

POSITIONS FOR BACHELOR- AND MASTER STUDENTS

AT THE LOMAKIN LAB

(MedUni, Center for Pathobiochemistry and Genetics)

Systems & Comparative Biology of Cell and Tissue Growth In-a-Dish

We are a group of cell biologists who use high-content microscopy along with powerful computers and AI-aided computer vision algorithms to capture, quantify, and mechanistically interlink single-cell-resolved cellular and subcellular phenotypes generated in human tissue cells as a stress response to pharmaceutical drugs. Utilizing this quantitative 'pharmacoscopy' paradigm, we aim to discover how medicinal drugs can act beyond their primary targets and alter the fundamental biology of healthy and diseased cells in our bodies. The long-term goal is to contribute this knowledge to understanding the two tightly interconnected biological processes of cancer and aging.

Another line of research is focused on the fascinating observation that humans and nonhuman primates develop, age, and acquire cancer at a slower pace compared to other mammalian species. What sets the morphogenetic clock to tick differently in cells of distinct species? We aim to address this question by growing species-specific tissue cells in the lab ('A-cell-zoo-in-a-dish') under identical cell culture conditions, permitting robust quantitative and comparative studies of cell biology across species. We combine our core expertise in quantitative imaging with 3D printing and microfabrication to reconstitute mini-tissues to understand how single-cell processes translate into tissue-scale behaviors. The molecular underpinnings of these processes are studied using modern -omics-based approaches. With this integrative approach, we hope to advance the fields of comparative regenerative medicine and biotechnology, including the emerging area of cellular agriculture.

We are willing to host research internships (including thesis work) at the Bachelor and Master levels. If you have interest in joining our team, please contact Dr. Alexis Lomakin at:

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