

Hosting group information for applicants

Name of DKFZ research division/group:
Translational Molecular Imaging (E280)

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Group homepage: **<https://www.dkfz.de/en/translationale-molekulare-bildgebung/index.php>**

Please visit our website for further information on our research and recent publications.

RESEARCH PROFILE AND PROJECT TOPICS:

Research of the Translational Molecular Imaging (TMI) Division focuses on the development and characterization of targeted imaging reporters for translating novel MRI detection techniques into diagnostic applications in oncology. The group is currently still located in Berlin (see also <http://schroeder.fmp-berlin.info/>) but we will set up a new NMR lab at DKFZ in fall 2021.

We aim to visualize key molecular changes in cancer onset and progression. To this end, we explore novel approaches based on advanced NMR techniques like spin hyperpolarization and saturation transfer techniques in exchange-coupled spin systems. Our interdisciplinary team comprises members from a diverse background and strives to combine key techniques from physics, biochemical engineering, and molecular biology to develop the next generation of ultra-sensitive NMR/MRI reporters. We offer an exciting mix of complementary techniques and look for candidates who want to learn novel approaches but who can also bring new knowledge into the group to combine techniques from different fields.

For candidates with a physics/MRI background, we offer projects in CEST MRI with hyperpolarized xenon to study spin exchange in various host structures for the optimization of MRI contrast agents and their sensing options for interactions with other biomolecules. Projects on fast image encoding and preclinical lung imaging are pursued as important components for clinical translation of this emerging technique.

Biologists are welcome if you are interested in broadening your horizon and learn about biomedical MRI while contributing to preclinical studies on novel reporters, characterizing their specificity for selected targets and their biocompatibility profile. You are welcome to pursue targeting concepts from other imaging modalities that can be translated to design reporters for previously MRI-inaccessible targets.



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Candidates with a biochemical background are welcome to join our efforts in the design and synthesis of nanoparticulate contrast agents (functionalized liposomes etc.) and the verification of their specificity and biocompatibility. We apply standard peptide synthesis protocols and test the assembled nanoparticles with regard to their NMR/MRI capabilities.

We are also interested in hosting Marie Skłodowska-Curie Fellows and support applications for MSCA funding and other programs.



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