Quo Vadis Nanomedicine?

10th - 11th April 2014

Interdisciplinary Workshop
Exeter University/UK
Centre for the Studies of Life Sciences

Organisation:
Prof. Michael Schillmeier
Dr. Matthias Barz
Prof. Robert Luxenhofer

UNIVERSITY OF EXETER
BRITISH SOCIETY FOR NANOMEDICINE
VolkswagenStiftung
UNIVERSITÄTSmedizin. MAINZ
JG|U JOHANNES GUTENBERG UNIVERSITÄT MAINZ
Max-Planck-Institut für Polymerforschung
SFB 1066

The aim of this two-day workshop at Exeter University / UK is to bring together leading nanomedical researchers and scholars from Science and Technology Studies to reflect and discuss the past, present and future of nanomedicine.

With the application of nanotechnologies to the medical field, researchers and clinicians expect groundbreaking diagnostic, therapeutic and regenerative innovations. Although nanomedical innovations are considered to be key enabling technologies of the 21st century, research on 'smart' nanomedical technologies is still at the very beginning. Currently, the process of translating research findings into applicable medicines and technologies has proven to be time- and cost-intensive with a moderate level of success (cf. White Paper to the Horizon 2020 Framework Programme for Research and Innovation – Recommendations from the Nanomedicine Community, ETP Nanomedicine 2013).

Against this background, the workshop 'Quo Vadis Nanomedicine' aims to discuss the development of medical nanotechnologies and how relevant actors perceive the future of nanomedicine. The workshop intends to tackle the following questions:

- How did nanomedical research evolve and how has it changed over the years?
- What is the future of nanomedical research, and how will it look?
- Have the expectations of nanomedical research changed over the years? If yes, why and how?
- What have been the main topics, matters of concern and controversies so far?
- What are the right materials for nanomedicines?
- How does nanomedical research affect the organization of everyday scientific practices?
- How does nanomedical research affect the working relations between different disciplines (experimental oncology, pharmacology, toxicology, etc.)?
- Has nanomedical research fostered working relations and communication practices with clinical practitioners and patients? If yes, how?
- What have been, what are and what will be the obstacles and main challenges of nanomedical research?
- Has nanomedical research affected the understandings of molecular processes?
- Has nanomedical research changed the understanding of what a disease is?
- How has nanomedical research altered the understanding of cancer or other major illnesses?
- Has nanomedical research affected pre-clinical and clinical work? If yes, why and how?

- Has nanomedical research affected the way 'models' are used? If yes, why and how?
- How is 'personalized medicine' related to nanomedical research? What are the main issues and concerns?
- How has nanomedical research affected the idea of 'evidence-based medicine'?
- What are the challenges of 'translational' nanomedical research?
- How has nanomedicine been perceived and discussed by social sciences and philosophy, patients and the interested public?
- What have been the main matters of concern? Have these concerns changed over time?
- What are the ethical and social aspects of nanomedicine?

In line with these, and similar questions, the workshop participants will present and discuss their own work, experience, perception and expectancies of nanomedical research.

Since your leading expertise is central to nanotechnological and nanomedical research, the Schumpeter-Project 'Innovations in Nanomedicine' funded by the VolkswagenStiftung, the SFB 1O66, 'Nanodimensional Polymeric Therapeutics for Tumourtherapy' funded by German Research Council (DFG) are delighted to welcome you to Exeter.

Kind regards

Prof. Michael Schillmeier
Dr. Matthias Barz
Prof. Robert Luxenhofer

Day 1 – Thursday, 10th April 2014

13:00-14:00 **Buffet Lunch**

14:00-14:10 **Introduction**
Prof. Michael Schillmeier

14:10-15:30 **Session 1** (Chair: Prof. Rannard)

1. Prof. R. Haag/Prof. R. Zentel (Free University Berlin, Johannes Gutenberg-University Mainz, Germany)
   Self-Organization or Chemical Design for the Preparation of Multifunctional Carriers?

2. Prof. R. Luxenhofer/Dr. M. Barz (Julius-Maximilians-University Würzburg, Johannes Gutenberg-University Mainz, Germany)
   Rational Design or High-Throughput: Can We Handle the Complexity we Desire?

3. Prof. Diana Megan Bowman & Jake Gatof (University of Michigan, USA)
   Reviewing the Regulatory Barriers for Nanomedicine: Global Questions and Challenges

4. Dr. Sacha Loeve (Université Paris 1, France)
   War versus oïkos: Metaphors in Nano-Enabled Drug Delivery

15:30-16:50 **Session 2** (Chair: Prof. Zentel)

1. Prof. C. M. Lehr/Prof. A. Lambrecht (Saarland University, Rheinische Friedrich-Wilhelms-University Bonn, Germany)
   Nanomedicines for Drug Delivery across Epithelial Barriers

2. Dr. B. Metselaar/Dr. T. Lammers (Enceladus Pharmaceuticals, ExMI, University Hospital Aachen, Helmholtz Institute for Biomedical Engineering at RWTH Aachen University, Germany)
   Critical Perspective on Preclinical Efficacy and Clinical Translation

3. Prof. St. Rannard/Prof. A. Owen (University of Liverpool, UK)
   Benefits and Challenges for Long-Acting Antiviral Nanoformulations

4. Prof. Vicki Stone (Heriot Watt University, Edinburgh, UK)
   Using in vitro and in vivo Methods to inform our Understanding of Nanomaterial Hazard

16:50-17:00 **Coffee/tea**

17:00-18:20 **Session 3** (Chair: Astrid Schwarz)

1. Dipl. Soz. Ghazal PourGashtasbi (Exeter, UK)
   Nanotoxicology and Challenges of Translation

2. Dr. Douglas Robinson (TEQNODE Limited, IFRIS, LATTS, Paris / France, NanoNEXTNL, University of Utrecht, NL)
   Nanomedicine Innovation Pathways and the Role of RRI (Responsible Research and Innovation)

3. Dipl. Soz. Nils Kubischok (University of Duisburg, Germany)
   Future Concepts and Technological Innovation in Nanomedicine

4. Dr. Xavier Guchet (Université Paris 1, France)
   What's in a Word? The "Person" of Personalized Medicine enabled by Nanotechnologies

18:20-19:00 **Discussion**

20:00 **Dinner**

Day 2 – Friday, 11th April 2014

08:30-09:00 **Coffee/Tea**

09:00-10:20 **Session 4** (Chair: R. Luxenhofer)

1. Prof. G. Battaglia/Prof. N. Tirelli (University College London, University of Manchester)
   Biological/Chemical Environment Dependent Behaviour of Nanomaterials. Looking for the Right in vitro-Models

2. Prof. K. Landfester/Prof. M. Schmidt (Johannes Gutenberg-University, Max Planck Institute for Polymer Research, Mainz)
   Nanocarriers in Biological Media

3. Prof. W. Parak /Dr. F. Baldelli-Bombelli (Philipps-Universität Marburg, University of East Anglia)
   From Advanced Nanotechnologies to a Personalized Medicine: Where are we?

4. PD Dr. Astrid Schwarz (Technical University of Darmstadt, Germany)
   Experimenting with Biocompatibility In and Beyond the Human Body - A Particular Economy of Promises in Nanomedical Research

10:20-12:00 **Session 5 (Chair: M. Barz)**

1. Prof. F. Kiessling/Dr. T. Lammers (ExMI, University Hospital Aachen, Helmholtz Institute for Biomedical Engineering at RWTH Aachen University, Germany)
   Nanoparticles as Diagnostic and Theragnostic Agents

2. Prof. T. Bopp/Dr. V. Mailänder (Institute for Immunology, III. Medizinische Klinik, University Medical Center of the Johannes Gutenberg-University Mainz, Germany)
   Nanoparticles for Immune Cells and Cellular Therapeutics

3. Ines Ferreira (University of Lisbon, Portugal)
   Small Things, Big Dreams – A Short Story About Nanomedicine

4. Dr. Robin Pierce (Harvard Law School, USA)
   Getting to the Root of Nanomedicine Research: The Need to Reconcile Complexities

12:00-13:00 **Lunch Buffet**

13:00-14:00 **Open Panel Discussion**

Additional Information

For Exeter campus map see: http://www.exeter.ac.uk/visit/directions/streathammap/

Workshop venue: Innovation Centre marked as building number 25 on the campus map.

Taxi companies Gemini Taxis 01392 666666
Capitol Taxis 01392 433433

Bus route H from *Exeter City Centre* and/or *Exeter St Davids train station* to the University, further travel information on the Visiting Us tab on the University website.

Exeter visitor information including a map of the city centre see
http://www.heartofdevon.com/exeter/tourist-info-and-map