BioTechMed-Graz

***Bio**medical Basics-**Tech**nological Developments-**Med**ical Implementation*

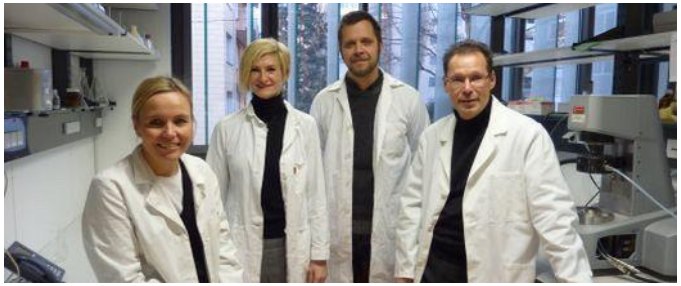
Research for Health

Representatives: Pharmaceutical and Medical Technology

- MUG:
  - Assoz.-Prof. Dr. Ruth Prassl
  - Apl. Prof. Dipl.Biochem. Dr.med. Eleonore Fröhlich
  - Univ.-Prof. Dr.med.univ. Harald Mangge

- TUG:
  - Univ.-Prof. Dr. Johannes Khinast
  - Ass.-Prof. Dr. Heidi Gruber-Wölfler
  - Ass.-Prof. Dr. Stefan Radl

- KFU:
  - Univ.-Prof. Dr. Andreas Zimmer
  - Assoz.-Prof. Dr. Eva Roblegg
  - Dipl.-Ing. Dr. Oliver Werzer



Pharmaceutical and Medical Technology

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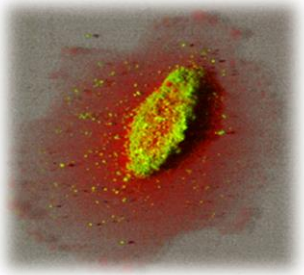
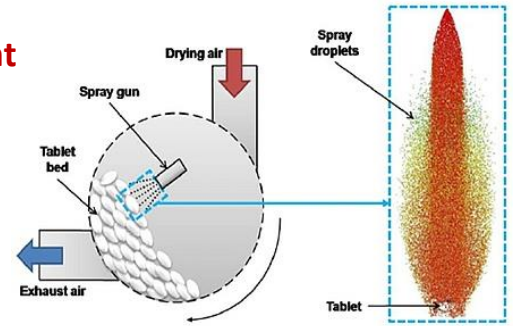
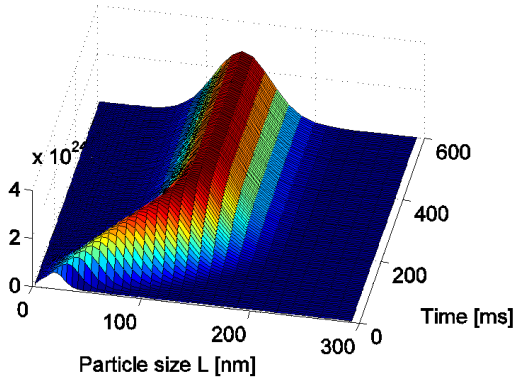
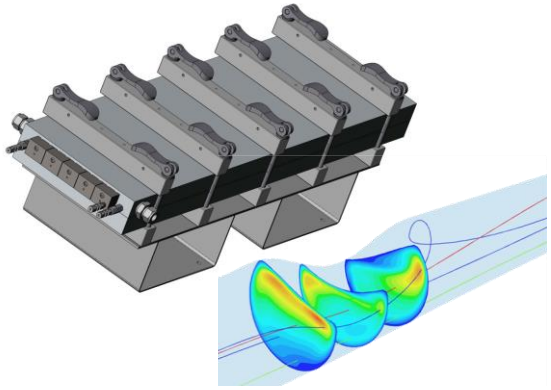


- Research:
  - Drug Delivery Systems and Drug Targeting
    - **Multiparticulate Drug Delivery Systems (Extrusion)**
  - Pharmaceutical Nanotechnology
    - **In vitro nanoparticle evaluation**
    - **Particle characterisation and structure assessment**
  - Nanotoxicology, 3Rs
  - Pharmaceutical Proteins / Peptides
  - Oral & Inhalative Dosage Forms (Aerosols)
  - Personalized Drugs and simplification of ODFs
  - Biopharmaceutics & Preformulations
  - Biological Barriers (Oral / Intestine / Placenta / Lung)
  - Process Development & Scale up
  - Continuous Processing Development and Implementation
  - Material Science & Characterization
  - Pharmaceutical Process Modeling & Simulation

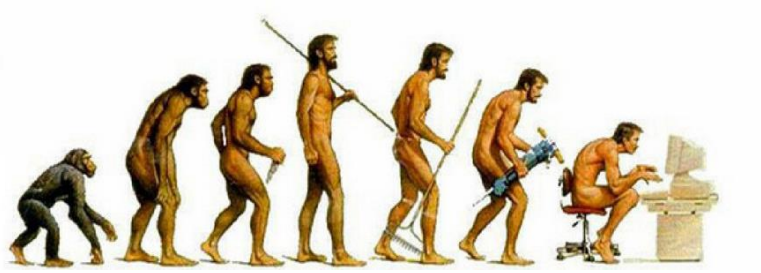




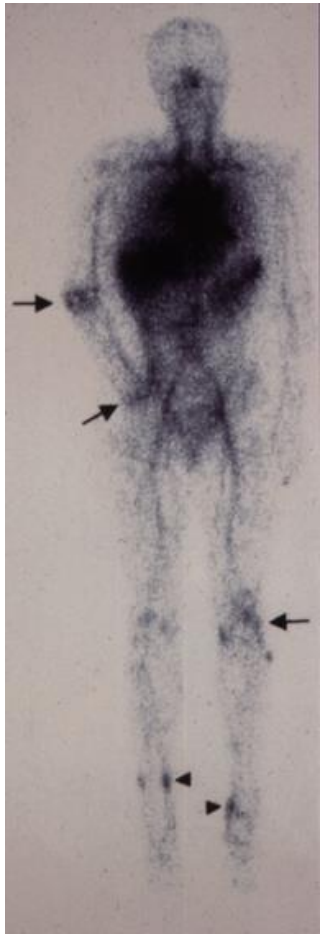
- Trends:
  - Personalized Drugs and Drug Formulations
    - **P4 Medicine: P4 = personalized – precise – predictive - preventive**
  - Safety awareness / Nanotoxicology
  - Third generation nanomedicines / Novel Drug Delivery Routes & Formulations
  - Pharmacogenomics & Adoption of Genomic Medicine
  - Patient Centricity
  - Advanced Manufacturing



- Future ?
  - **Drug Targeting** of Nanocarriers
  - **Drug Delivery** carriers for alternative administration routes (e.g., oral, pulmonary etc.)
  - Fundamental basis for a predictive understanding of **biological barriers** and cellular processes (uptake mechanisms)
  - Methods to study **biopharmaceutical interactions** of drug delivery systems with e.g., alcohol, food ….
  - Development of innovative science driven platform **knowledge for process and product** design & development
  - Increasing the **sustainability** profile reducing costs and time in pharmaceutical development
  - Development of **methods for designing, optimizing, scaling and controlling the manufacturing** of next-generation products



- Request:
  - **In vivo evaluations**
  - **Data Modeling and Analysis**
  - Molecular/Cell Biology
  - Omics
  - Materials Science
  - Visualization tools
  - Strategy Development
  - Information Management
  - Clinical entry

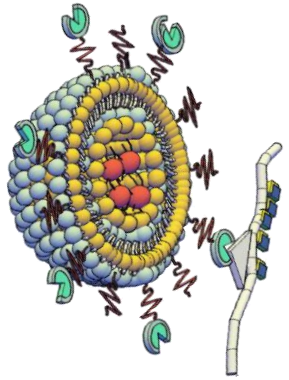


NanoAthero

SEVENTH FRAMEWORK PROGRAMME

Nanomedicine for target-specific imaging and treatment of atherosclerosis: development and initial clinical feasibility

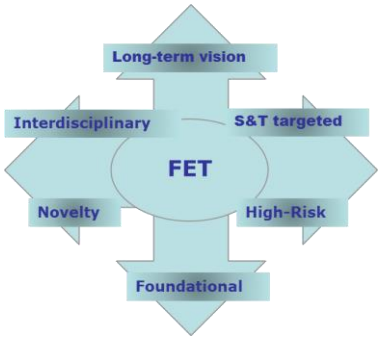
- Development of targeted nanoparticles
- Preclinical evaluation of targeted nanoparticles



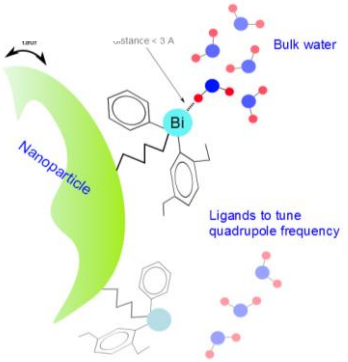
Projects

European Commission

CONQUER - *Contrast by Nuclear Quadrupole Enhanced Relaxation*



- Development of new ^{209}Bi-based imaging agents
- Labelling efficacy and safety studies



Industry

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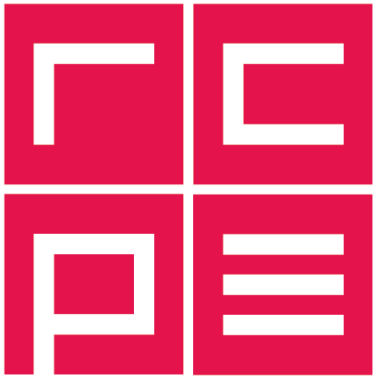

research
center
pharmaceutical
engineering

- **Modeling and Prediction**
- **Material Science**
- **Continuous Process and Quality Control**
- **Continuous Manufacturing**
- **Formulation Engineering**
- **Platform Technologies: Hot-Melt Extrusion & Injection Molding**
- **Drug and Drug Product Profiling**