



The Division of *Translational Molecular Imaging* is seeking a

## PhD Student in Molecular MR Imaging

(Ref.-No. 2022-0172)

*The DKFZ is committed to increase the proportion of women in all areas and positions in which women are underrepresented. Qualified female applicants are therefore particularly encouraged to apply.*

*Among candidates of equal aptitude and qualifications, a person with disabilities will be given preference.*

*To apply for a position please use our online application portal (<https://www.dkfz.de/en/stellenangebote/index.php>).*

*We ask for your understanding that we cannot return application documents that are sent to us by post (Deutsches Krebsforschungszentrum, Personalabteilung, Im Neuenheimer Feld 280, 69120 Heidelberg) and that we do not accept applications submitted via email. We apologize for any inconvenience this may cause.*

Cancer-TRAX is a joint PhD training initiative of the German Cancer Research Center (DKFZ) in Heidelberg and the Weizmann Institute of Science (WIS) in Rehovot, Israel. The successful candidate will become a member of the German-Israeli Helmholtz International Research School and benefit from joint mentoring of the collaborating scientists, additional joint networking meetings and training opportunities. For further information about the Research School, please visit the website: [https://www.dkfz.de/en/phd-program/GIHRIS\\_TRAX.html](https://www.dkfz.de/en/phd-program/GIHRIS_TRAX.html)

This position is linked to a project that will explore similarities between saturation transfer techniques (CEST) with  $^{19}\text{F}$  and  $^{129}\text{Xe}$  MRI. It is a collaboration between the laboratories of Dr. Leif Schröder at the DKFZ and the group of Dr. Amnon Bar-Shir at the exciting environment on the WIS campus in Rehovot, Israel, with an intended start in fall 2022. Candidates will benefit from joint supervision by both PIs and will spend time working at WIS for approximately 3 mid-term visits.

### Job description:

The tasks are to implement methods that enable a fundamental acceleration of the encoding schemes for saturation transfer detection for providing the full molecular and spectroscopic information not only for in vitro studies but also for oncological imaging applications in live tissue. The PhD student shall establish novel methods that include the following aspects of saturation transfer MRI for achieving a fundamental acceleration:

- optimized radiofrequency pulse schemes to avoid inefficient regimes of saturation transfer;
- MRI subsampling schemes with a focus on the contrast information that changes across an image series, i.e., avoiding the acquisition of redundant information of simply anatomical shape;
- exploiting redundancies in data post-processing for correlated pixel responses to reduce noise in image series.

The project will be conducted on a preclinical micro-imaging setup in combination with an in-house developed laser setup for the production of hyperpolarized Xe at DKFZ and also use the preclinical MRI facilities at WIS.

### Your profile:

Candidates with a master's degree in medical physics or (bio)physics and a strong interest in interdisciplinary magnetic resonance projects are encouraged to apply. Basic knowledge in NMR/MRI pulse sequence design is a great advantage but not mandatory. Experience in data processing with Python or Matlab is also beneficial.



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The candidate should be interested in working with people from different disciplines and independent thinking, structured work organization, and a good team spirit are expected. As the project is a collaboration with the Bar-Shir group at WIS, the candidate should also be willing and motivated to spend part of their PhD working in Israel.

**Contract period:**

The position is limited to 3 years with the possibility of prolongation.

**Important notice:**

The DKFZ is subject to the regulations of the Infection Protection Act (IfSG).

As a consequence, only persons who present proof of immunity against measles as well as against COVID-19 may work at the DKFZ.

**Contact:**

Dr. Leif Schröder, phone +49 6221/42-2432

Please note that we do not accept applications submitted via email.

**Application deadline:**

18.06.2022

