

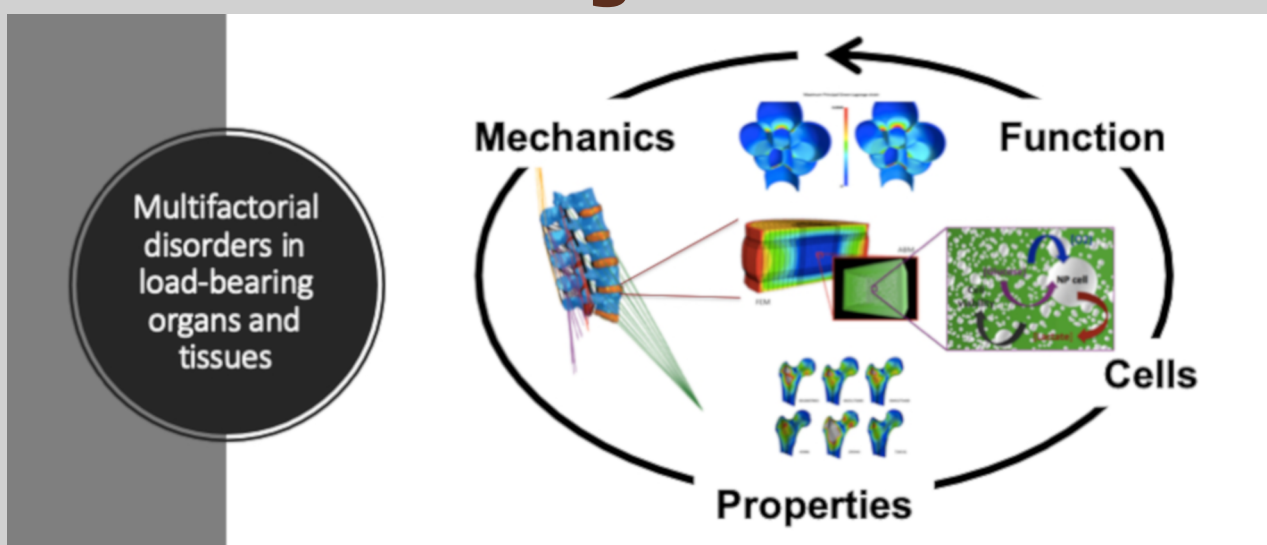


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Heterogeneous modelling to explore the degeneration of load-bearing tissues and organs



Dr. Jérôme Noailly

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Empresas invitadas:



Día : Miércoles 6 de Noviembre de 2019

Hora : 12:00h

Lugar : Seminario I, planta 4 de la E.T.S.I. Caminos, C. y P.
Campus Fuentenueva

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Heterogeneous modelling to explore the degeneration of load-bearing tissues and organs

Abstract: Despite important advances in the development and in the use of both diagnostic and treatment tools in medicine, the management of highly multifactorial conditions of load-bearing organs and tissues remains poorly efficient. Over the last decades, numerical models in biomechanics have allowed improving our understanding of several conditions, which is partly due to top-down rational explorations of the likely role of mechanical factors in the multifaceted regulation of the function of load-bearing tissues in health and disease. Yet, the translation of mechanical predictions into biology-based rationales remains a major challenge, to target promising biomarkers for prevention, early diagnosis and treatment. Theoretical tissue constitutive models in continuum mechanics can explicitly integrate tissue composition parameters through multiphysics and/or multiscale modelling, and pave the way to mechanistic descriptions of couplings through which organ and tissue biomechanics are affected by composition changes, the latter being regulated by dynamic cell behaviours in multifactorial micro-environments. This seminar will provide an overview of the efforts done in this direction by the Biomechanics and Mechanobiology Lab of the BCN MedTech Unit, at the Universitat Pompeu Fabra.

Dr. Jérôme Noailly



Biosketch: Jérôme Noailly began his PhD in 2002 at the Universitat Politècnica de Catalunya (UPC), Barcelona, Spain. He explored the mechanical communications within the lumbar spine through finite element modelling, and he addressed model approximation and reliability issues. In 2009, he received the best PhD thesis award in engineering from the UPC. From 2007 to 2011, he was a Marie Skłodowska-Curie postdoctoral fellow, first at the AO Research Institute (Davos, Switzerland) and the Eindhoven University of Technology (Netherlands), and then at the Institute for Bioengineering of Catalonia (IBEC), Barcelona, Spain. At IBEC, he focused on soft tissue and multiphysics modelling, and in 2012 he became the head of the group of Biomechanics and Mechanobiology (BMMB) and started to combine systems biology models. In 2015, he moved to the Universitat Pompeu Fabra (UPF), and merged the BMMB expertise with that of BCN MedTech. Jérôme was the principal investigator of the EU FP7 MySpine, and he is regularly in charge of clinical and technological transfer activities in computational biomechanics with companies and hospitals. In 2016 he was awarded a Ramon y Cajal Fellowship by the Spanish Government and in 2019, Jérôme became Tenure Track Professor at UPF. He has authored 37 peer-reviewed scientific papers and book chapters, 100+ contributions to conferences and he has been supervising 7 PhD theses.

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