12th European and Global CLINAM-Summit
Conference and Exhibition

Clinical Nanomedicine and the Impact of Digitalization and Artificial Intelligence for Precision Medicine
The Technologies for Diagnosis & Therapy in Patient Centric Medicine

NEW DATE: OCTOBER 25 – 28, 2020

PROGRAMME 2020 (Status APRIL 2020)
ONGOING SUBMISSION OF POSTER SUBMISSION UNTIL July 10, 2020

Summit under the Auspices of the Swiss Confederation, with 36 NPO Programme Supporters
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Scientific Committee of the 12th Summit

- Prof. Dr. med. Patrick Hunziker, University Hospital Basel (CH) (chair)
- Prof. Dr. med. Christoph Alexiou, University Hospital Erlangen (D)
- Prof. Dr. Lou Balogh, Editor-in-Chief, Precision Nanomedicine, Boston (USA)
- Prof. Dr. Yechezkel Barenholz, Hebrew University, Hadassah Medical School, Jerusalem (IL)
- Prof. Dr. med. Omid Farokhzad, Director, Center for Nanomedicine, Harvard Medical School and Brigham and Women's Hospital, Boston (USA)
- Prof. Dr. Dr. Twan Lammers, Institute for Experimental Molecular Imaging, RWTH Aachen University Clinic, Aachen (D)
- Prof. Dr. med. Dong Soo Lee, PhD. Chairman, Department of Nuclear Medicine Seoul National University (KOR)
- Dr. med. h.c. Beat Löffler, MA, CEO, CLINAM-Foundation, Basel (CH) (Programme, Organization & Realization)
- Prof. Dr. med. André Nel, M.B. Ch.B., PhD, Distinguished Professor of Medicine, Associate Director California NanoSystems Institute, Chief of Nanomedicine and Director of the Center for Environmental Implications of Nanotechnology, UCLA, Los Angeles, (USA)
- Prof. Dr. med. Marisa Papaluca Amati, Medical Advisor, Imperial College London, London (UK)
- Prof. Dr. Gert Storm, Institute for Pharmaceutical Sciences, Utrecht University, (NL) University of Twente (NL) and Department of Surgery, National University Hospital NUS, Singapore (SGP)
- Prof. Dr. Dr. h.c. Viola Vogel, Laboratory of Applied Mechanobiology, ETH Zürich (CH)

Introduction

Towards Innovation in Clinical Nanomedicine

The CLINAM Summit is a globally unique event that brings together all stakeholders in nanomedicine, targeted medicine and precision medicine. In its 12th Conference, it emphasizes, besides nanomedicine and related fields, the role of digitalization and artificial intelligence, highlighting the present achievements, with the ambitious goal to shape together, in an interdisciplinary endeavor, the medicine of the future. The Summit builds on the principle that fundamental and applied scientists, developers, clinicians, regulators and professionals from various related fields can mutually learn from each other to find better solutions. This leads to new collaboration and consortia of experts that will accelerate the development and strengthen the efforts towards a medicine that delivers more benefits to patients and society.

Precision and Personalization in Nanomedicine and Patient Centric Medicine

Based on recent groundbreaking achievements of nanomedicine and related fields, the meeting will be a highlight on the path towards personalized and patient centric medicine. It will highlight its potential for prevention, diagnosis and therapy. The development of new tools, materials and strategies for this growing field enables the translation of our progressive understanding of the genome and the immune system towards innovative new medical applications. The future of medicine includes a patient-centric approach whereby healthcare systems establish a partnership among practitioners, patients, and their families to align decisions with the patient’s wants, needs, and preferences. This includes capacity building of the patients, enabling them to decide and to participate in their own care.

AI and Digitalisation Benefits

Artificial intelligence to achieve set goals in nanomedicine and genomics will be highlighted as an enabling discipline. Particular attention is given to the potential benefits, but also to the inherent risks and pitfalls of machine learning, which will be investigated to realize the full potential for precision medicine. Digitalization is needed to evaluate the immense data sets that arise in medicine, and will allow to improve the effectiveness of drugs in the patient. High-Performance Computing with massive computational power permits gaining a more detailed understanding not only of the generic aspects of disease, but of its precise meaning in the individual. It will be used in comprehensive analyses and by simulating in virtual patients, predicting the most effective and least dangerous treatment strategy that can be applied in a cost-effective manner to each person individually.
Clinical Nanomedicine as Combined Predominant Cross Technology

CLINAM has evolved towards its role as the international forum for interdisciplinary fields of cutting edge medicine. In difference to all other human rights, the right to globally good health is still neglected. Today over 2 billion people have no access to basic medicine, rendering them vulnerable to preventable misery and suffering. Today, the rapid evolution of medical technologies opens perspectives far beyond what we expected two decades ago. Clinical Nanomedicine will have a predominant role in its character as cross technology for targeted drug delivery. The advancements in deciphering the genome and the understanding that the “one size fits all” approach for patients is overcome, gives new perspectives to understand all needs and facets for patient centric medicine. It will be inspiring to hear from outstanding experts about their future perspective of combining the toolbox of emerging technologies for medicine and its application for the patient. It will be instructive to hear from the opinion leaders about the interaction of Nanomedicine, Genetics, Digitalization, AI and further novel technologies, that will enable us bringing diagnosis and therapy to more patients worldwide in the next two decades. Globally every individual should gain access to advanced, cost effective and precise healthcare.

Target Audience

The faculty includes pioneers and opinion leaders in the fields of medicine, nanoscience and targeted medicine, who share experience in an interdisciplinary and interactive manner that widens mutual understanding for both sides. The summit and the exhibition are aimed at physicians, as well as scientists with a background in pharmacology, biology, physics, chemistry, biophysics, medicine materials science and engineering. Experts in artificial intelligence, digitalization and high performance computing show the implications in the healthcare sector. The meeting is a particularly useful source of knowledge for the targeted medicine and delivery community. The conference is also of interest for members of the regulatory authorities as well as policymakers, experts from industry in the field of life sciences, developers of new tools and materials for nanomedicine, and all those investigating the potential of emerging technologies in the field of healthcare and their combinations. Experts from venture companies can acquire knowledge on existing and upcoming developments and novel products in the establishing field of nanomedicine and knowledge-based medicine. Government authorities can profit from the regulator’s international sessions. Industrials find contacts for cooperation and get insight into the novel concepts and meet members of keen investigating startups with interest for working together. CLINAM is the worldwide melting pot for experts and a high-level communication platform where you meet those striving for equal goals.

Programme

Sunday, October 25, 2020

All Sunday Events on the 2nd Floor, Halls Osaka and Samarkand

About The Sunday of the Summit is the day for organizations to meet for their board meetings. The first speech in the late afternoon addresses all those that already arrived in Basel. Also the members of the assemblies are welcome. The official welcome dinner for the arrived speakers is on Sunday evening.

13.00  Preparatory Meetings for the Teams of ESNAM, ISNM, PRNANO
14.30  General Assembly of the European Society for Nanomedicine
16.30  General Assembly of the International Society for Nanomedicine
17.15  Board Meeting of the Journal “Precision Nanomedicine”, Official Journal of CLINAM
17.15  SUNDAY LECTURE FOR YOUNG RESEARCHERS, STUDENTS AND ALL ARRIVED CLINAM-Members

Topic Small Sizes for the Small: Nanomedicine Challenges and Opportunities in Pediatric Cancer
Prof. Dr. Alejandro Sosnik, Laboratory of Pharmaceutical Nanomaterial Science Department of Materials Science and Engineering, Technion Haifa (IL)

19.45  First Meeting for all Speakers: Welcome Dinner at the Swissotel Le Plaza***** on the 1st Floor, Hall Helvetia
Monday, October 26, 2020

**Session 1  Plenary Session**

Monday, Hall Montreal, 08.30 – 09.20

1. Opening Addresses and Scientific Introduction to CLINAM 12/2020

Chair  Beat Löffler, European Foundation for Clinical Nanomedicine, Basel (CH)

08.30  Opening Address from the European Foundation for Clinical Nanomedicine  
Dr. med. h.c. Beat Löffler, MA, CEO, European Foundation for Clinical Nanomedicine, and Leader of Löffler & Associates Concept Engineering GmbH, Basel (CH)

08.40  Opening Address from the European Commission  
Maria Pilar Aguar Fernandez, Head of Unit E.3 – Health Innovations, European Commission, DG Research & Innovation, Brussels (B)

08.50  Opening Address from the Swiss Government  
Myriam Cevallos, Scientific Advisor, EU-Framework Programmes, Federal Department of Economic Affairs, Education and Research EAER State Secretariat for Education, Research and Innovation SERI Research and Innovation EU-Framework Programmes

09.00  Scientific Introduction 2020: Nanomedicine and Converging Technologies: Towards Global Health  
Prof. Dr. med. Patrick Hunziker, President of the International Society for Nanomedicine, University Hospital Basel, Head of the CLINAM-Lab, Basel (CH)

09.15  Questions and Debate

**Session 2  Plenary Session**

Monday, Hall Montreal, 09.20 – 10.10

2. Data Driven Interventions for Improving Medicine

About  There is a hope that artificial Intelligence and digitalization will allow clinicians to get faster to an appropriate diagnosis and to get more time for their patients. Atomization can discharge medical doctors from the burden of clerical work and can fortify human capabilities. With the introduction of innovative data-driven tools into practice, mainly focusing on real-life effectiveness studies, predictive modeling, decision support tools and proactive care models, clinicians will get precise novel data supporting the decisions in therapy to benefit of the patient.

Chair  Prof. Dr. Yechezkel Barenholz, Hebrew University, Hadassah Medical School, Jerusalem (IL)

09.20  Computerized Medical Systems, Predictive Analytics and Big-data Informatics for Precision Medicine  
Prof. Dr. med. Varda Shalev, MPH, Director, Institute of Research and Innovation, Maccabitech, Primary care physician, Maccabi Health Care Services, Associate Professor, School of Public Health, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv (IL)

09.50  Questions and Debate

10.10  Break

**Session 3  Plenary Session**

Monday, Hall Montreal, 10.40 – 11.20

3. Therapeutic Delivery and Complex Nanostructures

About  The translation of nanomedicine from the laboratory to clinical adoption requires processing approaches that are scalable, economically viable, and can be validated by drug approval agencies. Scalable processes for targeted nanocarrier is one major challenge, since biologics, including peptides, proteins, and oligonucleotides,
are the fastest growing segment of the pharmaceutical market. New insights from virology, immunology, and cell biology are driving advances in the fields of immunoncology, leading to therapeutics that modify intracellular synthesis pathways, and vaccines. Evaluating processes to produce nanocarriers for biologics remain one of the “grand challenges” in this field.

Chair **Prof. Dr. Adriele Prina-Mello**, PhD, Ussher Assistant Professor/LBCAM Director Trinity Translational Medicine Institute (TTMI)/Department of Clinical Medicine, School of Medicine and AMBER/CRANN, Trinity College Dublin, University of Dublin (IRL)

10.40 **Nanomedicine: From High Tech to Global Health**
**Prof. Dr. Robert K. Prud’homme**, Professor and Director of the Program in Engineering Biology Princeton, Department of Chemical and Biological Engineering Princeton, Princeton University, NJ (USA)

11.10 **Questions and Debate**

### Session 4  Plenary Session

Monday, Hall Montreal, 11.20 – 12.00

#### 4. Immunotherapy and Inducing Antigen-Specific Immune Tolerance

**About** Nanoparticles have made a big impact on the development of immunotherapy for cancer and serious allergic disorders, demonstrating the ability to develop new therapeutics that are capable of boosting immunogenic effects in the setting of “cold” tumor microenvironments in solid cancers, as well as the ability to induce tolerogenic effects that suppress antigen-specific immune hyperactivity in the setting of asthma or autoimmune disease.

Chair **Prof. Dr. Jérôme Galon**, Research Director, Chief French National Institute of the Health and Medical Research (INSERM) Laboratory of Integrative Cancer Immunology, Cordeliers Research Center, Paris (F)

11.20 **Nano-enabled Immunotherapy for Cancer and the Treatment of Allergic and Autoimmune Disease**
**Prof. Dr. med. André Nel**, M.B. Ch.B., PhD, Distinguished Professor of Medicine, Chief, and Division of Nanomedicines, Research Director California NanoSystems Institute, and Director of UC Center for the Environmental Impact of Nanotechnology, Associate Editor ACS Nano, Los Angeles (USA)

11.50 **Questions and Debate**
Monday, Hall Montreal, 12.00 -12.40

### Session 5  1 of 4 Parallel Sessions

Monday, Hall Montreal, 13.30 – 16.45

#### 6. New Therapeutic Modalities and their Impact on Unmet Medical Needs  14’ plus 1’ Questions

**About** New molecular modalities have delivered therapeutic breakthroughs and are advancing to late clinical stages acting on previously undruggable, often intra-cellular biological targets. New modalities is a term that’s becoming a “catch-all” for any “unconventional” therapeutic of above average. The sophistication and complexity of new molecules is increasing, e.g. cell&gene products, nucleic acids, bi-functional molecules (protacs), nano-medical and other targeted delivery systems, antibody-drug and other-conjugates, peptides and other biologic molecules will be discussed.

Chair **Dr. Karin Abitorabi**, Novartis Senior Fellow Cell and Gene Therapy, Novartis Pharma AG, Basel (CH)

13.45 **SiRNA Onpattro (Patisiran) – Lipid Nanoparticles Regulatory Considerations in the Approval of Onpattro, the first RNAI Therapeutic**
**Dr. Sarawathy V. Nochur**, Senior Vice President, Chief Regulatory Officer, Regulatory Affairs, Alnylam Pharmaceuticals Cambridge, Massachusetts (USA)
14.00  **RNAntibody - a Therapeutic Option**  
Dr. Patrick Baumhof, Vice President Formulation & Delivery, CureVac AG, Tübingen (D)

14.15  **Topic to be announced**  
Dr. med. Clive A. Meanwell, Ph.D, Chief Innovation Officer, The Medicines Company, Parsippany, NJ (USA)

14.30  **The Development of Taclantis and Other Novel Derived Formulations**  
Dr. Ajay Khopade, Vice President - Formulation Development (Non-Orals) Sun Pharma Advanced Research Company Ltd., Vadodara, Gujarat (IND)

14.45  **Research on GLP-1 with a Special Focus on Semaglutide Oral Delivery**  
Dr. Jesper Lau, Vice President, Research Chemistry, Global Research Technologies, Novo Nordisk A/S, Copenhagen (DK)

15.00  **Next-generation Gene Editing Technology for Allogeneic Immune Cell Therapeutics**  
Dr. Steven Kanner, Chief Scientific Officer, Caribou Biosciences, Berkeley, CA (USA)

15.15  **Recent Advances in Antisense Technology**  
Dr. Brett P. Monia, Chief Executive Officer, Ionis Pharmaceuticals, Inc., Carlsbad, California (USA)

15.30  **Innovative Cell and Gene Therapies for Non-oncology Indications**  
Dr. Magdalena Obarzanek-Fojt, Principal Scientist Pharmaceutical Development, Novartis (CH)

15.45  **Title to be announced**  
Dr. Heinrich Haas, Vice President RNA Formulation & Drug Delivery, BioNTech SE, Mainz (D)

16.00  **Questions and Debate**

16.45  **Break**

**Session 6**  2 of 4 Parallel Sessions

Monday, Hall Sidney, 13.45 – 16.45  
**7. Chemistry of New Nanomedicines**  12’ plus 3’ Questions

**About**  
Session established in collaboration with the German Research Foundation (DFG) “Collaborative Research Center on Nanodimensional Polymer Therapeutics for Tumor Therapy” (CRC 1066), Johannes Gutenberg University, Mainz (D) — This session will focus on the development of new carrier systems from a materials science perspective. It has the intention to demonstrate that there are medical needs beyond, than classical tumor targeting, to which nanomedicine can be applied. Nanoparticles naturally accumulate in areas with a leaky vasculature like liver, areas of heavy inflammation and spleen or lymph nodes, which are central organs of the immune system.

**Chair**  
Dr. habil. Matthias Barz, Lecturer at Institute of Organic Chemistry, Johannes Gutenberg-University of Mainz (D) and Prof. Dr. Rudolf Zentel, Institute of Organic Chemistry, University of Mainz (D)

13.45  **Nanomaterials for RNA Delivery: From RNAi to CRISPR/Cas Gene Editing**  
Prof. Dr. Daniel J. Siegwart, Siegwart Research Group, Simmons Cancer Center, Department of Biochemistry UT Southwestern Medical Center, Dallas TX (USA)

14.00  **Polymer Prodrug Conjugates**  
Dr. Julien Nicolas CNRS Director of Research, Institut Galien Paris-Sud, UMR 8612, Faculté de Pharmacie de Châteenay-Malabry, Univ. Paris-Sud (F)

14.15  **Multivalent Nanosystems for Tumor Targeting**  
Prof. Dr. Rainer Haag, Institute of Chemistry and Biochemistry Organic Chemistry, Freie Universität Berlin, Berlin (D)

14.30  **Supramolecular Vaccines**  
Prof. Pol Besenius, Professor for Macromolecular Chemistry, Institute of Organic Chemistry, University of Mainz, Mainz (D)
14.45 Polypept(o)ides for Therapy of Infectious Diseases
Dr. habil. Matthias Barz, Lecturer at Institute of Organic Chemistry, Johannes Gutenberg-University of Mainz, Mainz (D)

15.00 Functional Therapeutic Hybrids
Prof. Dr. Tanja Weil, Max-Planck-Institute for Polymer Research (MPIP), Mainz (D)

15.15 Polymers Micelles in Cancer Therapy
Prof. Dr. Horacio Cabral, Researcher, Department of Materials Engineering, University of Tokyo (J)

15.30 Is Protein Corona Formation in Plasma an Intrinsic Property of all Nanoparticles?
Prof. Dr. Rudolf Zentel, Institute of Organic Chemistry, University of Mainz, Mainz (D)

15.45 Polypeptide-based Conjugates as Versatile Therapeutics
Prof. Dr. Maria Vicent, Head of Polymer Therapeutics Laboratory, Centro de Investigación Príncipe Felipe, Valencia (E)

16.00 Prodrugs and Associated Opportunities in Localized Drug Synthesis
Prof. Dr. Alexander N. Zelikin, Associate Professor, Department of Chemistry / Interdisciplinary Nanoscience Center – INANO-Kemi, Aarhus (DK)

16.15 Use of Click Chemistry to Prepare Orientated Display of Antibodies on Nanomedicines
Prof. Dr. Christopher Scott, Director Centre of Cancer Research and Cell Biology, Chair of Pharmaceutical Biosciences, The Queen’s University of Belfast, Belfast (UK)

16.30 Further Questions and Debate

16.45 Break

Session 7 3 of 4 Parallel Sessions

Monday, Hall Singapore, 13.45 – 16.45

8. How do Nanoparticles Behave - Nano Interacting with Life 12’ plus 3’ Q&D

About
This session aims on understanding of the mechanisms of nanomaterial interactions with living systems and the environment across the entire life cycle of nanomaterials. What are the mechanisms and how do nanoparticles behave in different biological environments? Presentations include cell interaction, the importance of degradation and excretion and new methods for evaluation and screening of nanoparticles for therapeutic applications. Delivery methods and imaging for evaluating the behavior of nanomaterials in vivo and the prediction of in vivo behavior of nanoparticles will be discussed.

Chair
Prof. Dr. Barbara Rothen-Rutishauser, Co-Chair Bio Nanomaterials, Adolphe Merkle Institute, University of Fribourg (CH)

13.45 What Cells can do with Nanomaterials
Prof. Dr. Barbara Rothen-Rutishauser, Co-Chair Bio Nanomaterials, Adolphe Merkle Institute, University of Fribourg (CH)

14.00 Entry of Nanoparticles into Cells: Mechanisms and Consequences
Prof. Dr. Kirsten Sandvig, Professor, Institute for Cancer Research, The Norwegian Radium Hospital Oslo University Hospital Montebello, Oslo (N)

14.15 Cell Response to Different (Nano-) Particle Stiffness
Prof. Dr. Alke Fink, Chair Bio Nanomaterials, Adolphe Merkle Institute, University of Fribourg (CH)

14.30 Nanoparticles for Clinical Use: Importance of Degradation and Excretion
Dr. Tore Skotland, Centre for Cancer Biomedicine, Institute for Cancer Research, University of Oslo, (N)
14.45 **Nanotechnology and Biological Drugs: a Powerful Alliance**  
**Prof. Dr. Maria José Alonso**, Editor-in-Chief of the Drug Delivery and Translational Research (DDTR) Journal, Past President of the Controlled Release Society (CRS), CIMUS Research Institute, Campus Vida, University of Santiago de Compostela (E)

15.00 **Nanocarriers of Photosensitizers Used in Photodynamic Therapy**  
**Prof. Barbara Klajnert-Maculewicz**, Department of General Biophysics, University of Lodz (P)

15.15 **Organelle-specific Targeting of Polymersomes into the Cell Nucleus**  
**Prof. Dr. Roderick Lim**, Argovia Professor for Nanobiology, Biozentrum and the Swiss Nanoscience Institute, University of Basel, Basel (CH)

15.30 **Cellular Fate of Nanoparticles Delivered to the Murine Lung: a New Role of Macrophages?**  
**Lin Yang, MSc**, Dr. Otmar Schmid group (Comprehensive Pneumology Center/Institute of Lung Biology and Disease, Helmholtz Center Munich and Technical University of Munich (D)

15.45 **Delivery of Anti-cancer Stem Cell Drugs in Colorectal Metastatic Cancer**  
**Prof. Dr. med. Simo Schwartz, Jr., PhD**, Director Molecular Biology and Biochemistry, Research Center for Nanomedicine (CIBBIM-Nanomedicine) University Hospital Vall d’Hebron and Vall d’Hebron Institut de Recerca (VHIR), Barcelona and President of the European Society for Nanomedicine, Barcelona (E)

16.00 **Further Presentation**

16.15 **Further Questions and Debate**

16.45 **Break**

**Session 8**  
4 of 4 Parallel Sessions

**Monday, Hall Rio, 13.45 – 15.25**

**9. Bioinspired, Biological and Smart Materials for Boosting Nanomedicine**

*About*  
This session will elucidate the recent development of nanocarrier systems for drug delivery applications, the properties, the size, the main organic nanocarrier (such as polymer-based micelles, liposomes, and dendrimers) and inorganic nanoparticles in applications (such as carbon nanotubes, gold nanoparticles, and quantum dots). The session will also focus on novel fabrication strategies and materials architectures for realizing particles with enhanced drug delivery and biomedical imaging properties, as guided by nature.

**Chair**  
**Prof. Dr. Paolo Decuzzi**, Senior Researcher and Professor, Director of the Laboratory of Nanotechnology for Precision Medicine, Italian Institute of Technology, Genova (I)

**13.45** **Using Biology to Design Novel Nanomedicines**  
**Prof. Dr. Paolo Decuzzi**, Senior Researcher and Professor, Director of the Laboratory of Nanotechnology for Precision Medicine, Italian Institute of Technology, Genova (I)

**13.55** **Engineering Responsive Nanoparticles and Devices against Biofilm Infections**  
**Prof. Dr. Sc. Georgios A. Sotiriou**, Assistant Professor, Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, Stockholm (S)

**14.05** **Biocompatibility Assessment of Graphene-based Materials**  
**Prof. Dr. med. Bengt Fadeel**, Nanosafety & Nanomedicine Laboratory, Division of Molecular Toxicology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm (S)

**14.15** **Catalytic Fluoroalkylations and Applications in Late Stage Fluorination of Bioactive Molecules**  
**Prof. Dr. Xingang Zhang**, Shanghai Institute of Organic Chemistry Chinese Academy of Sciences, Shanghai (ROC)
14.25  **Tumor Exosome-Based Nanoparticles and Artificially Cloaked Viral Nanovaccines for Chemo-immunotherapy Applications**  
*Prof. Dr. Hélder A. Santos*, Head of Division of Pharmaceutical Chemistry and Technology and Director of Nanomedicines and Biomedical Engineering Lab, Drug Research Program, Faculty of Pharmacy and Helsinki Institute of Life Science, University of Helsinki (FIN)

14.35  **Development of Personalized Cancer Vaccine**  
*Dr. Julianna Lisziewicz*, Nanomedicine Sote, Semmelweis University, Budapest, (H)

14.45  **Molecular Bioengineered Nanomedicines for Targeted Delivery of Peptides in Modulation of Diabetes**  
*Dr. Bruno Sarmento, PhD*, Principal Investigator, Nanomedicines & Translational Drug Delivery, Group Leader i3S - Instituto de Investigação e Inovação em Saúde INEB - Instituto de Engenharia Biomédica Universidade do Porto, Porto (PRT)

14.55  **Implications of carbon nanoparticles for potential biosensors and therapeutic applications**  
*Prof. Dr. Debabrata (Dev) Mukhopadhyay*, Departments of Biochemistry and Molecular Biology and Physiology and Biomedical Engineering, Florida DOH Cancer Research Chair, Mayo Clinic College of Medicine and Science, Jacksonville, Florida (USA)

15.05  **Nitric Oxide-Dependent Biodegradation of Graphene Oxide Reduces Inflammation**  
*Dr. Guotao Peng*, Division of Molecular Toxicology, Institute of Environmental Medicine Karolinska Institutet Stockholm (S)

15.15  **Questions and Debate**

**Session 9 Continuation 4 of 4 Parallel Sessions**

Monday, Hall Rio, (same Hall) 15.25 – 16.45

**10. Preclinical Projects and Ongoing Trials** (9’ plus 1’ first questions)

**About**
This session is dedicated to the current trends and challenges in the clinical translation of Nanomedicines as well as the potential pathways for translational development and Commercialization. The speakers present preclinical first and ongoing trials.

**Chair**
*Dr. Cristianne J. F. Rijcken, PharmD, PhD*, Founder and CSO, Cristal Therapeutics, Maastricht (NL)

15.25  **Designing Novel Nanosystems Consisting on Combined Gene and Immune Therapies for Non-Small Cell Lung Cancer**  
*Dr. Cristina Fornaguera i Puigvert*, Group of Materials Engineering (Gemat), IQS School of Engineering, University Ramon Llull, Barcelona (E)

15.35  **Translation to the Clinic of an Ultrasmall Gadolinium Based Nanoparticle: AGuIX**  
*Prof. Dr. François Lux*, Associates Professor, Lyon 1 University, Institut Lumière Matière, Equipe FENNEC, UMR CNRS 5306, Villeurbanne (F)

15.45  **Nanomedicines to Deliver Dual-targeting Dual-action Pt(IV) Chemotherapeutic Complexes for Enhanced Anticancer Activity and Reduced Nephrotoxicity**  
*Prof. Dr. Giorgia Pastorin*, Associate Professor and Deputy Head (Research), Pharmacy Department, National University of Singapore, Singapore (SGP)

15.55  **The Nanoprimer: a Nanoparticle Designed to Transiently Occupy the Mononuclear Phagocytic System In Order to Increase Nanomedicine-based Treatments Efficacy**  
*Dr. Matthieu Germain*, CEO, CURADIGM, Paris (F)

16.05  **Extremely Small Iron Oxide Nanoparticle as MRI T1 Agent**  
*Prof. Dr. Yung Doug Suh*, Group Leader, Laboratory for Advanced Molecular Probing (LAMP), Research Center for Bio Platform Technology, Korea Research Institute of Chemical Technology (KRICT), DaeJeon; Professor, School of Chemical Engineering, Sung Kyun Kwan University (SKKU), Suwon (KO)
A Novel Intraperitoneal Therapy for Gastric, Pancreatic and Ovarian Cancer with DFP-10825, a Unique RNAi Therapeutic Targeting Thymidylate Synthase, in Peritoneal Disseminated Xenograft Model

Prof. Dr. Tatsuhiro Ishida, Professor Department of Pharmacokinetics and Biopharmaceutics Institute of Biomedical Sciences, Tokushima University, Tokushima and Dr. Kiyoshi Eshima, President & Founder of Delta-Fly Pharma, Inc., Tokushima (J) (Preclinical Trial)

Questions and Debate

Break

Session 10 Foyer Session Small Speeches

Monday, Congress Foyer, 13.45 – 16.45

11. First Session of Small Speeches on Submitted Posters and University Village Posters 2020

About

Poster submitters, researchers and scientists at universities, participating in the University Village 2020 can apply for a small speech of 4 minutes, serving to highlight the research activities in nanotechnology/health. The speeches comprise a maximum of three slides. • Slide 1: General introduction to the topic’s future and outlook on translation of the work presented in a way that is accessible to the highly interdisciplinary audience. • Slide 2: Some of the highlights of the submitter’s work and institution’s work. • Slide 3: The proof, how the work at the university/institute fits into the area of nanomedicine and targeted delivery including showing the outlook on translation of the work.

Chair

Dr. Sc. nat. Ruth Schmid, Vice President Marketing, SINTEF Industry, Biotechnology and Nanomedicine, Polymer Particles and Surface Chemistry; Chair of the European Technology Platform on Nanomedicine (ETPN), Trondheim (N)

13.45 Introduction

Dr. Sc. nat. Ruth Schmid, Vice President Marketing, SINTEF Industry, Biotechnology and Nanomedicine, Polymer Particles and Surface Chemistry; Chair of the European Technology Platform on Nanomedicine (ETPN), Trondheim (N) Programme inserted in wallets of Summit

Break

Session 11 Satellite 1

Monday Hall Samarkand, 13.45 – 16.45

12. G-SRS - Global Substance Registration System

About

Session in Collaboration with the FDA USA. At present regulators around the globe (as well as many pharmaceutical companies) maintain similar individual databases for substances used in medicinal products. The content of these databases is overlapping to a large extent. A commonly recognized global database containing validated and quality-controlled substance information would lead to a significant reduction in duplicated work, better quality of the substance data, and ultimately an improved description and coding of the composition of approved medicinal products. The implementation of a system such as G-SRS is therefore highly desirable, particularly in the European setting with its abundance of national regulatory agencies. The session will address challenges and progress towards a global IDMP-compliant database for substances used in medicinal products.

Chair

Dr. Larry Callahan, Global Substance Registration System (G-SRS), Office of Health Informatics, Office of Chief Scientist FDA|HHS, New Hampshire, Silver Spring, MD (USA) and Dr. Philipp Weyermann, Head of Unit Case Management 2 Swissmedic, Bern (CH)

13.45 Introduction to G-SRS

Dr. Larry Callahan, Global Substance Registration System (G-SRS), Office of Health Informatics, Office of Chief Scientist FDA|HHS, New Hampshire, Silver Spring, MD (USA)

14.05 A Regulatory Agency Perspective on G-SRS

Dr. Philipp Weyermann, Head of Unit Case Management 2, Swissmedic, Bern (CH)
14.25 **Industry Perspective on G-SRS**
*Dr. Jean-Gonzague Fontaine*, IDMP Sustainability Strategy Lead, GlaxoSmithKline Vaccines, Wavre (BE)

14.45 **Innovative Materials in Recently Approved Medicines**
*Sarah Stemann*, Global Substance Registration System (GSRS) Project Manager
National Institutes of Health, Bethesda, Maryland (USA)

15.05 **Capturing Complex Vaccines and Gene and Cell Therapy Products in a Structured Substance Database**
*Dr. Marcel Hoefnagel PhD*, Senior Assessor Biopharmaceuticals, Medicines Evaluation Board, European Expert in Quality of ATMP, Vaccines and Allergens, Utrecht (NL)

15.25 **Panel Discussion on Defining the Challenges and Progress (Questions and Debate)**
Chair: *Dr. med. Frank F. Weichold, PhD*, Director of Critical Path and Regulatory Science Initiatives, Office of Regulatory Science & Innovation (ORSI) and Office of the Chief Scientist/Office of the Commissioner Food and Drug Administration (FDA), Silver Spring, MD (USA)

Session 12 **Plenary Session**
Monday Hall Montreal, 17.15 – 19.15

13. **Late Breaking and Ongoing Trials in Nanomedicine and Targeted Delivery** 12’ plus 3’ Questions

About
This session is dedicated to the current trends and challenges in the clinical translation of Nanomedicine as well as the potential pathways for translational development and Commercialization. The speakers present late breaking and ongoing trials.

Chair: *Dr. Neil Desai* CEO, Aadi Bioscience Inc. Pacific Palisades, CA, USA.

17.15 **Results from Clinical Phase 1 and 2 Evaluations of CPC634**
*Dr. Cristianne J. F. Rijcken, PharmD, PhD*, Founder and CSO, Cristal Therapeutics, Maastricht (NL)

17.30 **Results of a Registration Trial of ABI-009 (Nanoparticle Albumin Bound Sirolimus) in Malignant PEComa and other Clinical Studies”**
*Dr. Neil Desai* CEO, Aadi Bioscience Inc., Pacific Palisades, CA (USA)

17.45 **Topic to be announced**
*Dr. Clive A. Meanwell, M.D., Ph.D*, Chief Innovation Office, The Medicines Company, Parsippany, (USA)

18.00 **Talidox, the World’s Smallest Liposomal Doxorubicin: Insights from First Applications in Patients and Immuno-Oncological Potential**
*Dr. Stefan Halbherr, PhD*, Manager Research and Development, InnoMedica Holding AG, Bern (CH)

18.15 **Antisense Strategies for Neurodegenerative Diseases**
*Dr. Brett P. Monia*, Chief Executive Officer, Ionis Pharmaceuticals, Inc., Carlsbad, California (USA)

18.30 **Novel Peptide-oligonucleotide Complexes for mRNA and Gene Editing Therapeutics**
*Dr. Gilles Divita*, Aadigen, LLC, Pacific Palisades, CA (USA) and CEO of Divincell SAS, Montpellier (F)

18.45 **Clinical Experience with i.v. Liposomal Glucocorticoid Formulations Targeting Inflammation**
*Dr. Josbert Metselaar, PharmD, PhD*, Department of Experimental Molecular Imaging, RWTH Aachen University Clinic, Aachen (D) and CEO Enceladus Pharmaceuticals, Naarden (NL)

19.00 **Further Questions and Debate**

19.15 **End of Day 1**

19.35 **Meeting on the Tram Stop opposite the Congress Center**
Tramway Departing from Messeplatz to Landgasthof, Riehen Dorf.
*(Be punctual, not to miss the ride)*

19.45 **Aperitif in the Garden on behalf of the Canton of Basel-Stadt and Brokerage Dinner at Landgasthof Riehen. Cultural Event and the CLINAM Dwarf Award 202**
**Tuesday, October 27, 2020**

**Session 13  Plenary Session**

Tuesday, Hall Montreal, 08.15 – 09.00

14. NCI Funding in USA for Nanotechnology in Cancer

About The US National Cancer Institute (NCI) established the Alliance for Nanotechnology in Cancer in 2005 to recognize the value of convergence between nanotechnology and cancer research. It was the first program to support large-scale cooperative research in this area of medicine. The past fourteen years of the program's operation resulted in publication of more than 4,000 peer reviewed research articles, formation of several start-up companies collaborating with NCI-funded academic centers and committed to translation and commercialization of nanotechnology-based interventions and over 20 clinical trials associated with these interventions. The talk will provide the update on the program activities and outline its new strategic directions.

Chair Prof. Dr. med. Patrick Hunziker, President of the International Society for Nanomedicine, Basel (CH)

08.15 Update of the Alliance of the National Cancer Institute for Nanotechnology in Cancer
Dr. Piotr Grodzinski, Director, NCI Alliance for Nanotechnology in Cancer, National Cancer Institute, Bethesda, Maryland (USA)

08.50 Questions and Debate

**Session 14  Plenary Session**

Tuesday, Hall Montreal, 09.00 – 10.10

15. Nanomedicine - Visions for 2020-2030 Based on Lessons Learned from Past Experience

We are optimistic regarding the future of nanomedicines, we better understand now why the high expectations from the field have not been achieved yet. This session will summarize these lessons and is aiming to propose means to overcome current obstacles thereby coming closer to meet the desired expectations and hopes. We will take a fresh and close look at the multidisciplinary and complex currently clinically used nanomedicines, what they achieve and what they missed. So far the field of Nanomedicine and the nano-drugs developed are focus on the treatment of solid tumors and fungal infections. It seems that the focus on tumor will continue, the question is why other diseases that can benefit are neglected. This raises a major question on the role and contribution to Medicine. Another important question is, if and to what extent nanomedicine has an impact on Biotechnology, Genetics and Precision Medicine, Digital Medicine and Artificial Intelligence. Will nano-medicine play a role and to what extent in the above medicine related areas, and how important is this role? Can we identify the areas in which nanomedicine as a field and nano-drugs are a must? We will discuss where the field of nano-medicine should go in the next decade.

Chair Prof. Dr. Yechezkel Barenholz, Hebrew University, Hadassah Medical School, Jerusalem (IL)

09.00 Statement 1
Dr. Gerard M. Jensen, Director Technical Services at Gilead Sciences Hod Hasharon Business Park
Hod Hasharon (IL)

09.10 Statement 2
Prof. Dr. med. Alberto A. Gabizon, Hebrew University - School of Medicine - Shaare Zedek MC Oncology Institute, Jerusalem (IL)

09.20 Statement 3
Dr. Marina A. Dobrovolskaia, Ph.D., MBA, PMP, Senior Principal Scientist, Head, Immunology Section Nanotechnology Characterization Lab, Leidos Biomedical Research Inc., Frederick National Laboratory for Cancer Research Frederick MD (USA)

09.30 Statement 4
Dr. med. Clive A. Meanwell, M.D., Ph.D, Chief Innovation Office, The Medicines Company, Parsippany, NJ (USA)

09.40 Plenary Debate

10.10 Break
16. Integrated Assessment of Pharmacokinetics for Nanomedicine Development

Various nanomedicine systems have been developed for different routes of administration. More specifically, the structural modalities comprise dendrimers, nanocrystals, nanoemulsions, liposomes, solid lipid nanoparticles, micelles, and polymeric nanoparticles. Nanodrug systems have been employed to improve the pharmacodynamics and physicochemical process challenges across various pharmaceutical substances. As with conventional drug development, the translation of nanomedicines is underpinned by a robust understanding of the exposure-response relationship, and nanotechnology offers bespoke opportunities to dramatically improve pharmacokinetic behavior. For example, enhanced bioavailability of orally administered drugs, half-life extension of injected drugs, and a reduction in off-target drug accumulation have all been explicitly demonstrated. Therefore, nanodrug systems offer opportunities to lower the frequency of administration while maximizing efficacy and minimizing systemic side effects. Collective clinical benefits are therefore expected across emergent issues such as patient adherence (e.g. long-acting injectable nanomedicines preclude the need for daily ingestion of tablets) to medication and safety of agents with a narrow therapeutic index (e.g. specific cellular or tissue targeting). The pharmacokinetic advantages of nanomedicine systems must also be balanced against the potential for new safety considerations that stem from changes in drug distribution, prolonged drug exposure and/or the nanocarrier material itself. A better understanding of alterations in the pharmacokinetic-pharmacodynamics relationship that occur upon entrapment of drug within a nanoparticle including explicitly the efficacy and toxicity profiles will enable safe and effective new medicines to be more rapidly brought through clinical development.

Chair
Prof. Dr. Andrew Owen, PhD, FRSB, FBPhS, Professor of Pharmacology, Molecular and Clinical Pharmacology University of Liverpool (UK)

10.40 Introduction
Prof. Dr. Andrew Owen, PhD, FRSB, FBPhS, Professor of Pharmacology, Molecular and Clinical Pharmacology University of Liverpool (UK)

10.50 Short keynote lecture
Pharmacokinetic and Clinical Correlations of Pegylated Liposomal Mitomycin-c Prodrug (Promitil) in Colo-rectal Cancer Patients
Prof. Dr. med. Alberto A. Gabizon, Hebrew University - School of Medicine - Shaare Zedek MC Oncology Institute, Jerusalem (IL)

11.10 The Quest for Nanotechnology Platforms to Target the Central Nervous System
Prof. Dr. Alejandro Sosnik, Laboratory of Pharmaceutical Nanomaterial Science Department of Materials Science and Engineering, Technion Haifa (IL)

11.20 Nanoparticle-loaded Microarray Patches to Extend Pharmacokinetic Exposure
Prof. Dr. Ryan Donnelley Chair in Pharmaceutical Technology, School of Pharmacy Queen’s University Belfast, Belfast (UK)

11.30 Modifying Drug Carrier Transport through Nanotechnology to Widen the Therapeutic Index
Prof. Dr. Cameron Alexander Professor of Polymer Therapeutics, Head of Division of Molecular Therapeutics and Formulation, Faculty of Science, Nottingham (UK)

11.40 Concentration-dependent Versus Concentration Independent Safety and Biocompatibility Considerations for Nanomedicines
Dr. Neill Liptrott B.Sc., M.Sc., Ph.D., FHEA, Lecturer Molecular and Clinical Pharmacology, University of Liverpool (UK)

11.50 In Vitro Tools to Understand Nanomedicine Pharmacokinetics Early in Development
Dr. Marie Millard Department of Biology, Signals and Systems in Cancer and Neuroscience, University de Lorraine, Nancy (F)

12.00 Questions and debate
12.15 Lunch
Session 16  2 of 4 Parallel Sessions

Tuesday, Hall Sidney, 10.40 – 12.15

17. Nanomedicine in Brain Injuries and Neurological Disorders
About  This session gives insight into novel skills, ideas and research developments in the field of Brain issue, Neurology and Therapeutics and shows how besides other technologies Nanomedicine is involved in the development.

Chair  Prof. Dr. med. François Berger, BrainTech Lab-INSERM U 1205, University Grenoble Alpes, Grenoble (F)

10.40  Theranostic Nanophysics for the Deciphering, Prevention and Therapy of Brain Diseases
Prof. Dr. med. François Berger, Briante Lab-INSERM U 1205, University Grenoble Alpes, Grenoble (F)

10.50  Nano-formulation of Pomegranate Seed Oil
Dr. Ruth Gabizon, Department of Neurology, Hadassah University Hospital, Jerusalem (IL)

11.00  Brain Clinical Informatics – Promise and Barriers Towards Precise Medicine
Dr. Mira Marcus-Kalish, Director, International Research Affairs, Tel Aviv University Ramat Aviv, Tel Aviv (IL)

11.10  Graphene Quantum Dot for Parkinson’s Disease
Prof. Dr. Byung Hee Hong, Professor, Department of Chemistry, Seoul National University, Seoul, Seoul, (KOR)

11.20  Selective Entry of Lipid Vesicles into the Brain Post Intracerebral Haemorrhage Offers Novel Therapeutic Opportunities
Dr. Zahraa Al-Ahmady MSc, FHEA, Senior Lecturer in Pharmacology Pharmacology Department, School of Science and Technology, Nottingham Trent University, Nottingham (UK)

11.30  Talineuren: A Regenerative Nanodrug Against Neurodegeneration
Dr. Camille Peitsch, Scientist, Research & Development, InnoMedica Holding AG, Bern (CH)

11.40  Developing Polymeric Nanoformulation for Neurodegenerative Disorders via Intranasal Delivery
Dr. Julie Tzu-Wen Wang, Senior Research and Teaching Fellow in Nanomedicine, Institute of Pharmaceutical Science King’s College London, London (UK)

11.50  Producing Cell-based Materials for Molecular Diagnosing Rare Brain Degeneration Diseases and, possibly for Unraveling their Mechanisms
Prof. Dr. Giacinto Scopes, F.R.S. Donner Professor of Science, Emeritus @ Princeton; Distinguished Adjunct Prof. of Biology and Physics, Temple University, Philadelphia (USA) and Distinguished Scientist @ Elettra Synchrotron in Trieste (I)

12.00  Questions and Debate

12.15  Lunch

Session 17  3 of 4 Parallel Sessions

Tuesday, Singapore, 10.40 – 12.15

18. Advances in the field of Non-Biological Complex Drug Products (NBCDs) and their Follow-on Versions
About  Non-biological complex drug products (NBCDs) and their follow-on versions poses significant challenges to the scientific community. The family of NBCDs consists of products such as liposomes, glatiramoids, iron carbohydrate complexes and ocular emulsions. While increasing numbers of complex innovative products are entering the market, at the same time regulatory agencies across the globe have approved follow-on versions of the first generation of NBCDs. This session provides an update on the state of affairs in the field of NBCDs. Following good CLINAM practice it concludes with a lively debate.

Chair  Dr. Jon de Vlieger, Coordinator NBCD Working group, Lygature, Utrecht (NL) and
Dr. Scott E. McNeil, Former Director, Nanotechnology Characterization Laboratory, Frederick, MD (USA)
10.40 **Where to go with Nano?**  
*Prof. Daan Crommelin*, Emeritus Professor at the Department of Pharmaceutics, Utrecht University (NL), Adjunct Professor at the Department of Pharmaceutics and Pharmaceutical Chemistry at the University of Utah (USA), Co-founder of Octoplus, Leiden (NL)

10.50 **EC: Towards Science-based Regulations for NBCDs, the International Perspective**  
*Dr. rer. nat. Susanne Bremer-Hoffmann*, European Commission, Directorate General Joint Research Centre, Directorate F - Health, Consumers and Reference Materials, Ispra (I)

11.00 **Sharing Experience in Overcoming Upscaling Challenges for Nanomedicines**  
*Dr. Mark van Eldijk*, Ardena ChemConnection BV, Mariakerke (B)

11.10 **The Road Ahead for mRNA Nano-formulations**  
*Dr. Örn Almarsson*, Ph.D. Head, Delivery Sciences, Moderna Therapeutics, Cambridge, MA (USA)

11.20 **From Manufacturing to Bed: Special Consideration for the Handling of Nanomedicines**  
*Dr. Beat Flühmann*, Global Lead Non-Biological Complex Drugs. Vifor Pharma, Glattbrugg (CH)

11.20 **Complex Generics Containing Nanomaterials**  
*Dr. Wenlei Jiang*, Senior Science Advisor, U.S. Food and Drug Administration, Maryland, FDA (USA)

11.30 **Questions and Debate**

12.15 **Lunch**

**Session 18 4 of 4 Parallel Sessions**

**Tuesday, Hall Rio, 10.40 – 12.15**

**19. Advanced Cell-based Assays and Biosensors for Assessment of Nanomedicine Performance and Safety and Realistic Prediction of in Vivo Responses**

**About**  
Adherent two-dimensional (2D) cell monolayers are indispensable tools in nanomedicine/nanosafety research, but such culture systems do not reflect the situation in vivo, where cells grow and operate within a complex three-dimensional (3D) microenvironment. As a result, 2D cell culture often generates misleading and non-predictive data for in vivo responses. Increasing attention is therefore being placed on scaffold/matrix-based and scaffold-free 3D cultures and other related cell-based technologies (e.g., organ-on-a-chip systems), which closely simulate structural complexity, cell type, cyto-architecture and homeostasis analogous to tissues and organs. However, there are still challenges with engineered 3D cell culture systems, as in limitations with diffusional transport of oxygen and other nutrients as well as culture-dependent altered gene expression that requires addressing. This session examines technological developments of 3D cell culture systems and related advanced cell-based assay systems that can more realistically mimic the in vivo cell responses on nanomedicine challenge and provide more predictable results to in vivo tests.

**Chair**  
*Prof. Dr. Moein Moghimi*, Professor of Pharmaceutics and Nanomedicine, School of Pharmacy, Newcastle University, Translational and Clinical Research Institute, Faculty of Health and Medical Sciences, Newcastle University (UK), and Adjoint Professor, University of Colorado Medical Center, Denver, CO (USA)

10.40 **Assessing Nanomedicine Safety through Real-time Mitochondrial Respiration Profiling and Metabolomics**  
*Prof. Dr. Moein Moghimi*, Professor of Pharmaceutics and Nanomedicine, School of Pharmacy, Newcastle University, Translational and Clinical Research Institute, Faculty of Health and Medical Sciences, Newcastle University (UK), and Adjoint Professor, University of Colorado Medical Center, Denver, CO (USA)

11.00 **Complex 3D Cell Structures on Inorganic Surfaces**  
*Dr. Silke Krol*, Laboratory for personalized medicine, National Institute of Gastroenterology, "S. de Bellis" Research Hospital, Castellana Grotte, Bari (I)

11.20 **Microfluidic Devices for Predicting the in Vivo Performance of Nanomedicines**  
*Dr. Roberto Palomba*, Nanotechnology for Precision Medicine, Laboratory of Nanotechnology for Precision Medicine, Italian Institute of Technology, Genova (I)

11.40 **Questions and Debate**
Tuesday, Congress Foyer, 10.40 -12.15

**Session 19  Foyer Session Small Speeches**

**20. Second Session of Small Speeches on Submitted Posters and University Village Posters 2020**

*About* Poster submitters, researchers and scientists at universities, participating in the University Village 2020 can apply for a small speech of 4 minutes, serving to highlight the research activities in nanotechnology/health. The speeches comprise a maximum of three slides.

- Slide 1: General introduction to the topic’s future and outlook on translation of the work presented in a way that is accessible to the highly interdisciplinary audience.
- Slide 2: Some of the highlights of the submitter’s work and institution’s work.
- Slide 3: The proof, how the work at the university/institute fits into the area of nanomedicine and targeted delivery including showing the outlook on translation of the work.

*Chair* **Prof. Dr. Avi Schroeder, PhD**, Associate Professor of Chemical Engineering Laboratory for Targeted Drug Delivery and Personalized Medicine Technologies, Technion - Israel Institute of Technology, Haifa (IL)

**10.40 Introduction**

*Prof. Dr. Avi Schroeder, PhD*, Associate Professor of Chemical Engineering Laboratory for Targeted Drug Delivery and Personalized Medicine Technologies, Technion - Israel Institute of Technology, Haifa (IL)

**Programme inserted in wallets of Summit**

12.15 Lunch

**Session 20 Satellite 2 PANEL**

Tuesday, Hall Samarkand, 10.40 -12.15

**21. EU-US Nanomedicine Community of Research**

*About* The U.S.-EU Nanomedicine Community of Research (CORs) provides a platform for scientists in the United States and Europe to collaborate, share best practices, and identify key nanomedicine research needs through activities such as conference calls, webinars, joint publications, and an annual in-person meeting. For the second time, a session within the CLINAM-Summits serves as the annual meeting, to discuss the progress and to elaborate and initiate further cooperation actions.

*Chair* **Dr. Sc. nat. Ruth Schmid**, Vice President Marketing, SINTEF Industry, Biotechnology and Nanomedicine, Polymer Particles and Surface Chemistry, Chair of the European Technology Platform on Nanomedicine (ETPN) Trondheim (NO); and **Dr. Anil Patri**, Chair, Nanotechnology Task Force, Director, NCTR-ORA Nanotechnology Core Facility, U.S. Food and Drug Administration (FDA), National Center for Toxicological Research (NCTR), Jefferson, AR (USA)

**Speakers of the Panel**

**10.40**

**Dr. Lisa Friedersdorf**, Director of the National Nanotechnology Coordination Office of the USA (NNCO), Alexandria, VA (USA)

**Dr. Anil Patri**, Chair, Nanotechnology Task Force, Director, NCTR-ORA Nanotechnology Core Facility, U.S. Food and Drug Administration (FDA), National Center for Toxicological Research (NCTR), Jefferson, AR (USA)

**Dr. Sc. nat. Ruth Schmid**, Vice President Marketing, SINTEF Industry, Biotechnology and Nanomedicine, Polymer Particles and Surface Chemistry; Chair of the European Technology Platform on Nanomedicine (ETPN), Trondheim (N)

**Dr. Fanny Caputo**, Research Scientist SINTEF Industry, Biotechnology and Nanomedicine, Mass Spectrometry, Trondheim, (N)
**Dr. Piotr Grodzinski**, Director, NCI Alliance for Nanotechnology in Cancer, National Cancer Institute, Bethesda, Maryland (USA)

**Dr. Elke Anklam**, Principal Advisor to the EC-JRC Director General, Joint Research Center, European Commission, Brussels

12.15 **Tuesday, Hall Mexico, 12.15 – 13.15**

Separate Lunch before Group Meeting for Invited Regulatory Authorities in Session 25

12.15 **Lunch**

**Session 21** 1 of 5 Parallel Sessions

Tuesday, Hall Montreal, 13.15 – 15.45

**22. Pharmaceutical Development and Manufacturing (APV session) 12’ plus 3’ First Questions**

**About** The recent extension of pharmaceutical active types from small synthetic molecules to diverse novel biologics like RNA, bispecific antibodies, gene modified products, cell therapies offers to treat unmet medical needs. Pharmaceutical development, GMP manufacturing and control capabilities have become a major bottleneck towards regulatory approval, marketing and therapeutic application to unmet medical needs. This session in collaboration with The International Association for Pharmaceutical Technology (APV) will feature the industrial perspective on pharmaceutical development and manufacturing of nanomedicine and new molecular modalities and its drug delivery applications.

**Chair**  
**Dr. Bernd Riebesehl**, Principal Fellow, Novartis Pharma AG, Basel (CH)

13.15 **Large Scale GMP Production of Liposomes**  
**PD Dr. Peter van Hoogevest**, Head Scientific Department, Lipoid GmbH, Ludwigshafen (D)

13.30 **Delivery of New Modalities, Recent Technology Trends and Solutions**  
**Dr. Wouter Tonnis**, Pharmaceutical Technology Scout, Bayer AG, Berlin (D)

13.45 **Manufacturing Considerations for Bispecific and Multispecific Antibodies**  
**Dr. Mark Chiu, PhD**, Associate Director, Process Analytical Support of Large Molecule Analytical Development at Janssen Research & Development, Janssen Research & Development, Raritan, NJ (USA)

14.00 **Guiding mRNA Formulations from Laboratory into Clinical Trials. Lessons learned from Development and Optimization of Liposomal Formulations.**  
**Dr. Andreas Wagner**, Head Liposome Technology, Polymun Scientific, Immunbiologische Forschung GmbH, Klosterneuburg (A)

14.15 **Gene Therapy Manufacture**  
**Dr. Magdalena Obarzanek-Fojt**, Principal Scientist Pharmaceutical Development, Novartis (CH)

14.30 **Rapid Development and Scalable Manufacture of Nanomedicine Based Gene Therapies**  
**Dr. James Taylor, CEO & Co-Founder**, Precision NanoSystems, Vancouver, BC (CND)

14.45 **Development of a Cell Therapy with Gene-modified Primary Cells**  
**Karin Abitorabi**, Novartis Senior Fellow Cell and Gene Therapy, Novartis Pharma AG, Basel (CH)

15.05 **Driving Large Scale CAR-T Cell Manufacturing in Reality**  
**Dr. Alexander Huber**, Global CMC Head, Cell & Gene Therapy Unit, Novartis Pharma AG, Basel (CH)

15.20 **Further Questions and Debate**

15.45 **Break**
**Session 22  2 of 5 Parallel Sessions**

Tuesday, Hall Sydney 13.15 – 15.45

**23. Immune Modulation by Nanomedicines: New Therapeutic Approaches, Adverse Phenomena and Safety Testing**

*About*  
For therapeutic nanoparticles, developed for human use there is an absolute need to withstand critical toxicological analysis. The value of any developed drug depends on the delivery concept and the exclusion of potential toxicity. This session will showcase the state of the art in toxicological investigations.

*Chair*  
**Dr. Marina A. Dobrovolskaia, Ph.D., MBA, PMP**, Senior Principal Scientist, Head, Immunology Section Nanotechnology Characterization Lab, Leidos Biomedical Research Inc., Frederick National Laboratory for Cancer Research Frederick MD (USA) and **Prof. Dr. med. János Szebeni**, Head of the Nanomedicine Research and Education Center, Semmelweis University, Budapest (H)

13.15  
**Infusion Reactions as Critical Safety Barriers: Models, Mechanisms, Future Directions**  
**Prof. Dr. med. János Szebeni**, Head of the Nanomedicine Research and Education Center, Semmelweis University, Budapest (H)

13.25  
**A Novel Antigen Delivery System: Antigen-selective Delivery to Splenic Marginal Zone B Cells via Repeated Injections of PEGylated Liposomes**  
**Prof. Dr. Taro Shimizu and Prof. Dr. Tatsuhiro Ishida**, Department of Pharmacokinetics and Biopharmaceutics, Institute of Biomedical Sciences, Tokushima University, Tokushima (J)

13.35  
**Splenic Uptake of Ganglioside-containing Liposomes is Mediated by CD169+ Mmacrophages and Stimulates Strong Immune Responses**  
**Prof. Dr. Joke MM den Haan**, Associate Professor, Department of Molecular Cell Biology and Immunology (MCBI), Amsterdam UMC, Amsterdam (NL)

13.45  
**Clinical Case Study: Liposomal Methyl Prednisolone: How Preclinical Studies Helped the Translation**  
**Dr. Yaelle Bavli-Felsen**, Membrane and Liposome Research Lab, Hebrew University – Hadassa Medical School, Jerusalem (IL)

13.55  
**Emerging Biomarkers of Nanoparticle Immunotoxicity: an Outlook in Future**  
**Dr. Marina A. Dobrovolskaia, Ph.D., MBA, PMP**, Senior Principal Scientist, Head, Immunology Section Nanotechnology Characterization Lab, Leidos Biomedical Research Inc., Frederick National Laboratory for Cancer Research Frederick MD (USA)

14.05  
**Case study: Pre-existing Anti-PEG Antibodies: Safety Concerns and Challenges with Detection**  
**Prof. Dr. Steve Roffler**, Research Fellow. Institute of Biomedical Sciences Academia Sinica, Adjunct Associate Professor, National Yang Ming University, Taipei (TWN)

14.15  
**Role of Anti-PEG IgM in Infusion Reactions in Pigs**  
**Dr. Gergely Tibor Kozma, MSc, PhD** Senior Research Fellow at the Nanomedicine Research and Education Center at Semmelweis University, Budapest (H)

14.25  
**Safety Assessment of Sarah Nanotechnology in Swine Models**  
**Dr. Sarah Kraus, Ph.D., M.B.A**, Head of Biology Department, New Phase Ltd., Petah Tikva (IL)

14.35  
**Immunomodulation with Nucleic Acids Nanoparticles**  
**Prof Dr. Kirill Afonin**, Vice President of The International Society of RNA Nanotechnology and Nanomedicine (ISRNN), The University of North Carolina at Charlotte (UNC), Department of Chemistry, Charlotte, NC (USA)

14.45  
**The Effect of Heparin on the Cellular Uptake of Nanocarriers**  
**Adelina Haller, MSc., PhD Candidate, and Dr. Carole Champanhac**, Post-Doctoral Researcher, Max Planck Institute for Polymer Research, University Medical Centre Mainz, Mainz (D)

15.00  
**Panel with all Participants including Questions and Debate**

15.45  
**Break**
Session 23  3 of 5 Parallel Sessions

Tuesday, Hall Singapore, 13.15 – 15.45


About

In the last years, many different systems and strategies have been developed for drug targeting to pathological sites, as well as for visualizing and quantifying important physiological processes. Seen as ultimate goal to come to clinical outcomes the production and application of nanoparticles in health bears challenges with respect to assessing efficacy, quality and safety. Machine learning and artificial intelligence are in development and could accelerate the lifecycle and the scientific guidance for nanomedical products. A drug delivery system must execute multiple tasks, involving the highest degree of smartness. In the last years, many different systems and strategies have been developed for drug targeting to pathological sites, as well as for visualizing and quantifying important physiological processes.

Chair  Dr. Marieluise Wippermann, CEO, TecoMedical Ltd, Sissach (CH)

13.15  The Digital Twin, an Essential Tool in Personalizing Therapy and Prevention
Prof. Dr. Hans Lehrach, Director, Head, Department of Vertebrate Genomics, Max Planck Institute for Molecular Genetics, Berlin (D)

13.30  Barcoded Cancer Nanomedicines and Nano Immunotherapies Perform Differently in the Primary Tumor and in the Metastasis
Prof. Dr. Avi Schroeder, PhD, Associate Professor of Chemical Engineering Laboratory for Targeted Drug Delivery and Personalized Medicine Technologies, Technion - Israel Institute of Technology, Haifa (IL)

13.45  PEG-shedding and Coronation: Two Key Events Unlocking Cellular Uptake and mRNA-delivery Efficiency of LNPs
Dr. Audrey Gallud, Senior Researcher in cell biology and Nanotechnology, Department of Biology and Biological Engineering, Division of Chemical Biology, Chalmers University of Technology, Göteborg (S)

14.00  Nanoparticle Design Strategies for Effective Liver Cancer Immunotherapy
Prof. Dr. Gerrit Borchard, Translational research Centre in Oncohaematology, Biopharmaceutical Science Group Leader, CRTOH associate member, Geneva-Lausanne School pf Pharmacy (EPGL), President, Swiss Academy of Pharmaceutical Sciences (SAPhS). Geneva (CH)

14.15  Manipulating Cells’ Function with Novel Lipid Nanoparticles: from RNA Therapeutics to Genome Editing
Prof. Dr. Dan Peer, Chair, Tel Aviv University Cancer Biology Research Center, Director, Center for Translational Medicine, Director, Laboratory of Precision NanoMedicine, Dept. of Cell Research & Immunology, and Dept. of Materials Science & Engineering, Tel Aviv University, Tel-Aviv, Managing Director, SPARK, Tel Aviv (IL)

14.30  Mini-nano Delivery System for Drugs and Check Point Inhibitors for Blocking Growth of HER2+ Breast Cancer
Prof. Dr. Eggehard Holler, Professor of Neurosurgery, Director of Drug Synthesis, Nanomedicine Research Center, Department of Neurosurgery Cedars-Sinai Medical Center Los Angeles, CA (USA)

14.45  Novel Targeting Strategies to Enhance Tumor Drug Penetration in Pancreatic Cancer
Prof. Dr. Jai Prakash, Ph.D., Head of Targeted Therapeutics and Nanomedicine Department of Biomaterials, Science and Technology, University of Twente, Enschede (NL)

15.00  Platformability of RNA Drug Delivery; the Case of EXPERT, Bringing Immune Activating mRNA to the Clinic
Dr. Sven Even Borgos, Senior Research Scientist, SINTEF Materials and Chemistry, Department of Biotechnology and Nanomedicine, Trondheim (N)

15.15  Impact of Immunoprobe Design on Antigen Binding for Diagnostics Applications
Dr. Delyan Hristov, Researcher, NanoBiointerfaces Lab, School of Engineering, University of Massachusetts Boston, Boston (USA)

15.30  Further Questions and Debate

15.45  Break
**Session 24** 4 of 5 Parallel Sessions

Tuesday, Hall Rio, 13.15 – 15.45

25. **Clinical Molecular and Nuclear Imaging in Nanomedicine and Precision Medicine**

*About* Imaging plays a critical role in nanomedicine and precision medicine and includes screening, early diagnosis, guiding treatment, getting response to therapy, and assessing likelihood of disease recurrence. In this session different aspects of imaging will be elucidated with focus on the latest achievements and developments in the field.

*Chair* Prof. Dr. med. Christoph Alexiou, University Hospital Erlangen (D)

13.15 **Precision Nanomedicine Using Iron Oxide Nanoparticles and Robotics**
Prof. Dr. med. Christoph Alexiou, University Hospital Erlangen (D)

13.30 **Graphene Quantum dot as MRI T1 agent**
Prof. Dr. Yun-Sang Lee, Research Professor, Nuclear Medicine, SNUCM Nuclear Medicine and SNUH Nuclear Medicine, Seoul (KOR)

13.45 **Biochemical Functionality of Magnetic Particles as Nanosensors: How Far-away are we to Implement them into Clinical Practice?**
Prof. Dr. med. Beatrice Beck Schimmer, Vice President Medicine, Institute for Anesthesiology, University Hospital Zürich, Zürich (CH)

14.00 **Personalized Medicine for Renal Dysfunction using AGulX Nanoparticles**
Dr. Nathalie Mignet, Head of the UTCBS lab, Chemical and Biological Technologies for Health, University Paris Descartes INSERM U1267, CNRS UMR8258, Faculty of Pharmacy, Paris (F)

14.15 **Nanoplatforms for the Design of Engineered Biopolymer Nanostructures for Therapy and Multimodal Imaging Applications**
Dr. Enza Torino, PhD, University of Naples Federico II, Department of Chemical Materials and Production Engineering (DICMaPI, Napoli (I)

14.30 **Polymeric Nanoconjugates for MRI Brain Tumor Differential Imaging and Treatment**
Dr. med. Vladimir Ljubimov, MS, Neurosurgery Resident, Nanomedicine Research Center, Departments of Neurosurgery, and Biomedical Sciences, Cedars-Sinai Medical Center, Los Angeles, CA (USA)

14.45 Further Speaker

15.00 Further Speaker

15.15 Questions and Debate

15.45 Break

**Session 25** 5 of 5 Parallel Sessions

Tuesday Hall Osaka, 13.15 – 15.45

26. **The International Pharmaceutical Regulators Programme (IPRP)**
This Session is on Invitation only and the Related Programme will be sent to the Concerned Regulatory Authorities' members.

*Chair* Dr. Michael Johnston, Research Scientist, Principal Investigator, Health Canada, Ottawa (CND)

13.15 **Internal Session for Invited Members**

15.45 Break
27. The Regulatory Authorities’ Voice 2020

About
At every CLINAM Summit, the international regulatory authorities make statements on the global cooperation to come to an optimal framework for regulatory matters in nanomedicine and precision medicine. The session helps to create trust and mutual understanding between all stakeholders in nanomedicine and the regulatory authorities. This lowers the barriers to contact the regulatory authorities at an early stage of projects.

Chair
Maria Pilar Aguar Fernandez, Head of Unit E.3 – Health Innovations, European Commission, DG Research & Innovation, Brussels (B)

16.15
List of Members of Session to be finalized by April 2020

Europa
Dr. rer. nat. Susanne Bremer-Hoffmann, European Commission, Directorate General Joint Research Centre, Directorate F - Health, Consumers and Reference Materials, Ispra (I)
Dr. Falk Ehmann, European Medicines Agency, (EMA) Amsterdam (NL)
Robert E. Geertsma, M.Sc., Senior Scientist, Centre for Health Protection RIVM - National Institute for Public Health and the Environment RIVM, Bilthoven (NL)

Canada
Dr. Michael Johnston, Research Scientist, Principal Investigator, Health Canada, Ottawa (CND)

China
Prof. Dr. Chunying Chen, Professor, Expert in the regulatory matters, The National Center for Nanoscience and Technology, (NCNST), Chinese Academy of Sciences, Beijing, (CN)

USA
Dr. Katherine Tyner, PhD, Associate Director for Science (acting), Office of Pharmaceutical Quality CDER/FDA, Springfield, IL (USA)
Dr. Anil Patri, Chair, Nanotechnology Task Force, Director, NCTR-ORA Nanotechnology Core Facility, U.S. Food and Drug Administration (FDA), National Center for Toxicological Research (NCTR), Jefferson, AR (USA)
Dr. med. Frank F. Weichold, PhD, Director of Critical Path and Regulatory Science Initiatives, Office of Regulatory Science & Innovation (ORSI) and Office of the Chief Scientist/Office of the Commissioner Food and Drug Administration (FDA), Silver Spring, MD (USA)
Dr. Wenlei Jiang, Senior Science Advisor, U.S. Food and Drug Administration, Maryland (FDA)

Japan
NN, National Institute of Health Sciences, Kawasaki (JPN)

India
NN

Africa
Prof. Dr. Hulda Shaidi Swai, Director Africa Center of Excellence CREATE, School of Life Science and Bio-engineering, The Nelson Mandela African Institution of Science and Technology (NM-AIST)Extraordinary Professor at University of Pretoria, School of Life Science and Bio-engineering, Arusha (TZ)

Australia
Dr. Anne Field, Senior Toxicologist, Toxicology Section Scientific Evaluation Branch, Therapeutic Goods Administration Department of Health Woden Act (AUS)

Switzerland
Roman Leist, Scientific Expert, Swissmedic, Bern (CH)
Chair  Prof. Dr. Joy Wolfram, Assistant Professor and Director, Nanomedicine and Extracellular Vesicles Laboratory, Mayo Clinic, Jacksonville, Florida (US)

17.50  Hospital Bacterial Infection Prevention
Prof. Dr. Yechezkel Barenholz, Hebrew University, Hadassah Medical School, Jerusalem (IL)

18.15  Questions and Debate

Session 28   Plenary Session

Tuesday, Hall Montreal, – 18.25 Tuesday – 18.55

29. The Scope on Artificial Intelligence in the Medical Field

About  Today, “Artificial Intelligence” mostly means machine learning. Can it learn from “real-world data” for the benefit of health care and medical research? AI has proved useful in image diagnosis and the processing of clinical language. Intelligent systems predict future events and support clinical decisions. AI can also improve the interface between clinicians and computers. Yet there are limitations: large amounts of training data are needed, but shared data are difficult to construct due to patient privacy. Clinicians want to understand the rationale behind AI-based recommendations - they don't want black boxes. Systems are often not portable: AI trained in one hospital gets in trouble in a place with different data infrastructures and workflows. AI is often expected to revolutionize research: real-world data analytics is valuable for generating scientific hypotheses, but AI cannot substitute prospective studies.

Chair  Dr. med. h.c. Beat Löffler, MA, CEO of the European Foundation for Clinical Nanomedicine, Basel (CH)

18.25  Advantages and Limits of Artificial Intelligence
Prof. Dr. med. Stefan Schulz, Institute for Medical Informatics, Statistics and Documentation, Medical University of Graz, Graz (A)

18.45  Questions and Debate

Session 29   Plenary Session

Tuesday, Congress Foyer, 18.55 – 19.35

18.55  30. Poster Viewing Sessions and Individual Discussions and Explanations

19.30  End of Day 2

19.45  Speakers leaving in front of the revolving doors of Congress Center and walk to Hotel Merian-Spitz

20.00  Speakers’ Dinner on the Terraces of Merian Spitz

Wednesday, October 28, 2020

Session 30   Plenary Session

Wednesday, Hall Montreal, 08.30 – 10.40

31. TheraNoStic Concepts in Cancer Immunotherapy (17’ & 3’ Questions)

About  Immunotherapy is revolutionizing the treatment of cancer. It can induce unprecedented responses in advanced-stage patients, including complete cures, but it unfortunately only works in a relatively small portion of patients. In this session, diagnostic, therapeutic and theraNoStic concepts will be discussed that assist in unraveling the interactions between (nano-) immunotherapeutic, cancer cells and immune cells in individual
patients, in order to help stratify responders from non-responders, and to thereby aid in improving the outcomes of cancer immunotherapy.

Chair  Prof. Dr. Dr. Twan Lammers, Institute for Experimental Molecular Imaging, RWTH Aachen University (D)

08.30  **Introduction: Nanomedicine and Theranostics in the Era of Immunotherapy**
Prof. Dr. Dr. Twan Lammers, Department of Nanomedicine and Theranostics, Institute for Experimental Molecular Imaging, University Hospital RWTH Aachen (D)

08.50  **Redefining Cancer Immunotherapies for Patients**
Prof. Dr Jérôme Galon, Research Director, Chief French National Institute of the Health and Medical Research (INSERM) Laboratory of Integrative Cancer Immunology, Cordeliers Research Center, Paris (F)

09.10  **Antibody-cytokine Fusion Proteins for the Treatment of cancer and of chronic inflammation**
Prof. Dr. Dario Neri, Department of Chemistry and Applied Biosciences, Swiss Federal Institute of Technology (ETH Zürich) ETH Hoenggerberg, Zürich (CH)

09.30  **Molecular Imaging and Artificial Intelligence in Cancer Immunotherapy**
Prof. Dr. Bernd Pichler, Director and Chair Department of Preclinical Imaging and Radiopharmacy University Hospital Tübingen, Tübingen (D)

09.50  **Therapeutic Targeting of Trained Immunity**
Prof. Dr. Willem Mulder, Professor of Radiology at Icahn School of Medicine at Mount Sinai, NY (USA), Professor of Radiology, ISMMS Professor of Cardiovascular Nanomedicine, Director, Nanomedicine Program, AMC, Amsterdam (NL), Professor of Precision Medicine at the department of Biomedical Engineering, Technology University of Eindhoven (NL)

10.10  **Further Questions and Debate**

10.40  **Break**

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**Session 31  Plenary Session**

Wednesday, Hall Montreal, 11.10 – 12.00

**32. Pancreatic Cancer seen by a Healthy Patient**

About Lora Kelly is a 6 year pancreatic cancer survivor remaining in treatment. She runs a monthly support group for pancreatic cancer patients and their caregivers. Lora also formed and chairs her state’s chapter of the National Pancreas Foundation (NPF) to educate and fundraise for research respective to pancreatic cancer. Lora shares difficult truths about her cancer journey to help other patients and to inspire scientists to develop better therapies and find their way to a cure. Lora has spoken for various organizations such as the World Molecular Imaging Congress, Johns Hopkins, NPF, Let’s Win, and Relay for Life, and the Controlled Release Society.

Chair  Prof. Dr. Dr. Twan Lammers, Institute for Experimental Molecular Imaging, RWTH Aachen University (D)

11.10  **Cancer Journey; A Patient’s Perspective**
Lora Kelly, Chapter Chair of the Central PA Chapter of the National Pancreas Foundation (NPF) and Director of Clinical Education for HACC, Bethesda, MD (USA)

11.45  **Questions and Debate**

12.00  **Lunch  (Handing out Poster Awards)**

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**Session 32  1 of 4 Parallel Sessions**

Wednesday, Hall Montreal, 13.00 – 14.50

**33. Extracellular Vesicles in Nanomedicine – Natural and Synthetic Biopolymer Exosomes**

About Vesicles contain various biomolecules and mediate short- and long-distance intercellular communication in the body. Recent work has shown that extracellular vehicles (EVs) can be engineered to display therapeutic properties. Furthermore, synthetic nanocarrier made of polymerized natural substances (pNS) can also deliver multiple types of cargo while having intrinsic therapeutic functions. This session will cover new research in EVs
and pNS with respect to their applications in nanomedicine. Exosomes and other EVs have recently emerged as promising biological nanoparticles for drug delivery and diagnostics. Preclinical findings have already resulted in clinical trials with EVs applications and pNS are being developed for the treatment of autoimmune and inflammatory diseases. Nevertheless, many challenges including large-scale clinical-grade manufacturing, characterization, potential immunogenicity, and storage need to be overcome in order to exploit the full potential of these nanomedicines for therapy and diagnosis. This session will identify major hurdles and promising areas in this emerging nanomedicine field.

Chair  Prof. Dr. med. Raymond Schiffelers, Professor of Nanomedicine, Clinical Chemistry and Haematology, University Medical Center Utrecht UMCU, Utrecht (NL)

13.00  Functional RNA Delivery with Extracellular Vesicles
Prof. Dr. med. Raymond Schiffelers, Professor of Nanomedicine, Clinical Chemistry and Haematology, University Medical Center Utrecht UMCU, Utrecht (NL)

13.10  Evaluation of Bovine Milk Exosomes as Nano-medicinal Delivery Vehicle for Locked Nucleic Acid Antisense Oligonucleotides (LNA-ASO)"
Dr. Michael Keller, Senior Principal Scientist, Pre-Clinical CMC Pharma Research and Early Development Roche Innovation Center Basel, Basel (CH)

13.20  Extracellular Vesicles Increase the Efficacy of Enzyme Replacement Therapy in Lysosomal Storage Disorders
Dr. Ibane Abasolo, Functional Validation and Preclinical Research, CIBBIM-Nanomedicine Hospital Universitari Vall d’Hebron, Vall d’Hebron Institut de Recerca (VHIR), Barcelona (E)

13.30  Brain Theranostics with Extracellular Vesicles
Prof. Dr. med. Dong Soo Lee, PhD, Chairman, Department of Nuclear Medicine, Seoul National University Seoul (ROK)

13.40  Exosomes: as Dual Pancreatic Cancer Therapy and Diagnosis
Prof. Dr. Khuloud T. Al-Jamal, Chair of Drug Delivery & Nanomedicine, King’s College London (UK)

13.50  Mechanisms of Accumulation of Liposomes in the Skin
Prof. Dr. Dmitri Simberg, Assistant Professor, Skaggs School of Pharmacy and Pharmaceutical Sciences, Colorado Center for Nanomedicine and Nanosafety (CCNN), University of ColoradoDenver, CO (USA)

14.00  Targeting Metastatic Prostate Cancer via PSMA-targeted Exosome-mimetics
Dr. Wafa Al-Jamal, Reader in Nanomedicine and Drug Delivery, Prostate Cancer Research Fellow, School of Pharmacy, Belfast (UK)

14.10  Orally Admistered, Polymeric Bile Acid Nanoparticles to Restore Glucose Control and Induce Immune Tolerance in Early and Advance Diabetes
Dr. José M Carballido, Executive Director, Translational Medicine / Preclinical Safety Novartis Institutes for Biomedical Research, Basel (CH) and Dr. Gerald Rea, CEO, Toralgen Inc., Madison, IN (USA)

14.30  Questions and Debate

14.50  Break

Session 33  2 of 4 Parallel Sessions

Wednesday, Hall Sydney, 13.00 – 14.50

34. Nanomedicine in and against Infection and Inflammation (12’ plus 3’ Q&D)

About  The efforts in nanomedicine research have provided scientists with nanocarriers designed to match the specific requirements for the treatment of different inflammatory and infectious disease conditions. The advances made with such nanocarrier technologies in targeted nanomedicine and controlled release will be highlighted.

Chair  Prof. Dr. Gert Storm, Institute for Pharmaceutical Sciences, Utrecht University, (NL) University of Twente (NL) and Department of Surgery, National University Hospital NUS, Singapore (SGP)

13.00  Epigenetic-profiling of Macrophages During Inflammation
Dr. Nikhil Jain, Group Leader, Laboratory of Applied Mechanobiology, ETH Zürich (CH)

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<td>Anti-inflammatory Biogenic Adipose Nanoparticles for Combination Therapy</td>
<td>Prof. Dr. Joy Wolfram, Assistant Professor and Director, Nanomedicine and Extracellular Vesicles Laboratory, Mayo Clinic, Jacksonville, Florida (USA)</td>
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<td>13.30</td>
<td>Nanocrystal – Polymer Particles for a Sustained Treatment of Osteoarthritis</td>
<td>Dr. Olivier Jordan, Senior lecturer, Institute of Pharmaceutical Sciences of Western Switzerland University of Geneva, Geneva (CH)</td>
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<td>13.45</td>
<td>Application of Silver Nanoparticles in Burn Wound Healing – taking Laboratory Findings to Clinical Use</td>
<td>Prof. Dr. Kenneth Kak-Yuen Wong, MB, ChB, Ph.D, FRCSEd, FCSHK, FHKAM, Clinical Associate Professor, Chief of the Division of Pediatric Surgery, The University of Hong Kong (HKG)</td>
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<td>14.00</td>
<td>How Physical Factors Tune the Pro-inflammatory Response of Macrophages</td>
<td>Prof. Dr. Dr. h.c. Viola Vogel, Head of the Laboratory of Applied Mechanobiology, ETH Zürich (CH)</td>
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<td>14.15</td>
<td>A Nanotechnology Platform for Tympanic Membrane Regeneration</td>
<td>Prof. Dr. Carlos Mota, Assistant Professor, MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht University, Maastricht (B)</td>
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**Session 34 3 of 4 Parallel Sessions**

Wednesday, Hall Singapore 13.00 – 13.45

35. Nano- and Precision-Medicine in Rare and Neglected Diseases

About Parasites are the causative agents of an overabundance of human diseases. In the absence of effective vaccines, their sustainable control largely depends on chemotherapy but is jeopardized by the evolution of drug resistance. While this threat is particularly acute for malaria, it also affects other parasites and the vectors. Nanoparticles offer hope to circumvent drug resistance, for instance by Improving drug delivery to the target. This session will discuss how new successful medicines can help to grow the pipeline of candidates for rare and neglected diseases.

Chair Prof. Dr. Pascal Mäser, Head, Parasite Chemotherapy, Swiss Tropical & Public Health Institute, Basel (CH)

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<td>13.00</td>
<td>Nanocarriers targeted to the mosquito stages of malaria: curing the insect has its advantages</td>
<td>Prof. Dr. Xavier Fernández Busquets, PhD, Nanomalaria Joint Unit, Associate, Institute for Bioengineering of Catalonia, Barcelona, Member of the Barcelona Centre for International Health Research, Barcelona (E)</td>
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<td>13.10</td>
<td>Nanoformulation to Improve Parasite Chemotherapy: Research Examples from Trypanosoma and Plasmodium spp.</td>
<td>Prof. Dr. Pascal Mäser, Head, Parasite Chemotherapy, Swiss Tropical &amp; Public Health Institute, Basel (CH)</td>
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<td>13.20</td>
<td>Development and Evaluation of Antimalarial Properties of Self Nano-Emulsifying Drug Delivery Systems Containing Ethanol Leaf Extracts of Azadirachta Indica</td>
<td>Prof. Dr. Anthony A. Attama, Drug Delivery and Nanomedicines Research Group, Department of Pharmaceutics and Pharm. Microbiology, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka, Enugu State (NGA)</td>
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<td>13.30</td>
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**Session 35 Continuation 3 of 4 Parallel Sessions**

Wednesday, Hall Singapore 13.45 – 14.50

36. Prevention; Safety and Risk Management for Nanomedical Drugs and Devices

About The application of nanotechnologies in healthcare holds groundbreaking potential for innovation but Simultaneously bears many challenges with respect to assessing efficacy, quality and safety.
37. Nanomedicine Characterization – Global State of the Art

About Nanotechnology for medical purposes has been termed nanomedicine. Its definition is related to the use of nanomaterials for diagnosis, monitoring, control, prevention and therapy of diseases. In the last decade the definition of nanomaterials has been controversial and we have seen a manifold of attempts to classify the different types of nanotechnologies in the medical space. We look in this session experienced experts show the present pathways to success with different materials and clinical applications.

Chair Dr. Scott E. McNeil, Former Director, Nanotechnology Characterization Laboratory, Frederick, MD (USA)

13.00 Worldwide Development and Characterization of Nanomaterials / Nanomedicines
Dr. Scott E. McNeil, Former Director, Nanotechnology Characterization Laboratory, Frederick, MD (USA)

13.10 European Nanomedicine Characterization Laboratory – How to Continue and Lessons Learned
Dr. Sc. nat. Ruth Schmid, Vice President Marketing, SINTEF Industry, Biotechnology and Nanomedicine, Polymer Particles and Surface Chemistry; Chair of the European Technology Platform on Nanomedicine (ETPN), Trondheim (N)

13.20 Safety by Design Concept Applied to the Use of Polymeric Nanobiomaterials for Drug Delivery
Dr. Peter Wick, Head Particles-Biology Interactions, EMPA - Swiss Federal Laboratories for Materials Science and Technology, St. Gallen (CH), Lecturer ETH Zürich (CH)

13.30 Determining what really counts: Modeling and Measuring Nanoparticle Number Concentrations
Dr. Matthias Rösslein, Senior Scientist, EMPA Swiss Federal Laboratories for Materials Science and Technology, St. Gallen (CH)

13.40 Transparency, Reproducibility and Translation of Nanomedicine! Tackling the Complexity
Prof. Dr. Adriele Prina-Mello, PhD, Ussher Assistant Professor/LBCAM Director Trinity Translational Medicine Institute (TTMI)/Department of Clinical Medicine, School of Medicine and AMBER/CRANN, Trinity College Dublin, University of Dublin (IRL)

13.50 Development of Nanomedicine Reference Materials for Protein Nanoparticles and Liposomes.
Dr. Michael Johnston, PhD, Research Scientist, Centre for Biologics Evaluation and Genetic Therapies Directorate, Health Canada, Ottawa (CND)

14.00 From SOPs to Standards for Nanomedicine
Dr. Luigi Calzolai, PhD, Project Leader, Joint Research Center of the European Commission, Ispra (I)
### Dynamic Light Scattering (DLS) Adapted for the Anisotropic Nanoparticles
**Dr. David Jacob**, CTO, Cordouan Technologies, Pessac (F)

### Confidence in Nanomedicine Engineering and Development: Correct Measurement Required
**Hans van der Voorn**, BE (Hons), CEO, Izon Science Ltd, Christchurch (NZL)

### Questions and Debate

### Break

### Session 37 Satellite 3

**Wednesday, Hall Samarkand 13.00 – 14.50**

#### 38. UNESCO / CHAIR Session - Ethics, Capacity Building, Medical Nanomaterials Knowledge Management and Regulatory Matters

**About**
The fourth technological revolution started in the last decade and since three years has a huge acceleration that will fundamentally change our lives. In healthcare we have new forms of drug discovery and biomedical research. The technological equipment for the patients is already using artificial intelligence and digitalization as part of personalized medicine. However in this race towards better health care and improved methods in medicine still many patients do not receive the best care possible, either because research to support clinical decision making with high-quality evidence is lacking or because evidence-based practices are not yet routinely implemented but in stage of development. Developments always include risks, regulatory safety aspects, capacity building aspects and ethical concerns. The UNESCO-Chair on Materials Science and Engineering of the University of Strasbourg (F), the U.S. Food and Drug Administration (US) and the European Materials Research Society (F) jointly build an interdisciplinary team of speakers. They will highlight the ethical, educational and regulatory concerns and debate how the future training of the users shall be and the interesting question, whether the future role of clinicians will change.

**Chair**
**Dr. Anil Patri**, Chair, Nanotechnology Task Force, Director, NCTR-ORA Nanotechnology Core Facility, U.S. Food and Drug Administration (FDA), National Center for Toxicological Research (NCTR), Jefferson, AR (USA)

### 13.00 Personalized Patient-centered Health Care in the Era of Digitalization: Challenges for Physicians
**Prof. Dr. med. Dr. phil. Nikola Biller-Andorno**, Director of the Institute of Biomedical Ethics and History of Medicine, Center for Medical Humanities, University of Zürich, Zürich (CH)

### 13.15 Nanomaterials in Medicine
**Prof. Dr. Bert Müller**, Thomas Straumann Chair- for Materials Science in Medicine, Allschwil (CH)

### 13.30 Open Educational Resources for Bridging Gaps between High School – University – Industry
**Jack Barokas**, Head of Digital Media team and Digital Media Coordinator of International Projects at Tel Aviv University, Tel Aviv (IL)

### 13.45 Regulatory Matters in Nano- and Precision Medicine
**Dr. Anil Patri**, Chair, Nanotechnology Task Force, Director, NCTR-ORA Nanotechnology Core Facility, U.S. Food and Drug Administration (FDA), National Center for Toxicological Research (NCTR), Jefferson, AR (USA)

### 14.00 Knowledge Management and Health Data Standardization Efforts at FDA to Enhance the Utility and Value of Real World Evidence for Public Health.
**Dr. med. Frank F. Weichold, PhD**, Director of Critical Path and Regulatory Science Initiatives, Office of Regulatory Science & Innovation (ORSI) and Office of the Chief Scientist/Office of the Commissioner Food and Drug Administration (FDA), Silver Spring, MD (USA)

### 14.15 Capacity Building and Management for Clinical Practice
**Prof. Dr. Frances Richmond, PhD**, Professor and Chair, Department of Regulatory and Quality Sciences, Member of the International Center for Regulatory Science, Director of the Regulatory Science Program, USC School of Pharmacy, University of Southern California, Los Angeles, CA (USA)
**Session 38** 2 of 4 Parallel Sessions

Wednesday, Hall Montreal, 15.20 – 16.45

**39. Nanoparticles and the Immune System**

*About* Nanoparticle carriers allow to change the biodistribution of their cargo, making it possible to target specific cells and tissues, as well as the immune system or to exclude others. This opens the possibility to steer a complex immune response by targeting key players and to induce an immunological treatment of cancer, to enhance antiviral vaccination or reduce unwanted autoimmune and allergic reactions. For this nanocarriers allow a co-delivery of active compounds further modifying the response.

*Chair* Prof. Dr. med. Volker Mailänder, Center for Translational Nanomedicine, University Medicine of the Johannes-Gutenberg University Mainz (D) and Prof. Dr. med. Stephan Grabbe, Director of the Department of Dermatology, Medical Center & Polyclinic, Speaker of the Research Center for Immunotherapy, Mainz (D)

15.20 **Complement Modulation of Nanomedicine Performance in Health and Disease**

Prof. Dr. Moein Moghimi, Professor of Pharmaceutics and Nanomedicine, School of Pharmacy, Newcastle University, Translational and Clinical Research Institute, Faculty of Health and Medical Sciences, Newcastle University (UK), and Adjoint Professor, University of Colorado Medical Center, Denver, CO (USA)

15.35 **Role of the Protein Corona in Nanoparticle Uptake by Immune Cells**

Prof. Dr. med. Volker Mailänder, Center for Translational Nanomedicine, University Medicine of the Johannes-Gutenberg University Mainz (D)

15.50 **Modulation of Macrophage Polarization in the Tumor Microenvironment by Nanoparticles**

Prof. Dr. rer. nat. Tobias Bopp, Professor for Molecular Immunology, Institute for Immunology, Johannes Gutenberg University Mainz (D)

16.05 **Polymeric Nanoformulations to Promote Immunotherapy Responses**

Dr. Lutz Nuhn, Junior Group Leader, Department of Prof. Tanja Weil, Max-Planck-Institute for Polymer Research (MPIP), Mainz (D)

16.20 **The Effect of Glioblastoma Microenvironment on Local Immune System: FDA Preparation of Clinically Suitable Nanobioconjugates**

Prof. Dr. med. Julia Y. Ljubimova, Ph.D., Professor of Neurosurgery and Biomedical Sciences, Director of Nanomedicine Research Center, Department of Neurosurgery Oncology Translational Program, Samuel Oschin Comprehensive Cancer Center CEDARS-SINAI MEDICAL CENTER, Los Angeles, CA (USA)

16.35 **Questions and Debate**

16.45 Short break for going to Plenary Hall

**Session 39** 2 of 4 Parallel Sessions

Wednesday, Hall Sydney, 15.20 – 16.45

**40. Atherosclerosis Nanomedicine** (13’ plus 2’ for questions)

*About* Nanomedicines hold considerable potential in the prevention, diagnosis, and treatment of various ailments including atherosclerosis. Fewer side effects, amenable physicochemical properties and multi-potential application of such nano-systems are recognized through various investigations. Therefore, it is strongly believed that with targeted drug delivery to atherosclerotic lesions and plaque, management of onset and progression of disease would be more efficient than any classical treatment modalities.

*Chair* Prof. Dr. med. Patrick Hunziker, Leader of the Intensive Care Unit of the University Hospital Basel, President of the International Society for Nanomedicine, Basel (CH)
15.20 **The Eradication of Atherosclerosis by Nanomedicine**  
Prof. Dr. med. Patrick Hunziker, Leader of the Intensive Care Unit of the University Hospital Basel, President of the International Society for Nanomedicine, Basel (CH)

15.35 **New Approaches to Therapeutic Modification of Immune-mediated Inflammation in Vulnerable Atherosclerotic Plaques**  
Prof. Dr. med. Harald Mangge, Head, Clinical Institute for Medical and Chemical Laboratory Diagnosis (CIMCL), Medical University of Graz (A)

15.50 **Reversing the Cumulative Risk of LDL-C: Opportunities for Nanomedicines at the Frontline of Atherosclerosis Risk Management**  
Dr. med. Clive A. Meanwell, M.D., Ph.D, Chief Innovation Office, The Medicines Company, Parsippany, NJ (USA)

16.05 Speaker and Topic to be announced

16.20 Questions and Debate

16.45 Short break for going to Plenary Hall

**Session 40 3 of 4 Parallel Sessions**

Wednesday, Hall Singapore 15.20 – 16.45

**41. Nano-Physics and Mathematics in Healthcare**

About Nanophysics forms the basis of many phenomena and solutions in medicine and life sciences, and represents an important interface to these various fields. For industrial pharmaceutical companies novel developments allow the Integration of experimental and computational pharmacology, for the prediction of effects of drug candidates This session showcases novel developments in physics nanomedicine and in Chemistry.

Chair Prof. Dr. Dan Peer, Chair, Tel Aviv University Cancer Biology Research Center, Director, Center for Translational Medicine, Director, Laboratory of Precision NanoMedicine, Dept. of Cell Research & Immunology, and Dept. of Materials Science & Engineering, Tel Aviv University, Tel-Aviv (IL)

Short keynote

15.20 **Integrating Experimental and Computational Pharmacology for Intelligent Drug Design**  
Dr. Yaroslav Nikolaev, Principal Scientist in Computational Systems Biology, InterAx Biotech AG, Villigen, (CH)

15.35 **Artificial Intelligence and Causal Inference: Deep Learning for Estimating Treatment Effect**  
Prof. Dr. Volker Roth, Department of Mathematics and Computer Science, Leader of the Biomedical Data Analysis Group, University Basel (CH)

15.45 **Combining existing and novel developments for sustainable medical solutions**  
Prof. Dr. Gabriel Aeppli, Head of Photon Science Division (PSD), Paul Scherrer Institute, Villigen Professor of Physics at the ETH Zürich and at the EPFL Lausanne, Zürich (CH)

15.55 **Rationalizing Nanoparticle Design: from Architecture to Function**  
Prof. Dr. Inge Herrmann, Group Leader, Swiss Federal Laboratories for Materials Science and Technology (Empa), St. Gallen

16.05 **A Computational Protocol for the In Silico Maturation of Antibody Fragments**  
Dr. Sara Fortuna, Coordinator of the Self-Assembly, Recognition, and Applications group at the Department of Chemical and Pharmaceutical Sciences, University of Trieste (I)

16.15 **Three-Dimensional Graph Convolutional Network (3DGCN) for Deep-Learning Prediction of Drug-Target Interactions**  
Prof. Dr. Insung S. Choi, Ph.D. Director, Center for Cell-Encapsulation Research (Creative Research Initiative); Professor, Department of Chemistry, KAIST; Adjunct Professor, Department of Bio and Brain Engineering, KAIST, Adjunct Professor, School of Transdisciplinary Studies, KAIST, Daejeon (KOR)
16.25 Questions and Debate

16.45 Short break for going to Plenary Hall

Session 41 4 of 4 Parallel Sessions

Wednesday, Hall Rio, 15.20 – 16.45

42. Conceiving Networking, Publishing and Regulatory Matters in Nanomedicine

About: In the last 5 years we have been flooded by publications and one can find a conference dedicated to nanomedicine almost every day. This session aims to evaluate and integrate all attempts that shape the future of nanomedicine and precision medicine. Importantly, to assess the role of scientific information exchange in these endeavors? Regulatory authorities are developing worldwide networks, but how important and valid ethical considerations and social networks? There may be skilled concepts how to regulate the field, but we are far from bringing together definitions and processing principles for nanodrugs to form a systematic network similar to all other drugs. How can we select the best and useful papers out of the huge number of available publications? What is the future role of Nanomedicine and how can the claimed “high potential” become reality? What Management is needed?

Chair Prof. Dr. Lou Balogh, Editor-in-Chief, Precision Nanomedicine, Boston (USA)

15.20 Precision Nanomedicine, and Behind the Controversial Directions of Science
Prof. Dr. Lou Balogh, Editor-in-Chief, Precision Nanomedicine, Boston (USA)

15.35 Addressing the Regulatory Bottlenecks of Nanomedicines during Primary Research Planning
Dr. Rosy Favicchio, Associate Editor, Nature Biomedical Engineering

15.50 Ethics in the Dissemination of Novel Technologies
Dr. Donald Bruce, Managing Director, Edinethics Ltd., Edinburgh (UK)

16.05 Are we Building on the Shoulders of Giants or on a Nanobubble?
Dr. Raphaël Lévy, University of Liverpool, Liverpool (UK)

16.20 Science Management from CLINAM Perspective
Dr. med. h.c. Beat Löffler, MA, CEO of the European Foundation for Clinical Nanomedicine, Basel (CH)

16.35 Questions and Debate

16.45 Short break for going to Plenary Hall

Session 42 Satellite 4

Wednesday, Hall Samarkand 15.20 – 16.45

43. How is the Swiss Personalized Health Network (SPHN) making health data Findable, Accessible and Interoperable?

A Session in collaboration with the Swiss Academy of Medical Science (SAMW)

About The Swiss Personalized Health Network initiative contributes to the development, implementation and validation of coordinated data infrastructures in order to make health-relevant data interoperable and shareable for research in Switzerland. SPHN has adopted a federative approach by building upon – and supporting – existing data sources and infrastructures across the country. To make health data interoperable and accessible for research, SPHN rallies all decision-makers from key clinical, research-, research support institutions and patient organizations around the same table.

Chair Dr. Katrin Crameri, Director of the SPHN Data Coordination Center, Basel (CH)

15.20 How is SPHN Making Health Data Findable, Accessible and Interoperable?
Dr. Katrin Crameri, Director of the SPHN Data Coordination Center, Basel (CH)

15.30 The Swiss Ageing Citizen Reference
Prof. Nicole Probst-Hensch, Swiss Tropical and Public Health Institute/University of Basel, Basel (CH)
15.40   **Quality Assessment for Interoperable Quantitative Imaging**  
*Dr. med. Bram Stieltjes, PhD, Department Head, Research and Analytic Services, University hospital Basel (CH)*

15.50   **SwissGenVar: A Platform for Clinical Grade Interpretation of Genetic Variants to Foster Personalized Health care in Switzerland**  
*Prof. Dr. med. Anita Rauch, Institute of Medical Genetics, University Zurich (CH)*

16.00   **Clinical Research From Multi-modality Big Data Sources without Proprietary Interfaces in a Multicenter Approach.**  
*Prof. Dr. med. Jörg Leuppi, Professor of Internal Medicine, University of Basel, Head of the University Clinic of Medicine Cantonal Hospital Baselland, Liesal (CH)*

16.10   **Swiss BioRef: Personalized Reference Values for Precision Medicine**  
*PD Dr. med. Alexander B. Leichtle, Inselspital – Bern University Hospital, Bern (CH)*

16.20   **Questions and Debate**

16.45   **Short break for going to Plenary Hall**

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**Session 43**  
**Plenary Session**

Wednesday, Hall Montreal, 17.00 – 18.00

**44. Closing Lecture**

*About*: Prof. Dr. Mauro Ferrari is the President and the formal representative of the European Research Council and chairs the Scientific Council, the ERC’s governing body. The Scientific Council, composed of eminent scientists and scholars, defines the scientific funding strategy and methodologies of the ERC. Prof. Ferrari is responsible for funding investigator-driven frontier scientific research in Europe. He will lead the ERC’s preparing of the ground for the EU’s new Horizon Europe programme.

*Chair*:  
*Prof. Dr. med. Marisa Papaluca Amati*, Medical Advisor, Imperial College London, London (UK)

17.05   **Europe’s Science, Technology, Innovation and Research in the Future Horizon Europe Programme**  
*Prof. Dr. med. Mauro Ferrari*, President of the European Research Council (ERC), Brussels (B)

17.40   **Questions and Debate**

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**Session 44**  
**Plenary Session**

Wednesday, Hall Montreal, 18.00 – 18.15

**45. Results of the 12th CLINAM-Summit**

*About*: A group of speakers will the different sessions of the programme and report their impressions to the group. One of them will give a short outcome Summary of the group’s opinion of the Summit.

*Chair*:  
*Prof. Dr. Yechezkel Barenholz*, Hebrew University, Hadassah Medical School, Jerusalem (IL)

18.00   **Impression Summary of the Session Chairs**  
*Prof. Dr. med. Julia Y. Ljubimova, Ph.D., Professor of Neurosurgery and Biomedical Sciences, Director of Nanomedicine Research Center, Department of Neurosurgery Oncology Translational Program, Samuel Oschin Comprehensive Cancer Center CEDARS-SINAI MEDICAL CENTER, Los Angeles CA, (USA)*

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**Session 45**  
**Plenary Session**

**46. Closing CLINAM 12 /2020 and Announcement of CLINAM 2021**

18.15   **Looking forward**  
*Beat Löffler and Patrick Hunziker*
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**END OF CLINAM 2020**

**18.45** Leaving in front of Congress Center and walking to Restaurant Brauerei (Burgweg)

**19.00** Light Farwell Dinner
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Zhang, Wei  Enabling Sensitive Phenotypic Profiling of Cancer Exosomes using surface-enhanced Raman scattering
Zivotská, Hana  Conotoxin-derived biomimetic peptides for active targeting of neuroblastoma cells

…And further Posters

General Information

1. Ongoing Submissions of Abstracts for Posters until July 10, 2020

ALL MAIL RELATED TO SUBMISSIONS GO TO submiss20@clinam.org
Submissions of Posters can be sent until July 10. Posters after this date may still be accepted but will not be published in the printed proceedings of the Summit. Late submitters must therefore bring 20 handouts of their abstracts with them. At CLINAM you have the possibility to present your work on a worldwide platform with members from more than 35 countries.

2. Topics relating to the Summit 2020

Preamble:
The development of new tools, materials and new strategies in Nanomedicine and related fields is enabling the translation of the progressive understanding of the genome and the immune system towards innovative new medical applications. Artificial intelligence and digitalisation assist to achieve these goals. AI and digitalisation is besides Nanomedicine one of the focus fields of this summit. Particular attention is given to the potential benefits, but also to the inherent risks and pitfalls of machine learning, scrutinized to realize the full potential for precision medicine. All topics below may include the impact of AI and digitalization

Clinical Topics:
Nanomedicine and targeted delivery and precision medicine for cardiovascular disease, rheumatic disease, oncology, gastro-intestinal/hepatic disease, bacterial infection, viral infection, parasitic infection, implantology, inflammation, hematology, diabetes, neurology, neurosurgery, orphan diseases, eye and ear disease, tuberculosis, HIV, Ebola, tissue repair, orthopedics, etc.

Technology Topics:
Nanosystems, nanoparticles, nanoanalytics and diagnostics, toxicology, nano-imaging, targeted drug delivery, using nanoparticles, GMP and quality assurance, propositions for solving a medical problem in a novel way by the use of nanotechnology, novel concepts and ideas if they can be supported by thorough reasoning and could lead to novel research and solutions. Materials for use in nanotechnology and targeted medicine, concepts, diagnosis and therapy in the field of personalized medicine: clinical diagnosis and management on the individual patient’s clinical signs and symptoms, medical and family history, and data from laboratory and imaging evaluation to diagnose and treat illnesses, genetic testing leading to more personalized treatments. In addition, relevant novel tools for translational research and diagnostics are of high interest, etc.

Implications Topics:
Implications of Nanomedicine for society, developing countries, environment, risks and benefits, public health finance, health economics, and other subjects, etc.

Strategy, Government and Political Topics:
Strategy building and policy processes in nanomedicine. Strategic approaches towards establishing a unified funding area for nanotechnologies for medical research. Policy processes to foster leadership in Nanomedicine, regulatory authority topics as well as financial and marketing matter.

Industry Topics:

Industry projects and solutions in nanomedicine and targeted medicine, tools related to Nanomedicine and targeted medicine. Industry models for the future large-scale production, Good Manufacturing Practice, etc.

**Regulatory and Societal Affairs, Networking and Financing Topics:**


**Exhibitors Topics:**

Integrated interventions of exhibitors that are of high scientific or technical relevance and do not have the solely the purpose of promoting the trademark.

### 3. Canon of CLINAM 2020

All abstracts must cover original research aimed at future or current applications of nanoscience and targeted medicine including clinical trial designs, reports of ongoing and completed clinical trials, preclinical work, and technology papers with clinical long-term vision. All fields leading to the development of personalized and patient centric medicine are issues of great interest.

### 4. Submission Procedure

**Abstract**: Send us your poster-abstract, (Microsoft Word, RTF, or Open document file format, using Times New Roman, font size 11, single spacing NO PDF). The submission must not be longer than 3 pages, including metadata and figures (one figure is obligatory). All illustrations, figures, and tables must be placed within the text at the appropriate points. Index your file as follows: Last name.First name.abstract20.docx (or RTF etc.) You may send besides a word document a PDF for the purpose of control at printers’ office. **Biography**: Please add in your mail as separate document with your NARRATIVE CV, (no tables, small story) max one page. No more than 5 titles of recent publications can be included. Index your file as follows: Last name. First name.CV20.docx (or RTF etc.) **Portrait Photo**: Send us a head picture in gif or jpg, minimum 300 dpi. DO NOT COPY PASTE THE PICTURE Index your file as follows: Last name.First.Name.Picture20.jpg (or gif)

**Decision for acceptance / declination is sent to you by E-mail.**

### 5. Presentation Times and Installation of Posters

Posters will be located in the Foyer visible for all conference attendees. On the first day at the end of talks there is a 1 hour poster presentation. Further all meeting breaks and lunches will be the preferred time to study the posters. During lunch and breaks, the authors are asked to be present close to their poster. Posters are presented in the size of 1.40 meter high and 1.00 meter wide. Installation is on Monday, October 26, 2020 as from 6.30 until 8.00 am and the posters can be removed on Wednesday, October 28, after 4.00 pm and latest until 6.00pm.

### 6. The University Village and the Small Speeches

The University Village is an exquisite forum for universities and research institutes, giving them opportunity to present themselves as well as novel approaches, new research projects and initial outcomes of research, and patents. Researchers and engineers can use the foyer to install exhibition tables as one-stop-shops for the large spectrum of conference participants. Poster presenters and University Village members can apply for presentations in a special session of small speeches, 4 minutes in length and serving to highlight the research activities in nanotechnology, targeted Delivery and precision medicine. They must comprise three slides. • **Slide 1**: General introduction to the topic • **Slide 2**: Some of the highlights of submitter’s work and institution’s work • **Slide 3**: The proof as to how the work fits into the area of nanomedicine or precision medicine, including a glimpse into the future. Application for a small speech is only possible after your poster has been accepted. The selection is done by Dr. Schmid, Leader of the University Village and the Small Speeches section. Apply at Ruth.B.Schmid@sintef.no
7. Poster Prizes

There will be the CLINAM-Poster Prize to be handed out on Wednesday, October 28 at lunch time. There will be a first, second and third prize in 3 categories: 1. Basic Nanomedicine 2. Toxicology / Nano-Bio Characterisation 3. Translational Nanomedicine. Three first prizes are awarded with 500.00 CHF, three second prizes with 350.00 CHF and three third prizes with 250.00 CHF. The prizes are sponsored by the Swiss Federal Laboratories for Materials Science and Technology (EMPA).

8. Visa for Switzerland – Embassy Appointment minimum 6 weeks before travelling

Before registering, check Visa-Regulations for Switzerland: Participants with visa-need for entering Switzerland have to usually make their appointment with the Swiss Embassy min. 6 weeks before the Summit in their country in order to make an application and to acquire a visa. All concerned persons will ask us in a mail to send an official invitation letter, which you will have to present at the embassy. For this we need your statement of nationality, full address, permanent address, passport number, date of birth. Assure in the mail that you will come to the Summit if you receive the visa. We assist where we can, but have to accept, when the Embassies keep their deadlines.

9. Hotels

At CLINAM most Speakers and Poster members use the Hotel du Commerce*** (400 meters from the Congress Center) and the Swissôtel Le Plaza***** (under the same roof with the Congress Center). Members that book themselves can use the booking platforms or also look for B&B rooms or other hotels under https://www.basel.com/en

10. Copyrights

The copyrights of the Programme belongs to the European Foundation for Clinical Nanomedicine (CLINAM). Also the proceedings are under the Copyright of CLINAM: However copyrights of the abstracts belongs to the presents. The CLINAM sessions are filmed and 6 months after the Summit visible online. Speakers desiring, not to be filmed fill in the folder of rejection at registration.

11. Fellowships (until June 30, 2020)

ALL MAIL RELATED TO APPLICATIONS GO TO: Fellow20@clinam.org (Fellowships cannot be cumulated with ESNAM-reductions)

Fellowship 1:
Fee to be paid is 500.00 €: The Fellowship 1 includes the Summit-Ticket, Lunches, Brokerage Cultural Event and Farewell dinner. Beforehand submission of abstract of proposed Poster or Talk is mandatory. Once you have done this you can address a letter to CLINAM and apply for the fellowship giving reasons for need. Add a reference letter by a superior of your organization.

Fellowship 2:
380.00 € Fee to be paid The Fellowship 2 includes the Summit-Ticket and all lunches. No Dinners. Beforehand submission of abstract of proposed Poster or Talk is mandatory. Once you have done this you can address a letter to CLINAM and apply for the fellowship giving reasons for need. Add a reference letter by a superior of your organization.

Fellowship 3:
This is a waived registration and is most restricted. The contingent was given away for the May Summit that is now postponed to October. However, in some situation a supplementary waiving by CLINAM will be considered. However, Free Accommodation quotes are expired.
Registration for the Summit

<table>
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<tr>
<th>Currency is Euro Category</th>
<th>Early Bird until 10.6. 2020</th>
<th>Regular as from 11.6. 2020</th>
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<td>Academy, NPO, Submitted speakers and Posters</td>
<td>750.00</td>
<td>850.00</td>
<td>300.00</td>
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<tr>
<td>Exhibitors</td>
<td>850.00</td>
<td>(Badge on company, members can mutually use it to attend)</td>
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<td>Industry &amp; Government</td>
<td>1’200.00</td>
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<td>University Village Table</td>
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<td>Farewell Dinner</td>
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Special Group Rates = 20% on regular registration fees / write application to clinam@clinam.org (Cannot be cumulated with ESNAM- or Fellowship-Reduction)

Fellowship upon written request with reasons (see below)*

ESNAM members receive at registration a reduction of 15% (Your membership will be controlled).

Cancellation until August 15: 80.00 €. Until September 15: 50% of fee; after 15.9: No refund of fee.

Exhibition

Profit of Exhibiting

Exhibitors at the CLINAM Summit profit from meeting their potential clients in one spot since CLINAM is presently the world’s largest summit on Clinical Nanomedicine with about 500 participants in need of toolmakers findings, knowledge and their devices. SMEs and small start-up companies have the chance to showcase their skills at an affordable price and to meet ALL STAKEHOLDERS in the field of nanomedicine, targeted delivery and precision medicine. This is a Foyer exhibition at low exhibitor’s rate. All breaks and catering for lunches take place in midst of the CLINAM marketplace. Start-up booths are given to companies being less than 3 years in active development.

Regular Fees

Booking online https://www.clinam.org/exhibition.html

Go to the website, transfer the PDF sheet “EXHIBITOR REGISTRATION CLINAM 2020” to your desktop. Now the folder is activated and you can fill in your order. Send the order by email to loeffler@clinam.org

Floor space (350 €/m²)

| 06 m² (minimum) | 2’100.00 € |
| 08 m² | 2’800.00 € |
| 12 m² | 4’200.00 € |
| 16 m² | 5’600.00 € (Maximum is 36 m²) |

Company name A3 on pillar 100.00 €
1 table, 2 chairs, 1 pin board for poster & power connection 200.00 €
Exhibitors ticket for conference exhibitors multi-user badge
Booth construction on demand 850.00 €
Complete Package 6m² including 1 registration 3’250.00 €

Special Start-up Booth:

We offer companies and institutes less than 3 years in the market a space of 4 m², 1 table, 2 chairs,
Company name A3 on pillar power connection, 1 pin board and 1 registration including lunches 1’650.00 €

Use the same form as regular exhibitors however write in the field “Company name” STARTUP and after that the name of the Company Evening events can be bought at the registration desk for 50.00 € separately (Brokerage Dinner on Monday, October 26 and Farewell Dinner on October 28
Exhibition Participants CLINAM 12/ 2020

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<td>Switzerland</td>
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<td>Austria</td>
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University Village Participants CLINAM 12/ 2020

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<td>Switzerland</td>
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How to get to Congress Center Basel, Swissôtel Le Plaza and Hotel du Commerce

**Coming by train:** You will arrive at the Swiss Train Station Basel (SBB). From there you take tram number 2. You will after five stations, within 10 minutes, be at the conference center. The station is called “Messeplatz” and is announced. Coming from the German Station (Badischer Bahnhof) it is only 2 stops, also with tram number 2 (or also 6). The costs for a cab from SBB are about 18.-- CHF.

**Coming by flight to Basel-Mulhouse-Freiburg Airport:** This is a 15 minutes’ drive to the Congress Center Basel. There is an easy connection from Euro-Airport to the Congress Center downtown Basel by public transport (Bus No. 50), via the central Swiss railway station (Bahnhof SBB). From Bahnhof SBB the tram line no. 2 (see above) serves Basel Messeplatz/Exhibition square directly. The costs for a cab are about 45.-- CHF.

**Coming from Zürich Airport:** There are frequent trains between Basel SBB station and Zurich Airport taking less than an hour. You arrive in Basel at the Swiss Train Station and take as described above.

**Coming by Car:** Basel is the point where the Swiss, French and German motorway networks meet. Basel Exhibition and the trade-fair grounds have their own motorway exit. The “Messe” exit from the A2 motorway leads directly to the fair and congress ground. There is a car parking garage with space for 1,200 vehicles at the Exhibition Square/Messeplatz next to the Congress Center.
INVITATION TO READ AND TO WRITE IN THE PRNANO CLINAM JOURNAL
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The Mission
The journal promotes all practical, rational, and progressive aspects of nanomedicine including theory and practice. Authors are invited to send submissions in basic science, translational, preclinical, and clinical research. PRNANO accepts original manuscripts, as well as replication studies and discussions of negative results as long as they are clearly marked as such and move the field forward.

Support
We support authors who wish to share their work early through deposition of manuscripts with preprint servers such as bioRxiv or arXiv, have previously been presented at conferences, published as a thesis or have previously appeared in other “non-journal” venues (for example: blogs or posters).

Aim and scope
The journal exists to provide a good quality and supportive publishing forum with quick turnaround time for nanomedicine researchers and provides a cutting-edge and reliable source of information to societies, for libraries, and to the interested public without additional cost.

Online only
PRNANO is online only. Articles are published continuously on a rolling basis, then organized into quarterly issues (January, April, July, and October) and annual volumes. All articles receive a unique identifier (DOI:10.33218/prnano) and are archived both in Portico and Crossref, for preservation. We are members of COPE and our green archiving policy is registered in Sherpa/Romeo, i.e., pre-print and post-print PDFs, as well as publisher’s versions can be archived, without restrictions.

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The Exhibitors at the CLINAM Summit 2020

... and further Exhibitors
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