**Development of novel nanotechnology based diagnostic systems for Rheumatoid Arthritis and Osteoarthritis**

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- **NanoDiaRA (FP7 NMP4-LA-2009-228929)** develops a nanoparticle based approach as a generic platform for the development of novel diagnostic technologies for Rheumatoid Arthritis and Osteoarthritis.

- Microarray and imaging technologies will detect disease-related molecular and cellular processes with sensitivity and specificity.

- Such a comprehensive approach addresses key requisites for modern therapy.

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**Standardized Nanoparticles**

- Fixed Bed Reactor: Coating and derivatization to:
  - Improve reproducibility
  - Reduce size distribution
  - Facilitate the upscaling


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**Multiplex protein analytics and microfluidics**

- **Inca Trace**
- **Inca Slide**
- **IncaArray Bioanalytics** (www.arrayon.com)

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**MRI Diagnostics**

- **In vivo MRI** of the infarcted rats.
  - First line: shows the appearance over time of a hypointense (black) signal in the myocardial infarction area (arrows) due to the SPION.
  - Second line: does not show any hypointense signal (no SPION).

- Ex vivo MRI (last column) and ex vivo reflectance fluorescence (B) confirms the in vivo results.

University Hospital Geneva (CH): K. Montet-Abou et al., Eur Heart J (2010) 31 (11): 1410-1420 (results on which RA investigations are based)

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**Estonia**: University of Tartu, Rheumatology

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**Ethical and Social Aspects of Nanotechnology/-medicine**

- **Regulatory Framework (incl. toxicology, environmental aspects)**

- **Intellectual Property Rights**

- **Education and training of young investigators**

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