## Exploring porous microcapsules for oral drug delivery

Our group investigates porous calcium phosphate microcapsules, known as Template Inverted Particles (TIP), as carriers for oral drug delivery. We work with compounds ranging from peptides to lipophilic phytopharmaceuticals, with the aim of simplifying their formulation into patient-friendly oral dosage forms.

The idea behind TIP is to provide a common carrier platform for different active compounds. The compounds are loaded inside the microcapsules, allowing the carrier to retain the properties needed to form mechanically strong tablets that disintegrate rapidly and accelerate drug release.

In this project, you will gain hands-on experience in pharmaceutical formulation development, from loading an active compound into the microcapsules to preparing and evaluating tablets. You will explore how effectively the selected compound can be incorporated, characterize the loaded particles, and assess tablet properties and drug release.

Your experimental work will include the following methods:

- Drug loading by solvent evaporation, including rotary evaporation
- Particle characterization by scanning electron microscopy (SEM)
- Thermogravimetric analysis (TGA) and X-ray powder diffraction (XRPD)
- Drug quantification using HPLC or UV–Vis spectroscopy
- Tablet preparation and mechanical strength testing
- Tablet disintegration and drug release testing

Alongside your laboratory work, you will learn to plan experiments, analyze and interpret results, and communicate your findings through scientific writing and presentations. The specific research formulation/ active substance will be defined according to ongoing projects.

**Suitable for:** MSc students in Pharmacy, Drug Sciences or Nanosciences with an interest in pharmaceutical formulation and drug delivery.

Applications can be sent to Christina Schröter christina.schroeter@unibas.ch

**Project start:** Flexible / beginning of 2027