Editorial

Fungal Biofilms and Anti-Biofilm Strategies

Due to the increasing number of immunocompromised patients, combined with the advances in medical technology, fungi have emerged as a major cause of infectious disease, with *Candida albicans* being the major pathogen. *Candida* sp. are known to form biofilms upon contact with various surfaces. Fungal biofilms, especially those of the pathogen *C. albicans*, are a cause of infections associated with medical devices like indwelling intravascular catheters, tracheo-oesophageal voice prostheses and implants, as discussed by *Coenye and coworkers* in this special issue. Biofilm-associated fungal infections are particularly serious because sessile *Candida* cells are relatively resistant to a wide spectrum of antifungal drugs, as discussed by *Bink and coworkers* in this special issue. Moreover, the few antimycotics that are active against microbial biofilms often result in only partial killing of the biofilm cells, leaving a subpopulation of the biofilm cells alive, so called persisters. Because they start growing again when the antimycotic pressure drops, persisters are considered as one of the most important reasons for the recurrence of biofilm-associated infections, as discussed by *LaFleur* in this special issue.

Since biofilms are difficult to remove, biofilm formation on medical devices should be avoided by prophylaxis including (i) conducting the surgery as aseptic as possible; (ii) adapting the implant material in such a way the pathogens can not readily attach and (iii) by impregnation or coating the biomaterial with antimicrobials, as discussed by *Coenye and coworkers*. To reduce biofilm-associated infections on implants, biocidal coatings can be applied based on (i) the use of metal ions like silver, which is toxic when accumulated, or (ii) the release of standard antibiotics/antimycotics to which biofilms display increasing tolerance. Therefore, there is a need for the identification of novel safe antibiofilm compounds that can either prevent biofilm formation or eradicate existing biofilms, as discussed by *Bink and coworkers*. To drive this antibiofilm drug discovery process, various *in vitro* and *in vivo* biofilm model systems are available, as discussed by *Coenye and coworkers*.

In vivo, microorganisms exist predominantly as polymicrobial biofilms where intercellular (bacterial-fungal) interactions are keys to survival and lead to increased mortality as compared to monospecies biofilms in rodent models. The review of *Rizk* in this special issue will focus on the interspecies interactions within polymicrobial biofilms.

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