ULisboa (FFUL)

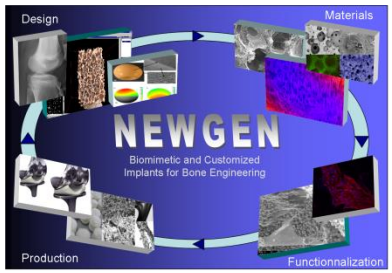
University of Lisbon, Faculty of Pharmacy

- **Complete denomination**: University of Lisbon, Faculty of Pharmacy, Instituto de Investigação do Medicamento (iMed.ULisboa)
- **Location (city, country)**: Lisbon/Portugal
- **Director**: Professor Matilde Fonseca e Castro
- **Contact person in NEWGEN**: **Ana Bettencourt** (asimao@ff.ul.pt; http://www.ff.ul.pt/~asimao/)
- **Working Group involvment**: WG3
- **Staff**: Ana Bettencourt, Ana Matos, Inês Ferreira, Lídia Gonçalves, António J. Almeida

Research topics: Biomaterials for local drug delivery, nanostructured delivery systems suitable for biofilm implant associated infections.

- **Researchers expertises**: (1) Nanostructured Polymeric Drug Delivery Systems; (2) Drug release modulation (antibiotics, anti-inflammatories); (3) Delivery routes: local and parenteral (4) *In vitro* characterization of biomaterials interactions with biological parameters.

Univ. Lisbon/ULisboa(FFUL)
Av. Prof. Gama Pinto
1649-003, Lisbon - Portugal



COST Action MP1301

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ULisboa(FFUL)/U.Lisbon, Faculty Pharmacy

BIOMATERIALS/NEWGEN TOPICS

LISBOA UNIVERSIDADE DE LISBOA

FACULDADE DE FARMÁCIA Universidade de Lisboa

iMed. ULisboa Instituto de Investigação do Medicamento

Abstract of activities:

Development and **full characterization** of innovative **polymeric nanostructured delivery systems** (nanoDDS) with controlled release properties and high anti-biofilm activity against relevant and multi-resistant pathogens **in implant-associated infections**.

Specifically, biomedical polymers (e.g. chitosan, PLGA, PMMA, Eudragit, PCL) with different degradation rates can be tailored to provide suitable release profiles.

Full characterization of nanoDDS includes assessing key parameters with impact on **drug release**, such as drug loading and nanoDDS size and distribution.

Evaluation of **anti-biofilm activity** of nanoDDS and their biological interaction with human cell lines, as well as its correlation with nanoDDS significant properties, as surface charge and hydrophobicity.

Keywords

Polymeric-nanoparticles, local-antibiotic-delivery, bone infections, biofilms, kinetic profiles, in vitro-testing

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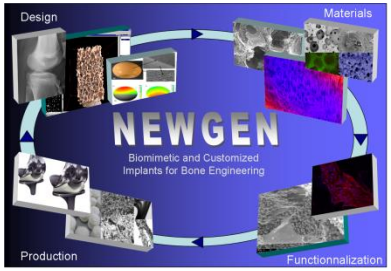

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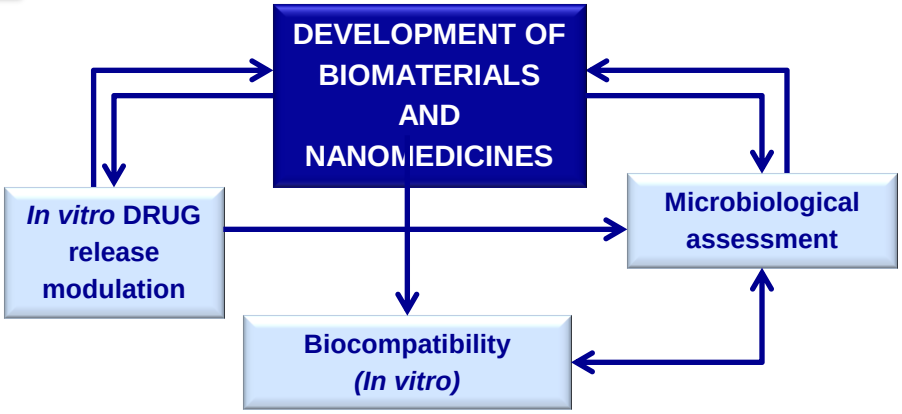
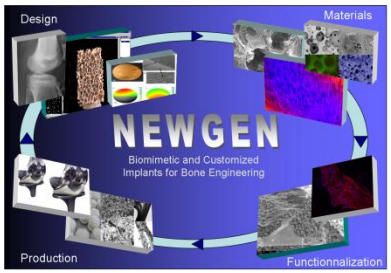
BIOMATERIALS/NEWGEN TOPICS

Graphical abstract:



Keywords: Polymeric-nanoparticles, local-drug-delivery, implant-associated infections, biofilms, kinetic profiles, in vitro-testing

Involvement in NEWGEN: As a working member in WG3.



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FACILITIES

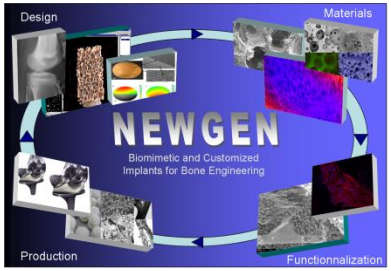
Biomaterials and Particulate Systems Development LAB

This facility has dedicated equipments for drug loaded particulate systems formulation as Ultra-Turrax T10 basic, Silverson Laboratory Mixer Emulsifiers L5M, Spray-drying and Lyophylizers.

Additional dedicated equipment for drug-load systems characterization includes: Malvern Mastersizer 2000 – Hydro SM (size distribution); Malvern Nanosizer Z (surface charge); IRAffinity-1 spectrophotometer (Infrared spectroscopy); gas pycnometry Micromeritics (porosity); DSC Q200 (Differential Scanning calorimetry); Kruss Tensiometer K12/3(Contact angle and Suface energy).

Standardized *in vitro* drug release methods and equipment for drug quantification as microplate readers, HPLC and GC apparatus are also available.

Other facilities includes cell culture rooms well equipped to perform biocompatibility studies.



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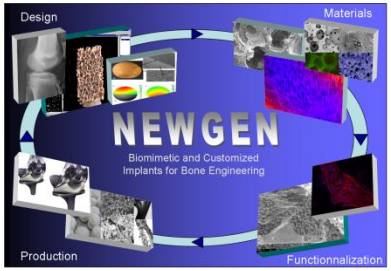
FACILITIES

Other Resources and Services of the Institute: http://imed.ulisboa.pt/

Animal facility, Cell function and Cell Biology, Biosafety Level 3 Security, Radioisotope, Mass spectrometry, Nuclear Magnetic Ressonance and Computer Assisted Drug Design.

The Institute is also highly involved in different **Advanced Training programs**



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