

Master's Thesis Project

Topic: Optimization of μm -sized vesicles production

Group: Poolman Lab, University of Groningen. Supervised by dr. Sabine Straathof

Start and duration: Jan – July 2026

This project aims to build a robust pipeline for producing highly monodisperse, micrometer-sized giant unilamellar vesicles (GUVs) as a foundational step toward assembling a simple synthetic cell capable of reliable division and homeostasis.

We will systematically produce GUVs in the lab, measure them with confocal microscopy, and use image-analysis workflow to assess the GUV size. We will also create an independent validation method (e.g. flow cytometer) to benchmark GUV size distributions.

Beyond the outlined plan, there is substantial room for the student to contribute their own ideas, explore new approaches, and actively shape the direction of the project.

Requirements: highly motivated student with critical thinking skills and independent aspirations, experience with biochemistry and/or microscopy is preferential.