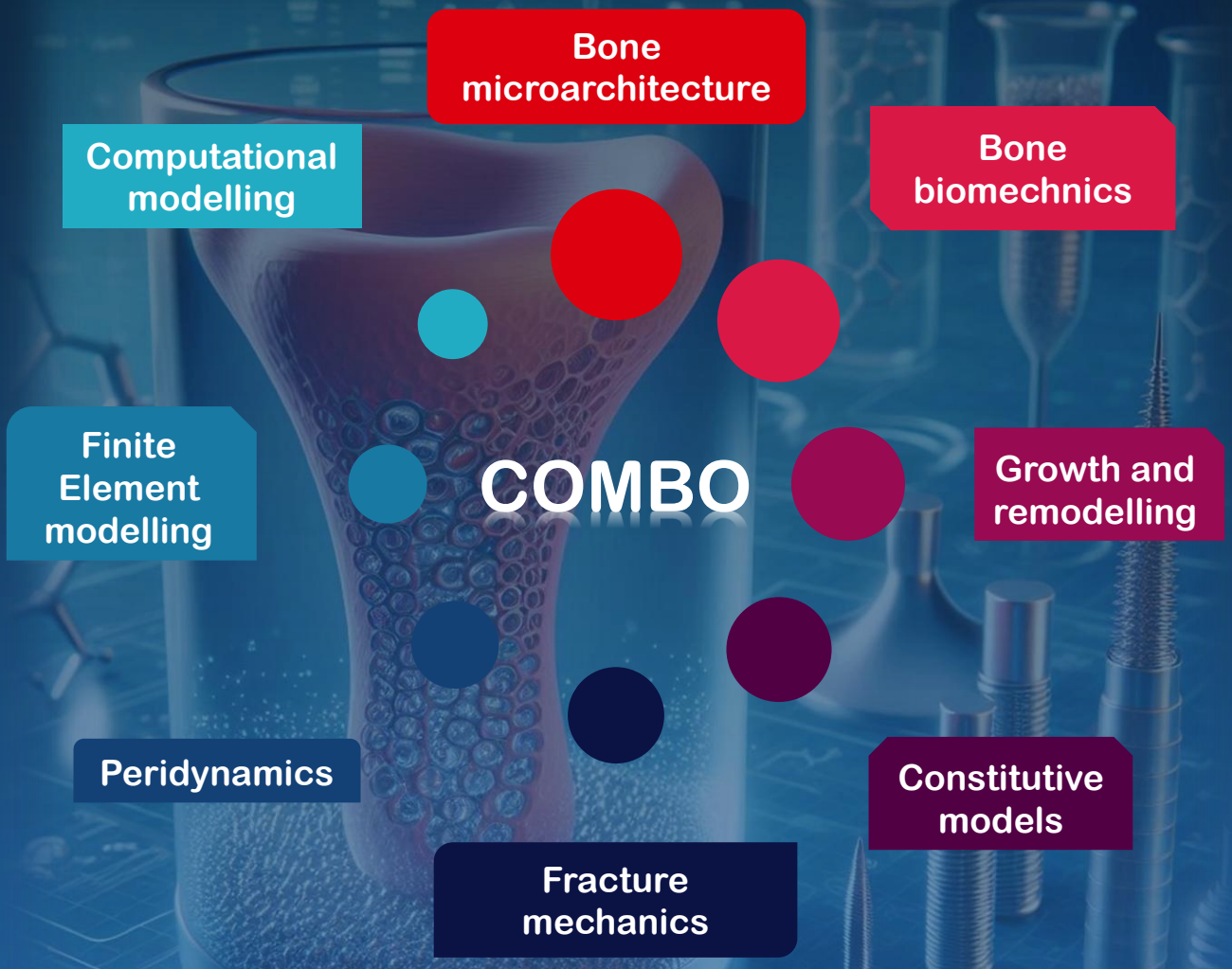
Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
TOR VERGATA
M2M Mechanics For Digital Innovation
TCBiomech

Workshop

BioSimulate 2025

05 June 2025 – Engineering Campus University of Rome Tor Vergata

Venue: Aula Convegni (Conference Room), "Didattica" building



COmputational Micromechanics in BOne mechanobiology

Organizing and scientific committee:

Giuseppe Vairo (local chairman), Università di Roma Tor Vergata
Alessio Gizzi (co–chairman), Università Campus Bio-Medico di Roma
Michele Marino, Università di Roma Tor Vergata
Pierfrancesco Gaziano, Università di Roma Tor Vergata
Lorenzo Zoboli, Università Campus Bio-Medico di Roma

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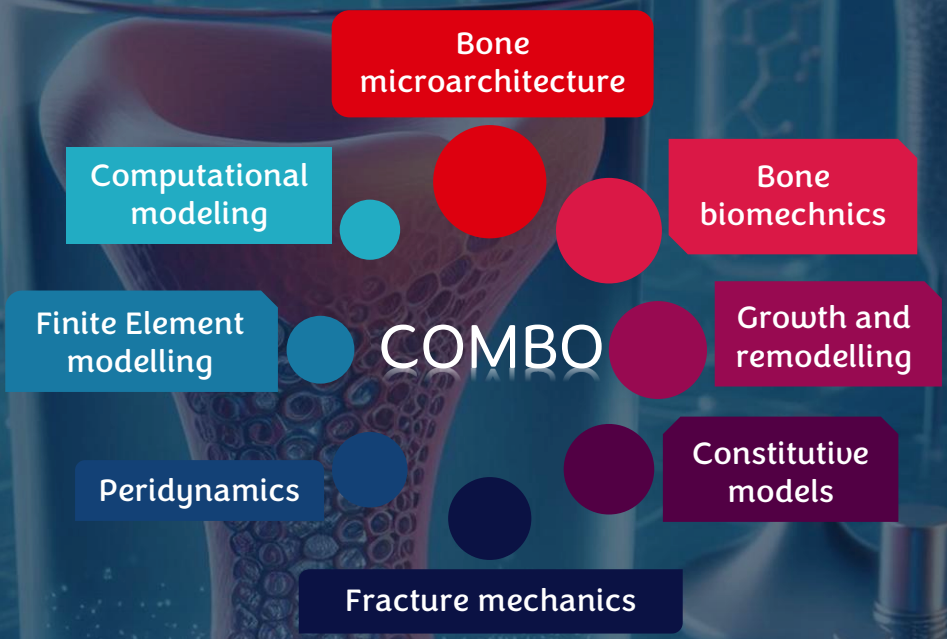

COmputational Micromechanics in BOne mechanobiology

This workshop aims to gather together international experts studying biocompatible materials for the treatment of musculoskeletal disorders. In this context, devices made of Magnesium alloys (e.g. bone substitutes, fixators, and stabilization tools) are the cutting – edge solution, but their development requires further theoretical and computational advances. The workshop will address:

- constitutive modeling of materials with nano/microstructure
- damage patterns during the biodegradation process
- multiscale chemo-mechano-biological approaches
- biomechanics of prosthetic devices in living tissues

The workshop will feature presentations from the clinical and engineering fields, as well as key findings from the COMBO project. A round table discussion will encourage interaction and knowledge sharing among participants. Attendance is free but requires prior registration via the provided link or QR code.

Register here:

https://forms.office.com/e/MbfdRj4tbW

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Program

14:00: Opening and introduction

14:10 – 14:40: M.J. Gomez-Benito, University of Saragoza, *Mechanobiology of bone healing: insights for smarter fixation devices.*

14:40 – 15:00: P. Gaziano, University of Rome Tor Vergata, *Chemo-mechanical modeling of biodegradable screws. Part I: phase-field.*

15:00 – 15:20: L. Zoboli, University Campus Bio-Medico of Rome, *Chemo-mechanical modeling of biodegradable screws. Part II: peridynamics and fatigue.*

15:20 – 15:50: U. Galvanetto, University of Padua, *PD-FEM coupled models to simulate brain surgery.*

15:50 – 16:20: Break

16:20 – 16:50: C. Falcinelli, University «G. D'Annunzio» Chieti-Pescara, *Bone strength assessment by merging FE modeling with CT images for fracture risk prediction.*

16:50 – 17:10: V. Diana, University of Genua, *Continuum-molecular modelling of heterogeneous materials and application to cortical bone fracture.*

17:10 – 17:30: S. Kovacevic, University of Oxford, *Virtual testing framework for predicting Mg-based implant degradation.*

17:30 – 17:50: A. Hermann, Hamburg University of Technology, *Convergent nonlocal extension of the phase-field corrosion model.*

17:50 – 18:10: G. Ongaro, Sapienza University of Rome, *Multi-adaptive framework for 3D bio-degradable implants.*

18:10: Open discussion
18:30: Wrap-up and closing

How to get to WS location

🚇 Step 1: Metro from Roma Termini to Anagnina

- Take Metro Line A (direction: *Anagnina*) from Roma Termini.
- Get off at Anagnina (last stop on Line A) after approximately 25 minutes.
- Trip duration: approx. 25 minutes.

🚌 Step 2: Bus from Anagnina to the University Campus

- Board Bus 20 Express toward *Tor Vergata*.
- Get off at Cambridge/Tor Vergata or Ingegneria/Tor Vergata.
- Trip duration: approx. 25 minutes.

Fiumicino Airport to Termini station

https://maps.app.goo.gl/hVireffx5MNURViF8

Termini station to Anagnina station

https://maps.app.goo.gl/SMKc1ERQvgjn341F6

Anagnina station To Engineering campus

https://maps.app.goo.gl/ygRAUErpqTGkPtge7