The German Diabetes Center (DDZ), Leibniz Institute for Diabetes Research at Heinrich Heine University (HHU) Düsseldorf is an interdisciplinary research institute that integrates basic, translational and clinical research to improve the prevention, diagnosis and treatment of diabetes mellitus and its complications. The Institute for Clinical Biochemistry and Pathobiochemistry (Director: Prof. Dr. Hadi Al-Hasani) investigates the molecular mechanisms underlying insulin resistance, skeletal muscle metabolism and type 2 diabetes.

For a new research project, we are looking for a talented and highly motivated

Doctoral Student (PhD / Dr. rer. nat., m/f/div., E13 TV-L 65%)

to join our interdisciplinary research team investigating the molecular mechanisms by which repeated cold exposure improves skeletal muscle insulin sensitivity.

Insulin resistance of skeletal muscle is a key feature in the development of type 2 diabetes, accounting for the majority of impaired postprandial glucose disposal. While lifestyle interventions such as exercise are well established, repeated cold exposure has recently emerged as a promising strategy to improve insulin sensitivity in humans, with reported improvements of up to 40%. However, the molecular mechanisms underlying these beneficial metabolic adaptations remain largely unknown.

The project aims to identify the signaling pathways responsible for cold-induced improvements in skeletal muscle insulin action. A particular focus will be placed on testing the hypothesis that mild cold-induced muscle activation ("micro-shivering"), rather than brown adipose tissue activation, mediates these metabolic benefits.

The project combines translational human studies with mechanistic investigations in mouse models and offers extensive training in state-of-the-art metabolic and molecular research techniques.

Your project will include:

- Proteomic analysis of human skeletal muscle biopsies obtained from cold acclimation studies to identify molecular signatures associated with improved insulin sensitivity.
- Mechanistic studies in wild-type and UCP1-deficient mice to investigate the effects of cold exposure and muscle activation on glucose uptake and insulin action.
- Functional characterization of established and novel regulators of skeletal muscle metabolism, including AMPK, GLUT4, Rac1 and newly identified candidate proteins.
- Investigation of GLUT4 trafficking and insulin signaling using advanced molecular and cellular approaches.

The project offers training in:

- Mass spectrometry-based proteomics
- Mouse models of insulin resistance and metabolic disease
- Indirect calorimetry and metabolic phenotyping
- Glucose uptake assays in isolated skeletal muscle
- Molecular biology techniques (Western blotting, qPCR, gene expression analyses)
- Immunohistochemistry and skeletal muscle fibre typing
- *In vivo* electroporation and functional gene manipulation
- Fluorescence-based analysis of GLUT4 translocation

Your profile

- You hold (or are close to obtaining) a Master's degree in Biochemistry, Molecular Biology, Molecular Medicine, Physiology, Biomedical Sciences or a related discipline.
- You have practical experience in molecular and cellular biology techniques such as Western blotting, qPCR and cell culture.
- Experience with metabolic phenotyping, skeletal muscle biology, mouse models or proteomics is advantageous but not required.
- You enjoy interdisciplinary research and are interested in combining human physiology with mechanistic laboratory studies.
- You are highly motivated, curious, and able to work independently as well as collaboratively in an international research environment.
- You have an excellent command of written and spoken English.

We provide an exciting, dynamic and international research environment with access to unique resources in diabetes and metabolism research. The successful candidate will receive comprehensive training in modern metabolic phenotyping, molecular biology and translational research, embedded in a highly collaborative environment at the German Diabetes Center and Heinrich Heine University Düsseldorf. Opportunities for scientific exchange, international collaborations and participation in advanced training programs are available through the German Center for Diabetes Research (DZD) and the institute's graduate education activities.

Initially, the position is available for two years starting from **01.01.2027** or later with the possibility of extension. The employment contract is governed by the current version of the TV-L regulations for the State of North Rhine-Westphalia, including the provisions applicable to scientific staff. Remuneration will be according to TV-L E13 (65%), depending on qualifications and experience.

Female candidates are particularly encouraged to apply. Applications from persons with disabilities will be given preferential consideration where qualifications are equivalent. The German Diabetes Center is committed to equal opportunities, diversity and family-friendly working conditions and has been certified under the "Career and Family" audit since 2011. The provisions of § 7 (1) of the German Part-Time and Fixed-Term Employment Act (TzBfG) apply.

For further information about the project, please contact PD. Dr. Alexandra Chadt (Alexandra.chadt@ddz.de).

Please submit your complete application (motivation letter, curriculum vitae, academic transcripts and certificates) quoting the reference code **ICB-DFG-26-1** to personal@ddz.de by **05.10.2026.**

Applications will be processed electronically in accordance with the applicable data protection regulations. By submitting an application, applicants consent to this procedure.

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