ANDREW N. HOOFNAGLE
4/2/2022

Work contact information
Department of Laboratory Medicine and Pathology
Campus Box 357110
University of Washington Medical Center
Seattle, WA 98195
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EDUCATION

M.D., University of Colorado School of Medicine, Denver, CO
June 1997 – May 2004

Ph.D., University of Colorado at Boulder, Boulder, CO
August 1999 – August 2002
Major: Chemistry and Biochemistry
Thesis title: "Activation induced changes in conformational mobility in the mitogen activated protein kinases." (Advisor – Natalie Ahn, Ph.D.)

B.S., Cornell University, Ithaca, NY
September 1991 – May 1995
Major: Biology (Microbiology focus)

POSTGRADUATE TRAINING

Resident, Clinical Pathology, Departments of Laboratory Medicine and Pathology
University of Washington Medical Center, Seattle, WA 98195
July 2004 – June 2007

Chief Resident, Clinical Pathology, Departments of Laboratory Medicine and Pathology
University of Washington Medical Center, Seattle, WA 98195
July 2005 – June 2006

FACULTY POSITIONS HELD

Professor
Department of Laboratory Medicine and Pathology
University of Washington
July 2020 – present

Adjunct Professor
Division of Metabolism, Endocrinology, and Nutrition
Department of Medicine
University of Washington
July 2017 – present

Professor
Department of Laboratory Medicine
University of Washington

July 2017 – June 2020

Associate Professor
Department of Laboratory Medicine
University of Washington
July 2012 – 2017

Adjunct Associate Professor
Division of Metabolism, Endocrinology, and Nutrition
Department of Medicine
University of Washington
July 2012 – 2017

Assistant Professor
Department of Laboratory Medicine
University of Washington
July 2007 – June 2012

Adjunct Assistant Professor
Division of Metabolism, Endocrinology, and Nutrition
Department of Medicine
University of Washington
January 2010 – June 2012

POSITIONS HELD

Head, Division of Chemistry, Department of Laboratory Medicine and Pathology,
University of Washington (UW)
July 2020 – present

Director, Clinical Mass Spectrometry, Department of Laboratory Medicine and Pathology
July 2020 – present

Director, Clinical Chemistry Laboratory, University of Washington Medical Center
February 2013 – present

Assistant Director, Clinical Immunology, Department of Laboratory Medicine and Pathology
July 2020 – present

Director, Analytical Core, Nutrition and Obesity Research Center, Univ. of Wash.
April 2013 – July 2018, July 2020 – present

Head, Division of Chemistry, Department of Laboratory Medicine
February 2013 – June 2020

Director, Clinical Mass Spectrometry, Department of Laboratory Medicine
July 2007 – June 2020

Assistant Director, Clinical Immunology, Department of Laboratory Medicine
July 2007 – June 2020

Deputy Director, Northwest Lipid Metabolism and Diabetes Research Laboratory, UW
July 2019 – June 2020

Director, Reference Laboratory Services, Department of Laboratory Medicine
March 2011 – July 2019

Associate Director, Analytical Core, Nutrition and Obesity Research Center, UW
July 2007 – April 2013

Assistant Director, Clinical Chemistry, Department of Laboratory Medicine
July 2007 – January 2013

Assistant Director, Analytical Hub, Mouse Metabolic Phenotyping Center, UW
September 2009 – August 2011

HONORS AND AWARDS

Travelling Lectureship, Canadian Society of Clinical Chemists (2019)
David Rothfield Memorial Oration, Australasian Association of Clinical Biochemists (2018)
Kubasik Award, American Association of Clinical Chemistry (AACC, 2017)
van Slyke Award, AACC (2017)
Distinguished Analytical Scientist Award,
Clinical and Pharmaceutical Solutions through Analysis Symposium (2015)
Ellis Benson Award, Academy of Clinical Laboratory Physicians and Scientists (2013)
Outstanding Scientific Achievements by a Young Investigator, AACC (2012)
Mentor of the Month, AACC (April, 2011)
Outstanding Speaker Award, AACC (2010, 2011, 2013, 2014, 2015)
Grannis Award for Excellence in Research, National Acad. of Clinical Biochemistry (NACB, 2010)
Distinguished Abstract Award, NACB (2009)
Best Abstract Award, Proteomics Division, AACC (2009)
Best Abstract Award, Nutrition Division, AACC (2009)
Robert F. Labbé Junior Faculty Fellowship, University of Washington (2008)
Human Immunology Award, Irvington Institute for Immunological Research (2006, declined)
Student Travel Grant Award, AACC (2006)
Best Abstract Award, Clinical and Diagnostic Immunology Division, AACC (2006)
Young Investigator Awards, Academy of Clinical Laboratory Physicians and Scientists (2006,7)
Strandjord-Clayson Award, Department of Laboratory Medicine, University of Washington (2006)
Young Leader Award, College of American Pathologists Foundation (2004)
Election to Alpha Omega Alpha, University of Colorado School of Medicine (2003)
Citation for Academic Excellence, University of Colorado School of Medicine (1998)
Recipient of Ph.D. Boulder Graduate Fellowship (1998)
NIH Pre-doctoral Intramural Research Training Award (1996 – 1997)
Howard Hughes Research Scholarship, Cornell University (1994)
Morley Student Research Grant, Cornell University (1993)

BOARD CERTIFICATION

Board Certified in Clinical Pathology (August 21, 2007)

LICENSE TO PRACTICE

Washington Physician and Surgeon (July 2006 – present)

PROFESSIONAL ORGANIZATIONS

College of American Pathologists –Fellow
Academy of Clinical Laboratory Physicians and Scientists – Member
American Society for Clinical Pathology – Fellow
Canadian Society for Clinical Chemistry – Member
College of American Pathologists –Member of the Accuracy-based Testing Committee (2011-19)
American Association for Clinical Chemistry – Annual Meeting Organizing Cmte, Vice-chair (2016)
National Academy of Clinical Biochemistry – Fellow, Member of the Board of Directors (2013-16)
American Association for Clinical Chemistry – President, Proteomics Division (2015)
American Association for Clinical Chemistry – Treasurer, Proteomics Division (2012-14)
American Association for Clinical Chemistry – Chair, Continuing Medical Educ Cmte (2008-13)
Mass Spectrometry: Applications for the Clinical Laboratory, Annual Meeting – Co-Chair (2008-13)

EDITORIAL RESPONSIBILITIES

Clinical Chemistry, Associate Editor (2010 – present)
Molecular and Cellular Proteomics, Board of Editors (2010 – 2018)
Proteomics: Clinical Applications, Editorial Board (2011 – present)
Clinical Proteomics, Editorial Board (2011 – present)
Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 6th edition, Associate Editor
Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 7th edition, Associate Editor

TEACHING RESPONSIBILITIES

Laboratory Medicine 322/418 (yearly) *(Clinical Chemistry - Lectures)*
Glucose Testing and Diabetes, Clinical Mass Spectrometry, Thyroid Disorders, Thyroid Testing, and/or Chromatography
Laboratory Medicine 427 (2007-2015) *(Senior Seminar in Laboratory Medicine - Seminar)*
Critical Pathways
Laboratory Medicine 685 (yearly) *(Senior Medical Students Special Seminar)*
Pheochromocytoma and/or Lipids
Mass Spectrometry: Applications to the Clinical Laboratory (MSACL) 2008, 2010 *(Workshop)*
Evening Workshop: Proteins, Proteomics and Disease Markers
American Association for Clinical Chemistry 2009 *(Moderator for two symposia)*
Applications of LC-MS/MS in the Clinical Laboratory: Proteins
Application of LC-MS/MS in the Clinical Laboratory: Small Molecules
Northwest Medical Laboratory Symposium 2009 *(Workshop)*
LC-MS in the Clinical Laboratory: Using Vitamin D as a Case Study
American Association for Clinical Chemistry 2010 *(Moderator for one symposium)*
Measuring Proteins in Clinical Samples Using LC-MS/MS
American Society for Clinical Pathology 2010 *(Workshop)*
LC-MS/MS and the Clinical Laboratory: Examples from Endocrinology
American Association for Clinical Chemistry 2011 *(Speaker for one symposium)*
Applications of Tandem Mass Spectrometry for Proteomic Clinical Diagnostics
Washington State Society of Pathologists 2011 Annual Meeting *(Speaker for one symposium)*
Thyroid Disease and the Clinical Laboratory
Partners for Clean Competition Annual Meeting 2011, UCLA CME *(Symposium speaker)*
Measuring Proteins Using Mass Spectrometry

American Association for Clinical Chemistry 2012 *(Speaker for one workshop)*
Quality Control for Liquid Chromatography-Mass Spectrometry: Reading the Signs
ASCLS-Washington Spring Seminar 2013 *(Short Course Instructor)*
Mass Spectrometry in the Clinical Laboratory
American Association for Clinical Chemistry 2013
The Why and How-To of Using LC-MS to Measure Proteins *(Workshop Speaker)*
What Proteomics Can Learn From Metabolomics *(Symposium Speaker)*
(Symposium Moderator and Speaker)
Why Should We Use Mass Spectrometry to Measure Vitamin D Metabolites?
Meeting the Challenge of Chronic Pain Management (UW CME) *(Instructor)*
UDT – How the Lab Can Help (2013)
Update on Ordering UDTs (2014)
American Society for Clinical Pathology (Webinar on March 26, 2014) *(Instructor)*
Why Should I Use Mass Spectrometry to Measure Vitamin D?
Laboratory Medicine Grand Rounds 2014 (UW CME) *(Instructor)*
A Clinicopathologic Correlation (CPC) in Pain Medicine Testing.
Personalized Diagnostics Today Virtual Meeting (AACC, 2014) *(Instructor)*
Protein Measurements by Mass Spectrometry: Better for Patients?
Seminar Series at Sahlgrenska Academy, Gothenburg, Sweden *(Seminar Speaker)*
Clinical Proteomics
Targeted Proteomics Course at UW 2014-2018 *(Instructor)*
Proteomic Assay Calibration (2015, 2016, 2017, 2018)
Plasma Proteomics (2015, 2016, 2017)
Immunoaffinity Techniques (2014)
Targeted Proteomics Course at Northeastern 2018, 2019 *(Instructor)*
Proteomic Assay Calibration (2018, 2019)
MSACL 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019 *(Short Course Instructor)*
Quantitative Proteomics
MSACL EU 2017 *(Short Course Instructor)*
Quantitative Proteomics
University of Colorado Resident Rounds (2021) *(Visiting Lecturer)*
Clinical Mass Spectrometry

SPECIAL NATIONAL AND INTERNATIONAL RESPONSIBILITIES

Chemical Pathology Test Development and Advisory Committee, American Board of Pathology (2019-present)
Apolipoproteins by Mass Spectrometry Working Group, Scientific Division, IFCC (2017-present)
C64, Measurement of Proteins and Peptides by Mass Spectrometry, Clinical Laboratory Standards Institute Guideline, Voting Member of the Writing Group (2017-2021)
Harmonization Oversight Group, International Consortium for Harmonization of Clinical Laboratory Results, International Federation of Clinical Chemistry (IFCC) (2018-2020)
Expert Panel on the Vitamin D Paradox, NIH, Moderator (December 2017)
Immunology Devices Panel, Food and Drug Administration (CDRH), Consultant (2016-present)
Opponent, PhD Dissertation Defense of Josef Pannee, University of Gothenburg, Sweden (Nov 2015)
Genome Canada College of Reviewers: Genomic Applications Partnership Program (Sept 2015)
FDA Panel on Laboratory Developed Tests, Member. (January 2015)

NCI's Clinical Proteomic Technologies for Cancer: Think Tank. (April 2014)
Research Oversight Committee, Genome Canada and Genome BC (Sept 2013-Sept 2018)
C62-A, Liquid Chromatography-Mass Spectrometry Methods, Clinical Laboratory Standards Institute Guideline, Voting Member of the Writing Group (2013-2014)
Targeted Peptide Measurements in Biology and Medicine: Best Practices for Assay Development Using a "Fit-for-Purpose" Approach (June 2013)
Chair, NIH Study Section – Topic 319 (March 2013)
NCI Frederick Advisory Committee, Immuno-MRM Working Group Meeting (Feb 2013)
NIH Ad hoc Mail-in Reviewer for SBIR/STTR Program (Feb, Sept 2012)
Genome Canada College of Reviewers: Large-Scale Applied Research Project Competition in Genomics and Personalized Health (May 2012)
NIH-AACC Statistical Experimental Design Considerations in Research Studies Using Proteomic Technologies (Aug 2011)
NIH-CDC Int'l Standardization of 25-OH-vit-D Levels in National Health Surveys (Nov 2010)
NIH-CDC Roundtable on NHANES Monitoring of Folate and Vitamin B12, Member (July 2010)
CAP Vitamin D Accuracy-based Proficiency Standards Subcommittee, Member (2010-2011)
NCI-CPTC Strategy Workshop on Implementing a Cancer Biomarker Pipeline (September 2009)
NIH-CDC Roundtable on NHANES Monitoring of Serum 25-OH Vitamin D, Member (July 2009)
NCI-FDA Interagency Oncology Task Force on Molecular Diagnostics, Member (Nov. 2008)

CURRENT RESEARCH SUPPORT

R01 HL096875 (Kestenbaum) 09/01/2016-06/30/2021 5%
NIH/NHLBI
Individual Response to Vitamin D Treatment
Findings from the studies proposed in this application could augment the interpretation of ongoing vitamin D clinical trials and catalyze a precision medicine approach aimed at maximizing the benefits of vitamin D therapy while potentially reducing harm and substantially decreasing costs.
Role: co-Investigator

1 U01 CA214114 (Paulovich) 06/01/2017-05/31/2022 2.5%
NIH/NCI
Proteogenomic studies aimed at understanding ovarian tumor responses to agents targeting the DNA damage response and translating this knowledge into clinical benefit
Under the direction of Andrew Hoofnagle, MD PhD, the University of Washington will oversee the quality assurance and quality control of assays developed as part of the Proteogenomic Translational Research Center and deployed in the analysis of clinical trial biospecimens.
Role: PI (subcontract)

P30 DK017047 (Kahn) 01/01/2019-11/30/2022 10%
NIDDK/NIH
Diabetes Research Center
Part of the National Network established by NIDDK, the Diabetes Research Center provides Core resources for diabetes investigators around the country. The Quantitative and Functional Proteomics Core develops and provides cutting-edge assays that use tandem mass spectrometry in the quantitation of small molecules and proteins in clinical samples.
Role: Director of the Quantitative Proteomics Subcore

U01 DK121289 (Hoofnagle) 04/01/2019-03/31/2023 20%

NIDDK/NIH

Quantifying proteins in plasma to democratize personalized medicine for patients with Type 1 diabetes

This proposal aims to generate and validate novel transferable protein assays that harness the power of mass spectrometry. Standard operating procedures, validation data, and affinity reagents will be made available to the research community.

Role: PI

R01 CA235575 (Paulovich) 09/01/2018-08/31/2023 5%

NCI/NIH

Clinical Translation of a NextGen platform for quantifying protein networks in human biospecimens

Our project aims to translate (for use in clinical research settings) a multiplex protein assay for quantifying tumor suppressor proteins and cell signaling networks that respond to DNA damage—a critical network targeted by current drug discovery efforts. The assay is based on a NextGen platform for quantifying protein panels uses targeted multiple reaction monitoring mass spectrometry (MRM-MS), which complements existing protein assay technologies and overcomes many of the technological limitations, including enabling multiplexing of assays for many proteins in a single network. MRM has been extensively validated in the preclinical space, but has not yet been adapted for clinical translation.

Role: PI (subcontract)

U19 AG065156 (MacCoss and Montine) 02/15/2020-1/31/2025 25%

NIA/NIH

Next Generation Translational Proteomics for Alzheimer's and Related Dementias

We propose to enable precision medicine for Alzheimer’s disease (AD) by developing a cooperative research program that will unite a unique research team with the specific goal of vastly improving the molecular characterization of CSF as predictors of cognitive decline and AD pathophysiology

Role: PI, Project 3; PI, Core 3

R01 DK124063 (Kestenbaum and Wurfel) 05/01/2020-04/30/2025 5%

NIH/NIDDK

Role of Kidney Proximal Tubular Secretion in Critical Illness

The major goal of this study is to advance clinical assessment of acute kidney injury (AKI) by adding functional measurements that align with the underlying mechanisms of disease.

Role: Co-Investigator

R21 AI153487 (Fink) 07/01/2020-06/30/2022 0%

NIH/NIAID

Neurosteroid Inhibition of Pyroptotic Lysis

This proposal aims to understand how the neurosteroid, pregnenolone sulfate, inhibits the form of programmed cell death called pyroptosis. This project will also determine whether other steroids share this activity.

Role: Other Significant Contributor (no salary support)

R01 DK125646 (Schafer and Schwartz, UCSF) 07/01/2020-06/30/2025 5%
NIDDK/NIH
Skeletal Health in Type 1 Diabetes and the Role of Diabetic Kidney Disease
This is an ancillary study across 7 of the existing PERL centers to examine relationships between bone density/bone microstructure and kidney function in patients with Type 1 Diabetes. The results of this study will inform potential future screening and interventions for patients with diabetic kidney disease.
Role: Co-Investigator

R01 DK12508 (de Boer) 12/01/2020-11/30/2024 10%
NIDDK/NIH
Kidney Tubular Functions in Type 1 Diabetes
The primary goals of this study are to characterize longitudinal changes in kidney tubular functions and changes in T1D, test whether treatment with allopurinol vs. placebo mitigates the loss of kidney tubular functions over time and the extent of tubular damage, and identify risk factors associated with loss of kidney tubular functions over time
Role: Co-Investigator

R01 HL146499 (Lemaitre) 06/24/2020-05/31/2024 10%
NHLBI/NIH
Plasma Sphingolipids and Subclinical and Clinical Cardiovascular Disease
The goal of this study is to identify novel factors, plasma ceramides and sphingomyelins, associated with subclinical cardiovascular disease, including changes in myocardial structure and function, estimated with cardiac magnetic resonance (CMR) imaging, and changes in atherosclerosis, estimated with coronary artery calcium (CAC).
Role: Co-Investigator

R01 HL149675 (Lemaitre) 06/10/2020-05/31/2023 10%
NHLBI/NIH
Circulating sphingolipids and risk and outcomes of ventricular fibrillation
The study will investigate associations of erythrocyte sphingolipids with incident ventricular fibrillation and outcomes of ventricular fibrillation.
Role: Co-Investigator

P30 DK035816 (Schwartz) 07/01/2020-06/30/2025 10%
NIDDK/NIH
Nutrition Obesity Research Center
The NORC Analytic Core provides affiliate investigators with nutrition-related testing for clinical and basic science research studies. This is a Core facility and no personal research support is available
Role: Director, Analytic Core

U2C DK 114886 (Himmelfarb) 06/19/2017-06/30/2022 5%
NIDDK/NIH
Central Hub for Kidney Precision Medicine
The overarching objective of the KPMP Central Hub is to facilitate logistics and operations required to promote scientific rigor, patient safety, and the successful interdisciplinary team science necessary to for major advances in kidney precision medicine. As a key component of this model, the Administrative Core will have primary responsibility for coordinating the operations

of the KPMP, establishing necessary working groups and relationships, forming and operating a Patient Engagement Working Group, and administering an Opportunity Pool to form new partnerships. The Administrative Core will additionally provide project management, budgeting, and fiscal management for all Hub activities. The Administrative Core will be responsible for overall day-to-day center operations, research, research training and education, and community outreach activities, including information dissemination.
Role: Co-Investigator

PREVIOUS RESEARCH SUPPORT

Pilot Microgrant (Hoofnagle) 07/01/2021 to 04/30/2022 5%
Validation of a novel assay for type III collagen turnover
In this micro-grant application, we propose to finish validating our novel assay in preparation for a full evaluation by the Collagen Turnover Working Group, which was formed as an effort to improve upon the quantification of the amino-terminal peptide of type III procollagen, one of the biomarkers currently used to detect the use of exogenous human growth hormone
Role: PI

Pilot Microgrant (Hoofnagle) 09/01/2020-03/31/2020 5%
Partnership for Clean Competition
A novel method for measuring type III collagen turnover
This proposal is for the development of a novel assay for the quantification of the C-terminal peptide of type III procollagen and breakdown products of collagen in plasma, which are putative biomarkers of the turnover of type III collagen and the administration of exogenous human growth hormone, a substance used for performance enhancement in sports.
Role: PI

R01 DK088762 (de Boer) 02/24/2016-01/31/2021 7.5%
NIH/NIDDK
Randomized trial of vitamin D and omega-3 fatty acids for diabetic kidney disease
In this competitive renewal application, we propose to extend follow-up of our VITAL DKD ancillary study from 2 to 5 years, add measurements to stored specimens to more comprehensively evaluate treatment effects, and assess intermediate cardiovascular outcomes that complement our primary renal outcome.
Role: Co-investigator

Industry Grant (Hoofnagle) 06/01/2020-09/01/2020 0.5%
Tasso, Inc.
Demonstrating the Utility of Tasso OnDemand-SST in Remote Serosurveillance in COVID-19
This study focuses on the Tasso-SST, a Tasso OnDemand product that enables home collection of a blood sample that yields 100-150 uL of serum, which is compatible with most in vitro diagnostic test systems. To test the hypothesis that serum from the Tasso-SST device is equivalent to that obtained at standard phlebotomy, we propose these specific aims to (1) compare Tasso-SST serum to serum obtained by standard phlebotomy at the same time, (2) evaluate the stability of antibodies to SARS-CoV-2 during shipment, and (3) demonstrate that patients can use the device at home and ship their sample to the laboratory and that those samples are equivalent to the serum collected by standard phlebotomy.
Role: PI

Industry Grant (Hoofnagle) 10/01/2014-03/29/2020 1%
Waters Technologies Corporation
Translating Advances in Mass Spectrometry into Clinical Care
The goal of this project is to evaluate novel methods for protein quantification using new instrumentation and approaches to calibration.
Role: PI

1R01DK099199 (de Boer) 04/15/2014-02/29/2020 10%
NIH/NIDDK
Vitamin D catabolism in chronic kidney disease
Using injections of stable isotope labeled 25-hydroxyvitamin D, this project aims to understand changes in vitamin D metabolism due to chronic kidney disease.
Role: co-Investigator

1 R01 DK107931 (Kestenbaum) 09/01/2015-02/29/2020 5%
NIH/NIDDK
Tubular Secretion in Chronic Kidney Disease
This grant proposes to advance our understanding of proximal tubule secretion function by (1) estimating renal secretion function and determining associations with major clinical outcomes in CRIC, and (2) recruiting patients with a broad range of kidney function and comparing the ability of tubule secretion and GFR to predict renal drug clearances.
Role: Co-investigator

Foundation Grant (Afkarian/de Boer) 04/01/2015-09/30/2019 2.5%
Juvenile Diabetes Res Foundation
Biomarker Validation and Discovery in Diabetic Nephropathy
Targeted proteomics will be used to (1) identify novel biomarkers in urine for the development and progression of diabetic nephropathy and (2) identify novel pathways that are altered during disease progression.
Role: Co-investigator

1 R21 AI129935 (Winer) 07/14/2017-06/30/2019 10%
NIH/NIAID
Vitamin D and Natural History of Human Papillomavirus (HPV) Infections in Women
We hypothesize that serum vitamin D levels will be inversely associated with prevalent, persistent, and reactivated hrHPV infection. Information gleaned will help us to understand whether serum vitamin D levels impact the hrHPV natural history n mid-adult women. Ultimately, these pilot data will be crucial in developing future longitudinal studies designed to evaluate whether achievement or maintenance of sufficient serum vitamin D levels can positively alter the natural history of hrHPV infections.
Role: co-Investigator

R01 DK102438 (Isakova) 06/01/2018-05/31/2019 5%
NIH/NIDDK
Impact of Phosphate and FGF23 reduction on intermediate end points in CKD
Leader of the biomarker laboratory to investigate the influence of phosphate lowering therapies on biomarkers related to mineral metabolism and other biomarkers of chronic kidney disease.
Role: PI (subcontract)

5 R01 ES024381 (Braun) 04/01/2016-03/31/2019 5%
NIH/NIEHS
Endocrine Disrupting Chemicals, Thyroid Hormones, and Child Neurobehavior
This project will test the hypothesis that chronic exposure to phthalates, triclosan, and bisphenol A has detrimental effects on the thyroid hormone axis and that these hormonal changes increase the risk of attention-deficit/hyperactivity disorder, cognitive impairments, or learning disabilities in growing children.
Role: PI (subcontract)

1 R01 DK103657-01 (Lemaitre) 09/30/2014-07/31/2018 5%
NIH/NIDDK
Sphingolipids, Diabetes, and Cardiovascular Disease
This application seeks to identify plasma ceramide and sphingomyelin species associated with increased risk of incident heart disease and type 2 diabetic subjects in the Strong Heart Family Study.
Role: Co-investigator

P30 DK035816 (Chait/Shwartz) 07/01/2007-06/30/2018 10%
NIH/NIDDK
Clinical Nutrition Research Unit (CNRU)
The CNRU Analytical Core provides affiliate investigators with nutrition-related testing for clinical and basic science research studies.
Role: Director of the Analytical Core

U01 DK099877 (Gassman) 07/01/2014-06/30/2018 5%
NIH/NIDDK
Pilot Clinical Trials in CKD Consortium
Serve as the specialized laboratory for the measurement of FGF23 in the Pilot Clinical Trials in CKD Consortium, a collection of investigators/groups interested in performing clinical population studies of interventions in chronic kidney disease.
Role: PI (subcontract)

R01HL128575 (Lemaitre) 04/15/16 – 01/31/2019 5%
NIH/NHLBI
Plasma Sphingolipids and Risk of Cardiovascular Disease
This study will investigate the associations of novel modifiable factors, plasma ceramides and sphingomyelins containing specific saturated fatty acids, with the risks of incident heart failure, incident atrial fibrillation, incident sudden cardiac death and total mortality among older adults.
Role: co-Investigator

1R01DK101720 (Ix) 04/01/2014-02/28/2018 5%
NIH/NIDDK
Effects of Niacin on Mineral Metabolism in Chronic Kidney Disease
This project aims to determine the effects of niacin on phosphate, FGF23, and other markers of mineral metabolism in CKD patients randomized to niacin or placebo in the AIM-HIGH trial.
Role: PI (subcontract)

1 R01 GM107142-01 (MacCoss) 09/01/2013-04/30/2018 10%
NIH/NIGMS
Self Correcting Nanoflow LC-MS for Clinical Proteomics
This project aims to test the hypothesis that instrumentation automation in nano-flow chromatography can improve the robustness of clinical protein measurements by LC-MS/MS.
Role: Co-Investigator

5 R01 DK104706 (Afkarian) 04/25/2015-02/28/2018 2.5%
Molecular signatures of diabetic kidney disease
This project aims to develop and deploy a panel assay to quantify proteins in urine in CRIC participants and in patients from the SKS study to predict disease progression.
Role: Co-investigator

Partnership for Clean Competition (Hoofnagle) 12/01/2011-06/08/2017 0%
Sensitive and specific detection of human chorionic gonadotropin and markers of growth hormone administration using LC-MS/MS
This project aims to develop novel assays employing mass spectrometry to improve the sensitivity and specificity of assays for hCG, IGF-I, and PIIINP, markers of performance enhancing drug use.
Role: PI

1 R01 HL111375-01A1 (Hoofnagle) 07/01/2012-11/30/2016 30%
NIH/NHLBI
HDL and cardiovascular risk in chronic kidney disease
This project aims to identify novel molecular alterations in high density lipoproteins that are associated with poor cardiovascular outcomes and endothelial dysfunction in patients with chronic kidney disease.
Role: PI

U24CA160034-01(Carr) 09/01/2011-08/31/2016 15%
NIH/NCI
Proteo-genomic Discovery, Prioritization and Verification of Cancer Biomarkers
This project is a multi-institutional collaboration to generate hundreds of new assays for putative cancer biomarkers using LC-MS/MS
Role: PI (subcontract)

5 R33 CA173300-02 (Paulovich) 09/01/2013-08/31/2016 5%
NIH/NCI
Advanced development of immuno-MRM technology to analyze archived cancer tissues
The goal of this project is to develop methods that can be used to quantify proteins in tissues by immunoaffinity-LC-MS/MS for diagnosis, prognosis, or therapeutic management of disease.
Role: PI (subcontract)

5 R01 DK094891-02 (Kestenbaum) 09/01/2013-08/31/2015 10%
NIH/NIDDK
Mineral metabolism disturbances and arteriovenous fistula maturation
This project focuses on a better understanding of the mechanisms and markers of fistula maturation failure in patients with end-stage kidney disease.
Role: Co-investigator

3 R01 DK088762 (de Boer) 09/092014-08/31/2015 3.75%
NIH/NIDDK/ODS
Randomized trial of vitamin d and omega-3 fatty acids for diabetic kidney disease
This administrative supplement aims to develop and validate a novel LC-MS/MS assay for cholecalciferol and ergocalciferol in human serum and plasma samples.
Role: Co-Investigator

1 R21 AI109817-01 (Abraham) 12/15/2013-11/30/2015 5%
NIH/NIAID
Vitamin d deficiency, inflammation and age-related disease in HIV-infected men
The aim of this study is to characterize vitamin D levels in patients infected with HIV before and after HAART to better understand the importance of vitamin D status on inflammation in treated HIV patients.
Role: PI (subcontract)

1 R01 HL096875-01A1 (de Boer/Kestenbaum) 04/01/2010-03/31/2014 10%
Phosphorus and Vitamin D Metabolism and Cardiovascular Outcomes: Multiethnic Study of Atherosclerosis
The overall goal of this application is to define relationships of phosphorous excess and vitamin D insufficiency with subclinical cardiovascular outcomes in a community based, multi-ethnic population.
Role: co-Investigator

2 R01 AG027002-05A1 (Sarnak) 05/01/2012-03/31/2015 5%
The Aging Kidney: Chronic Injury, Impaired Functions and Clinical Outcomes
This project aims to measure markers of mineral metabolism in the Health ABC cohort to better predict clinical outcomes related to kidney function in a normal aging population.
Role: Co-Investigator (subcontract)

1R01AG034853-01A2 (Shlipak) 05/01/2010-04/30/2015 10%

The Aging Kidney in HIV-Infection: biomarkers for early detection of injury

The overall goal of this proposal is to identify novel biomarkers of early kidney injury that would specify the site of injury within the kidney, precede detectable declines in GFR, and allow for targeted prevention of kidney disease.

Role: PI (subcontract)

1 RC4 DK090766-01 (de Boer) 09/30/2010-09/29/2012 10%

Vitamin D metabolism and type 1 diabetes complications

The overall goal of this application is to assess the potential clinical relevance of impaired vitamin D metabolism in the pathogenesis of type 1 diabetes complications.

Role: co-Investigator

P30 DK017047 (Palmer) 10/01/2009-9/30/2011 10%

Pilot and Feasibility Award - Diabetes and Endocrinology Research Center (DERC)

Lipoproteomic Biomarkers of Vascular Disease in Diabetes

The goal of this proposal is to investigate whether there are proteomic changes in high density lipoproteins or non-high density lipoproteins that associate with type 1 diabetes or the presence of coronary artery disease in subjects with type 1 diabetes.

Role: PI

Commercialization grant (Stayton) 07/01/2011-6/30/2012 5%

Life Sciences Discovery Fund

Smart magnetic nanoparticles in commercial immunoassays

The overall goal of this proposal is to develop the proof-of-principle data needed to interest a commercial investor to bring smart magnetic nanoparticles to market.

Role: Co-investigator

Coulter Foundation (Lai) 06/01/2011-05/30/2012 5%

Next Generation High Sensitivity Immunoassay

The goal of this project is to evaluate the use of smart magnetic nano-particles in immunoassays and compare them to currently available microparticles.

Role: co-PI

Alzheimer's Disease Research Center (Raskind) 05/01/2011-04/30/2012 4%

Pilot grant: Quantification of A-beta and Tau in CSF by LC-MS/MS

This project aims to generate clinical-quality LC-MS/MS assays for A-beta and Tau in CSF to be used as biomarkers of Alzheimer's Disease.

Role: PI

3 U24 DK076126-04S1 (LeBoeuf) 02/01/2010-08/31/2011 5%

Mouse Metabolic Phenotyping Center (MMPC): Diabetes and Diabetic Complications

The MMPC Analytic Core performs specialized testing on mouse samples for characterization of metabolic phenotypes in basic science research.

Role: Assistant Director of the Analytical Hub

P30 DK035816 (Chait) 07/01/2007-06/30/2009
Pilot and Feasibility Award - CNRU
Role of HDL Proteomic Changes in the Pathogenesis of Atherosclerosis in Obesity
This study aims to determine biomarkers of the atherosclerotic risk associated with insulin resistance within the HDL proteome.
Role: PI

Pilot Grant (Hoofnagle) 02/01/2008-01/31/2009
Alliance for Lupus Research
Biomarkers of Atherosclerosis in Systemic Lupus Erythematosus
The goal of this project is to determine the HDL proteomic changes in patients diagnosed with lupus who are at increased risk of atherosclerosis.
Role: PI

ORIGINAL PUBLICATIONS

H-index: 57

1. Pablo A, **Hoofnagle AN**, Mathias PC. Listening to your mass spectrometer: An open-source toolkit to visualize mass spectrometer data. (2021) *J Mass Spectrom Adv Clin Lab.* **23**:44-49.

2. Huang D, Chowdhury S, Wang H, Savage SR, Ivey RG, Kennedy JJ, Whiteaker JR, Lin C, Hou X, Oberg AL, Larson MC, Eskandari N, Delisi DA, Gentile S, Huntoon CJ, Voytovich UJ, Shire ZJ, Yu Q, Gygi SP, **Hoofnagle AN**, Herbert ZT, Lorentzen TD, Calinawan A, Karnitz LM, Weroha SJ, Kaufmann SH, Zhang B, Wang P, Birrer MJ, Paulovich AG. (2021) Multiomic analysis identifies CPT1A as a potential therapeutic target in platinum-refractory, high-grade serous ovarian cancer. *Cell Rep Med.* **2**(12):100471.

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4. Hsu S, Prince DK, Williams K, Allen NB, Burke GL, **Hoofnagle AN**, Li X, Liu KJ, McClelland RL, Michos ED, Psaty BM, Shea SJ, Rice KM, Rotter JI, Siscovick D, Tracy RP, Watson KE, Kestenbaum BR, de Boer IH. Clinical and biomarker modifiers of vitamin D treatment response: the Multi-Ethnic Study of Atherosclerosis. *Am J Clin Nutr.* **115**(3):914-924.

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8. Shi J, Bird R, Schmeling MW, **Hoofnagle AN**. (2021) Using mass spectrometry to overcome the longstanding inaccuracy of a commercially-available clinical testosterone immunoassay. *J Chromatogr B Analyt Technol Biomed Life Sci.* **1183**:122969.

9. Banerjee RR, Spence T, Frank SJ, Pandian R, **Hoofnagle AN**, Argiropoulos B, Marcadier JL. (2021) Very Low Vitamin D in a Patient With a Novel Pathogenic Variant in the GC Gene That Encodes Vitamin D-Binding Protein. *J Endocr Soc.* **5**(9):bvab104.

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14. Best CM, Zelnick LR, Thummel KE, Hsu S, Limonte C, Thadhani R, Sesso HD, Manson JE, Buring JE, Mora S, Lee IM, Cook NR, Friedenberg G, Luttmann-Gibson H, de Boer IH, **Hoofnagle AN**. (2022) Serum Vitamin D: Correlates of Baseline Concentration and Response to Supplementation in VITAL-DKD. *J Clin Endocrinol Metab.* **107**(2):525-537.

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7. Durazo-Arvizu RA, Camacho P, Bovet P, Forrester T, Lambert EV, Plange-Rhule J, **Hoofnagle AN**, Aloia J, Tayo B, Dugas LR, Cooper RS, and Luke A. (2015) Reply to T Weishaar. *Am J Clin Nutr.* **101**(2):413-4.

8. Grant RP and **Hoofnagle AN**. (2014) From Lost in Translation to Paradise Found: Enabling Protein Biomarker Method Transfer by Use of Mass Spectrometry. *Clin Chem.* 60(7):941-4

9. Di Meo AD, Diamandis EP, Rodriguez H, **Hoofnagle AN**, Ioannidis J, and Lopez M. (2014) What Is Wrong with Clinical Proteomics? *Clin Chem.* 60(10):1258-66

10. **Hoofnagle AN**, Aebersold R, Anderson NL, Felsenfeld A, and Liebler DC. (2011) Painting a moving picture: large-scale proteomics efforts and their potential for changing patient care. *Clin Chem.* **57**:1357-60.

11. **Hoofnagle AN.** (2010) Peptide lost and found: internal standards and the mass spectrometric quantification of peptides. *Clin Chem.* **56**:1515-7.

12. Simons SA, Molinelli AR, Sobhani K, Rainey PM, and **Hoofnagle AN.** (2009) Two Cases with Unusual Vancomycin Measurements. *Clin Chem.* **55**:578-80.

13. Walter RB, **Hoofnagle AN**, Lanum SA, and Collins SJ. (2006) Acute, life-threatening hypoglycemia associated with haloperidol in a hematopoietic stem cell transplant recipient. *Bone Marrow Transplant*. **37**:109-10.

14. **Hoofnagle AN.** (2005) Error by an Impaired Staff Member. *Laboratory Errors & Patient Safety*. **5**:8-9.

PATENTS

Hoofnagle AN and Wener MH. (2010) "Methods and Compositions for Detecting Thyroglobulin in a Biological Sample." U.S. Patent Number 7,807,172. *Licensed to SISCAPA Assay Technologies*

FORMAL PRESENTATIONS

1. Invited speaker (December 2021) "Clinical Proteomics: Catching Flies with Chopsticks." Pathology Grand Rounds, University of Colorado, Aurora, CO.

2. Invited speaker (October 2021) "Clinical Proteomics: Catching Flies with Chopsticks." Pathology Grand Rounds, University of Minnesota, Minneapolis, MN (virtual due to COVID).

3. Invited speaker (January 2021) "Clinical Proteomics: Catching Flies with Chopsticks." Special Seminar, MSACL Connect (virtual due to COVID).

4. Invited speaker (November 2020) "Mass spectrometry troubleshooting and validation - Dealing with your daily problems." 2020 AACC Annual Meeting, Presidents Session (virtual due to COVID).

5. Invited speaker (February 2020) "Clinical Proteomics: What Every Sample Wants." Special Seminar, Department of Pathology, University of Florida, Gainesville, FL.

6. Invited speaker (December 2019) "Clinical Proteomics: What Every Sample Wants." CSCC Travelling Lectureship Symposium, Mount Sinai Hospital, Toronto, ON, Canada.

7. Invited speaker (December 2019) “Clinical Proteomics: What Every Sample Wants.” Special Seminar, Centre hospitalier de l'Université de Montréal, Montreal, QC, Canada.

8. Invited speaker (November 2019) “Complementing Medical Genetics with Clinical Proteomics.” Medical Genetics Grand Rounds, UW, Seattle, WA.

9. Invited speaker (November 2019) “Generating a New Hypothesis: Targeted Proteomics, ApoL1, and Chronic Kidney Disease.” Prime time for precision diagnostics driven by unmet clinical needs symposium, Leiden University Medical Center, Leiden, The Netherlands.

10. Invited speaker (October 2019) “Clinical Proteomics in the Hospital Lab: Meeting the Needs of Patients.” Clinical and Pharmaceutical Solutions through Analysis Annual Meeting, Langhorne, PA.

11. Invited speaker (October 2019) “Clinical Proteomics: What Every Sample Wants.” Special Seminar, Memorial University of Newfoundland, St. John’s, NF, Canada.

12. Invited speaker (October 2019) “Clinical Proteomics: What Every Sample Wants.” Department Pathology Ground Rounds, Dalhousie University, Halifax, NS, Canada.

13. Invited speaker (October 2019) “Quantifying proteins by LC-MS/MS: A clinical perspective.” 18th Annual USADA Symposium on Anti-Doping Science, Tokyo, Japan.

14. Invited speaker (September 2019) “Clinical Proteomics: What Every Sample Wants.” Special Seminar, Royal University Hospital, Saskatoon, SK, Canada.

15. Invited speaker (September 2019) “Clinical Proteomics: What Every Sample Wants.” Translational Clinical Proteomics Symposium, British Columbia Society of Clinical Chemists, Vancouver, BC, Canada.

16. Invited speaker (September 2019) “Clinical Proteomics: What Every Sample Wants.” Annual Meeting of the Alberta Society of Clinical Chemists at the University of Alberta Hospital, Edmonton, AB, Canada.

17. Invited speaker (September 2019) “Clinical Proteomics: What Every Sample Wants.” Meeting of the SoCal Chapter of AACC, CME Provided by Kaiser Permanente, Los Angeles, CA.

18. Invited speaker (July 2019) “Advanced Topics in LC-MS/MS.” Annual Meeting of AACC, Anaheim, CA.

19. Invited speaker (May 2019) “Clinical Mass Spectrometry: Think About It.” Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, Salt Lake City, UT.

20. Invited speaker (May 2019) “Using Targeted Proteomic Assays in the Care of Patients.” Special Emphasis Meeting, Annual Meeting of the NIA-funded Alzheimer’s Disease Centers, Philadelphia, PA.

21. Invited speaker (April 2019) “Clinical Proteomics for Biomarker Discovery.” Proteomics and its Application to Translational and Precision Medicine, Keystone Meeting, Stockholm, Sweden.

22. Invited speaker (April 2019) “Apolipoprotein L1 is Associated with Larger HDL Particles in Chronic Kidney Disease.” Annual Meeting of the Association for Mass Spectrometry: Applications to the Clinical Laboratory, Palm Springs, CA.

23. Invited speaker (October 2018) “Quantifying Vitamin D Binding Globulin by LC-MS/MS.” Faculty Retreat, Division of Metabolism, Endocrinology, and Nutrition, Department of Medicine, UW, Eunumclaw, WA.

24. Invited speaker (October 2018) “Using Mass Spectrometry to Measure Proteins for the Care of Patients.” Grand Rounds, Memorial Sloan Kettering, New York City, NY.

25. Invited speaker (October 2018) “Using Mass Spectrometry to Improve the Care of Patients.” Grand Rounds, Children’s Hospital of Philadelphia, Philadelphia, PA.

26. Invited speaker (October 2018) “Clinical Proteomics: What Every Sample Wants.” Annual Meeting, Mass Spectrometry Separations Science Section, AACC, Philadelphia, PA.

27. Invited speaker (September 2018) “Using Mass Spectrometry to Measure Proteins for the Care of Patients.” Plenary Lecture, Annual Meeting of the Australasian Association for Clinical Biochemistry, Sydney, NSW, Australia.

28. Invited speaker (September 2018) “Clinical Proteomics.” Australasian Association for Clinical Biochemistry, Clinical Mass Spectrometry Satellite Meeting, Sydney, NSW, Australia.

29. Invited speaker (September 2018) “HDL Proteomics.” Regional Meeting of the Australasian Association for Clinical Biochemistry, Sydney, NSW, Australia.

30. Invited speaker (June 2018) “Mass Spectrometry: Bridging Biology, Epidemiology, and Patient Care.” Pathology Grand Rounds, University of Vermont, Burlington, VT.

31. Invited speaker (December 2017) “Racial Differences in the Key Aspects of Vitamin D Biochemistry.” Expert Panel on the Vitamin D Paradox, NIH, Bethesda, MD.

32. Invited speaker (November 2017) “Proficiency Testing and External Quality Assessment: College of American Pathologists Accuracy-Based Vitamin D Survey.” Meeting of the Vitamin D Standardization Program, Bethesda, MD.

33. Invited speaker (November 2017) “Why Patients(’ Samples) Prefer to Have a Mass Spectrometer Quantify Their Proteins.” Fall Meeting of the Central New York Chapter of AACC, Turning Stone, NY.

34. Invited speaker (October 2017) “Why Patients(’ Samples) Prefer to Have a Mass Spectrometer Quantify Their Proteins.” Fall Meeting of the Metropolitan New York Chapter of AACC, Tarrytown, NY.

35. Invited speaker (September 2017) “Quantifying Proteins in Dried Blood Spots. ” Mass Spectrometry: Applications to the Clinical Laboratory EU Annual Meeting, Salzburg, Austria.

36. Invited speaker (June 2017) “Kidney Function is Associated with Changes in HDL Composition.” Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, New Haven, CT.

37. Invited speaker (May 2017) “Kidney Function is Associated with Changes in HDL composition.” HDL Workshop: An Ancillary Meeting of the Annual Meeting of the Society for Atherosclerosis, Thrombosis, and Vascular Biology, Minneapolis, MI.

38. Invited speaker (May 2017) “Why Patients Prefer to Have a Mass Spectrometer Quantify Their Proteins.” Grand Rounds, Department of Pathology, Duke University, Durham, NC.

39. Invited speaker (May 2017) “Kidney Function is Associated with Changes in HDL Composition.” Laboratory of Medical Genetics Research Seminar, Department of Pathology, Duke University, Durham, NC.

40. Invited speaker (March 2017) “Why Patient(‘s Samples) Prefer to Have a Mass Spectrometer Quantify Their Proteins.” Research Rounds, Department of Laboratory Medicine, Yale University, New Haven, CT.

41. Invited speaker (March 2017) “Improving Our Understanding of Vitamin D Metabolism with LC-MS/MS: Unveiling Biology, Increasing Throughput.” The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon) Annual Meeting, Chicago, IL.

42. Invited speaker (January 2017) “A Multiplexed Assay to Identify CYP24A1 Deficiency.” Mass Spectrometry: Applications to the Clinical Laboratory Annual Meeting, Palm Springs, CA.

43. Invited speaker (January 2017) “Kidney function is associated with changes in HDL composition.” Diabetes and Metabolism Seminar Series, University of Washington, Seattle, WA.

44. Invited speaker (November 2016) “Affinity Enrichment.” Sample Preparation ASMS Fall Workshop, Baltimore, MD.

45. Invited speaker (November 2016) “Clinical Biomarkers.” Sample Preparation ASMS Fall Workshop, Baltimore, MD.

46. Invited speaker (October 2016) “Using Mass Spectrometry to Care for Patients.” West and Midwest Chairs and Administrators Regional Conference, Maui, HI.

47. Invited speaker (September 2016) “Perspectives From a Clinical Laboratory.” Iron Screening and Supplementation in Iron-replete Pregnant Women and Young Children, Public Workshop at the National Institutes of Health, Bethesda, MD.

48. Invited speaker (May 2016) “Keynote Address: Using Mass Spectrometry to Help Patients.” Mass Spectrometry in the Clinic: Regulatory Considerations Surrounding Validation of Liquid Chromatography-Mass Spectrometry Based Devices, Public Workshop at the Food and Drug Administration, Silver Spring, MD.

49. Invited speaker (April 2016) “Multiplexed Vitamin D Metabolite Assay and Column Regeneration.” Waters Users’ Group Meeting, San Francisco, CA

50. Invited speaker (March 2016) “Quantification Of Vitamin D-binding Protein By Liquid Chromatography-tandem Mass Spectrometry: Implications For The Assessment Of Bioavailable Vitamin D Concentrations Across Genotypes.” Vitamin D Workshop, Boston, MA.

51. Invited speaker (March 2016) “Replacing Protein Immunoassays with LC-MS/MS.” Symposium on Mass Spectrometry in the Modern Clinical Laboratory, University of California, San Deigo, CA.

52. Invited speaker (February 2016) “Gingerbread Men: A Cookie-cutter Bottom-up Proteomics Workflow for the Hungry?” Mass Spectrometry: Applications to the Clinical Laboratory Annual Meeting, Palm Springs, CA.

53. Invited speaker (November 2015) “Why Patients Adore Mass Spectrometry.” Seminar Series at Sahlgrenska Academy, Gothenburg, Sweden.

54. Invited speaker (October 2015) “Taking Advantage of Mass Spectrometry in the Care of Patients.” Special Seminar at Food and Drug Administration (CDRH), Silver Spring, MD.

55. Invited speaker (October 2015) “Pigs ‘n Blankets: Mass Spectrometry and the Continuum of Human Health.” Clinical and Pharmaceutical Solutions through Analysis Annual Meeting, Langhorne, PA.

56. Invited speaker (September 2015) “How Far Should Assay Validation Go in a Tiered Environment?” Crystal City VI: BMV on Biomarkers [Sponsored by the Food and Drug Administration (CDER) and the American Association of Pharmaceutical Sciences], Baltimore, MD.

57. Invited speaker (September 2015) “Why Patients Adore Mass Spectrometry.” Mass Spectrometry: Applications to the Clinical Laboratory EU Annual Meeting, Salzburg, Austria.

58. Invited speaker (August 2015) “How Mass Spectrometers Help Patients.” Special Seminar at Cambridge Isotopes, Tewksbury, MA.

59. Invited speaker (June 2015) “Quantifying VDBG by LC-MS/MS.” Vitamin D Standardization Program Annual Meeting, Cambridge, UK.

60. Invited speaker (May 2015) “Moving from Biomarker Discovery to Clinical Utility.” Waters-Tufts Scientific Executive Summit, Boston, MA.

61. Invited speaker (February 2015) “Quantifying Proteins in Clinical Samples by LC-MS/MS.” Special Seminar at St. Paul’s Hospital, Vancouver, BC.

62. Invited speaker (December 2014) “Measurement of 25(OH)D: Perspective From the Clinical Lab.” Vitamin D: moving toward evidence-based decision making in primary care, sponsored by NIH, Bethesda, MD.

63. Invited speaker (October 2014) “Using Mass Spectrometry to Measure Proteins in the Clinical Laboratory.” AACC Conference on Clinical Mass Spectrometry, St. Louis, MO.

64. Invited speaker (October 2014) “Helping the Clinical Lab Help Patients.” Clinical and Pharmaceutical Solutions through Analysis Annual Meeting, Langhorne, PA.

65. Invited speaker (October 2014) “Helping the Clinical Lab Help Patients.” Clinical and Pharmaceutical Solutions through Analysis Annual Meeting, Langhorne, PA.

66. Invited speaker (June 2014) “Prioritizing Our Validation Efforts.” Proteomics in the Clinic (Hosted by the FDA). Silver Spring, MD.

67. Invited speaker (June 2014) “A Clinicopathologic Correlation (CPC) in Pain Medicine Testing.” Laboratory Medicine Grand Rounds at the University of Washington. Seattle, WA.

68. Invited speaker (May 2014) “If It’s Broke, Why Not Fix It? How Mass Spectrometry Can Make the Most of Our Precious Samples.” Advancing translational research Using mass spectrometry (Hosted by the Duke Proteomics Core Facility with Support From the Duke Translational Research Institute). Durham, NC.

69. Invited speaker (April 2014) “Validation Approaches and Requirements” NCI’s Clinical Proteomic Technologies for Cancer: Think Tank. Bethesda, MD.

70. Invited speaker (March 2014) “Why Should I Use Mass Spectrometry to Measure Vitamin D?” American Society for Clinical Pathology Webinar Series.

71. Invited speaker (March 2014) “What Contributes to Inter-laboratory Variability of Targeted Protein LC-MS/MS Assays: A Case Study Using IGF-1.” Mass Spectrometry: Applications to the Clinical Laboratory Annual Meeting, San Diego, CA.

72. Invited speaker (November 2013) “Developing a Mini-validation Guidance Document for Novel LC-MRM/MS Assays.” Clinical Proteomics Tumor Analysis Consortium Annual Meeting, Bethesda, MD.

73. Invited speaker (November 2013) “Why Should We Use Mass Spectrometry to Measure Vitamin D Metabolites?” Vitamin D Standardization Program Symposium: Tools to Improve Laboratory Measurement, Gaithersburg, MD.

74. Invited speaker (November 2013) “UDT – How the Lab Can Help” Meeting the Challenge of Chronic Pain Management, Shoreline, WA.

75. Invited speaker (October 2013) “Perspectives on Assays with Short Turn-Around Time” Clinical and Pharmaceutical Solutions through Analysis Annual Meeting, Langhorne, PA.

76. Invited speaker (July 2013) “The Why and How-To of Using LCMS to Measure Proteins” Annual Meeting of the American Association for Clinical Chemistry, Houston, TX.

77. Invited speaker (July 2013) “What Proteomics Can Learn From Metabolomics” Annual Meeting of the American Association for Clinical Chemistry, Houston, TX.

78. Invited speaker (July 2013) “Why Should We Use Mass Spectrometry to Measure Vitamin D Metabolites?” Annual Meeting of the American Association for Clinical Chemistry, Houston, TX.

79. Invited speaker (June 2013) “A Wide Spectrum: Clinical Diagnostics for the Masses” Annual Meeting of the American Association for Mass Spectrometry, Minneapolis, MN.

80. Invited speaker (June 2013) “What Can My Spectrometer Do for Me?” Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, Atlanta, GA.

81. Invited speaker (June 2013) “Targeted Peptide Measurements in Biology and Medicine: What Are the Options?” Targeted Peptide Measurements in Biology and Medicine: Best Practices for Assay Development Using a “Fit-for-Purpose” Approach. Bethesda, MD.

82. Invited speaker (March 2013) “External Calibration: Why Should I?” US Human Proteome Organization, Baltimore, MD.

83. Invited speaker (December 2012) “Biomarkers of Disease Progression in Type 1 Diabetes” Diabetes Research Center/Nutrition Obesity Research Center Retreat, Seattle, WA.

84. Invited speaker (November 2012) “Quantifying Proteins in Mixtures is Complex” Southeastern Regional Meeting of the American Chemical Society, Raleigh, NC.

85. Invited speaker (October 2012) “Measuring Proteins by LC-MS in Clinical Samples” Mass Spectrometry: The expanding role in Life Sciences and Diagnostics (sponsored by Tecan, Inc.), Boston, MA.

86. Invited speaker (July 2012) “Quality Control for Liquid Chromatography-Mass Spectrometry: Reading the Signs” Annual Meeting of the American Association for Clinical Chemistry, Los Angeles, CA.

87. Invited speaker (July 2012) “Progress Toward the Quantification of Proteins in Clinical Samples by LC-MS/MS” Waters Workshop, Los Angeles, CA.

88. Invited speaker (May 2012) “Proper calibration can improve accuracy and precision of targeted proteomics assays.” Annual Meeting of the American Society for Mass Spectrometry, Vancouver, BC.

89. Invited speaker (January 2012) “Progress Toward the Quantification of Proteins in Clinical Samples by LC-MS/MS.” Mass Spectrometry: Applications to the Clinical Laboratory. San Diego, CA.

90. Invited speaker (December 2011) “Measuring Proteins by Mass Spectrometry.” Partnership for Clean Competition Annual Meeting. New York, NY.

91. Invited speaker (September 2011) Novel Roles for Mass Spectrometry in the Clinical Laboratory” Triangle Area Mass Spectrometry Discussion Group. Raleigh, NC.

92. Invited speaker (August 2011) “Quantifying Proteins by LC-MS/MS.” Next Generation Diagnostics Summit. Washington, DC.

93. Invited speaker (July 2011) “Applications of Tandem Mass Spectrometry for Proteomic Clinical Diagnostics.” 2011 Meeting of the American Association for Clinical Chemistry. Atlanta, GA.

94. Invited speaker (March 2011) “Quantifying Proteins by LC-MS/MS: Lessons From the Apolipoproteins.” Special seminar, Biodesign Institute. Phoenix, AZ.

95. Invited speaker (January 2011) “Quantifying Proteins by LC-MS/MS.” Special seminar, Department of Laboratory Medicine and Pathology. Minneapolis, MN.

96. Invited speaker (November 2010) “Serum Protein Quantification by LC-MS/MS: Apolipoproteins and Thyroglobulin.” Practical Applications of Mass Spectrometry in the Clinical Laboratory, Baltimore, MD.

97. Invited speaker (October 2010) “LC-MS/MS and the Clinical Laboratory: Examples from Endocrinology.” 2010 Annual Meeting of the American Society of Clinical Pathology, San Francisco, CA.

98. Invited speaker (October 2010) “Quantifying Proteins by LC-MS/MS.” Path Presents Seminar Series, Department of Pathology, University of Washington, Seattle, WA.

99. Invited speaker (October 2010) “Quantifying Proteins in Clinical Samples by LC-MS/MS.” Clinical Diagnostics Summit, BioConference Live, Seattle, WA (online).

100. Invited speaker (October 2010) “Developing Targeted Assays Using Mass Spectrometry.” Kidney Research Institute - Scientific Advisory Committee Meeting. Seattle, WA.

101. Invited speaker (October 2010) “Quantifying Proteins by LC-MS/MS.” 2010 Fall Meeting of the Ohio River Valley Section of AACC, Indianapolis, IN.

102. Invited speaker (October 2010) “Quantifying Proteins in Clinical Samples by LC-MS.” 9th Annual Symposium of the US Anti-Doping Association, Leesburg, VA.

103. Invited speaker (July 2010) “Quantifying Proteins by LC-MS/MS.” 2010 Meeting of the American Association of Clinical Chemistry, Anaheim, CA.

104. Invited speaker (March 2010) “Clinical Laboratory Assays by Quantitative Mass Spectrometry.” Annual Meeting of the US Human Proteome Organization. Denver, CO.

105. Invited speaker (February 2010) “Lipoproteomics in Obesity and Insulin Resistance.” Mass Spectrometry: Applications to the Clinical Laboratory 2010. San Diego, CA.

106. Invited speaker (December 2009) “Proteomics of Lipoproteins and Macrophages: An Expanding Role for Complement Regulation in Atherosclerosis.” Research Seminar. Department of Laboratory Medicine and Pathology, Yale University, New Haven, CT.

107. Invited speaker (November 2009) “Clinically Quantifying Low-abundance Serum Proteins by LC-MS/MS: Potential Benefits and a Case Study.” Clinical Proteomic Technologies for Cancer 2009 Annual Meeting, Sponsored by the National Cancer Institute. Bethesda, MD.

108. Invited speaker (October 2009) “Biomarkers in Atherosclerosis: What Lies in HDL.” Kidney Research Institute - Scientific Advisory Committee Meeting. Seattle, WA.

109. Invited speaker (July 2009) “Clinical Lipoproteomics Unveils Clusterin as a Novel Biomarker of Insulin Resistance.” Special Awards Ceremony, National Academy of Clinical Biochemistry, Chicago, IL.

110. Invited speaker (July 2009) “Serum Tumor Marker Quantification by LC-MS/MS: Is There Hope?” 2009 Meeting of the American Association of Clinical Chemistry, Chicago, IL.

111. Invited speaker (June 2009) “Proteomics and Biomarker Discovery: The Challenge of Human Plasma Proteomics.” Special Seminar in Biochemistry, Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO.

112. Invited speaker (June 2009) “Clusterin is depleted from HDL in obesity and insulin resistance.” Special Seminar in Endocrinology, Division of Endocrinology, Metabolism and Diabetes, University of Colorado Denver, Denver, CO.

113. Invited speaker (November 2008) “Serum Simplification Using Density Gradient Ultracentrifugation and Anti-Peptide Antibodies.” Current Topics in Cloning and Protein Expression, San Diego, CA.

114. Invited speaker (November 2008) “Tumor Marker Quantification by Mass Spectrometry: First Steps with Thyroglobulin.” Mass Spectrometry: Applications to the Clinical Laboratory, San Diego, CA.

115. Invited speaker (August 2008) “Towards Serum Protein Quantification by Mass Spectrometry.” Annual Meeting of the Association for Medical Laboratory Immunologists, Seattle, WA.

116. Invited speaker (July 2008) “Serum Tumor Marker Quantification by Mass Spectrometry: Is There Hope?” Seminar in Clinical Chemistry, Department of Pathology, University of Utah, Salt Lake City, UT.

117. Invited speaker (May 2008) "Biomarkers of Atherogenesis in SLE." Scientific Collaborative Meeting, Alliance for Lupus Research, New York, NY.

118. Invited speaker (September 2007) "Clinical Tumor Marker Quantitation with LC/MS/MS: Is There Hope?" Asilomar Conference, American Association for Mass Spectrometry, Asilomar, CA.

119. Invited speaker (June 2007) "Hospital-wide Intensive Insulin Therapy: What Can We Learn from Laboratory Data?" Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, San Diego, CA.

120. Invited speaker (November 2006) "Thyroglobulin Autoantibodies Revisited." Special Seminar, Department of Pathology and Laboratory Medicine, Mayo Clinic, Rochester, MN.

121. Invited speaker (June 2006) "Using a Secure Internet Accessible Database to Document Calls to Clinical Pathology Residents and to Improve Laboratory Medicine Education." Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, Chicago, IL.

122. Invited speaker (June 2006) "Detection and preliminary characterization of an isobaric interfering substance in the liquid chromatographic-tandem mass spectrometric quantitation of urine anabasine, a marker of tobacco exposure." Annual Meeting of the Academy of Clinical Laboratory Physicians and Scientists, Chicago, IL.

123. Invited speaker (February 2005) "State of the art: Mass spectrometry in the clinical laboratory." Grand Rounds, University of Washington, Department of Laboratory Medicine, Seattle, WA.

124. Invited speaker (July 2001) "Changes in Conformational Flexibility in the Protein Kinase ERK2 Following Phosphorylation and Activation." National M.D/Ph.D. Student Conference, Aspen, CO.

125. Invited speaker (July 1999) "Using hydrogen exchange-mass spectrometry and pepsin mapping to probe secondary structure in ERK2." 41st Rocky Mountain Conference on Analytical Chemistry, Denver, CO.

ABSTRACTS/POSTERS

Hoofnagle AN, Andrews ML, Kuklenyik Z, de Boer IH, and Kestenbaum BR. (October 2018) "Apolipoprotein L1 is Associated with Larger HDL Particles in Chronic Kidney Disease." Annual Conference of the American Society for Nephrology, San Diego, CA.

Netzel BC, Grebe SK, Becker JO, **Hoofnagle AN**, Clark PM, and Algeciras-Schimnich A. (March 2015) "Evaluation of Two LC-MS/MS Thyroglobulin Assays Performance in the Presence of Anti-thyroglobulin Autoantibodies." Annual Conference on Mass Spectrometry: Applications to the Clinical Laboratory, San Diego, CA.

Hoofnagle AN and the Assay Development Working Group (November 2013) "Developing a Mini-validation Guidance Document for Novel LC-MRM/MS Assays." First Clinical Proteomics Tumor Analysis Consortium Annual Meeting, Bethesda, MD.

Hoofnagle AN, Wu M, Becker JO, Brunzell JD, Kahn SE, Knopp RH, Lyons T, and Heinecke JW. (July 2009) "Clinical Lipoproteomics Unveils Clusterin as a Novel Biomarker of Insulin Resistance." 2009 Meeting of the American Association of Clinical Chemistry, Chicago, IL.

Hoofnagle AN, Wu M, Becker JO, Lyons T, Knopp RH, and Heinecke JW. (August 2008) "HDL Proteomic Changes in Insulin Resistance, Obesity, and Diabetes." 2008 Kern Aspen Lipid Conference, Aspen, CO.

Hoofnagle AN, Becker JO, Wener MH, and Heinecke JW. (July 2008) "Quantification of Serum Tumor Markers: Immunoaffinity Peptide Purification and Tandem Mass Spectrometry." 2008 Meeting of the American Association of Clinical Chemistry, Washington, DC.

Hoofnagle AN, Vaisar T, LeBoeuf RC, and Heinecke JW. (March 2008) "Critical role of macrophage-derived complement factor C3 in atherogenesis." 2008 Deuel Conference on Lipids, San Diego, CA.

Hoofnagle AN, Vaisar T, Green PS, and Heinecke JW. (August 2007) "Interplay between macrophage-derived complement factor C3 and HDL in atherogenesis." 2007 Kern Aspen Lipid Conference, Aspen, CO.

Hoofnagle AN, Wood LF, and Wener M. (July 2006) "Reducing autoantibody interference in thyroglobulin testing." 2006 Meeting of the American Association of Clinical Chemistry, Chicago, IL.

Hoofnagle AN, Laha T, Rainey PM, and Sadrzadeh SMH. (September 2005) "Rapid specimen preparation for the detection of nicotine and metabolites in urine using liquid chromatography-tandem mass spectrometry." 2005 Annual Meeting of the College of American Pathologists, Chicago, IL.

Hoofnagle AN, Laha T, Rainey PM, and Sadrzadeh SMH. (July 2005) "A rapid sample preparation technique for the LC/MS/MS quantitation of nicotine and metabolites in urine." 2005 Annual Meeting of the American Association for Clinical Chemistry, Orlando, FL.

Hoofnagle AN, Stoner JW, Eaton SS, and Ahn NG. (July 2002) "Site directed spin labeling and continuous wave EPR detect phosphorylation induced changes in conformational mobility in the protein kinase ERK2." 25th International EPR Symposium at the 44th Rocky Mountain Conference on Analytical Chemistry, Denver, CO.

Hoofnagle AN, Resing KA, Goldsmith EJ, and Ahn NG. (August 2001) "Changes in Conformational Flexibility in the Protein Kinase ERK2 Following Phosphorylation and Activation." Gordon Conference—Enzymes, Co-enzymes, and Metabolic Pathways, Meriden, NH.

Hoofnagle AN, Resing KA, Goldsmith EJ, and Ahn NG. (August 2000) "Changes in Conformational Flexibility in the Protein Kinase ERK2 Following Phosphorylation and Activation." Meeting of the Protein Society, San Diego, CA.

PRESS COVERAGE

"You Need Vitamin D to Live. How Could This Woman Survive With None in Her Blood?" *The New York Times*, Interviewed by Wudan Yan, Publication date: 04/13/2019.

"Theranos expert quits advisory board of blood testing group" *Financial Times*, Interviewed by David Crow, Publication date: 03/18/2018.

"Theranos founder's conference invitation sparks row among scientists" *Financial Times*, Interviewed by David Crow, Publication date: 08/04/2016.

"Mass Spec Welcome In Clinical Labs" *Chemical and Engineering News,* **93**:32-34. Interviewed by Celia Henry Arnaud, Publication date: 2015.

"Scientists re-examine racial variations in Vitamin D" University of Washington Press Release by Leila Gray. Publication date: 10/09/2015.

"New platform for cataloging hundreds of proteins gets test drive" *Nature Medicine*, **20**:1082–1083. Interviewed by Kendall Powell, Publication date: 2014.

"Despite legal pot, clean urine still needed for some employers" KIRO Radio (Local TV and Radio Station in Seattle). Interviewed by Zak Burns, MyNorthwest posting date: 03/21/2014.

"New Guidelines For Vitamin D" KUOW News (Seattle Public Radio Station). Interviewed by Patricia Murphy, Air Date: 12/01/2010.

"Simultaneous Quantification of Apolipoprotein A-I and Apolipoprotein B by Liquid Chromatography-Multiple Reaction Monitoring/Mass Spectrometry" Clinical Chemistry (Podcast). Interviewed by Bob Barrett.

"Quantification of 1α,25-Dihydroxy Vitamin D by Immunoextraction and Liquid Chromatography-Tandem Mass Spectrometry" Clinical Chemistry (Podcast). Interviewed by Bob Barrett.