





Dr. Saverio Affatato

Kick-off meeting

Barcelona, 3-5 March 2014

Laboratorio Tecnologia Medica Istituto Ortopedico Rizzoli Bologna, Italy





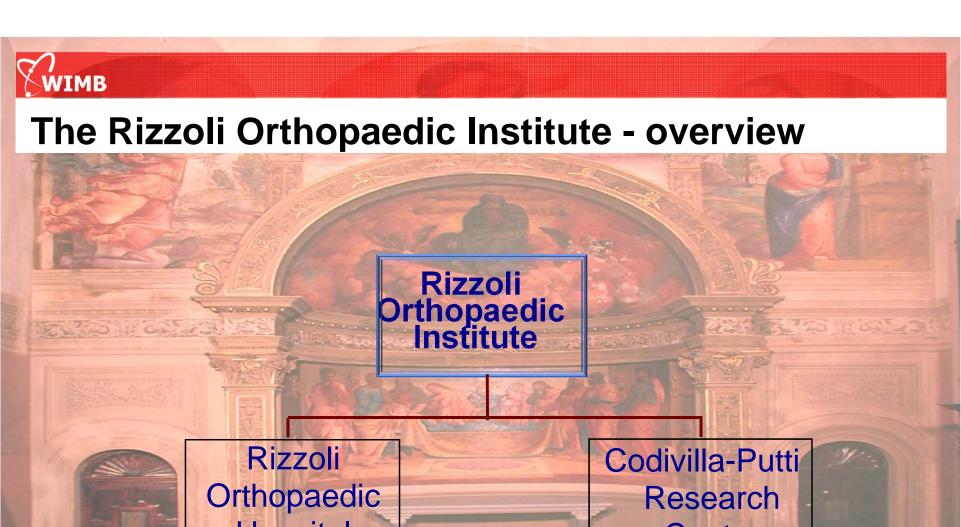
The Rizzoli Orthopaedic Institute - overview

In 1896 the Rizzoli Institute was opened as a special hospital for orthopaedics and traumatology.

In 1981 was recognized as National Hospital and Research Institute for Orthopaedics

2014: The Rizzoli Institute is the largest Research and Healtcare center on orthopaedics in Italy





Hospital

Center





The Hospital: the number

> 150 000 PATIENTS EXAMINED PER YEAR

> OVER 20 000 ORTHOPAEDIC OPERATIONS

PER YEAR

> 327 BEDS





The Research center: the number

15 LABORATORIES

✓ OVER 300 PEOPLE EMPLOYED:

DOCTORS, BIOLOGISTS,

ENGINEERS, TECHNICIANS







THE RESEARCH CENTRE

Immunologia

Diagrag

Laboratorio di Tecnologia Medica

Director Dr. Aldo Toni

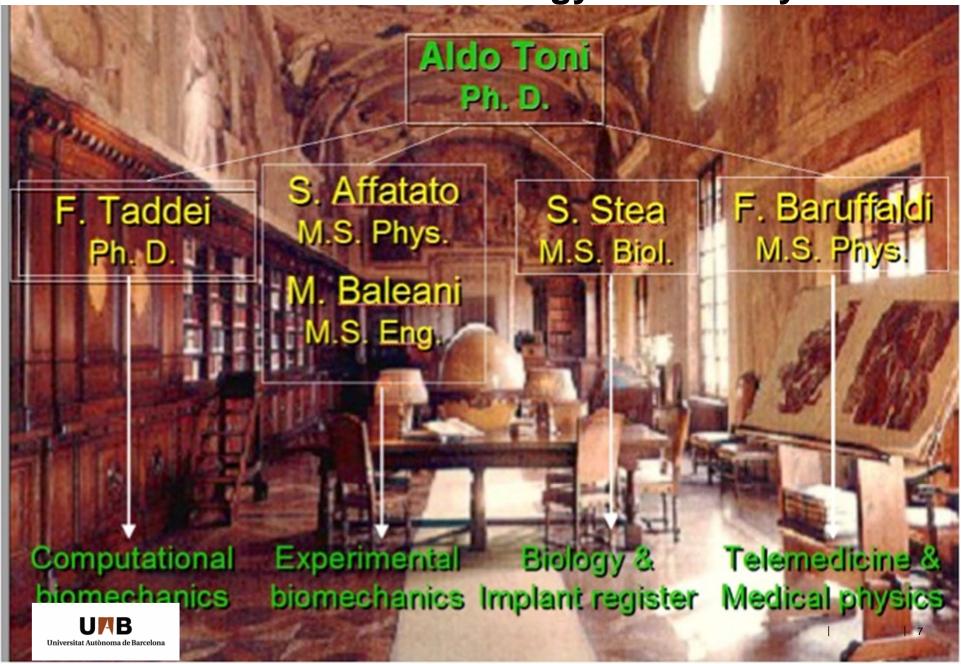
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Medica



The Medical Technology Laboratory





Running research tasks related to WIMB

- Long term effects of cementless arthroplasty
- Development of new tools for earlier implant failure clinical detection
- In Vitro evaluation of functional performances of new prostheses
- Biomaterials and soft tissue characterization





Running research tasks related to WIMB (2):

- > FEM prediction of functional performances of new prostheses
- > Bone remodelling around total hip replacements
- > Wear assessment of different materials such as cer-on-cer, meton-met, and cer/met-on-pol bearings





Experimental facilities: Testing machines



Hydraulic uniaxial testing machine Mod. 8502, Instron, with a load capacity of 100 kN equipped with data acquisition boards (up to 4 channels)



Hydraulic uniaxial testing machine Mod. MiniBionix 858, MTS, with a load capacity of 15 kN, equipped with data acquisition boards (up to 16 channels, 5 kHz)



Electric uniaxial testing machine Mod. V1000, Vitrodyne with LOAD CAPACITY OF 100 N



Hydraulic uniaxial testing machine Mod. FPF 20, Italsigma, with a load capacity of 20 kN



Hydraulic axial-torsional testing machine Mod. MiniBionix 858, MTS, with a load capacity of 100 Nm and 15 kN equipped with data acquisition board (up to 16 channels, 5 kHz)



The SHORE WESTERN hip wear simulator is used to investigate wear in prosthetic hip joint. The wear tests were performed following the recommendations defined in

international standard.



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Experimental facilities: Hip and Knee wear simulation







Experimental facilities: X-ray microtomography (microCT) applied to bone investigation



MicroCT system Skyscan 1072 installed at LTM-IOR: Left, microCT system. Right, the external PC





Computational Biomechanics:

Structural and kinematic subject-specific model for the study of stress levels in the bone

Prediction of risk of fracture in osteoporotic subjects

Analysis of the functional outcome for bone-prosthesis systems







R.I.P.O.: a peculiar activity

- The Register of Orthopaedic Prosthetic Implants (R.I.P.O) was initiated at the Rizzoli Orthopaedic Institutes in 1990.

- It allows the epidemiological evaluation and the post-marketing monitoring of orthopaedic medical devices.



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The Research center

