

Master thesis at the Institute of Pharmaceutical Biotechnology (AG Prof. Dierk Niessing)

Title: Biochemical analysis of novel RNA-protein complexes

Details: Positively charged, unstructured nucleic acid binding (PUN) motifs are defined linear sequence motifs in proteins that bind DNA or RNA and occur in proteomes of all three kingdoms of life. We recently showed that the yeast protein Loc1p contains clusters of such PUN-motifs that cause phase separation with RNA or DNA and catalyze nucleic acid folding (Niedner *et al.* 2024). Proteins carrying multiple clustered PUN motifs are involved in a variety of RNA- and DNA-related processes from bacteria to yeast to higher eucaryotes. The proposed thesis aims to expand the characterization of PUN-proteins from yeast to human.

Methods: molecular biology methods, recombinant protein expression, state-of-the-art chromatographic protein purification, biophysical methods for the characterization of protein-RNA complexes (e.g. multi-angle light scattering (MALS), Fluorescence spectroscopy, Fluorescence microscopy, Fluorescence recovery after photobleaching (FRAP), Electromobility shift assays (EMSAs))

Supervision: One-to-one supervision by post-docs or PhD students

Reference: Niedner *et al.* 2024, *Nucleic Acids Res.* 52, <https://doi.org/10.1093/nar/gkae1107>

Group homepage: <https://www.uni-ulm.de/nawi/institute-of-pharmaceutical-biotechnology/>