

ATENEO



Paula de Oliveira

Universidade de Coimbra

Microorganisms and Infections: a theoretical and computational study

Abstract: Adaptation to survive is a common feature of life. Microorganisms -bacteria and virus- are not an exception. Bacteria, differently from virus, can live in almost every environment, preferring surfaces where they aggregate to have a larger likelihood to survive. Such multicellular lifestyle, the biofilm, results in a much-reduced permeation of antibiotics, allows evasion of the host immune response and increase antibiotic tolerance and multiresistance. We consider the surgical insertion of indwelling medical devices (catheters, orthopedic prosthesis, etc). When one of those medical devices is implanted in a patient, bacteria ran for the foreign surface. Biofilm formation initiates and a severe infection, called hospital-acquired infection, can occur. Once a biofilm forms, systemic drug delivery cannot eliminate infection. In situ release strategies, based on avoiding biofilm formation, by dispersing antibacterial drugs in biodegradable coatings of the indwelling devices, should be implemented. Mathematical models can provide preliminary, risk-free answers that can greatly guide preclinical and pharmaceutical research. In this talk, we present a model, based on coupled systems of convection-diffusion-reaction PDEs, that describes the post-surgical evolution of a bacterial infection.

Nota: La capacidad de la Sala de Grados está limitada a 13 personas. Para asistencia presencial se ruega confirmación en la dirección bcano@uva.es

La conferencia se podrá seguir online en

<https://teams.microsoft.com/l/meetup-join/19%3a058a50eb876847918f2245435535992e%40thread.tacv2/1613729955974?context=%7b%22Tid%22%3a%225f2a1fdf-b755-40df-8d23-5c8d19455375%22%2c%22Oid%22%3a%222b25a16b-97c7-4ba5-91fb-301c759828f3%22%7d>

Sala de Grados I, Facultad de Ciencias
Jueves 25 de Febrero de 2021 (17:00)

