Else Kröner Fresenius Symposium

Nanomedicine

From bench to bedside

October 7–9, 2024

FAU
Friedrich-Alexander-Universität
Faculty of Medicine

Else Kröner Fresenius Stiftung

Uniklinikum Erlangen

Nanomedicine

From bench to bedside

Venue:
Kreuz + Quer
Bohlenplatz 1
91054 Erlangen
Germany

Registration:

Dear Colleagues, dear Ladies and Gentlemen,

Welcome to our 2024 **Else Kröner Fresenius Symposium on Nanomedicine: From bench to bedside.** Bridging the boundaries between physical, chemical, biological and medical sciences, nanomedicine enables us to apply nanotechnological advances in human medicine to diagnose and treat the patients in a more effective and personalized way.

Acknowledging the scientific and clinical potential of this field, the Else Kröner Fresenius Foundation supported the 2010 symposium on nanomedicine organized by SEON. Since then, this field has considerably developed and advanced, with multiple examples of nanoparticulate systems finding their way into clinical trials.

Marking the 15th anniversary of our section, the 2024 Else Kröner Fresenius Symposium with additional support of the Manfred Roth Foundation (Fürth, Germany) aims to provide a summary of the progress in nanomedicine over the past decade, with a particular focus on the most recent advances in the field. During the three intensive days of thematic sessions comprising speeches and discussions, this year‘s symposium will bring together leading experts in the fields of nanomedicine, chemistry, pharmaceutics, engineering, robotics and AI, optics and imaging, toxicology and immunology, regenerative medicine, cardiology, oncology, as well as drug, vaccine and RNA delivery, from both academia and industry, providing fascinating insights into the latest developments of nanosystems for disease diagnosis and personalized therapy, as well as their preclinical and clinical assessment.

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Foreword

Our intention is to promote an open scientific exchange and open-ended discussions of the cutting-edge findings, giving all participants the opportunity to learn and share their ideas about the future concepts in nanomedicine during the scientific sessions, but also to network during the social events. The contents of this symposium will be published in a special issue of Biochemical and Biophysical Research Communications (BBRC).

Thank you for joining us this year in Erlangen. We wish you a highly informative and results-orientated symposium.

August 2024

Very sincerely

Prof. Dr. med. Christoph Alexiou

Assistant Medical Director
Else Kröner Fresenius Foundation Professorship
Head Section of Experimental Oncology and Nanomedicine (SEON)
Department of Otorhinolaryngology – Head and Neck Surgery, Uniklinikum Erlangen, Germany

Monday, October 7

9.00 Reception
Welcome

10.00 **Welcome to the symposium**
Prof. Dr. Christoph Alexiou

History of SEON
Prof. Dr. Wolfgang M. Heckl
General Manager of Deutsches Museum, Oskar-von-Miller Chair of Scientific Communication, Technical University of Munich, Germany

Welcome address
Prof. Dr. Joachim Hornegger
President of the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany

Prof. Dr. Markus F. Neurath
Dean of the Medical Faculty, Chair of Internal Medicine 1, Uniklinikum Erlangen, Germany

Prof. Dr. Heinrich Iro
Chair of Otorhinolaryngology, Head and Neck Surgery, Uniklinikum Erlangen, Germany

Nanomedicine – From science into clinics: Requirements, challenges, medical needs
Prof. Dr. Patrick Hunziker
University Hospital Basel, Switzerland

11.00 **Key note lecture from the Nobel Laureate**
Prof. Dr. Moungi G. Bawendi
Massachusetts Institute of Technology, Cambridge, USA

12.30 **Discussion/lunch break**

Topics/Program items:

13.30 **Production and characterization of nanoparticles for biomedical applications**

Chair: **PD Dr. Rainer Tietze**
SEON, Uniklinikum Erlangen, Germany

Prof. Robin N. Klupp Taylor
Institute of Particle Technology,
FAU, Germany

Considerations of design for nanoscaled products aiming theranostic applications
Prof. Dr. Nguyen TK Thanh
University College London, United Kingdom

Transforming drug and vaccine delivery for equitable access
Dr. Ana Jaklenec
Massachusetts Institute of Technology, Cambridge, USA

Discussion

15.00 **Nanotoxicology and -safety**

Chair: **PD Dr. Christina Janko**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Bengt Fadeel
Karolinska Institutet, Stockholm, Sweden

Sustainable nanotechnology: Safer and sustainable by design materials, approaches and applications in biomedical, agriculture and food system areas
Prof. Dr. Philip Demokritou
Harvard School of Public Health, Cambridge, USA

A futuristic approach for assessing nanoparticles immunotoxicity
Dr. Marina A. Dobrovolskaia
Nanotechnology Characterization Laboratory (NCL), Frederick, USA

Understanding the immunological interactions of two-dimensional (2D) materials
Prof. Dr. Bengt Fadeel
Karolinska Institutet, Stockholm, Sweden

Discussion/break

16.30 **Pharmaceutical production/development of nanotherapeutics for clinical applications**

Chair: **Dr. Helmut Spielvogel**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Frank Dörje
Hospital Pharmacy, Uniklinikum Erlangen, Germany

From albumin-based nab technology for small molecules to peptide-based delivery for RNA therapeutics – clinical strategies for development
Dr. Neil Desai
Aadi Bioscience and Aanastra Inc., Pacific Palisades, USA

Nanotherapeutics for combatting and preventing infectious diseases
Prof. Dr. Claus-Michael Lehr
University of Saarbrücken, Germany

Discussion

18.00 **Visit to Deutsches Museum Nuremberg – the Future Museum** (separate invitation required)

Dinner (separate invitation required)

Tuesday, October 8

8.30 **Pharmaceutical production/development of nanotherapeutics for clinical applications**

Chair: **Dr. Helmut Spielvogel**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Frank Dörje
Hospital Pharmacy, Uniklinikum Erlangen, Germany

Bacterial nanocellulose as a pharmaceutical raw material to incorporate APIs for controlled delivery
Prof. Dr. Dagmar Fischer
Department of Pharmaceutical Technology, FAU, Germany

Development of GMP-compliant multi-functionalizable magnetic nanoparticles for diagnostic and therapeutic applications
Dr. Helmut Spielvogel
SEON, Uniklinikum Erlangen, Germany

Novel nanopharmaceutical drug for treatment of hyperphosphatemia
Prof. Dr. Matthias Taupitz
Charité – Universitätsmedizin Berlin, Germany

Discussion/break

10.30 **Applications:**

Imaging (MRI, Ultrasound, MPI)

Chair: **Prof. Dr. Stefan Lyer**
SEON, Uniklinikum Erlangen, Germany

Dr. Markus Kopp
Department of Radiology, Uniklinikum Erlangen, Germany

Human-scale navigation of magnetic microrobots in hepatic arteries
Prof. Dr. Urs Häfeli
University of British Columbia, Vancouver, Canada

Image-guided strategies to improve drug delivery to tumors beyond using the EPR effect
Prof. Dr. med. Fabian Kiessling
RWTH Aachen University and Helmholtz-Institute for Biomedical Engineering, Aachen, Germany

Guiding drugs to the target: Magnetic particle imaging
Prof. Dr. Thorsten M. Buzug
University of Lübeck and Fraunhofer IMTE, Lübeck, Germany

Therapy monitoring of drug delivery systems: From magnetomotive ultrasound to photoacoustic imaging
Prof. Dr. Stanislav Emelianov
Georgia Institute of Technology and Emory University School of Medicine, Atlanta, USA

Discussion

12.30 **Lunch**

13.30 **Regenerative medicine**

Chair: **Prof. Dr. Iwona Cicha**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Oliver Friedrich
Institute of Medical Biotechnology,
FAU, Germany

Nanoparticles for tissue regeneration and healing of inflammatory lesions
Prof. Dr. Didier Letourneur
Laboratory for Vascular Translational Science,
INSERM, Paris, France

Biomaterials for regenerative medicine
Prof. Dr. Aldo Boccaccini
Institute of Biomaterials, FAU, Germany

Discussion

15.00 **Infectious diseases, oncology and vaccination**

Chair: **PD Dr. Dipl. Biochem Jürgen Held**
Institute of Microbiology, Uniklinikum Erlangen,
Germany

PD Dr. Richard Strauß
Medicine 1, Uniklinikum Erlangen, Germany

Search and detect pathogens using magnetic iron oxide nanoparticles
PD Dr. Rainer Tietze
SEON, Uniklinikum Erlangen, Germany

‚Nano' and mRNA pharmaceuticals for infectious diseases
Dr. Heinrich Haas
Johannes Gutenberg University Mainz, Germany

Nanocoating-based living therapeutics
Prof. Dr. Jinyao Liu
Shanghai Jiao Tong University, Shanghai, China

Individualizing immunotherapy in cancer
Prof. Dr. Dirk Jäger
National Center for Tumor Diseases (NCT) Heidelberg, Germany

Discussion

19.00 **Congress evening and dinner**
(separate invitation required)

Wednesday, October 9

8.30 **Oncology**

Chair: **Prof. Dr. Christoph Alexiou**
SEON, Uniklinikum Erlangen,Germany

Prof. Dr. Carola Berking
Departmenf of Dermatology, Uniklinikum Erlangen, Germany

Nanodimensional polymer therapeutics for tumor therapy
Prof. Dr. Stephan Grabbe
University Medicine of the Johann Gutenberg University Mainz, Germany

CAR-T-cell hybrids for precision therapy of solid tumors
PD Dr. Christina Janko
SEON, Uniklinikum Erlangen, Germany

Highly precise anticancer therapy upon light or ultrasound activation of platinum-loaded nanoparticles
Dr. Johannes Karges
Ruhr University Bochum, Germany

Utilizing transcytotic transport of nanocarriers for efficient drug delivery in solid tumors
Prof. Dr. Huan Meng
National Center for Nanoscience and Technology (NCNST), Beijing, China

Discussion

10.30 **Break**

11.00 **Cardiovascular diseases**

Chair: **Prof. Dr. Iwona Cicha**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Christoph Garlichs
Diako Hospital Flensburg, Germany

Nanotherapeutics for targeted thrombolysis
Dr. Cédric Chauvierre
Laboratory for Vascular Translational Science, INSERM, Paris, France

Clinical needs and translational prospects of cardiovascular nanomedicine
Prof. Dr. Michael Joner
German Heart Centre, Munich, Germany

Discussion

12.00 **AI and robotics in nanomedicine**

Chair: **Prof. Dr. Stefan Lyer**
SEON, Uniklinikum Erlangen, Germany

Prof. Dr. Björn Eskofier
Department of Artificial Intelligence in Biomedical Engineering, FAU, Germany

AI-based knowledge discovery:
The quest for science automation
Prof. Dr. Sami Haddadin
Technical University of Munich, Germany

Integration of AI and robotics into treatment concepts with magnetic drug targeting
Prof. Dr. Stefan Lyer
SEON, Uniklinikum Erlangen, Germany

Opportunities for medical robotics in the era of generative AI
Prof. Dr. Florian Walter
Machine Intelligence Lab, Department of Engineering, University of Technology Nuremberg, Germany

Discussion

13.30 **Closing remarks**

End of the symposium

Lunch

Christoph Alexiou

Christoph Alexiou is the Head of the Section of Experimental Oncology and Nanomedicine (SEON) and Assistant Medical Director in the Department of Oto-Rhino-Laryngology – Head and Neck Surgery at the Uniklinikum Erlangen. He received his MD title from the Medical School at the Technical University of Munich (TUM) in 1995. After finishing his internship in the Gastroenterology Department at the University Hospital of TUM, he worked as a physician and researcher at the Department of Oto-Rhino-Laryngology, Head and Neck Surgery, and founded a research group developing local chemotherapy with magnetic nanoparticles (Magnetic Drug Targeting). Having completed his specialization as an ENT physician in 2000, he moved to the ENT department at Uniklinikum Erlangen in 2002, where he obtained his postdoctoral lecturing qualification (habilitation) in 2004.

Since 2009, Prof. Alexiou has held the W3 Else Kröner Fresenius Foundation Professorship for Nanomedicine at the Uniklinikum Erlangen. In addition to several national and renowned international awards, he has received multiple grants from the European Union, German Research Foundation (DFG), Ministry of Education and Science (BMBF) and Bavarian State Ministry of the Environment and Consumer Protection and is a member of the Editorial Board of the Journal Biochemical and Biophysical Research Communication (BBRC).

His interdisciplinary research addresses the emerging fields of diagnosis, therapy and regenerative medicine using magnetic nanoparticles, with a particular focus on translation from basic research into clinical trials.

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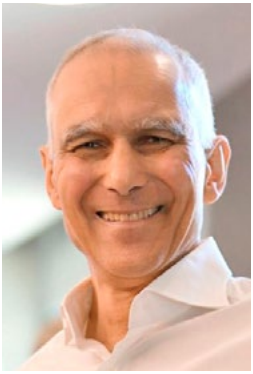
Moungi Bawendi



Moungi Bawendi is the Lester Wolfe Professor of Chemistry at the Department of Chemistry of Massachusetts Institute of Technology (MIT). He received his Bachelor degree in 1982 from Harvard University and his PhD in 1988 from the University of Chicago. Subsequently, he completed two years of postdoctoral research at Bell Laboratories, working with Louis Brus, where he began his studies on nanomaterials. Prof. Bawendi joined the faculty at MIT in 1990, becoming Associate Professor in 1995 and Professor in 1996. He is a fellow of the American Association for the Advancement of Science, a fellow of the American Academy of Arts and Sciences, and a member of the US National Academy of Sciences.

Prof. Bawendi was one of the pioneers in the field of colloidal quantum dots. His studies included the development of methods for synthesizing, characterizing and processing quantum dots, magnetic nanoparticles and J-aggregates, as well as the applications of nanomaterials for light emission, photodetection, spectral sensing, solar energy harvesting, and bio-imaging. His laboratory has pursued studies in fundamental optical and magnetic properties of nanostructures using a variety of spectroscopic methods, and developed the methods of incorporating quantum dots, magnetic particles, J-aggregates and thin film materials into optical and opto-electronic device structures. Further, his group has pioneered novel optical tools and probes, including nanoparticles and other imaging agents, for the spectroscopy of single nanostructures as well as for in-vivo imaging.

Prof. Moungi Bawendi is a co-laureate of the 2023 Nobel Prize in Chemistry.

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Carola Berking

Carola Berking has been the Head of the Department of Dermatology at the Universitätsklinikum Erlangen since 2019 and the Vice Dean for Research of the Medical Faculty at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) since 2024. She received her MD from the Medical School of the University of Munich (LMU) in 1998. Subsequently, she worked as a postdoctoral fellow at the Wistar Institute in Philadelphia until 2001. She obtained her habilitation on her research of malignant melanoma at the LMU in 2004, and in 2008 Prof. Berking was appointed to a Professorship for Dermatology and Allergy at the LMU with a focus on dermato-oncology. Since 2019, she has held a W3 Professorship for Dermatology and Venereology and acted as the Head of the Department of Dermatology at the Uniklinikum Erlangen.

Prof. Berking's research focuses on cellular and molecular biology of melanoma and uveal melanoma, as well as non-invasive diagnostics of skin lesions and non-melanoma skin cancer. She has authored more than 250 peer-reviewed articles and won several awards, including the Therese von Bayern Award. Since 2019, she has been Vice President of the Dermatologie Cooperative Oncology Group (DeCOG), and has served as speaker of the Melanoma Study Group of the Bavarian Cancer Research Center (BZKF) since 2021. Additionally, Prof. Berking is chair of the Clinician Scientist Program Committee of the Medical Faculty of the FAU.

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Aldo R. Boccaccini

Aldo R. Boccaccini is Professor of Materials Science (Biomaterials) and Head of the Institute of Biomaterials at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany. He is a visiting professor at Imperial College London, UK, and RWTH Aachen University (Germany). He obtained an Engineering degree from Instituto Balseiro, Argentina and a Doctorate in Engineering (Dr.-Ing.) from RWTH Aachen University, Germany (1994), followed by post-doctoral appointments at University of Birmingham, UK (1994-1996), and the University of California, San Diego, USA (1996-1997).

Prof. Boccaccini is a fellow of multiple materials science/technology societies and serves as the president of the Federation of European Materials Societies. He was a vice-president of the Council of the European Society for Biomaterials (ESB) between 2020-2023. In 2023, he was elected Fellow, Biomaterials Science and Engineering (FBSE) and in March 2024 he was inducted into the prestigious College of Fellows of the American Institute for Medical and Biological Engineering. In addition to teaching and projects coordination, Prof. Boccaccini has published more than 1,000 scientific papers and 25 book chapters. He is one of the most frequently cited researchers in the world, with his work being cited more than 72,000 times and having been included in the “Highly Cited Researchers” lists of Clarivate Analytics in 2014 and 2018. Prof. Boccaccini‘s research activities lie in the fields of ceramics, glasses and composites for biomedical, functional and/or structural applications with a focus on bioactive materials, scaffolds for tissue engineering, nanomaterials for drug delivery, biofabrication and antibacterial coatings.

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Thorsten M. Buzug

Thorsten M. Buzug has been the Director of the Institute for Medical Engineering at the University of Lübeck since 2006 and the Executive Director of the Fraunhofer Research Institution for Individualized and Cell-Based Medical Engineering IMTE since 2020. He received his PhD in Applied Physics at the Christian-Albrecht-University of Kiel in 1993, in the field of analysis of nonlinear dynamical systems. From 1993 to 1994, he worked as a research associate at the Research Institute of the German Armed Forces for Waterborne Sound and Geophysics (FWG) in Kiel, where he was involved in the signal processing of underwater sound systems especially for sonar applications. At the end of 1994, he moved to Philips Research Laboratories in Hamburg to work as the head of the research cluster for medical image processing.

In 1998, Prof. Buzug was appointed Professor of Physics and Medical Technology at the RheinAhrCampus Remagen, Koblenz University of Applied Sciences, where he served as the Chairman of the Academic Development Committee from 2000 to 2004 and as Chairman of the joint Scientific Council of the Departments from 2004 to 2006. In 2006, he became Director of the Institute for Medical Engineering at the University of Lübeck and between 2011 and 2016 he was elected as the Vice President of the University of Lübeck. He is a member of the National Academy of Science and Engineering (acatech), the German Physical Society (DPG), the German Society for Biomedical Engineering (DGBMT), and the German Society for Non-Destructive Testing (DGfZP).

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Cédric Chauvierre

Cédric Chauvierre is the Head of the Nanomedicine Group at the INSERM U1148 Team 3 led by Didier Letourneur. He obtained his Master degree in Physico-Chemistry from Ecole Centrale Paris in 1999 and a PhD in Pharmaceutical Sciences from University Paris XI in 2003. After two years in a start-up company as Scientific Manager, he took over a position as a researcher at INSERM in 2005. In 2014, he obtained the accreditation to supervise research (HDR) in Sciences from University Paris 13 and was promoted to Research Director in 2022. From 2025, he will head the Team 4 (Nanotechnologies for vascular medicine and imaging), with 22 permanent members.

In addition to project coordination, clinical trial management, teaching and supervising students, Dr. Chauvierre is a member of INSERM Specialized Scientific Committee on Technologies for Health as well as the Management Board of the UFR of Medicine Université Paris Cité. As a laureate of several scientific prizes, he has given a number of invited talks at international and national congresses, and contributed to the meetings' organization as a board member of the French Society for Nanomedicine (SFNano) and member of the French Society for Biomaterials.

His current research activities focus on nanomedicine dedicated to molecular diagnosis and targeted therapy in vitro and in vivo of cardiovascular diseases.

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Iwona Cicha

Iwona Cicha is an Associate Professor and the Head of the Cardiovascular Nanomedicine Unit at the Section of Experimental Oncology and Nanomedicine (SEON), Department of Otorhinolaryngology, Head and Neck Surgery at the Universitätsklinikum Erlangen. She obtained her MsC in Biology from the Jagiellonian University in Krakow, Poland, and her PhD in Medical Sciences from the Ehime University, Japan, in 2002. From 2003 until 2013, Prof. Cicha worked as a postdoctoral fellow at the Laboratory for Molecular Cardiology at the Universitätsklinikum Erlangen, where she received her habilitation in 2012. She has been leading the Cardiovascular Nanomedicine Unit at SEON since 2013 and was nominated an associate Professor at the Medical Faculty of FAU in 2018.

Prof. Cicha has extensive experience in the field of atherosclerosis, with focus on the role of inflammation and blood flow dynamics in plaque development and destabilization. Her group investigates the application of nanomedical strategies for the diagnosis and treatment of cardiovascular diseases. Further scientific interests include biofabrication of three-dimensional vascularized models, and magnetic colonisation of scaffold materials with vascular endothelial cells.
She has authored or co-authored a large number of publications on these topics and participated in multiple interdisciplinary and international projects.

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Philip Demokritou

Philip Demokritou is a Henry Rutgers Chair and Professor in Nanoscience and Environmental Bioengineering at the School of Public Health & School of Engineering, Rutgers University and an Adjunct Professor at the Harvard University. Before joining Rutgers University in 2021, he worked as a Professor at TH Chan School of Public Health at Harvard University for 25 years, where among other roles he served as the founding Director of two interdisciplinary research Centers: Harvard-NIEHS Nanosafety Research Center and the Center for Nanotechnology and Nanotoxicology. He is also widely known as the founder of the Rutgers Nanoscience and Advanced Materials Research Center at Rutgers University.

Prof. Demokritou's fundamental research focuses on investigating the mechanisms of interaction between nanoparticles and biological and environmental systems and how their properties and structures define their bioactivity and toxicological footprint. Additionally, his research focuses on understanding, manipulating, and applying nanoscale materials and associated phenomena to address major environmental and public health challenges of the 21st century in food safety and security, agrochemical delivery, airborne infectious diseases, obesity, climate change and sustainability. Prof. Demokritou holds more than a dozen international/US patents and is a co-founder of DIETRICS, a food ingredient innovation company. He is a co-author of two books, numerous book chapters, and more than 220 articles in leading journals in the fields of nanoscience, particle toxicology and health effect, and aerosol science and engineering. He is also a founding co-editor in chief of the multidisciplinary journal NanoImpact (Elsevier).

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Neil Desai

Neil Desai is the Founder, CEO and Chairman of Aanastra, Inc., and Co-Founder of Divincell SAS. Both companies are pioneering novel peptide-based RNA therapeutic drug delivery systems for the treatment of cancer and genetic diseases. He obtained his BSc in Chemical Engineering from the University Institute of Chemical Technology in Mumbai, India, followed by conferment of MSc and PhD degrees in Chemical Engineering from the University of Texas at Austin, USA. He is the inventor of the nab technology (nab-sirolimus (FYARRO) and nab-paclitaxel (ABRAXANE)). During his career spanning over 25 years he has developed novel encapsulation systems for living cells and was part of the team that performed the world's first successful encapsulated islet cell transplant in a diabetic patient. As the senior vice president of global R&D at Abraxis Bioscience, where he invented the nab technology, he led the Abraxane team through all drug development stages and regulatory apoprovals in breast, lung and pancreatic cancer. Following the acquisition of Abraxis by Celgene Corp in 2010, he served as vice president of Strategic Platforms at Celgene until 2016.

Dr. Desai is also the founder, Executive Chairman and former CEO (2014-Dec 2022) of Aadi Bioscience, which he steered to the public market (AADI: Nasdaq) in August 2021, as well as the approval and commercialization of its flagship drug FYARRO, the first FDA approved therapy for advanced malignant perivascular epithelioid cell tumor. Dr. Desai can look back upon more than 100 issued patents, over 40 peer-reviewed publications and book chapters, and over 200 presentations at scientific meetings. He was an active participant in FDA and EU Nanotechnology initiatives and a member of the Steering Committee for the National Cancer Institute (NCI) Alliance for Nanotechnology in Cancer.

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Marina A. Dobrovolskaia

Marina A. Dobrovolskaia is the Laboratory Director of Operations and the Head of the Immunology Section at the Nanotechnology Characterization Laboratory (NCL) in Maryland, USA. She received her M.S. degree from the Kazan State University in Russia, PhD degree from the N.N. Blokhin Cancer Research Center of the Russian Academy of Medical Sciences in Moscow, Russia, and an MBA degree from the the Hood College in Frederick, MD. Before joining the NCL, Dr. Dobrovolskaia worked as a Research Scientist in a GLP laboratory at the contract research organization PPD, Inc. in Richmond, VA, USA.

As the Director of Operations at NCL, Dr. Dobrovolskaia supervises the preclinical nanoparticle characterization services to advance the bench-to-bed translation of promising nanotechnology concepts and contributes to the education of a next generation of scientists in the field of nanomedicine. She also directs the performance of immunology, client relations and administrative sections of the NCL, which play a crucial role in advancing NCL's key strategic goals and supporting the mission of the Frederick National Laboratory for Cancer Research. As the Head of the Immunology Section, Dr. Dobrovolskaia leads a team conducting preclinical studies to monitor the toxicity of nanoparticles to the immune system in vitro and in vivo. Dr. Dobrovolskaia has been included in the Stanford World's Top 2% Scientists list since 2022. Her research interests encompass immunology, toxicology, nanotechnology, and bioanalytical methodology.

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Frank Dörje

Frank Dörje is the Head of the Pharmacy and Manager of the Pharmacy and Therapeutics Committee at the Uniklinikum Erlangen. He studied chemistry and pharmacy at the Technische Universität Braunschweig, where he received his approbation in 1988. He completed his PhD in 1992 at the Wolfgang Goethe-Universität Frankfurt, followed by a research residency at the National Institutes of Health in Bethesda, USA. Since 2001, he has been Head of the Hospital Pharmacy and Manager of the Pharmacy and Therapeutics Committee at the Uniklinikum Erlangen. He received a MBA degree in Health Care Management from the University of Bayreuth in 2007. He was appointed Honorary Professor for Clinical Pharmacy at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) in 2014.

Prof. Dörje‘s research interests lie in the translational biomedical research, such as the manufacturing of investigational medicinal products in accordance with GMP, medication management and safety and clinical decision support systems, and improvement of medication adherence. He has served as an appointed member of the Drug Commission of German Pharmacists (AMK) since 2017 and as Vice President of the German Federal Association of Hospital Pharmacists since 2020.

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Stanislav Emelianov

Stanislav Emelianov is a Joseph M. Pettit Endowed Chair, Georgia Research Alliance Eminent Scholar, and Professor for Electrical & Computer Engineering and Biomedical Engineering at the Georgia Institute of Technology. Furthermore, he works as an appointed Professor of Radiology at Emory University School of Medicine and is affiliated with Winship Cancer Institute. Furthermore, Dr. Emelianov is co-Director of the Pediatric Technology Center, an unique patient-centric partnership between Children's Healthcare of Atlanta and Georgia Institute of Technology (Georgia Tech). Finally, Prof. Emelianov is Director of the Ultrasound Imaging and Therapeutics Research Laboratory at the Georgia Tech where projects focus on the discovery, development and clinical translation of diagnostic imaging and therapeutic instrumentation, augmented with theranostic nanoagents.

Dr. Emelianov has authored over 250 publications and been named a Fellow of the American Institute for Medical and Biological Engineering (AIMBE), Institute of Electrical and Electronics Engineers (IEEE), Acoustical Society of America (OSA), and Society of Photographic Instrumentation Engineers (SPIE). He is an expert in biomedical imaging instrumentation and nanoagents for imaging and therapy. Throughout his distinguished career, Dr. Emelianov has been at the forefront of advancing functional, cellular, and molecular imaging methods. These methods are designed to detect and diagnose various pathologies, particularly cancer, while aiding in treatment, planning, improving image-guided therapy, and monitoring treatment outcomes.

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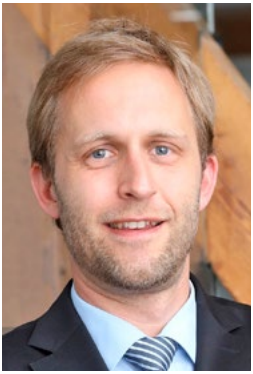
Bjoern M. Eskofier



Bjoern M. Eskofier (SM, IEEE) is the Head of the Machine Learning and Data Analytics (MaD) Lab at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) and the founding spokesperson of FAU's Department Artificial Intelligence in Biomedical Engineering (AIBE). He graduated in Electrical Engineering at FAU in 2006 and completed his PhD in Biomechanics at the University of Calgary, Canada. Prof. Eskofier was a visiting professor in the Motion Analysis Lab at Harvard Medical School in 2016, the Human Dynamics group at MIT Media Lab in 2018, and Prof. Scott Delp's NMBL Lab at the School of Engineering and Medicine, Stanford University in 2023. Since 2023, he has also been an associate principal investigator and leader of the "Translational Digital Health" research group at the Helmholtz Zentrum Munich, Germany.

Prof. Eskofier's revolves around contributions to a digital health ecosystem where patients are connected to professionals within the healthcare system using digital support tools. His digital health research philosophy implies that only multidisciplinary teams of engineers, medical experts, industry representatives and entrepreneurs can possess the necessary tools to actually implement changes in healthcare. He has authored more than 400 peer-reviewed articles, holds five patents, has started three spinoff startup companies, and won several medical-technical research awards, including the "Curious Minds" 2021 award in "Life Sciences" by Manager Magazin and Merck.

In addition to teaching, editorial tasks in IEEE journals and congress organization, Prof. Eskofier is the spokesperson of the German Ministry of Economic Affairs and Climate Action GAIA-X Use Case project "TEAM-X" and co-spokesperson of the German Research Foundation Collaborative Research Center "EmpkinS" (www.empkins.de).

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From 2009 to 2013, Prof. Fadeel served as the Vice Chairman of the Institute of Environmental Medicine and was nominated the Vice Chairman of the same institute again in 2023. He was also appointed as a member of the Faculty Council at Karolinska Institutet in 2023. Prof. Fadeel was elected as a Fellow of the Academy of Toxicological Sciences in 2012, and was elected as a Member of Academia Europaea (Class of Biochemistry and Molecular Biology) in 2024. His research activities over the past fifteen years have focused on the impact of engineered nanomaterials and other advanced materials on the immune system. He has participated in several EU-funded projects focused on nanosafety, as well as the Graphene Flagship project (2013–2023).

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Besides being a member of numerous advisory boards and executive committees in academia and industry, Prof. Fischer was the president of the German Pharmaceutical Society (DPhG) from 2020 to 2023, and is a full member of the Akademie gemeinnütziger Wissenschaften zu Erfurt, Germany.

Her research is focused on the development of natural and synthetic polymers as targeted drug delivery systems in the field of infection, inflammation and aging. Her major focus lies on nanosafety aspects, biocompatibility testing and the development of alternative biological test models according to the 3R concept (3R: reduce, reuse, and recycle).

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Oliver Friedrich

Oliver Friedrich has been Professor and the Head of Institute of Medical Biotechnology (MBT) at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany since 2010. He is also Adjunct Professor at the Australian Queensland University of Technology (Brisbane), University of New South Wales, Sydney, Australia and the Victor Chang Cardiac Research Institute (Sydney). He studied Medicine and Physics at Ruprecht-Karls University Heidelberg and obtained his medical degree in 1997 and his Physics Diploma in 2000. Subsequently, he completed two doctorates, in Medicine (Physiology) in 2000 and in Sciences (Physical Chemistry and Molecular Biotechnology) in 2002, and obtained his Habilitation in Physiology and Biophysics at the University of Heidelberg in 2006. Between 2004 and 2008, he worked as an ARC International Fellow and Senior Lecturer at the University of Queensland in Brisbane, Australia. Upon his return to Germany, he took up the position as inaugurating Chair of the newly founded Institute of Medical Biotechnology at FAU. He currently also acts as the Head of School of Chemical and Biological Engineering at FAU.

Prof. Friedrich's research focuses on delineating tissue and organ structure-function relationships by determining tissue (sub)cellular ultrastructure in 3D and obtaining functional performance information, especially in mechanically active tissues, such as in skeletal and heart muscle, bone or the gut. His biophotonics group develops minimally invasive modalities for assessing 3D tissue architecture through label-free multiphoton imaging techniques and quantitative morphometry. The biomechatronics group conceives novel recording and stimulation techniques to automate tissue and single-cell biomechanics analysis. The fusion of those bioengineering concepts into 'Opto-Biomechatronics' allows his team to simultaneously obtain structure-function relationships from cells and tissues and use these technologies in studies on disease models and tissue engineering.

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Christoph D. Garlichs is Head of the Department of Cardiology, Angiology, Nephrology and Intensive Care Medicine at the DIAKO Hospital in Flensburg, Germany. He received his MD degree from the Medical Faculty of the Free University of Berlin in 1994. Subsequently, he began his clinical and research career at the University of Dresden, Germany. In 1998, he continued his training in internal medicine with a focus on clinical and interventional cardiology at the Uniklinikum Erlangen, where he became one of the Deputy Directors of the Department of Cardiology. In 1998, in addition to his clinical work, he founded the Laboratory for Experimental Cardiology at the Uniklinikum Erlangen. He obtained his habilitation in 2002 and his associate Professorship in 2008. In 2012, he was appointed a Professorship. In 2012, the University of Aberdeen/Scotland offered him a chair in cardiology, but he decided to continue his work at the Academic Hospital in Flensburg as the chief physician of internal medicine.

Prof. Garlichs is a member of the Germany Society of Cardiology and fellow of the European Society of Cardiology and the American College of Cardiology. His research is focused on inflammatory mechanisms in atherosclerosis, heart failure and arterial hypertension. More recent projects have also focused on nanobiomaterials for cardiovascular applications.

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Stephan Grabbe is the Director of the Dermatology Department at the University of Mainz Medical Center (UMMC), Germany. He received his medical and scientific education at the Department of Dermatology of the University of Münster, Germany, as well as at the Harvard Medical School in Boston, USA, with research fellowships at the Department of Dermatology, Massachusetts General Hospital (1989-1992) and the Department of Dermatology, Brigham and Womens' Hospital (1998-1999). Before being appointed to his current position, Prof. Grabbe was Director and Chairman of the Dermatology Department at the University of Essen (2003-2007). He is currently also Head of the UMMC Skin Cancer Center, a member of the board of the University of Mainz Cancer Center (UCT), Adjunct Clinician Scientist at the Institute for Molecular Biology, and co-speaker of the Research Center Immunotherapy (FZI) at the Johannes Gutenberg University Mainz, Germany.

Prof. Grabbe's clinical focus is on skin oncology and immune-mediated skin diseases. His scientific focus lies in the field of cellular immunology and immunotherapy, dendritic cells, as well as nanoparticle-mediated immunomodulation. He is the speaker of the collaborative research center SFB 1066 of the German Research Foundation ("Nanoparticle-mediated immunotherapy"), and the deputy speaker of the collaborative research center SFB TR156 („Skin immunology"). Prof. Grabbe has published more than 250 original papers and has an h-index of 58.

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Heinrich Haas is the Chief Technology Officer at the clinical stage company NeoVac, Oxford, UK. After receiving his PhD in Physical Chemistry in the group of Prof. H. Möhwald at Johannes-Gutenberg University Mainz, Germany, Dr. Haas researched lipid membranes and organized biomolecular systems at the Department of Biopharmaceutics and Pharmaceutical Technology, University of Mainz, and completed two postdoctoral stays abroad, at the University of Genoa, Italy (1996-1998) and the Universities of Sao Paulo and Campinas, Brazil (1998-2001). After joining the pharmaceutical industry (Munich Biotech AG, Medigene AG, Ribological GmbH), he developed different types of nanoparticle products to be applied in clinical stage.

Since joining BioNTech RNA Pharmaceuticals GmbH in 2010, Dr. Haas helped in setting up the formulation development and analytics unit, which develops formulations for the delivery of RNA and small molecules. From 2014 to 2023, he was a Vice-President of BioNTech RNA Pharmaceuticals responsible for Formulation & Drug Delivery. Dr. Haas recent work focuses on colloidal/nanoparticulate formulations for targeted drug and RNA delivery with therapeutic and diagnostic applications in cancer, inflammatory diseases autoimmune diseases and other indications.

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Sami Haddadin

Sami Haddadin is Professor at Technical University of Munich (TUM), Germany, and the Director of Munich School of Robotics and Machine Intelligence (MIRMI), Europe's largest institute for robotics and AI. Having completed his studies at TUM and obtaining a doctorate in Electrical Engineering from RWTH Aachen University in 2011, he became the Director of the Institute of Automatic Control, Leibniz Universität Hannover 2014-2018. In April 2018, he returned to Munich to take the positions of Director at MIRMI and Professor of Electrical Engineering and Computer Science at TUM.

Prof. Haddadin's research spans robotics, AI, and human neuroscience with a focus on human-centered robotics, embodied AI, robot learning and control, collective intelligence, and human-robot symbiosis. His robot developments range from manipulators and hands, unmanned aerial vehicles (UAVs), mobile systems and medical robots to humanoids, intelligent prosthetics, and exoskeletons, with many of these inventions being commercialized by industry, medical and private sectors and in worldwide use. Prof. Haddadin has received numerous awards, including the George Giralt PhD Award, the RSS Early Career Spotlight, the IEEE/RAS Early Career Award, the Alfried Krupp Award, the German President's Award for Innovation in Science and Technology, and the Leibniz Prize. He is an IEEE Fellow and a member of both the German National Academy of Sciences Leopoldina and the National Academy of Science and Engineering Acatech.

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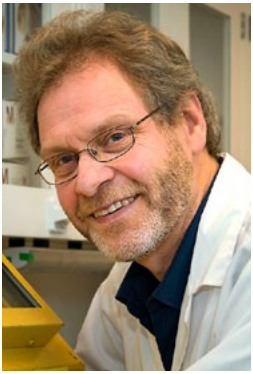

Urs Häfeli is a Full Professor at the Faculty of Pharmaceutical Sciences, University of British Columbia (UBC) in Vancouver, Canada. Having completed his BSc at the Federal Institute of Technology (ETH), Zurich, Switzerland and his PhD at the Paul Scherrer Institute, Villigen, Switzerland, he worked at the Joint Center for Radiation Therapy of Harvard Medical School, Boston, USA between 1991 and 1993, before moving to the Radiation Oncology Department at the Cleveland Clinic. In 2004, Prof. Häfeli was appointed Assistant Professor at the Division of Pharmaceutics and Biopharmaceutics, Faculty of Pharmaceutical Sciences, UBC, and was nominated Associate Professor of UBC in 2010. Between 2016 and 2021, he held the Lundbeck Foundation Joint Professorship in Drug Delivery & Nano-Medicines at the Department of Pharmacy, Faculty of Health and Medical Sciences (SUND) of the Copenhagen University, Denmark.

Prof. Häfeli is the organizer of the biannual meeting dedicated to “Scientific and Clinical Applications of Magnetic Carriers”, which was initiated in 1996 and regularly attracts more than 300 participants worldwide, as well as the yearly “Vancouver Nanomedicine Day” and the “Copenhagen Nanomedicine Day”. His research interests include drug delivery, nanomedicines and radiopharmaceuticals, and the results of his scientific work have been published in form of 164 articles, one book and 21 book chapters, as well as six patents.

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Wolfgang M. Heckl is the Director General of the Deutsches Museum and holds the Oskar von Miller Chair of Science Communication at the Physics Department of Technical University Munich (TUM) School of Education. Prof. Heckl was a student of Nobel Prize winner Gerd Binnig, who co-founded nanosciences with his development of the scanning tunnelling microscope, and Theodor Hänsch, one of the pioneers in the field of optical and atomic physics. He obtained a PhD in Physics from TUM and completed his habilitation at the Ludwig-Maximilians-University, Munich in 1993, where he held a professorship for Experimental Physics until 2009. In 2004, he was appointed Director General of the Deutsches Museum and in 2009 Professor of Experimental Physics at TUM, where he conducts research in the field of nanoscience and science communication.

The development of a basic understanding of science within society lies in the particular focus of his work, including the areas of TV, radio, internet and print media. Prof. Heckl has authored or co-authored 200 original peer-reviewed publications, more than 150 other publications and gave hundreds of invited talks. He is the author of the Spiegel bestseller “Die Kultur der Reparatur”, translated into several languages, and co-author of the book “Wissenschaftskommunikation” published by Springer Publisher. Furthermore, he is a member of numerous national and international committees and advises the European Commission and the German government on nanotechnology and science communication.

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Scientifically, Jürgen Held is head of the Clinical Mycology Research Group and has been working since 2011 on optimising the diagnosis of invasive mycoses. He was the first to introduce the β-D glucan measurement in Germany and since then has focussed on the application of fungal biomarkers in clinical routine. Numerous presentations on national and international congresses as well as many publications in renowned journals attest to his scientific work. In 2012, he received an education scholarship from the German-speaking Mycological Society (DMykG) and in 2015 he won the Diagnostic Prize from the German Society for Hygiene and Microbiology (DGHM). In 2019, he obtained his Habilitation for Clinical Microbiology and Infectious Diseases. Since 2018, Jürgen Held has been a member of the Board of the Division of Diagnostic and Clinical Microbiology of the DGHM, taking over the chair in 2022. In 2021, he was congress president of the annual scientific meeting of the DMykG.

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Joachim Hornegger

Joachim Hornegger is a distinguished computer scientist and expert in pattern recognition, specializing in image and speech analysis, medical imaging, and interdisciplinary research. He studied computer science and mathematics at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), where he completed his doctoral degree in 1996 with his thesis on statistical object modelling and recognition. From 1997 to 1998, Prof. Hornegger was a guest researcher at the Massachusetts Institute of Technology (MIT) and the Computer Science Department at Stanford University. He then became the Chair of Pattern Recognition at the Faculty of Engineering and a secondary member of the Faculty of Medicine at FAU in 2005 and Vice Dean of Computer Science from 2009 to 2011. From 2011 to 2015, he was vice president of the FAU and part of the executive board. As President of FAU Erlangen-Nürnberg since 2015, he has significantly advanced the university's research initiatives, supporting the full spectrum of academic diversity and placing a strong emphasis on promoting interdisciplinary research. His career includes being the Department Head at Siemens Medical Solutions, where he led critical initiatives as Department Head, pioneering AI applications in medical imaging.

Prof. Hornegger is recognized as one of the most frequently cited researchers in ophthalmology within the German-speaking world and was awarded the BMBF Innovationspreis in 2000 for his groundbreaking work in GPU-based image processing. With over 1,000 publications and more than 100 patents, he has made substantial contributions to both academia and industry. As a member of acatech, the National Academy of Science and Engineering in Germany, he continues to drive innovative, interdisciplinary research while fostering a diverse and inclusive academic environment.

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Patrick Hunziker is the Deputy Head at the Clinic for Intensive Care University Hospital Basel, Switzerland and the Group Leader of Nanomedicine Research Lab. He studied Medicine at the University of Zurich, Switzerland. After receiving a doctoral degree in Experimental Immunology in 1989, he moved on to perform research in the field of experimental hematology. He earned specialist degrees in Internal Medicine, Cardiology and Intensive Care Medicine. As a fellow at the Massachusetts General Hospital, Harvard Medical School, Prof. Hunziker worked on cardiac diseases and technologies in humans and animals in a joint project with the Massachusetts Institute of Technology, Cambridge, USA. His professional activities in Europe, the USA, Africa and China gave him a broad insight into the needs of the medicine of the future, and 2001 he became involved in nanomedicine as a physician at the Swiss National Center of Competence Nanotechnology. His research on the development of nanosized polymer carriers with switchable functionality was cited as a "Nanoscience milestone of the year" by MIT Technology Review in 2007.

Prof. Hunziker is the founding president of the International Society of Nanomedicine together with Beat Löffler, and initiator of the annual European Conference for Clinical Nanomedicine (CLINAM Foundation). He was invited to shape the future research policy of the European Commission in the field of nanomedicine and is a member of various strategic committees at the university, national and continental level. Patrick Hunziker has authored more than 230 highly cited scientific publications. Focusing his research on applications of high-tech methods for improved diagnosis and therapy, he has received prestigious prizes from the Swiss Heart Foundation and the Pfizer research prize.

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Prof. Iro was appointed Deputy Medical Director in 2004 and Medical Director of clinical affairs at the Uniklinikum Erlangen in 2009. He has been a member of the executive committee of the Deutsche Gesellschaft für Computer-und Roboter-Assistierte Chirurgie (CURAC Society) since 2004 and President of the German Society of Oto-Rhino-Laryngology, Head and Neck Surgery since 2013. Prof. Iro has received multiple awards for his achievements in medicine and medical research, including the Bavarian Order of Merit in 2021.

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Since 2005, Prof. Jäger has been the Managing Director of the NCT Heidelberg, in charge of all patient care programs and counseling services, as well as Medical Director of the Medical Oncology Department at the UKHD. In addition, he has been heading the Clinical Cooperation Unit "Applied Tumor-Immunity" at the DKFZ since 2014. His research focusses on immuno-oncology and the development of advanced methods and medicinal products to characterize and manipulate tumor-host interactions, in particular via modulation of the tumor environment. Furthermore, his team engages in developing cellular therapies, bispecific antibodies, and computational tumor immunology. Prof. Jäger has been involved in over 100 clinical trials, and builds on this foundation to further advance personalized cancer immunotherapy as innovative treatment concepts.

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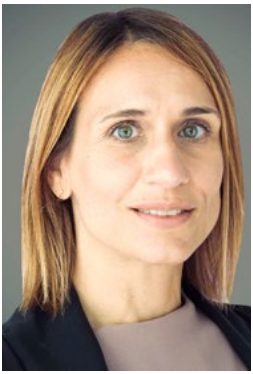

Ana Jaklenec is a Principal Research Scientist at the David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology (MIT), USA. She received her Bachelor degree from the Department of Biomedical Engineering and her PhD from the Brown University, Department of Biomedical Engineering. Following her postdoctoral work at the Department of Chemical Engineering (2007-2010) and the David H. Koch Institute for Integrative Cancer Research (2010-2013), she was appointed Research Scientist and in 2023 a Principal Research Scientist and Principal Investigator at the David H. Koch Institute for Integrative Cancer Research, MIT. Dr. Jaklenec is also a co-founder and board-member of OmniPulse Biosciences, VitaKey and Particles for Humanity, a consultant and senior lecturer for Moderna Therapeutics, and a fellow of several scientific societies, including Controlled Release Society, American Institute for Medical and Biological Engineering and National Academy of Inventors.

In 2007, Dr. Jaklenec was awarded Ruth L. Kirschstein National Research Service Award, NIH, NIAMS. Her research accomplishments include polymeric capsules for probiotic and micronutrient delivery and peptide-based platforms for antibiotic administration, vaccine printer for thermostable COVID-19 mRNA vaccines as well as a 3D printing method called StampEd Assembly of polymer Layers (SEAL) for the controlled release of biologics improving cancer therapies.

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Christina Janko is a Group Leader and one of the Deputy Heads at the Section of Experimental Oncology and Nanomedicine (SEON), Department of Otorhinolarygology, Head and Neck Surgery of the Uniklinikum Erlangen, Germany. Having obtained her diploma in Biology at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) in 2007, she completed her doctoral studies between 2007 and 2012 in the Department of Internal Medicine 3, Immunology and Rheumatology (Uniklinikum Erlangen), where she investigated the mechanisms of clearance of dying cells. Dr. Janko remained in the Department of Immunology and Rheumatology as a Postdoc for one year and joined SEON in 2013 as a group leader in the field of nanotoxicology. During her research stay at the Nanotechnology Characterization Laboratory (NCL, Frederick, USA) in 2015, she mastered the state-of-the-art preclinical techniques of nanosafety analysis. In 2023, she obtained her habilitation and the university teaching qualification in Experimental Medicine (Nanomedicine).

In addition to university teaching and coordinating research projects, Dr. Janko is currently completing a specialization in toxicology at the German Society for Experimental and Clinical Pharmacology and Toxicology (DGPT). Her research interests include the toxicological and immunological characterization of nanoparticles and the loading of cells with iron oxide nanoparticles to enable their magnetic control. She has authored more than 120 publications in the field of nanomedicine and nanotoxicology.

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Michael Joner

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Apart from acting as editor in Eurointervention Journal, Prof. Joner is a Member of the German Society of Cardiology, the European Association of Percutaneous Cardiovascular Interventions, and of the ESC Task Force for the Assessment of Coronary Stents, as well as a Medical Advisory Board Member of Biotronik SE&CoKG. He has also acted as scientific board member of Euro PCR Congresses, TCT Congress, and CRT Congress in 2013, where he obtained a Young Investigator Award. From 2013 to 2016, he was appointed as Chief Executive Officer at CVPath Institute Inc., Gaithersurg, USA. Prof. Joner has also served as a Principle Investigator of multiple clinical trials and numerous preclinical studies funded in international industrial partners such as Biotronik SE&Co.KG, Abbott Vascular, Medtronic and Cardionovum.

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Johannes Karges

Johannes Karges is a Liebig Fellow and Group Leader at the Faculty of Chemistry and Biochemistry, Ruhr University Bochum, Germany. He completed his undergraduate studies at the Philipps-University Marburg (Germany) and the Imperial College London (United Kingdom). In 2016, he joined the lab of Prof. Gilles Gasser at the Paris Sciences et Lettres University (France) and worked for some time in the lab of Prof. Hui Chao at Sun Yat-Sen University (China) to study the development of metal complexes as photosensitizers for photodynamic therapy and their selective delivery to cancer tissues to obtain his PhD. In 2020, he performed postdoctoral studies in the lab of Prof. Seth Cohen at the University of California, San Diego (USA), being engaged in the development of metal complexes as enzyme inhibitors.

In 2022, Dr. Karges received the Liebig fellowship of the German Chemical Industry, which enabled him to start an independent career at the Ruhr University Bochum (Germany). The focus of his group is to understand, identify, and/or influence the biological processes in cancer cells with the aim of developing novel metal-based therapeutics. He recently received the prestigious Paul Ehrlich and Ludwig Darmstaedter Young Talent Award 2024.

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Fabian Kiessling

Fabian Kiessling is the Head of Institute of Experimental Molecular Imaging (ExMI) at the RWTH Aachen University. He studied medicine at the Ruprecht-Karls University in Heidelberg, Germany, and, after receiving his MD degree in 2001, specialized in the field of diagnostic radiology. Having obtained habilitation at the University of Heidelberg in 2006, he led the Junior Group Molecular Imaging at the German Cancer Research Center (DKFZ) in Heidelberg, before being appointed a full professor and the chair of the Institute of Experimental Molecular Imaging, RWTH Aachen University in 2008.

Apart from being an awardee of multiple research prizes, Prof. Kiessling is also a fellow of the World Molecular Imaging Society and the RWTH Aachen University, a full member of the Sigma Xi Society and a Clarivate Highly Cited Researcher for the years 2019-2023. He also acts as an editor of several scientific journals and holds functions in multiple scientific societies, most notably as a President of the European Society for Molecular Imaging (ESMI). His team focuses on cancer diagnostics, the development and imaging of patient-tailored implants, tumor-targeted drug delivery, as well as molecular imaging in Crohn's disease.

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Robin Klupp Taylor

Robin Klupp Taylor is an Associate Professor for Nanostructured Particles in the Department of Chemical and Biological engineering at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany. He obtained his MEng in Engineering and Materials Science in 1999 and his DPhil in Materials Science in 2007, both from the University of Oxford. From 2004, he gained valuable industrial experience as a research scientist at Oxonica Ltd. and the Johnson Matthey Technology Centre. In 2007, Prof. Klupp Taylor joined FAU's Institute of Particle Technology as a postdoctoral fellow and in 2009 he became Assistant Professor for Nanostructured Particles. Since 2014, Prof Klupp Taylor has been an Associate Professor for Nanostructured Particles at the Institute of Particle Technology at FAU.

His research primarily focuses on colloidal synthesis, particularly the development of symmetric and asymmetric multifunctional nanostructures. Prof. Klupp Taylor has been deeply involved in academic leadership, serving as the Vice-Chair and later Chair of the Elite Master's Programme in Advanced Materials and Processes, as well as holding a prominent role in the Cluster of Excellence Engineering of Advanced Materials (2007-2019). Since 2020, he has coordinated the integrated Research Training Group of Collaborative Research Center (SFB) 1411 Design of Particulate Products and co-coordinated the Graduate School in Engineering of Advanced Materials.

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Markus Kopp

Markus Kopp is a senior radiologist at the Department of Radiology at the Uniklinikum Erlangen. After obtaining his medical degree in 2015, he started his radiology residency at the Uniklinikum Erlangen, where he received his MD in 2017. Since 2021, Markus Kopp has been a board-certified radiologist with clinical and scientific focus on innovative MRI techniques, interventional radiology and head and neck imaging.

Markus Kopp is involved in several international and local studies, regarding artificial intelligence for the non-invasive detection of tumors funded by the EU. Moreover, the evaluation and improvement of image quality on recent MRI and CT scanners is an ongoing ambition. He is also an investigator in clinical trials at the Uniklinikum Erlangen with the aim of CE certification of innovative MRI scanners.

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Claus-Michael Lehr

Claus-Michael Lehr is a Professor at Saarland University, Saarbrücken, Germany, as well as a cofounder and Head of the Department of Drug Delivery across Biological Barriers at the Helmholtz Institute for Pharmaceutical Research Saarland (HIPS) since 2009. He completed his studies in Pharmacy at the Johannes Gutenberg University Mainz in 1983 and obtained the PhD in Pharmaceutical Sciences from Leiden University, Netherlands in 1991. After a postdoctoral stay at the Department of Biopharmaceutical Sciences, University of Southern California, USA, he joined Philipps-Universität Marburg, Germany in 1993 as a professor and the Head of Pharmaceutical Technology Department. In 1995, he took the position of Professor for Biopharmacy and Pharmaceutical Technology at the Saarland University, Germany.

Prof. Lehr's team investigates drug delivery across biological barriers (such as skin, lungs and intestinal mucosa, but also mucus, biofilms and the bacterial cell wall) to combat and prevent infectious diseases. His focus is on nanoscale carrier systems as well as complex in vitro models based on human cells and tissue. Prof. Lehr is (co-)author of more than 500 publications with over 25,000 citations (h-index: 89). He is also co-editor of the European Journal of Pharmaceutics and Biopharmaceutics, the initiator of the biennial International Conference on "Biological Barriers", as well as co-founder of the companies Across Barriers GmbH and PharmBioTec GmbH.

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Didier Letourneur

Didier Letourneur is the Research Director at CNRS (French National Center for Scientific Research) and the President of the Scientific Council of Institut national de la santé et de la recherche médicale (INSERM), France. He obtained his Engineer degree in Material Sciences and a PhD in Chemistry from University Paris, followed by habilitation (HDR) in Sciences in 1997. Since 2014, he has been the Director of the Laboratory for Vascular Translational Science (LVTS, with about 250 persons) affiliated to INSERM and Universities Paris Cité and Sorbonne Paris Nord. He served as a vice-chairman for Regenerative Medicine at the European Technology Platform for Nanomedicine and has held the position of Secretary-General since 2015. Furthermore, he was President of BIOMAT, the French Society for Biomaterials in the time from 2009 to 2019, and presided the INSERM committee on Health Technologies & Social Sciences from 2016 to 2021.

Prof. Letourneur is the author of 250 international publications and inventor of eighteen patents. In 2016, he founded the company SILTISS for the development of innovative implants from polysaccharide-based materials that obtained regulatory approval to conduct clinical trials. He won several prizes including the Coup d'Elan from the Bettencourt Foundation 2001, the Cardiovascular Innovation Award 2011 from the French Medical Research Foundation, the 2016 G. Winter Award from the European Society for Biomaterials, and the 2017 Asian Polymer Association Jubilee Award. Prof. Letourneur is actively involved in several national and European grants and was the coordinator of the EU-NMP large scale project NanoAthero. His current research activities focus on biomaterials and nanomaterials dedicated to the diagnosis and therapy of diseases.

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Jinyao Liu

Jinyao Liu is a Professor and an Assistant to the Dean at the Institute of Molecular Medicine, Shanghai Jiao Tong University, China. He received the PhD in Materials Science and Engineering at the Shanghai Jiao Tong University under the supervision of Prof. Deyue Yan in 2013. Subsequently, he joined the group of Prof. Ashutosh Chilkoti in the Department of Biomedical Engineering at the Duke University, Durham, USA as a postdoctoral researcher between 2013 and 2015. From 2015 to 2018, he worked as a postdoctoral associate at Prof. Robert Langer's laboratory in the Koch Institute for Integrative Cancer Research at Massachusetts Institute of Technology, Cambridge, MA, USA.

Prof. Liu is the Executive Editor of Journal of Nanobiotechnology (Springer Nature), and serves as an editorial board member of J Controlled Release, and guest editor of Advanced Drug Delivery Reviews. During the past five years, he has published over 50 papers as corresponding author in Nat Biomed Eng, Matter, Nat Commun, Sci Adv, J Am Chem Soc, Angew Chem Int Ed, Adv Mater, etc. Prof. Liu has also been awarded numerous prestigious grants and prizes, including the Young Thousand Talents Program of China, 2022 JNB Rising Star, and 2019 CASNN Rising Star. His current research interests include microbial bioagents, nanomedicines, oral delivery systems, and hydrogels.

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Stefan Lyer

Stefan Lyer is a Professor for Artificial Intelligence-Controlled Nanomaterials and the Deputy Head of the Section of Experimental Oncology and Nanomedicine (SEON) at the Uniklinikum Erlangen. He studied Biology at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) between 1995 and 2001. Subsequently, he completed his PhD at the German Cancer Research Center (DKFZ)/Ruprecht-Karls-University Heidelberg in 2006. He continued as a postdoc at the Department of Genome Analysis at the DKFZ for another year. In 2008, he returned to Erlangen, taking a postdoc position in the ENT-Department of Uniklinikum Erlangen as a member of Prof. Christoph Alexiou's group, which was renamed Section of Experimental Oncology and Nanomedicine (SEON) in 2009. He has been the Deputy Head of SEON since 2011 and was appointed W2-Professor for AI-Controlled Nanomaterials within the Hightech Agenda Bavaria in June 2022.

Prof. Lyer is member of the Universitätsbund Erlangen e.V., the Societas physico-medica Erlangensis, the German Platform for NanoBiomedicine and the Ferrofluidverein Deutschland e.V., in which he was appointed as Deputy Chairman in 2023. He is active in teaching courses and educating students in "Fundamentals of animal experimentation according to FELASA Category B guidelines". His scientific interests include the development of magnetic particles for biomedical applications and in vitro diagnostics as well as in vitro characterisation and in vivo application of these nanoparticles in cancer therapy and MR imaging.

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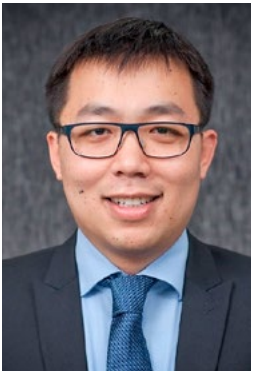
Huan Meng



Huan Meng was appointed as professor of the National Center for Nanoscience and Technology at the Chinese Academy of Sciences in 2021. He studied pharmaceutical sciences at the Peking University, Beijing, China and, after having received his MSc degree in 2003, he completed a PhD in bioinorganic chemistry at the Graduate University of Chinese Academy of Sciences. Between 2008 and 2010, he worked as a Postdoctoral Researcher at the Division of Nanomedicine, Department of Medicine, University of California in Los Angeles (UCLA), USA. Subsequently, he was appointed as assistant researcher in 2010, and as assistant Professor in 2013, before becoming the associate Professor at the Department of Medicine, California NanoSystems Institute and the Jonsson Comprehensive Cancer Center of the UCLA in 2020.

Apart from being an awardee of research and poster prizes, Prof. Meng is also a Clarivate Highly Cited Researcher for 2018. He is furthermore acting as an editor of several scientific journals. His research focuses on cancer treatment, safe design of nanocomposite and nanoenabled platforms for chemo- and immunotherapy, the development of nanosystems for pulmonary fibrosis, osteoarthritis and muscle damage, as well as nanoparticle-based carrier systems for mRNA delivery.

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Markus F. Neurath

Markus F. Neurath is the Head of the Department of Medicine 1 of the Uniklinikum Erlangen and Dean of the Medical Faculty of the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU). He studied Medicine at the Philipps-University Marburg, where he received his MD in 1990. After working as a resident at the University of Mainz, he joined the lab of Prof. Warren Strober at NIH/NIAID in Bethesda, USA as a post-doctoral fellow. Subsequently, he returned to Mainz and finished his habilitation in 1998. After a stay as a guest professor at Harvard Medical School in Boston, he was appointed to a W2 professorship at the Medical Clinic I in Mainz, Germany. In 2007, he accepted a call as W3 professor in Mainz and took over the position as Head of the Department of the Institute of Molecular Medicine in Mainz. Since 2009, he has held the chair for Internal Medicine 1 at the University of Erlangen-Nürnberg, while also being Head of the Department of Medicine 1 at the Uniklinikum Erlangen.

His major scientific interest focuses on the field of immunology and endoscopy of the gut. His research deals with the immunologic and molecular mechanisms in the pathogenesis of inflammatory bowel diseases and GI cancer. He has received multiple awards, including the Ernst Jung-Preis in 2006.

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Helmut Spielvogel

Helmut Spielvogel is a licensed pharmacist and since July 2022 he has acted as Head of Pharmaceutical Development and Manufacturing Group at the Section of Experimental Oncology and Nanomedicine (SEON), Department of Otorhinolaryngology, Head and Neck Surgery at the Uniklinikum Erlangen, being in charge of planning and implementation of a GMP-compliant production of iron oxide nanoparticles developed at SEON. After completing his degree in Pharmacy at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) in 1987, he joined the Institute of Experimental Cancer Research at Leopold Franzens-University Innsbruck, Austria, to investigate the cellular mechanisms of tumor growth. Upon his return to Erlangen, he completed his doctorate with a dissertation on the topics of human genetics, molecular biology and microbiology at the Faculty of Science at FAU. Dr. Spielvogel then worked for the pharmaceutical contractor Klöckner Pentapack as Head of Product Development, Head of Quality Control and Qualified Person (QP) until 1995, after which he took the position of QP and Head of Quality Assurance at Retterspitz Arzneimittel GmbH. In 2000, he co-founded the company Actinium GmbH, specializing in advising clients from the cosmetics and pharmaceutical industry on issues of quality and risk management and dermatological and toxicological safety. Between 2016 and 2022, Dr. Spielvogel worked as a freelance QP and officially appointed expert for the hospital pharmacy of Uniklinikum Erlangen, being authorized to manufacture and certify active pharmaceutical ingredients (API). He has written or contributed to a number of publications including reference books comprising a variety of legal, economic and scientific topics.

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Richard Strauß

Richard Strauß is the vice chairman of Department of Medicine 1 at the Uniklinikum Erlangen, the head of the Intensive Care and Clinical Infectious Disease unit within the Department, and Co-Chair of the Center for Infectious disease, University Hospital Erlangen, certified by the German Society of Infectious Diseases (DGI). He studied Medicine at the University of Würzburg, Germany, received a doctoral degree in Medicine in 1988 and his postdoctoral lecture qualification at the University of Erlangen in 2005. He has earned specialist degrees in Internal Medicine, Respiratory Medicine, Intensive Care Medicine and Infectious Disease.

Richard Strauß is author and co-author of various articles on clinical studies on infectious disease and critical care issues.

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Matthias Taupitz

Matthias Taupitz is Professor of Radiology at the Charité - Universitätsmedizin Berlin and the Vice-Director of Campus Benjamin Franklin at Charité, Germany. Having studied medicine at the Freie Universität Berlin, he obtained his license to practice as a physician in 1986, and subsequently specialized in Diagnostic Radiology. In 1989, he also completed studies in Physics. Since 2006, he has supported the Bundesamt für Arzneimittel und Medizinprodukte (BfArM, Federal Institute of Drugs and Medicinal Products) as a consultant.

Prof. Taupitz's scientific activities include clinical research in the field of magnetic resonance imaging (MRI), urological diagnostics and experimental radiology. As principal investigator and co-investigator, he carried out large number of Phase I-III clinical trials, evaluating the safety and efficacy of novel contrast agents, and supervised the clinical studies on e.g. non-invasive detection of prostate cancer using functional MRI and whole-heart contrast-enhanced coronary magnetic resonance angiography (MRA). Prof. Taupitz leads the sections of Experimental Radiology and Magnetic Resonance Imaging at the Radiology Department of Charité. His team develops very small superparamagnetic iron oxide particles (VSOPs) as contrast agents for imaging atherosclerosis and inflammatory bowel disease.

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Nguyễn Thị Kim Thanh

Nguyễn Thị Kim Thanh is a Full Professor in Nanomaterials at the University College London, UK and a Vice Dean for Innovation and Enterprise at the Faculty of Mathematics and Physical Sciences. Between 2005 and 2014, she held a prestigious Royal Society University Research Fellowship. She has acted as a visiting professor at various universities in France, Japan, Singapore. In 2019, she obtained a highly prestigious Royal Society Rosalind Franklin Award for her achievements in the field of nanomaterials and was the RSC Interdisciplinary Prize winner in 2022. Prof. Thanh was one of only twelve recipients globally of the 2023 Distinguished Women in Chemical Engineering Award, bestowed by International Union of Pure and Applied Chemistry (IUPAC). She was recently elected as a member of Academia Europaea.

Prof. Thanh is a fellow of a number of scientific societies, including RSC, InstP, IMMM and RSB. She has chaired and organized over 45 high-profile international conferences, besides acting as an editor in chief of seventeen books, including the Royal Society of Chemistry book Series, Nanoscience and Nanotechnology and as an associate editor for RSC Nanoscale and Nanoscale Advances Journals.

She has published more than 170 research papers, book chapters, theme issues, and proceedings. She leads a highly dynamic group conducting cutting-edge interdisciplinary and innovative research on the design and synthesis of magnetic and plasmonic nanomaterials predominantly for biomedical applications.

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Rainer Tietze

Rainer Tietze is a lecturer at the Uniklinikum Erlangen and one of the Deputy Heads of the Section for Experimental Oncology and Nanomedicine (SEON). He studied food chemistry in Frankfurt am Main, Germany, from 1998 to 2002 and worked at the Max-Rubner-Federal Research Institute for Nutrition and Food and the State Investigation Office of Hessen in Kassel, Germany, during his traineeship. He then obtained his doctorate at the Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) on the development of radiolabelled subtype-selective dopamine receptor ligands for positron emission tomography. In 2007, as a research associate, he joined the group of Prof. Christoph Alexiou, who in 2009 became the first Professor for Nanomedicine in Germany.

PD Dr. Tietze obtained his habilitation and university teaching authorization in 2020 and, as a Head of the Nanomaterial Synthesis group, he has been in charge of the development of nanoparticulate systems for various biomedical applications. His research interests include the development of functionalised magnetic nanoparticles for in-vitro diagnostic systems, drug delivery and imaging. His projects are funded both by individual programs and part of research consortia. As a senior academic advisor, he is also highly involved in teaching students in the field of nanomedicine and supervising academic theses.

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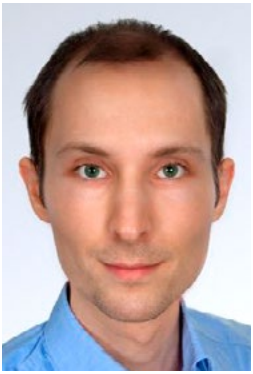
Florian Walter



Florian Walter is the Head of Machine Intelligence Lab at the University of Technology Nuremberg, Germany. He received a Master's degree in computer science from the Technical University of Munich (TUM), Germany, in 2014. During his studies, he was granted the Max Weber Program scholarship for gifted students in Bavaria. From September 2013 to February 2014, he was a visiting student researcher at the Stanford Robotics Lab, Stanford University, USA. In 2014, Prof. Walter joined the Chair of Robotics, Artificial Intelligence and Real-Time Systems at the TUM School of Computation, Information and Technology, where he received his PhD in 2021. Subsequently, he stayed at the same institute as a postdoc until 2023, when he joined the University of Technology in Nuremberg to start the Machine Intelligence Lab.

Prof. Walter's research focusses on the intersection of robotics and machine learning, with an emphasis on simulation, reinforcement learning, and robotics foundation models. Further contributions include work on neuromorphic computing and biomimetic robotics. He has organized several workshops and been involved in numerous national and international research projects.

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Berking, C	Department of Dermatology, Uniklinikum Erlangen, Germany
Boccaccini, AR	Institute of Biomaterials, Department of Materials Science and Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany
Buzug, TM	Institute of Medical Engineering, University Lübeck and Fraunhofer Research Institute for Individualized and Cell-Based Medical Engineering (IMTE), Lübeck, Germany
Chauvierre, C	Laboratory for Vascular Translational Science, INSERM UMRS 1148, Paris, France
Cicha, I	Section of Experimental Oncology and Nanomedicine (SEON), Department of Otorhinolaryngology – Head and Neck Surgery, Uniklinikum Erlangen, Germany
Demokritou, P	Center for Nanotechnology and Nanotoxicology, Harvard School of Public Health, Cambridge, MA, USA
Desai, N	Aadi Bioscience and Aanastra Inc., Pacific Palisades, CA, USA

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Fischer, D	Department of Pharmaceutical Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany
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Garlichs, C	Department of Cardiology, Angiology, Nephrology and Intensive Care Medicine, DIAKO Hospital Flensburg, Germany
Grabbe, S	Dermatology Department at the University of Mainz Medical Center (UMMC), Johann Gutenberg University Mainz, Germany

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Heckl, W	General Manager of Deutsches Museum, Oskar-von-Miller Chair of Scientific Communication, Technische Universität München, Germany
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Jäger, D	Department of Medical Oncology, National Center for Tumor Diseases (NCT) Heidelberg, Germany
Jaklenec, A	Langer Lab at Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, USA

List of speakers and chairpersons

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Karges, J	Faculty of Chemistry and Biochemistry, Ruhr University Bochum, Germany
Klupp Taylor, R	Department of Particle Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany
Kopp, M	Institute of Radiology, Uniklinikum Erlangen, Germany
Kiessling, F	Institute of Experimental Molecular Imaging, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University, Aachen, Germany
Lehr, C-M	Department of Biopharmacy and Pharmaceutical Technology, University of Saarbrücken, Germany
Letourneur, D	Laboratory for Vascular Translational Science, INSERM UMRS 1148, Paris, France
Liu, J	Institute of Molecular Medicine, Shanghai Jiao Tong University, Shanghai, China

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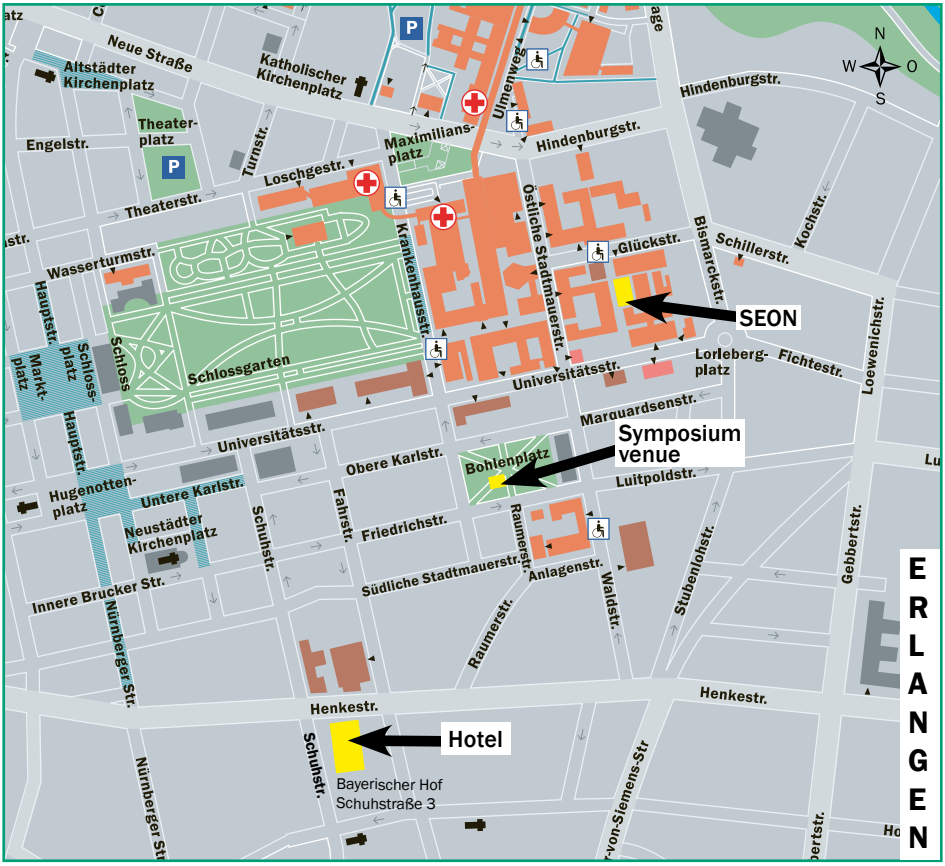
Strauß, R	Department of Medicine 1, Uniklinikum Erlangen, Germany
Taupitz, M	Clinic for Radiology and Nuclear Medicine, Campus Benjamin Franklin, Charité Berlin, Germany
Thanh, NTK	London Center for Nanotechnology, University College London, UK
Tietze, R	Section of Experimental Oncology and Nanomedicine (SEON), Department of Otorhinolaryngology – Head and Neck Surgery, Uniklinikum Erlangen, Germany
Walter, F	Machine Intelligence Lab, Department of Engineering, University of Technology Nuremberg (UTN), Germany

Site map



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Thank you very much for the support

Hans Wormser

Herzogenaurach

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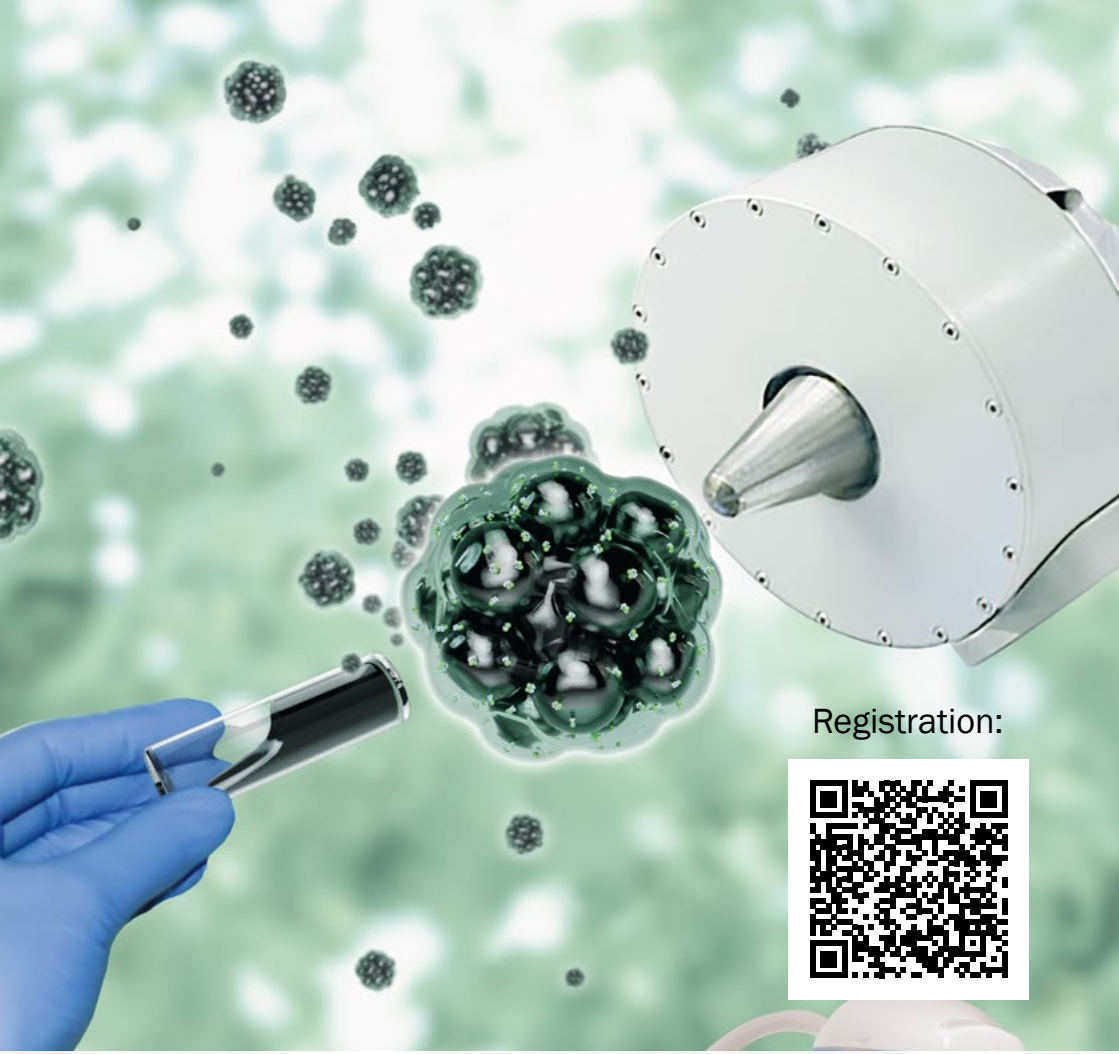

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