

Postdoctoral Researcher (f/m/d) – Hyperpolarized ^{13}C MRI and Cardiometabolic Imaging

Fixed-term position (5 years)

The **University Hospital Düsseldorf (UKD)** is the largest hospital in the state capital of North Rhine-Westphalia and one of the leading medical centers in Germany. Around 9,300 employees at UKD and its affiliated companies provide inpatient care to more than 45,000 patients and outpatient care to over 270,000 patients each year. UKD is internationally recognized for excellence in patient care, research, and teaching, as well as for innovative and safe diagnostics, therapy, and prevention. Patients benefit from the close interdisciplinary collaboration of more than 60 clinics and institutes. A particular strength of UKD is the close integration of clinical practice and research, enabling the safe translation of new medical methods into patient care.

The **Faculty of Medicine at Heinrich Heine University Düsseldorf** is a leading center for biomedical research. Its basic and clinical research programs are funded by organizations including the German Research Foundation (DFG), the State and Federal Ministries, and the European Union.

The **Interdisciplinary Cardiometabolic Imaging Unit** within the **Center for CARDiovascular Research in DIABetes (CARDDIAB)** at Heinrich Heine University Düsseldorf invites applications for a

Research Associate (Postdoctoral Researcher) (f/m/d) Full-time | Fixed-term for 5 years

This is a qualification position in accordance with the German Academic Fixed-Term Contract Act (WissZeitVG, Section 2 (1)).

Research Environment

A major research focus of the **Center for Magnetic Resonance in CARDDIAB (CMRC)** is the analysis of *in vivo* metabolic fluxes to non-invasively characterize metabolic alterations across different stages of cardiovascular disease (including heart failure and ischemic cardiomyopathy) and metabolic disorders (including steatotic liver disease, prediabetes, and diabetes mellitus). The long-term objective is to develop novel therapeutic interventions.

To achieve this goal, CMRC provides a unique translational imaging platform featuring:

- Clinical 3T and 7T MRI systems
- Two 9.4T small-animal MRI scanners
- Hyperpolarization technologies
- Comprehensive infrastructure for translational cardiometabolic research

This platform enables the development and application of advanced imaging and spectroscopy methods from preclinical animal models to human clinical studies.

A key research objective is the investigation of real-time metabolic fluxes using hyperpolarized **^{13}C magnetic resonance imaging (HP ^{13}C MRI)** in both animal models and humans. This technology presents unique challenges, including handling hyperpolarized substrates due to their short-lived polarization and developing optimized MR acquisition protocols.

Recently, CMRC successfully established HP ^{13}C MRI using hyperpolarized [**$1\text{-}^{13}\text{C}$**]pyruvate in diabetic mouse models. The next step is to establish standardized acquisition and analysis protocols that can be routinely applied in studies of skeletal muscle, liver, and cardiac metabolism.

Your Responsibilities

As a member of the HP ^{13}C research team, your primary responsibility will be the development of standardized HP ^{13}C MRI workflows to ensure high-quality and reproducible research results. Your tasks will include:

- Establishing and further developing HP ^{13}C MRI for small-animal studies, with a particular focus on hyperpolarized [**$1\text{-}^{13}\text{C}$**]pyruvate, followed by translation to large-animal models and ultimately human studies.
- Developing dedicated software tools for data analysis.

- Performing, analyzing, and interpreting ongoing HP ^{13}C MRI studies at CMRC, particularly at the interface between heart failure and diabetes research.
- Developing novel HP ^{13}C MRI methodologies, with a focus on introducing new hyperpolarized substrates for cardiometabolic research.

Your Profile

Required Qualifications

- Master's degree (or equivalent) in a natural science or engineering discipline.
- PhD in Physics, Medical Physics, Chemistry, or a related field.
- Hands-on experience with HP ^{13}C MRI.
- Programming experience in MATLAB and/or Python.
- Excellent teamwork skills.

Preferred Qualifications

- Experience with MRI systems from Bruker and Siemens.
- Experience in MRI pulse sequence programming on these platforms.
- Experience in MR imaging of small animals, large animals, and/or humans.
- Strong interest in cardiometabolic research.

Personal Skills

- Enthusiasm for tackling new scientific challenges.
- Ability to solve complex problems in a structured and goal-oriented manner.
- Excellent communication and interpersonal skills.
- Excellent written and spoken English; German language skills are advantageous.

We Offer

We offer an exciting and diverse research environment with significant scientific independence in a creative and highly motivated interdisciplinary team. The position is remunerated according to the German public sector pay scale **TV-L E13**.

You will benefit from excellent opportunities for scientific collaboration, participation in and initiation of innovative research projects, and active involvement in building the interdisciplinary cardiometabolic imaging program within CARDDIAB at the interface of cardiovascular and metabolic research.

The position also offers the opportunity to pursue a **habilitation** (postdoctoral qualification for a professorship).

Contact

For further information regarding the position, please contact:

Junior Professor Dr. Andreas Korzowski

Email: andreas.korzowski@hhu.de

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The employment contract will be concluded with **Heinrich Heine University Düsseldorf**.

Heinrich Heine University Düsseldorf is committed to increasing the proportion of women in areas where they are underrepresented and therefore strongly encourages qualified women to apply. Women with equal qualifications, aptitude, and professional performance will be given preferential consideration unless reasons specific to another applicant prevail.

The university is certified as a family-friendly institution and actively supports the compatibility of academic careers and family life. Applications from individuals with severe disabilities or equivalent status are expressly welcomed.

Where operational requirements permit, positions at Heinrich Heine University Düsseldorf may also be filled on a part-time basis.

Application

Interested candidates are invited to submit their complete application, quoting reference number **322E/26**, email to:

bewerbungen@med.uni-duesseldorf.de

or by mail to:

University Hospital Düsseldorf
D 01.2.1 – Reference No. **322E/26**
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