

PhD/postdoc positions innovative bio-NMR methods – *Linser group*

We are looking for new group members with a focus on **innovating and exploiting NMR spectroscopy on proteins**.

Our lab's interests are the characterization of protein structure, dynamics and interactions via combination of solution and novel solid-state NMR methods. In the past, we have committed ourselves to a wide range of developments for innovative bio-NMR methodology as well as application of new and established methods to better understand the behavior of various proteins. In particular, we have been one of the drivers for **proton-detected solid-state NMR** methods development, in particular regarding higher-dimensionality experiments and other innovative strategies, improved structure elucidation, and assessment of protein dynamics. On the other hand, we use the broad portfolio of **solution NMR** and combine much of this with **MD simulations** using and developing a range of integrated structural biology approaches. Our biological interests are the protein dynamics playing a role for **enzymatic function** and as well as **protein-small molecule** and **protein/DNA interactions**.

Being part of the International Max-Planck Research School IMPRS-LM, the lab has an outstanding infrastructure and research environment, including manifold facilities and services associated with the Max-Planck Institute for molecular physiology (expression, crystallization, etc.), providing excellent research opportunities. Our lab has an 800 (cryo) and a 700 MHz high-field NMR spectrometer, a second 800 MHz arriving next year, and a 500 MHz, waiting for its ssNMR probe to be delivered, as well as a big share of the measurement time of a service 700 MHz system (proton-optimized cryo probe). We use state-of-the-art equipment, including three probes for MAS at 65 and 111 kHz each. Whereas many of you may know the group from our work regarding solid-state NMR methods, current projects are now equally applying NMR in solution and in solids, with a wide range of facets to choose from and combine to your own taste, should you be interested in becoming part of our scientific endeavors.

The preferred candidates should be well-prepared (PhD candidates) or already knowledgeable (postdoc candidates) for/in biochemistry, NMR characterization of proteins, and/or new methods, ideally including a wide range of aspects ranging from protein sample production, assignments, structure calculation, and dynamics. Applicants should be devoted natural scientists (chemists/biochemists/physicists) by training, craving for exciting structural-biology insights from leading-edge technical concepts, and foster scientific exchange with their fellow coworkers in and outside the group. I highly value a social personality, and of course eagerness, a high level of detail, and strong commitment are important prerequisites.

Dortmund is a soaring, well-connected, diverse, and vibrant city of around 600 k people in Western Germany not yet well known to many as a science hub, as it has transitioned from a difficult coal mining history in the middle of the last century to being an important player for science and education in the West of Germany only recently. Owing to the impact of its conversion into a science city, Dortmund has been awarded "Europe's Innovation Capital 2021". The group is part of a multitude of collaborative science platforms fostering high-quality interdisciplinary research and scientific exchange in multiple directions, and most projects involve collaborations with molecular dynamics, drug discovery/medicinal chemistry, and biochemistry groups close-by and world-wide. The group and in particular the positions advertised (multiple ones available) are financed generously via an [ERC Consolidator grant](#) and the Excellence Cluster [RESOLV](#).

If you feel like you meet the above criteria and want your face to be associated with the creation of NMR technologies to come, I would be very happy to get in touch. For PhD candidate

applicants, who will be part of the International Max Planck Research School, please note the time window 06.03.23 – 10.04.23 for the current IMPRS call, which is accessible on <https://www.imprs-lm.mpg.de/index.php/join/apply> now.

(You should finally apply there, but you are welcome to get in touch with me informally beforehand.) Postdocs should simply get in touch with me.

Please also check the following webpages for more information on the lab:

www.linser-lab.com (The institute webpage only has a part of the contents of the external one.) as well as <https://www.imprs-lm.mpg.de/>

Some of our recent papers are listed below.

Best regards and looking forward to getting in touch,

Rasmus Linser

A. Klein, P. Rovó, V. V. Sakhrani, Y. Wang, J. B. Holmes, V. Liu, P. Skowronek, L. Kukuk, S. K. Vasa, P. Güntert, L. J. Mueller, **R. Linser**, “Atomic-Resolution Chemical Characterization of (2x)72 kDa Tryptophan Synthase via 4D and 5D 1H-Detected Solid-State NMR”, *Proc. Natl. Acad. Sci. U.S.A.*, 119 (4) e2114690119 (2022), DOI: 10.1073/pnas.2114690119 ([Link](#)).

H. Singh, C. K. Das, B. Buchmuller, L. Schäfer, D. Summerer, **R. Linser**, “Epigenetic CpG Duplex Marks Probed by an Evolved DNA Reader via a Well-Tempered Conformational Plasticity”, *accepted in Nucleic Acids Res.*, gkad134 (2023), DOI:10.1093/nar/gkad134. ([Link](#))

A. Klein, S. K. Vasa, B. Söldner, K. Grohe, **R. Linser**, “Unambiguous Sidechain Assignments for Solid-State Nuclear Magnetic Resonance Structure of Non-deuterated Proteins via a Combined 5D/4D Sidechain-to-Backbone Experiment”, *J. Phys. Chem. Lett.*, 13, 1644–1651 (2022), DOI: 10.1021/acs.jpcclett.1c04075 ([Link](#)).

B. Söldner, K. Grohe, P. Neidig, J. Auch, S. Blach, A. Klein, S. K. Vasa, L. V. Schäfer, **R. Linser**, “Integrated Assessment of Structure and Dynamics of Solid Proteins”, *J. Phys. Chem. Lett.* 14, 1725–1731 (2023). ([Link](#))

H. Singh, C. K. Das, S. K. Vasa, K. Grohe, L. V. Schäfer, **R. Linser**, “The active site of a prototypical “rigid” drug target is marked by extensive conformational dynamics”, *Angew. Chem., Int. Ed.*, 59 (51), 22916–22921(2020), DOI: 10.1002/anie.202009348 ([Link](#)).

H. Singh, S. K. Vasa, H. Jangra, P. Rovó, C. Päslock, C. K. Das, H. Zipse, L. Schäfer, **R. Linser**, “Fast-microsecond dynamics of the protein-water network in the active site of human carbonic anhydrase II by solid-state NMR spectroscopy.” *J. Am. Chem. Soc.*, 141 (49), 19276–19288, DOI: 10.1021/jacs.9b05311 (2019). ([Link](#))

S. K. Vasa, H. Singh, K. Grohe, **R. Linser**, “Assessment of a large enzyme-drug complex by proton-detected solid-state NMR without deuteration”, *Angew. Chem. Int. Ed.*, 58 (17), 5758–5762, DOI: 10.1002/anie.201811714 (2019). ([Link](#))

P. Rovó, C. A. Smith, D. Gauto, B. L. de Groot, P. Schanda, **R. Linser**, “Mechanistic insights into microsecond timescale motion of solid proteins using complementary 15N and 1H relaxation dispersion techniques”, *J. Am. Chem. Soc.*, 141 (2), 858–869, DOI: 10.1021/jacs.8b09258 (2019). ([Link](#))

Your tasks

Your responsibility is to enable exciting structural-biology insights using leading-edge technical concepts, aided by scientific exchange with your fellow coworkers in and outside the group.

Your profile

Completed university studies in chemistry, physics or similar

Required for Postdoc applicants: PhD in NMR or structural biology

Experience in biochemistry, NMR characterization of proteins, and/or new methods, ideally including a wide range of aspects ranging from protein sample production, assignments, structure calculation, and dynamics.

Teamwork and communication skills, English skills

Your benefits

This position is to be filled in the Faculty of Chemistry and Chemical Biology for a period of three years (PhD positions) or two years (Postdoc positions) initially. The duration of the contract will be appropriate to the qualification goal. Remuneration is paid in accordance with the collective bargaining regulations according to pay group 13 TV-L. (Postdocs obtain 100 % of this salary, PhD students 65 %.)

Your application

If you are interested, please apply with cover letter, CV, certificates and letter of motivation via email to

rasmus.linser@tu-dortmund.de

We promote diversity and equal opportunities. Convince us with your personality and expertise. Applications from women will be given preferential treatment in accordance with the statutory regulations. It is pointed out that the application of suitable severely disabled persons is desired.

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www.linser-lab.com; www.imprs-lm.mpg.de/index.php/join/apply