6th European Conference on Computational Mechanics (ECCM 6)
7th European Conference on Computational Fluid Dynamics (ECFD 7)
11-15 June 2018, Glasgow, UK

RETINAL TREATMENTS: PATHWAYS AND BARRIERS

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Keywords: *Partial Differential Equations, Mathematical model, Retina*

In this talk we present three dimensional computational models that simulate drug delivery from two different pathways - intravitreal and transscleral. The models consist of coupled systems of partial differential equations linked by interface conditions, where the properties of the drug, the delivery devices and the eye tissues are taken into account.

The evolution of drug distribution that permeates the retina when eluted from intravitreal or transscleral biodegradable implants is compared, namely regarding peak concentrations and residence time. The influence on drug kinetics of the breakdown of retinal protective barriers, which occur in most pathologies of the posterior segment of the eye, is analyzed. The possible medical outcomes of the models are briefly discussed.

Comments on the use of parameters, coming from in vitro and ex-vivo laboratorial experiments are also included.

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