Press release

Please fill in this form and return it to graduateschoolhealth@au.dk in Word format no later than three weeks prior to your defence.

Basic information

Name: Sandra Maria Skovdal Email: skovdal@clin.au.dk Phone: +45 29846373

Department of: Clinical Medicine

Main supervisor: Søren Jensen-Fangel

Title of dissertation: Novel strategies to combat medical biofilms

Date for defence: April 23rd 2021 at (time of day): 13:00 Place: Online at Zoom, https://aarhusuniversity.zoom.us/j/63890005492; and in Jeppe Vontillius Auditorium (only if physical attendance is allowed at the date of defence).

Press release (Danish)

Ph.d.-forsvar om hvordan biofilm-infektioner potentielt kan bekæmpes i fremtiden

Nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af læge Sandra Maria Skovdal, der forsvarer det d. 23/4-2021.

Bakteriers tolerance overfor antibiotika er en af de største udfordringer i vor tids sundhedsvæsen. Et af de primære problemer er, at bakterier under infektion danner biofilm, og det estimeres at biofilm er involveret i ca. 65 % af hospitals-erhvervede infektioner. Biofilm er byer af bakterier, hvori bakterierne kommunikerer og koordinerer et dannelsen af et forsvar mod ydre trusler som antibiotika, immunforsvar og miljøændringer. Biofilm kan sammenlignes med en multicellulær organisme med forskellige subgrupper af celletyper- og funktioner, og tilpasser sig hurtigt et givent miljø. I klinikken er biofilmsdannelse er forbundet med antibiotika-behandlingssvigt, recidiverende infektioner, ekstra kirurgiske interventioner samt øget morbiditet og mortallitet. Formålet med ph.d.-projektet er at undersøge nye potentielle strategier til bekæmpelse af biofilm-infektioner i fremtiden, samt at overføre nye strategier fra grundvidenskabelige studier til prækliniske modeller. I det første studie viser vi et lovende potentiale af en ny coating til titanium-implantater, som forhindrer bakteriel tilhæftning og forbedrer antibiotikas virkning. I det næste studie søger vi en bedre forståelse af, hvordan den ellers ufarlige Staphylococcus epidermidis bliver patogen under en biofilm-infektion. I det tredje studie forskes i at genbruge allerede godkendte lægemidler, som har vist en antibakteriel virkning i laboratorieforsøg. Nærværende ph.d.-projekt er translationel forskning, som bidrager med ny viden om S. epidermidis biofilm og bygger bro mellem lovende laboratorieresultater og klinikken, til gavn for fremtidige patienter i bekæmpelsen af biofilm-infektioner.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 23/4 kl. 13:00 online via Zoom på https://aarhusuniversity.zoom.us/j/63890005492; samt i Jeppe Vontillius Auditorium, bygning 1252, lokale 1252, Aarhus Universitet, Bartholins Allé 3, 8000 Aarhus C (kun hvis fysisk fremmøde tillades på datoen). Titlen på projektet er "Novel strategies to combat medical biofilms". Yderligere oplysninger: Ph.d.-studerende Sandra Maria Skovdal, e-mail: skovdal@clin.au.dk, tlf. +45 29846373.

Bedømmelsesudvalg:
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Press release (English)

Ph.d.-defence on novel strategies to combat medical biofilms in the future

The project was carried out by Sandra Maria Skovdal, MD, who is defending her dissertation on April 23rd 2021.

The antibiotic tolerance of bacteria is one of the major challenges in today's health care. A primary cause is the formation of biofilms during infections, and it is estimated that biofilms are involved in approx. 65 % of hospital-acquired infections. Biofilms are cities of bacteria, in which the bacteria communicate and coordinate formation of a defense against external threats such as antibiotics, the immune system and environmental changes. Biofilm can be compared to a multicellular organism with different subgroups of cell types and functions, able to adapt to a given environment. In clinical medicine, biofilm formation is associated with antibiotic treatment failure, recurrent infections, additional surgical interventions as well as increased morbidity and mortality.
The purpose of the PhD project is to investigate new potential strategies for combating biofilm infections in the future, and to transfer new strategies from basic science to preclinical models. The first study involves a promising potential of a new coating for titanium implants, which prevents bacterial attachment and improves the effect of antibiotics. The next study pursues a better understanding of how the otherwise harmless Staphylococcus epidermidis becomes pathogenic during a biofilm infection. The third study involves repurposing of already approved drugs; one that has recently revealed to excert antimicrobial effect; and another which is hypothesized to interfere with biofilm formation. This PhD study is translational research contributing with new knowledge on S. epidermidis biofilm and bridges the gap between promising laboratory results and clinical medicine, for the benefit of future patients in the fight against biofilm infections.

The defence is public and takes place on April 23rd 2021 at 1 pm online at Zoom, https://aarhusuniversity.zoom.us/j/63890005492; and in Jeppe Vontillius Auditorium, Aarhus University, Bartholins Allé 3, 8000 Aarhus C (only if physical attendance is allowed at the date of defence). The title of the project is "Novel strategies to combat medical biofilms". For more information, please contact PhD student Sandra Maria Skovdal, email: skovdal@clin.au.dk, Phone +45 29846373.

Assessment committee:
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