

Core Unit Proteomics

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IZKF
CORE UNIT
PROTEOMICS



The Core Unit Proteomics CUP has been set up as a service and technology platform back in 1999 when mass spectrometry-based protein identification became of interest to the biochemist and clinical researcher. The IZKF has recognized early on the demand not only for the technology but also for the specialist knowledge required to provide its members with state-of-the-art analyses. For a little more than a decade the Core Unit has been part of the Central Project Group Integrated Functional Genomics, a very successful venture including DNA/RNA methodologies in addition. Following the milestone technical developments in both proteomics and genomics such as next generation sequencing, infrastructural changes were called for now. CUP continues to provide essential services and research in the protein analysis field also aiming for the latest technology as demonstrated by the recent DFG grant for a high-resolution mass spectrometer with ion mobility capability for proteome expression analyses – to be installed in 2015.

The Core Unit assists researchers in a number of tasks in protein analysis ranging from cell and tissue preparation and analyte purification to separation and detection using gel electrophoresis, chromatography and mass spectrometry. Not only proteins and peptides are targeted; other biomolecules such as steroids and fatty acids are also investigated. In fact, two current projects (DFG and IMF funded) concern the latter in a disease-related context (Complex Regional Pain Syndrome, with University Clinic Mainz, and Multiple Sclerosis, with Dept. of Neurology Münster, resp.). Those also illustrate the collaborative efforts of CUP with both in- and outside institutions from Germany and abroad. CUP is a partner in the EUTRAIN Network Serum Biomarkers in Innate Immunity initiated by the Institute of Immunology and it is itself heading a European effort to push the CoFGE-technology, which was originally invented in the Core Unit. **Comparative 2D Fluorescence Gel Electrophoresis** (Fig. 1) has been successfully licensed to a leading manufacturer and was honored with the WWU Transfer Prize 2013/2014. CUP is part of an active scene of analytically working academic groups with complimentary specialization in Münster. Interactions among the groups range from information exchange, use of selected equipment, practical help and referral. CUP continuously trains Master and Ph.D. students who eventually graduate at the Faculty for the Natural Sciences. Projects concern instrumentation, method development or applications.

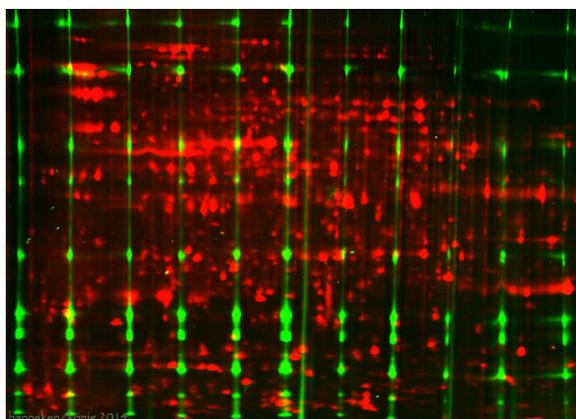


Figure 1: False color image generated by CoFGE – an award-winning technology developed in the Core Unit. Press photograph from the award ceremony.

Technology (partially open access)

Biomolecular mass spectrometry and chromatography (MALDI-TOF, ion trap, Q-TOF, nano/cap-RP-LC-MS/MS, MS^E, ion mobility)

Gel electrophoresis, DIGE, CoFGE

Homogenization equipment, fluorescence scanning, Bioanalyzer chip technology

Rotofor isoelectric focussing in the liquid phase, UV cross-linking

Service and research

Biomolecular mass spectrometry, determination of molecular weights, profiling

Protein identification, modification analysis, de novo sequencing, label-free expression analysis with multivariate statistics, 2D-PAGE with specific and non-specific staining, 2D-DIGE expression analysis