High-Throughput Screening and Machine Learning for Engineering Protein Secretion in Mammalian Cells

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Efficient protein secretion in mammalian cells is a central challenge in biopharmaceutical manufacturing. This PhD project combines high-throughput experimental technologies with machine learning to better understand and engineer protein secretion pathways.

The project will establish high-throughput screening pipelines using modern technologies such as nanovial-based assays, cell sorting, and automated data acquisition. The resulting large-scale datasets will be analysed using machine-learning models to identify design principles for signal peptides and secretion efficiency.

By integrating AI-driven analysis with experimental feedback, the project aims to generate predictive models and actionable design rules for improving protein secretion. The research sits at the interface of mammalian cell engineering, data science, and AI-enabled biotechnology, and is well suited to candidates with interests in quantitative biology, machine learning, and bioprocessing.