

Disease specific protein modifications and novel therapeutic strategies

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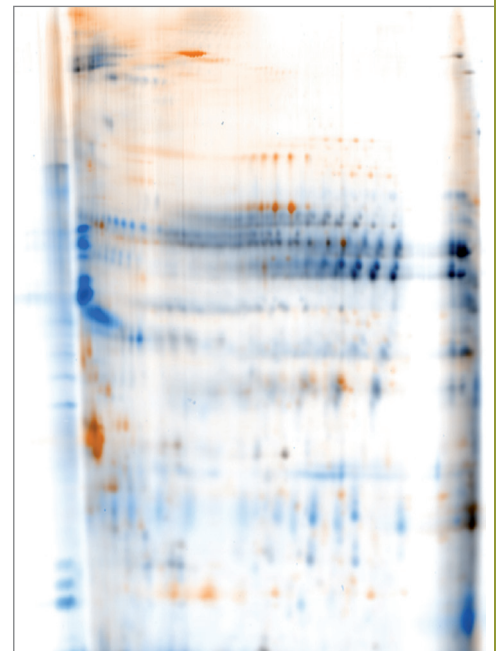
The research efforts of the group rely on sophisticated analytical tools and advanced peptide synthesis strategies to develop new analytical tools and diagnostic approaches as well as novel drug leads for future therapeutic strategies based on novel modes of actions. The research group focuses on both basic and applied research projects and is open for new collaborations. Current international collaborations focus on Alzheimer's disease (Tau and A β), molecular mechanisms of cell aging (glycation, oxidation) and related diseases (diabetes, Alzheimer's disease) as well as multi-resistant Gram-negative and Gram-positive bacteria (drug development, resistance mechanism, virulence factors). The results have been documented in almost 40 international peer reviewed publications and three patents since 2006. Examples are studies on phosphorylation, glycation, hydroxylation, glycosylation, methylation, and

desamidation of specific proteins as well as the proteome level using liquor and plasma samples. Furthermore, several drug candidates are in advanced *in-vitro* testing and early *in-vivo* studies (efficacy and toxicity).

The research as well as the established core facilities "Mass spectrometry", "Peptide Synthesis" and "Proteomics" rely on sophisticated methods and technologies, such as two-dimensional gel electrophoresis (2-DE, blotting, fluorescence staining, image analysis), chromatography (RPC, HIC, IEC, HILIC, SEC, IMAC), capillary electrophoresis, proteomics, mass spectrometry (ESI-QqTOF-MS, MALDI-TOF/TOF-MS, ESI-Orbitrap-MS, EI/CI/FAB-MS), peptide synthesis (multiple and microwave assisted), protein-peptide ligation, ELISA (including ImmunoPCR), amino acid analysis, and cell culture techniques.

Keywords

- Alzheimer's Disease
- Antimicrobial Peptides
- Proteomics
- Posttranslational Modifications
- LC/CE-Mass Spectrometry



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