

Imperial College London

Department of Mechanical Engineering

PhD Studentship in Modelling Deformations and Solid/Fluid Interactions in Soft Tissues with Application to Drug Delivery in Brain

Applications are invited for a research studentship in the field of Computational Modelling for Biomedical applications, leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by the European Union for a project funded under the HORIZON 2020 programme.

The Department of Mechanical Engineering has been recently awarded a prestigious €8.3M project under the Research and Innovation Action (RIA) topic on robotic assisted neurosurgical drug delivery. The Imperial team, headed by Drs' Rodriguez y Baena, Dini and Professor Van Wachem, will coordinate the project, codenamed EDEN2020, which will also benefit from strong industrial presence (Renishaw plc and XoGraph Ltd.), a 1st class clinical team in Italy (Politecnico di Milano, San Raffaele and the Univerista' di Milano), and the involvement of leading experts in intra-operative imaging (Technical Univeristy of Munich) and shape sensing (Universitair Medisch Centrum Groningen). You will join a team of six researchers at Imperial College.

The research involves development and validation of novel methods for the modelling of soft tissue microscopic deformations and fluid/solid interactions that govern fluid flow in internal human organs (with main focus on brain). These models will be based and will extend the existing algorithms built by the team of investigators looking at flow in porous hyper-viscoelastic media representative of soft tissues. This will enable realisation of simulations that can predict the orientation of the endoscopic probe to optimise drug delivery in certain regions of the tissue. Hence, this project will complement the research performed by other members of the consortium to ensure that the neurosurgical tools are developed and implemented in commercial solutions. The work will be largely software oriented, involving implementation of necessary algorithms in open source and in-house codes but will also include an experimental part that looks at the tissue microstructure as an input to the models.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class honours degree in mechanical engineering, bioengineering, material science, computer science or other related subjects, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. An interest in computational modelling and biomechanics is essential. Good team-working, observational and communication skills are also essential.

To find out more about research at Imperial College London in this area, go to:
<http://www3.imperial.ac.uk/mechanicalengineering>

For information on how to apply, go to:
<http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/>

For further details of the post contact Dr Daniele Dini d.dini@imperial.ac.uk +44 (0)20 7594 7242. Interested applicants should send an up-to-date curriculum vitae to Dr Dini. Please quote "EDEN2020 Modelling PhD" in the title of your email.

Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: - until post filled
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Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people