Master Thesis Project

Expanding the toolkit for studies of RNA expression dynamics by metabolic labeling

Background:

To understand the functional roles of RNA in the cell, it is essential to not only assess steady state levels of transcripts but also to learn more about the rate by which they are synthesized, processed or degraded. In collaboration with the lab of Prof. Ronald Micura, Institute of Organic Chemistry, we have recently introduced novel methods that allow for fast and accurate measurement of RNA expression dynamics (TUC-seq and TUC-seq DUAL). The method involves the labeling of nascent RNA by derivatives of RNA nucleosides (4-thiouridine, 6-thioguanosine) that can be selectively converted to cytosine and adenosine, respectively, enabling the identification of newly synthesized transcripts by direct sequencing (Riml, Amort et al., *Angew. Chemie* 2017; Lusser et al., *Methods Mol. Biol*., 2020; Gasser, Delazer et al., *Angew. Chemie* 2020).

We are looking for motivated students who are interested to further improve and optimize this method using different modified nucleosides

This highly interdisciplinary project will be carried out in close collaboration with the Micura lab. Studies will be conducted in cultured mammalian cells, and involve a variety of techniques (standard molecular methods, cell culture methods, live cell labeling and pulse-chase experiments, RNA isolation and conversion, amplicon sequencing etc).

Start: Immediately
Where: **Lusser Lab**, Institute of Molecular Biology, Biocenter, Medical University of Innsbruck, Innrain 80-82, 3rd floor.
Contact: **Dr. Alexandra Lusser** (Tel: 9003 70210; mailto:alexandra.lusser@i-med.ac.at)

September 30, 2021