

## 12<sup>th</sup> European and Global Summit for Nanomedicine Clinical Nanomedicine and the Impact of Digitalization and Artificial Intelligence for Precision Medicine

The Technologies for Diagnosis & Therapy in Patient-Centric Medicine

### THE LIVE STREAM PROGRAMME, 26. – 28. October 2020

- Summit under the Auspices of the Swiss Confederation and with 36 NPO Programme Supporters



European and Global Summit for Clinical Nanomedicine "Clinical Nanomedicine and the Impact of Digitalization and Artificial Intelligence"

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## The Sponsors of the 12<sup>th</sup> Global and European CLINAM- Summit

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### Venue

#### Congress Center Basel

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## Scientific Committee of the 12<sup>th</sup> Summit

- **Prof. Dr. med. Patrick Hunziker**, University Hospital Basel (CH), President of the International Society for Nanomedicine (ISNM) (*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) & Löffler & Associates (*Programme Contents, 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**, Reynolds Chair, Department of Primary Care & Public Health School of Public Health, Faculty of Medicine, 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), Member of the Board of Trustees of CLINAM, Basel (CH)
- **Prof. Dr. Dr. h.c. Viola Vogel**, Laboratory of Applied Mechanobiology, ETH Zürich (CH)

## Introduction

Due to COVID-19 the CLINAM-Summit has been postponed to October 25 -28, 2020 and has been revised in size. We hoped that we will be able to offer attendance in Basel at the summit and additional participation by live streaming. On August 27, 2020 the CLINAM leaders had to decide to cancel the real life part in Basel and **to change the Summit to an entire live streaming Summit**. This is not only a huge challenge for us but also for all speakers. We are grateful that we can count on your most accurate timing and keeping the speech length. All speakers have promised us to assist to make this virtual Summit a great success.

The CLINAM Summit is a globally unique event that brings together all stakeholders in nanomedicine, targeted medicine and precision medicine. In its 12<sup>th</sup> 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. The event as reality event brings manifold contacts that lead to, cooperation, startups and new projects. In the present time in which social distancing and wearing masks and the eschewal of Dinners and cultural events are given the social quality suffers and therefore CLINAM will be in virtual Mode this year. We hope that 2021 it will be again a reality life Summit.

## Nanotechnology for COVID-19

Due to the worldwide recent pandemic situation the treatment of COVID-19 by nanotechnology based developments towards vaccines will be discussed. The regulatory authorities' session – every year a highlight at CLINAM – therefore is dedicated 2020 to COVID-19.

## 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 show 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. Artificial intelligence and digitalization to achieve set goals in nanomedicine and genomics will be highlighted as enabling disciplines. 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.

## 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. Now, 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.

### **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. Industrials find contacts for cooperation and get insight into the novel concepts and meet members of keen investigating startups with interest for working together. Developers from pharmaceutical industry present their recent findings and research. Experts in artificial intelligence, digitalization and high performance computing show implications of their work and research for 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. CLINAM is the worldwide melting pot for experts and a high-level communication platform where you meet those striving for equal goals.

## **Welcome to the Virtual CLINAM Lounge**

We welcome you to visit the **CLINAM Virtual lounge** via <https://www.clinam.org/> or directly to [conference.clinam.org](https://conference.clinam.org) Here you will find the exhibitors, all posters in original, the programme and the Proceedings with the abstracts of the speeches and the Biography of the Speakers and Poster Presenters. Posters are covered with an audio by the authors. You can look up the Scientific Committee members and the Sponsors. Read the latest Issue of the CLINAM Journal PRNANO and besides this we have a special treat for all participants. It is the CLINAM Brokerage Evening Event with a Swiss Dinner and - as always - some cultural moments. Go to the video lounge to see industrial and scientific presentations. Be surprised by the possibilities that a virtual Summit can contain. You will also find the 2020 award of the CLINAM-Dwarf. There will be also a Virtual Debate Hall for up to 300 participants.

## **Timing of Speeches**

Use in the virtual lounge **the time conversion clock**. It will help all speakers to adjust to Basel time and to be timely in their virtual halls for their speech.



# Programme

## Monday, October 26, 2020 STREAM 1 Plenary Day (Only Stream 1)

Monday, Stream 1 08.30 – 09.10

**1. Opening Addresses and Scientific Introduction to CLINAM 12/2020** (6' per Speech)

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 Head of Löffler & Associates – Concept Engineering GmbH, Basel (CH)

**08.40 Opening Address from the Canton of Basel-Stadt**

**Dr. Lukas Engelberger**, Member of the Executive Council of the Canton of Basel-Stadt; President of the Swiss Conference of the Cantonal Ministers of Public Health, Basel (C)  
**Opening Address from the Swiss Government**

**08-50 Opening Address from the European Commission**

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

**09.00 Opening Address on behalf of the Swiss Confederation**

**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, Bern (CH)

Monday, Stream 1 09.10 – 09.40

**2. Introduction to the Summit 12 /2020** (20' Speech & 10' Questions)

Chair **Prof. Dr. Dr. h.c. Viola Vogel**, Laboratory of Applied Mechanobiology, ETH Zürich (CH)

**09.10 Scientific Introduction 2020: Nanomedicine and Converging Technologies: Towards Global Health**

**Prof. Dr. med. Patrick Hunziker**, President of the International Society for Nanomedicine; CSO of the CLINAM-Foundation; Deputy Head of the Intensive Care Clinic of the University Hospital Basel; Head of the CLINAM-Lab, Basel (CH)

**09.30 Questions and Debate**

Monday, Stream 1 09.40 – 10.20

**3. Data Driven Interventions for Improving Medicine** (30' Speech & 10' Questions)

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. Automatization 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 (Chezy) Barenholz**, Hebrew University, Hadassah Medical School, Jerusalem (IL)

**09.40 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)

**10.10 Questions and Debate**

**10.20 Break**

**Monday, Stream 1 10.50 – 11.30**

**4. Immunotherapy and Inducing Antigen-Specific Immune Tolerance** (30' Speech & 10' Questions)

About Nanoparticles have made a big impact on the development of immunotherapy for cancer and serious allergic disorders, demonstrating the ability to develop new therapeutic 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)

**10.50 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 Nano-medicines, Research Director California NanoSystems Institute, and Director of UC Center for the Environmental Impact of Nanotechnology, Associate Editor ACS Nano, Los Angeles (USA)

**11.20 Questions and Debate**

**Monday, Stream 1 11.30 – 12.10**

**5. Precision Medicine - Industrial and Economic Strategy** (30' Speech & 10' Questions)

Our biggest drugs have gone “up-market”. In 2000, led by Prilosec and Zocor, the top-10 of the United States sold for \$37 billion (inflation adjusted to today) drugs and they were prescribed to 120 million people. In 2020, led by Humira and Keytruda, the top-10 will sell \$93 billion, but only be prescribed to 18 million people. This structural change to a market dominated by treatments for some forms of cancer, inflammatory, and rare diseases – means little investment in the drivers and diseases which comprise the greatest burdens of global health. In 2020, COVID-19 brought this in to stark relief as we once more confront the challenge that the underlying health of populations drives its social performance and underlying economic growth. Can we fix this? Two approaches might help: First dramatic improvements in technology development efficiency which are now possible. Second, new business models in which payers and consumers make early decisions and commitments about technologies of choice. The combination of both may improve returns on capital employed and drive us back to the great cause of finding solutions for common, deadly and costly conditions such as cardiovascular disease diabetes, chronic lung disease, kidney disease, anxiety and depression

Chair **Dr. Michael Keller**, Senior Principal Scientist, Pre-Clinical CMC Pharma Research and Early Development, Roche Innovation Center Basel, Basel (CH)

**11.30 From Precision to Population: Harnessing New Knowledge to Reduce Global Health Burden at Scale**

**Dr. med. Clive Meanwell, PhD**, Managing Partner, Population Health Partners, New York (USA) Vice President of BB Biotech, Schaffhausen (CH)

**12.00 Questions and Debate**

**Monday, Stream 1 12.10 – 12.50**

**6. Recent Developments and Trials in Nanomedicine at Gilead Sciences** (30' Speech & 10' Questions)

AmBisome (liposomal amphotericin B) is among the earliest approved liposomal therapeutics, and has been in commercial use since the early 1990s. The session will show recent trials and elucidate the pharmacokinetics. The speech report results from other liposomal and lipid complex applications from Gilead including an update on work with the anti-viral Remdesivir.

Chair **Dr. Patrick Baumhof**, Vice President Formulation & Delivery, CureVac AG, Tübingen (D)

**12.10 Nanomedicine in Drug Development: AmBisome and the NeXstar/Gilead Liposome Paradigm**

**Dr. Gerard M. Jensen**, Executive Director, Technical Operations, Gilead Sciences, La Verne, California (USA)

**12.40 Questions and Debate**

**12.50 Lunch**

**14.00 Monday, Stream 1 14.00 – 15.30**

**7. The Regulatory Authorities' Voice 2020** (90 minutes Statements, Questions and Debate)

This is the traditional CLINAM Regulatory Authorities session that helps to create trust and mutual understanding between the regulatory authorities and all stakeholders in nanomedicine and related fields. This lowers the barriers to contact the regulatory authorities at an early stage of projects. This year the session has a specific interest to debate on the background of COVID-19. Members from all continents will join this meeting. Those who can travel will be in Basel. The others will be connected in live streaming into the session. Content. The outbreak of COVID-9 has caused huge interest to rapidly look for existing drugs that may help to cure patients. Patients using existing drugs with purpose for other diseases at own risk is only one way of action. Many patients could eventually profit from non regulatory authorized medications, which is illegal. What is the state of the art in nano/precision medicine for prevention, diagnosis and management of COVID-19? Key regulatory questions could include topics such as:

- Time from threat to invention and global deployment may be critical. How to get faster?
- Is the current regulatory framework adequate for such threats as COVID-19?
- How can we accelerate the process for these areas, including diagnostics, repurposing of drugs and development of new drugs?
- What delay is "ethical" in a pandemic constellation?
- How much/what evidence from clinical trials is needed before new drugs / vaccines, can be applied in a pandemic world?
- Is it needed to accelerate or facilitate the clinical trial stage or to give access to an investigational medical product?
- Developments done for COVID-19 rapidly (e.g. mass production of ventilators) may become obsolete in case of successful vaccine development. How is regulatory support to help steering the processes?
- A new phenomenon is that pharmaceutical industries cooperate to develop a vaccine as rapid as possible and maybe apply for approval as a large group. How can such Consortia be supported non-bureaucratically?
- Governments have a heavy hand in managing healthcare and science COVID-19. How much bias is introduced in publications by government interference and is it justified to publish manuscripts that have a high risk of political bias?

This way the panel will elucidate regulatory response to coronavirus (COVID-19) and prepare the ground for the industrial session. This session is scheduled just before the session "New Therapeutic Modalities and their Impact on Unmet Medical Needs" where many members from industry are speakers in the development to generate new vaccines and new therapeutics.

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

Co-Chair **Prof. Dr. med. Marisa Papaluca**, Reynolds Chair, Department of Primary Care & Public Health School of Public Health Faculty of Medicine, Imperial College London, London (UK)

- Europa** **Dr. Falk Ehmann**, Chair Innovation Task Force at European Medicines Agency EMA, Amsterdam, (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. 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)
- Africa** **Prof. Dr. Hulda Shaidi Swai**, Director Africa Center of Excellence CREATES, 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)

**15.30 Break**

**Monday, Stream 1 16.00 – 18.30**

**8. New Therapeutic Modalities and their Impact on Unmet Medical Needs (12' Speech & 3' Questions)**

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 is 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 biological molecules will be discussed.

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

**16.00 RNAntibody - a Therapeutic Option**

**Dr. Patrick Baumhof**, Vice President Formulation & Delivery, CureVac AG, Tübingen (D)

**16.15 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)

**16.30 Rapid Deployment of a Messenger RNA Vaccine for Pandemic Response**

**Dr. Don Parsons**, Head, Early Technical Development and LNP Process Development, Moderna Therapeutics, Cambridge, MA (USA)

**16.45 Next-generation Gene Editing Technology for Allogeneic Immune Cell Therapeutics**

**Dr. Steven Kanner**, Chief Scientific Officer, Caribou Biosciences, Berkeley, CA (USA)

**17.00 Recent Advances in Antisense Technology**

**Dr. Brett P. Monia**, Chief Operating Officer and Senior Vice President. Translational Medicine, Ionis Pharmaceuticals, Inc., Carlsbad, California (USA)

**17.15 Innovative Cell and Gene Therapies for Non-oncology Indications**

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

**17.30 An RNA Vaccine Drives Expansion and Efficacy of Claudia-CAR-T Cells against Solid Tumors**

**Dr. med. Benjamin Rengstl, PhD**, Head of Immunoreceptor Therapy, BioNTech Cell & Gene Therapies GmbH, Mainz (D)

**17.45 Making Medicines with New Behaviors**

**Dr. Stefan Halbherr, PhD** CSO, Research and Development, InnoMedica Holding AG, Bern (CH)

**18.00 Manipulating Cells' Function with Novel Lipid Nanoparticles: from RNA Therapeutics to Genome Editing**

**Prof. Dr. Dan Peer**, Vice President for Research and Development at Tel Aviv University, 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)

**18.15 Design of Carriers for Proteins and RNA molecules**

**Prof. Maria José Alonso**, Editor-in-Chief of the Drug Delivery and Translational Research (DDTR) Journal, Past President of the Controlled Release Society (CRS), Professor of Pharmaceutical Technology, head of the Nanomedicine lab at the CIMUS Research Institute Campus Vida -University of Santiago de Compostela (USC), Santiago de Compostela (E)

18.30 End of Day 1

18.30 End of Day 1

## Tuesday, October 27, 2020 STREAMS 1 / 2 / 3

STREAM 1	STREAM 2	STREAM 3
<p><b>Tuesday, Stream 1, 08.15 – 10.10</b></p> <p><b>9. Late Breaking and Ongoing Trials in Nanomedicine and Targeted Delivery</b> (15' Speech and 5' First questions) 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.</p> <p>Chair: <b>Dr. Neil Desai</b> CEO, Aadi Bioscience Inc. Pacific Palisades, CA (USA)</p> <p><b>08.15 Results from Clinical Phase 1 and 2 Evaluations of CPC634</b> <b>Dr. Cristianne J. F. Rijcken, PharmD, PhD</b>, Founder and CSO, Cristal Therapeutics, Maastricht (NL)</p>	<p><b>Tuesday, Stream 2 08.15 – 10.10</b></p> <p><b>10. Platforms for Targeting, Drug Delivery, Diagnostics, Drug Development, Design Strategies and Manufacturing for Precision Medicine</b> (12' Speech and 3' Questions) 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.</p>	<p><b>Tuesday, Stream 3, 08.15 – 10.10</b></p> <p><b>11. How Do Nanoparticles Behave - Nano Interacting With Life</b> (10' Speech and 5' Questions) 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.</p> <p>Chair <b>Prof. Dr. Barbara Rothen-Rutishauser</b>, Co-Chair Bio Nanomaterials, Adolphe Merkle Institute, University of Fribourg CH)</p>

<p><b>08.35 Results of a Registrational Trial of ABI-009 Nanoparticle Albumin Bound Sirolimus in Malignant PEComa and other Clinical Studies</b>  <b>Dr. Neil Desai</b>, CEO, Aadi Bioscience Inc., Pacific Palisades, CA (USA)</p> <p><b>08.55 Talidox, the World's Smallest Liposomal Doxorubicin: Insights from First Applications in Patients and Immuno-Oncological Potential</b>  <b>Dr. Stefan Halbherr, PhD.</b>, CSO, Research and Development, InnoMedica Holding AG, Bern (CH)</p> <p><b>09.15 Novel Peptide-oligonucleotide Complexes for mRNA and Gene Editing Therapeutics</b>  <b>Dr. Gilles Divita</b>, Aadigen, LLC, Pacific Palisades, CA (USA) and CEO of DivinCell SAS, Montpellier(F)</p> <p><b>09.35 Clinical Experience with i.v. Liposomal Glucocorticoid Formulations Targeting Inflammation</b>  <b>Dr. Josbert Metselaar, PharmD, PhD</b>, Department of Experimental Molecular Imaging, RWTH Aachen University Clinic, Aachen (D) and CEO Enceladus Pharmaceuticals, Naarden (NL)</p> <p><b>09.55 Questions and Debate</b></p> <p><b>10.10 Break</b></p>	<p>Chair <b>Dr. Marieluise Wippermann</b>, CEO, TecoMedical Ltd, Sissach (CH)</p> <p><b>08.15 The Digital Twin, an Essential Tool in Personalizing Therapy and Prevention</b>  <b>Prof. Dr. Hans Lehrach</b>, Director, Head, Department of Vertebrate Genomics, Max Planck Institute for Molecular Genetics, Berlin (D)</p> <p><b>08.30 Barcoded Cancer Nanomedicines and Nano Immunotherapies Perform Differently in the Primary Tumor and in the Metastasis</b>  <b>Prof. Dr. Avi Schroeder, PhD</b>, Associate Professor of Chemical Engineering Laboratory for Targeted Drug Delivery and Personalized Medicine Technologies, Technion - Israel Institute of Technology, Haifa (IL)</p> <p><b>08.45 Nanoparticle Design Strategies for Effective Liver Cancer Immunotherapy</b>  <b>Prof. Dr. Gerrit Borchard</b>, Translational Research Centre in Oncohaematology, Biopharmaceutical Science Group Leader, CRTOH associate member, Geneva-Lausanne School of Pharmacy (EPGL), Geneva (CH)</p> <p><b>09.00 Novel Targeting Strategies to Enhance Tumor Drug Penetration in Pancreatic Cancer</b>  <b>Prof. Dr. Jai Prakash, Ph.D.</b>, Head of Targeted Therapeutics and Nanomedicine, Department of Biomaterials, Science and Technology, University of Twente, Enschede (NL)</p> <p><b>09.15 Platformability of RNA Drug Delivery; the Case of EXPERT, Bringing Immune Activating mRNA to the Clinic</b>  <b>Dr. Sven Even Borgos</b>, Senior Research Scientist, SINTEF Materials and Chemistry, Department of Biotechnology and Nanomedicine, Trondheim (N)</p> <p><b>09.30 Questions and Debate</b></p> <p><b>10.10 Break</b></p>	<p><b>08.15 What Cells Can do With Nanomaterials</b>  <b>Prof. Dr. Barbara Rothen-Rutishauser</b>, Co-Chair Bio Nanomaterials, University of Fribourg (CH)</p> <p><b>08.30 Entry of Nanoparticles into Cells: Mechanisms and Consequences</b>  <b>Prof. Dr. Kirsten Sandvig</b>, Professor, Institute for Cancer Research, the Norwegian Radium Hospital, Oslo University Hospital Montebello, Oslo (N)</p> <p><b>08.45 Nanoparticles for Clinical Use: Importance of Degradation and Excretion</b>  <b>Dr. Tore Skotland</b>, Institute for Cancer Research, the Norwegian Radium Hospital, Oslo University Hospital Montebello, Oslo (N)</p> <p><b>09.00 Organelle-specific Targeting of Polymersomes into the Cell Nucleus</b>  <b>Prof. Dr. Roderick Lim</b>, Argovia Professor for Nanobiology, Biozentrum and the Swiss Nanoscience Institute, University of Basel, Basel (CH)</p> <p><b>09.15 Cellular Fate of Nanoparticles Delivered to the Murine Lung: a New Role of Macrophages?</b>  <b>Lin Yang, MSc</b>, Dr. Otmar Schmid group (Comprehensive Pneumology Center / Institute of Lung Biology and Disease), Helmholtz Center Munich and Technical University of Munich (D)</p> <p><b>09.30 Delivery of Anti-cancer Stem Cell Drugs in Colorectal Metastatic Cancer</b>  <b>Prof. Dr. med. Simo Schwartz, Jr., PhD</b>, 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)</p> <p><b>09.45 Questions and Debate</b></p> <p><b>10.10 Break</b></p>
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<p><b>Tuesday, Stream 1 10.40 -13.15</b></p> <p><b>12. Pharmaceutical Development and Manufacturing (APV session)</b> (12' Speech and 3' Questions)</p> <p>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.</p> <p>Chair <b>Dr. Bernd Riebesehl</b>, Principal Fellow, Novartis Pharma AG, Basel (CH)</p> <p><b>10.40 Large Scale GMP Production of Liposomes</b>  <b>PD Dr. Peter van Hoogevest</b>, Head Scientific Department, Lipoid GmbH, Ludwigshafen (D)</p> <p><b>10.55 Delivery of New Modalities, Recent Technology Trends and Solutions</b>  <b>Dr. Wouter Müllers</b>, Pharmaceutical Technology Scout, Bayer AG, Berlin (D)</p> <p><b>11.10 Manufacturing Considerations for Bispecific and Multispecific Antibodies</b>  <b>Dr. Mark Chiu, PhD</b>, Associate Director, Process Analytical Support of Large Molecule Analytical Development at Janssen Research &amp; Development, Janssen Research &amp; Development, Raritan, NJ (USA)</p> <p><b>11.25 Gene Therapy Manufacture</b>  <b>Dr. Magdalena Obarzanek-Fojt</b>, Principal Sci-entist Pharmaceutical Development, Novartis, Basel (CH)</p>	<p><b>Tuesday Stream 2 10.40 -13.15</b></p> <p><b>13. The Plethora of Nanomedicine Aspects</b> (9' Speech and 1' first Questions)</p> <p>Due to the situation with COVID-19 the CLINAM Foundation had to downsize the Summit. Instead of cancelling the outstanding speakers we have created this session with a multitude of topics concerning Nanomedicine and Precision Medicine. All speakers have 10 minutes plus one minute for first questions.</p> <p>Chair <b>Dr. Cristianne J. F. Rijcken, PharmD, PhD</b>, Founder and CSO, Cristal Therapeutics, Maastricht (NL)</p> <p><b><u>Nano- and Precision-Medicine in Rare and Neglected Diseases</u></b></p> <p><b>10.40 Nanocarriers Targeted to the Mosquito Stages of Malaria: Curing the Insect has its Advantages</b>  <b>Prof. Dr. Xavier Fernández Busquets, PhD</b>, Nanomalaria Joint Unit, Associate, Institute for Bioengineering of Catalonia, Barcelona, Member of the Barcelona Centre for International Health Research, Barcelona (E)</p> <p><b><u>The Scope on Artificial Intelligence in the Medical Field</u></b></p> <p><b>10.50 Advantages and Limits of Artificial Intelligence</b>  <b>Prof. Dr. med. Stefan Schulz</b>, Institute for Medical Informatics, Statistics and Documentation, Medical University of Graz, Graz (A)</p> <p><b>Understanding New way of Atherosclerosis</b></p> <p><b>11.00 The role of B-cells in Atherosclerosis</b>  <b>Prof. Dr. med. Harald Mangge</b>, Head, Clinical Institute for Medical and Chemical Laboratory Diagnosis (CIMCL), Medical University of Graz (A)</p> <p><b><u>Prevention, Safety and Risk Management for Nanomedicine</u></b></p> <p><b>11.10 Risk Management for Nanomedical Products</b>  <b>Robert E. Geertsma, M.Sc.</b>, Senior Scientist, Centre for Health Protection RIVM - National Institute for Public Health and the Environment, Bilthoven (NL)</p> <p><b>11.20 Safety Testing of Iron oxide Containing Nanoparticles for Later Clinical Use</b>  <b>Dr. László Dézsi, PhD, Dr. Habil</b>, Research Associate Professor, Semmelweis University, Institute of Translational Medicine, Nanomedicine Research and Education Center, Budapest (H)</p>	<p><b>Tuesday, Stream 3, 10.40 – 12.30</b></p> <p><b>14. Nanomedicine in and against Infection and Inflammation</b> (20' Speech)</p> <p>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.</p> <p>Chair <b>Prof. Dr. Gert Storm</b>, Institute for Pharmaceutical Sciences, Utrecht University (NL), University of Twente (NL) and Department of Surgery, National University Hospital NUS, Singapore (SGP)</p> <p><b>10.40 The Mechanobiology of Macrophage Inflammation: A Novel Way to the Study, Diagnose, and Treat Chronic Inflammation.</b>  <b>Dr. Nikhil Jain</b>, Group Leader, Laboratory of Applied Mechanobiology, ETH Zürich (CH)</p> <p><b>11.00 Nanocrystal – Polymer Particles for a Sustained Treatment of Osteoarthritis</b>  <b>Dr. Olivier Jordan</b>, Senior lecturer, Institute of Pharmaceutical Sciences of Western Switzerland University of Geneva, Geneva (CH)</p> <p><b>11.20 The Mechanobiology of Lymph Node Tissues: impact of swelling on Il-7 mediated homeostasis</b>  <b>Prof. Dr. Dr. h.c. Viola Vogel</b>, Head of the Laboratory of Applied Mechanobiology, ETH Zürich (CH)</p> <p><b>11.40 A Nanotechnology Platform for Tympanic Membrane Regeneration</b>  <b>Prof. Dr. Carlos Mota</b>, Assistant Professor, MERLN Institute for Technology-Inspired Regenerative Medicine, Maastricht University, Maastricht (B)</p> <p><b>12.00 Further Questions and Debate</b></p>
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**11.40 Accelerating the Development of Transformative Nanomedicines with NxGen Microfluidics Technology**

**Dr. Lloyd Jeffs**, Director, Clinical Manufacturing Solutions, Precision NanoSystems Inc., Vancouver, BC (CND)

**11.55 Development of a Cell Therapy with Gene-modified Primary Cells**

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

**12.10 Driving Large Scale CAR-T Cell Manufacturing in Reality**

**Dr. Alexander Huber**, Global CMC Head, Cell & Gene Therapy Development and Manufacturing, Novartis Pharma AG, Basel (CH)

**12.25 Approaches for Next Generation Lipid Nanoparticle Technologies for RNA Delivery**

**Dr. Heinrich Haas**, Vice President RNA Formulation & Drug Delivery, BioNTech SE, Mainz (D)

**12.40 Last questions and Debate**

**13.15 Lunch**

**11.30 Nanomedicine today – ‘Quality by design’ or ‘Trial and Error’?**

**Prof. Dr. phil. nat, habil. Matthias G. Wacker**, Associate Professor, Department of Pharmacy, Faculty of Science, National University of Singapore NUS, Singapore (SGP)

**Preclinical Projects and Ongoing Trials**

**11.40 Designing Novel Nanosystems Consisting on Combined Gene and Immune Therapies for NSCLC**

**Dr. Cristina Fornaguera i Puigvert**, Group of Materials Engineering (Gemat), IQS School of Engineering, University Ramon Llull, Barcelona (E)

**11.50 Translation to the Clinic of an Ultrasmall Gadolinium Based Nanoparticle: AGuIX**

**Prof. Dr. François Lux**, Associâtes Professor, Lyon 1 University, Institut Lumière Matière, Equipe FENNEC, UMR CNRS 5306, Villeurbanne (F)

**12.00 Nanomedicines to Deliver Dual-targeting Dual-action Pt(IV) Chemotherapeutic Complexes for Enhanced Anticancer Activity and Reduced Nephrotoxicity**

**Prof. Dr. Giorgia Pastorin**, Associate Professor at the Department of Pharmacy, and Assistant Dean (Research) at the Faculty of Science, National University of Singapore, (SGP)

**12.10 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)

**Medical Nanomaterials Knowledge**

**12.20 Nanomaterials in Medicine**

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

**Advanced Cell-based Assays and Biosensors for Assessment of Nanomedicine**

**12.40 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)

**12.50 Questions and Debate**

**13.15 Lunch**

**Tuesday, Stream 3 12.30 – 13.15**

**15. Regulatory Science Research Leading to Policy**

(30' Speech and 15' Questions and Debate)

Emerging complex products utilizing nanotechnology/nanomaterial require a better understanding of the critical quality attributes and how to apply these principles to regulate products. Apart from gathering this knowledge from literature, regulatory agencies conduct internal research to provide guidance to industry, develop policy, and review products for safety and effectiveness. Advances in regulatory science and guidance from regulatory agencies will be presented in this session.

Chair **Prof. Dr. Gerrit Borchard**, Translational Research Centre in Oncohaematology, Biopharmaceutical Science Group Leader, CRTOH associate member, Geneva-Lausanne School of Pharmacy (EPGL), President, Swiss Academy of Pharmaceutical Sciences (SAPhS), Geneva (CH)

**12.30 Over a Decade of Progress in Research, Regulation and Policy at U.S. FDA**

**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 Questions and Debate**

**13.15 Lunch**



<p><b>Tuesday, Stream 1, 14.15 – 16.30</b></p> <p><b>16 .Integrated Assessment of Pharmacokinetics for Nanomedicine Development</b> (12 min Speech and 3 minutes questions)</p> <p>Various nanomedical 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.</p> <p>Chair <b>Prof. Dr. Andrew Owen, PhD, FRSB, FBPhS, Professor of Pharmacology, Molecular and Clinical Pharmacology University of Liverpool (UK)</b></p> <p><b>14.15 Introduction</b></p> <p><b>Prof. Dr. Andrew Owen, PhD, FRSB, FBPhS, Professor of Pharmacology, Molecular and Clinical Pharmacology University of Liverpool (UK)</b></p> <p><b>14.30  Pharmacokinetic and Clinical Correlations of Pegylated Liposomal Mitomycin-c Prodrug (Promitil) in Colorectal Cancer Patients</b></p> <p><b>Prof. Dr. med. Alberto A. Gabizon, Hebrew University - School of Medicine - Shaare Zedek MC Oncology Institute, Jerusalem (IL)</b></p> <p><b>15.00 Concentration-dependent Versus Concentration Independent Safety and Biocompatibility Considerations for Nanomedicines</b></p> <p><b>Dr. Neill Liptrott B.Sc., M.Sc., FHEA, Lecturer Molecular and Clinical Pharmacology, University of Liverpool (UK)</b></p>	<p><b>Tuesday, Stream 2, 14.15 – 16.30</b></p> <p><b>17. Chemistry of New Nanomedicines</b> (11' Speech and 4'Questions)</p> <p>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.</p> <p>Chair <b>Prof. Dr. Matthias Barz, Full Professor for Biotherapeutic Deliver , Leiden Academic Center for Drug Research (LACDR), Leiden University, Leiden (NL) ) and Prof. Dr. Rudolf Zentel, Institute of Organic Chemistry University of Mainz (D)</b></p> <p><b>14.15 Nanomaterials for RNA Delivery: From RNAi to CRISPR/Cas Editing</b></p> <p><b>Prof. Dr. Daniel Siegwart</b> Research Group, Simmons Cancer Center, Department of Biochemistry UT Southwestern Medical Center, Dallas TX (USA)</p> <p><b>14.30 Polymer Prodrug Conjugates</b></p> <p><b>Dr. Julien Nicolas, CNRS Director of Research, Institut Galien Paris-Sud, UMR 8612, Faculté de Pharmacie de Châtenay-Malabry, Univ. Paris-Sud. Paris (F)</b></p> <p><b>14.45 Multivalent Nanosystems for Tumor Targeting</b></p> <p><b>Prof. Dr. Rainer Haag, Institute of Chemistry and Biochemistry Organic Chemistry, Freie Universität Berlin, Berlin (D)</b></p>	<p><b>Tuesday, Stream 3, 14.15 – 16.30</b></p> <p><b>18. Nanomedicine in Brain Injuries and Neurological Disorders</b> (12' speech and 3' Questions)</p> <p>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.</p> <p>Chair <b>Prof. Dr. med. François Berger, BrainTech Lab-INSERM U 1205, University Grenoble Alpes, Grenoble (F)</b></p> <p><b>14.15 Theranostic Nanophysics for the Deciphering, Prevention and Therapy of Brain Diseases</b></p> <p><b>Prof. Dr. med. François Berger, BrainTech Lab-INSERM U 1205, University Grenoble Alpes, Grenoble (F)</b></p> <p><b>14.30 Nano-formulation of Pomegranate Seed Oil</b></p> <p><b>Dr. Ruth Gabizon, Department of Neurology, Hadassah University Hospital, Jerusalem (IL)</b></p> <p><b>14.45 Brain Clinical Informatics – Promise and Barriers Towards Precise Medicine</b></p> <p><b>Dr. Mira Marcus-Kalish, Director, International Research Affairs, Tel Aviv University Ramat Aviv, Tel Aviv (IL)</b></p> <p><b>15.00 Graphene Quantum Dot for Parkinson's Disease</b></p> <p><b>Prof. Dr. Byung Hee Hong, Professor, Department of Chemistry, Seoul National University, Seoul, Seoul (KOR)</b></p> <p><b>15.15 Selective Entry of Lipid Vesicles into the Brain Post Intracerebral Haemorrhage Offers Novel Therapeutic Opportunities</b></p> <p><b>Dr. Zahraa Al-Ahmady, MSc, FHEA, Senior Lecturer in Pharmacology Department, School of Science and Technology, Nottingham Trent University, Nottingham (UK)</b></p> <p><b>15.30 Talineuren: A Regenerative Nanodrug Against Neurodegeneration</b></p> <p><b>Dr. Camille Peitsch, Scientist, Research &amp; Development, InnoMedica Holding AG, Bern (CH)</b></p>
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**15.15 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)

**15.30 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, University of Nottingham, Nottingham (UK)

**15.45 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)

**16.00 Further Questions and Debate**

**16.30 Break**

**Tuesday, Stream 1 17.00 – 18.30**

**19. Conceiving Networking, Publishing and Regulatory Matters in Nanomedicine**

(12' and 3' Questions)

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 are 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

**15.00 Supramolecular Vaccines**

**Prof. Pol Besenius**, Professor for Macromolecular Chemistry, Institute of Organic Chemistry, University of Mainz, Mainz (D)

**15.15 Polypept(o)ides for Therapy of Infectious Diseases**

**Prof. Dr. Matthias Barz**, Full Professor for Biotherapeutic Deliver, Leiden Academic Center for Drug Research (LACDR), Leiden University, Leiden (NL)

**15.30 Polymeric Micelles in Cancer Therapy**

**Prof. Dr. Horacio Cabral**, Researcher, Department of Materials Engineering, University of Tokyo (J)

**15.45 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)

**16.00 Polypeptide-based Conjugates as Versatile Therapeutics**

**Prof. Dr. Maria Vicent**, Head of Polymer Therapeutics Laboratory, Centro de Investigación Príncipe Felipe, Valencia(E)

**16.15 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)

**16.30 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)

**16.40 Break**

**15.45 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)

**16.00 Further Questions and Debate**

**16.30 Break**

**Tuesday, Stream 3, 17.00 – 18.30**

**21. Advances in the field of Non-Biological Complex Drug Products (NBCDs) and their Follow-on Versions**  
(9' Speech and 1' First Questions)

Non-biological complex drug products (NBCDs) and their follow-on versions pose 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 **Prof. Dr. Scott E. McNeil**, Department of Pharmaceutical Sciences, Faculty of Science, University of Basel, Basel (CH)

**17.00 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 Octopus, Leiden (NL)

other drugs. How can we select the best and most 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)

#### **17.00 Precision Nanomedicine, and Behind the Controversial Directions of Science**

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

#### **17.15 Addressing the Regulatory Bottlenecks of Nanomedicines during Primary Research Planning**

**Dr. Rosy Favicchio**, Associate Editor, Nature Biomedical Engineering. London (UK)

#### **17.30 Ethics in the Dissemination of Novel Technologies**

**Dr. Donald Bruce**, Managing Director, Edinethics Ltd., Edinburgh (UK)

#### **17.45 Are we Building on the Shoulders of Giants or on a Nanobubble?**

**Dr. Raphaël Lévy**, University of Liverpool, Liverpool (UK)

#### **18.00 Science Management from CLINAM Perspective**

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

#### **18.10 Questions and Debate**

**Tuesday, Stream 2, 17.00 – 18.30**

#### **20. Bioinspired, Biological, and Smart Materials for Boosting Nanomedicine** (10' speech and 1' Questions)

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 **Dr. Silke Krol**, Laboratory for personalized medicine, National Institute of Gastroenterology, "S. de Bellis" Research Hospital, Castellana Grotte, Bari (I)

#### **17.00 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)

#### **17.10 Tumor Exosome-Based Nanoparticles and Artificially Cloaked Viral Nanovaccines for Chemo-immunotherapy Applications**

**Prof. Dr. Hélder A. Santos**, Director of Nanomedicines and Biomedical Engineering Lab, Drug Research Program, Faculty of Pharmacy and Helsinki Institute of Life Science, University of Helsinki (FIN)

#### **17.30 Molecular Bioengineered Nanomedicines for Targeted Delivery of Peptides in Modulation of Diabetes**

**Dr. Bruno Sarmiento, 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)

#### **17.10 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)

#### **17.20 Sharing Experience in Overcoming Upscaling Challenges for Nanomedicines**

**Dr. Mark van Eldijk**, Ardena ChemConnection BV, Mariakerke (B)

#### **17.30 The Road Ahead for mRNA Nano-formulations**

**Dr. Don Parsons**, Head, Early Technical Development and LNP Process Development, Moderna Therapeutics, Cambridge, MA (USA)

#### **17.40 From Manufacturing to Bed: Special Consideration for the Handling of Nanomedicines**

**Dr. Beat Flühmann**, Global Lead Non-Biological Complex Drugs, Vifor Pharma, Glattbrugg (CH)

#### **17.50 Complex Generics Containing Nanomaterials**

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

#### **18.00 Questions and Debate**

<p><b>17.40 Implications of carbon nanoparticles for potential biosensors and therapeutic applications</b>  <b>Prof. Dr. Debabrata (Dev) Mukhopadhyay</b>, 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)</p> <p><b>17.50 Nitric Oxide-Dependent Biodegradation of Graphene Oxide Reduces Inflammation</b>  <b>Dr. Guotao Peng</b>, Division of Molecular Toxicology, Institute of Environmental MedicineKarolinska Institutet, Stockholm (S)</p> <p><b>18.10 Questions and Debate</b></p>
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**Tuesday , Stream 1, PLENARY 18.30 – 19.00**

**22. Antimicrobial Resistance** (20' Speech and 0' Questions and Debate)

Hospital bacterial infections are occurring at much higher than desired frequency. In many cases, these infections are severe and due to antimicrobial resistance (AMR), their treatment is very difficult. There is no question that prevention in such cases is much better, safer, and cheaper than trying to cure by treatment. This presentation will describe two different modalities of prevention. One passive and the second active. The common denominator of both is that they are based on nano-technology. Also both are aiming to reduce demand for antibiotics by preventing healthcare associated infections from occurring in the first place, and making every effort to prevent transmission when they occur. Currently the critical efforts of infection-prevention does not get the desired attention and this presentation is aimed to show options that are expected to bring the prevention to the front of the clinical settings.

Chair **Dr. med. h.c. Beat Löffler, MA**, CEO, CLINAM-Foundation, Basel (CH)

**18.30 Hospital Bacterial Infection Prevention**

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

**18.50 Questions and Debate**

**19.00 End of Day**

## Wednesday, October 28, 2020 STREAMS 1 / 2 / 3 (Plenary Session 08.15 until 12.10 h)

**Wednesday, Stream 1. 08.30– 10.15**

**23. Theranostic Concepts in Cancer Immunotherapy** (including 5' for Questions)

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)

**08.45 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 Deep Learning-based Histology Biomarkers in Solid Tumors**

**Dr. med. Jakob Nikolas Kather, MSc.** Physician/Scientist. Department of Medicine III, RWTH University Hospital Aachen (D)

**09.25 Antibody-cytokine Fusions**

**Prof. Dr. Dario Neri**, Department of Chemistry and Applied Biosciences, Swiss Federal Institute of Technology (ETH Zürich) Zürich (CH)

**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)

**10.15 Break**

**Wednesday Stream 1 , 10.45 – 11.30**

**24. Pancreatic Cancer seen by a Healthy Patient** (35' Speech and 10' Debate)

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)

<p><b>10.45</b>      <b>Cancer Journey; A Patient’s Perspective</b>  <b>Lora Kelly</b>, Chapter Chair of the Central PA Chapter of the National Pancreas Foundation (NPF) and Director of Clinical Education for HACC, Bethesda, MD (USA)</p>		
<p><b>11.20</b>      <b>Questions and Debate</b></p> <p><b>Wednesday Hall Montreal, 11.30 – 12.10</b>  <b>25. NCI Funding in USA for Nanotechnology in Cancer</b> (30’ Speech and 10’ Questions)  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 the 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.</p> <p>Chair      <b>Prof. Dr. med. Patrick Hunziker</b>, President of the International Society for Nanomedicine, Basel (CH)</p>		
<p><b>11.30</b>      <b>Update of the Alliance of the National Cancer Institute for Nanotechnology in Cancer</b>  <b>Dr. Piotr Grodzinski</b>, Director, NCI Alliance for Nanotechnology in Cancer, National Cancer Institute, Bethesda, Maryland (USA)</p>		
<p><b>12.00</b>      <b>Questions and debate</b></p>		
<p><b>12.10</b>      <b>Lunch</b></p>		
<p><b>STREAM 1</b></p>	<p><b>STREAM 2</b></p>	<p><b>STREAM 3</b></p>
<p><b>Wednesday, Stream 1 I, 13.15 – 15.00</b>  <b>26. Nanoparticles and the Immune System</b>  (14’ Speech and 1’ Questions )  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)  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. To this end, nanocarriers allow a co-delivery of active compounds further modifying the response.</p>	<p><b>Wednesday, Stream 2, 13.15 – 15.00</b>  <b>27. Immune Modulation by Nanomedicines: New Therapeutic Approaches, Adverse Phenomena and Safety Testing</b> (14’ Speech and 1’ First questions)  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.</p> <p>Chair <b>Dr. Marina A. Dobrovolskaia, Ph.D., MBA, PMP</b>, Senior Principal Scientist, Head of the Immunology Section at the Nanotechnology Characterization Lab, Leidos Biomedical Research Inc., Frederick National Laboratory for Cancer Research Frederick MD (USA) and <b>Prof. Dr. med. János Szebeni</b>, Head of the Nanomedicine Research and Education Center, Semmelweis University, Budapest (H)</p>	<p><b>Wednesday, Stream 3, 13.15 – 15.00</b>  <b>28. Extracellular Vesicles in Nanomedicine – Natural and Synthetic Biopolymer Exosomes</b>  (9’ Speech and 1’ Questions)  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 nanocarriers 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,</p>



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)

### **13.15 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)

### **13.30 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)

### **13.45 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)

### **14.00 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)

### **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)

### **13.30 Emerging Biomarkers of Nanoparticle Immunotoxicity: an Outlook in Future**

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

### **13.45 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)

### **14.00 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)

### **14.15 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)

### **14.30 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)

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)

### **13.15 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)

### **13.25 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)

### **13.35 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)

### **13.45 Brain Theranostics with Extracellular Vesicles**

**Prof. Dr. med. Dong Soo Lee, PhD**, Chairman, Department of Nuclear Medicine, Seoul National University, Seoul (ROK)

### **13.55 Exosomes: as Dual Pancreatic Cancer Therapy and Diagnosis**

**Prof. Dr. Khuloud T. Al-Jamal**, Chair of Drug Delivery & Nanomedicine, King's College London (UK)



<p><b>14.15 The Effect of Glioblastoma Microenvironment on Local Immune System: FDA Preparation of Clinically Suitable Nanobioconjugates</b>  <b>Prof. Dr. med. Julia Y. Ljubimova, Ph.D.</b>, Professor of Neurosurgery and Biomedical Sciences, Director of Nanomedicine Research Center, Department of Neurosurgery Oncology Translational Program, Samuel Oschin Comprehensive Cancer Center <i>CEDARS-SINAI MEDICAL CENTER</i>, Los Angeles, CA (USA)</p> <p><b>14.30 Questions and Debate</b></p> <p><b>15.10 Break</b></p>	<p><b>14.45 The Effect of Heparin on the Cellular Uptake of Nanocarriers</b>  <b>Adelina Haller, MSc.</b>, PhD Candidate, Max Planck Institute for Polymer Research, University Medical Centre Mainz, Mainz (D) in cooperation with <b>Dr. Carole Champanhac</b>, Postdoctoral Researcher, Department of Physical Chemistry of Polymers, Max Planck Institute for Polymer Research, Mainz (D)</p> <p><b>15.00 Last Questions and Debate</b></p> <p><b>15.10 Break</b></p>	<p><b>14.05 Mechanisms of Accumulation of Liposomes in the Skin</b>  <b>Prof. Dr. Dmitri Simberg</b>, Assistant Professor, Skaggs School of Pharmacy and Pharmaceutical Sciences, Colorado Center for Nanomedicine and Nanosafety (CCNN), University of Colorado Denver, CO (USA)</p> <p><b>14.15 Targeting Metastatic Prostate Cancer via PSMA-targeted Exosome-mimetics</b>  <b>Dr. Wafa Al-Jamal</b>, Reader in Nanomedicine and Drug Delivery, Prostate Cancer Research Fellow, School of Pharmacy, Belfast (UK)</p> <p><b>14.25 Orally Administered, Polymeric Bile Acid Nanoparticles to Restore Glucose Control and Induce Immune Tolerance in Early and Advance Diabetes</b>  <b>Dr. José M Carballido</b>, Executive Director, Translational Medicine / Preclinical Safety, Novartis Institutes for Biomedical Research, Basel (CH) and <b>Dr. Gerald Rea</b>, CEO, Toralgen Inc., Madison, IN (USA)</p> <p><b>14.45 Questions and Debate</b></p> <p><b>15.10 Break</b></p>
<p><b>Wednesday, Hall Montreal, 15.30 – 17.00</b>  <b>29. Nano-Physics and Mathematics in Healthcare</b> (9' Speech and 1' Questions)  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.</p> <p>Chair <b>Prof. Dr. Inge Herrmann</b>, Group Leader, ETH Zurich and Swiss Federal Laboratories for Materials Science and Technology (Empa), Zurich and St. Gallen (CH)</p>	<p><b>Wednesday, Stream 2, 15.30 -17.00</b>  <b>30. The Plethora of Nanomedicine Aspects Session 2</b> (9' Speech and 1' Questions)  Due to the situation with COVID-19 the CLINAM Foundation had to downsize the Summit. Instead of cancelling the outstanding speakers we have created this session with a multitude of topics concerning Nanomedicine and Precision Medicine. All speakers have 9 minutes plus one minute for first questions.</p> <p>Chair <b>Prof. Dr. Scott E. McNeil</b>, Department of Pharmaceutical Sciences, Faculty of Science, University of Basel, Basel (CH)</p>	<p><b>Wednesday, Hall Sydney, 15.30 – 17.00</b>  <b>31. Clinical Molecular and Nuclear Imaging in Nanomedicine and Precision Medicine</b> (10' Speech)  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.</p> <p>Chair <b>Prof. Dr. med. Christoph Alexiou</b>, University Hospital Erlangen (D)</p> <p><b>15.30 Precision Nanomedicine Using Iron Oxide Nanoparticles and Robotics</b>  <b>Prof. Dr. med. Christoph Alexiou</b>, University Hospital Erlangen (D)</p>

<p><b>15.30 Integrating Experimental and Computational Pharmacology for Intelligent Drug Design</b>  <b>Dr. Yaroslav Nikolaev</b>, Team Leader Computational Biology, InterAx Biotech AG, Villigen, (CH)</p> <p><b>15.50 Single Particle Measurement of Number, Size and Charge is required for Confidence in Nanomedicine Engineering and Development</b>  <b>Dr. Marianne Marchioni</b>, PhD, PharmD, Application specialist of Izon science, Lyon (F)</p> <p><b>16.00 Combining existing and novel developments for sustainable medical solutions</b>  <b>Prof. Dr. Gabriel Aeppli</b>, Head of Photon Science Division (PSD), Paul Scherrer Institute, Villigen and Professor of Physics at the ETH Zürich and at the EPFL Lausanne, Zürich (CH)</p> <p><b>16.10 Rationalizing Nanoparticle Design: from Architecture to Function</b>  <b>Prof. Dr. Inge Herrmann</b>, Group Leader, ETH Zurich and Swiss Federal Laboratories for Materials Science and Technology (Empa), Zurich and St. Gallen (CH)</p> <p><b>16.20 A Computational Protocol for the in Silico Maturation of Antibody Fragments</b>  <b>Dr. Sara Fortuna</b>, Coordinator of the Self-Assembly, Recognition, and Applications group at the Department of Chemical and Pharmaceutical Sciences, University of Trieste (I)</p> <p><b>16.30 Three-Dimensional Graph Convolutional Network (3DGCN) for Deep-Learning Prediction of Drug-Target Interactions</b>  <b>Prof. Dr. Insung S. Choi</b>, 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)</p>	<p><b><u>Nanomedicine Characterization – Global State of the Art</u></b>  <b>15.30 Worldwide Development and Characterization of Nanomaterials / Nanomedicines</b>  <b>Prof. Dr. Scott E. McNeil</b>, Department of Pharmaceutical Sciences, Faculty of Science, University of Basel, Basel (CH)</p> <p><b>15.40 Determining what really counts: Modeling and Measuring Nanoparticle Number Concentrations</b>  <b>Dr. Matthias Rösslein</b>, Senior Scientist, EMPA Swiss Federal Laboratories for Materials Science and Technology, St. Gallen (CH)</p> <p><b>15.50 Transparency, Reproducibility and Translation of Nanomedicine! Tackling the Complexity</b>  <b>Prof. Dr. Adriele Prina-Mello</b>, 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)</p> <p><b>16.00 From SOPs to Standards for Nanomedicine</b>  <b>Dr. Luigi Calzolari</b>, Project Leader, Joint Research Center of the European Commission, Ispra (I)</p> <p><b>16.10 Hyphenation of Electrical Asymmetrical Field-Flow Fractionation with Multi-Angle Light Scattering and Nanoparticle Tracking Analysis for Multi-dimensional Characterization of Liposomes and Exosomes in Complex Biological media</b>  <b>Dr. Florian Meier</b>, Group Leader Research, Postnova Analytics GmbH, Research &amp; Development, Landsberg (D)</p> <p><b><u>Knowledge Management</u></b>  <b>16.30 Knowledge Management and Health Data Standardization Efforts at FDA to Enhance the Utility and Value of Real World Evidence for Public Health</b>  <b>Dr. med. Frank F. Weichold, PhD</b>, Director of Critical Path and Regulatory Science Initiatives, Office of Regulatory Science &amp; Innovation (ORSI) and Office of the Chief Scientist/Office of the Commissioner Food and Drug Administration (FDA), Silver Spring, MD (USA)</p> <p><b>16.40 Questions and Debate</b></p>	<p><b>15.40 Biochemical Functionality of Magnetic Particles as Nanosensors: How Far-away are we to Implement them into Clinical Practice?</b>  <b>Prof. Dr. med. Beatrice Beck Schimmer</b>, Vice President Medicine, Institute for Anesthesiology, University Hospital Zürich, Zürich (CH)</p> <p><b>15.50 Personalized Medicine for Renal Dysfunction using AGuIX Nanoparticles</b>  <b>Dr. Nathalie Mignet</b>, Head of the UTCBS lab, Chemical and Biological Technologies for Health, University Paris Descartes INSERM U1267, CNRS UMR8258, Faculty of Pharmacy, Paris (F)</p> <p><b>16.00 Nanoplatfoms for the Design of Engineered Biopolymer Nanostructures for Therapy and Multimodal Imaging Applications</b>  <b>Dr. Enza Torino</b>, University of Naples Federico II, Department of Chemical Materials and Production Engineering (DICMaPI), Napol (I)</p> <p><b>16.10 Polymeric Nanoconjugates for MRI Brain Tumor Differential Imaging and Treatment</b>  <b>Dr. med. Vladimir Ljubimov, MD</b>, Neurosurgery Resident, Nanomedicine Research Center, Departments of Neurosurgery, and Biomedical Sciences, Cedars-Sinai Medical Center, Los Angeles, CA (USA)</p> <p><b>16.20 Questions and Debate</b></p>
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**16.40 Papere-Based Immunoassays, Where Surface Chemistry and Machine Learning Meet**

**Dr. Delyan R. Hristov**, Department of Engineering, University of Massachusetts Boston, Boston, MA (USA)

**16.50 Questions and Debate**

**Wednesday, Hall Montreal, 17.00 – 17.40**

**32. How to Achieve Expectations and Dreams of Precision Medicine** (30' Speech and 10' Questions)

Chemotherapy, biologically target therapy, radiotherapy, nanotherapy, and immunotherapy are honored, and extremely valuable approaches to the treatment of cancer and other diseases, and will continue to be for the foreseeable future, each with their strengths, limitations, and appropriate combinations of patient and indication. They will also be an integral part of the future in a different manner: The expectations and dreams of precision medicine cannot be met by a single disciplinary approach, and will require a true convergence of the various "therapies" with novel approaches, from the digital world, math, physics, and other disciplines. MetaTherapeutics are a first emergent new class of innovatively executed precision medicines, expanding on current paradigms, and bringing new hope against current untreatable diseases.

**Prof. Dr. med. Marisa Papaluca**, Reynolds Chair, Department of Primary Care & Public Health School of Public Health Faculty of Medicine, Imperial College London, London (UK)

**17.00 MetaTherapeutics: A New Generation of Treatments?**

**Prof. Dr med Mauro Ferrari**, Affiliate Professor of Pharmaceutics, University of Washington, Seattle (USA)

**17.30 Questions and Debate**

**Wednesday Hall Montreal, 17.40 – 18.00**

**17.40 33. Closing of CLINAM 12 /2020 and Announcement of CLINAM 2021/22**

**18.00 End of the CLINAM Summit 12 /2020**

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## General Information

### Presentation of Posters in the Virtual Foyer of the CLINAM Summit

All Posters will be in Original online. Every Poster is underplayed with an audio clip where the author presents in a short speech of 4 minutes his poster. The breaks in the summit give participants time to review the posters online.

### Poster Prizes

There will be the CLINAM-Poster 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). The names of the winners will be announced on the last Day of the Summit in the Virtual CLINAM Foyer under Poster Prizes.

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<b>Industry &amp; Government Participation via Live Streaming</b>	<b>400.00 €</b>
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<b>Guests</b>	<b>1 free link to access the Summits</b>
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## Exhibition 2020 - due to COVID-19 the exhibition in Live Stream

### Virtual live streaming is a challenge and a solution

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**The Virtual Summit Exhibition includes:** 1) Short presentation paper on the CLINAM Virtual Exhibition space including logo and link to company's Website. 2) Being addressed in the opening. 3) Two presentation pages in the proceedings and two hard cover copies of the proceedings. Free inclusion of a youtube video on the website 4) 3 free links for participation virtually in the entire Summit, held in Basel.

## Participants in the CLINAM 12/ 2020 Virtual Exhibition

<b>BioNanoNet, (A)</b>	<b>Izon Science Europe (F)</b>	<b>Polymun Scientific GmbH (A)</b>
<b>CIBER-BBN (E)</b>	<b>Leon Nanodrugs (D)</b>	<b>PRNANO USA</b>
<b>CLINAM Foundation (CH)</b>	<b>Lipoid AG (CH)</b>	<b>Postnova (D)</b>
<b>ESNAM (E)</b>	<b>Malvern Panalytical Ltd (UK)</b>	<b>ProMatLeben, (D)</b>
<b>InnoMedica (CH)</b>	<b>Nanbiosis (E)</b>	<b>TECOmedical AG, (D)</b>
<b>ISNM (CH)</b>	<b>NanoLockin (CH)</b>	

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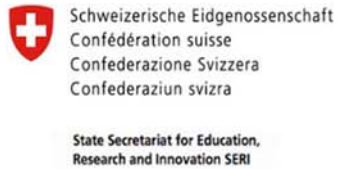
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