



Fundación Progreso y Salud
CONSEJERÍA DE SALUD

NANOSPAINCONF2010
March 25th 2010 / Málaga

INTERNATIONAL **WORKSHOP** ON NANOMEDICINE

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and nanotechnologies to
clinical applications*

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Welcome to the INTERNATIONAL WORKSHOP ON NANOMEDICINE

The International Workshop on Nanomedicine has been organized by **Progress and Health Foundation** in collaboration with the **Andalusian Centre for Nanomedicine and Biotechnology** (BIONAND), **Spanish NanoMedicine Platform** (NANOMED), the **Biomedical Research Networking Center in Bioengineering, Biomaterials and Nanomedicine** (CIBER-BBN), **University of Málaga** and the **Phantoms Foundation**.

The aim of this **Workshop** is to analyze the limits and potentials of nanomedicine to solve health problems. For that purpose, clinicians and nanoscientists, who have the common vision to apply nanoscience methods, tools and materials to the benefit of the patient, will share their knowledge and experience.

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PROGRAMME OVERVIEW

🕒	SESSION
9:00	WELCOME Natividad Cuende Executive Director. Andalusian Initiative for Advanced Therapies
9:15	SESSION 01: FROM NANOMEDICINE TOWARDS CLINICAL RESEARCH: BUILDING THE BRIDGE BETWEEN THE LAB AND THE PATIENTS (ROUND TABLE) Lajos P. Balogh, Barbara Klajnert, Ricardo Franco Chairman: David Pozo
10:30	☕ Coffee Break
11:00	SESSION 02: EMERGING NANOSCIENCE TECHNOLOGIES FOR DIAGNOSTICS Laura M. Lechuga, Arben Merkoci, Javier Tamayo Chairman: Victor Puentes
12:00	SESSION 03: NANOTECHNOLOGY APPROACHES FOR THERAPY DISEASES Jesús de la Fuente, Lajos Balogh, Rogério Gaspar Chairman: Laura M. Lechuga
13:00	🍴 Lunch
14:00	SESSION 04: NANOTOXICOLOGY AND POTENTIAL HEALTH EFFECTS Victor Puentes, Benoit Nemery, Simó Schwartz Chairman: Wolfgang Parak
15:00	SESSION 05: THE POTENTIAL OF NANOMEDICINE TO ADDRESS CLINICAL NEEDS CANCER Jaume Reventòs, Wolfgang Parak NEURODEGENERATIVE DISEASES Johannes Brettschneider, Josep B. Cladera Chairman: Josep Samitier
16:20	☕ Coffee Break
16:50	SESSION 05: THE POTENTIAL OF NANOMEDICINE TO ADDRESS CLINICAL NEEDS REGENERATIVE MEDICINE Augusto Silva, João F. Mano Chairman: Josep Samitier
17:30	SESSION 05: CONCLUSIONS (ROUND TABLE) Chairman: Josep Samitier Jaume Reventòs, Wolfgang Parak, Johannes Brettschneider, Josep B. Cladera, Augusto Silva, João F. Mano and David Pozo
18:15	POSTER SESSION
19:30	End of the Workshop

DETAILED PROGRAMME: TIMETABLE

	SESSIONS
9:00	WELCOME Natividad Cuende Executive Director. Andalusian Initiative for Advanced Therapies
S1:	SESSION 01: FROM NANOMEDICINE TOWARDS CLINICAL RESEARCH: BUILDING THE BRIDGE BETWEEN THE LAB AND THE PATIENTS (ROUND TABLE) Chairman: David Pozo
9:15	Nanomedicine: Promises and Challenges Lajos Balogh University of Buffalo. USA
9:30	COST Action TD0802 "Biological properties of dendrimers" - main benefits and obstacles Barbara Klajnert University of Lodz. Poland
9:45	Personalized medicine in the "-omics" era: how can Nanotechnology help? Ricardo Franco Universidade Nova de Lisboa. Portugal
10:00	Round Table: Lajos Balogh, Barbara Klajnert and Ricardo Franco
10:30	 Coffee Break
S2:	SESSION 02: EMERGING NANOSCIENCE TECHNOLOGIES FOR DIAGNOSTICS
11:00	Integrated nanobiosensor platforms for point-of-care diagnostics Laura M. Lechuga Research Center on Nanoscience and Nanotechnology CIN2 (CSIC-ICN). Spain
11:20	Nanoparticles based biosensors for diagnostics applications Arben Merkoci Catalan Institute of Nanotechnology CIN2 (ICN-CSIC). Spain
11:40	Ultrasensitive biological sensors based on Nanomechanical systems for future early disease detection Javier Tamayo Institute of Microelectronics of Madrid (IMM-CNM, CSIC). Spain

DETAILED PROGRAMME: TIMETABLE

S3:	SESSION 03: NANOTECHNOLOGY APPROACHES FOR THERAPY DISEASES
12:00	<p>Engineering Biofunctional Nanoparticles Jesús de la Fuente Aragon Institute of Nanoscience. Spain</p>
12:20	<p>Imaging and Therapy based on Dendrimers and Nanocomposites Lajos Balogh University of Buffalo. USA</p>
12:40	<p>Nanomedicines lab to clinic: current status and major regulatory challenges in translational research Rogério Gaspar Institute for Medicines and Pharmaceutical Sciences. Portugal</p>
13:00	<p>🍴 Lunch</p>
S4:	SESSION 04: NANOTOXICOLOGY AND POTENTIAL HEALTH EFFECTS
14:00	<p>Does the nanoform of a substance entails an increased toxicity? Victor Puntès Catalan Institute of Nanotechnology (ICN). Spain</p>
14:20	<p>Nanotoxicology and potential health effects Benoit Nemery Katholieke Universiteit Leuven. Belgium</p>
14:40	<p>Toxicology assays and protocols in nanomedicine Simó Schwartz Molecular Biology and Biochemistry Research Center for Nanomedicine (CIBBIM-Nanomedicine). Vall d'Hebron University Hospital. Spain</p>

DETAILED PROGRAMME: TIMETABLE

S5:	SESSION 05: THE POTENTIAL OF NANOMEDICINE TO ADDRESS CLINICAL NEEDS
15:00	<p>> CANCER</p> <p>New strategies in the early diagnosis of prostate cancer Jaume Reventòs Vall d'Hebron Research Institute. Hospital Vall d'Hebron. Spain</p>
15:20	<p>How colloidal nano- and microparticles could contribute to medicine? Wolfgang Parak University of Marburg. Germany</p>
15:40	<p>> NEURODEGENERATIVE DISEASES</p> <p>Blood-brain barrier in neurodegenerative diseases: perspectives for nanomedicine Johannes Brettschneider University of Ulm. Germany</p>
16:00	<p>Dendrimers' Potential against Neurodegenerative Processes Josep B. Cladera Autonomous University of Barcelona. Spain</p>
16:20	☕ Coffee Break
16:50	<p>> REGENERATIVE MEDICINE</p> <p>Nanoparticles as a tool for stem cell tissue repair Augusto Silva Ministry of Health and Social Policies. Spain</p>
17:10	<p>Multi-dimensional nanotechnology approaches in tissue engineering and regenerative medicine João F. Mano University of Minho. Portugal</p>
17:30	<p>> CONCLUSIONS Chairman: Josep Samitier Round Table: Jaume Reventòs, Wolfgang Parak, Johannes Brettschneider, Josep B. Cladera, Augusto Silva, João F. Mano and David Pozo</p>
18:15	POSTER SESSION
19:30	End of the Workshop

LIST OF SPEAKERS

WELCOME

Natividad Cuende Melero

Executive Director, Andalusian Initiative for Advanced Therapies

SESSION 01: FROM NANOMEDICINE TOWARDS CLINICAL RESEARCH: BUILDING THE BRIDGE BETWEEN THE LAB AND THE PATIENTS (ROUND TABLE)

Lajos P. Balogh, Barbara Klajnert, Ricardo Franco

Lajos Balogh

Principal and CEO at AA Nanotech Consulting, New York, USA. He was Director of Nanotechnology Research at the Department of Radiation Medicine, Roswell Park Cancer Institute and Professor of Biomedical Nanotechnology at the Department of Radiation Medicine, SUNY-Buffalo, USA. Research Interests: development of radioactive nanocomposites to treat tumor. Imaging nanocomposites targeting tumor microvasculature.

Barbara Klajnert

Associate Professor at the Department of General Biophysics, University of Lodz, Poland. Research interests: biomedical properties and applications of dendrimers.

Ricardo Franco

Assistant Professor. REQUIMTE/CQFB Departamento de Química, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Caparica, Portugal. Research Interests: Structural aspects of the interaction of proteins adsorbed to silver and gold nanoparticles and nanostructured surfaces. Technological applications in the screening of genetic diseases by colloidal gold nanoprobe functionalized with thiolated-DNA. Nanoparticles with other interesting characteristics for detection (transparent, fluorescent, magnetic) are under development to functionalize with specific ligands (e.g., His-tag; glycosylated) for in situ and ex situ detection and separation of DNA and proteins. Microscopic techniques (TEM, AFM) are essential tools in these studies.

SESSION 02: EMERGING NANOSCIENCE TECHNOLOGIES FOR DIAGNOSTICS

Laura M. Lechuga, Arben Merkoci, Javier Tamayo

Laura M. Lechuga

Full Professor of the Spanish National Research Council (CSIC) and Head of the Nanobiosensors and Bioanalytical Applications Group at the Research Center on Nanoscience and Nanotechnology (CIN2), CSIC in Barcelona, Spain. Research interests: technological development of nanobiosensors based on plasmonics, magnetoplasmonics, integrated photonics and nanomechanics principles, surface biofunctionalization and microfluidics lab-on-a-chip integration and the application in the environmental control of pollutants, early diagnosis of cancer, genomics and proteomics.

Arben Merkoci

ICREA Research Professor & Director of the Nanobioelectronics and Biosensors Group, Catalan Institute of Nanotechnology- CIN2 (ICN-CSIC), Barcelona, Spain. Research interests: Nanomaterials for (bio)sensing, nanostructured lab-on-a-chip devices, DNA sensors, immunosensors, cell sensors, diagnostic, safety and security related (bio)sensing.

Javier Tamayo

Group Leader of Bionanomechanics Lab. Institute of Microelectronics of Madrid (IMM-CNM, CSIC). Madrid, Spain. Research Interests: study and development of nanomechanical sensors for DNA detection.

SESSION 03: NANOTECHNOLOGY APPROACHES FOR THERAPY DISEASES***Jesús de la Fuente, Lajos Balogh, Rogério Gaspar******Jesús de la Fuente***

Group Leader of BioNanoSurf Group. Aragon Institute of Nanoscience. Zaragoza, Spain.

Lajos Balogh

Principal and CEO at AA Nanotech Consulting, New York, USA. He was Director of Nanotechnology Research at the Department of Radiation Medicine, Roswell Park Cancer Institute and Professor of Biomedical Nanotechnology at the Department of Radiation Medicine, SUNY-Buffalo, USA. Research Interests: development of radioactive nanocomposites to treat tumor. Imaging nanocomposites targeting tumor microvasculature.

Rogério Paulo

Full Professor Pharmaceutics (Faculty of Pharmacy). Coordinator of the Nanomedicine and Drug Delivery Systems Group (Nano&DDS); Institute for Medicines and Pharmaceutical Sciences, Lisbon, Portugal. Research Interests: Intracellular delivery of nucleic acids and/or combination chemotherapy by the use of nano-systems in oncology and infectious diseases. Macrophage delivery of drugs for the treatment of infectious diseases, namely leishmaniasis and tuberculosis. Site and organ specific delivery of new and already marketed drugs (arthritis, aging diseases) involving oxidative stress related diseases. Dermal and transdermal delivery of low molecular weight drugs and macromolecules using among others specially designed nanosystems and mechanisms of skin permeation and drug delivery. Liposomes as adjuvants for photodynamic therapy of skin cancer. Micro and nanoparticulate systems in mucosal immunization as immunoadjuvant or carriers for DNA. Polymer-protein conjugates as nanomedicines for promoting tissue repair. Establishment of structure /function relationship of chemically modified drugs tested in appropriate animal models. Study of the immune response of incorporated versus free bioactive agents, in animals infected (tuberculosis, leishmaniasis). Pro-active assessment of risk with nanomaterials. Micro and nanoformulated systems for oral, intraperitoneal and pulmonary delivery of new drugs.

SESSION 04: NANOTOXICOLOGY AND POTENTIAL HEALTH EFFECTS

Victor Puntès, Benoît Nemery, Simó Schwartz

Victor Puntès

Group Leader of Inorganic Nanoparticles Group, Catalan Institute of Nanotechnology (ICN), Barcelona, Spain. Research interests: Synthesis, characterization and self-assembly of nanoparticles. Applications of nanoparticles to medicine. Nanotoxicology.

Benoît Nemery

Head of Research Unit of Lung Toxicology. Laboratory of Pneumology, Katholieke Universiteit Leuven. Leuven, Belgium.

Research interests: In vivo and in vitro studies to investigate the mechanisms of pulmonary toxicity caused by various agents, such as industrial chemicals, polymers, air pollutants and nanomaterials. Chemical-induced asthma. Mechanisms of the cardiovascular effects of pollutant particles.

Simó Schwartz

Nanomedicine Coordinator of the Molecular Biology and Biochemistry Research Center for Nanomedicine (CIBBIM-Nanomedicine) and director of the drug delivery and targeting group. Vall d'Hebron University Hospital, Barcelona, Spain.

SESSION 05: THE POTENTIAL OF NANOMEDICINE TO ADDRESS CLINICAL NEEDSCANCER *Jaume Reventòs, Wolfgang Parak*NEURODEGENERATIVE DISEASES *Johannes Brettschneider, Josep B. Cladera*REGENERATIVE MEDICINE *Augusto Silva, João F. Mano*

CANCER

Jaume Reventòs

Biomedical Research Unit, Vall d'Hebron Research Institute, University Hospital, Barcelona, Spain.

Wolfgang Parak

Full Professor at the Department of Physics, University of Marburg, Germany. Research interests: Synthesis, characterization, functionalization and study of the biological applications of polyelectrolyte polymer capsules for drug delivery. Synthesis, surface chemistry and bioconjugation of colloidal nanoparticles. Investigation of the interaction of nanoparticles with cells, in particular their uptake.

NEURODEGENERATIVE DISEASES

Johannes Brettschneider

Neurochemical and Neuroimmunological Laboratory, Department of Neurology, University of Ulm, Germany

Josep B. Cladera

Professor at the Department of Biochemistry and Molecular Biology, Autonomous University of Barcelona, Spain. Research interests: applications of dendrimers to neurodegenerative diseases.

REGENERATIVE MEDICINE

Augusto Silva

Director of Advanced Therapies and Transplantation
Ministry of Health and Social Policies. Spain

João F. Mano

Assistant Professor, Department of Polymer Engineering, University of Minho, Portugal. Research Interests: development of biomacromolecular-based and bio-inspired systems for biomedical applications, including tissue engineering scaffolding and drug delivery. Smart and bioactive materials. Nanoscience and nanotechnology applied to biomaterials and tissue engineering. Thermo-physical and mechanical properties of polymers and biomaterials.

SCIENTIFIC COMMITTEE

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