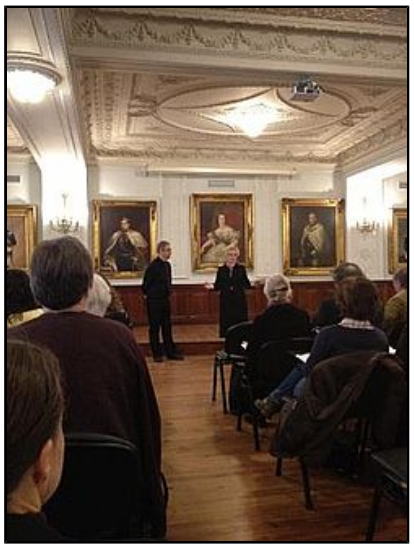
Conference and 8th Scientific Meeting

NANOFOL – NanoDiaRA Conference in the 7th Framework Programme

Nanoparticles for Early Diagnostics of Inflammatory Diseases: New approaches in the field of soft and hard nanoparticles

November 20th–21st 2013, Lisbon



Artur Cavaco?Paulo (NANOFOL) and Margarethe Hofmann-Amtenbrink (NanoDiaRA) welcome the participants

The two European research projects NanoDiaRA and NANOFOL, exploring novel techniques and scientific relationships in a very transdisciplinary way in the field of early detection of inflammatory diseases, jointly organised a conference in Lisbon from 20 to 21 November 2013.

At the conference the results of more than 20 research groups and more than 70 scientists, engineers, technicians and trainees were presented. The participants had the opportunity to work together and to profit for their research from this exchange. Starting more than 20 years ago with the funding schemes *COST Actions*, *Brite-Euram* and the various Framework projects, the EU funding has allowed European researchers to work in close collaboration beyond national borders. The EU Commission also encouraged academia and industry to work closer together in research and development. The conference in Lisbon highlighted some of this collaborative work. Both EU funded projects will end shortly and new common projects may be created in the new Framework Programme HORIZON 2020 to further exploit results.

In this two-days conferences both projects presented an overview of their results by more than 20 short presentations. In addition to that, presentations from invited speakers took place, like Dr. Sander Langereis from Philips Netherlands who presented early diagnostic tools using the various imaging devices, and Prof. em. Robin Poole, Mc Gill University, Montréal, talking about the need to early diagnose arthritis and the ways to use nanotechnology and biomarkers for such early detection. The conference discussed the research which was conducted in the field of soft and hard nanoparticles for detection and therapy of inflammatory diseases like arthritis, presenting the various nanoparticle formulations used by the NANOFOL project like protein?based nanoparticles (Ana Loureiro, University of Minho), liposomal?based nanoparticles (Eugénia Nogueira, University of Minho) and the new enzymatic approach for human serum albumin?antibody (HSA?mAb) conjugate production (Alexandra Rollett, Universität für Bodenkultur, Vienna). To use these specific nanoparticles for the treatment of the disease, strategies for genetic reprogramming of macrophage subsets in inflammatory diseases were discussed by Alexandre do Carmo, Institute for Molecular and Cell Biology Porto, as well as new macrophage subsets with potential implication in

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inflammatory diseases, presented by Anna Repic and Hannes Stockinger, Medical University of Vienna. Imaging strategies were used for the *in vivo* therapeutic assessment of targeted nanoparticles in mice models of rheumatoid arthritis, as presented in a talk given by Gilles Renault from Inserm.

The magnetic PVA coated iron oxide nanoparticles (SPION) developed by NanoDiaRA were presented by Heinrich Hofmann and their functionalisation and characterisation by Lionel Maurizi, EPFL Lausanne. These particles have been investigated on their influence on survival and function of human immune cells, as presented by Frank Buttgereit and Cindy Strehl from Charité, Berlin, while Thomas Broschard, Merck KgaA, Darmstadt, discussed the requirements to deliver safe nanodiagnostics, speaking about *in vivo* toxicity. The *in vivo* molecular imaging and *in vivo* tracking of SPION labeled mesenchymal stem cells in antigen induced arthritis were presented by Lindsey Crowe and Azza Gramoun from University of Geneva, while Frank Schulze, Charité, presented results of Mesenchymal Stem Cells (MSCs) labelled with PVA?SPIONs and the impact of the SPIONs on functional changes of such cells. NanoDiaRA is also discovering biomarkers and is developing new assays; topics which were presented by Patrik Önnerfjord from University of Lund and Hui Gao from Arrayon Biotechnology.

The conference did not only cover the research but also strategies for innovation and ethical implications of nanomedicine. João Nuno Moreira from University of Coimbra informed about the challenging ways of nanotechnology-based strategies in, e.g., anticancer drugs. At the second day the transfer from invention to innovation was presented and discussed by Dr. Ion Arocena from Suanfarma, SA, Alcobendas, Madrid, and Dr. Jan Hed, AnaMar AB, Lund, showing how challenging and cost-intensive it sometimes can be to transform scientific knowledge into products and services which can be marketed.

Another important issue for researchers is the dissemination of their results. Natascha Bushati, Associate Editor of Nature Communications, London, gave an overview about the various Nature journals and informed about decision?making processes from the submission of a scientific paper towards the peer?review process and the final approval. As science demands ethical rules for the research and the publishing, PD Dr. Felix Thiele from the Europäische Akademie Bad Neuenahr-Ahrweiler discussed ethical aspects which are especially relevant in the nanoscience and nanomedicine when dealing with nanobased drugs, devices and therapies for patients.

Two further projects of the *Cluster Targeted Nanopharmaceuticals and Early Diagnostics* were also presenting the results of their projects about cancer diagnostics and treatment. Dmitry Grishenkov, School of Technology and Health Royal Institute of Technology, Stockholm, spoke about contrast agents for early diagnostics and monitoring of progression of liver cancer, and Louis Shenkman, Tel Aviv University, presented a modular nanosystems platform for advanced cancer management. The posters which were shown during the breaks were presented at the end of the conference by short oral talks.

This very interesting conference was highly appreciated by all participants who were able to get a profound overview about the progress in their own and in related research areas. On the next day, the project NanoDiaRA met for a last scientific meeting to prepare the work plan for the remaining months of the project before the final evaluation meeting which will take place in

February 2014.

You can download the Book of Abstracts here.

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