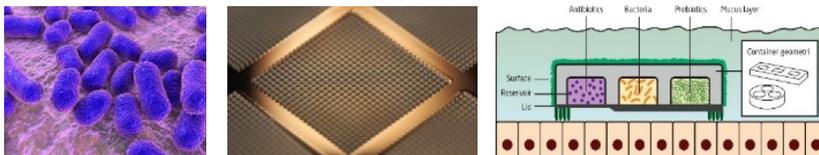


Master project

Microcontainers for oral delivery of probiotics



Prebiotics and probiotics are applied to affect the human microbiota of the gut, for example with the purpose of preventing diarrhea. Probiotics are typically delivered orally in the form of tablets containing spray-dried bacteria, but key challenges remain. These include the delivery of microorganisms to the lower part of the small intestine, as many microbes do not survive the passage through the upper gastrointestinal tract. Furthermore, the microorganisms need to be able to enter the mucus layer to multiply and colonize in the gut mucosa.

Micrometer sized polymeric cylindrical containers (known as microcontainers) have been developed for oral delivery of therapeutics. Microcontainers are loaded with the compound of interest and subsequently coated with polymers for protection through the gastrointestinal tract. Studies have shown that microcontainers are engulfed in the intestinal mucus, which makes microcontainers promising for targeted delivery of probiotics.

Example of specific project topics:

- How will various pH-dependent and water-soluble polymers affect the release of probiotics?
- Can mucoadhesive polymers improve the adhesion of micro-containers to the intestinal mucus?

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About IDUN

IDUN is a center of excellence funded by the Danish National Research Foundation and the Villum Foundation. The center is divided into two parts: IDUN Drug and IDUN Sensor, focusing on drug delivery and nanomechanical sensors, respectively.