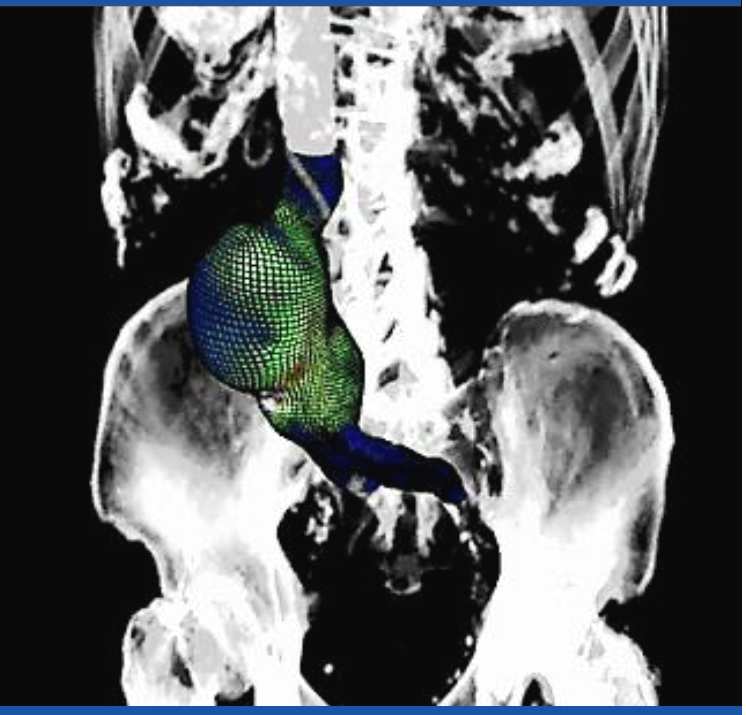
Summer school, Stockholm
September 5th to 9th 2022

Computational Tissue Biomechanics
From in-vitro experiment to computational analysis



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Alain Goriely, University of Oxford, UK

Georges Limbert, University of Southampton, UK

Gustavo Orozco, Lund University, Sweden

Hanna Isaksson, Lund University, Sweden

Stéphane Avril, Ecole des Mines de Saint-Etienne, France

Svein Kleiven, KTH Royal Institute of Technology, Sweden

T. Christian Gasser, KTH Royal Institute of Technology, Sweden

The course introduces and applies state-of-the-art tools in the continuum mechanical analysis of biological tissues. It is designed for **master students** and **PhD students** having a decent background in mechanical engineering and solid mechanics. The course includes:

Lectures from experts in the field
Experimental tissue characterization
Finite Element Method (FEM) modeling

Lectures

Basic concepts and processes

Description of mathematical, physical and biological concepts and processes

Computational continuum biomechanics (Gasser, 4 hours)

Tissue growth (Goriely, 2 hours)

Description of biological tissues

Histology, mechanical properties, modeling, parameter identification

Bone, Tendon, Ligament and articular cartilage (Isaksson, Orozco; 4 hours)

Skin (Limbert; 2 hours)

Brain (Kleiven; 2 hours)

Vascular tissue (Gasser, Avril; 4 hours)

Hands-on laboratory

Hands-on laboratory and Finite Element Method (FEM) modeling in groups of approximately up to 10 students.

In-vitro experimental tissue characterization including Digital Image Correlation (DIC) measurements (4 hours)

Linear and non-linear FEM modeling (4 hours)

Venue

KTH Solid Mechanics
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Contact

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