We are looking for 1-2 motivated Postdocs for research projects in RNA biophysics/structural biology under biologically relevant conditions

Are you interested in working with RNA regulation and microRNAs specifically? We are a supportive, friendly and competent team in an international environment searching for new colleagues. Are you interested in using and developing state-of-the-art methods in biophysics and structural biology (e.g. RNA probing & SHAPE, or NMR). Are you looking for an employer that invests in sustainable employee ship and offers safe, favorable working conditions? We welcome you to apply for a postdoctoral position at Uppsala University.

The research at the Department of Medical Biochemistry and Microbiology (IMBIM) at Uppsala University broadly spans the areas of biochemistry, cell and molecular biology, tumor biology, comparative genetics, functional genomics, immunology, bacteriology, and virology. The department is hosted at the Biomedical Center (BMC), containing strong environments in spectroscopy, biophysics, structural biology, analytical and organic chemistry.

The Petzold Lab is researching RNA regulation based on structural changes and interactions. Possibly more than 50% of the human genome codes for non-coding RNA. These RNAs are ubiquitous among all life forms and the mechanisms how non-coding RNAs regulate these cellular functions are largely unknown. In the Petzold research group, we are interested in understanding how these RNAs change their structures in order to perform function. We employ Nuclear Magnetic Resonance (NMR), and other biophysical techniques, to investigate the molecular mechanism of RNA function. When function of these molecular machines becomes apparent, it also provides a variety of unique new drug targets. The lab develops methods in NMR and RNA biochemistry to address these questions. Current projects include viral, bacterial and eukaryotic regulatory RNAs, e.g. microRNAs, ribosomal RNAs, or RNA from HBV. Learning methods in this field positions you uniquely for the growing field of RNA-based medicine in industry or RNA-based research in academia. We have a strong track record of publishing novel methodologies and insights into RNA mechanism (recent publications) and hope that you can contribute to exciting endeavors in the future.
More about our research group: www.petzoldlab.com

Possible projects:

(1) **microRNA biophysics**: How do microRNAs distinguish different mRNA targets and how does the cellular environment influence this decision?
(2) **mRNA structure in respect of microRNA accessibility**: What are the factors that make mRNA accessible for microRNAs in terms of mRNA structure, protein occupation, ribosome read-through, mRNA stability and other factors
(3) **microRNA structure**: How does one microRNA:mRNA structure look like? Is it dynamic? How is it in the context of human Argonaute protein? Many different methods will be combined to understand these systems.
(4) microRNA-based novel drug design: Based on recent results from the lab, we are developing a novel anti-cancer drug platform. Be involved with developing/designing a novel drug class.

(5) **NMR method development**: We are working on making RNA dynamics faster and more sensitive and develop it for in-cell NMR applications, both in liquid as well as in DNP-enhanced solid-state.
(6) **RNA probing dynamics development**: We are working to develop an NMR-informed probing approach to study RNA dynamics on a variety of RNA systems.

You will work in a dynamic, international and multidisciplinary team including close collaborations with researchers both in Sweden and internationally. We represent a fun, motivated and diverse group of people who love solving problems together.

Your profile
Your major task is to perform high-level research, both independently and in a group. You will be involved in some teaching, as well as contributing to a functioning lab. Weekly group meetings provide opportunities to discuss and present, where you will be expected to contribute. We expect you to contribute or even lead in analyzing, summarizing, and conceptualizing data/results and cooperatively write manuscripts.

Formal Requirements
PhD degree in Biology, Chemistry or Physics, or related subjects; or a foreign degree equivalent to a PhD degree in the aforementioned topics. The degree needs to be obtained by the time of the decision of employment. Priority will be given to applicants who have completed their degree no more than four years before the deadline for applications. Due to special circumstances, the degree may have been obtained earlier. The four-year period can be extended due to circumstances such as sick leave, parental leave, duties in labour unions, etc. Fluency in English is a requirement (written and oral).

Additional qualifications
A background in biochemistry or biophysics of RNA with an interest in multi-disciplinary research is of large advantage. Furthermore, knowledge in one or several of the following topics are of advantage but not required: SHAPE, cryo-EM, RNA biochemistry, NMR or computational aspects of nucleic acid or structural biology. Experience with programming is of advantage, as is using advanced data analysis tools.

We are looking for a highly motivated, well-organized, driven, and enthusiastic person interested in our area of research, who is ready to explore new avenues in science. The candidate should have a high degree of independence but should also show a collaborative approach to research and be able to work productively in a team.

An application must contain the following documents in English (as one PDF in the described order):

- A complete curriculum vitae (CV, max. 3 pages), including date of the thesis defense, title of the thesis, previous academic positions, academic title, current position, academic distinctions, and committee work, contact information of at least 2 references
- A complete list of publications
- A summary of current work (no more than one page)

- Verifications for crediting of illness, military service, work for labor unions or student organizations, parental leave or similar circumstances,
- A short project proposal for work in our lab (max. ½ page).
- A personal letter (max 1 page). The personal letter should explain why the candidate is interested in RNA biochemistry, structural biology or biophysics, and which questions the student thinks are of interest to address in this project. The letter should also describe the student's perspective on the usefulness of generative AI tools such as ChatGPT, for example in the preparation of this application, and/or in the course of the project. If ChatGPT or similar tools were used in the preparation of the application, this must be disclosed.

About the employment
The employment is a temporary position with a stipend of two years according to Uppsala University rules and regulations. Full-time position. Starting March 1st 2025 or as agreed. Placement: Uppsala

For further information about the position and applications: Katja Petzold, katja.petzold@imbim.uu.se and Saskia Rughöft, saskia.rughoft@kemi.uu.se

Please submit your application by *27th of February 2025*

Are you considering moving to Sweden to work at Uppsala University? Find out more about what it´s like to work and live in Sweden.