

BRÎNDUȘA ALINA PETRE

Research areas

- **Protein and peptide chemistry:** structural identification and characterization of post-translational modification at protein and peptide level.
- **Oxidative stress and neurodegenerative diseases:** the effect of oxidative modifications in pathophysiological protein aggregation.
- **Affinity – mass spectrometry:** development of new approaches for studying protein-ligand interactions.
- **Rare disease diagnostic:** new substrate base strategies for lysosomal rare disease diagnostic.

Protein and peptide chemistry: most important biochemical features of proteins and peptides are post-translational modifications that usually dictate their activation or inactivation. We aim in our studies to identify PTM's in biological samples from different disease cases.

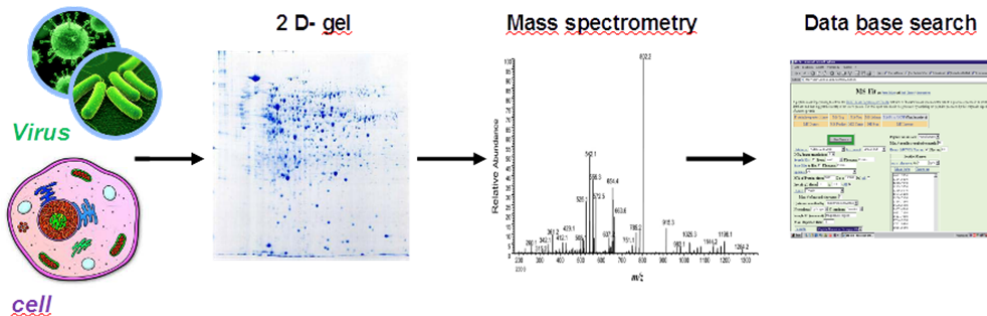
Oxidative stress and neurodegenerative diseases: the important task is to investigate the implication of oxidative modifications on aggregating proteins.

Affinity – mass spectrometry: main purpose is to identify and characterize the specific epitope structure in different biological

interacting partners.

Rare disease diagnostic: in collaboration with Prof. Dr. M. Przybylski we are trying to develop biomedical diagnostic tools using fluorimetry, mass spectrometry and synthetic new substrates for Mucopolysaccharidoses (MPS) disease, a class of lysosomal rare disease.

Keywords: proteomics, liquid chromatography, mass spectrometry, antibodies, Western blot, affinity – mass spectrometry, ELISA, fluorimetry, rare disease diagnostic.



Publications (selection)

Drăgușan, M., **Petre, B.A.**, Slămnioiu, S. et al. Online bioaffinity –electrospray mass spectrometry for structure identification and quantification of protein-ligand interactions, *J. Am. Soc. Mass Spectrom.* 21(10): 1643-8, **2010**.

Dragusanu, M., **Petre, B.A.**, Przybylski M., Epitope motif of an anti-nitrotyrosine antibody specific for nitrotyrosine- modified peptides revealed by affinity-mass spectrometry, *J. Pept. Sci.* 17(3): 184-191, **2011**.

Petre, B.A., Ulrich M., Stumbaum M., et al. When is *mass spectrometry* combined with *affinity* approaches *essential*? A Case Study of Tyrosine Nitration in Proteins, *J. Am. Soc. Mass Spectrom.*, 23(11): 1831-1840, **2012**.

Petre, B.A. Affinity – mass spectrometry approaches for elucidating structures and interactions of protein – ligand complexes in *Advances in experimental medicine and biology – Springer*, 01/2014; 806:129-151, **2014**.

Drochioiu, G., Ciobanu, C.I., Bancila, S., Ion, L. **Petre, B.A.**, Andries, C., Gradinaru, R.V., Murariu, M., Ultrasound-based protein determination in maize seeds, *Ultrasonics Sonochem.* 29, 93–103, **2016**.



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Biochemistry

Visiting researcher

University of Rostock,
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University of Konstanz,
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Whashington University
in St. Louis, MO, USA

Invited talks

2007

NATO Advanced
Research Workshop,
Romania

Swiss Proteomics
Society, Lausanne,
Switzerland

2008

56th ASMS Conference
on Mass Spectrometry,
Denver, USA

OPTM conference,
Boston, USA

2013

MSLife Workshop
Konstanz, DE

2014

Colloquium at the
Department of
Chemistry, University
of Konstanz, DE