

**PW18 Establishment of a standardized procedure for identification of microorganisms by MALDI TOF mass spectrometry**

Leith J. Fremlin<sup>1</sup>; Matthias Pelzing<sup>1</sup>; Thomas Wenzel<sup>2</sup>; Carrie L. Seachord<sup>3</sup>; Thorsten Mieruch<sup>2</sup>; Thomas W. Fuller<sup>4</sup>; Thomas Maier<sup>2</sup>; Richard R. Drake<sup>4</sup>; Markus Kostrzewa<sup>2</sup>

1. Bruker Biosciences, Melbourne, Australia
2. Bruker Daltonik GmbH, Leipzig, Germany
3. Children's Hospital of the King's Daughter, Norfolk, VA, USA
4. Eastern Virginia Medical School, Norfolk, VA, USA

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Use of a dedicated bacterial calibration standard to establish reliable MALDI-TOF MS microorganism identification on different mass spectrometers

Introduction: MALDI-TOF MS profiling has been shown to be a fast and reliable method for the classification and identification of microorganisms making it a promising tool for clinical diagnostics, environmental and taxonomical research, or food processing quality control.

Methods: A dedicated calibration standard was developed covering the mass range from 4 to 17 kDa. Three different MALDI-TOF mass spectrometers (i.e. microflex TOF, autoflex II TOF/TOF, ultraflex III TOF/TOF, Bruker Daltonics) were tuned using this standard to reach minimum values for different parameters, i.e. mass accuracy, resolution, relative intensity, and single signal intensity. Calibration was performed based on a set of eight characteristic peaks within the standard. Subsequently, microorganisms from strain collections and routine clinical isolation were identified by pattern matching against a reference database.

Preliminary Results: Mass spectra of different microorganisms from strain collections were acquired and analysed using the MALDI Biotyper software and a reference data base containing over 1500 different microbial species. In all cases, an unambiguous identification could be achieved. Finally, measurements of isolates from clinical routine diagnostics were performed and the spectra were matched against the MALDI Biotyper database. The MALDI-TOF approach enabled 100% identification of the most prevalent bacterial species from the clinic and >80% of the rarer clinical species, indicating this method has a high potential to be introduced in clinical microbiology.