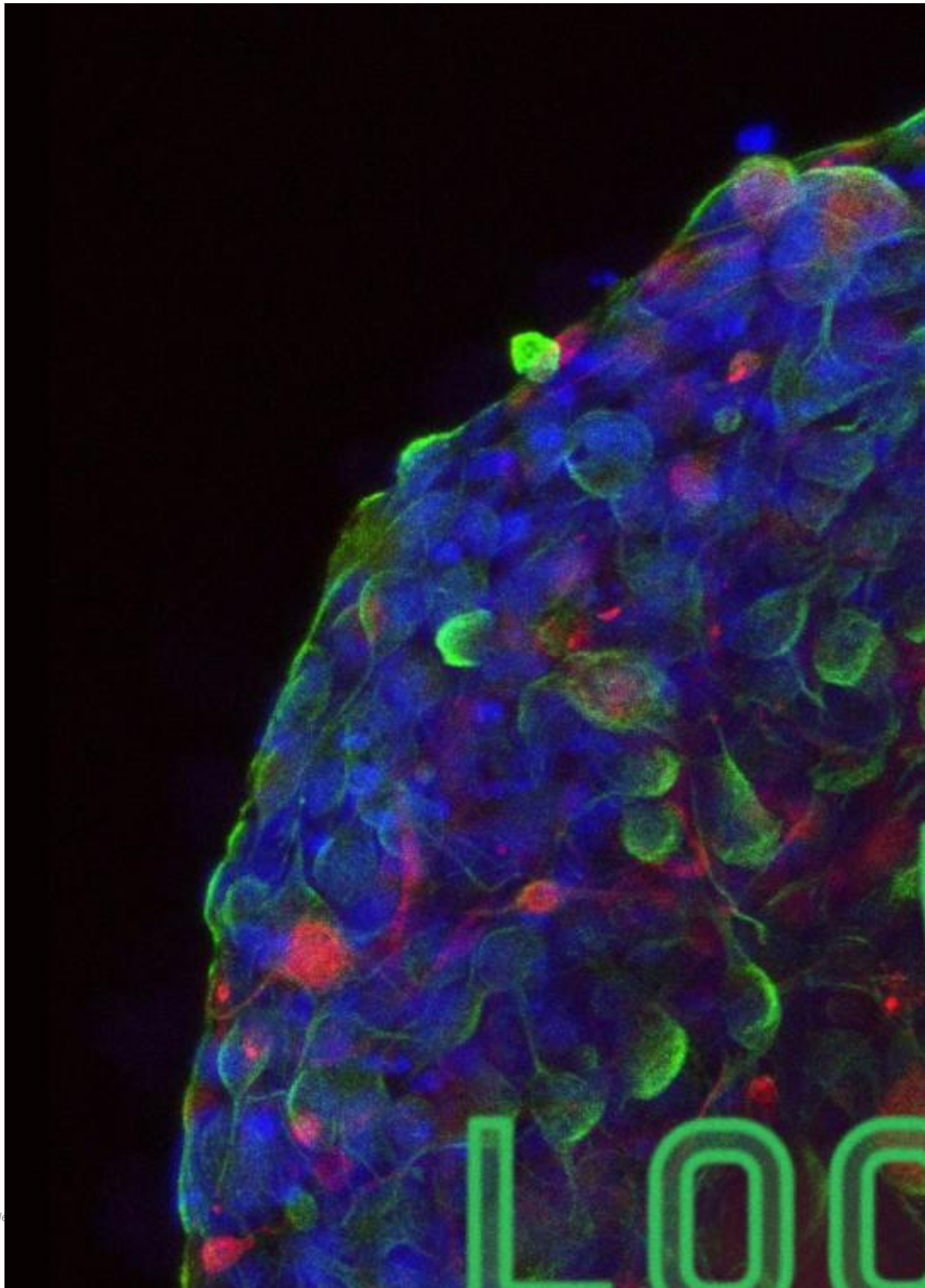
We are looking for highly motivated Ph.D. candidates


LOC

Do you want to study intercellular communication between tumour cells and help find new methods for personalised treatment of pancreatic tumours?

Join our team at the Laboratory of Metabolism and Bioenergetics at the Third Faculty of Medicine, Charles University!

We offer a PhD position on a research project with significant translational potential. We study the biology and treatment of pancreatic ductal adenocarcinoma (PDAC) – one of the most aggressive cancers that unfortunately still resists standard cancer therapy.

The low five-year survival rate for PDAC is directly linked to the rapid development of resistance to chemotherapeutic agents. One aspect of this problem is the extreme metabolic plasticity of tumour cells, which can reprogram their metabolism, for example, by increasing glycolysis (the Warburg effect) or changing the transport of lactate and amino acids. Furthermore, they can cooperate with or directly exploit surrounding non-tumour cells as sources for their own growth and spread.

The project we invite you to work on deals with one of the most recently described mechanisms of resistance: intercellular communication via tunnelling nanotubes (TNTs). These thin, membrane-bound intercellular tubes function as "highways" for the active transport of cellular material. In our laboratory, we are investigating how PDAC cells, often in response to chemotherapy-induced stress, increase TNT production to transfer mitochondria, various proteins and metabolites, and, last but not least, ribosomal components, whose transport was first described by our laboratory. This transfer allows tumour cells to enhance their metabolism and protein synthesis, which contributes significantly to the overall resistance of the tumour.

Your work will be closely linked to clinical medicine and the opportunity to help real patients. A key part of the project is the development of methods for personalised treatment based on early testing of tumour sensitivity to chemotherapeutic agents and prediction of treatment response based on the morphology and properties of tumour cells grown in short-term culture. You will work with expanded cell cultures and organoids derived from patient biopsies. You will learn to measure metabolic and signalling processes in real time using advanced technologies (e.g., Seahorse XF) and analyse data in accordance with the principles of open science, with a preference for Bayesian statistical models and the possibility of using machine learning.

Previous experience with cell cultures, molecular biological and biochemical methods is a great advantage. If you also enjoy mathematics, statistics, and programming, we can achieve even more together. More information about our laboratory and work can be found here .

Please send your applications by 30 April 2026.

For more information or to express your interest in studying, please contact the head of the laboratory directly at jan.trnka@lf3.cuni.cz .