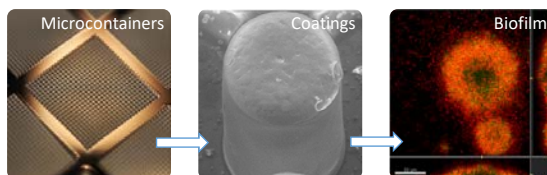


Microcontainers for improved treatment of biofilm



A biofilm is an assemblage of bacteria living together in a self-produced extracellular matrix, which allows bacterial survival in an otherwise hostile environment. Biofilm-associated infections are very difficult to eradicate successfully and they often cause chronic infections with persistent inflammation despite multiple treatments with antibiotics. *Pseudomonas aeruginosa* is a gram-negative human pathogen that forms biofilm. *P. aeruginosa* infections are most prevalent in patients suffering from cystic fibrosis but also found in skin ulcers as well as intestinal infections.

Micrometer sized polymeric devices (microcontainers) have shown to engulf in the intestinal mucus and this property might be useful in the treatment of biofilms. We hypothesized that the microcontainers can target the antibiotics delivery by overcoming the biofilm and releasing the antibiotics in a controlled manner in locations where the bacteria are present hence improving treatment.

Example of specific project topics:

- Development, characterization and testing of lids that degrades the components of the extracellular matrix produced by *P. aeruginosa*
- Growing and testing *in vivo*-like biofilms in shear systems for higher throughput screening of drug delivery systems such as microcontainers
- Test of strategies to achieve a burst release of otherwise poorly water-soluble antibiotics from microcontainers

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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.