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Neuropeptidomics

Neuropeptides are key mediators in many biological functions, and understanding their interaction with target proteins is fundamental to unravel the underlying mechanism of diseases. Over the years, an increasing number of bioactive peptides from animals, plants, and bacteria have been characterised, with the overwhelming realisation that these molecules often show better therapeutic performance than their human counterparts, particularly regarding *in vivo* stability.

Our joint efforts situated in this area of Chemical and Systems Biology focus on the exploration and translation of these vast and untapped natural libraries towards the development of useful research tools and therapeutics. Solid-phase peptide synthesis, the main tool to access these compounds, is a powerful technology for the assembly and chemical modification of these highly chiral and structurally complex peptides. We then use these ligands to develop advanced molecular probes, targeted proteomics approaches and therapeutic leads to address important questions of unmet medical need.

We seek a talented and ambitious Master's student for a project centred around the oxytocin signalling system in health and disease.

The Project: The oxytocin signalling system regulates fundamental physiological processes such as reproductive functions and complex social behaviour. It is also a high-profile target for autism, schizophrenia, stress, depression, anxiety, cancer, and pain. Our group is interested in creating a sample preparation and targeted mass spectrometry analysis workflow that enables accurate quantitation of oxytocin in the blood. This would facilitate the data interpretation of clinical studies, where monitoring the blood concentration of this neuropeptide is of critical interest. This project entails analytical method development, sample preparation methods, mass spectrometry and solid-phase peptide synthesis.

Requirements

Strong analytical chemistry background and synthetic lab skills (organic chemistry, peptide chemistry)
Strong ambition and good work ethics

Techniques likely to learn (project dependent)

Solid-phase peptide synthesis
High-performance liquid chromatography
Mass spectrometry, Proteomics
Sample preparation techniques

If interested, then please send your CV, grade transcripts and brief cover letter to markus.muttenthaler@univie.ac.at & robert.ahrends@univie.ac.at with 'Master Thesis Project Neuropeptidomics' in the subject line.
