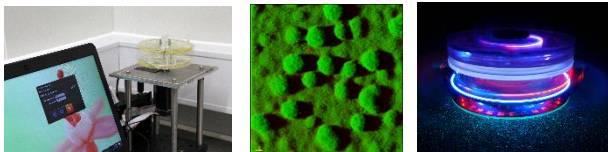


Master project

Lab-on-disc (LoD) for bacterial biofilm growth and testing of antibiotic resistance



Bacteria easily adheres to surfaces creating biofilm and can develop resistance to antibiotic treatment. Because of their nature, biofilms are a public health problem, since it is difficult to eradicate them with antibiotics and they show 10-1000 times less susceptibility to treatments. Traditionally, biofilm resistance is evaluated on agar plates, which do not mimic the bacterial natural growth environment. On contrary, studying biofilms using flow systems, where fresh medium is continuously perfused, mimics more elements from in vivo conditions. Unluckily these systems require bulky and expensive equipment together with trained personnel. LoD appears to be a good alternative to conventional agar plates and pressure driven fluidic systems, since they can be portable, low cost, using small reagent volume (few mL to μ L) and only require a small motor to actuate the fluid controlled by centrifugal force.

At the end of the project the student will be able to:

- Design and fabricate LoD
- Grow bacterial biofilm on disc
- Recognize which antibiotic treatment is better to treat bacterial biofilm
- Treat and analyze pictures taken using confocal microscope

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Location: IDUN center of Excellence, DTU Health Tech

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.