

## BIOBLOCKERS - ANTIFUNGAL BIOFILM DISRUPTORS FOR MEDICAL DEVICES

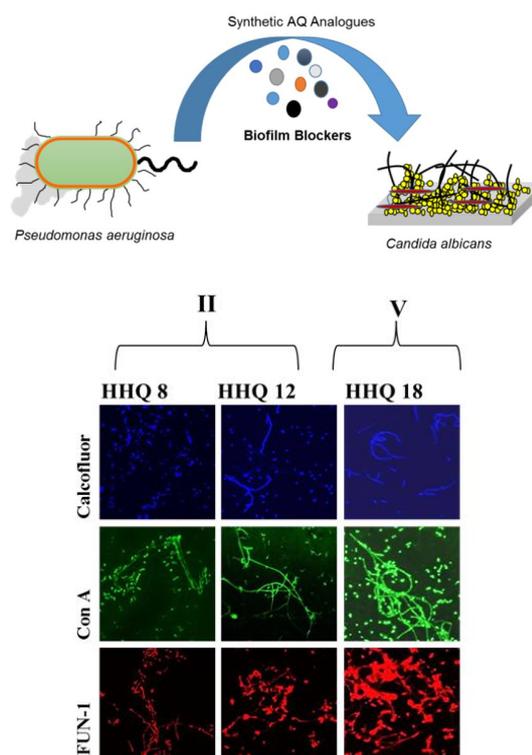
Fungal infection can cause serious illness, especially in patients with compromised immune systems. UCC scientists have identified potent drug-like compounds capable of disrupting biofilm formation and growth; in particular, biofilm formation due to fungal infection by *Candida albicans* or *Aspergillus fumigatus*. The invention has particular utility in combatting fungal infections in medical devices, for example, implanted medical devices such as indwelling catheters, prostheses and contact lenses.

### VALUE PROPOSITION

Implanted medical devices are extremely important and widely used in modern medicine, saving lives and improving the quality of life of millions of people throughout the world. However negative outcomes following implantation can occur due to fungal infection of the implant. Failure to effectively treat such infections can lead to serious illness and even death. In many cases conventional therapies fail and the only treatment option is removal of the device. Treatment of fungal infection with conventional antimycotics is increasingly difficult due to the fact that many pathogens can enter the biofilm mode of growth and become treatment-resistant. Biofilm formation contributes to other serious nosocomial infections of immunocompromised patients and contamination of pharmaceutical formulations. The compounds discovered at UCC have been shown to disrupt biofilm formation and render the colonies susceptible to conventional antifungal therapy.

### THE TECHNOLOGY

Analogues of 2-heptyl-4(1H)-quinolone (HHQ) and 2-Heptyl-3-hydroxy-4(1H)-quinolone (PQS) have been shown to potently inhibit fungal biofilm formation in vitro. These analogues, unlike the parent compounds, do not increase the virulence of *Pseudomonas aeruginosa*. *C. albicans* biofilm formation was carried out in 96 well plates and the ability of the compounds to disrupt biofilm formation was tested using Confocal Scanning Laser Microscopy and an XTT Metabolic Assay. The XTT assay is a commonly used quantitative method assessing *Candida* biofilm mass and growth often in response to novel drug therapies. Typical results after incubation with the inhibitor compounds are shown in Figure 1. A patent application has been filed on the chemical structures.



**Figure 1:** *Candida albicans* biofilms are disrupted in the presence of HHQ/PQS analogues.

**Selected References:** UK Patent Application No. 1513614.6 "Antifungal compositions, compounds and method and uses relating thereto."

### DEVELOPMENT STATUS

- Discovery stage (patent filed)

### FIELD OF APPLICATION

- Antifungal coatings for medical devices

### CONTACT

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