Boston Research Stay 2026 – Report (3rd and 4th Cohort of GRK 2381)

Doctoral fellows: Kevin Dervishi, Alisa Groh, Kim Hebbel, Julia Hoffmeister, Daniel Lambton, Marina Reichl

Time period of 3-month lab visit: May to July (P3) and July to September (P1, P4 and P11)



Figure 1: Members of the Blanton lab, from left to right: Virginia Illingworth, Robert Blanton, Kevin Dervishi, Jacob Schroader, Zachary Robbe and Anna Burke

Kevin Dervishi (P4 – Atherosclerosis) joined the Blanton lab at the Molecular Cardiology Research Institute (MCRI), Tufts Medical Center, in Boston. During his time there, he learned different techniques used to study heart diseases, including echocardiography in mouse models established in the lab. This allowed him to gain practical experience in examining heart structure and function. Alongside this, he started working on a cloning project for his thesis project. Overall, his time in the lab gave him the opportunity to gain hands-on research experience, learn new in vivo and molecular biology methods and become more familiar with the work carried out in a cardiovascular research laboratory.

Alisa Groh (P1 – Cancer) joined Assistant Professor Martin Thunemann in the Neurovascular Imaging lab at Boston University, where she gained valuable experience in advanced *in vivo* imaging techniques. During her research stay, Alisa received specialized training in Two-photon microscopy and Optical Coherence Tomography (OCT) using mouse models with iPSC-derived cortical implants. These implants were combined with drug-releasing biomaterials designed to deliver cGMP-associated compounds. Alisa's work focused on applying these complementary imaging approaches to investigate neurovascular structures and characterize vascular changes in the brain.

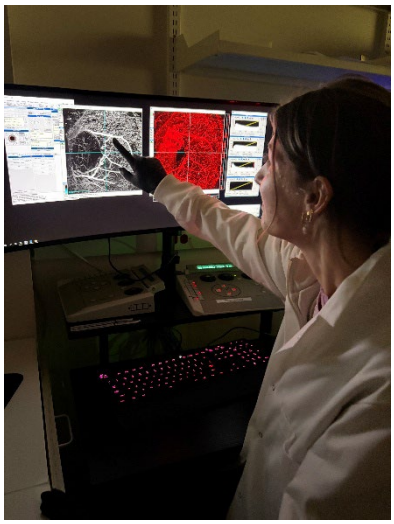

Figure 2: Alisa at the Two-photon microscope.

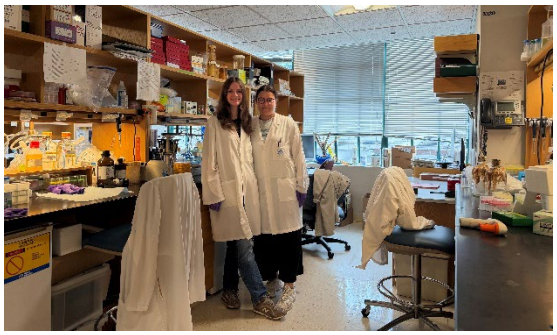

Figure 3: Kim (left) and Julia (right) in the Jain lab.

Kim Hebbel (P10 – Cancer Immunotherapy) and **Julia Hoffmeister** (P1 – Cancer) joined the research group of Director Dr. Rakesh Jain and Associate Professor Dai Fukumura at E. L. Steele Laboratories at Massachusetts General Hospital and Harvard Medical School. Their research is focused on improving the delivery and efficacy of anticancer therapeutics through normalization of the tumor microenvironment.

Kim worked with Dr. Daniel Radin, whose research aims to improve glioblastoma therapy, focusing on cancer cell stemness. Using syngeneic glioblastoma models, his work pursues this by modulating specific signaling pathways and by normalizing the tumor vasculature. Kim contributed to *in vivo* experiments, assisting with intracranial, orthotopic implantation of glioblastoma cells and with tumor monitoring. These experiments were read out by spectral flow cytometry with multi-marker stemness panels. In parallel, she tested several targeted treatments on tumor cells by viability assays, spheroid analyses and spectral flow cytometry. To capture their downstream effects, she additionally used confocal microscopy. Moreover, she assessed treatment effects on various primary healthy cell types to exclude toxicities. Overall, Kim gained methods well beyond her current PhD project which will be very helpful for her future research.



Figure 4: Kim working hard in the cell culture.

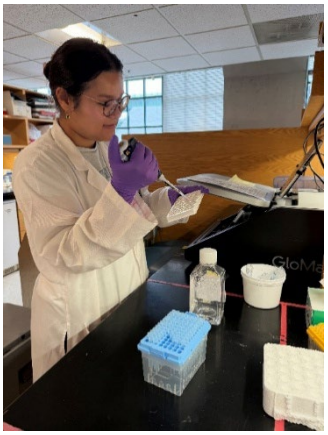

Figure 5: Julia monitoring tumor growth using the Gluc reporter system.

Julia joined Instructor Dr. Heena Kumra's team, who works on strategies to enhance therapeutic efficacy and minimize treatment-related toxicity in pancreatic ductal adenocarcinoma (PDAC). Heena integrated Julia in several projects addressing the aggressive nature and therapeutic resistance of this disease, as well as an investigation into promising CAR T-cell therapy approaches to expand treatment options for cancer patients. Julia learned several methods and techniques relevant to cancer research. She was introduced to various cell and tissue staining techniques, as well as the surgical procedure for orthotopic PDAC cell implantation. Julia also gained practical experience with different injection techniques for administering various compounds. Additionally, she learned how to monitor tumor growth in an orthotopic PDAC mouse model using a Gaussia luciferase-based reporter system.

Daniel Lambton and **Marina Reichl** (P3 – Vascular Biomechanics) joined the group of Associate Professor Francesca Seta at the Boston University Chobanian & Avedisian School of Medicine. During their stay, both improved their knowledge of vascular biology by applying their technical expertise to novel approaches in Marfan-Syndrome research. Marina established a 3D *in vitro* cell culture model to mimic the extracellular environment of aortic smooth muscle cells, whereas Daniel developed measurement protocols for *ex vivo* calcium imaging of murine aortas and mitochondrial calcium detection *in vitro*.



Figure 6: Seta Lab members (left to right, top to bottom): J. Nelson, D. Lambton, D. Ji, D. Craig-Schwartz, A. Wazir, F. Seta, M. Reichl, E. Budbazar

Moreover, the students got the chance to present their ongoing research projects at the **Reinhard-Frank-Mini-Symposium**, which was held on August 27th, 2026, at Boston University. The Symposium provided an excellent platform for scientific exchange, constructive feedback, and interdisciplinary discussions with leading experts in the respective fields. Engaging with researchers from different backgrounds allowed the junior researchers to gain new perspectives on their work, explore potential collaborations, and identify new approaches to address current research challenges. These discussions were particularly inspiring and offered valuable insights that they could take back to their own projects.



Figure 7: Doctoral fellows of the 3rd and 4th cohort of GRK 2381 in Boston, from left to right: Kevin Dervishi, Julia Hoffmeister, Kim Hebbel, Marina Reichl, Alisa Groh, and Daniel Lambton

We would like to express our sincere gratitude to all PIs and lab members who gave us the opportunity to join their laboratories, took the time to supervise us and made this research stay possible. Finally, we would like to thank our Research Training Group, GRK 2381, the German Research Foundation (DFG), and the Reinhard-Frank Stiftung for funding this research stay and enabling junior researchers to take part in such a valuable experience surrounded by inspiring scientists.