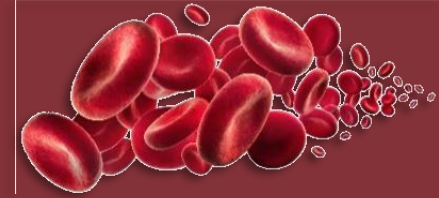


# 3 Funded Open Positions in Computational Biorheology and Biomechanics



## Project 1 – PhD Level:

### Modeling of Hemodynamics and Vascular Micromechanics at organ level.

Development of a Macro-Model and performance of large-scale numerical calculations with the finite-element method to examine the blood flow in a microvascular network. Its main objectives are the following:

- Derivation of a constitutive model that can reproduce the thixotropic behaviour of blood in microvessels,
- Parametrization of the hemorheological constitutive model in terms of systemic hematocrit and other significant hemorheological parameters,
- Derivation a multilayer model for the mechanics of the microvessel tissue.
- Implementation of a numerical code for flows in straight, bifurcated microvessels as well as in a microvascular network.

## Project 2 – PhD Level:

### Microrheological and Mechanical Modeling of Tissue Cells

Development of a Micro-Model and mapping of its predictions onto a macroscopic anisotropic constitutive model for tunica intima and media layers. Its main objectives are the following:

- Constitutive modeling of the various compartments of a eukaryotic cell,
- Parametrization of the constitutive model for endothelial and smooth muscle cells,
- Implementation of a numerical code for modeling endothelial and smooth muscle cells.
- Implementation of a numerical code for simulating the behavior of a representative volume of tunica intima and media layers.

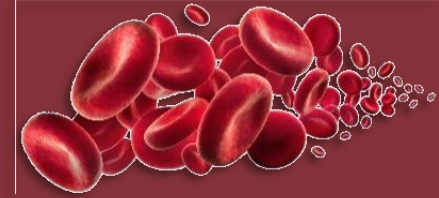
## Project 3 – Master Level:

### Mechanobiological Modeling

Its main objectives are to model:

- Biochemical cascade for NO production and Ca<sup>2+</sup> dynamics in Endothelial Cells,
- Biochemical cascade for NO consumption and Ca<sup>2+</sup> dynamics in Red Blood Cells,
- Biochemical cascade for NO consumption and Ca<sup>2+</sup> dynamics in Smooth Muscle Cells.

# 3 Funded Open Positions in Computational Biorheology and Biomechanics



## Our research environment

The research of the Fluids Lab (officially the Laboratory of Fluid Mechanics and Rheology) in the University of Patras focuses on the rheology of complex fluids and materials that are of industrial and biological relevance. To establish a more fundamental understanding of their rheological behavior under various conditions, the Fluids Lab investigates the relationship between their rheology and their microstructure using a variety of different methods. For more information, please visit our website: <http://fluidslab.chemeng.upatras.gr/>

## Your profile

We are looking for talented individuals who are excited about academic research. They should be able to work independently as well as to collaborate with an interdisciplinary team of researchers. Applicants should hold a Diploma in Chemical or Mechanical engineering, Applied Physics or a related field. Good communication skills and fluency in both written and spoken English are required. Analytical, Physical Modeling and Programming skills are expected (e.g. one language among Fortran 2015, C++, Python, Matlab)

## Our Offer

The Fluids Lab is one of the most renowned Labs in the field of Computational Rheology in Europe. We are offering excellent working conditions in a highly international research environment with large computational capacities. The salary is in accordance with the ELIDEK call (1250€ for the PhDs and 850€ for the MS). The positions can be filled immediately and are initially limited to three and two years, for PhD and Master level researchers respectively. Continuation of the appointments beyond this period of time are intended. All projects are in collaboration with Cyprus University of Technology (CUT) and University College of London (UCL).

## Contact Info

Please express your interest by electronic mail and preferably in one single pdf-document to Ass. Professor Yannis Dimakopoulos in the following address: [dimako@chemeng.upatras.gr](mailto:dimako@chemeng.upatras.gr)

For full consideration, the application should include a cover letter, a detailed CV, a list of possible publications, copies of all educational certificates and transcripts, a summary of past research activities and the names of three references.