

## Università degli Studi di Pavia





## in collaboration with Centro di Simulazione Numerica Avanzata – CeSNA Istituto Universitario di Studi Superiori

## Towards a patient-specific constitutive modeling of soft biological tissues: the multiscale structural approach

Soft tissues are present in almost every human organ and experience inelastic and damage mechanisms in pathological situations. Mechanics of such tissues is mainly related to the one of collagenous structures within them and their mechanical modeling is of key importance for the understanding of many pathological macroscopic effects as a consequence of altered structural features at tissue level.

A novel constitutive model of soft biological tissues is presented, explicitly taking into account constituent nonlinearities, both at the nano and the microscale, and adopting a structural rationale gathered with a multiscale approach. The predicted mechanical response of biological structures (such as tendons, ligaments or arterial walls) directly depends on histological and biochemical features correlating structure/arrangement of tissue constituents with their mechanical role and, thereby, opening towards a patient-specific constitutive modeling.

**Dr. Michele Marino** DiCII, University of Rome "Tor Vergata" *Tuesday, October 29, MS1 Room, 10.00* DICAr, Via Ferrata,1 – Pavia

