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Title: Linking viral infection of pancreatic cells with type-1 diabetes by single-cell virology

Supervisors:
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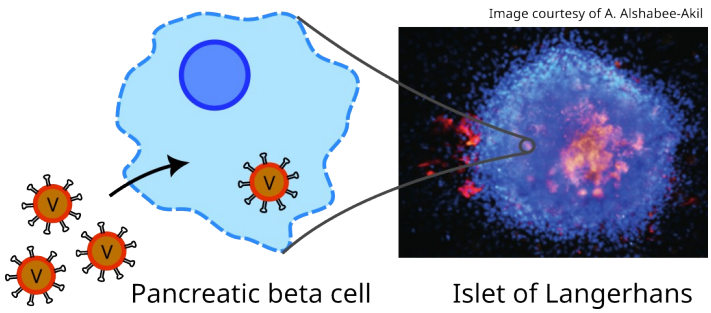
Project timeline: Minimum 3 years.



Project description: Type-1 diabetes (T1D) is among the most common chronic conditions of children. In T1D individuals, the insulin producing pancreatic beta cells are attacked by the person's own immune system, leading to lifelong insulin deficiency. Population data broadly suggests that people who had a previous pancreatic infection by specific types of enterovirus are at increased risk of developing T1D, however the biological processes and molecular mechanisms underpinning this observation remain unknown.

This project aims at using advanced single cell biotechnologies and algorithms to establish the nature of the molecular link between enterovirus infection of pancreatic cells and T1D. Thousands of pancreatic cells from human donors will be infected by T1D-associated viruses and the effect of infection on the cells' gene expression and behaviour will be measured with extreme granularity. How does infection lead to autoimmunity and T1D? We'll find out!

Team and skills: The candidate will join a well-resourced, internationally connected research team and develop advanced skills in biomedical research, either combining both wet-lab biochemistry and dry-lab computational analysis, or focusing on the computational side exclusively. Single cell analysis, bioinformatics, and biological interpretation will be integrated daily. The student will be mentored and guided towards scientific independence.

Requirements: A strong background in computational biology is expected. Candidates with deep knowledge of data science or computer science and an interested in biology or medicine will be considered as well. The student should be curious, motivated, fast-learning, and passionate about science. Knowledge of cell biology and/or of diabetes is a plus.

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