

## **Summary of Seed Funding Project: Integration of Spatial Transcriptomics and PET-MRI Imaging in Prostate Cancer Analysis**

Our ambitious project aimed to correlate spatial transcriptomics RNA sequencing with PET-MRI imaging in prostate cancer (PCa) samples. We are pleased to report significant advancements and milestones achieved during the course of this project:

### **Spatial Transcriptomics Sequencing**

We successfully sequenced four PCa samples using the Visium spatial transcriptomics technology. This advanced method allowed us to gain a more nuanced understanding of the tumor microenvironment at a cellular level, within the spatial context of the tissue.

### **Training and Knowledge Transfer**

Key personnel in bioinformatics and genomics undertook secondments at the European Molecular Biology Laboratory (EMBL). This experience provided our team with state-of-the-art knowledge in spatial transcriptomics analysis.

### **Development of SpatialPath Tool**

Leveraging the expertise gained, we developed an innovative tool named 'SpatialPath', which is now accessible at [cfb.ceitec.muni.cz/spatialpath/](http://cfb.ceitec.muni.cz/spatialpath/). SpatialPath is capable of analyzing specific paths in transcriptionally resolved tissue slides. It identifies and highlights crucial genes along these paths and enables comparison between multiple samples. This tool represents a significant leap in the analysis of spatial transcriptomics data.

### **Upcoming Publication**

Our team is in the process of preparing a publication for the journal 'Bioinformatics'. This publication will detail the functionalities and applications of the SpatialPath tool, contributing to the wider scientific community.

### **Extended Collaborations**

The success of our seed project has laid the groundwork for further collaboration. We have secured a partnership with the Medical University of Vienna to apply our methodologies to a project analyzing stress in lung cancer. This collaboration underscores the potential and applicability of our work in broader oncological research.

In conclusion, the project not only achieved its initial goals but also paved the way for future explorations and collaborations in the field of cancer research, demonstrating the profound impact of integrating cutting-edge technologies in understanding complex diseases.