

## ***The SpectraCell Raman-system for strain differentiation of bacteria***

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The SpectraCell RA™ Bacterial Strain Analyzer system was developed to enable simple, rapid and reproducible high throughput bacterial strain discrimination, based on Raman spectroscopy. Strain analysis results show a high concordance with genotyping, most notably with pulsed-field gel electrophoresis.

The spectral differences between different bacterial strains can be minute. For example, correlation coefficients between spectra of *S. aureus* strains are typically as large as 99.9% or higher, leaving little room for error, especially when system-to-system transfer and cross-system use of data must be facilitated.

For this reason the instrument hardware, measurement protocols, signal pre-processing and signal analysis have been refined over many years, in a collaboration between Erasmus MC and River Diagnostics, starting in a broader context within the European Commission sponsored MIDAS-project (1997-2001).

The working principle and workflow around the system will be highlighted as well as its performance, vis-a-vis first result obtained and presented some 12 years ago.

The system puts a powerful epidemiological tool in the hands of hospital infection prevention teams and food safety agencies. In hospitals the aim is to help drive down the incidence of hospital acquired infections (HAIs). HAIs are a pressing problem. Five to ten percent of patients admitted to a hospital contract an infection while being cared for. This problem is compounded by the fact that antibiotic resistance is rising steadily and especially in hospital environments.