

ADVANCES IN BIOPHYSICAL COUPLED PROBLEMS

TRACK NUMBER: 300

A. COCLITE^{*}, M. D. DE TULLIO[†], G. FLORIO[†], AND G. PASCAZIO[†]

^{*}Scuola di Ingegneria, Università degli studi della Basilicata,

Viale dell'ateneo Lucano 10, 85100, Potenza (ITALY)

alessandro.coclite@unibas.it

[†]Dipartimento di Meccanica, Matematica e Management, Politecnico di Bari

Via Re David 200, 70125, Bari (ITALY)

marcodonato.detullio@poliba.it, giuseppe.florio@poliba.it, and giuseppe.pascazio@poliba.it

Keywords: multiphysics modelling, computational biophysics, coupled complex systems.

ABSTRACT

Nowadays biological systems are triggering the interest of more and more scientists, highlighting the need of affordable analytical and numerical tools for describing processes in a wide range of spatial and temporal scales, within a number of competing biophysical effects. Without the conceit of being exhaustive, one can think at: the modeling of protein folding/unfolding when interacting with biological substrates; disease early detection based on the analysis of patterns into tomography images; nanomedicines as promising technique in early-detection, treatment and follow-up of cancer; the rational design of medical devices for improving clinical approaches.

The aim of this minisymposium is to gather diverse research fields, experiences, and expertise in the same room to lay the foundation of new multidisciplinary collaborations. This minisymposium will explore the most recent developments and trends in the design of accurate and efficient methods for coupled multiphysics biological problems.

Topics of interest will include micro- and nano-transport, fluid-structure interaction, pattern formation in soft and active matter, biological structures across all scales, design of medical devices for diagnosis and treatments. Participants are encouraged to submit their contributions on these challenging topics, including analytical and computational works. The organizers are proposing to invite enough speakers to fill at least 2 minisymposium sessions.