IBV
INSTITUTO DE
BIOMECÁNICA

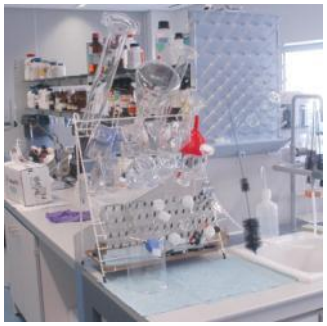
In search of well-being and quality of life

Presentation

Facilities

- Movement Analysis Laboratory.
- Functional Evaluation, Body Damage and Disability Laboratory.
- Ergonomics Laboratory.
- Footwear Functional Design Laboratory.
- Technical Aid Laboratory.
- Paving Surface Laboratory.
- Sport and Leisure Laboratory.
- Climatic Comfort Laboratory.
- Surgical Implant Laboratory.
- Biomaterial Laboratory.
- Biological Laboratory.
- Image Analysis Laboratory.
- Operating Theatre.
- Stabling.
- Mechanical Testing Laboratory.
- Metrology Laboratory.
- Instrumentation and Electronics Laboratory.
- Information Technology Laboratory.
- Industrial Design Laboratory.
- Mechanical Workshop and Prototyping Laboratory.
- Experience Laboratory (Living Lab).
- Library-Newspaper and Periodicals Library.

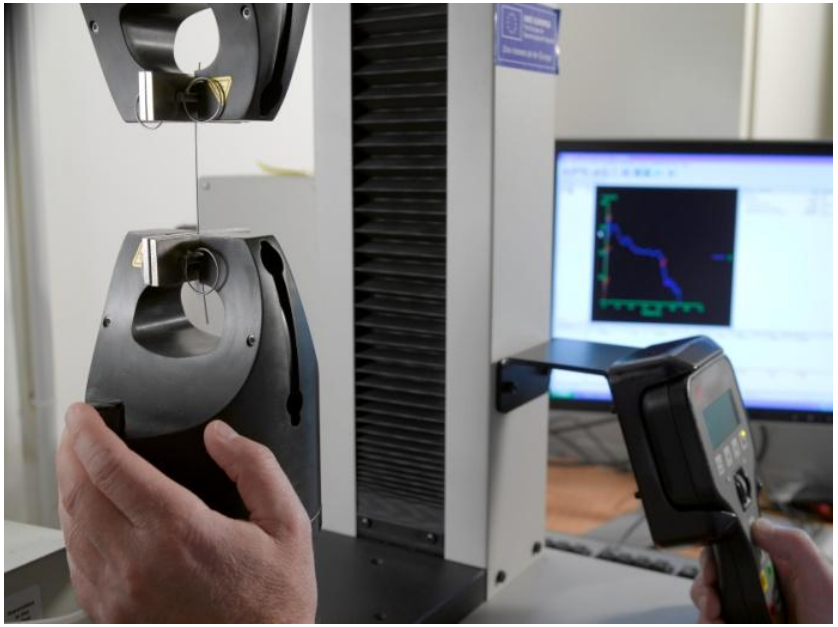


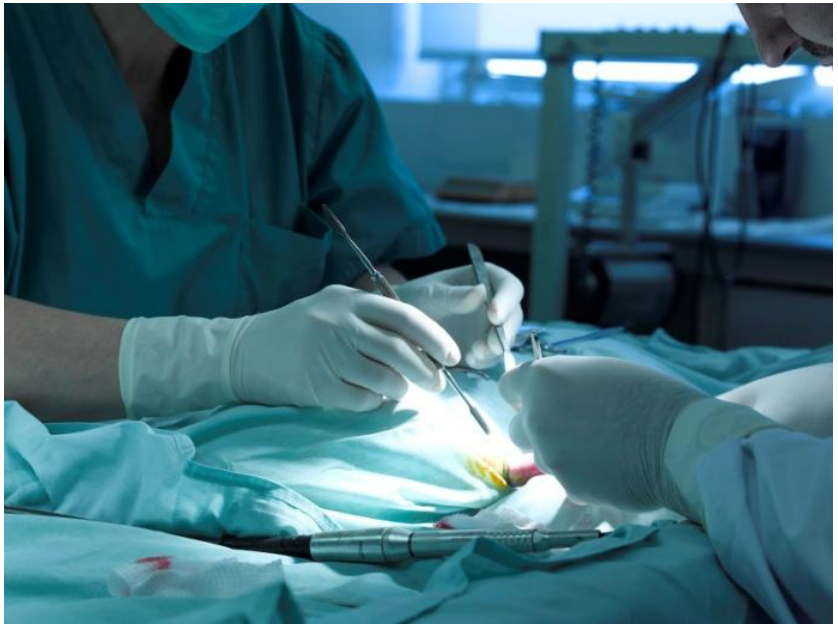


Healthcare Technology Laboratories

Healthcare Technology Laboratories allow the study of the biomechanical behaviour of biomaterials and medical devices.

Several properties are evaluated in these facilities such as mechanical strength, wear, osteointegration capacity, biocompatibility, etc.





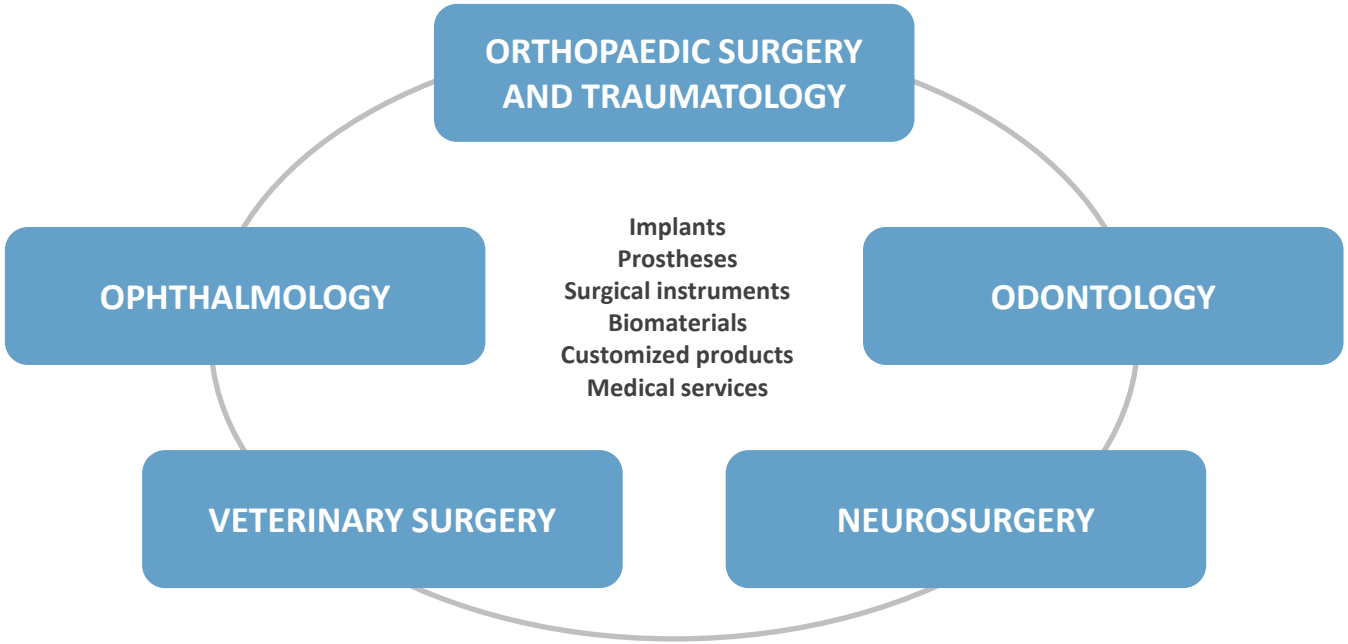
Services and products

SERVICES	PROJECTS	Contracted R&D
		Technology Assessment
	TECHNOLOGICAL SERVICES	Inspection and Testing
		Biomechanical Evaluation
		Education
		Information and Documentation
PRODUCTS		Biomechanical Applications
		ICT Applications
INNOVATIVE BUSINESS INITIATIVES		Knowledge-Intensive Businesses
		Technology-Based Businesses

Healthecare Technologies Area

Health, well-being and quality of life

Activities of the IBV in the **Healthcare Technology field** aim at directing innovation towards the improvement of people's health, well-being and quality of life and, at the same time, providing companies and entities that offer medical products and services with business keys to increase their competitiveness and differentiation in the market.



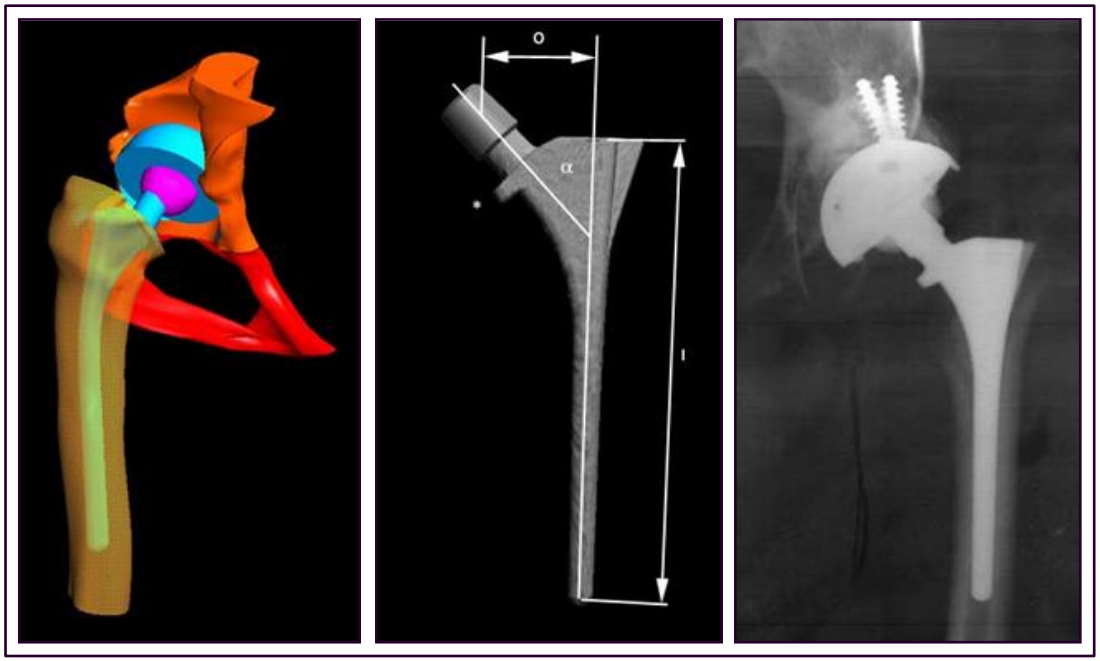
Services for the dental sector

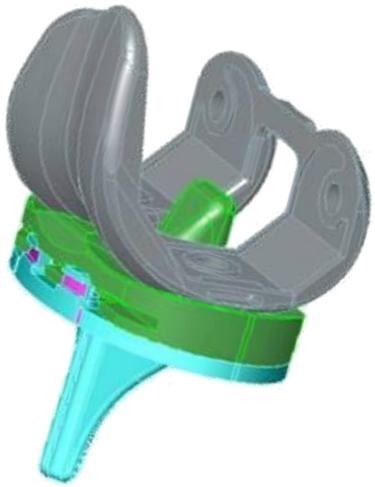
IBV offers a complete portfolio of technological services for the design and evaluation of medical devices and biomaterials in the sector.

PRODUCT DESIGN	PRODUCT EVALUATION	BIOMATERIAL EVALUATION	CE MARK DOCUMENTATION
Identification of needs	Mechanical tests	Mechanical characterization	Essential requirements
Definition of design specifications	Analytical models	Osteointegration	Risk analysis
Conceptual and detailed design	Wear studies	Bone tissue regeneration	Clinical evaluation
Selection of materials and manufacturing techniques	Non-standardized tests	Biocompatibility	

Healthcare Technology Group (TSA). IBV

- **Design and development of medical devices**:
  - Spine
  - Knee
  - Hip
  - Dental
  - Other...





IBV

Ergonomic design of laparoscopic surgery instruments

- Instituto de Biomecánica de Valencia (IBV)

IBV

Cuidamos tu calidad de vida

- Grupo de Diseño Industrial de la Universidad de Extremadura (GDI)

Centro Universitario de Mérida

- Centro de Cirugía de Mínima Invasión Jesús Usón (CCMI)

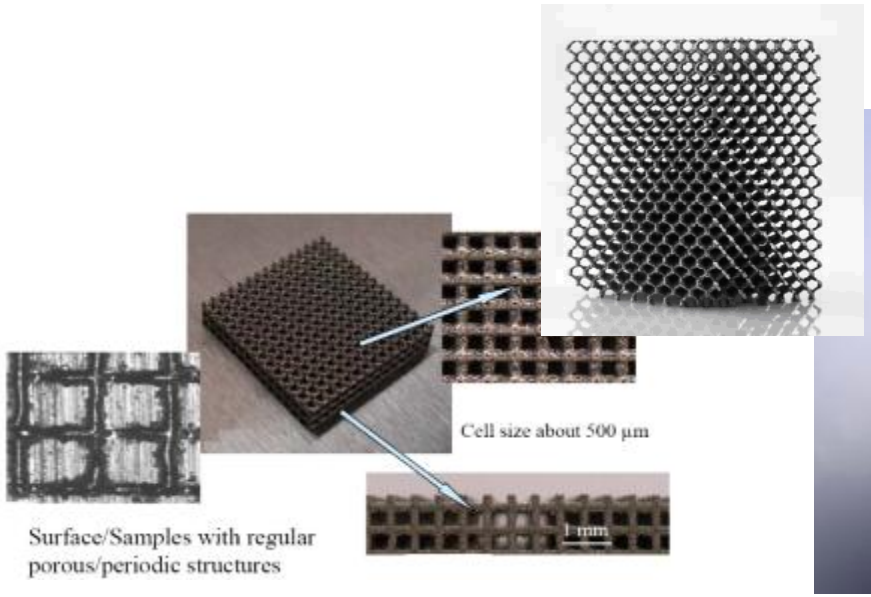
Centro de Cirugía de Mínima Invasión
Minimally Invasive Surgery Centre
Jesús Usón

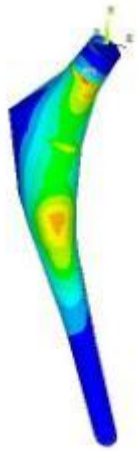
1 European Patent .Ref. EP10382362.1

Success case studies

PRODUCT DESIGN

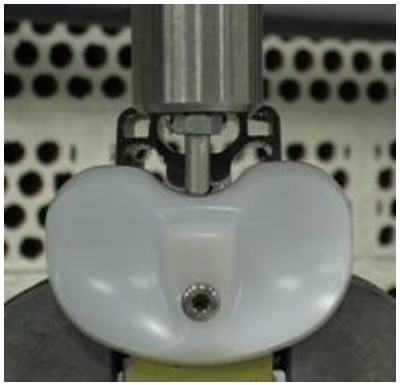
IBV has collaborated during the design of a bone substitute manufactured in porous metal by additive technologies.



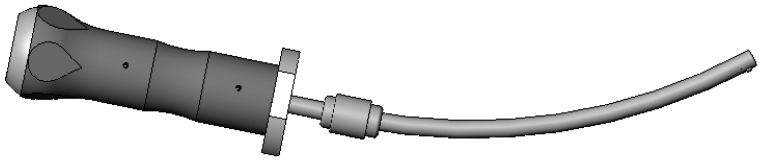


TSA-IBV

- Technical evaluation of medical devices



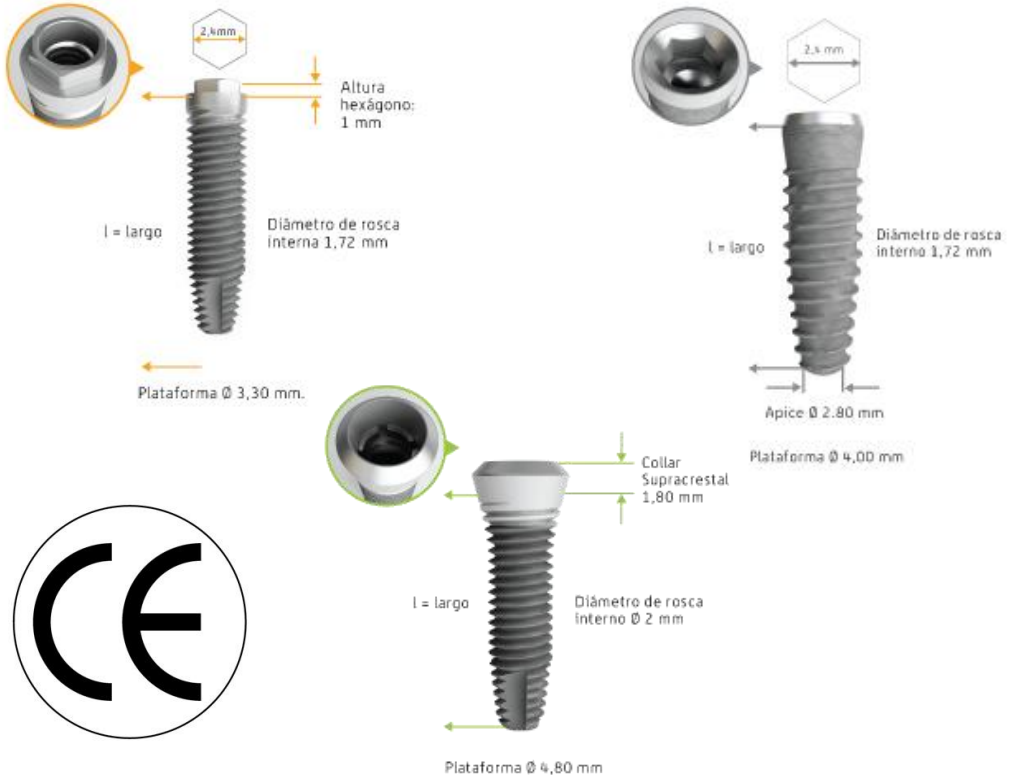

- Development of new ergonomics surgical instruments

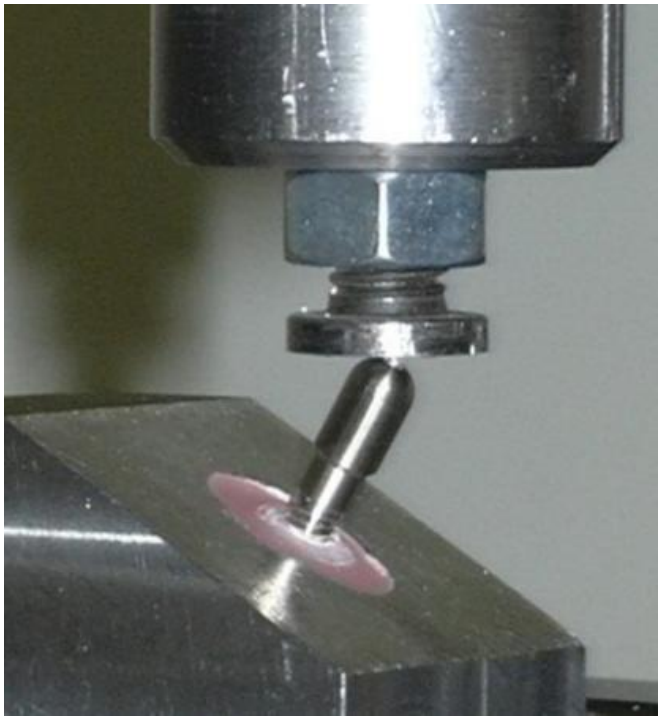



Success case studies

PRODUCT EVALUATION: Mechanical tests

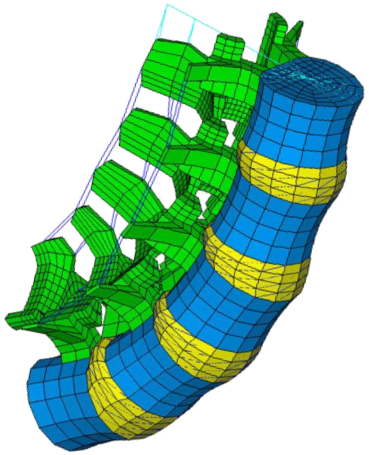
IBV has carried out static and fatigue mechanical tests according to ISO 14801 of dental implants from the Argentinian company B&W, allowing this manufacturer to obtain the CE mark for marketing them in Europe.

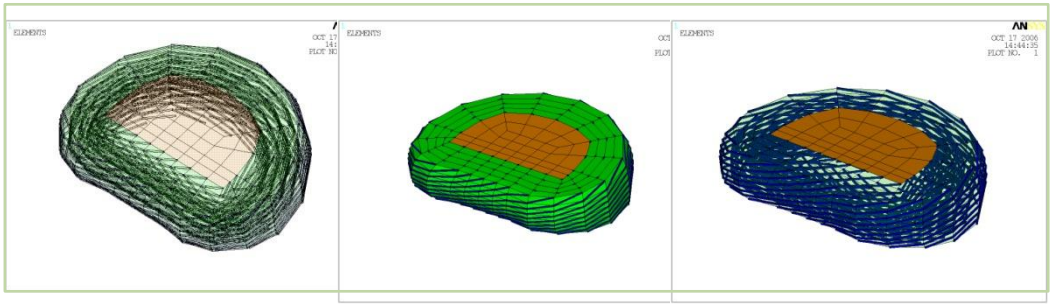




TSA-IBV

- **Biomechanical studies**
  - Finite element modelling of biological structures and medical devices
  - Analysis of prosthetic wear (knee, hip, spine...).
  - Studies on MIS instrumentation and laparoscopy



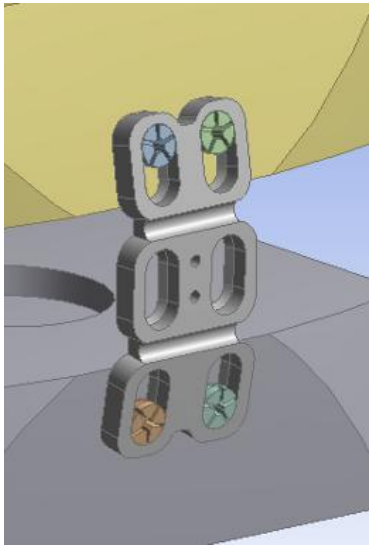


Success case studies

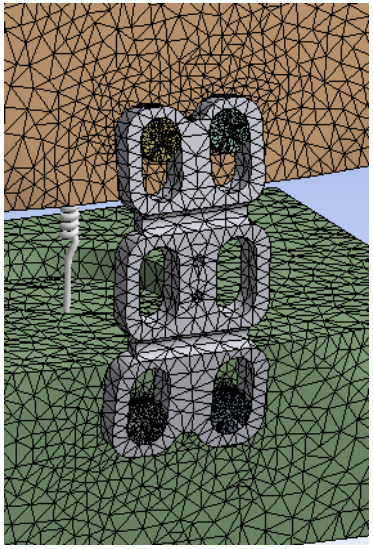
PRODUCT EVALUATION: Analytical models

IBV has studied the biomechanical behaviour of cervical plates by means of finite element models. In order to validate these models, analytical results have been compared with the values of mechanical tests.

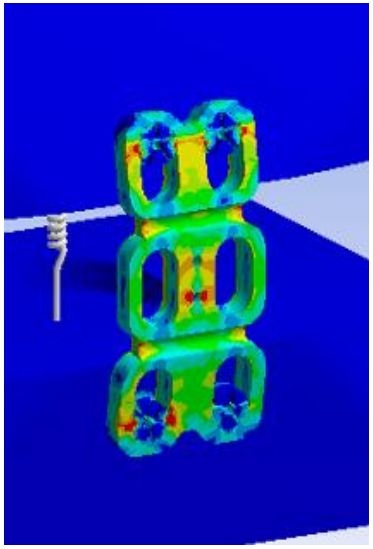
COMPUTER AIDED DESIGN



FINITE ELEMENT MODEL

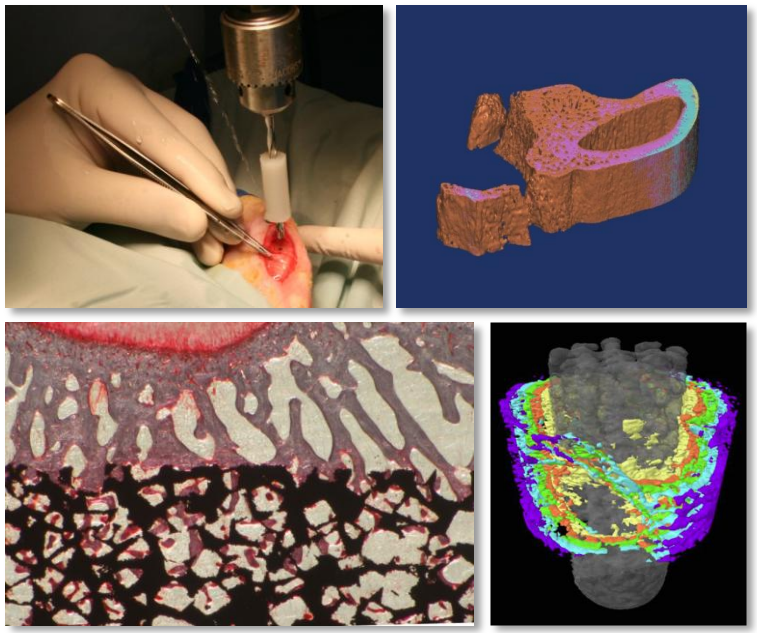


BIOMECHANICAL SIMULATION



MECHANICAL TESTS

TSA-IBV



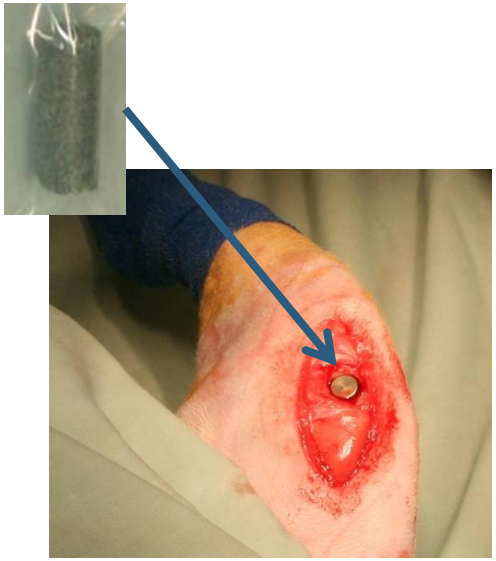
Regenerative Medicine and Tissue Engineering:

- Evaluation of new biomaterials
- Mechanical behaviour analysis of tissues and structures of human body under physiological and pathological conditions
- Design and *in vivo* evaluation of scaffolds

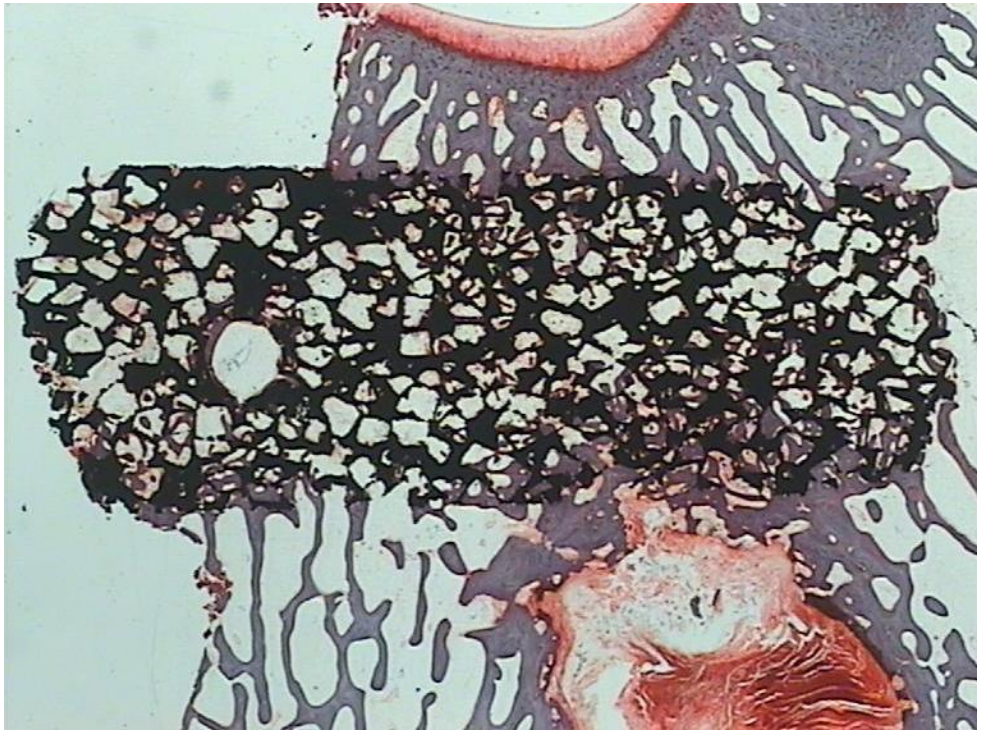
Success case studies

BIOMATERIAL EVALUATION: Osteointegration

IBV has carried out a histomorphometric study of the osteointegration of porous titanium implants, by embedding undecalcified bone specimens in PMMA to not modify the structures of bone tissues.



EMBEDMENT, CUTTING AND STAINING



Cuidamos
tu calidad
de vida

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