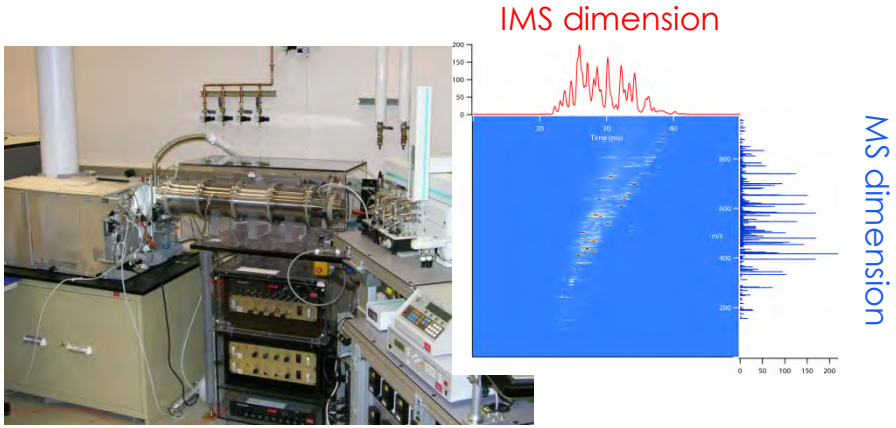
Ion Mobility Spectrometry – Mass Spectrometry (IMS-MS) Proteomics System

Capability/Need

- Applies **1st of kind**, **"next-generation"** proteomics platform by combining liquid chromatography, ion mobility spectrometry, and time-of-flight mass spectrometry
- Throughput increases of 10-50 times anticipated; four systems being developed
- Primary structure information can be obtained
- Outcome of EMSL's first Scientific Partner Project (FY2008-2009); PNNL LDRD co-investment
- Intellectual property and technology licensing imminent (Agilent)



LC-IMS-MS to the rescue: making systems biology a reality

Science/Users

- Next-generation proteomics platform provides high capacity for **unique scales** of biological and environmental research, such as:
  - Detection of all gene knock-outs (including sub-cellular fractions, with multiple perturbations and time points)
  - Enabling large numbers of environments or perturbations; broad adaptive evolution studies
  - Investigating hundreds or thousands of naturally occurring microbe strains
  - Dynamic sampling of microbial communities; sampling at many points and times
  - Multi-scale ecosystem studies.

EMSL Strategy Alignment; Specifics

- Science themes: Biological Interactions and Dynamics; Geochemistry/Biogeochemistry and Subsurface Science
- Cross-cutting challenges: Static-Dynamics; Unprecedented Resolution; Predict Biological Function; Linking Theory/Experiment
- EMSL capability area: Mass Spectrometry
- Anticipated availability: December 2010
- Technical POC: Ljiljana Paša-Tolić