

## ***Department of Radiology and Nuclear Medicine:***

The development and application of novel MR methods for the diagnosis, disease prediction and treatment monitoring of human cancers is a main research focus at our department. We are one of the leading groups in MR of (prostate) cancer, with many years of experience in this field ((Assoc.) Professors Tom Scheenen, Jurgen Fütterer, Arend Heerschap, Jelle Barentsz). This research is integrated with clinical examinations and other investigations of cancer cells or tissues to find the best solution for (bio-) medical questions. Our cancer research is translational: to support human studies with new perspectives and understanding, parallel MR investigations are performed in animal models. The group is composed of senior researchers, Post-docs, PhD students and technical staff with clinical, biological, bio-chemical, bio-physical, engineering and technical backgrounds. We collaborate intensively with the departments of urology, pathology, radiotherapy, and internal medicine, and with many groups at national and international level (e.g. in EU and US).

We are looking to further expand the existing team with Dr. Ir. Tom Scheenen as Principle Investigator.

## ***Research facilities:***

The Radboud University has the most extensive MR research equipment in the Netherlands. For biomedical applications various systems are available for imaging and spectroscopic purposes including two human 1.5T, three human 3T whole body MR systems and a human 7T whole body MR (located in Essen). High-resolution NMR machines up to 20 T are available at the science faculty. Pre-clinical MR equipment (7 and 11.7 Tesla) is installed in a dedicated animal imaging laboratory together with PET/CT, optical devices, and a setup for Dynamic Nuclear Polarization studies.

## ***Research goals:***

Screening, diagnosis, staging, surveillance and treatment monitoring of prostate cancer has top priority in our group. We are one of few groups at the frontline of the introduction of multi-parametric (mp)MRI for the detection and staging of prostate cancer. Now that mpMRI of localized disease is mainstay, we are aiming at accurate and early staging of oligometastatic disease and treatment monitoring. Understanding pathophysiology of the disease is important, and quantitative mpMRI and (X-nuclear) spectroscopic imaging methods up to a field strength of 7T need to be developed and implemented to identify new (MR) biomarkers of disease progression. Next to this, we aim at improved and earlier detection of lymph node metastases of prostate cancer, with the aid of a USPIO contrast agent for MRI and with  $^{18}\text{F}$  or  $^{68}\text{Ga}$ -PSMA PET-CT. Finding small lymph node metastases is a major challenge, which we tackle with the latest MRI-technology at ultra-high magnetic field (7T) and this USPIO nanoparticle contrast agent. Together with our research team in Essen, Germany (prof. Harald Quick) we will develop and implement new 7T MR hard- and software needed to perform iron-sensitive MRI of the pelvis, together with acquiring metabolic information of the prostate.

By optimizing the sensitivity for iron, using dedicated MRI pulse sequences, we intend to push the boundaries to detect the smallest – potentially sub millimetre – metastatic lymph nodes. Next to lymph node staging, we will improve anatomical, functional and metabolic imaging of the primary tumor at 7T to better assess primary cancer stage. Our final aim is to enable 7T MRI-guided targeted therapy, thereby allowing personalized treatment of prostate cancer (and other cancer types).

## ***1 post-doc / tenure track position:***

We are looking for a post-doc with existing experience in MR methodology, preferably at ultra-high field or in multi-nuclear spectroscopy and interest in oncological applications, for a three-year position on MR research of prostate cancer at (ultra-)high magnetic field strength. If your CV qualifies, we will start a tenure track over these three years which, if successful, results in a permanent position at the department of radiology and nuclear medicine. The candidate will have the freedom to invest in his/her own research direction (fitting within the existing scientific environment).

## ***Requirements, position and salary:***

We are looking for an enthusiastic candidate with a PhD-degree and proven track record in MR technology. The multi-disciplinary character of the project requires a broad interest and good communication skills. We offer a fulltime job for a period of 3 years, with salary according to the collective agreement (CAO) of Dutch universities.

## ***Requested Info:***

- An application letter with your current research interests and research plans for the future
- A CV including a complete list of publications, lectures at conferences and a list of third party funding. Highlight five key publications that you consider particularly relevant to this position, and describe your contributions to these publications.
- 2 reference names or 2 letters of recommendations

should be filed to the job application page of the Radboudumc:

<https://www.radboudumc.nl/en/vacancies/75761-postdoc-tenure-track-in-advanced-mri-in-oncology>

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