	119	ACI47547.1	209484145	11
Juglans regia	English walnut	Jug r 4.0101	Food Plant	Juglans Jug r 4 seed storage protein	IgE but no biological test	507	AAW29810.1	56788031	7
Juglans regia	English walnut	Jug r 6.0101	Food Plant	Juglans Jug r 6	IgE but no biological test	502	XP_018814692.1	1098817075	19
Juglans regia	English walnut	Jug r 5.0101	Food Plant	Juglans regia Jug r 5	IgE plus basophil+ or SPT+	160	APD76154.1	1104688561	17
Juglans regia	English walnut	Unassigned	Food Plant	Juglans regia Walnut profilin	IgE but no biological test	131	AVD53651.1	1343184140	20
Juniperus ashei	Mountain cedar	Jun a 2.0101	Aero Plant	Juniperus Jun a 2	IgE but no biological test	507	CAC05582.1	9955725	7
Juniperus ashei	Mountain cedar	Jun a 3.0101	Aero Plant	Juniperus Jun a 3	IgE but no biological test	225	P81295.1	9087177	8
Juniperus ashei	Mountain cedar	Jun a 1.0101	Aero Plant	Juniperus Jun a/v 1	IgE but no biological test	367	AAD03608.1	4138877	7
Juniperus oxycedrus	Juniper	Unassigned	Aero Plant	Juniperus Jun a/v 1	IgE but no biological test	367	CAC48400.1	15139849	7
Juniperus oxycedrus	Juniper	Jun o 4.0101	Aero Plant	Juniperus Jun o 4	IgE but no biological test	165	AAC15474.2	5391446	7
Juniperus rigida	Cedar	Unassigned	Aero Plant	Juniperus Jun a 3	IgE but no biological test	225	AAR21072.1	38456224	7
Juniperus rigida	Cedar	Unassigned	Aero Plant	Juniperus Jun a 3	IgE but no biological test	225	AAR21071.1	38456222	7
Juniperus virginiana	Red cedar	Unassigned	Aero Plant	Juniperus Jun a 3	IgE but no biological test	110	Q9LD79.2	51316532	7
Juniperus virginiana	Red cedar	Jun v 1.0102	Aero Plant	Juniperus Jun a/v 1	IgE but no biological test	367	AAF80164.1	8843917	7
Juniperus virginiana	Red cedar	Jun v 1.0101	Aero Plant	Juniperus Jun a/v 1	IgE but no biological test	367	AAF80166.1	8843921	7

Species	Common	IUISÂ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Lactuca sativa	Garden lettuce	Lac s 1	Food Plant	Lactuca sativa LTP	IgE plus basophil+ or SPT+	117	A0A2J6KL39.1	1559988728	20
Lates calcarifer	Asian Seabass	Lat c 1.0101	Food Animal	Lates Lat c 1	IgE but no biological test	109	AAV97933.1	56553743	15
Lates calcarifer	Asian Seabass	Lat c 1.0201	Food Animal	Lates Lat c 1	IgE but no biological test	109	AAT45383.1	48526356	15
Lens culinaris	Lentil	Len c 3.0101	Food Plant	Lens Len c 3	IgE but no biological test	118	AAX35807.1	60735410	15
Lens culinaris	Lentil	Len c 1.0101	Food Plant	Lens Len c 1	IgE but no biological test	418	CAD87730.1	29539109	7
Lens culinaris	Lentil	Len c 1.0102	Food Plant	Lens Len c 1	IgE but no biological test	415	CAD87731.1	29539111	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Blomia Blo t 12	IgE plus basophil+ or SPT+	143	AAQ55550.1	33943777	7
Lepidoglyphus destructor	Storage mite	Lep d 10.0101	Aero Mite	Lepidoglyphus Lep d 10	IgE but no biological test	284	CAB71342.1	6900304	15
Lepidoglyphus destructor	Storage mite	Lep d 13.0101	Aero Mite	Lepidoglyphus Lep d 13	IgE but no biological test	131	CAB62213.1	6523380	15
Lepidoglyphus destructor	Storage mite	Lep d 2.0102	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	CAD32313.1	21213898	7
Lepidoglyphus destructor	Storage mite	Lep d 2.0202	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	CAD32314.1	21213900	7
Lepidoglyphus destructor	Storage mite		Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	2118249B	1582223	7
Lepidoglyphus destructor	Storage mite		Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	2118249A	1582222	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73484.1	34495274	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73486.1	34495278	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	140	AAQ73487.1	34495280	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73488.1	34495282	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73489.1	34495284	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73490.1	34495286	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73491.1	34495288	7
Lepidoglyphus destructor	Storage mite	Unassigned	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	AAQ73492.1	34495290	7
Lepidoglyphus destructor	Storage mite	Lep d 2.0101	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	98	CAA57160.1	587450	15
Lepidoglyphus destructor	Storage mite	Lep d 2.0201	Aero Mite	Lepidoglyphus Lep d 2	IgE but no biological test	141	CAA58755.1	999458	15
Lepidoglyphus destructor	Storage mite	Lep d 5.0102	Aero Mite	Lepidoglyphus Lep d 5	IgE but no biological test	171	AAQ73493.1	34495292	7
Lepidoglyphus destructor	Storage mite	Lep d 5.0103	Aero Mite	Lepidoglyphus Lep d 5	IgE but no biological test	169	AAQ73494.1	34495294	7
Lepidoglyphus destructor	Storage mite	Lep d 5.0101	Aero Mite	Lepidoglyphus Lep d 5	IgE but no biological test	110	CAB62212.1	6523378	15
Lepidoglyphus destructor	Storage mite	Lep d 7.0101	Aero Mite	Lepidoglyphus Lep d 7	IgE but no biological test	216	CAB65963.1	6706282	15
Lepidorhombus whiffiagonis	Flat fish	Lep w 1.0101	Food Animal	Lepidorhombus Lep w 1 parvalbumin	IgE but no biological test	109	CAP17694.1	208606078	10
Lepisma saccharina	Silverfish	Lep s 1.0101	Aero Insect	Lepisma Tropomyosin	IgE plus basophil+ or SPT+	284	CAC84590.2	20387027	7
Lepisma saccharina	Silverfish	Unassigned	Aero Insect	Lepisma Tropomyosin	IgE plus basophil+ or SPT+	243	CAC84593.2	20387029	7
Ligustrum vulgare	Privet	Lig v 1.0101	Aero Plant	Ligustrum Lig v 1	IgE but no biological test	145	CAA54818.1	3256210	7
Ligustrum vulgare	Privet	Lig v 1.0102	Aero Plant	Ligustrum Lig v 1	IgE but no biological test	145	CAA54819.1	3256212	7
Lilium longiflorum	Trumpet lily	Unassigned	Aero Plant	Lilium polygalacturonase	IgE but no biological test	413	AAZ91659.1	73913442	8
Liposcelis bostrychophila	booklice	Lip b 1.0101	Aero Insect	Liposcelis Lip b 1 Fragments	IgE but no biological test	254	BAW03243.1	1109516247	18
Liposcelis bostrychophila	booklice	Lip b 1.0102	Aero Insect	Liposcelis Lip b 1 Fragments	IgE but no biological test	254	BAW03242.1	1109516245	18
Litchi chinensis	Lychee nut	Lit c 1.0101	Food Plant	Litchi Lit c 1	IgE but no biological test	131	AAL07320.1	15809696	7
Litchi chinensis	Lychee nut	Unassigned	Food Plant	Litchi Lit c 1	IgE but no biological test	131	ABC02750.1	83317152	7
Litopenaeus vannamei	Whiteleg Shrimp	Lit v 4.0101	Food Animal	Litopenaeus Lit v 4 sarcoplasmic Ca+ binding	IgE plus basophil+ or SPT+	193	ACM89179.1	223403273	11
Litopenaeus vannamei	Whiteleg Shrimp	Lit v 1.0101	Food Animal	Litopenaeus Lit v 1 tropomyosin	IgE but no biological test	284	ACB38288.1	170791252	10
Litopenaeus vannamei	Whiteleg Shrimp	Lit v 2.0101	Food Animal	Litopenaeus Lit v 2	IgE but no biological test	356	ABI98020.1	115492980	8
Litopenaeus vannamei	Whiteleg Shrimp	Unassigned	Food Animal	Litopenaeus Lit v 2	IgE but no biological test	356	B0FRF9.1	1679377515	20
Litopenaeus vannamei	Whiteleg Shrimp	Lit v 3.0101	Food Animal	Litopenaeus Lit v 3 myosin	IgE but no biological test	177	ACC76803.1	184198734	10
Lolium perenne	Perennial ryegrass		Aero Plant	Lolium Lol p 1	IgE plus basophil+ or SPT+	263	P14946.2	126385	7
Lolium perenne	Perennial ryegrass	Lol p 1.0102	Aero Plant	Lolium Lol p 1	IgE plus basophil+ or SPT+	252	AAA53278.1	168314	7
Lolium perenne	Perennial ryegrass	Lol p 1.0101	Aero Plant	Lolium Lol p 1	IgE plus basophil+ or SPT+	263	AAA53279.1	168316	10
Lolium perenne	Perennial ryegrass	Lol p 1.0103	Aero Plant	Lolium Lol p 1	IgE plus basophil+ or SPT+	263	CAB63699.1	6599300	10
Lolium perenne	Perennial ryegrass	Lol p 11.0101	Aero Plant	Lolium Lol p 11	IgE plus basophil+ or SPT+	134	Q7M1X5.1	47605808	7
Lolium perenne	Perennial ryegrass	Lol p 2.0101	Aero Plant	Lolium Lol p 2	IgE plus basophil+ or SPT+	97	P14947.1	126386	7
Lolium perenne	Perennial ryegrass		Aero Plant	Lolium Lol p 2	IgE plus basophil+ or SPT+	88	CAA51775.1	939932	7
Lolium perenne	Perennial ryegrass	Lol p 3.0101	Aero Plant	Lolium Lol p 3	IgE but no biological test	97	P14948.1	126387	7
Lolium perenne	Perennial ryegrass	Lol p 4.0101	Aero Plant	Lolium Lol p 4	IgE plus basophil+ or SPT+	423	CAH92637.1	55859464	7
Lolium perenne	Perennial ryegrass		Aero Plant	Lolium Lol p 5	IgE plus basophil+ or SPT+	301	AAD20386.1	4416516	7
Lolium perenne	Perennial ryegrass		Aero Plant	Lolium Lol p 5	IgE plus basophil+ or SPT+	301	CAB64344.1	6634467	7
Lolium perenne	Perennial ryegrass	Lol p 5.0101	Aero Plant	Lolium Lol p 5	IgE plus basophil+ or SPT+	339	AAA33405.1	455268	10
Lolium perenne	Perennial ryegrass	Lol p 5.0102	Aero Plant	Lolium Lol p 5	IgE plus basophil+ or SPT+	307	Q40240.2	332278195	12

Species	Common	IUISÁ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Lupinus albus	white lupine	Unassigned	Food Plant	Lupinus albus congluten beta	IgE but no biological test	531	CAI84850.2	89994190	14
Lupinus albus	white lupine	Unassigned	Food Plant	Lupinus albus congluten beta	IgE but no biological test	533	Q8EBC1.1	75121065	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	521	ABR21771.1	149208401	9
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	455	ABR21772.1	149208403	9
Lupinus angustifolius	blue lupin	Lup an 1.0101	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	611	ACB05815.1	169950562	10
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	605	F5B8W5.1	980951568	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	593	F5B8W4.1	980951565	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	637	F5B8W3.1	980951561	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	590	F5B8W2.1	980951555	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	580	F5B8W1.1	980951550	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	603	F5B8W0.1	980951548	17
Lupinus angustifolius	blue lupin	Unassigned	Food Plant	Lupinus Lup an 1 conglutin beta	IgE but no biological test	611	F5B8V9.1	980951518	17
Lycium barbarum	wolfberry	Unassigned	Food Plant	Lycium ltp	IgE but no biological test	51	B3A0N2.1	353805423	13
Macrobrachium rosenbergii	Giant River Prawn	Mac r 1.0101	Food Animal	Macrobrachium rosenbergii shrimp tropomyosin	IgE but no biological test	284	ADC55380.1	288819271	11
Macrobrachium rosenbergii	Giant River Prawn	Unassigned	Food Animal	Macrobrachium rosenbergii shrimp tropomyosin	IgE but no biological test	284	AHA85706.1	558698675	15
Macruronus magellanicus	Patagonian Grenadier	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	98	P86739.1	308191460	12
Macruronus magellanicus	Patagonian Grenadier	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86741.1	308191461	12
Macruronus magellanicus	Patagonian Grenadier	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	74	P86740.1	308191474	12
Macruronus novaezelandiae	Blue hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	83	P86742.1	308191475	12
Malassezia furfur	Yeast	Mala f 2.0101	Contact	Malassezia Mala f 2	IgE but no biological test	177	BAA32435.1	3445490	7
Malassezia furfur	Yeast	Mala f 3.0101	Contact	Malassezia Mala f 3	IgE but no biological test	166	BAA32436.1	3445492	7
Malassezia furfur	Yeast	Mala f 4.0101	Contact	Malassezia Mala f 4	IgE but no biological test	342	AAD25927.1	4587985	7
Malassezia sympodialis	Yeast	Mala s 1.0101	Contact	Malassezia Mala s 1	IgE plus basophil+ or SPT+	350	CAA65341.1	1261972	7
Malassezia sympodialis	Yeast	Mala s 10.0101	Contact	Malassezia Mala s 10 heat shock protein	IgE but no biological test	773	CAD20981.3	28564467	14
Malassezia sympodialis	Yeast	Mala s 11.0101	Contact	Malassezia Mala s 11 first 38 aa signal	IgE but no biological test	237	CAD68071.1	28569698	7
Malassezia sympodialis	Yeast	Mala s 12.0101	Contact	Malassezia Mala s 12	IgE but no biological test	618	CAI43283.4	78038796	7
Malassezia sympodialis	Yeast	Mala s 5.0101	Contact	Malassezia Mala s 5	IgE but no biological test	172	CAA09883.1	4138171	7
Malassezia sympodialis	Yeast	Mala s 6.0101	Contact	Malassezia Mala s 6	IgE but no biological test	162	CAA09884.1	4138173	7
Malassezia sympodialis	Yeast	Mala s 7.0101	Contact	Malassezia Mala s 7	IgE but no biological test	187	CAA09885.1	4138175	7
Malassezia sympodialis	Yeast	Mala s 8.0101	Contact	Malassezia Mala s 8	IgE but no biological test	179	CAA09886.2	7271239	7
Malassezia sympodialis	Yeast	Mala s 9.0101	Contact	Malassezia Mala s 9	IgE but no biological test	342	CAA09887.4	19069920	7
Malassezia sympodialis ATCC 42132	Yeast	Unassigned	Contact	Malassezia Mala s 10 heat shock protein	IgE but no biological test	773	CCU97864.1	465797105	14
Malassezia sympodialis ATCC 42132	Yeast	Unassigned	Contact	Malassezia Mala s 11 first 38 aa signal	IgE but no biological test	202	CCV00099.1	465795607	14
Malassezia sympodialis ATCC 42132	Yeast	Mala s 13	Contact	Malassezia Mala s 13 Thioredoxin Rev	IgE plus basophil+ or SPT+	107	CCU98198.1	465793078	14
Malassezia sympodialis ATCC 42132	Yeast	Unassigned	Contact	Malassezia Mala s 5	IgE but no biological test	172	CCU99457.1	465794772	14
Malassezia sympodialis ATCC 42132	Yeast	Unassigned	Contact	Malassezia Mala s 7	IgE but no biological test	200	SHO79205.1	1129841119	18
Malassezia sympodialis ATCC 42132	Yeast	Unassigned	Contact	Malassezia Mala s 9	IgE but no biological test	342	CCU99206.1	465794420	14
Malus x domestica	Apple	Mal d 1.0301	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	CAA96534.1	1313966	7
Malus x domestica	Apple	Mal d 1.0401	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	160	CAA96535.1	1313968	7
Malus x domestica	Apple	Mal d 1.0402	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	160	CAA96536.1	1313970	7
Malus x domestica	Apple	Mal d 1.0403	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	160	CAA96537.1	1313972	7
Malus x domestica	Apple	Mal d 1.0206	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD13683.1	2443824	7
Malus x domestica	Apple	Mal d 1.0103	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26546.1	4590364	7
Malus x domestica	Apple	Mal d 1.0203	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26547.1	4590366	7
Malus x domestica	Apple	Mal d 1.0204	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26548.1	4590368	7
Malus x domestica	Apple	Mal d 1.0104	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26552.1	4590376	7
Malus x domestica	Apple	Mal d 1.0105	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26553.1	4590378	7
Malus x domestica	Apple	Mal d 1.0106	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26554.1	4590380	7

Species	Common	IUISÀ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Malus x domestica	Apple	Mal d 1.0107	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26555.1	4590382	7
Malus x domestica	Apple	Mal d 1.0205	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD26558.1	4590388	7
Malus x domestica	Apple	Mal d 1.0208	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	158	CAD32318.1	21685277	7
Malus x domestica	Apple	Mal d 1.0304	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAO25113.1	27922941	7
Malus x domestica	Apple	Mal d 1.0108	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAD29671.1	4768879	11
Malus x domestica	Apple	Mal d 1.0201	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAB01362.1	862307	11
Malus x domestica	Apple	Mal d 1.0102	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	CAA88833.1	886683	11
Malus x domestica	Apple	Mal d 1.0101	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	CAA58646.1	747852	15
Malus x domestica	Apple	Mal d 1.0109	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAK13029.1	15418742	15
Malus x domestica	Apple	Mal d 1.0207	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAK13030.1	15418744	15
Malus x domestica	Apple	Mal d 1.0302	Food Plant	Malus Mal d 1	IgE plus basophil+ or SPT+	159	AAK13027.1	15418738	15
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	26	AAB35897.1	1478293	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	246	AAX19848.1	60418842	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	246	AAX19851.1	60418848	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	246	Q9FSG7.1	30316292	8
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	158	CAT99612.1	218059718	10
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	158	CAT99611.1	218059715	10
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	193	AFM77001.1	392507603	13
Malus x domestica	Apple	Mal d 2.0101	Food Plant	Malus Mal d 2	IgE but no biological test	245	AAC36740.1	3643249	15
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 2	IgE but no biological test	159	APG29330.1	1109403341	18
Malus x domestica	Apple	Mal d 3.0201	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAF26450.1	6715522	7
Malus x domestica	Apple	Mal d 3.0203	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAT80665.1	50659891	7
Malus x domestica	Apple	Mal d 3.0202	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAT80664.1	50659889	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAT80662.1	50659885	7
Malus x domestica	Apple		Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAT80659.1	50659879	7
Malus x domestica	Apple	Mal d 3.0102	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAT80649.1	50659859	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 3	IgE plus basophil+ or SPT+	115	AAR22488.1	38492338	7
Malus x domestica	Apple	Mal d 4.0302	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAD46559.1	28881453	7
Malus x domestica	Apple	Mal d 4.0102	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAD46561.1	28881457	7
Malus x domestica	Apple	Mal d 4.0202	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAD46560.1	28881455	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAX19854.1	60418854	7
Malus x domestica	Apple		Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAX19856.1	60418858	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAX19858.1	60418862	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAX19860.1	60418866	7
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAK93713.1	164510842	9
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAK93753.1	164510858	9
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAK93757.1	164510860	9
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	77	CAT99618.1	218059730	10
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	115	CAT99619.1	218059733	10
Malus x domestica	Apple	Unassigned	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	CAT99617.1	218059728	10
Malus x domestica	Apple	Mal d 4.0301	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAD29412.1	4761584	11
Malus x domestica	Apple	Mal d 4.0201	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAD29413.1	4761586	11
Malus x domestica	Apple	Mal d 4.0101	Food Plant	Malus Mal d 4	IgE plus basophil+ or SPT+	131	AAD29414.1	4761588	11
Manihot esculenta	Cassava	Unassigned	Food Plant	Manihot Man e 5.0101	IgE but no biological test	177	AAM55492.1	21585695	7
Manihot esculenta	Cassava	Man e 5.0101	Food Plant	Manihot Man e 5.0101	IgE but no biological test	177	AEE98392.1	332713934	14
Manilkara zapota	Sapodilla plum	Unassigned	Food Plant	Manilkara Thaumatin like protein 1	IgE but no biological test	12	B3EWS0.1	442580988	14
Manilkara zapota	Sapodilla plum	Unassigned	Food Plant	Manilkara Thaumatin like protein 1	IgE but no biological test	9	B3EWE5.3	442570282	14
Manilkara zapota	Sapodilla plum	Unassigned	Food Plant	Manilkara Thaumatin like protein 1	IgE but no biological test	207	G5DC91.2	663434113	15
Marsupenaeus japonicus	Kuruma Shrimp	Unassigned	Food Animal	Marsupenaeus tropomyosin	IgE but no biological test	284	BAF47263.1	125995159	8
Melicertus latisulcatus	King Prawn	Mel l 1.0101	Food Animal	Melicertus tropomyosin	IgE but no biological test	284	AGF86397.1	451935062	14
Mercurialis annua	Annual mercury grass	Mer a 1.0101	Aero Plant	Mercurialis Mer a 1	IgE but no biological test	133	CAA73720.1	2959898	7
Merluccius australis australis	southern hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86745.1	308191452	12
Merluccius australis polylepis	Southern hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86749.1	308191453	12
Merluccius australis polylepis	Southern hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86750.1	308191464	12

Species	Common	IUISÂ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Merluccius bilinearis	Silver hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86752.1	308191465	12
Merluccius bilinearis	Silver hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86753.1	308191478	12
Merluccius bilinearis	Silver hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	94	P86754.1	308191488	12
Merluccius capensis	Shallow-water cape hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86757.1	308191466	12
Merluccius gayi	Southern Pacific hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86761.1	308191455	12
Merluccius gayi	Southern Pacific hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	91	P86760.1	308191489	12
Merluccius merluccius	European hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P02620.1	131116	12
Merluccius merluccius	European hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86765.1	308191469	12
Merluccius paradoxus	Deep-water cape hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86768.1	308191457	12
Merluccius paradoxus	Deep-water cape hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86769.1	308191470	12
Merluccius paradoxus	Deep-water cape hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	95	P86770.1	308191483	12
Merluccius polli	Benguela hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86771.1	308191471	12
Merluccius polli	Benguela hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	69	P86772.1	308191484	12
Merluccius productus	North Pacific hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86774.1	308191459	12
Merluccius productus	North Pacific hake	Unassigned	Food Animal	Merluccius sp. Macruronus sp. Parvalbumin Hake	IgE but no biological test	108	P86775.1	308191472	12
Mesocricetus auratus	Golden hamster	Mes a 1.0101	Aero Animal	Mesocricetus auratus Mes a 1	IgE but no biological test	172	AAD55792.2	13124689	16
Mesocricetus auratus	Golden hamster	Unassigned	Aero Animal	Mesocricetus auratus Mes a 1	IgE but no biological test	172	Q99MG7.1	81916647	17
Metapenaeus ensis	Greasyback shrimp	Met e 1.0101	Food Animal	Metapenaeus Met e 1 Tropomyosin	IgE but no biological test	274	AAA60330.1	607633	7
Mimachlamys nobilis	Noble scallop	Unassigned	Food Animal	Mimachlamys Tropomyosin	IgE plus basophil+ or SPT+	284	AAG08989.1	9954253	7
Morus alba var. atropurpurea	White Mulberry	Unassigned	Food Plant	Morus winter accumulating protein	IgE but no biological test	157	AHW81906.1	610664572	15
Morus bombycis	Mulberry	Unassigned	Food Plant	Morus winter accumulating protein	IgE but no biological test	157	AAV33670.1	54311115	12
Morus bombycis	Mulberry	Unassigned	Food Plant	Morus winter accumulating protein	IgE but no biological test	157	AAV33672.1	54311119	12
Morus nigra	Black mulberry	Mor n 3.0101	Food Plant	Morus Mor n 3 mulberry LTP	IgE plus basophil+ or SPT+	91	P85894.1	288561913	11
Mus musculus	Mouse		Aero Animal	Mus Mus m 1	IgE plus basophil+ or SPT+	180	P02762.2	20178291	7
Mus musculus	Mouse	Mus m 1.0101	Aero Animal	Mus Mus m 1	IgE plus basophil+ or SPT+	180	CAA26953.1	295910	15
Mus musculus	Mouse	Unassigned	Aero Animal	Mus Mus m 1	IgE plus basophil+ or SPT+	181	A2BIM8.1	980952242	17
Mus musculus domesticus	Mouse	Mus m 1.0102	Aero Animal	Mus Mus m 1	IgE plus basophil+ or SPT+	180	AAA39768.1	199881	15
Musa acuminata	Banana	Mus a 1.0101	Food Plant	Musa acuminata Mus a 1 profilin banana	IgE but no biological test	131	AAK54834.1	14161635	7
Musa acuminata	Banana	Unassigned	Food Plant	Musa acuminata Mus a 5 Endo-Beta-1,3-Glucanase	IgE plus basophil+ or SPT+	312	2CYG_A	83754908	7
Musa acuminata	Banana	Mus a 4.0101	Food Plant	Musa Mus a 4	IgE plus basophil+ or SPT+	200	1Z3Q_A	88191901	7
Musa acuminata	Banana	Mus a 2.0101	Food Plant	Musa Mus s 2	IgE but no biological test	318	CAC81811.1	17932710	15
Musa acuminata AAA Group	Banana	Unassigned	Food Plant	Musa acuminata Mus a 5 Endo-Beta-1,3-Glucanase	IgE plus basophil+ or SPT+	340	AAB82772.2	6073860	14
Mustelus griseus		Unassigned	Food Animal	Mustelus griseus parvalbumin	IgE but no biological test	110	5ZGM_A	1446210823	20
Mustelus griseus		Unassigned	Food Animal	Mustelus griseus parvalbumin	IgE but no biological test	107	5ZH6_A	1446210825	20
Myrmecia banksi	Giant Bull Ant	Myr p 3.0101	Venom or Salivary	Myrmecia Myr p 3 listed as Myrmecia banksi	IgE but no biological test	84	BAD36780.1	51241753	15
Myrmecia pilosula	Jumper ant	Unassigned	Venom or Salivary	Myrmecia Myr p 1	IgE but no biological test	112	AAB50883.1	1911819	7
Myrmecia pilosula	Jumper ant	Myr p 1.0101	Venom or Salivary	Myrmecia Myr p 1	IgE but no biological test	112	CAA49760.1	312284	15
Myrmecia pilosula	Jumper ant		Venom or Salivary	Myrmecia Myr p 2	IgE but no biological test	75	2206305A	1587177	7
Myrmecia pilosula	Jumper ant	Myr p 2.0101	Venom or Salivary	Myrmecia Myr p 2	IgE but no biological test	75	AAB36316.1	1438761	10
Neptunea polycostata	Wrinkled Neptune	Unassigned	Food Animal	Neptunea tropomyosin	IgE but no biological test	284	BAH10150.1	219806590	10
Nicotiana tabacum	Tobacco	Unassigned	Aero Plant	Nicotiana villin	IgE but no biological test	520	CAE17317.1	57283139	7
Nicotiana tabacum	Tobacco	Unassigned	Aero Plant	Nicotiana villin	IgE but no biological test	559	CAE17316.1	57283137	7
Octopus vulgaris	Octopus	Unassigned	Food Animal	Octopus tropomyosin	IgE but no biological test	284	BAE54433.1	83715936	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Olea europaea	Olive tree	Unassigned	Aero Plant	Ole e 14 Olea europea polygalacturonase	IgE but no biological test	379	AHL24656.1	589912881	15
Olea europaea	Olive tree	Ole e 13.0101	Aero Plant	Olea e 13 in WHO IUIS	IgE but no biological test	226	E3SU11.1	449061783	14
Olea europaea	Olive tree	Ole e 1.0102	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	145	P19963.2	14424429	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	137	I53806	1362128	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	136	E53806	1362129	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	136	F53806	1362130	7
Olea europaea	Olive tree	Ole e 1.0104	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	145	C53806	1362131	7
Olea europaea	Olive tree		Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	137	A38968	1362132	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	136	G53806	1362133	7
Olea europaea	Olive tree	Ole e 1.0103	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	145	B53806	1362136	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	136	H53806	1362137	7
Olea europaea	Olive tree	Ole e 1.0105	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	146	CAA73038.1	2465127	7
Olea europaea	Olive tree	Ole e 1.0106	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	146	CAA73037.1	2465129	7
Olea europaea	Olive tree	Ole e 1.0107	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	146	CAA73036.1	2465131	7
Olea europaea	Olive tree	Ole e 1.0101	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	130	AAB32652.2	13195753	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	134	AAO22133.1	37724587	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	135	AAO22132.1	37724593	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAN18044.1	37548753	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	131	AAQ10281.1	33329758	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAQ10280.1	33329756	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAQ10279.1	33329754	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	131	AAQ10278.1	33329752	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	131	AAQ10277.1	33329750	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	129	AAQ10276.1	33329748	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	131	AAQ10274.1	33329744	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAQ10271.1	33329738	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAQ10268.1	33329732	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	132	AAQ08190.1	33325115	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	140	ABP58632.1	145313982	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	140	ABP58633.1	145313984	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	140	ABP58635.1	145313988	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	140	ABP58636.1	145313990	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 1	IgE plus basophil+ or SPT+	140	ABP58637.1	145313992	9
Olea europaea	Olive tree	Ole e 10.0101	Aero Plant	Olea Ole e 10	IgE plus basophil+ or SPT+	123	AAL92578.1	29465664	7
Olea europaea	Olive tree		Aero Plant	Olea Ole e 11.0101 and 0102	IgE but no biological test	364	AAY88919.1	68270856	11
Olea europaea	Olive tree	Ole e 11.0101	Aero Plant	Olea Ole e 11.0101 and 0102	IgE but no biological test	364	ACZ57582.1	269996495	11
Olea europaea	Olive tree	Ole e 12.0101	Aero Plant	olea Ole e 12 in WHO IUIS	IgE but no biological test	308	E1U332.1	449061782	14
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 15 cyclophilin	IgE but no biological test	172	AVV30163.1	1373739558	20
Olea europaea	Olive tree		Aero Plant	Olea Ole e 2	IgE but no biological test	134	O24170.1	3914427	7
Olea europaea	Olive tree		Aero Plant	Olea Ole e 2	IgE but no biological test	134	O24171.1	3914428	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 2	IgE but no biological test	131	A4GFC0.1	576017874	15
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 2	IgE but no biological test	131	A4GFC3.1	576017774	15
Olea europaea	Olive tree	Ole e 2.0101	Aero Plant	Olea Ole e 2	IgE but no biological test	134	CAA73035.1	2465133	15
Olea europaea	Olive tree	Ole e 3.0101	Aero Plant	Olea Ole e 3	IgE plus basophil+ or SPT+	84	AAD05375.1	3337403	7
Olea europaea	Olive tree		Aero Plant	Olea Ole e 3	IgE plus basophil+ or SPT+	52	AAO33897.1	37725377	7
Olea europaea	Olive tree	Ole e 5.0101	Aero Plant	Olea Ole e 5	IgE but no biological test	30	P80740.2	122064581	8
Olea europaea	Olive tree		Aero Plant	Olea Ole e 5	IgE but no biological test	152	CAD21706.2	38840779	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABP58627.1	145313972	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26131.1	160347106	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	144	ABX26132.1	160347108	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26134.1	160347112	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26138.1	160347120	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26139.1	160347122	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26140.1	160347124	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26141.1	160347126	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26143.1	160347130	9

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26145.1	160347134	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX26147.1	160347138	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54842.1	160962543	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54844.1	160962547	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54849.1	160962557	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54855.1	160962569	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54859.1	160962577	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54862.1	160962583	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	144	ABX54864.1	160962587	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54866.1	160962591	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54869.1	160962597	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54876.1	160962611	9
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 5	IgE but no biological test	152	ABX54877.1	160962613	9
Olea europaea	Olive tree	Ole e 6.0101	Aero Plant	Olea Ole e 6	IgE but no biological test	50	AAB66909.1	2276458	11
Olea europaea	Olive tree	Ole e 7.0101	Aero Plant	Olea Ole e 7	IgE but no biological test	21	P81430.2	22002032	7
Olea europaea	Olive tree		Aero Plant	Olea Ole e 8	IgE but no biological test	171	AAF31152.1	6901654	7
Olea europaea	Olive tree	Ole e 8.0101	Aero Plant	Olea Ole e 8	IgE but no biological test	171	AAF31151.1	6901652	11
Olea europaea	Olive tree	Ole e 9.0101	Aero Plant	Olea Ole e 9	IgE plus basophil+ or SPT+	460	AAK58515.1	14279169	7
Olea europaea	Olive tree	Unassigned	Aero Plant	Olea Ole e 9	IgE plus basophil+ or SPT+	101	2JON_A	166235350	9
Ommastrephes bartramii	red squid	Unassigned	Food Animal	Ommastrephes tropomyosin	IgE but no biological test	284	BAE54432.1	83715934	7
Onchocerca volvulus	Parasitic nematode	Unassigned	Worm (parasite)	Onchocerca tropomyosin	IgE plus basophil+ or SPT+	284	Q25632.1	42559588	12
Oncorhynchus keta	chum salmon	Onc k 5.0101	Food Animal	Oncorhynchus Onc k 5	IgE but no biological test	193	BAJ07603.1	296040357	15
Oncorhynchus mykiss	rainbow trout	Onc m 1.0101	Food Animal	Oncorhynchus Rainbow trout parv Onc m 1	IgE but no biological test	108	P86431.1	288559139	11
Oncorhynchus mykiss	rainbow trout	Onc m 1.0201	Food Animal	Oncorhynchus Rainbow trout parv Onc m 1	IgE but no biological test	107	P86432.1	288559140	11
Oncorhynchus mykiss	rainbow trout	Unassigned	Food Animal	Oncorhynchus Rainbow trout parv Onc m 1	IgE but no biological test	97	AOC96842.1	1064270801	19
Oratosquilla oratoria	mantis shrimp	Unassigned	Food Animal	Oratosquilla tropomyosin	IgE plus basophil+ or SPT+	284	BAF95206.1	162286975	9
Oreochromis mossambicus	Mozambique tilapia	Ore m 4.0101	Food Animal	Oreochromis Ore m 4 tropomyosin	IgE but no biological test	284	AFV53352.1	410060781	14
Oryctolagus cuniculus	European rabbit	Ory c 3.A.0101	Aero Animal	Oryctolagus Ory c 3	IgE plus basophil+ or SPT+	93	AAG42806.1	11993600	15
Oryctolagus cuniculus	European rabbit	Ory c 3.B.0101	Aero Animal	Oryctolagus Ory c 3	IgE plus basophil+ or SPT+	90	AAG42802.1	11993592	15
Oryctolagus cuniculus	European rabbit	Ory c 4.0101	Aero Animal	Oryctolagus Ory c 4	IgE but no biological test	172	CCC15303.1	557943216	15
Oryza sativa	Rice	Unassigned	Food Plant	Oryza Glyoxalase I	IgE but no biological test	291	Q948T6.2	84029333	7
Oryza sativa	Rice	Ory s 1.0101	Aero Plant	Oryza Ory s 1	IgE but no biological test	263	AAA86533.1	1173557	8
Oryza sativa	Rice	Unassigned	Aero Plant	Oryza Ory s 1	IgE but no biological test	267	AAF72991.1	8118439	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Glyoxalase I	IgE but no biological test	291	BAB71741.1	16580747	7
Oryza sativa (japonica cultivar-group)	Rice		Aero Plant	Oryza Ory s 1	IgE but no biological test	267	Q40638.2	109913547	8
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Aero Plant	Oryza putative polcalcin Phl p 7	IgE but no biological test	82	BAD13150.1	45736119	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	157	BAC20657.1	23618954	8
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	165	BAA01998.1	218193	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	157	BAA01996.1	218197	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	111	BAA07772.1	1304216	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	109	BAA07773.1	1304217	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	113	BAA07774.1	1304218	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	166	BAA07710.1	1398913	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	160	BAA07711.1	1398915	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	157	BAA07712.1	1398916	7

Species	Common	IUISA Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	160	BAA07713.1	1398918	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	157	AAB99797.1	2827316	7
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	166	Q01882.2	114152865	8
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	163	Q01883.2	114152864	8
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	160	BAC19997.1	23495787	8
Oryza sativa (japonica cultivar-group)	Rice	Unassigned	Food Plant	Oryza Trypsin alpha-amylase inhibitor	IgE but no biological test	160	BAC20650.1	23616947	7
Ostrya carpinifolia	European hop hornbeam	Ost c 1.0101	Aero Plant	Ostrya Ost c 1pollen allergen	IgE plus basophil+ or SPT+	160	ADK39021.1	300872535	12
Pachycondyla chinensis	Asian needle ant	Pac c 3.0101	Venom or Salivary	Pachycondyla Pac c 3 allergen	IgE but no biological test	199	ACA96507.1	169822894	10
Pandalus borealis	caribean shrimp	Pan b 1.0101	Food Animal	Pandalus Pan b 1	IgE but no biological test	284	CBY17558.1	312831088	12
Panulirus stimpsoni	Lobster	Pan s 1.0101	Food Animal	Panulirus Pan s 1	IgE plus basophil+ or SPT+	274	AAC38996.1	3080761	11
Paralithodes camtschaticus	Kamchatka crab	Unassigned	Food Animal	Paralithodes tropomyosin	IgE but no biological test	284	BAF47265.1	125995163	8
Paralithodes camtschaticus	Kamchatka crab	Unassigned	Food Animal	Paralithodes tropomyosin	IgE but no biological test	284	BAF47266.1	125995165	8
Parietaria judaica	Weed		Aero Plant	Parietaria Par j 1	IgE plus basophil+ or SPT+	143	2008179A	741844	7
Parietaria judaica	Weed	Par j 1.0102	Aero Plant	Parietaria Par j 1	IgE plus basophil+ or SPT+	176	CAA65123.1	1532058	7
Parietaria judaica	Weed	Par j 1.0101	Aero Plant	Parietaria Par j 1	IgE plus basophil+ or SPT+	133	CAA54587.1	992512	15
Parietaria judaica	Weed	Par j 1.0103	Aero Plant	Parietaria Par j 1	IgE plus basophil+ or SPT+	139	CAI94601.1	95007033	15
Parietaria judaica	Weed		Aero Plant	Parietaria Par j 1	IgE plus basophil+ or SPT+	138	CAA59370.1	706811	15
Parietaria judaica	Weed	Par j 2.0102	Aero Plant	Parietaria Par j 2	IgE plus basophil+ or SPT+	133	CAA65122.1	1532056	7
Parietaria judaica	Weed	Par j 2.0101	Aero Plant	Parietaria Par j 2	IgE plus basophil+ or SPT+	133	P55958.1	2497750	7
Parietaria judaica	Weed	Par j 3.0102	Aero Plant	Parietaria Par j 3 profilin	IgE plus basophil+ or SPT+	131	Q9T0M8.1	14423869	7
Parietaria judaica	Weed	Par j 3.0101	Aero Plant	Parietaria Par j 3 profilin	IgE plus basophil+ or SPT+	132	Q9XG85.1	14423876	7
Parietaria judaica	Weed	Par j 3.0201	Aero Plant	Parietaria Par j 3 profilin	IgE plus basophil+ or SPT+	131	CCP19647.1	444175753	14
Parietaria judaica	Weed	Par j 4.0101	Aero Plant	Parietaria Par j 4	IgE plus basophil+ or SPT+	84	CAP05019.1	201071363	15
Parietaria officinalis	Weed	Par o 1.0101	Aero Plant	Parietaria Par o 1	IgE but no biological test	12	Q7M1E8	75139847	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	17	AAB36008.1	1311509	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	15	AAB36009.1	1311510	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	15	AAB36010.1	1311511	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	15	AAB36011.1	1311512	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	30	AAB36012.1	1311513	7
Parietaria officinalis	Weed		Aero Plant	Parietaria Par o 1	IgE but no biological test	24	AAB46820.1	1836011	7
Parietaria officinalis	Weed	Unassigned	Aero Plant	Parietaria Par o 1	IgE but no biological test	25	AAB46819.1	1836010	7
Parthenium hysterophorus		Par h 1.0101	Aero Plant	Parthenium hysterophorus Par h 1	IgE but no biological test	156	AKF12278.1	817033923	17
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	169	CBM42667.1	338930686	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	169	CBM42666.1	338930684	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	169	CBM42665.1	338930682	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	169	CBM42664.1	338930680	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	393	CBM42663.1	338930678	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	393	CBM42662.1	338930676	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	391	CBM42661.1	338930674	12
Paspalum notatum	Bahia grass	Unassigned	Aero Plant	Paspalum group 13 pollen allergen	IgE plus basophil+ or SPT+	395	CBM42660.1	338930672	12
Paspalum notatum	Bahia grass	Pas n 1.0101	Aero Plant	Paspalum Pas n 1 beta expansin	IgE plus basophil+ or SPT+	265	ACA23876.1	168419914	10
Penaeus monodon	Black tiger shrimp	Pen m 1.0101	Food Animal	Penaeus Pen m 1 tropomyosin	IgE but no biological test	284	AAX37286.1	60892782	15
Penaeus monodon	Black tiger shrimp	Pen m 2.0101	Food Animal	Penaeus Pen m 2	IgE plus basophil+ or SPT+	356	AAO15713.1	27463265	7
Penaeus monodon	Black tiger shrimp	Unassigned	Food Animal	Penaeus Pen m 2	IgE plus basophil+ or SPT+	356	C7E3T4.1	308154236	12
Penaeus monodon	Black tiger shrimp	Pen m 3.0101	Food Animal	Penaeus Pen m 3 myosin light chain	IgE but no biological test	177	ADV17342.1	317383196	12
Penaeus monodon	Black tiger shrimp	Pen m 4.0101	Food Animal	Penaeus Pen m 4 sarcoplasmic calcium binding	IgE but no biological test	193	ADV17343.1	317383198	12
Penicillium brevicompactum	Fungus	Pen b 26.0101	Aero Fungi	Penicillium Pen b 26	IgE but no biological test	107	AAX11194.1	59894749	7
Penicillium chrysogenum	Fungus	Pen ch 18.0101	Aero Fungi	Penicillium Pen 18	IgE but no biological test	494	AAF71379.1	7963902	7
Penicillium chrysogenum	Fungus		Aero Fungi	Penicillium Pen 18	IgE but no biological test	494	AAG44693.2	14215732	7

Species	Common	IUISÃ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Penicillium chrysogenum	Fungus	Pen ch 13.0101	Aero Fungi	Penicillium Pen ch 13	IgE plus basophil+ or SPT+	397	AAF23726.1	6684758	7
Penicillium chrysogenum	Fungus		Aero Fungi	Penicillium Pen ch 13	IgE plus basophil+ or SPT+	398	AAM33821.1	21059093	7
Penicillium chrysogenum	Fungus	Pen ch 20.0101	Aero Fungi	Penicillium Pen ch 20	IgE but no biological test	117	AAB34785.1	999009	7
Penicillium chrysogenum	Fungus	Pen ch 35.0101	Aero Fungi	Penicillium Pen ch 35	IgE but no biological test	324	ADK27483.1	300679427	15
Penicillium citrinum	Fungus	Unassigned	Aero Fungi	Penicillium Pen 18	IgE but no biological test	457	AAD25995.1	4588118	7
Penicillium citrinum	Fungus	Unassigned	Aero Fungi	Penicillium Pen 18	IgE but no biological test	358	AAG44480.1	12005501	7
Penicillium citrinum	Fungus	Pen c 19.0101	Aero Fungi	Penicillium Pen c 19	IgE but no biological test	503	Q92260.1	14423733	7
Penicillium citrinum	Fungus	Pen c 22.0101	Aero Fungi	Penicillium Pen c 22	IgE but no biological test	438	AAK51201.1	13991101	7
Penicillium citrinum	Fungus	Pen c 24.0101	Aero Fungi	Penicillium Pen c 24	IgE but no biological test	228	AAR17475.1	38326693	7
Penicillium citrinum	Fungus	Pen c 3.0101	Aero Fungi	Penicillium Pen c 3	IgE but no biological test	167	AAD42074.1	5326864	7
Penicillium citrinum	Fungus	Pen c 30.0101	Aero Fungi	Penicillium Pen c 30	IgE but no biological test	733	ABB89950.1	82754305	7
Penicillium citrinum	Fungus	Pen c 32.0101	Aero Fungi	Penicillium Pen c 32	IgE but no biological test	290	ABM60783.1	121584258	8
Penicillium citrinum	Fungus	Pen c 3.0101	Aero Fungi	Penicillium Pen ch 13	IgE plus basophil+ or SPT+	397	AAD25926.1	4587983	7
Penicillium crustosum	Fungus	Pen cr 26.0101	Aero Fungi	Penicillium crustosum Pen cr 26 60s P1	IgE but no biological test	107	AEX34122.1	371537645	13
Penicillium oxalicum	Fungus	Pen o 18.0101	Aero Fungi	Penicillium Pen 18	IgE but no biological test	503	AAG44478.1	12005497	7
Periplaneta americana	American cockroach	Per a 5.0101	Aero Insect	Per a 5 Periplaneta GST	IgE plus basophil+ or SPT+	216	AAX33729.1	60678789	7
Periplaneta americana	American cockroach	Per a 5.0102	Aero Insect	Per a 5 Periplaneta GST	IgE plus basophil+ or SPT+	216	AEV23867.1	359326557	15
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Per a 5 Periplaneta GST	IgE plus basophil+ or SPT+	216	AUW37958.1	1337340498	19
Periplaneta americana	American cockroach	Per a 11.0101	Aero Insect	Periplaneta americana Per a 11	IgE plus basophil+ or SPT+	494	AKH04310.1	821092692	16
Periplaneta americana	American cockroach	Per a 12.0101	Aero Insect	Periplaneta americana Per a 12	IgE plus basophil+ or SPT+	407	AKH04311.1	821092694	16
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Not in IUIS Per a 4	IgE but no biological test	183	AAX33728.1	60678787	7
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Not in IUIS Per a 4	IgE but no biological test	163	3EBW_A	215794707	10
Periplaneta americana	American cockroach	Per a 11.0101	Aero Insect	Periplaneta Not in IUIS Per a 4	IgE but no biological test	167	ACJ37391.1	212675312	10
Periplaneta americana	American cockroach	Per a 1.0201	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	446	AAC34736.1	2231297	7
Periplaneta americana	American cockroach	Per a 1.0104	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	274	AAC34737.1	2253610	7
Periplaneta americana	American cockroach	Per a 1.0103	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	395	AAB82404.1	2580504	7
Periplaneta americana	American cockroach	Per a 1.0102	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	228	AAC34312.1	2897849	7
Periplaneta americana	American cockroach	Per a 1.0101	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	231	AAD13533.1	4240399	7
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	124	AAP13554.1	30144660	7
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 1	IgE plus basophil+ or SPT+	395	ADB92492.1	284518361	11
Periplaneta americana	American cockroach	Per a 10.0101	Aero Insect	Periplaneta Per a 10 ser protease	IgE plus basophil+ or SPT+	256	AAX33734.1	60678799	7
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 2	IgE but no biological test	351	AAX33727.1	60678785	7
Periplaneta americana	American cockroach	Per a 2.0101	Aero Insect	Periplaneta Per a 2	IgE but no biological test	351	ADR82198.1	313870534	12
Periplaneta americana	American cockroach	Per a 3.0201	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	631	AAB09632.1	1531589	7
Periplaneta americana	American cockroach	Per a 3.0202	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	470	AAB62731.1	1580794	7
Periplaneta americana	American cockroach	Per a 3.0203	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	393	AAB63595.1	1580797	7
Periplaneta americana	American cockroach	Per a 3.0101	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	685	Q25641.1	2833325	9
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	688	ADB92493.1	284518363	11
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 3	IgE plus basophil+ or SPT+	685	ADD17628.1	289721058	11
Periplaneta americana	American cockroach	Per a 6.0101	Aero Insect	Periplaneta Per a 6	IgE but no biological test	151	AAX33730.1	60678791	8
Periplaneta americana	American cockroach	Per a 7.0102	Aero Insect	Periplaneta Per a 7	IgE plus basophil+ or SPT+	284	AAD19606.1	4378573	7
Periplaneta americana	American cockroach	Per a 7.0101	Aero Insect	Periplaneta Per a 7	IgE plus basophil+ or SPT+	284	CAB38086.1	4468639	7
Periplaneta americana	American cockroach	Per a 6.0101	Aero Insect	Periplaneta Per a 7	IgE plus basophil+ or SPT+	284	ACS14052.1	239740599	11
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 7	IgE plus basophil+ or SPT+	284	P0DSM7.1	1679373733	20
Periplaneta americana	American cockroach	Unassigned	Aero Insect	Periplaneta Per a 9	IgE but no biological test	356	AAT77152.1	50428904	8
Periplaneta americana	American cockroach	Per a 9.0101	Aero Insect	Periplaneta Per a 9	IgE but no biological test	356	ACA00204.1	167782135	9
Periplaneta fuliginosa	Smokybrown cockroach	Unassigned	Aero Insect	Periplaneta Per a 7	IgE plus basophil+ or SPT+	284	AAL86701.1	19310971	7
Perna viridis	Asian green mussell	Unassigned	Food Animal	Perna Tropomyosin	IgE but no biological test	284	AAG08988.1	9954251	7
Persea americana	Avocado	Pers a 1.0101	Food Plant	Persea Pers a 1	IgE but no biological test	326	CAB01591.1	3201547	7
Phalaris aquatica	Canary grass	Unassigned	Aero Plant	Phalaris Pha a 1	IgE but no biological test	20	AAB27445.1	409328	7
Phalaris aquatica	Canary grass	Pha a 1.0101	Aero Plant	Phalaris Pha a 1	IgE but no biological test	269	Q41260.1	2498576	7
Phalaris aquatica	Canary grass	Pha a 5.0101	Aero Plant	Phalaris Pha a 5	IgE but no biological test	320	P56164.1	2498577	7
Phalaris aquatica	Canary grass	Unassigned	Aero Plant	Phalaris Pha a 5	IgE but no biological test	305	P56165.1	2498578	7
Phalaris aquatica	Canary grass	Unassigned	Aero Plant	Phalaris Pha a 5	IgE but no biological test	294	P56166.1	2498579	7
Phalaris aquatica	Canary grass	Unassigned	Aero Plant	Phalaris Pha a 5	IgE but no biological test	175	P56167.1	2498580	7
Phaseolus vulgaris	Kidney bean	Pha v 3.0101	Food Plant	Phaseolus Pha v 3	IgE plus basophil+ or SPT+	115	ADC80502.1	289064177	11

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Phaseolus vulgaris	Kidney bean	Pha v 3.0201	Food Plant	Phaseolus Pha v 3	IgE plus basophil+ or SPT+	118	ADC80503.1	289064179	11
Phleum pratense	Common timothy	Phl p 1.0102	Aero Plant	Phleum Phl p 1	IgE plus basophil+ or SPT+	263	CAA55390.1	473360	7
Phleum pratense	Common timothy	Phl p 1.0101	Aero Plant	Phleum Phl p 1	IgE plus basophil+ or SPT+	263	CAA61613.1	3801094	7
Phleum pratense	Common timothy	Phl p 2.0101	Aero Plant	Phleum Phl p 1	IgE plus basophil+ or SPT+	241	1N10_A	28373838	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 1	IgE plus basophil+ or SPT+	240	CAG24374.1	45823012	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 1	IgE plus basophil+ or SPT+	262	2118271A	1582250	10
Phleum pratense	Common timothy	Phl p 11.0101	Aero Plant	Phleum Phl p 11	IgE plus basophil+ or SPT+	143	AAN32987.1	23452313	7
Phleum pratense	Common timothy	Phl p 12.0103	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	CAA70609.1	2415700	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81289.1	110644908	8
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81290.1	110644908	8
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81291.1	110644910	8
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81292.1	110644912	8
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81293.1	110644914	8
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81294.1	110644916	8
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	ABG81295.1	110644918	8
Phleum pratense	Common timothy	Phl p 12.0102	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	CAA70608.1	2415698	10
Phleum pratense	Common timothy	Phl p 12.0101	Aero Plant	Phleum Phl p 12	IgE but no biological test	131	CAA54686.1	453976	15
Phleum pratense	Common timothy	Phl p 13.0101	Aero Plant	Phleum Phl p 13	IgE plus basophil+ or SPT+	394	CAB42886.1	4826572	7
Phleum pratense	Common timothy	Phl p 2.0101	Aero Plant	Phleum Phl p 2	IgE but no biological test	122	CAA53529.1	415896	7
Phleum pratense	Common timothy	Phl p 4.0101	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	508	CAD54670.2	54144332	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAF32567.2	45108973	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAF32566.2	45108967	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAQ55938.1	189014266	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAQ55939.1	189014268	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAQ55940.1	189014270	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	CAQ55941.1	189014272	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	500	3TSH_A	405944794	14
Phleum pratense	Common timothy	Phl p 4.0201	Aero Plant	Phleum Phl p 4	IgE plus basophil+ or SPT+	508	CAD54671.2	54144334	15
Phleum pratense	Common timothy	Phl p 5.0101	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	312	CAA52753.1	398830	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	257	S32101	422005	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	280	S38584	481397	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	24	Q7M1L8	75139900	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	285	2023228A	1092249	7
Phleum pratense	Common timothy	Phl p 5.0202	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	281	CAB05371.1	1684718	7
Phleum pratense	Common timothy	Phl p 5.0104	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	276	CAB05372.1	1684720	7
Phleum pratense	Common timothy	Phl p 5.0102	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	286	CAA50281.1	2398757	7
Phleum pratense	Common timothy	Phl p 5.0105	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	276	AAC16525.1	3135497	7
Phleum pratense	Common timothy	Phl p 5.0106	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	276	AAC16526.1	3135499	7
Phleum pratense	Common timothy	Phl p 5.0107	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	276	AAC16527.1	3135501	7
Phleum pratense	Common timothy	Phl p 5.0108	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	276	AAC16528.1	3135503	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	312	AAC25994.1	3309039	7
Phleum pratense	Common timothy	Phl p 5.0203	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	295	AAC25995.1	3309041	7
Phleum pratense	Common timothy	Phl p 5.0206	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	290	AAC25997.1	3309045	7
Phleum pratense	Common timothy	Phl p 5.0207	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	AAC25998.1	3309047	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	275	AAK25823.1	13430402	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38384.1	21725606	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38385.1	21725608	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38386.1	21725610	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38387.1	21725612	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38388.1	21725614	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38389.1	21725616	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38390.1	21725618	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38391.1	21725620	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38392.1	21725622	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38393.1	21725624	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38394.1	21725626	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38395.1	21725628	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38396.1	21725630	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	287	CAD38397.1	21725632	7
Phleum pratense	Common timothy		Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	102	1L3P_A	28948464	7
Phleum pratense	Common timothy	Phl p 5.0109	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	284	CAD87529.1	29500897	7
Phleum pratense	Common timothy	Phl p 5.0201	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	284	CAA81609.1	2398759	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 5	IgE plus basophil+ or SPT+	309	CCD28287.1	345108717	13
Phleum pratense	Common timothy	Phl p 6.0102	Aero Plant	Phleum Phl p 6	IgE plus basophil+ or SPT+	138	CAA76556.1	3004465	7
Phleum pratense	Common timothy	Phl p 6.0101	Aero Plant	Phleum Phl p 6	IgE plus basophil+ or SPT+	138	CAA76557.1	3004467	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 6	IgE plus basophil+ or SPT+	106	CAA76558.1	3004469	7
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum Phl p 6	IgE plus basophil+ or SPT+	111	1NLX_N	28374072	7
Phleum pratense	Common timothy	Phl p 7.0101	Aero Plant	Phleum Polcalin (Phl p 7)	IgE plus basophil+ or SPT+	78	CAA76887.1	3367732	10
Phleum pratense	Common timothy	Unassigned	Aero Plant	Phleum pollen allergen group 3	IgE plus basophil+ or SPT+	100	3FT1_A	283806887	11
Phodopus sungorus	Siberian hamster	Phod s 1.0101	Aero Plant	Phodopus sungorus lipocalin	IgE plus basophil+ or SPT+	151	AGT28425.1	530376029	16
Phoenix dactylifera	Date palm	Phl p 2.0101	Aero Plant	Phoenix Pho d 2	IgE but no biological test	131	CAD10390.1	21322677	7
Pinus koraiensis		Pin k 2.0101	Food Plant	Pinus koraiensis vicilin Pin k 2.0101	IgE but no biological test	463	AHC94918.1	567773309	15
Pinus pinea	Pine	Unassigned	Food Plant	Pinus pinea albumin AAI	IgE but no biological test	110	CEJ95862.1	749495809	16
Pinus pinea	Pine	Pin p 1.0101	Food Plant	Pinus pinea Pin p 1 2S	IgE plus basophil+ or SPT+	164	CTQ87571.1	916237486	16
Pistacia vera	pistachio	Unassigned	Food Plant	Pistacia 11S globulin	IgE but no biological test	472	ABU42022.1	156001070	9
Pistacia vera	pistachio	Pis v 2.0101	Food Plant	Pistacia 11S globulin	IgE but no biological test	496	ABG73109.1	110349083	10
Pistacia vera	pistachio	Pis v 2.0201	Food Plant	Pistacia 11S globulin	IgE but no biological test	472	ABG73110.1	110349085	10
Pistacia vera	pistachio	Pis v 1.0101	Food Plant	Pistacia Pis v 1 2S albumin	IgE but no biological test	149	ABG73108.1	110349081	10
Pistacia vera	pistachio	Pis v 3.0101	Food Plant	Pistacia Pis v 3 vicilin	IgE but no biological test	519	ABQ36577.1	133711974	10
Pistacia vera	pistachio	Pis v 4.0101	Food Plant	Pistacia Pis v 4	IgE but no biological test	230	ABR29644.1	149786150	9
Pisum sativum	Pea	Pis s 1.0102	Food Plant	Pisum Pis s 1	IgE but no biological test	415	CAF25233.1	42414629	7
Pisum sativum	Pea	Pis s 1.0101	Food Plant	Pisum Pis s 1	IgE but no biological test	415	CAF25232.1	42414627	7
Pisum sativum	Pea	Pis s 2.0101	Food Plant	Pisum Pis s 2	IgE but no biological test	613	CAB82855.1	7339551	15
Pisum sativum	Pea	Pis s 3.0101	Food Plant	Pisum sativum Pis s 3	IgE but no biological test	120	AJG44053.1	752855036	17
Pisum sativum	Pea	Unassigned	Food Plant	Pisum sativum Pis s 3	IgE but no biological test	120	A0A158V755.1	1064302992	18
Pisum sativum	Pea	Unassigned	Food Plant	Pisum sativum Pis s 3	IgE but no biological test	119	A0A158V976.1	1064302985	18
Pisum sativum	Pea	Unassigned	Food Plant	Pisum sativum Pis s 3	IgE but no biological test	95	2N81_A	1026943499	18
Plantago lanceolata	Narrow-leaved plantain	Pla l 1.0101	Aero Plant	Plantago Pla l 1	IgE but no biological test	131	CAC41633.1	14422359	7
Plantago lanceolata	Narrow-leaved plantain	Pla l 1.0102	Aero Plant	Plantago Pla l 1	IgE but no biological test	131	CAC41634.1	14422361	7
Plantago lanceolata	Narrow-leaved plantain	Pla l 1.0103	Aero Plant	Plantago Pla l 1	IgE but no biological test	131	CAC41635.1	14422363	7
Plantago lanceolata	Narrow-leaved plantain	Unassigned	Aero Plant	Plantago Pla l 1	IgE but no biological test	65	CAD80019.1	29163773	7
Platanus orientalis	oriental plane	Pla or 1.0101	Aero Plant	Platanus Pla or 1	IgE but no biological test	170	ABY21305.1	162949336	9
Platanus orientalis	oriental plane	Pla or 2.0101	Aero Plant	Platanus Pla or 2	IgE but no biological test	378	ABY21306.1	162949338	9
Platanus x acerifolia	London plane tree	Pla a 3.0101	Aero Plant	Platanus acerifolia Pla a 3	IgE plus basophil+ or SPT+	93	ALF39466.1	930156468	16
Platanus x acerifolia	London plane tree	Pla a 3.0201	Aero Plant	Platanus acerifolia Pla a 3	IgE plus basophil+ or SPT+	118	ALF00099.1	928541035	17
Platanus x acerifolia	London plane tree	Pla a 1.0101	Aero Plant	Platanus Pla a 1	IgE plus basophil+ or SPT+	179	CAD20556.1	26190140	7
Platanus x acerifolia	London plane tree	Pla a 2.0101	Aero Plant	Platanus Pla a 2	IgE plus basophil+ or SPT+	377	CAE52833.1	49523394	7
Plodia interpunctella	Indian meal moth	Plo i 1.0101	Aero Insect	Plodia Plo i 1 Arginine kinase	IgE plus basophil+ or SPT+	355	CAC85911.1	15886861	7
Plodia interpunctella	Indian meal moth	Plo i 2.0101	Aero Insect	Plodia Plo i 2 thioredoxin	IgE but no biological test	106	CBW45298.1	308193268	12
Poa pratensis	Kentucky bluegrass	Unassigned	Aero Plant	Poa not IUIS Poa p 9 like Poa p 5	IgE but no biological test	373	P22284.1	113560	7
Poa pratensis	Kentucky bluegrass	Unassigned	Aero Plant	Poa not IUIS Poa p 9 like Poa p 5	IgE but no biological test	307	P22286.1	113562	7
Poa pratensis	Kentucky bluegrass	Unassigned	Aero Plant	Poa not IUIS Poa p 9 like Poa p 5	IgE but no biological test	131	A60373	539056	7
Poa pratensis	Kentucky bluegrass	Unassigned	Aero Plant	Poa not IUIS Poa p 9 like Poa p 5	IgE but no biological test	333	P22285.1	113561	7
Poa pratensis	Kentucky bluegrass		Aero Plant	Poa Poa p 1	IgE but no biological test	20	A60372	280414	7
Poa pratensis	Kentucky bluegrass		Aero Plant	Poa Poa p 1	IgE but no biological test	26	F37396	320620	7
Poa pratensis	Kentucky bluegrass	Poa p 1.0101	Aero Plant	Poa Poa p 1	IgE but no biological test	263	CAA10520.1	4090265	7
Poa pratensis	Kentucky bluegrass	Poa p 5.0101	Aero Plant	Poa Poa p 5	IgE but no biological test	303	AAG42254.1	11991227	7
Polistes annularis	Paper wasp	Pol a 5.0101	Venom or Salivary	Polistes Pol 5	IgE plus basophil+ or SPT+	209	AAA29793.1	160780	7
Polistes annularis	Paper wasp	Pol a 1.0101	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	301	AAD52615.1	5815249	11
Polistes annularis	Paper wasp	Pol a 2.0101	Venom or Salivary	Polistes Pol a 2	IgE but no biological test	367	AAD52616.1	5815251	11
Polistes dominula		Unassigned	Venom or Salivary	Polistes Pol d 3	IgE plus basophil+ or SPT+	775	XP_015174445.1	972165860	19
Polistes dominulus	Paper wasp	Pol d 5.0101	Venom or Salivary	Polistes Pol 5	IgE plus basophil+ or SPT+	227	AAT95010.1	51093377	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Polistes dominulus	Paper wasp	Pol d 1.0104	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	316	AAS67044.1	45510893	7
Polistes dominulus	Paper wasp	Pol d 1.0103	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	316	AAS67043.1	45510891	7
Polistes dominulus	Paper wasp	Pol d 1.0102	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	316	AAS67042.1	45510889	7
Polistes dominulus	Paper wasp	Pol d 1.0101	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	337	AAS67041.1	45510887	7
Polistes dominulus	Paper wasp	Pol d 4.0101	Venom or Salivary	Polistes Venom serine protease	IgE but no biological test	277	AAP37412.1	30909091	7
Polistes exclamans	Paper wasp	Pol e 5.0101	Venom or Salivary	Polistes Pol 5	IgE plus basophil+ or SPT+	226	AAT95009.1	51093375	7
Polistes fuscatus	Paper wasp	Pol f 5.0101	Venom or Salivary	Polistes Pol 5	IgE plus basophil+ or SPT+	205	P35780.1	549188	7
Polistes gallicus	Paper wasp	Pol g 5.0101	Venom or Salivary	Polistes Pol 5	IgE plus basophil+ or SPT+	206	P83377.1	25091511	7
Polistes gallicus	Paper wasp	Pol g 1.0101	Venom or Salivary	Polistes Pol a 1 Pol d 1	IgE but no biological test	42	P83542.1	41017429	7
Polybia paulista	wasp	Poly p 1.0101	Venom or Salivary	Polybia Pol p 1.0101 phospholipase	IgE but no biological test	322	A2VBC4.1	165216292	9
Polybia paulista	wasp	Poly p 5.0101	Venom or Salivary	Polybia Pol p 1.0101 phospholipase	IgE but no biological test	302	ADT89774.1	315190620	12
Polybia paulista	wasp	Unassigned	Venom or Salivary	Polybia Poly p 2 hyaluronidase	IgE but no biological test	345	ADL09135.1	302201583	12
Polybia paulista	wasp	Poly p 2.0101	Venom or Salivary	Polybia Poly p 2 hyaluronidase	IgE but no biological test	288	P86687.1	302425085	12
Polybia paulista	wasp	Unassigned	Venom or Salivary	Polybia Poly p 5, Poly s 5 venom allergen	IgE but no biological test	141	ADD63684.1	290792375	11
Polybia paulista	wasp	Poly p 5.0102	Venom or Salivary	Polybia Poly p 5, Poly s 5 venom allergen	IgE but no biological test	207	P86686.1	302595972	12
Polybia scutellaris rioplatensis	Wasp	Unassigned	Venom or Salivary	Polybia Poly p 5, Poly s 5 venom allergen	IgE but no biological test	207	Q7Z156.2	47117356	7
Pontastacus leptodactylus	Danube crayfish	Pon l 4.0101	Food Animal	Pontastacus Pon l 4	IgE but no biological test	192	P05946.1	134309	15
Portunus pelagicus	blue swimmer crab	Por p 1.0101	Food Animal	Portunus Por p 1 tropomyosin	IgE plus basophil+ or SPT+	284	AGE44125.1	448278534	14
Portunus sanguinolentus	Crab	Unassigned	Food Animal	Portunus Por s and t tropomyosin	IgE but no biological test	284	ABL89183.1	119574937	8
Portunus trituberculatus	Crab	Unassigned	Food Animal	Portunus Por s and t tropomyosin	IgE but no biological test	284	ABS12234.1	151505281	9
Procambarus clarkii	red swamp crayfish	Pro c 5.0101	Food Animal	Procambarus Pro c 5 MLC 1	IgE but no biological test	153	AFP95338.1	401606251	19
Procambarus clarkii	red swamp crayfish	Pro c 8.0101	Food Animal	Procambarus Pro c 8	IgE but no biological test	248	AEB54655.1	328900101	19
Procambarus clarkii	red swamp crayfish	Pro c 2.0101	Food Animal	Procambarus red crayfish arginine kinase	IgE but no biological test	357	AFA45339.1	375298901	13
Procambarus clarkii	red swamp crayfish	Pro c 1.0101	Food Animal	Procambarus tropomysin	IgE but no biological test	284	ACN87223.1	225348412	10
Prosopis juliflora	mesquite	Pro j 1.0101	Aero Plant	Prosopis juliflora Pro j 1.0101	IgE but no biological test	150	AKV72167.1	914410008	16
Prosopis juliflora	mesquite	Pro j 2.0101	Aero Plant	Prosopis Pro j 2	IgE but no biological test	133	AHY24177.1	625293889	15
Protortonia cacti	Arthropod	Unassigned	Food Animal	Protortonia	IgE but no biological test	335	BAH59276.1	237769615	11
Prunus armeniaca	Apricot	Unassigned	Food Plant	Prunus armeniaca Pru ar 5	IgE but no biological test	168	AAD32205.1	4887129	7
Prunus armeniaca	Apricot	Pru ar 1.0101	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AAB97141.1	2677826	7
Prunus armeniaca	Apricot	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	119	ADR66945.1	313575730	12
Prunus armeniaca	Apricot	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66946.1	313575732	12
Prunus armeniaca	Apricot	Pru ar 3.0101	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66947.1	313575734	12
Prunus armeniaca	Apricot	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66948.1	313575736	12
Prunus avium	Cherry	Unassigned	Food Plant	Prunus avium Pru av 7.01 Gibberellin	IgE but no biological test	88	XP_021820299.1	1220067778	20
Prunus avium	Cherry	Pru av 1.0101	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AAC02632.1	1513216	7
Prunus avium	Cherry	Pru av 1.0203	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AAS47037.1	44409486	7
Prunus avium	Cherry	Pru av 1.0202	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AAS47036.1	44409474	7
Prunus avium	Cherry	Pru av 1.0201	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AAS47035.1	44409451	7
Prunus avium	Cherry	Unassigned	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	159	1H2O_A	158162378	9
Prunus avium	Cherry	Pru av 3.0101	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	AAF26449.1	6715520	7
Prunus avium	Cherry	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66943.1	313575726	12
Prunus avium	Cherry	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66944.1	313575728	12
Prunus avium	Cherry	Pru av 4.0101	Food Plant	Prunus Pru 4 Profilin peach cherry almond	IgE plus basophil+ or SPT+	131	AAD29411.1	4761582	7
Prunus avium	Cherry	Pru av 2.0101	Food Plant	Prunus Pru av 2	IgE but no biological test	245	AAB38064.1	1144346	7
Prunus domestica	Plum	Pru d 3.0101	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	91	P82534.1	9257015	7
Prunus dulcis	Almond	Unassigned	Food Plant	Pru du 8 Antimicrobial protein	IgE but no biological test	264	QDO73345.1	1706883247	20
Prunus dulcis	Almond	Unassigned	Food Plant	Pru du x Prunus dulcis vicilin	IgE but no biological test	547	QFG58557.1	1757285428	20
Prunus dulcis	Almond	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	241	ACE80974.1	190813941	10
Prunus dulcis	Almond	Pru du 4.0101	Food Plant	Prunus Pru 4 Profilin peach cherry almond	IgE plus basophil+ or SPT+	131	AAL91662.1	24473794	7
Prunus dulcis	Almond	Unassigned	Food Plant	Prunus Pru du 6 Amandin	IgE but no biological test	531	3EHK_A	258588247	11
Prunus dulcis	Almond	Unassigned	Food Plant	Prunus Pru du 6 Amandin	IgE but no biological test	178	AGR27935.1	523916668	15
Prunus dulcis	Almond	Pru du 6.0101	Food Plant	Prunus Pru du 6 Amandin	IgE but no biological test	551	ADN39440.1	307159112	15
Prunus dulcis	Almond	Pru du 6.0201	Food Plant	Prunus Pru du 6 Amandin	IgE but no biological test	504	ADN39441.1	307159114	15
Prunus dulcis	Almond	Unassigned	Food Plant	Prunus Seed allergenic protein 2 (Conglutin gamma)	IgE but no biological test	25	P82952.1	75107131	8

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Prunus dulcis x Prunus persica	Plant hybrid	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	160	ACE80939.1	190613871	10
Prunus dulcis x Prunus persica	Plant hybrid	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	ACE80956.1	190613905	10
Prunus dulcis x Prunus persica	Plant hybrid	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	ACE80958.1	190613909	10
Prunus dulcis x Prunus persica	Plant hybrid	Pru p 2.0201	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	ACE80957.1	190613907	10
Prunus dulcis x Prunus persica	Plant hybrid	Pru p 2.0101	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	ACE80959.1	190613911	10
Prunus dulcis x Prunus persica	Plant hybrid	Pru p 2.0301	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	242	ACE80955.1	190613903	10
Prunus dulcis x Prunus persica	Plant hybrid	Unassigned	Food Plant	Prunus Pru 4 Profilin peach cherry almond	IgE plus basophil+ or SPT+	131	ACE80972.1	190613937	10
Prunus persica	Peach	Unassigned	Food Plant	Pru p 9 peach a PR-1 protein Cys rich	IgE plus basophil+ or SPT+	161	XP_007199020.1	595790543	20
Prunus persica	Peach	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	P83332.1	25091405	12
Prunus persica	Peach	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	242	P83335.1	25091406	12
Prunus persica	Peach	Unassigned	Food Plant	Prunus persica Pru p 2 IUIS	IgE plus basophil+ or SPT+	246	AEV57471.1	359744030	13
Prunus persica	Peach	Pru p 1.0101	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	ABB78006.1	82492265	7
Prunus persica	Peach	Pru p 1.0301	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AJE61291.1	748758672	16
Prunus persica	Peach	Pru p 1.0201	Food Plant	Prunus PRP (Bet v 1 family)	IgE plus basophil+ or SPT+	160	AJE61290.1	748758670	16
Prunus persica	Peach	Pru p 3.0101	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	91	P81402.1	3287877	7
Prunus persica	Peach	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	AAV40850.1	54793477	7
Prunus persica	Peach	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	ADR66939.1	313575718	12
Prunus persica	Peach	Unassigned	Food Plant	Prunus Pru 3	IgE plus basophil+ or SPT+	117	AGW21344.1	544369592	15
Prunus persica	Peach	Pru p 4.0101	Food Plant	Prunus Pru 4 Profilin peach cherry almond	IgE plus basophil+ or SPT+	131	CAD37201.1	27528310	7
Prunus persica	Peach	Pru p 4.0201	Food Plant	Prunus Pru 4 Profilin peach cherry almond	IgE plus basophil+ or SPT+	131	CAD37202.1	27528312	7
Prunus persica	Peach	Pru p 7.0101	Food Plant	Prunus Pru p 7 Pru m 7 Pesmaclein	IgE plus basophil+ or SPT+	63	P86888.1	408407790	14
Pseudocardium sachalinensis	Mollusc	Unassigned	Food Animal	Pseudocardium tropomyosin	IgE but no biological test	284	BAH10154.1	219806598	10
Punica granatum	Pomegranate	Unassigned	Food Plant	Punica chitinase putative Put g 14	IgE but no biological test	299	G1UH28.1	1679362782	20
Punica granatum	Pomegranate	Pun g 7	Food Plant	Punica peptide Pommaclein Pun g 7	IgE but no biological test	20	C0HKC0.1	1179881437	18
Punica granatum	Pomegranate	Pun g 1.0101	Food Plant	Punica Pun g 1	IgE but no biological test	120	AHB19227.1	559797767	15
Punica granatum	Pomegranate	Pun g 1.0201	Food Plant	Punica Pun g 1	IgE but no biological test	120	AHB19226.1	559797765	15
Punica granatum	Pomegranate	Pun g 1.0301	Food Plant	Punica Pun g 1	IgE but no biological test	120	AHB19225.1	559797763	15
Pyrus communis	Pear	Pyr c 3.0101	Food Plant	Pyrus LTP Pyr c 3 IUIS	IgE but no biological test	115	AAF26451.1	6715524	11
Pyrus communis	Pear	Unassigned	Food Plant	Pyrus LTP Pyr c 3 IUIS	IgE but no biological test	94	AET05733.1	355525862	13
Pyrus communis	Pear	Unassigned	Food Plant	Pyrus LTP Pyr c 3 IUIS	IgE but no biological test	94	AET05732.1	355525860	13
Pyrus communis	Pear	Unassigned	Food Plant	Pyrus LTP Pyr c 3 IUIS	IgE but no biological test	94	AET05730.1	355525856	13
Pyrus communis	Pear	Pyr c 1.0101	Food Plant	Pyrus Pyr c 1	IgE plus basophil+ or SPT+	159	O65200.1	14423877	9
Pyrus communis	Pear	Pyr c 4.0101	Food Plant	Pyrus Pyr c 4	IgE plus basophil+ or SPT+	131	AAD29410.1	4761580	7
Pyrus communis	Pear	Pyr c 5.0101	Food Plant	Pyrus Pyr c 5	IgE plus basophil+ or SPT+	308	AAC24001.1	3243234	7
Quercus alba	Oak	Que a 1.0201	Aero Plant	Quercus Que a 1 Que m 1	IgE plus basophil+ or SPT+	159	ABZ81045.1	167472847	10
Quercus alba	Oak	Que a 1.0401	Aero Plant	Quercus Que a 1 Que m 1	IgE plus basophil+ or SPT+	160	ABZ81047.1	167472851	10
Quercus alba	Oak	Que a 1.0301	Aero Plant	Quercus Que a 1 Que m 1	IgE plus basophil+ or SPT+	160	ABZ81046.1	167472849	10
Quercus mongolica		Unassigned	Aero Plant	Quercus Que a 1 Que m 1	IgE plus basophil+ or SPT+	160	AUH28179.1	1316209040	19
Rana esculenta	Frog	Ran e 1.0101	Food Animal	Rana Ran e 1	IgE but no biological test	110	CAC83046.1	20796729	7
Rana esculenta	Frog	Ran e 2.0101	Food Animal	Rana Ran e 2	IgE but no biological test	109	CAC95152.1	20797081	7
Rana sp. CH-2001	Frog	Unassigned	Food Animal	Rana Ran e 1	IgE but no biological test	110	CAC83047.1	20796733	7
Rana sp. CH-2001	Frog	Unassigned	Food Animal	Rana Ran e 2	IgE but no biological test	109	CAC95153.1	20797085	7
Rastrelliger kanagurta		Ras k 1.0101	Food Animal	Rastrelliger Ras k 1 parvalbumin	IgE but no biological test	109	ANW10058.1	1046811129	18
Rattus norvegicus	Rat		Aero Animal	Rattus Rat n 1	IgE but no biological test	161	P02761.1	127533	7
Rattus norvegicus	Rat		Aero Animal	Rattus Rat n 1	IgE but no biological test	161	Q63213	81890324	7
Rattus norvegicus	Rat	Rat n 1.0101	Aero Animal	Rattus Rat n 1	IgE but no biological test	177	AAA41198.1	204261	15
Rhizopus oryzae	Fungus	Unassigned	Aero Fungi	Rhizopus Rhi o 1.0101	IgE plus basophil+ or SPT+	401	AIS82657.1	695094784	16
Rhodotorula mucilaginosa	Fungus	Rho m 1.0101	Aero Fungi	Rhodotorula Rho m 1	IgE but no biological test	439	AAP30720.1	30314940	11
Rhodotorula mucilaginosa	Fungus	Rho m 2.0101	Aero Fungi	Rhodotorula Rho m 2	IgE but no biological test	342	AAT37679.1	54654335	7
Ricinus communis	Castor bean	Ric c 1.0101	Food Plant	Ricinus Ric c 1	IgE plus basophil+ or SPT+	258	CAA38097.1	21068	15
Rubus idaeus	raspberry	Rub i 1.0101	Food Plant	Rubus Rub i 1	IgE but no biological test	137	ABG54495.1	110180525	8

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Rubus idaeus	raspberry	Rub i 3.0101	Food Plant	Rubus Rub i 3	IgE but no biological test	117	ABG54494.1	110180523	8
Saccostrea glomerata		Sac g 1	Food Animal	Saccostrea glomerata Sac g 1	IgE but no biological test	284	AVD53650.1	1343184138	19
Salmo salar	Salmon		Food Animal	Salmo Sal s 1	IgE plus basophil+ or SPT+	108	Q91483.3	18281421	7
Salmo salar	Salmon	Unassigned	Food Animal	Salmo Sal s 1	IgE plus basophil+ or SPT+	109	ACI68103.1	209734468	10
Salmo salar	Salmon	Sal s 1.0101	Food Animal	Salmo Sal s 1	IgE plus basophil+ or SPT+	109	CAA66403.1	1322183	15
Salmo salar	Salmon	Unassigned	Food Animal	Salmo Sal s 2 enolase	IgE plus basophil+ or SPT+	432	CBL79145.1	385145180	13
Salmo salar	Salmon	Sal s 2.0101	Food Animal	Salmo Sal s 2 enolase	IgE plus basophil+ or SPT+	434	ACH70931.1	197632415	15
Salmo salar	Salmon	Sal s 3.0101	Food Animal	Salmo Sal s 3 aldolase	IgE plus basophil+ or SPT+	363	ACH70901.1	197632355	13
Salmo salar	Salmon	Unassigned	Food Animal	Salmo Sal s 3 aldolase	IgE plus basophil+ or SPT+	363	CBL79147.1	385145176	13
Salsola kali	Thistle	Unassigned	Aero Plant	Salsola kali Sal k 6.01	IgE plus basophil+ or SPT+	381	AHL24657.1	589912883	15
Salsola kali	Thistle	Sal k 6.0101	Aero Plant	Salsola kali Sal k 6.01	IgE plus basophil+ or SPT+	401	ARS33724.1	1194995727	18
Salsola kali	Thistle	Sal k 1.0201	Aero Plant	Salsola pectin methylesterase Sal k 1.01 & 1.02	IgE but no biological test	362	AAT99258.1	51242679	8
Salsola kali	Thistle	Sal k 1.0302	Aero Plant	Salsola pectin methylesterase Sal k 1.01 & 1.02	IgE but no biological test	339	AAX11261.1	59895728	8
Salsola kali	Thistle	Sal k 1.0301	Aero Plant	Salsola pectin methylesterase Sal k 1.01 & 1.02	IgE but no biological test	339	AAX11262.1	59895730	8
Salsola kali	Thistle	Unassigned	Aero Plant	Salsola pectin methylesterase Sal k 1.01 & 1.02	IgE but no biological test	339	ACO34813.1	225810597	10
Salsola kali	Thistle	Sal k 1.0101	Aero Plant	Salsola Sal k 1	IgE plus basophil+ or SPT+	42	P83181.1	25090947	10
Salsola kali	Thistle	Sal k 3.0101	Aero Plant	Salsola Sal k 3 pollen allergen	IgE plus basophil+ or SPT+	757	ACO34814.1	225810599	10
Salsola kali	Thistle	Sal k 4.0101	Aero Plant	Salsola Sal k 4 profilin	IgE plus basophil+ or SPT+	133	ACS34771.1	239916566	11
Salsola kali	Thistle	Unassigned	Aero Plant	Salsola Sal k 4 profilin	IgE plus basophil+ or SPT+	133	AHL24658.1	589912885	15
Salsola kali	Thistle	Sal k 4.0201	Aero Plant	Salsola Sal k 4 profilin	IgE plus basophil+ or SPT+	133	ADK22841.1	300490499	15
Salsola kali	Thistle	Sal k 6.0101	Aero Plant	Salsola Sal k 5	IgE but no biological test	151	ADK22842.1	300490501	15
Salvelinus fontinalis	Brook trout	Unassigned	Food Animal	Salvelinus parvalbumin	IgE but no biological test	109	CAX32966.1	288557438	11
Salvelinus fontinalis	Brook trout	Unassigned	Food Animal	Salvelinus parvalbumin	IgE but no biological test	108	CAX32967.1	288557440	11
Sarcoptes scabiei	mite	Unassigned	Venom or Salivary	Sarcoptes scabiei paramyosin	IgE but no biological test	828	SHD75397.1	1109598142	18
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes Apolipoprotein Ssag1.2	IgE but no biological test	330	AAO15613.1	27462848	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes cysteine protease CO8	IgE but no biological test	340	AAS93669.1	46406002	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes cysteine proteases FO4	IgE but no biological test	338	AAS93674.1	46406012	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes cysteine proteases FO4	IgE but no biological test	339	AAS93675.1	46406014	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes cysteine proteases FO4	IgE but no biological test	273	AAS93676.1	46406016	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes Glutathione S-transferase Mu	IgE but no biological test	219	AAO15607.1	27462836	7
Sarcoptes scabiei type hominis	Scabies mite	Unassigned	Venom or Salivary	Sarcoptes Glutathione S-transferase Mu	IgE but no biological test	219	AAX37321.1	60920770	7
Sarcoptes scabiei type suis	Scabies mite	Unassigned	Aero Mite	Sarcoptes Apolipoprotein Ssag1.2	IgE but no biological test	310	AGM48615.1	507480520	15
Sardinops sagax	South American pilchard	Sar sa 1.0101	Food Animal	Sardinops Sar sa 1 parvalbumin	IgE but no biological test	109	CAQ68366.1	193247972	10
Scapharca broughtonii	Clam	Unassigned	Food Animal	Scapharca tropomyosin	IgE but no biological test	284	BAH10151.1	219806582	10
Schedonorus arundinaceus	Tall fescue	Unassigned	Aero Plant	Festuca group 1 allergen	IgE but no biological test	35	Q7M1Y1	75139991	7
Schedonorus arundinaceus	Tall fescue	Unassigned	Venom or Salivary	Festuca group 1 allergen	IgE but no biological test	17	C37396	320610	7
Schedonorus arundinaceus	Tall fescue	Unassigned	Aero Plant	Festuca group 1 allergen	IgE but no biological test	20	D37396	320611	7
Schistosoma japonicum	Schistosoma	Unassigned	Protozoan	Schistosoma profilin	IgE but no biological test	129	AAP06493.1	29841461	7
Schistosoma japonicum	Schistosoma	Unassigned	Protozoan	Schistosoma tegumental antigen	IgE but no biological test	191	AAC67308.1	2739154	7
Schizophyllum commune H4-8	Mushroom	Sch c 1.0101	Aero Fungi	Schizophyllum Sch c 1	IgE but no biological test	576	XP_003030591.1	302681819	15
Scomber japonicus	Chub mackerel	Sco j 1	Food Animal	Scomber Parvalbumin Sco s 1	IgE but no biological test	109	BAC66518.1	29420793	7
Scomber scombrus	Atlantic mackerel	Sco s 1.0101	Food Animal	Scomber Parvalbumin Sco s 1	IgE but no biological test	109	CAX32965.1	288557436	11
Scylla paramamosain	green mud crab	Scy p 2.0101	Food Animal	Scylla arginine kinase Scy p 2	IgE but no biological test	357	AFA45340.1	375298903	13
Scylla paramamosain	green mud crab	Unassigned	Food Animal	Scylla arginine kinase Scy p 2	IgE but no biological test	357	5ZHQ_A	1597623661	20
Scylla paramamosain	green mud crab	Unassigned	Food Animal	Scylla paramamosain filamin C	IgE plus basophil+ or SPT+	847	QFI57017.1	1759300245	20
Scylla paramamosain	green mud crab	Scy p 4.0101	Food Animal	Scylla paramamosain Scy p 4 Sarc Ca Binding Ptn	IgE but no biological test	193	AFJ80778.1	387571563	18

Species	Common	IUISÁ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Scylla paramamosain	green mud crab	Scy p 8.0101	Food Animal	Scylla paramamosain Triosphosphate Isomerase	IgE but no biological test	248	APP94292.1	1122816254	18
Scylla serrata	giant mud crab	Unassigned	Food Animal	Scylla arginine kinase Scy p 2	IgE but no biological test	356	CBEIP1.1	1679377517	20
Scylla serrata	giant mud crab	Unassigned	Food Animal	Scylla sp. (mud crab) tropomyosin	IgE but no biological test	284	ABS12233.1	151505279	9
Sebastes marinus	ocean perch (red fish)	Seb m 1.0101	Food Animal	Sebastes Seb m 1	IgE but no biological test	109	CAQ72968.1	242253959	11
Sebastes marinus	ocean perch (red fish)	Seb m 1.0201	Food Animal	Sebastes Seb m 1	IgE but no biological test	110	CAQ72969.1	242253961	11
Secale cereale	Rye	Sec c 20.0101	Food Plant	Secale Sec c 20	IgE plus basophil+ or SPT+	23	AAB37403.1	1699225	15
Secale cereale	Rye	Sec c 20.0201	Food Plant	Secale Sec c 20	IgE plus basophil+ or SPT+	29	AAB37406.1	1699228	15
Secale cereale	Rye	Sec c 38.0101	Aero Plant	Secale Sec c 38.01	IgE plus basophil+ or SPT+	26		75198875	7
Secale cereale	Rye	Unassigned	Aero Plant	Secale Sec c 4	IgE but no biological test	520	CAH92630.1	55859456	7
Secale cereale	Rye	Unassigned	Aero Plant	Secale Sec c 4	IgE but no biological test	518	CAH92627.1	55859454	7
Secale cereale	Rye	Unassigned	Aero Plant	Secale Sec c 5	IgE but no biological test	16	Q7M263	75140047	7
Secale cereale	Rye	Sec c 5.0101	Food Plant	Secale Sec c 5	IgE but no biological test	292	CBG76811.1	332205751	12
Sepia esculenta	cuttlefish	Unassigned	Food Animal	Sepia tropomyosin	IgE but no biological test	284	BAE54429.1	83715928	7
Sepioteuthis lessoniana	bigfin reef squid	Unassigned	Food Animal	Sepioteuthis tropomyosin	IgE but no biological test	284	BAE54430.1	83715930	7
Sesamum indicum	Sesame	Unassigned	Food Plant	Sesamum seed maturation-like protein	IgE but no biological test	345	ACB55491.1	171853012	16
Sesamum indicum	Sesame	Ses i 1.0101	Food Plant	Sesamum Ses i 1	IgE but no biological test	153	AAK15088.1	13183175	7
Sesamum indicum	Sesame	Unassigned	Food Plant	Sesamum Ses i 1	IgE but no biological test	153	ACI41244.1	209165427	10
Sesamum indicum	Sesame	Ses i 2.0101	Food Plant	Sesamum Ses i 2	IgE but no biological test	148	AAD42943.1	5381323	7
Sesamum indicum	Sesame	Ses i 3.0101	Food Plant	Sesamum Ses i 3	IgE but no biological test	585	AAK15089.1	13183177	7
Sesamum indicum	Sesame	Ses i 4.0101	Food Plant	Sesamum Ses i 4 oleosin	IgE but no biological test	166	AAG23840.1	10834827	13
Sesamum indicum	Sesame	Unassigned	Food Plant	Sesamum Ses i 5 oleosin	IgE but no biological test	145	ACH85188.1	198250343	10
Sesamum indicum	Sesame	Ses i 5.0101	Food Plant	Sesamum Ses i 5 oleosin	IgE but no biological test	145	AAD42942.1	5381321	15
Sesamum indicum	Sesame	Ses i 6.0101	Food Plant	Sesamum Ses i 6	IgE plus basophil+ or SPT+	459	AAD42944.1	5381325	15
Sesamum indicum	Sesame	Ses i 7.0101	Food Plant	Sesamum Ses i 7	IgE but no biological test	497	AAK15087.1	13183173	15
Simulium vittatum	black fly	Unassigned	Venom or Salivary	Simulium vit antigen 5 by similarity	IgE but no biological test	277	ACH56843.1	197260686	10
Simulium vittatum	black fly	Unassigned	Venom or Salivary	Simulium vit antigen 5 by similarity	IgE but no biological test	277	ACH56844.1	197260688	10
Sinapis alba	White mustard		Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	CAA62909.1	1009434	7
Sinapis alba	White mustard		Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	CAA62910.1	1009436	7
Sinapis alba	White mustard		Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	CAA62911.1	1009438	7
Sinapis alba	White mustard		Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	CAA62912.1	1009440	7
Sinapis alba	White mustard		Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	CAA62908.1	1009442	7
Sinapis alba	White mustard	Sin a 1.0101	Food Plant	Sinapis Sin a 1.01	IgE plus basophil+ or SPT+	145	P15322.2	51338758	7
Sinapis alba	White mustard	Sin a 2.0101	Food Plant	Sinapis Sin a 2.01 11S globulin	IgE plus basophil+ or SPT+	510	AAX77383.1	62240390	7
Sinapis alba	White mustard	Unassigned	Food Plant	Sinapis Sin a 2.01 11S globulin	IgE plus basophil+ or SPT+	523	AAX77384.1	62240392	7
Sinapis alba	White mustard	Sin a 3.0101	Food Plant	Sinapis Sin a 3.01 LTP	IgE but no biological test	92	ABU95411.1	156778059	12
Sinapis alba	White mustard	Sin a 4.0101	Food Plant	Sinapis Sin a 4.01 profilin	IgE but no biological test	131	ABU95412.1	156778061	12
Sinonovacula constricta	Chinese razor clam	Unassigned	Food Animal	Sinonovacula tropomyosin [Song paper]	IgE but no biological test	284	ABU53681.1	156145810	15
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 6.0101	Food Plant	Solanum lycopersicum Sola l 6	IgE plus basophil+ or SPT+	96	NP_001306883.1	985801667	17
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 7.0101	Food Plant	Solanum lycopersicum Sola l 7	IgE plus basophil+ or SPT+	115	XP_004229753.1	460367790	16
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 1.0101	Food Plant	Solanum Sola l 1 profilin (Lyc e 1)	IgE plus basophil+ or SPT+	131	CAD10377.1	16555787	7
Solanum lycopersicum (Lycopersicon esculentum)	Tomato		Food Plant	Solanum Sola l 1 profilin (Lyc e 1)	IgE plus basophil+ or SPT+	131	AAL29690.1	17224229	7
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 2.0101	Food Plant	Solanum Sola l 2 Beta-fructofuranosidase (Lyc e 2)	IgE but no biological test	553	AAL75449.1	18542113	7
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 2.0201	Food Plant	Solanum Sola l 2 Beta-fructofuranosidase (Lyc e 2)	IgE but no biological test	636	AAL75450.1	18542115	7
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Unassigned	Food Plant	Solanum Sola l 3 LTP (Lyc e 3)	IgE plus basophil+ or SPT+	114	CAJ19705.1	71360928	7
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 3.0101	Food Plant	Solanum Sola l 3 LTP (Lyc e 3)	IgE plus basophil+ or SPT+	114	AAB42069.1	1816535	15
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 4.0101	Food Plant	Solanum Sola l 4 PR-10 (Lyc e 4)	IgE but no biological test	178	CAA75803.1	2887310	14
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Sola l 4.0201	Food Plant	Solanum Sola l 4 PR-10 (Lyc e 4)	IgE but no biological test	160	AHC08074.1	565380268	15
Solanum lycopersicum (Lycopersicon esculentum)	Tomato	Unassigned	Food Plant	Solanum Sola l 4 PR-10 (Lyc e 4)	IgE but no biological test	160	AHC08073.1	565380238	15

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Solanum melongena	Eggplant	Unassigned	Food Plant	Solanum melalongena Sola m 1	IgE plus basophil+ or SPT+	159	QEQ43417.1	1743129991	20
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum profilin-like	IgE but no biological test	131	ABA81885.1	77416979	7
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum profilin-like	IgE but no biological test	131	ABB16985.1	77999277	7
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum Sola t 1	IgE plus basophil+ or SPT+	386	CAA31575.1	21510	7
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum Sola t 1	IgE plus basophil+ or SPT+	386	CAA27571.1	21512	7
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum Sola t 1	IgE plus basophil+ or SPT+	386	CAA27588.1	21514	7
Solanum tuberosum	Potato	Unassigned	Food Plant	Solanum Sola t 1	IgE plus basophil+ or SPT+	386	AAA33819.1	169500	7
Solanum tuberosum	Potato		Food Plant	Solanum Sola t 1	IgE plus basophil+ or SPT+	386	P15476.2	158517845	9
Solanum tuberosum	Potato	Sola t 2.0101	Food Plant	Solanum Sola t 2	IgE plus basophil+ or SPT+	188	P16348.1	124148	7
Solanum tuberosum	Potato		Food Plant	Solanum Sola t 3	IgE plus basophil+ or SPT+	222	P20347.3	20141344	7
Solanum tuberosum	Potato	Sola t 3.0101	Food Plant	Solanum Sola t 3	IgE plus basophil+ or SPT+	186	AAB63099.1	1575306	15
Solanum tuberosum	Potato	Sola t 4.0101	Food Plant	Solanum Sola t 4	IgE plus basophil+ or SPT+	221	BAA04149.1	994779	15
Solen strictus	Gould's razor shell	Unassigned	Food Animal	Solen tropomyosin	IgE but no biological test	284	BAH10156.1	219806602	10
Solenopsis geminata	Tropical Fire Ant	Sol g 4.0101	Venom or Salivary	Solenopsis Sol g 4 Sol i 4	IgE but no biological test	137	AAF65312.1	7638028	7
Solenopsis geminata	Tropical Fire Ant		Venom or Salivary	Solenopsis Sol g 4 Sol i 4	IgE but no biological test	137	AAF65313.1	7638030	7
Solenopsis invicta	Red fire ant		Venom or Salivary	Solenopsis Sol g 4 Sol i 4	IgE but no biological test	137	AAC97370.1	4038411	7
Solenopsis invicta	Red fire ant	Sol i 4.0101	Venom or Salivary	Solenopsis Sol g 4 Sol i 4	IgE but no biological test	137	AAC97369.1	4038409	11
Solenopsis invicta	Red fire ant	Unassigned	Venom or Salivary	Solenopsis Sol i 1	IgE but no biological test	58	AAB36117.1	1336809	7
Solenopsis invicta	Red fire ant	Unassigned	Venom or Salivary	Solenopsis Sol i 1	IgE but no biological test	25	AAB36119.1	1336811	7
Solenopsis invicta	Red fire ant	Unassigned	Venom or Salivary	Solenopsis Sol i 1	IgE but no biological test	26	AAB36120.1	1336812	7
Solenopsis invicta	Red fire ant	Unassigned	Venom or Salivary	Solenopsis Sol i 1	IgE but no biological test	26	AAB36121.1	1336813	7
Solenopsis invicta	Red fire ant	Sol i 1.0101	Venom or Salivary	Solenopsis Sol i 1	IgE but no biological test	346	AAT95008.1	51093373	7
Solenopsis invicta	Red fire ant	Sol i 2.0101	Venom or Salivary	Solenopsis Sol i and Sol r Venom allergen II	IgE but no biological test	138	P35775.1	549179	7
Solenopsis invicta	Red fire ant	Sol i 3.0101	Venom or Salivary	Solenopsis Venom allergen III	IgE but no biological test	234	AAB65434.1	2293571	11
Solenopsis richteri	Black fire ant	Sol r 2.0101	Venom or Salivary	Solenopsis Sol i and Sol r Venom allergen II	IgE but no biological test	119	P35776.2	6136162	7
Solenopsis richteri	Black fire ant	Sol r 3.0101	Venom or Salivary	Solenopsis Venom allergen III	IgE but no biological test	211	P35779.2	6136163	7
Solenopsis saevissima	Brazilian fire ant	Unassigned	Venom or Salivary	Solenopsis Sol g 4 Sol i 4	IgE but no biological test	137	ADD74392.1	291092710	12
Sorghum halepense	Johnson grass	Sor h 2.0201	Aero Plant	Sorghum halepens group 2 allergen	IgE but no biological test	121	AIL01319.1	674275735	16
Sorghum halepense	Johnson grass	Sor h 2.0101	Aero Plant	Sorghum halepens group 2 allergen	IgE but no biological test	119	AIL01318.1	674275733	16
Sorghum halepense	Johnson grass	Sor h 1.0101	Aero Plant	Sorghum Sor h 1	IgE but no biological test	266	AIL01316.1	674275729	15
Sorghum halepense	Johnson grass	Sor h 1.0201	Aero Plant	Sorghum Sor h 1	IgE but no biological test	266	AIL01317.1	674275731	15
Sorghum halepense	Johnson grass	Sor h 13.0101	Aero Plant	Sorghum Sor h 13	IgE but no biological test	422	AIL01320.1	674275737	15
Sorghum halepense	Johnson grass	Sor h 13.0201	Aero Plant	Sorghum Sor h 13	IgE but no biological test	410	AIL01321.1	674275739	15
Stachybotrys chartarum	Fungus	Sta 3.0101	Aero Fungi	Stachybotrys Sta c 3	IgE but no biological test	144	ACT37324.1	253970748	14
Staphylococcus aureus	Bacteria	Unassigned	Bacteria skin	Staphylococcus enterotoxin SEA	IgE plus basophil+ or SPT+	233	1ESF_B	1633233	9
Staphylococcus aureus	Bacteria	Unassigned	Bacteria skin	Staphylococcus enterotoxin SEB	IgE plus basophil+ or SPT+	254	CAJ43561.1	83308249	9
Staphylococcus aureus	Bacteria	Unassigned	Bacteria skin	Staphylococcus enterotoxin SEC	IgE but no biological test	266	P34071.1	462026	9
Staphylococcus aureus	Bacteria	Unassigned	Bacteria skin	Staphylococcus enterotoxin SED	IgE but no biological test	258	P20723.1	119654	9
Staphylococcus aureus	Bacteria	Unassigned	Bacteria skin	Staphylococcus enterotoxin TSST 1	IgE plus basophil+ or SPT+	234	P06886.1	136457	9
Stemphylium callistephi	Fungus	Unassigned	Aero Fungi	Stemphylium major allergen alt a1-like	IgE but no biological test	137	AAT66567.1	49476467	7
Stemphylium sp. CID1012	Fungus	Unassigned	Aero Fungi	Stemphylium major allergen alt a1-like	IgE but no biological test	137	ABS29033.1	152060760	9
Stemphylium vesicarium	Fungus	Unassigned	Aero Fungi	Stemphylium major allergen alt a1-like	IgE but no biological test	137	AAT66566.1	49476465	7
Strongyloides stercoralis	Parasitic nematode	Unassigned	Worm (parasite)	Strongyloides L3NeAg.01	IgE plus basophil+ or SPT+	229	AAD46493.1	5669875	7
Suidasia medanensis	Mite	Unassigned	Aero Mite	Suidasia putative not official Sui m 2	IgE but no biological test	141	AAS75831.1	45738062	7
Sus scrofa	Pig	Unassigned	Aero Animal	Sus Porcine Pepsin	IgE but no biological test	385	P00791.3	118572685	11
Sus scrofa	Pig	Sus s 1.0101	Aero Animal	Sus s serum albumin	IgE but no biological test	605	AAA30988.1	164318	17
Sus scrofa	Pig	Unassigned	Aero Animal	Sus s serum albumin	IgE but no biological test	607	NP_001005208.1	52353352	17
Syringa vulgaris	Lilac	Syr v 3.0101	Aero Plant	Syringa Syr v 3	IgE but no biological test	81	P58171.1	14423847	7
Syringa vulgaris	Lilac	Syr v 1.0101	Aero Plant	Syringa Syr v I	IgE but no biological test	145	S43242	631911	7
Syringa vulgaris	Lilac	Syr v 1.0102	Aero Plant	Syringa Syr v I	IgE but no biological test	145	S43243	631912	7
Syringa vulgaris	Lilac	Syr v 1.0103	Aero Plant	Syringa Syr v I	IgE but no biological test	145	S43244	631913	7
Tabanus yao	Horse Fly	Tab y 1.0101	Venom or Salivary	Tabanus Tab y 1 Apyrase	IgE plus basophil+ or SPT+	554	ADX78255.1	323473390	12
Tabanus yao	Horse Fly	Tab y 2.0101	Venom or Salivary	Tabanus Tab y 2 Hyaluronidase	IgE but no biological test	349	ADM18346.1	304273371	12
Tabanus yao	Horse Fly	Tab y 5.0101	Venom or Salivary	Tabanus Tab y 5	IgE but no biological test	256	ADM18345.1	304273369	12
Tenebrio molitor	Yellow mealworm	Unassigned	Food Insect	Tenebrio molitor tropomyosin mealworm	IgE plus basophil+ or SPT+	284	QBM01048.1	1591440921	20

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Thaumetopoea pityocampa	Pine moth	Tha p 1.0101	Contact	Thaumetopoea Tha p 1 full length	IgE but no biological test	126	ADK47876.1	301030229	12
Thaumetopoea pityocampa	Pine moth	Tha p 2.0101	Contact	Thaumetopoea Tha p 2	IgE but no biological test	115	P86360.1	408387552	14
Thaumetopoea pityocampa	Pine moth	Unassigned	Contact	Thaumetopoea Tha p 2	IgE but no biological test	104	CEE03319.1	1056731906	18
Thaumetopoea solitaria		Unassigned	Contact	Thaumetopoea Tha p 2	IgE but no biological test	100	CEE03318.1	1056731899	18
Theragra chalcogramma	Alaska pollock	Unassigned	Food Animal	Theragra parvalbumin	IgE plus basophil+ or SPT+	109	AAK63088.1	14531020	7
Theragra chalcogramma	Alaska pollock	Unassigned	Food Animal	Theragra parvalbumin	IgE plus basophil+ or SPT+	109	AAK63088.1	14531018	7
Thunnus albacares	Yellowfin tuna	Unassigned	Food Animal	Thunnus Thu a 2 enolase	IgE plus basophil+ or SPT+	12	P86978.1	576011132	15
Thunnus albacares	Yellowfin tuna	Thu a 2.0101	Food Animal	Thunnus Thu a 2 enolase	IgE plus basophil+ or SPT+	432	I0J1J1.1	576011129	15
Thunnus albacares	Yellowfin tuna	Unassigned	Food Animal	Thunnus Thu a 3 aldolase	IgE plus basophil+ or SPT+	364	CAX82602.1	291195949	12
Thunnus albacares	Yellowfin tuna	Thu a 3.0101	Food Animal	Thunnus Thu a 3 aldolase	IgE plus basophil+ or SPT+	37	P86979.1	576011088	15
Todarodes pacificus	Japanese flying squid	Unassigned	Food Animal	Todarodes Tod p 1	IgE but no biological test	284	BAE54431.1	83715932	7
Trachurus japonicus	Japanese horse mackerel	Unassigned	Food Animal	Trachurus parvalbumin	IgE but no biological test	107	BAE46763.1	77769800	7
Tresus keenae	clam	Unassigned	Food Animal	Tresus tropomyosin	IgE but no biological test	284	BAH10155.1	219806600	10
Triatoma protracta	Western conenose	Tria p 1.0101	Venom or Salivary	Triatoma Tria p 1	IgE but no biological test	169	AAF07903.2	15426413	7
Trichophyton rubrum	Fungus	Tri r 2.0101	Contact	Trichophyton (Arthroderma) Tri r 2	IgE plus basophil+ or SPT+	412	AAD52013.1	5813790	7
Trichophyton rubrum	Fungus	Tri r 4.0101	Contact	Trichophyton tri 4 allergen (Arthroderma)	IgE plus basophil+ or SPT+	726	AAD52012.1	5813788	7
Trichophyton schoenleinii	Fungus	Unassigned	Contact	Trichophyton (Arthroderma) Tri r 2	IgE plus basophil+ or SPT+	405	Q8J077.1	74663809	12
Trichophyton schoenleinii	Fungus	Unassigned	Contact	Trichophyton tri 4 allergen (Arthroderma)	IgE plus basophil+ or SPT+	726	CAD23374.1	23894227	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 14 LTP_amylase inhibitor	IgE plus basophil+ or SPT+	113	P24296.2	417370	11
Triticum aestivum	Wheat	Tri a 40.0101	Aero Plant	Triticum aestivum Tri a 40	IgE but no biological test	143	CAA42453.1	21711	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum aestivum Tri a 40	IgE but no biological test	143	ACG59281.1	195957140	10
Triticum aestivum	Wheat	Tri a 41.0101	Aero Plant	Triticum aestivum Tri a 41	IgE but no biological test	60	AKJ77988.1	827354845	16
Triticum aestivum	Wheat	Tri a 42.0101	Aero Plant	Triticum aestivum Tri a 42	IgE but no biological test	76	AKJ77986.1	827354790	16
Triticum aestivum	Wheat	Tri a 43.0101	Aero Plant	Triticum aestivum Tri a 43	IgE but no biological test	108	AKJ77987.1	827354822	16
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum aestivum Tri a 44	IgE but no biological test	94	CAI64398.1	66840998	7
Triticum aestivum	Wheat	Tri a 44.0101	Aero Plant	Triticum aestivum Tri a 44	IgE but no biological test	107	AKJ77990.1	827354912	16
Triticum aestivum	Wheat	Tri a 45.0101	Aero Plant	Triticum aestivum Tri a 45	IgE but no biological test	89	AKJ77985.1	827354784	16
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	307	CAA35238.1	21673	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	286	CAA25593.1	21755	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	296	CAA26383.1	21757	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	286	CAA26384.1	21761	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	313	CAA26385.1	21765	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	318	AAA34275.1	170710	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	291	AAA34276.1	170712	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	313	AAA34279.1	170718	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	286	AAA34280.1	170720	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	262	AAA34281.1	170722	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	297	AAA34282.1	170724	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	282	AAA34283.1	170726	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	186	AAA34284.1	170728	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	259	BAA12318.1	1304264	7
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Bakers asthma allergen #4	IgE but no biological test	27	P81496.1	3913017	7
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum flour Glutathione Transferase	IgE plus basophil+ or SPT+	222	ACE82289.1	190684057	11
Triticum aestivum	Wheat	Tri a 19.0101	Food Plant	Triticum omega-5 gliadin Tri a 19	IgE plus basophil+ or SPT+	439	BAE20328.1	73912496	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum omega-5 gliadin Tri a 19	IgE plus basophil+ or SPT+	359	CAR82265.1	208605344	10
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum omega-5 gliadin Tri a 19	IgE plus basophil+ or SPT+	272	CAR82266.1	208605346	10
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum omega-5 gliadin Tri a 19	IgE plus basophil+ or SPT+	346	CAR82267.1	208605348	10
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum omega-5 gliadin Tri a 19	IgE plus basophil+ or SPT+	366	BAN29067.1	508732623	15
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum putative leucine-rich repeat protein	IgE but no biological test	137	CAI64397.1	66840996	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum serine carboxypeptidase II	IgE but no biological test	280	CAI64396.1	66840994	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum serine carboxypeptidase II	IgE but no biological test	444	P08819.2	125987805	10
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Thaumatin-like	IgE but no biological test	173	P27357.1	135917	12
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 12	IgE but no biological test	131	ACE82291.1	190684061	11
Triticum aestivum	Wheat	Tri a 12.0103	Food Plant	Triticum Tri a 12	IgE but no biological test	131	CAA61945.2	548948852	14
Triticum aestivum	Wheat	Tri a 12.0101	Food Plant	Triticum Tri a 12	IgE but no biological test	131	CAA61943.2	548948848	15
Triticum aestivum	Wheat	Tri a 12.0102	Food Plant	Triticum Tri a 12	IgE but no biological test	131	CAA61944.2	548948850	15

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Triticum aestivum	Wheat	Tri a 12.0104	Food Plant	Triticum Tri a 12	IgE but no biological test	131	CAQ57979.1	207366248	15
Triticum aestivum	Wheat	Tri a 15.0101	Aero Plant	Triticum Tri a 15	IgE but no biological test	121	CBA13560.1	283465829	11
Triticum aestivum	Wheat	Tri a 17.0101	Food Plant	Triticum Tri a 17	IgE plus basophil+ or SPT+	509	6GER_A	1540347225	19
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	302	AAA34272.1	170702	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	291	AAA34274.1	170708	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	251	AAA34288.1	170736	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	327	AAA34289.1	170738	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	279	BAA11251.1	1063270	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 20	IgE plus basophil+ or SPT+	285	CAI78902.1	62484809	7
Triticum aestivum	Wheat	Tri a 20.0101	Food Plant	Triticum Tri a 20	IgE plus basophil+ or SPT+	279	BAN29066.1	508732621	15
Triticum aestivum	Wheat	Tri a 21.0101	Food Plant	Triticum Tri a 21 alpha, beta-gliadin	IgE but no biological test	281	CAY54134.1	283476402	11
Triticum aestivum	Wheat	Tri a 25.0101	Aero Plant	Triticum Tri a 25	IgE but no biological test	125	CAB96931.1	8980491	15
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	830	CAA43331.1	21743	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	648	CAA31395.1	21751	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	660	CAA26847.1	21779	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	39	CAA24934.1	21793	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	705	CAA43361.1	22090	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	815	AAB02788.1	170743	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	838	CAA27052.1	736319	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	101	CAA24933.1	897811	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 26	IgE plus basophil+ or SPT+	794	BAN29068.1	508732625	15
Triticum aestivum	Wheat	Tri a 26.0101	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	848	CAA31395.4	288860106	15
Triticum aestivum	Wheat	Tri a 26.0201	Food Plant	Triticum Tri a 26	IgE plus basophil+ or SPT+	795	AAZ23584.1	71084277	15
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 27.0101 Thiol reductase	IgE but no biological test	203	BAC76688.1	30793446	7
Triticum aestivum	Wheat	Tri a 28.0101	Food Plant	Triticum Tri a 28	IgE but no biological test	119	CAI84642.1	66841026	7
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Tri a 29	IgE plus basophil+ or SPT+	145	CAA35598.1	21701	7
Triticum aestivum	Wheat	Tri a 29.0101	Aero Plant	Triticum Tri a 29	IgE plus basophil+ or SPT+	120	CAZ76052.1	253783731	11
Triticum aestivum	Wheat	Tri a 29.0201	Aero Plant	Triticum Tri a 29	IgE plus basophil+ or SPT+	120	CBA13559.1	283465827	11
Triticum aestivum	Wheat	Tri a 30.0101	Aero Plant	Triticum Tri a 30	IgE plus basophil+ or SPT+	168	CAA35597.1	21713	7
Triticum aestivum	Wheat	Tri a 31.0101	Aero Plant	Triticum Tri a 31	IgE but no biological test	253	CAC14917.1	11124572	7
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Tri a 32 Peroxiredoxin	IgE plus basophil+ or SPT+	218	ACE62290.1	190684059	11
Triticum aestivum	Wheat	Tri a 32.0101	Aero Plant	Triticum Tri a 32 Peroxiredoxin	IgE plus basophil+ or SPT+	218	Q6W8Q2.1	75324900	14
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Tri a 33 Serine protease inhibitor	IgE but no biological test	399	CAA72273.1	1885350	7
Triticum aestivum	Wheat	Tri a 33.0101	Aero Plant	Triticum Tri a 33 Serine protease inhibitor	IgE but no biological test	398	CAB52710.1	5734506	15
Triticum aestivum	Wheat	Tri a 34.0101	Aero Plant	Triticum Tri a 34 GAPDH	IgE but no biological test	337	CAZ76054.1	253783729	11
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	307	CAA31685.1	21773	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	356	CAA30570.1	21783	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 36	IgE but no biological test	304	AAA34285.1	170730	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 36	IgE but no biological test	323	AAA34286.1	170732	7
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 36	IgE but no biological test	244	AAA34287.1	170734	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	373	O22116	75317968	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	229	CAA59338.1	886963	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	261	CAA59339.1	886965	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	276	CAA59340.1	886967	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	285	O22108	75219081	7
Triticum aestivum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	326	CAI79052.1	62550933	7
Triticum aestivum	Wheat	Tri a 36.0101	Food Plant	Triticum Tri a 36	IgE but no biological test	369	AEH31546.1	335331566	12
Triticum aestivum	Wheat	Unassigned	Gliadin	Triticum Tri a 36	IgE but no biological test	283	BAN29069.1	508732627	15
Triticum aestivum	Wheat	Tri a 37.0101	Food Plant	Triticum Tri a 37 alpha purothionin	IgE but no biological test	137	CAA65313.1	4007850	14
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Tri a 39 serine proteinase inhibitor-like	IgE but no biological test	84	ABS58503.1	154101366	10
Triticum aestivum	Wheat	Unassigned	Aero Plant	Triticum Tri a 39 serine proteinase inhibitor-like	IgE but no biological test	84	P82977.2	122065237	11
Triticum aestivum	Wheat	Tri a 39.0101	Aero Plant	Triticum Tri a 39 serine proteinase inhibitor-like	IgE but no biological test	84	CCK33471.1	403213259	14
Triticum aestivum	Wheat	Tri tu 14	Food Plant	Triticum Tri tu 14	IgE plus basophil+ or SPT+	115	CAH69206.1	84617221	19

Species	Common	IUISÂ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Triticum monococcum subsp. aegilopoides		Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	293	APY24042.1	1137166044	18
Triticum turgidum subsp. durum	Wheat	Unassigned	Food Plant	Triticum aestivum Tri a 40	IgE but no biological test	143	CAA34709.1	21916	7
Triticum turgidum subsp. durum	Wheat	Unassigned	Aero Plant	Triticum Tri a 29	IgE plus basophil+ or SPT+	145	CAA39099.1	21920	7
Triticum turgidum subsp. durum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	295	CAA36063.1	21926	7
Triticum turgidum subsp. durum	Wheat	Unassigned	Food Plant	Triticum Tri a 36	IgE but no biological test	285	CAA44473.1	21930	7
Triticum urartu	Wheat	Unassigned	Gliadin	Triticum alpha/beta gliadin	IgE plus basophil+ or SPT+	296	AAA34290.1	170740	7
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Blo-t-5-like loose group	IgE but no biological test	135	AAX34057.1	60679590	9
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Blo-t-5-like loose group	IgE but no biological test	128	AAX34058.1	60679592	9
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Blo-t-5-like loose group	IgE but no biological test	138	AAX34059.1	60679594	9
Tyrophagus putrescentiae	Dust mite	Tyr p 28.0101	Aero Mite	Tyrophagus putrescentiae Tyr p 28	IgE but no biological test	659	AOD75395.1	1055365842	17
Tyrophagus putrescentiae	Dust mite	Tyr p 35.0101	Aero Mite	Tyrophagus putrescentiae Tyr p 35	IgE but no biological test	486	AOD75396.1	1055365860	17
Tyrophagus putrescentiae	Dust mite	Tyr p 36.0101	Aero Mite	Tyrophagus putrescentiae Tyr p 36	IgE but no biological test	131	AOD75399.1	1055365943	17
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Tyr p 10 tropomyosin	IgE but no biological test	284	ABQ96644.1	148615631	9
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Tyr p 10 tropomyosin	IgE but no biological test	201	ABU97479.1	156938915	9
Tyrophagus putrescentiae	Dust mite	Tyr p 10.0101	Aero Mite	Tyrophagus Tyr p 10 tropomyosin	IgE but no biological test	284	AAT40866.1	48249227	9
Tyrophagus putrescentiae	Dust mite	Tyr p 13.0101	Aero Mite	Tyrophagus Tyr p 13	IgE but no biological test	131	AAU11502.1	51860756	7
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Tyr p 13	IgE but no biological test	130	ABM53751.1	121296500	9
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Tyr p 13	IgE but no biological test	131	ABU97480.1	156938917	9
Tyrophagus putrescentiae	Dust mite	Tyr p 2.0101	Aero Mite	Tyrophagus Tyr p 2	IgE but no biological test	141	CAA73221.1	2182106	7
Tyrophagus putrescentiae	Dust mite	Tyr p 34.0101	Aero Mite	Tyrophagus Tyr p 24 Troponin C	IgE but no biological test	153	ACL36923.1	219815476	11
Tyrophagus putrescentiae	Dust mite	Tyr p 3.0101	Aero Mite	Tyrophagus Tyr p 3	IgE plus basophil+ or SPT+	285	ABZ81991.1	167540622	11
Tyrophagus putrescentiae	Dust mite	Unassigned	Aero Mite	Tyrophagus Tyr p 8	IgE plus basophil+ or SPT+	218	AGG10560.1	452215228	14
Ulocladium alternariae	Fungus	Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	138	AAT66607.1	49476547	7
Ulocladium atrum	Fungus	Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	AAT66609.1	49476551	7
Ulocladium capsicum		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	134	ACH42744.1	197110100	10
Ulocladium chartarum	Fungus	Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	AAT66610.1	49476553	7
Ulocladium dauci		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ACJ65836.1	215399749	11
Ulocladium microsporum		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	138	AGC36415.1	441467668	18
Ulocladium oudemansii		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ACH42743.1	197110098	10
Ulocladium oudemansii		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	138	ACI44002.1	209363467	10
Ulocladium sp. CID262		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ABQ59259.1	148357923	9
Ulocladium sp. CID598		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ABQ59258.1	148357921	9
Ulocladium sp. CID68		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ABQ59255.1	148357915	9
Ulocladium sp. HSAUP1144		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	138	ACJ54737.1	213958825	11
Ulocladium sp. XGZ-2008		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	ACH42741.1	197110094	10
Ulocladium sp. XGZ-2011a		Unassigned	Aero Fungi	Ulocladium alt a1-like	IgE but no biological test	137	AGC36416.1	441467671	18
Urochloa mutica		Unassigned	Aero Plant	Uro m 1 beta expansin	IgE plus basophil+ or SPT+	262	QCB92083.1	1618648552	20
Vachellia farnesiana		Unassigned	Aero Plant	Acacia (Vachellia) Aca f 1	IgE but no biological test	150	AKV72166.1	914410006	17
Vachellia farnesiana		Unassigned	Aero Plant	Acacia (Vachellia) profilin Aca f 2	IgE but no biological test	133	AIV43662.1	701225196	17
Venerupis philippinarum	Clam	Unassigned	Food Animal	Venerupis tropomyosin	IgE but no biological test	284	BAH10157.1	219806573	10
Vespa affinis	Lesser banded hornet	Unassigned	Venom or Salivary	Vespa affinis Phospholipase A1	IgE plus basophil+ or SPT+	334	P0DMB5.1	576011175	15
Vespa affinis	Lesser banded hornet	Unassigned	Venom or Salivary	Vespa affinis Phospholipase A1	IgE plus basophil+ or SPT+	334	P0DMB4.1	576011171	15
Vespa crabro	European hornet	Vesp c 1.0101	Venom or Salivary	Vespa Vesp c 1 phospholipase	IgE but no biological test	301	P0CH87.1	313471397	12
Vespa crabro	European hornet	Vesp c 5.0101	Venom or Salivary	Vespa Vesp c 5 and Vesp m 5	IgE but no biological test	202	P35781.1	549184	7
Vespa crabro	European hornet	Vesp c 5.0102	Venom or Salivary	Vespa Vesp c 5 and Vesp m 5	IgE but no biological test	202	P35782.1	549185	7
Vespa magnifica	Hornet	Unassigned	Venom or Salivary	Vespa magnifica Vesp ma 2 hyaluronidase	IgE plus basophil+ or SPT+	357	CBY83816.1	315133295	12
Vespa magnifica	Hornet	Unassigned	Venom or Salivary	Vespa magnifica Vesp ma 5	IgE plus basophil+ or SPT+	225	CBY93636.1	319801357	12
Vespa mandarinia	Wasp	Vesp m 5.0101	Venom or Salivary	Vespa Vesp c 5 and Vesp m 5	IgE but no biological test	202	P81657.1	6136165	7
Vespula flavopilosa	Wasp	Ves f 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	P35783.1	549189	7
Vespula germanica	Wasp	Ves g 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	P35784.1	549190	7
Vespula germanica	Wasp	Unassigned	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	CAJ28930.1	74035841	7
Vespula germanica	Wasp	Unassigned	Venom or Salivary	Vespula Phospholipase A1- Ves m/v 1	IgE plus basophil+ or SPT+	300	CAJ28931.1	74035843	7

Species	Common	IUISÅ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Vespula germanica	Wasp	Unassigned	Venom or Salivary	Vespula Ves v 2	IgE plus basophil+ or SPT+	331	CAL59818.1	116174180	8
Vespula germanica	Wasp	Unassigned	Venom or Salivary	Vespula Ves v 2	IgE plus basophil+ or SPT+	323	CAL59819.1	116174182	8
Vespula maculifrons	Wasp	Ves m 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	P35760.1	549191	7
Vespula maculifrons	Wasp	Unassigned	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	227	ABC73066.1	85681830	7
Vespula maculifrons	Wasp	Vesp m 1.0101	Venom or Salivary	Vespula Phospholipase A1- Ves m/v 1	IgE plus basophil+ or SPT+	300	P51528.1	1709545	8
Vespula maculifrons	Wasp	Ves m 2.0101	Venom or Salivary	Vespula Ves m 2 Hyaluronidase	IgE but no biological test	31	P0CH89.1	313118253	12
Vespula pensylvanica	Wasp	Ves p 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	P35785.1	549192	7
Vespula squamosa	Wasp	Ves s 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	205	P35786.1	549193	7
Vespula squamosa	Wasp	Ves s 1.0101	Venom or Salivary	Vespula Ves s 1 phospholipase	IgE but no biological test	298	P0CH86.1	313471398	12
Vespula vidua	Wasp	Ves vi 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	206	P35787.1	549194	7
Vespula vulgaris	Wasp	Ves v 5.0101	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	227	AAA30333.1	162551	7
Vespula vulgaris	Wasp	Ves v 5	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	204	CAB42887.1	4826574	7
Vespula vulgaris	Wasp	Ves v 5	Venom or Salivary	Vespula antigen 5 Ves f, v, s 5	IgE plus basophil+ or SPT+	209	1QNX_A	11514279	7
Vespula vulgaris	Wasp	Vesp v 1.0101	Venom or Salivary	Vespula Phospholipase A1- Ves m/v 1	IgE plus basophil+ or SPT+	336	AAB48072.1	897647	7
Vespula vulgaris	Wasp		Venom or Salivary	Vespula Ves v 2	IgE plus basophil+ or SPT+	331	P49370.1	1346323	7
Vespula vulgaris	Wasp	Ves v 2.0101	Venom or Salivary	Vespula Ves v 2	IgE plus basophil+ or SPT+	340	CAI77218.1	62147665	7
Vespula vulgaris	Wasp	Unassigned	Venom or Salivary	Vespula Ves v 2	IgE plus basophil+ or SPT+	331	2ATM_A	109157163	8
Vespula vulgaris	Wasp	Ves v 3.0101	Venom or Salivary	Vespula Ves v 3 dipeptidylpeptidase IV	IgE plus basophil+ or SPT+	776	ACA00159.1	167782086	9
Vigna radiata	mung bean	Vig r 1.0101	Food Plant	Vigna Vig r 1 PR 10	IgE but no biological test	155	AAX19889.1	60418924	7
Vigna radiata	mung bean	Vig r 2.0101	Food Plant	Vigna Vig r 2	IgE but no biological test	453	ABG02262.1	108743976	15
Vigna radiata	mung bean	Vig r 2.0201	Food Plant	Vigna Vig r 2	IgE but no biological test	454	ABW23574.1	158251953	15
Vigna radiata	mung bean	Vig r 6.0101	Food Plant	Vigna Vig r 6 Cytokinin-specific binding protein	IgE but no biological test	155	BAA74451.1	4190976	14
Vigna radiata var. radiata	mung bean	Vig r 4.0101	Food Plant	Vigna Vig r 4	IgE but no biological test	272	CAA50008.1	1000708	15
Vigna radiata var. radiata	mung bean	Unassigned	Food Plant	Vigna Vig r 6 Cytokinin-specific binding protein	IgE but no biological test	155	A0A1S3THR8.1	155998738	20
Vitis sp.	Grape	Unassigned	Food Plant	Vitis Lipid transfer protein P3	IgE but no biological test	91	P80273.2	145559502	8
Vitis sp.	Grape		Food Plant	Vitis Vit v 1 LTP	IgE but no biological test	37	P80274.1	462719	7
Vitis sp.	Grape	Unassigned	Food Plant	Vitis Vit v 1 LTP	IgE but no biological test	38	P33556.1	462717	7
Xiphias gladius	Swordfish	Xip g 1.0101	Food Animal	Xiphias Xip g 1 beta-parvalbumin	IgE but no biological test	109	CAR48256.1	222352960	10
Zea mays	Corn	Unassigned	Aero Plant	Zea group 13 pollen allergen	IgE but no biological test	410	ABD79096.1	89892725	7
Zea mays	Corn	Unassigned	Aero Plant	Zea group 13 pollen allergen	IgE but no biological test	404	ABD79097.1	89892727	7
Zea mays	Corn	Unassigned	Aero Plant	Zea group 13 pollen allergen	IgE but no biological test	411	ABD79098.1	89892729	7
Zea mays	Corn	Zea m 8.0101	Food Plant	Zea mays Zea m 8	IgE but no biological test	278	ACX37090.1	260401081	17
Zea mays	Corn	Unassigned	Food Plant	Zea mays Zea m 8	IgE but no biological test	280	P29022.1	116329	17
Zea mays	Corn	Unassigned	Aero Plant	Zea pollen specific protein	IgE but no biological test	170	2209273A	1588669	7
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 beta-expansin	IgE but no biological test	269	AAO45608.1	28630923	7
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 beta-expansin	IgE but no biological test	269	AAK56124.1	14193761	8
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 beta-expansin	IgE but no biological test	245	2HCZ_X	114794319	8
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 beta-expansin	IgE but no biological test	191	AAA33496.1	293902	11
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	263	ABD79094.1	89892721	7
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	252	ABD79095.1	89892723	7
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	99	ABF81861.1	105969543	8
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	269	ABF81862.1	105969545	8
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	270	Q1ZYQ8.2	115502167	9
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 1 isoform	IgE but no biological test	269	P0C1Y5.1	115502168	9
Zea mays	Corn	Zea m 12.0104	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	AAB86960.1	2642324	7
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81312.1	110644952	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81313.1	110644954	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81314.1	110644956	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81315.1	110644958	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81316.1	110644960	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	131	ABG81317.1	110644962	8
Zea mays	Corn	Unassigned	Food Plant	Zea Zea m 12 profilin	IgE but no biological test	130	ABG81318.1	110644964	8
Zea mays	Corn	Zea m 12.0101	Aero Plant	Zea Zea m 12 profilin	IgE but no biological test	131	CAA51718.1	313138	15
Zea mays	Corn	Zea m 12.0102	Aero Plant	Zea Zea m 12 profilin	IgE but no biological test	137	CAA51719.1	313140	15
Zea mays	Corn	Zea m 12.0103	Aero Plant	Zea Zea m 12 profilin	IgE but no biological test	131	CAA51720.1	313142	15

Species	Common	IUISÃ Allergen	Type	Group	Allergenicity	Length	Accession	GI#	First Version
Zea mays	Corn	Zea m 12.0105	Aero Plant	Zea Zea m 12 profilin	IgE but no biological test	131	AAG35601.1	11493877	15
Zea mays	Corn	Unassigned	Aero Plant	Zea Zea m 12 profilin	IgE but no biological test	132	5FEF_A	1064246368	18
Zea mays	Corn	Zea m 14.0101	Food Plant	Zea Zea m 14	IgE but no biological test	120	AAA33493.1	168576	15
Zea mays	Corn	Zea m 14.0102	Food Plant	Zea Zea m 14	IgE but no biological test	99	AAA33494.1	168578	15
Zea mays	Corn	Zea m 25.0101	Aero Plant	Zea Zea m 25 thioredoxin	IgE but no biological test	128	CAI64400.1	66841002	7
Ziziphus mauritiana	Chinese-date	Ziz m 1.0101	Food Plant	Ziziphus Ziz m 1	IgE plus basophil+ or SPT+	330	AAX40948.1	61225281	7

APPENDIX F
PROTEOMICS ANALYSIS OF SILKWORM PUPAE, COCOONS, AND CAMBRIDGE CROPS PRODUCT (DR. JOHNSON REPORT)

Identification and analysis of potentially allergenic proteins in samples derived from the *Bombyx mori* silkworm for Cambridge Crops, Inc.

Analysis by:

Philip Johnson, PhD

Assistant Professor

University of Nebraska—Lincoln

Department of Food Science and Technology

philip.johnson@unl.edu

Report completed:
March 19, 2020

Table of Contents

I. Objective of this report

Examine the presence of particular proteins relevant to allergen risk assessment in samples derived from *Bombyx mori* using mass spectrometry (MS) data provided by Cambridge Crops, Inc. (CC) and analytical partners.

A. Samples (information provided by CC)

The following information was provided by Cambridge Crops. Samples sent by Cambridge Crops to their analytical partner at Harvard are below:

- Pupa of *Bombyx mori*
- Cocoon of *Bombyx mori*
- Degummed Fibroin (partially processed product material)
- Fibroin powder product (finished product material)

B. Abbreviations used

MS – mass spectrometry
MWCO – molecular weight cutoff
FASP – filter aided sample preparation
TFA – triflouroacetic acid
EIC – extracted ion chromatogram
TM – tropmyosin
AK – arginine kinase
TR – thioredoxin
CN – chitinase
PM – paramyosin

C. Notes and disclaimers

This report describes the expert opinion of the author. This report should not be taken as an opinion as to the safety or otherwise of any product. Only the data analysis and interpretation were performed by Phil Johnson. I understand that Cambridge Crops provided the samples to the Harvard Center for Mass Spectrometry Proteomics laboratory, and that the Harvard laboratory prepared the samples and the MS analysis. The detail of methodology used for experimental work was provided by Cambridge Crops and the Harvard University laboratory.

Proteins of interest were not selected by Phil Johnson, but were provided by Cambridge Crops after discussion with Dr. Richard Goodman of the Food Allergy Research and Resource Program at the University of Nebraska-Lincoln.

II. Summary of opinions:

Cambridge Crops, along with Dr. Richard Goodman, identified five Proteins of Allergenic Interest. Of the five proteins, only one is a recognized allergen in *B. mori* silkworms—the rest are allergens identified within potentially similar insects.

It is my expert opinion that the fibroin powder product does not contain Proteins of Allergenic Interest that are detectable with the methods used under standardized identification criteria set by the Human Proteome Organization (HUPO)–Proteomics Standards Initiative (PSI).

III. Methodology

A. Cocoon, degummed fibroin and fibroin powder product

The cocoon, degummed fibroin, and fibroin powder product were prepared by CC to meet their own standards. I understand their methodology is described in the Generally Recognized as Safe dossier. Protein concentration of their samples was determined by CC using the BCA assay using 5% fibroin solution as a calibrant. For each sample, protein concentration was estimated at approximately 14mg/ml. Each MS analysis presented in this report is the result of sample processing and MS of individual samples. For the powders and degummed fibroin these were individually weighed powders. For the cocoon, the analysis is of a single whole cocoon.

I understand that the Harvard University laboratory performed the following: 20 µl of dialyzed material (protein concentration approximately 14 mg/ml for a total of approximately 280 µg of protein) was reduced, alkylated and digested under a total 4 µg of trypsin) using a FASP protocol. Samples were dried and resuspended in 30 µl of 0.1 % TFA. 5 ml of this solution was injected for MS analysis (Orbitrap Elite Hybrid Ion Trap-Orbitrap Mass Spectrometer using a WATERS Aquity column (#186008795 nanoEase M/Z Peptide BEH column).

B. Pupa samples

Three individual pupae were analyzed. Each sample was processed and analyzed once. Covaris DF buffer (containing urea) was added to a Bombyx mori pupa (sample 1 = 7.6 mg, sample 2 = 6.62 mg) to give a 1% w/v solution, and sonicated using a Covaris S220 shearing device. Samples (1 = 76 µg, 2 = 66 µg) of the resultant extract were used in FASP and analyzed as described above. An estimated 2.5 µg of pupa material was injected.

C. Source of data used in this analysis

Raw MS data (Thermo.raw files) were provided by the Harvard laboratory. Table 1, below, shows an overview of the data files used in this report. Two separate sets of MS analysis were performed in separate experiments. In total, there are 3 MS runs of pupa material, 1 run of cocoon material, 1 run of degummed fibroin product and 3 runs of fibroin powder product. These files are archived and are available upon request.

Data file	Name used in this report	Date of MS analysis
200204ASYSAM06609_Pupa-FT.raw	Pupa1	20200204
200204ASYSAM06610_Cocoon-FT.raw	Cocoon1	20200204
200204ASYSAM06611_DegummedFibroin-FT.raw	DFib1	20200204
200204ASYSAM06612_FibroinPowderProduct-FT.raw	Powder1	20200204
200211ASYSAM06657_Pupa1-FT2.raw	Pupa2a	20200211
200211ASYSAM06658_Pupa2-FT2.raw	Pupa2b	20200211
200211ASYSAM06659_Powder1-FT2.raw	Powder2a	20200211
200211ASYSAM06660_Powder2-FT2.raw	Powder2b	20200211

Table 1. MS data files and tissue of origin of MS data used in this report. Data generated on the two different dates were obtained using different protein load on column prior to MS. That obtained on 20200204 is detailed in Methodology, above. That obtained on 20200211 was obtained using a reduced protein load.

IV. Data analysis (performed by Phil Johnson)

Data were analyzed using PEAKSQ version 8.5. Full settings used are available upon request. Data were taken directly from PEAKS, and label-free data was exported for analysis in MS Excel. Graphpad Prism was used for generating figures. This report only considers data relevant to particular proteins (see below). Data for all proteins is available in a supplemental Excel file available upon request.

A. Note on protein identification quality

The -10lgP score is a measure of quality of protein identification used by PEAKS software. The P-value is converted to -10*log10(P-value) to make it more immediately understandable. A more significant match will have a higher -10lgP value. Additionally, a P-value of 1% is equivalent to -10lgP of 20. This score is dependent upon the database used as well as the number and quality of peptide spectra. The number of peptides identified for each protein sequence is given here as an additional measure of identification quality. Human Proteome Organization (HUPO)–Proteomics Standards Initiative (PSI) demand at least two unique peptides for a protein identification.

B. Proteins of allergenic interest

The following proteins were identified by Cambridge Crops during their discussion with Dr. Richard Goodman. The proteins of allergenic interest were identified in that they are potentially allergenic. *B. mori* sequences corresponding to each protein of allergenic interest were identified by text search of protein name, and by BLAST searching to identify potentially unnamed members of the protein families. Analytical data pertaining to these identified sequences was used to prepare this report. Importantly, not all of the sequences included in this analysis are known or even suspected allergens. In this report we examine known protein sequences, related by function or homology, to these potential allergens:

- Tropomyosin (TM)
    - TM is a cytoskeletal protein, abundant in muscular tissues. It has not been identified as a *B. mori* allergen but is recognized as a likely 'pan-allergen' in insects and shellfish.
- Arginine Kinase (AK)
    - AK is involved in energy metabolism and is likely a component of all metabolically active tissues. AK is a recognized allergen in *B. mori* and other insects.
- Thioredoxin (TR)
    - TR is involved in redox signaling and is a likely component of all metabolically active tissues. TR is a recognized allergen in moth species, but not *B. mori*.
- Chitinase (CT) (includes 'imaginal disk growth factor' and 'oviduct specific glycoprotein' which are homologous to chitinases and likely share function)
    - CT is involved in molting and development and is likely localized to tissues undergoing developmental change. CT is a recognized allergen in other insect species but not *B. mori*.
- Paramyosin (PM)
    - PM is a cytoskeletal protein, likely most abundant in muscle tissue. PM is a recognized allergen in other insect species but not in *B. mori*.

Together, these proteins will be identified as "Proteins of Allergenic Interest." Only data pertinent to these proteins are discussed in this report.

V. Results and Discussion

A. Preliminary review of MS data quality

Total Ion Chromatograms (TICs) represent the total amount of ions passing through the MS instrument and may be used as a measure of data quality, particularly with respect to chromatography. Maximum TIC (a measure of ion abundance from the sample) for all files was in the range 10^8-10^9 which is generally optimal. Peak resolution was poor but did not appear to adversely affect peptide and protein identification (see below). It is likely that quantitation of observed peptides and proteins by peak integration would be affected. Data presented here comes from two independent experiments, both showing poor peak resolution. The reproducibility of the chromatography indicates that poor resolution may be due to the nature of the samples and therefore difficult to avoid.

B. Data overview - identification of peptides and proteins

Table 1, below, summarizes number of MS2 triggers, as well as number of peptide and protein identifications. Number of identified proteins containing missed cleavages is also indicated. An FDR of 1% (generally accepted standard in the field) is used in each case. Number of MS2 triggers was relatively consistent and indicates properly functioning MS acquisition. The number of identified peptides and proteins decreases in the non-pupa samples. The smaller number of peptide and protein identifications in cocoon, degummed fibroin and powder product are likely the result of decreased sample complexity (i.e. smaller number of proteins in the sample). Data from the second set of analysis (Pupa 2a, Pupa 2b, Powder 2a, Powder 2b) yielded higher numbers of peptide and protein identifications than comparable analyses from the first experiment (Pupa 1, Powder 1). This indicates that the adjustment of procedures resulted in improved detection.

Sample	#ms2 scans	#Peptide-Spectrum Matches	#Peptide sequences	#Proteins
Pupa 1	9013	3215	2544	730
Pupa 2a	7243	3754	3193	1018
Pupa 2b	6945	3569	2689	803
Cocoon1	10804	2772	867	178
DFib1	8689	1347	295	92
Powder1	8252	688	166	87
Powder2a	6352	659	202	135
Powder2b	5746	712	197	140

Table 2. Overview of data and database search quality. A false discovery rate (FDR) was set at <1% throughout.'#ms2' scans is the number of times fragmentation and secondary scan was triggered. 'Peptide-spectrum matches' indicate the number of these secondary scans that could be matched to peptides in the B. mori sequence database. '#Peptide sequences' indicate the number of these matched peptide sequences. '#Proteins' indicates the number of individual protein sequences in the B. mori database to which these peptide sequences were matched.

C. Presence of proteins of allergenic interest in samples

Complete information on the detection of Proteins of Allergenic Interest in each sample is given in a supplementary Excel file archived and available upon request. Summary of such information, showing only the highest-quality identification within each protein group, is shown in Table 3. A discussion of identified peptides and protein in each group of samples is given below.

	TM	AK	TR	CN	PM
Pupa1	237.67 (7)	318.42(16)	227.14(9)	348.47(13)	159.95(5)
Pupa2a	236.16 (14)	289.72(15)	233.06(8)	229.73(13)	216.88(10)
Pupa2b	225.47 (10)	238.37(10)	212.36(6)	246.08(15)	206.54(8)
Cocoon1	not detected ("nd") (0)	nd (0)	nd (0)	nd (0)	nd (0)
DFib1	nd (0)	nd (0)	nd (0)	nd (0)	nd (0)
Powder1	nd (0)	nd (0)	nd (0)	nd (0)	nd (0)
Powder2a	nd (0)	nd (0)	nd (0)	nd (0)	nd (0)
Powder2b	45.87 (1)	nd (0)	nd (0)	nd (0)	nd (0)

Table 3. Identification of proteins of allergenic interest using data from each indicated sample (TM=tropomyosin, AK = arginine kinase, TR=thioredoxin, CN=chitinase, PM=paramyosin). Only the highest quality (highest -10lgP) protein identification for each protein of allergenic interest is given here. For a complete description of all proteins potentially identified in each sample, refer to the supplementary Excel file. For each protein of allergenic interest, quality criteria for the highest quality identification among the sequences is given. The highest -10logP score (statistically derived measure of protein identification, higher is better) is presented with the number of peptide matches to that sequence in parentheses. nd=not detected.

1. Identification of Proteins of Allergenic Interest in the pupa

Representative sequences from each Protein of Allergenic Interest were readily identifiable, at high confidence, in all three pupae samples. This high-quality identification serves as a positive control, and suggests that the methodology employed is capable of definitive demonstration of protein presence if proteins are present in the sample. In some cases, isoforms of proteins of allergenic interest were identifiable due to the presence of peptides that are unique to one or another isoform. In other cases, only peptides that were shared between isoforms were identified, therefore positively identifying the group of proteins rather than an individual isoform.

2. Identification of Proteins of Allergenic Interest in the cocoon

No identifiable Protein of Allergenic Interest was present in the single degummed fibroin sample.

3. Identification of Proteins of Allergenic Interest in the degummed fibroin

No identifiable Protein of Allergenic Interest was present in the single degummed fibroin sample.

4. Identification of Proteins of Allergenic Interest in the fibroin powder (Mori Silk)

Human Proteome Organization (HUPO)–Proteomics Standards Initiative (PSI) demand at least two unique peptides for a protein identification. That said, one of the three powder samples gave a single peptide match for a TM protein. A separate sample (powder 2a) gave a single peptide match for a TR protein. Further, these matches were of particularly low quality and depended on one peptide only—which would not rise to the HUPO standard. This single peptide was further not detected in the other two powder samples, or in the cocoon sample. This further indicates that TM is not present at detectable levels in the powder product.

The occurrence of the identified TM peptide in B. mori TM sequences is shown in Figure 1. The peptide, KIVELEEELR, is shared between all *B. mori* TM sequences and could therefore arise from one, all, or some TM isoforms. The peptide is does not result from a trypsin (the enzyme used for MS sample preparation) cleavage at both ends. Were this peptide cleaved by trypsin, we would expect removal of the N-terminal lysine (K) residue, as trypsin cuts after K or R except where P is the next residue. In the vast majority of cases, the most abundant peptides and most reliable identification result from perfect trypsin cleavages. This further suggests that the identification of this peptide may not be genuine.

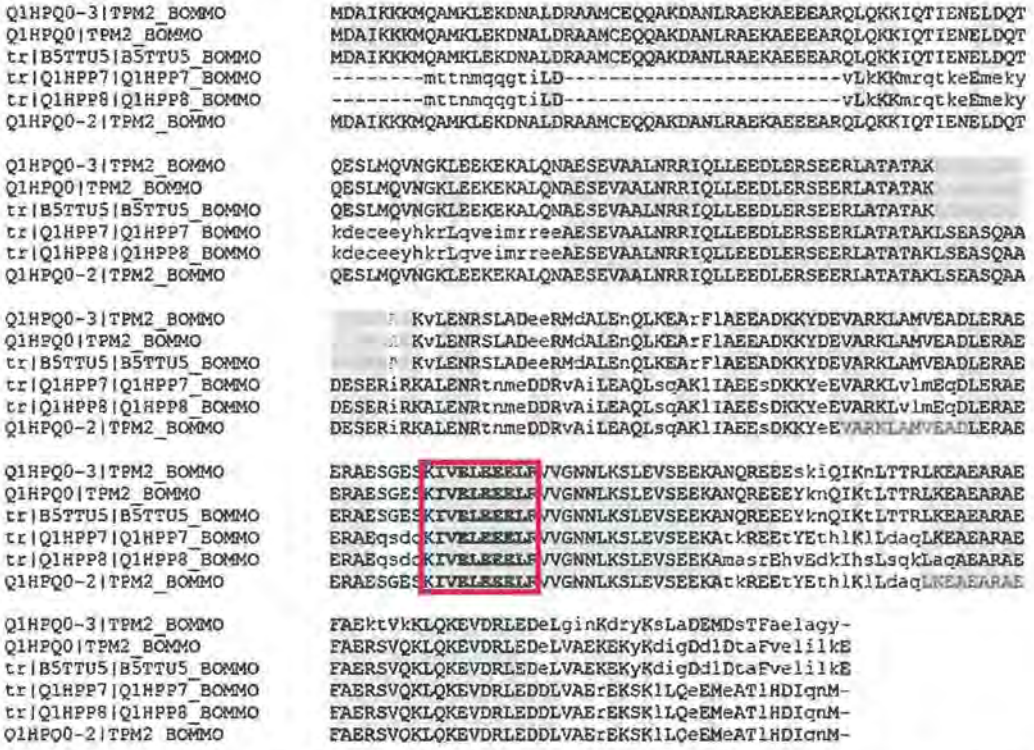

Figure 1. Occurrence of the identified peptide (KIVELEEELR) in an alignment of8 B. mori TM sequences. Uniprot ID of each sequence is indicated at the left of each sequence. The alignment was generated using PEAKS 8.5. The peptide identified is shown within a red box. Capital letters and shading (dark = high conservation, light = lower conservation) indicate conservation of residues throughout sequences. A dash indicates absence of residues in a given sequence.

VI. Conclusions

- TM, AK, TR, CN and PM were readily identifiable in pupae samples at high confidence (n=3).
- Using HUPO Standards, no Proteins of Allergenic Interest were detected in the cocoon sample (n=3).
- Using HUPO Standards, no Proteins of Allergenic Interest were detected in the degummed fibroin sample (n=1).
- Using HUPO Standards, no Proteins of Allergenic Interest were detected in the fibroin powder product samples (n=3).
- In sum, it is my expert opinion that the fibroin powder product does not contain Proteins of Allergenic Interest that are detectable using the method employed.

Author: [redacted] Date: 3/22/2020

Philip Johnson, Ph.D.

Assistant Professor
University of Nebraska—Lincoln
Department of Food Science and Technology

APPENDIX G
MORI SILK TOXICOLOGICAL STUDIES

APPENDIX G.1
MORI SILK BACTERIAL REVERSE MUTATION TEST

STUDY TITLE

Silk Fibroin:
Bacterial Reverse Mutation Test (Ames Test)

DATA REQUIREMENT

US FDA Toxicological Principles for the Safety Assessment of Food Ingredients, Redbook 2000, IV.C. 1. a. (2007)

ICH S2 (R1) Guidance on Genotoxicity Testing and Data Interpretation for Pharmaceuticals Intended for Human Use (2012)

AUTHOR

Mithila Shitut, BVSc & AH, MS

STUDY COMPLETED ON

September 15, 2017

PERFORMING LABORATORY

Product Safety Labs

LABORATORY STUDY NUMBER

45996

SPONSOR

Tufts University
169 Holland St.
Somerville, MA 02144

Product Safety Labs
2394 US Highway 130
Dayton, NJ 08810
USA

732-438-5100
psl@productsafetylabs.com
www.productsafetylabs.com

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

Silk Fibroin

This study meets the requirements of Good Laboratory Practices as stated in U.S. FDA GLP: 21 CFR Part 58, 1987, and with the following exception:

Characterization of the positive control substances and verification of concentration of the positive control substances in their carriers during this study were not determined analytically; however, the purity of the materials used were certified by a reputable supplier and all preparations were thoroughly documented.

Specific information related to the characterization of the test substance as received and tested is the responsibility of the study Sponsor (see Test Substance section).

Study Director: [redacted] Date: September 10 2017

Name of Signer: Mithila Shitut BVSc & AH, MS

Name of Company: Product Safety Labs

Sponsor: _____ Date: _____

Name of Signer: _____

Name of Company: Tufts University

Submitter: _____ Date: _____

Name of Signer: _____

Name of Company: Tufts University

QUALITY ASSURANCE STATEMENT

The Product Safety Labs' Quality Assurance Unit has reviewed this final study report to assure the report accurately describes the methods and standard operating procedures, and that the reported results accurately reflect the raw data of the study.

QA activities for this study:

QA Activity	Performed By	Date Conducted	Date Findings Reported To Study Director And Management
Protocol review	A. LaPorte; A. Villagran	Aug 21, 2015[1]; Aug 25, 2017	Aug 21, 2015; Aug 25, 2017
In-process inspection: *Optical density check and plating*	B. Simms	Aug 10, 2017	Aug 10, 2017
Raw data audit	A. Villagran	Aug 25, 2017	Aug 25, 2017
Draft report review	A. Villagran	Aug 25, 2017	Aug 25, 2017

Final report reviewed by:

[redacted]

Alicia Villagran, RQAP-GLP
Quality Assurance Auditor
Product Safety Labs

SEPT. 15, 2017
Date

[1] PSL's "generic" protocol used for this study was reviewed by the Quality Assurance group on this date.

TABLE OF CONTENTS

SILK FIBROIN:
BACTERIAL REVERSE MUTATION TEST (AMES TEST)

PROTOCOL NO.:	P600.AMES
STUDY NUMBER:	45996
SPONSOR:	Tufts University 169 Holland St. Somerville, MA 02144
TEST SUBSTANCE IDENTIFICATION:	Silk Fibroin Batch #: 2017_27_07
DATE RECEIVED:	August 2, 2017
PSL REFERENCE NO:	170802-1D
STUDY INITIATION DATE:	August 3, 2017
DATES OF TEST:	August 10 - August 14, 2017
NOTEBOOK NO.:	45996: pages 1-82

1. PURPOSE

To evaluate the potential for Silk Fibroin to induce gene mutations in bacteria using the Ames assay. Point mutations which involve substitution, addition or deletion of one or a few DNA base pairs are detected in amino acid-requiring strains of *Salmonella typhimurium* (*S. typhimurium*, ST) and *Escherichia coli* (*E. coli*, EC) by their ability to functionally reverse mutations. These reverse mutations result in revertant colonies of bacteria with restored capability to synthesize the essential amino acid.

2. SUMMARY

The Ames test was conducted with Silk Fibroin at levels of 31.6, 100, 316, 1000, 3160, 10,000, 31,600, and 100,000 µg/plate, with the high level being the standard limit for this test. The main test was conducted using the plate incorporation method in both the absence and presence of metabolic activation (chemically-induced rat liver S9 mix). The results of the test were confirmed using a similar study design but employing the pre-incubation modification of the Ames test.

The mean revertant colony counts for each strain treated with the vehicle were close to or within the expected range, considering the laboratory historical control range and/or published values (Mortelmans & Zeiger, 2000; Gatehouse, 2012). The positive control substances caused the expected substantial increases in revertant colony counts in both the absence and presence of S9 in each phase of the test confirming the sensitivity of the test and the activity of the S9 mix. Therefore, each phase of the test is considered valid.

No signs of precipitation or toxicity were noted in any of the strains. Contamination, which did not impact mutagenicity evaluation, was noted in individual plates for the E. coli, TA1535 and TA1537 strains.

For all strains, eight dose levels without precipitation, toxicity or plate contamination were evaluated; therefore, bacterial mutagenicity was adequately assessed.

In conclusion, based on these findings and on the evaluation system used, Silk Fibroin did not elicit evidence of bacterial mutagenicity in the Ames assay.

3. TEST SUBSTANCE

The test substance, identified as Silk Fibroin, Batch #: 2017_27_07, was received on August 2, 2017, and was further identified with PSL Reference Number 170802-1D. The test substance was stored refrigerated. Documentation of the methods of synthesis, fabrication, or derivation of the test substance is retained by Tufts University Science and Tech Center, 4 Colby Street, Medford, MA.

The following information related to the characterization of the test substance was provided by the Sponsor:

Composition: Silk fibroin - 5%
Water - 95%

Physical Description: Clear liquid

Stability: Test substance was expected to be stable for the duration of testing.

Expiration Date: September 27, 2017

No correction for purity was used in preparation of formulations, and all dose levels are expressed in terms of material as supplied.

4. POSITIVE CONTROL SUBSTANCES

The positive control substances (known mutagens) were received on the dates listed below and were further identified using Product Safety Labs' identification numbers. The substances were stored refrigerated. Documentation of the methods of synthesis, fabrication, or derivation of the positive controls is retained by the vendor (Molecular Toxicology, Inc.).

Positive Control Substance Identification	Lot No.	CAS No.	Date of Receipt	PSL ID No.	Expiration Date
Sodium Azide (NaN_3)	6356SA	26628-22-8	Jun 22, 2017	170622-6H	Jul 14, 2018
ICR 191 Acridine	6263ICR	17070-45-0	Jun 22, 2017	170622-5H	Mar 29, 2019
Daunomycin	2177DU	20830-81-3	Jun 22, 2017	170622-4H	Dec 1, 2018
Methyl methanesulfonate (MMS)	8210MS	66-27-3	Jun 27, 2017	170627-18H	Jun 20, 2019
2-Aminoanthracene (2-AA)	6441AA	613-13-8	Jun 22, 2017	170622-3H	May 2, 2019

5. VEHICLE CONTROL SUBSTANCE

The test substance was found to be soluble in sterile water that was used as the vehicle control.

6. GENERAL TEST SYSTEM PARAMETERS

A. Test System Identification

Each of the *S. typhimurium* and *E. coli* strains received for use on this study was accompanied by documentation that includes lot number, preparation and expiration dates, and confirmation of phenotype and response to specific mutagens. The following bacterial strains were purchased from Molecular Toxicology, Inc.:

Strain	Characteristics	Mutations Detected	Lot Number	Expiration Date
ST TA1535	his; rfa; uvrB	Base-pair substitution	5138D	Aug 25, 2018
ST TA1537	his; rfa; uvrB	Frameshift	5166D	Mar 02, 2019
ST TA98	his; rfa; uvrB; R-factor	Frameshift	5165D	Feb 23, 2019
ST TA100	his; rfa; uvrB; R-factor	Base-pair substitution	5185D	Apr 06, 2019
EC WP2 uvrA	trp; uvrA	Base-pair substitution	5161D	Jan 06, 2019

Legend:

his	histidine required as a growth factor
rfa	deep rough mutation involves loss of a major component of the cell coat increasing permeability to larger molecules; this deletion also involves the gene coding for biotin synthesis
uvrA/B	deletion of DNA nucleotide excision repair system
R-factor	contains the pKM101 plasmid which increases sensitivity by enhancing error-prone DNA repair systems
trp	tryptophan required as a growth factor

B. Justification for the Selection of the Test System

The referenced guidelines (Section 10) accept the combination of *S. typhimurium* (TA1535, TA1537, TA98, and TA100) and *E. coli* (WP2 uvrA) strains selected for use in this study.

7. ASSAY MATERIALS

A. Growth Media and Plates

Overlay agar (supplemented with biotin and limited amounts of histidine and tryptophan) and minimal glucose agar plates were purchased from Molecular Toxicology, Inc.

B. Metabolic Activation System (S9 Mix) and Substitution Buffer

S9 mix (cofactor supplemented post-mitochondrial fraction) was included in the Ames test to simulate mammalian metabolism since some test substances only become mutagenic following metabolic activation. S9 liver fraction was purchased from Molecular Toxicology, Inc., and sourced from male Sprague-Dawley rats induced with phenobarbital and benzoflavone.

The S9 mix, freshly prepared on the day of use, was maintained on ice prior to and during use and contained 5% v/v S9 fraction. The prepared S9 mix contained the following sterile cofactors (Maron & Ames, 1983): 8 mM $MgCl_2$, 33 mM KCl, 100 mM sodium phosphate buffer pH 7.4, 5 mM glucose-6-phosphate and 4 mM NADP.

Sodium phosphate buffer was used as the substitution buffer for plates treated in the absence of S9.

C. Bacteria (Test Systems)

Fresh bacterial suspension cultures in nutrient broth were prepared so that they were in the late exponential phase of growth at the time of use (approximately 1 x 10^9 bacteria/mL). Bacterial growth was evaluated by spectrophotometric optical density measurement.

D. Test Substance Preparation

The test substance was formulated as a solution in Sterile water (0.316, 1, 3.16, 10, 31.6, 100, 316, and 1000 mg/mL) to provide corresponding dose levels of up to 100,000 µg/plate. The test substance was mixed with the vehicle by gently pipetting up and down. The entire tube was placed on a stir plate with a sterile stir bar and mixed at 125 RPM for approximately 5 to 10 minutes to make a homogenous solution. This procedure was followed before making every dilution.

E. Positive Control Substances

The performance of this test was evaluated with positive controls for each tester strain used, with and without metabolic activation (S9). Appropriate dilutions were prepared using the solvents listed below prior to testing.

Positive Control Substance (Concentration)	Solvent	Tester Strain	Metabolic Activation (S9)
Sodium Azide (15 µg/mL)	Sterile water	*S. typhimurium* TA100, TA1535	Absent
ICR 191 Acridine (10 µg/mL)	Sterile water	*S. typhimurium* TA1537	Absent
Daunomycin (60 µg/mL)	Sterile water	*S. typhimurium* TA98	Absent
Methyl methanesulfonate (25 µL/mL)	Sterile water	*E. coli* WP2 uvrA	Absent
2-Aminoanthracene (100 µg/mL)	DMSO	All	Present

8. EXPERIMENTAL DESIGN

A. Main Test (see Section 12)

The initial experiment followed the plate incorporation method, in which the following materials were mixed and poured over the surface of a minimal agar plate:

- Standard volume[1] of vehicle control, test substance solution, or positive control
- 500 µL S9 mix or substitution buffer
- 100 µL bacterial preparation (ST or EC)
- 2.0 mL overlay agar maintained at approximately 45°C

Plates were prepared in triplicate and uniquely identified. For each of the bacterial strains, plates were prepared at each experimental point as follows:

Treatment	Dose No.	Active Ingredient dose (µg/plate)	Final Test Substance Dose (µg/plate)[C]	Number of Replicates -S9	Number of Replicates +S9	Number of Strains
Vehicle control	0	0	0	3	3	5
Test substance	1	1.58	31.6	3	3	5
	2	5.0	100	3	3	5
	3	15.8	316	3	3	5
	4	50	1000	3	3	5
	5	158	3160	3	3	5
	6	500	10,000	3	3	5
	7	1580	31,600	3	3	5
	8	5000	100,000[A]	3	3	5
Positive control	*[B]		*[B]	3	3	5

[A] The OECD standard limit dose
[B] Dose depends on the test organism and the positive control
[C] Active ingredient composition in test substance is 5%

Appropriate sterility control check plates (treated with critical components in the absence of bacteria) were included as a standard procedural check. After pouring, plates were placed on a level surface until the agar was gelled then incubated at approximately 37°C until growth was adequate for enumeration (approximately 65 hours). Note that the loss of an individual plate (e.g., due to microbial contamination) will not affect the validity of the study.

B. Confirmatory Test

The confirmatory test employed the pre-incubation modification of the plate incorporation test. The test or control substances, bacteria suspension, and S9/substitution buffer were incubated under agitation for approximately 30 minutes at approximately 37°C prior to mixing with the overlay agar and pouring onto the minimal agar plates before proceeding as described for the

[1] Standard dose volume is 100 µL per plate for the positive controls, but this may be adjusted for the vehicle and test substance to achieve the required dose per plate depending on the nature of vehicle.

initial test. The study design for the confirmatory test, including strains, dose levels etc. was as described above for the initial (main) test.

C. Control of Bias

General procedures associated with the balanced design and conduct of this study were employed to control bias.

D. Results

After incubation, the number of colonies per plate was counted manually and/or with the aid of a plate counter (Colony Plate Reader: Model Colony-Doc-It™). The mean and standard deviation were calculated for each set of triplicate plates.

E. Criteria for Validity

The background lawn for vehicle control plates should appear normal (i.e., slightly hazy with abundant microscopic non-revertant bacterial colonies). The mean revertant colony counts for each strain treated with the vehicle should lie close to or within the expected range taking into account the laboratory historical control range and/or published values (Mortelmans & Zeiger, 2000; Gatehouse, 2012). The positive controls (with S9 where required) should produce substantial increases in revertant colony numbers with the appropriate bacterial strain as specified in the Evaluation of Mutagenicity Section below.

In the case where part of the study is invalid based on these criteria (e.g., the positive control does not induce an appropriate response with an individual strain or generally poor growth of the background lawn with that strain), detailed results for that part of the study will not be reported and the affected part of the study would normally be subjected to an automatic repeat as described in an amendment, if appropriate.

F. Evaluation of Toxicity

Toxic effects of the test substance are indicated by the partial or complete absence of a background lawn of non-revertant bacteria (colony counts, if any, should not be reported) or a substantial dose-related reduction in revertant colony counts compared with lower dose levels and concurrent vehicle control taking into account the laboratory historical control range. Where precipitation obscures observations on the condition of the background lawn, the lawn can be considered normal and intact if the revertant colony counts are within the expected range based on results for lower dose levels and historical control counts for that strain.

G. Evaluation of Mutagenicity

For each experimental point, the Mutation Factor (MF) was calculated by dividing the mean revertant colony count by the mean revertant colony count for the corresponding concurrent vehicle control group. The mutagenic activity of the test item was assessed by applying the following criteria:

The results were considered positive (i.e., indicative of mutagenic potential) if:

- The results for the test item showed a substantial increase in revertant colony counts, i.e., response MF ≥ 2 for strains TA98, TA100, and WP2 uvrA or MF ≥ 3 for strains TA1535 and TA1537, with mean value(s) outside the laboratory historical control range. Otherwise, results were considered negative.

- The above increase must be dose related and/or reproducible, i.e., increases must be

obtained at more than one experimental point (at least one strain, more than one dose level, more than one occasion or with different methodologies).

If the second criterion is not met, the results may be classified as equivocal, and further testing may be appropriate.

A test substance that produces neither a concentration related increase in the number of revertant colonies nor a reproducible substantial increase in revertant colonies is considered to be non-mutagenic in this test system.

9. STATISTICAL ANALYSIS

Product Safety Labs calculated means and standard deviations for all quantitative data collected.

10. STUDY CONDUCT

This study was conducted at Product Safety Labs' (PSL) test facility at 2394 US Highway 130, Dayton, New Jersey 08810. The Study Director for this study was Mithila Shitut, BVSc & AH, MS. The primary scientist for this study was Anupama Dubey, BS, with contributions from Monika Abraham, BA, Lisa Broske-Godin, BS, RLATG, Janet Dell John, BA, RLATG, and Katherine Sibley, BS. This study was conducted to comply with the Good Laboratory Practice (GLP) regulations as defined in:

- US FDA GLP: 21 CFR Part 58, 1987

The procedures as described in this protocol are based on the most recent version of the following testing guidelines:

- US FDA Toxicological Principles for the Safety Assessment of Food Ingredients, Redbook 2000, IV.C. 1. a. (2007)
- ICH S2 (R1) Guidance on Genotoxicity Testing and Data Interpretation for Pharmaceuticals Intended for Human Use (2012)

11. QUALITY ASSURANCE

The final report was audited for agreement with the raw data records and for compliance with the protocol, Product Safety Labs Standard Operating Procedures and appropriate Good Laboratory Practice Standards. Dates of inspections and audits performed during the study and the dates of reporting of the inspection and audit findings to the Study Director and Facility Management are presented in the Quality Assurance Statement.

12. AMENDMENT TO THE PROTOCOL

At the request of the Sponsor, Section 7A. Main Test of the protocol was changed to the following:

The initial experiment followed the plate incorporation method, in which the following materials were mixed and poured over the surface of a minimal agar plate:

- Standard volume[1] of vehicle control, test substance solution, or positive control

[1] Standard dose volume is 100 µL per plate for the positive controls, but this may be adjusted for the vehicle and test substance to achieve the required dose per plate depending on the nature of vehicle.

- 500 µL S9 mix or substitution buffer
- 100 µL bacterial preparation (ST or EC)
- 2.0 mL overlay agar maintained at approximately 45°C

Plates were prepared in triplicate and uniquely identified. For each of the bacterial strains, plates were prepared at each experimental point as follows:

Treatment	Dose No.	Active Ingredient dose (µg/plate)	Final Test Substance Dose (µg/plate)[C]	Number of Replicates -S9	Number of Replicates +S9	Number of Strains
Vehicle control	0	0	0	3	3	5
Test substance	1	1.58	31.6	3	3	5
	2	5.0	100	3	3	5
	3	15.8	316	3	3	5
	4	50	1000	3	3	5
	5	158	3160	3	3	5
	6	500	10,000	3	3	5
	7	1580	31,600	3	3	5
	8	5000	100,000	3	3	5
Positive control	*[B]		*[B]	3	3	5

[A] The OECD standard limit dose
[B] Dose depends on the test organism and the positive control
[C] Active ingredient composition in test substance is 5%

Appropriate sterility control check plates (treated with critical components in the absence of bacteria) were included as a standard procedural check. After pouring, plates were placed on a level surface until the agar was gelled then incubated at approximately 37°C until growth was adequate for enumeration (approximately 65 hours). Note that the loss of an individual plate (e.g., due to microbial contamination) will not affect the validity of the study.

13. DEVIATIONS FROM THE PROTOCOL

None.

14. FINAL REPORT AND RECORDS TO BE MAINTAINED

Information on equipment maintenance and calibration, storage, usage, and disposition of the test substance, and all other records that would demonstrate adherence to the protocol will be maintained. Facility records which are not specific to the subject study will be maintained by the testing facility and archived according to PSL SOP.

The original, final report will be sent to the Sponsor. A copy of the signed report, together with the protocol, associated amendments and/or deviations if applicable, and all raw data generated at PSL will be maintained in the PSL Archives. PSL will maintain these records for a period of at least five years. After this time, the Sponsor of the study will be offered the opportunity to take possession of the records or request continued archiving by PSL.

15. RESULTS

Revertant colony counts for each strain are presented in Tables 1-5. Historical Control Data is presented in Appendix A.

The mean revertant colony counts for each strain treated with the vehicle were close to or within the expected range, considering the laboratory historical control range and/or published values (Mortelmans & Zeiger, 2000; Gatehouse, 2012). The positive control substances caused the expected substantial increases in revertant colony counts in both the absence and presence of S9 in each phase of the test confirming the sensitivity of the test and the activity of the S9 mix. Therefore, each phase of the test is considered valid.

No signs of precipitation or toxicity were noted in any of the strains. Contamination, which did not obscure the counts, was noted in an individual plate in the vehicle control plate for the E. coli strain in the plate incorporation method. Contamination, which obscured the counts, was noted for strains TA1535 and TA1537 in individual plates at doses 3160 µg/plate and 1000 µg/plate for the plate incorporation method with S9 and in the pre-incubation method with S9, respectively. Individual plate contamination did not impact mutagenicity evaluation.

For all strains, eight dose levels without precipitation, toxicity or plate contamination were evaluated; therefore, bacterial mutagenicity was adequately assessed.

There was no concentration-related or substantial test substance related increases in the number of revertant colonies observed with strains TA1535, TA1537, TA98, TA100 or E. Coli WP2 uvrA in both the absence and presence of S9 using either the plate incorporation or the pre-incubation method.

16. CONCLUSION

Based on these findings and on the evaluation system used, Silk Fibroin did not elicit evidence of bacterial mutagenicity in the Ames assay.

17 REFERENCES

Ames, B. N., Durston, W. E., Lee, F. D., & Yamasaki, E. (1973). Carcinogens are mutagens: a simple test system combining liver homogenates for activation and bacteria for detection. *Proceedings of the National Academy of Sciences, Vol. 70* (No. 8), 2281-2285.

Gatehouse D (2012). Bacterial mutagenicity assays: test methods. *Methods in Molecular Biology, Vol. 817*: 21-34.

Maron, D. M., & Ames, B. N. (1983). Revised methods for the Salmonella mutagenicity test. *Mutation Research, 113,* 173-215.

Mortelmans, K., & Zeiger, E. (2000). The Ames *Salmonella*/microsome mutagenicity assay. *Mutation Research, 455,* 29–60.

U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention & National Institutes of Health. (2009). Biosafety in Microbiological and Biomedical Laboratories (5th ed.). HHS Publication No. (CDC) 21-1112.

SIGNATURE

Silk Fibroin

I, the undersigned, declare that the methods, results and data contained in this report faithfully reflect the procedures used and raw data collected during the study.

[redacted]

Mithila Shitut, BVSc & AH, MS
Study Director
Product Safety Labs

Date

TABLE 1A: REVERTANT COLONY COUNTS – TA 1535

Plate Incorporation Method - Main Test									
TA1535		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	5 17 13	12	6.1	12 8 8	9	2.3	1.00	1.00
Test Substance	31.6	12 12 14	13	1.2	15 7 16	13	4.9	1.08	1.44
Test Substance	100	11 13 15	13	2.0	6 5 15	9	5.5	1.08	1.00
Test Substance	316	11 14 12	12	1.5	12 13 14	13	1.0	1.00	1.44
Test Substance	1000	16 13 15	15	1.5	10 9 15	11	3.2	1.25	1.22
Test Substance	3160	12 12 13	12	0.6	U 9 15	12	4.2	1.00	1.33
Test Substance	10000	10 12 23	15	7.0	14 9 8	10	3.2	1.25	1.11
Test Substance	31600	11 11 9	10	1.2	14 18 15	16	2.1	0.83	1.78
Test Substance	1000000	12 21 17	17	4.5	15 10 6	10	4.5	1.42	1.11
Sodium Azide	1.5	796 841 783	807	30.4	-			67.25	-
2-AA	10				374 461 401	412	44.5	-	45.78

N/A = Not applicable; U = Contamination, plate unreadable

TABLE 1B: REVERTANT COLONY COUNTS – TA 1535

Pre-Incubation Method - Confirmatory Test									
TA1535		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	18 8 10	12	5.3	16 15 9	13	3.8	1.00	1.00
Test Substance	31.6	11 16 15	14	2.6	9 8 13	10	2.6	1.17	0.77
Test Substance	100	5 9 12	9	3.5	9 8 9	9	0.6	0.75	0.69
Test Substance	316	13 9 10	11	2.1	12 11 12	12	0.6	0.92	0.92
Test Substance	1000	15 10 12	12	2.5	14 14 9	12	2.9	1.00	0.92
Test Substance	3160	14 14 19	16	2.9	8 9 8	8	0.6	1.33	0.62
Test Substance	10000	15 12 13	13	1.5	14 14 9	12	2.9	1.08	0.92
Test Substance	31600	24 11 10	15	7.8	17 8 8	11	5.2	1.25	0.85
Test Substance	1000000	12 13 9	11	2.1	19 14 13	15	3.2	0.92	1.15
Sodium Azide	1.5	792 807 815	805	11.7	-			67.08	-
2-AA	10	-			364 326 350	347	19.2	-	26.69

N/A = Not applicable

TABLE 2A: REVERTANT COLONY COUNTS – TA 1537

Plate Incorporation Method - Main Test									
TA1537		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	11 10 14	12	2.1	14 10 17	14	3.5	1.00	1.00
Test Substance	31.6	18 16 11	15	3.6	17 17 13	16	2.3	1.25	1.14
Test Substance	100	9 12 19	13	5.1	14 17 10	14	3.5	1.08	1.00
Test Substance	316	15 11 11	12	2.3	14 14 19	16	2.9	1.00	1.14
Test Substance	1000	6 10 6	7	2.3	14 11 11	12	1.7	0.58	0.86
Test Substance	3160	5 14 12	10	4.7	14 13 16	14	1.5	0.83	1.00
Test Substance	10000	14 18 13	15	2.6	17 13 9	13	4.0	1.25	0.93
Test Substance	31600	16 19 13	16	3.0	17 11 10	13	3.8	1.33	0.93
Test Substance	1000000	22 17 22	20	2.9	17 25 20	21	4.0	1.67	1.50
ICR 191 Acridine	1	326 227 308	287	52.7	-			23.92	-
2-AA	10				162 234 333	243	85.9	-	17.36

N/A = Not applicable

TABLE 2B: REVERTANT COLONY COUNTS – TA 1537

Pre-Incubation Method - Confirmatory Test									
TA1537		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	19 16 12	16	3.5	11 11 19	14	4.6	1.00	1.00
Test Substance	31.6	17 17 10	15	4.0	8 12 12	11	2.3	0.94	0.79
Test Substance	100	12 10 10	11	1.2	11 10 14	12	2.1	0.69	0.86
Test Substance	316	17 10 16	14	3.8	15 13 18	15	2.5	0.88	1.07
Test Substance	1000	14 14 27	18	7.5	U 18 16	17	1.4	1.13	1.21
Test Substance	3160	13 12 12	12	0.6	22 14 16	17	4.2	0.75	1.21
Test Substance	10000	16 16 20	17	2.3	22 17 16	18	3.2	1.06	1.29
Test Substance	31600	13 20 22	18	4.7	14 11 21	15	5.1	1.13	1.07
Test Substance	1000000	22 18 14	18	4.0	12 17 14	14	2.5	1.13	1.00
ICR 191 Acridine	1	5509 6162 6172	5948	379.9				371.75	-
2-AA	10	-			274 202 222	233	37.2	-	16.64

N/A = Not applicable; U = Contamination, plate unreadable

TABLE 3A: REVERTANT COLONY COUNTS – TA 98

Plate Incorporation Method - Main Test									
TA98		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	23 25 25	24	1.2	31 30 22	28	4.9	1.00	1.00
Test Substance	31.6	23 21 26	23	2.5	24 24 22	23	1.2	0.96	0.82
Test Substance	100	21 26 18	22	4.0	22 26 33	27	5.6	0.92	0.96
Test Substance	316	19 24 23	22	2.6	32 33 23	29	5.5	0.92	1.04
Test Substance	1000	20 35 16	24	10.0	28 33 25	29	4.0	1.00	1.04
Test Substance	3160	22 27 29	26	3.6	19 30 27	25	5.7	1.08	0.89
Test Substance	10000	16 20 25	20	4.5	29 25 31	28	3.1	0.83	1.00
Test Substance	31600	22 16 24	21	4.2	22 22 26	23	2.3	0.88	0.82
Test Substance	100000	22 25 30	26	4.0	33 31 22	29	5.9	1.08	1.04
Daunomycin	6	1328 1416 1293	1346	63.4				56.08	-
2-AA	10				3408 2859 3347	3205	300.9	-	114.46

N/A = Not applicable

TABLE 3B: REVERTANT COLONY COUNTS – TA 98

Pre-Incubation Method - Confirmatory Test									
TA98		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	22 20 22	21	1.2	30 21 29	27	4.9	1.00	1.00
Test Substance	31.6	20 21 27	23	3.8	25 24 27	25	1.5	1.10	0.93
Test Substance	100	26 16 19	20	5.1	23 25 29	26	3.1	0.95	0.96
Test Substance	316	26 22 22	23	2.3	20 26 22	23	3.1	1.10	0.85
Test Substance	1000	25 22 18	22	3.5	18 26 29	24	5.7	1.05	0.89
Test Substance	3160	35 29 28	31	3.8	28 29 24	27	2.6	1.48	1.00
Test Substance	10000	17 29 17	21	6.9	34 37 30	34	3.5	1.00	1.26
Test Substance	31600	23 22 25	23	1.5	26 22 23	24	2.1	1.10	0.89
Test Substance	1000000	22 19 21	21	1.5	25 29 21	25	4.0	1.00	0.93
Daunomycin	6	892 864 871	876	14.6				41.71	-
2-AA	10		-		3868 3508 3160	3512	354.0	-	130.07

N/A = Not applicable

TABLE 4A: REVERTANT COLONY COUNTS – TA 100

Plate Incorporation Method - Main Test									
TA100		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (ug/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	96 90 80	89	8.1	104 111 115	110	5.6	1.00	1.00
Test Substance	31.6	126 112 127	122	8.4	120 122 98	113	13.3	1.37	1.03
Test Substance	100	89 94 120	101	16.6	112 125 114	117	7.0	1.13	1.06
Test Substance	316	112 118 105	112	6.5	108 116 94	106	11.1	1.26	0.96
Test Substance	1000	84 105 96	95	10.5	115 128 108	117	10.1	1.07	1.06
Test Substance	3160	103 108 110	107	3.6	98 110 97	102	7.2	1.20	0.93
Test Substance	10000	122 99 115	112	11.8	118 140 108	122	16.4	1.26	1.11
Test Substance	31600	122 107 92	107	15.0	133 118 100	117	16.5	1.20	1.06
Test Substance	1000000	105 95 115	105	10.0	116 143 113	124	16.5	1.18	1.13
Sodium Azide	1.5	704 657 728	696	36.1				7.82	-
2-AA	10		-		3983 3837 3617	3812	184.2	-	34.65

N/A = Not applicable

TABLE 4B: REVERTANT COLONY COUNTS – TA 100

Pre-Incubation Method - Confirmatory Test									
TA100		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	84 135 126	115	27.2	92 127 145	121	27.0	1.00	1.00
Test Substance	31.6	97 73 102	91	15.5	114 118 133	122	10.0	0.79	1.01
Test Substance	100	103 100 94	99	4.6	132 117 129	126	7.9	0.86	1.04
Test Substance	316	105 126 91	107	17.6	118 143 137	133	13.1	0.93	1.10
Test Substance	1000	125 122 126	124	2.1	96 115 129	113	16.6	1.08	0.93
Test Substance	3160	98 108 123	110	12.6	113 109 111	111	2.0	0.96	0.92
Test Substance	10000	127 113 109	116	9.5	118 112 115	115	3.0	1.01	0.95
Test Substance	31600	92 106 110	103	9.5	112 109 90	104	11.9	0.90	0.86
Test Substance	1000000	112 107 95	105	8.7	113 117 93	108	12.9	0.91	0.89
Sodium Azide	1.5	501 433 493	476	37.2	-			4.14	-
2-AA	10	-			2464 2707 2954	2708	245.0	-	22.38

N/A = Not applicable

TABLE 5A: REVERTANT COLONY COUNTS – EC WP2 uvrA

Plate Incorporation Method - Main Test									
E. Coli WP2 uvrA		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (ug/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	41 35/C 39	38	3.1	43 52 41	45	5.9	1.00	1.00
Test Substance	31.6	42 36 36	38	3.5	45 44 39	43	3.2	1.00	0.96
Test Substance	100	40 31 33	35	4.7	44 43 30	39	7.8	0.92	0.87
Test Substance	316	46 39 38	41	4.4	40 44 45	43	2.6	1.08	0.96
Test Substance	1000	45 36 51	44	7.5	43 36 49	43	6.5	1.16	0.96
Test Substance	3160	36 31 44	37	6.6	35 44 31	37	6.7	0.97	0.82
Test Substance	10000	43 30 33	35	6.8	50 44 57	50	6.5	0.92	1.11
Test Substance	31600	32 47 26	35	10.8	43 42 38	41	2.6	0.92	0.91
Test Substance	1000000	34 46 42	41	6.1	45 48 51	48	3.0	1.08	1.07
MMS	2.5	896 817 930	881	58.0	-			23.18	-
2-AA	10	-			115 120 117	117	2.5	-	2.60

N/A = Not applicable; C = Contamination, did not obscure count

TABLE 5B: REVERTANT COLONY COUNTS – EC WP2 uvrA

Pre-Incubation Method - Confirmatory Test									
E. Coli WP2 uvrA		Revertant Colonies per Plate						Mutation Factor	
		Without Activation (-S9)			With Activation (+S9)				
Treatment	Dose (µg/plate)	Counts	Mean	SD	Counts	Mean	SD	-S9	+S9
Sterile Water	N/A	34 42 38	38	4.0	40 44 43	42	2.1	1.00	1.00
Test Substance	31.6	47 42 42	44	2.9	51 49 46	49	2.5	1.16	1.17
Test Substance	100	37 36 40	38	2.1	48 49 40	46	4.9	1.00	1.10
Test Substance	316	29 40 33	34	5.6	42 54 38	45	8.3	0.89	1.07
Test Substance	1000	27 34 36	32	4.7	37 41 41	40	2.3	0.84	0.95
Test Substance	3160	32 40 38	37	4.2	41 43 33	39	5.3	0.97	0.93
Test Substance	10000	30 35 40	35	5.0	53 57 45	52	6.1	0.92	1.24
Test Substance	31600	38 44 30	37	7.0	46 43 33	41	6.8	0.97	0.98
Test Substance	1000000	34 38 35	36	2.1	46 44 41	44	2.5	0.95	1.05
MMS	2.5	457 460 453	457	3.5	-			12.03	-
2-AA	10	-			108 104 121	111	8.9	-	2.64

N/A = Not applicable

APPENDIX A: HISTORICAL CONTROL DATA[1]

Plate Incorporation Method - Revertants Per Plate							
Strain	**Treatment**	**Dose (µg/plate)**	**S9**	**Mean**	**SD**	**Min**	**Max**
TA1535	Sodium Azide	1.5	-	618	91	359	1192
TA1537	ICR 191 Acridine	1	-	1136	1437	119	6388
TA98	Daunomycin	6	-	938	343	350	1500
TA100	Sodium Azide	1.5	-	600	126	392	1003
E. Coli	MMS	2.5	-	634	101	386	846
TA1535	2-AA	10	+	267	86	85	636
TA1537	2-AA	10	+	280	99	42	542
TA98	2-AA	10	+	2321	971	83	3915
TA100	2-AA	10	+	2377	806	976	4169
E. Coli	2-AA	10	+	125	30	63	196
TA1535	Sterile Water	N/A	-	13	2	7	21
TA1537	Sterile Water	N/A	-	12	4	6	25
TA98	Sterile Water	N/A	-	28	8	16	49
TA100	Sterile Water	N/A	-	130	16	104	155
E. Coli	Sterile Water	N/A	-	45	7	29	57
TA1535	Sterile Water	N/A	+	13	3	9	20
TA1537	Sterile Water	N/A	+	15	3	8	28
TA98	Sterile Water	N/A	+	29	5	18	40
TA100	Sterile Water	N/A	+	145	14	116	170
E. Coli	Sterile Water	N/A	+	59	13	31	81

Historical Data maintained by PSL from 2015.

APPENDIX A (cont.): HISTORICAL CONTROL DATA[1]

Pre-Incubation Method - Revertants Per Plate							
Strain	Treatment	Dose (ug/plate)	S9	Mean	SD	Min	Max
TA1535	Sodium Azide	1.5	-	622	71	478	831
TA1537	ICR 191 Acridine	1	-	3227	1227	875	5700
TA98	Daunomycin	6	-	602	345	146	1227
TA100	Sodium Azide	1.5	-	539	166	138	904
E. Coli	MMS	2.5	-	509	143	313	808
TA1535	2-AA	10	+	293	64	64	391
TA1537	2-AA	10	+	260	107	112	541
TA98	2-AA	10	+	2384	938	506	3530
TA100	2-AA	10	+	2388	583	1308	3620
E. Coli	2-AA	10	+	128	29	60	188
TA1535	Sterile Water	N/A	-	16	3	8	23
TA1537	Sterile Water	N/A	-	14	5	5	23
TA98	Sterile Water	N/A	-	29	7	14	46
TA100	Sterile Water	N/A	-	118	18	83	143
E. Coli	Sterile Water	N/A	-	46	10	30	67
TA1535	Sterile Water	N/A	+	12	2	8	19
TA1537	Sterile Water	N/A	+	14	5	6	26
TA98	Sterile Water	N/A	+	35	7	23	50
TA100	Sterile Water	N/A	+	125	16	88	147
E. Coli	Sterile Water	N/A	+	53	9	36	76

[1] Historical Data maintained by PSL from 2015.