# Microbial Identification Databases

## Technology Summary

Available to license, the invention is a method for assembling a coherent database containing an essentially unlimited number of pyrolysis mass spectra to enable rapid chemotaxonomy of unknown microbial samples. The invention corrects for short and long-term drift of microbial pyrolysis mass spectra by using spectra of similar microbes as internal standards. The invention provides for the first time a practical way to assemble a coherent database containing an essentially unlimited number of pyrolysis mass spectra or other instrumental "fingerprints", where one or more is representative of each relevant strain, and representative of additional strains as they are added to the pool of microbial agents. Microorganisms can be identified using the invention from their fingerprint spectra regardless of the growth medium used to culture the bacteria. This is a result of the discovery that corrections made to the fingerprint spectrum of one type of bacterium to compensate for changes in growth medium may be applied successfully to metabolically similar bacteria. Fingerprint spectra to which the method of the invention may be applied include pyrolysis MALDI or other types of mass spectra, infrared spectra, chromatograms, NMR spectra and ion-mobility spectra. The present invention is especially useful for the rapid identification of microorganisms, including human pathogens.

## Potential Commercial Applications

- Method to quickly identify microorganisms based on spectroscopic, spectrometric and chromatographic characteristics regardless of environment
- Rapid identification of pathogens during an outbreak
- Identification of biological warfare agents

## Competitive Advantages

- Rapid microorganism identification that can compensate for both instrumental contamination and environmental changes
- Applicable to a broad range of fingerprint methods to include mass spectrometry, infrared spectroscopy, ion mobility spectrometry, gas and liquid chromatography, and nuclear magnetic resonance (NMR)

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## Publications:

Wilkes et al., Improved Cell Typing by Charge-State Deconvolution of MALDI Mass Spectra, Rapid Communications in Mass Spectrometry: 595-603, March 2006 PMID: 16628570

## Intellectual Property:

United States Patent No. No. 6,996,472 Issued 02.07.2006

**Product Area:** Pyrolysis Mass spectra, fingerprint spectra, instrument microorganism fingerprint database

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