NANOBIOMEDICINE

Organizers Faculties of Medicine, Chemistry, Physics and Informatics of the University of Hamburg in cooperation with SFB 444, 470, 508

Universität Hamburg

Universitätsklinikum Hamburg-Eppendorf

Max-Planck-Unit for Structural Molecular Biology

Center of Competence HanseNanoTec

hansenanotec

Programme Committee Christoph Wagener, Olaf Pongs, Eckhard Mandelkow

Scientific Advisory Board Gerhard Adam, Thomas Eschenhagen Heinz Hohenberg, Dietrich Mack, Eckhard Mandelkow, Ursula Platzer, Olaf Pongs, Johannes M. Rüger, H. Siegfried Stiehl, Christoph Wagener, Horst Weller, Roger Wepf, Roland Wiesendanger

Congress fee free (Registration required)

Venue University Hospital Hamburg-Eppendorf
Erika-Haus (Building W 29)
Martinistr. 52
20246 Hamburg

Registration & accomodation Congress office
U. Brenger
HanseNanoTec and
University of Hamburg
Jungiusstr. 11
20355 Hamburg
Tel.: 040 / 42838 - 7045
Fax: 040 / 42838 - 6959
www.hansenanotec.de

Registration Form

NANOBIOMEDICINE

July 2-3, 2004 - Hamburg

- participation is free of congress fee -

Title: _____ Gender: ☐ f ☐ m

First Name: _____

Last Name: _____

Company: _____

Department: _____

Street / P.O.Box: _____

Postal Code: _____ City: _____

email: _____

I want to attend the congress on

☐ Friday, 2.7.2004

☐ Saturday, 3.7.2004

Date: _____ Signature _____

Return to congress office by fax:

U. Brenger

Fax: 040 / 42838 - 6959

Tel.: 040 / 42838 - 7045

NANOBIOMEDICINE

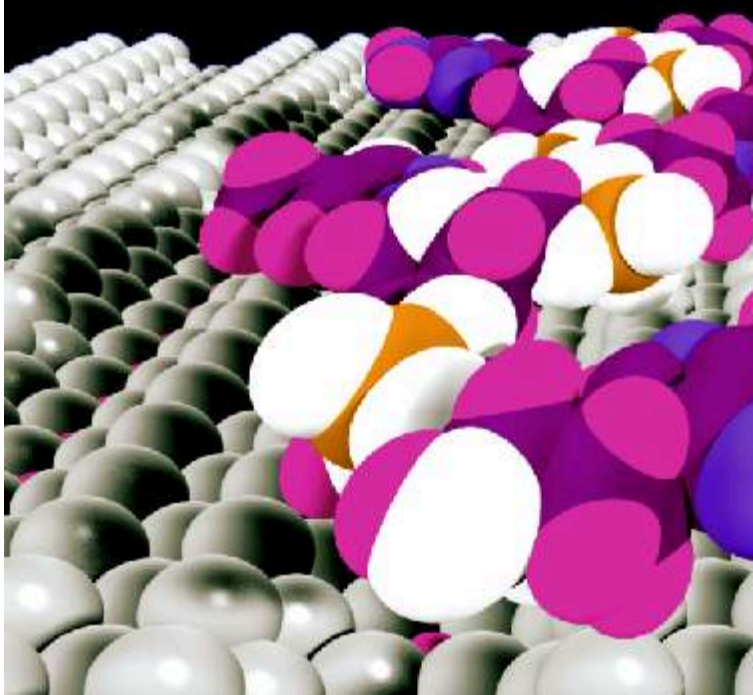
Moving Nanotechnology from Bench to Bedside

International Symposium

nanoparticles - tissue engineering -
electron tomography - electron microscopy
sensor technology - nanomotors - implants -
computation and modelling - force microscopy

July 2-3, 2004

University Hospital Hamburg-Eppendorf



Scope

Nanotechnology paves the ways to a variety of technical applications. Which of these applications are relevant for medical sciences and, most importantly, for patient care and diagnostics? These questions are addressed at the meeting.

Scientists from various fields such as physics, chemistry, biology, informatics and medicine gather to discuss established and potential areas in which Nanosciences and Medical Sciences overlap. A number of questions will be addressed:

- How are supramolecular structures generated?
- Can nanomaterials constitute substrates for culturing new tissues and possibly organs?
- Will nanotechnology help to design implants with predefined biological properties?
- Can biological devices sensor the state of organs and organisms?
- Which are the perspectives for the use of nanoparticles as labels of proteins and cells or as vehicles for drug delivery?
- Which are the principles that create order from interacting biomolecules?

These and other issues will be covered by experts in their fields. In physics, chemistry and molecular biology, Hamburg is well known for its expertise in the nanosciences. The meeting should help to transfer this expertise into the clinic in order to open new perspectives for diagnosis and therapy.

Program

Friday, July 2, 2004

8:45 **Registration**

9:00 **Introductory remarks**

Dr. Roland Salchow, State Secretary of Hamburg

Prof. Dr. Rolf Stahl, Dean of the Faculty of Medicine

Chairman: Johannes M. Rüger

Nanoparticles

9:15 ***"Diagnostic use of supramagnetic iron oxide nanoparticles in Magnetic Resonance Imaging"***
Claus Nolte-Ernsting, University Hospital Eppendorf, Hamburg

10:00 ***"Nanoparticles as carriers for genes and drugs"***
Helmut Schmidt, Leibniz-Institute for New Materials, Saarbrücken

10:45 Coffee break

11:00 ***"Nanoparticles for biomedical applications"***
Horst Weller, Institute for Physical Chemistry, University of Hamburg

Tissue Engineering

11:45 ***"3-Dimensional Engineered Heart Tissue for Drug Target Validation and Cardiac Repair"***
Thomas Eschenhagen, University Hospital Eppendorf, Hamburg

12:30 Lunch

Chairman: Olaf Pongs

Electron Tomography and Electron Microscopy

13:30 ***"In vivo veritas: Cryo Electron Tomography of living cells"***
Jürgen Plitzko, MPI of Biochemistry, Martinsried, Munich

14:15 ***"Systemic Electron Microscopy of life-like tissues based on micro-, nano- and cryotechniques"***
Heinz Hohenberg, Heinrich-Pette Institute of Virology and Immunology, Hamburg

15:00 Coffee break

Sensor Technology

15:15 ***"Electronic Biosensor - Array of Silicon Chips"***
Roland Thewes, Infineon Technologies AG, Corporate Research, Munich

Nanomotors

16:00 ***"Molecular motors and engines"***
Paul Matsudaira, Whitehead Institute, MIT, Cambridge

Saturday, July 3, 2004

Chairman: H. Siegfried Stiehl

9:00 ***"Nanomedicine: Moving nanotechnology from bench to the patient"***
Ueli Aebi, M. E. Müller Institute, Biocenter, University of Basel

Computation and Modelling

9:45 ***"Direct Nanomanipulation: Its impact on the scientific method in biomedicine"***
Russel M. Taylor, Department of Computer Science, Physics and Astronomy, University of North Carolina

10:30 Coffee break

10:45 ***"Molecular Bioinformatics and its Applications in Medical Research"***
Matthias Rarey, Center for Bioinformatics, University of Hamburg

11:30 ***"The enabling and integration roles of computation in systems biology"***
Benno Schwikowski, Systems Biology, Institute Pasteur, Paris

12:15 Lunch

Chairman: Eckhard Mandelkow

Force Microscopy

13:15 ***"Observing structure, function and folding of single proteins"***
Daniel Müller, Biotechnological Center, Techn. University Dresden

14:00 ***"Cryogenic scanning force microscopy with true atomic resolution: Current status and challenges for the future"***
Roland Wiesendanger, Institute for Applied Physics, University of Hamburg

Implants / Surfaces

14:45 ***"Atomic force microscopy studies of microbial adhesion"***
Chistopher Wright, Department of Chemical and Biological Process Engineering, University of Wales Swansea

15:30 Coffee break

15:45 ***"Microbial biofilms - cases of prokaryotic complexity with relevance for bacterial infections"***
Soeren Molin, Centre for Biomedical Microbiology, BioCentrum - DTU, Technical University of Denmark

16:30 ***"Surface Properties of thin organic films in biotechnology and medical applications"***
Michael Grunze, Applied Physical Chemistry, University of Heidelberg

17:15 ***"Biomimetic hydroxyapatite and mineralized collagen coatings and their functionalisation by cell selective adhesion peptides"***
Andreas Sewing, Biomet Merck, BioMaterials GmbH, Darmstadt