

THE MATHEMATICS OF AGEING: FROM THE HEART TO THE EYE

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The transport of chemical molecules in body tissues depends on their properties but also on the physiological properties of the target tissues. A compromised elasticity, a larger stiffness, and an increased porosity are common characteristics of ageing tissues. The aim of this talk is to show how these properties influence the pharmacokinetics of drugs.

Mathematical models, composed by systems of partial differential equations and integro-differential equations, that represent the coupling between drug delivery devices and body tissues, are presented. Theoretical results concerning the qualitative behavior of the systems will be presented. Numerical simulations show the predictive value of the models.

This is a joint work with J. Ferreira and P. Silva from CMUC and J. Naghipoor from the University of Weimar, Germany.