

# JOANNEUM RESEARCH Forschungsgesellschaft mbH

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NANO-STRUCTURED MATERIALS FOR  
DRUG TARGETING, RELEASE AND IMAGING

Priv.-Doz. DI Dr. Frank SINNER

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# NANO-HEALTH

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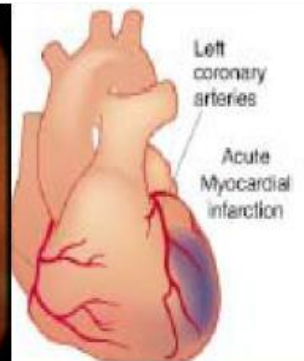
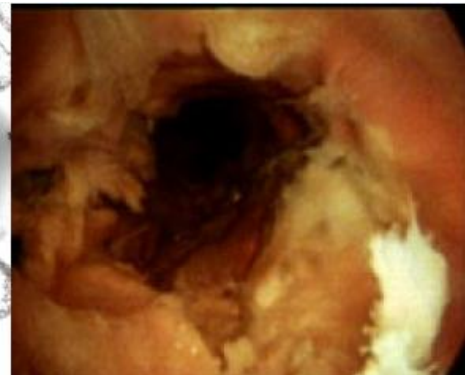
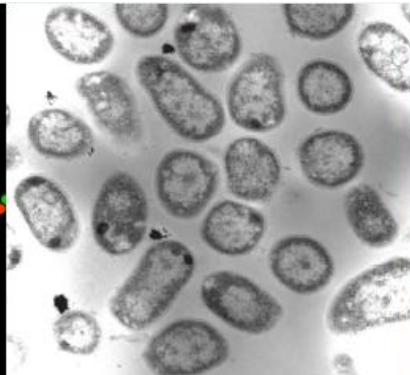
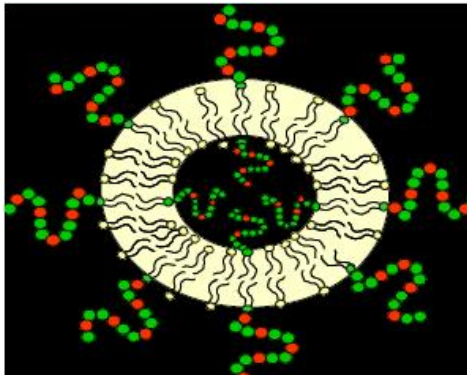
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- **Nano-HEALTH** was a joint research project funded by the **Austrian “Nano-Initiative”**, a funding initiative designed to support the development of nanoscience and nanotechnology in Austria
- Project duration: March 2005 - February 2012
- 17 project partners: universities, non-university research institutes, industry
  - RTD project cluster (calls 2004, 2005, 2006 and 2007) and
  - 1 large scale project (call 2008)
- Project volume: € 8.039.693

# AIMS OF NANO-HEALTH

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- The main focus of Nano-Health was to use Nanotechnologies in medicine to enhance the quality of life of chronically ill patients suffering from diseases such as diabetes, cancer, and atherosclerosis.



# AIMS OF NANO-HEALTH

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The research project **NANO-HEALTH** aimed to develop a platform for novel multifunctional nanoparticles (NPs) for use in:

- the targeted delivery of active substances for the treatment of severe and chronic diseases by various application routes
- nanodiagnostics - the NPs act as contrast media for clinical imaging via magnetic resonance imaging (MRI), and via nuclear imaging by PET/SPECT
- clinical applications, including the improved detection of atherosclerotic vascular lesions, stem cell tracking, as well as cancer diagnosis and treatment
- toxicological studies of nanostructured materials

# SUCCESS – Story

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- A **‘toolbox’ of nine different NPs** was developed, characterized and optimized for various medical applications.
- For diagnosis and imaging, two different visualization strategies were followed: **magnetic resonance (MRI)** and **radioactivity**. Coupling of these tags allowed in-vitro characterization as well as in-vivo tracking of the different types of NPs developed within the consortium.
- For drug delivery, **oral, inhalative and nasal delivery routes** were the objectives. In this context, the focus was the **“injectable-to-non-invasive-conversion”**. **Nanotoxicology is an important aspect** of NPs and nanotechnology in general.
- Nanotoxicology, which deals with toxicological aspects of nanostructured materials, was a particular focus: numerous in-vitro models were developed to evaluate the possible toxicity of the NPs used within the consortium.  
→ EURO-NanoTox!

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# IMPACT OF NANO-HEALTH

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- Patents: 6
- Publications:
  - 231 published and accepted publications in peer-reviewed journals (representing a total of over 669 impact points)
  - 308 presentations (invited lectures and congress lectures)
  - 373 posters on different national and international conferences
- European Level:
  - 3 partners of the Nano-Health consortium are constitution members of the European Technology Platform of Nanomedicine
  - The European Center for Nanotoxicology was founded ([www.euro-nanotox.at](http://www.euro-nanotox.at))

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nanotox

# IMPACT OF NANO-HEALTH

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## ■ Scientific cooperations:

- Several EU projects in HEALTH and NMP-Calls of FP6, FP7 as follow-up activities of Nano-Health
- 3 new industrial driven national projects were developed
- Liposomes for drug delivery by inhalation are now part of a new LBI
- Thiomatrix is partner of the project „cationic NPs for targeting angiogenesis“, Bavaria, (Bayerische Forschungsförderung)

## ■ Companies:

- 3 companies were founded:
- BioNanoNet Forschungsgesellschaft mbH
- Green River Polymers
- LOB Pharma

# NANO-HEALTH PARTNERS

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MEDIZINISCHE UNIVERSITÄT  
INNSBRUCK



universität  
wien



Green River Polymers



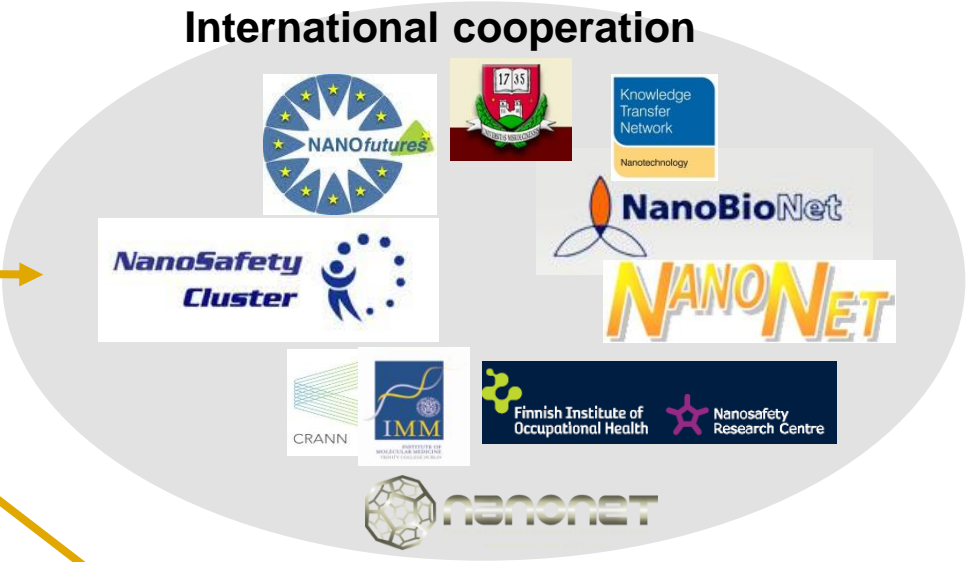


# European Center for Nanotoxicology

**Austria**

EURO  
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European Center for Nanotoxicology

## International cooperation



## National cooperation



## Projects



# Thank you for your attention

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