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Reference letter

Ekaterina Karetnikova is a PhD student from the Department of Physiology of the Biological Faculty of St. Petersburg State University, which is one of the official strategic partners of the Technische Universität (TU) Dresden. The Angiology and Anaesthesiology research labs of the TU Dresden have been successfully collaborating with the Department of Physiology of the Biological Faculty for several years.

Ekaterina Karetnikova is a talented scholar. She has won the funding from the DAAD Ostpartnerschaft Programm and Freunden und Förderen der TU Dresden to come to the Technische Universität Dresden and work under the joint supervision of Prof. Peter Spieth from the Anesthesiology Department and Priv.-Doz. Roman Rodionov from the Angiology Department. Ekaterina Karetnikova from 01.12.2017 till 01.07.2019 played a leading role in several projects: "Epithelial and mesenchymal markers mRNA expression levels in different alveolar epithelial cells lines", "Influence of Dimethylarginine Dimethylaminohydrolase 1 (DDAH1) expression levels on the early response of mice lung to profibrotic treatment with bleomycin", "Intracellular distribution of DDAH1 in different cell lines", "Binding partners of DDAH1".

The main skills acquired by Ekaterina are:

- cultivation of different immortalized and primary cell lines (L2 ATCC® CCL-149™, RLE-6TN ATCC® CRL-2300™, R3/1, BEAS-2B ATCC® CRL-9609™, E10, HepG2 ATCC® HB-8065™, HEK293T (ATCC® CRL-3216™), PC-3 (ATCC® CRL-1435™), EA.hy926 (ATCC® CRL-2922™) and HUVEC)
- different procedures of mRNA isolation from cell lines and tissues, measurement of mRNA concentration and purity by Synergy™ Mx Microplate Reader (BioTek), reverse transcription, primers design, checking primers efficiency, qPCR (Bio-Rad iCycler iQ5 Multicolor Real-Time PCR Detection System), PCR product electrophoresis in agarose gel, calculation of levels of genes expression according to a reference gene, statistical analysis of the results
- preparation and cultivation of precision-cut lung slices (PCLS) from mice lungs
- preparation of tissue and cell lysates; measurement of protein concentrations, ELISA, Western blot (Bio-Rad, Mini-PROTEAN® Tetra Cell, Mini Trans-Blot® Module, PowerPac™ HC Power Supply #1658035), calculation levels of proteins expressions according to a reference protein, statistical analysis of the results

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- immunofluorescence staining of cells and tissues, immunohistochemistry, image acquisition and analysis with fluorescent microscope KEYENCE BZ-9000 and with a confocal laser microscope with Airyscan detector LSM880 (Zeiss)

- bacterial transformation and cultivation (NEB® 10-beta Competent E. coli (High Efficiency)), plasmids isolation from bacteria (QIAGEN® Plasmid Maxi Kit), measurement of plasmid concentration by Synergy™ Mx Microplate Reader (BioTek), transfection of different eukaryotic cell lines with plasmids, pull down of Tag-DDAH1 with DDAH1 binding partners, quality and quantity assessment of samples for LC-MS/MS.

Ekaterina has participated and passed the exams in the certification course "Using Experimental Animals in Research" (Theory, Rat, Zebrafish modules) organized by the Max Planck Institute of Molecular Cell Biology and Genetics and TU Dresden. Ekaterina also took the CRTD (Center for Regenerative Therapies Dresden) practical certification course on using mice in experimental research. We are convinced that Ekaterina's experience in working with experimental animals and her knowledge of different animal models will be very useful in her further scientific career.

During her stay in the Angiology and Anaesthesiology labs Ekaterina Karetnikova has shown excellent scientific skills, which make her a promising scientist. She can independently plan and work on experiments; at the same time, she has good communication and organization abilities. Ekaterina Karetnikova is a good team player able to coordinate her work with the other lab members. Good self-organization enabled her to carry out four different projects in parallel. Regular reading and analysis of scientific publications allowed Ekaterina Karetnikova to take part in the development of promising areas for future research and to solve many current methodological issues. Publication of the review ("Is homoarginine a protective cardiovascular risk factor?") in the ATVB journal confirms her good skills in working with scientific literature. Ekaterina is a very motivated and focused person, who is very passionate about science. We are very happy with Ekaterina's work and we would like to support her as far as possible.

Please don't hesitate to contact us, if you have further questions.

Best regards,

Priv.-Doz. Roman Rodionov

Univ.-Prof. Dr. med. habil. Peter Spieth