nanomedicine and drug delivery symposium - boston

NanoDDS'07

November 2–3, 2007

Northeastern University
Boston, MA

Dear Friends and Colleagues,

It is my pleasure and honor to welcome you to Boston, Northeastern University and to the 5th International Nanomedicine and Drug Delivery Symposium.

I am proud to be the Chair of the 5th Symposium initiated by Sasha Kabanov, Kalle Levon, and Hamid Ghandehari. This series has developed into a significant scientific event.

Thousands of papers, hundreds of patents, dozens of books and meetings, and clinically used nanomedicines speak to the importance of our common field of nanomedicine and drug delivery.

Our keynote speaker, Bob Langer, along with twenty outstanding speakers from all areas of Nanomedicine and Drug Delivery and almost 80 posters from many young scientists, guarantees the 5th International Nanomedicine and Drug Delivery Symposium to be as successful as its predecessors.

We are grateful to the sponsors of the Symposium. Their support allows us the opportunity to enjoy the scientific sessions and meet with friends and colleagues. This list of supporters includes the National Institute of Health, Northeastern University as well as the many industry sponsors.

You are in the heart of one of the most beautiful cities in America.

Take good memories with you back home.

All the best to all of you.

Vladimir Torchilin
Symposium Chair

FIFTH INTERNATIONAL NANOMEDICINE AND DRUG DELIVERY SYMPOSIUM

November 2–3, 2007 • Northeastern University • Boston, MA

OBJECTIVE
Provide a comprehensive overview of the latest developments in all aspects of nanomedicine and drug delivery.

COMPOSITION
Keynote presentation
Over 20 presentations from the leaders in the fields
Poster session

EXPECTED PARTICIPANTS
Academic and industrial scientists, graduate students, clinicians and business specialists.

SCIENTIFIC ADVISORY BOARD
Martyn Davies, Nottingham, UK
Adi Eisenberg, Montreal, Canada
Hamid Ghandehari, Baltimore, USA
Allan Hoffman, Seattle, WA, USA
Alexander Kabanov, Omaha, NE, USA
Kazunori Kataoka, Tokyo, Japan
Thomas Kissel, Marburg, Germany
Henry Kopecek, Salt Lake City, UT, USA
Robert Langer, Cambridge MA, USA
Kalle Levon, New York, NY, USA
Kinam Park, West Lafayette, IN, USA
W.Mark Saltzman, New Haven, CT, USA
Francis Szoka, San Francisco, CA, USA

KEY NOTE SPEAKER
Prof. Robert Langer of MIT

CONFIRMED SPEAKERS
Tamara Minko, Rutgers University, USA
Alexander Kabanov, University of Nebraska, USA
Mansoor Amiji, Northeastern University, USA
Francis Szoka, University of California San Francisco, USA
Christine Allen, University of Toronto, Canada
Anna Moore, MGH/Harvard Medical School, USA
Volkmar Weissig, Northeastern University, USA
Alexander Wei, Purdue University, USA
Hamid Ghandehari, University of Maryland, USA
Jonathan Aylott, University of Nottingham, UK
Neil Desai, Abraxis BioScience, USA
Muthiah Manoharan, Alnylam Pharmaceuticals, USA
Joseph DeSimone, University of North Carolina, USA
Hideyoshi Harashima, Hokkaido University, Japan
Yuri Lvov, Louisiana Tech, USA
Dan Luo, Cornell University, USA
Patrick Stayton, University of Washington, USA
James Leary, Purdue University, USA
Aliasger Salem, University of Iowa, USA
Etienne Schacht, University of Gent, Belgium
Lawrence Mayer, Celator, Vancouver, Canada
Claus M. Lehr, Saarland University, Germany

ORGANIZING COMMITTEE
Vladimir Torchilin, Chairman
Alexander Kabanov
Hamid Ghandehari
Mansoor Amiji
Robert Campbell
Volkmar Weissig
Tatyana Levchenko
Anita Young

SELECTED TOPICS
Drug and Gene Delivery for Cancer Therapy
Multifunctional Nanomedicines
Nanodiagnostics
Intracellular Drug Delivery

LOCATION
On the campus of Northeastern University, downtown Boston. Walking distance to Museum of Fine Arts and many other attractions.

SOCIAL ACTIVITY
On Friday, November 2, 2007 there will be a starlight dinner cruise on board the Boston Harbor cruise ship "Odyssey". The cruise departs from Rowes Wharf. Boarding is at 7:00 PM, cruise time is 8–10:00 PM. Jackets and ties are suggested, no jeans or sneakers allowed. Cash bar and smoking on outside decks only. Transportation from the Royal Sonesta Hotel will be provided by Peter Pan Bus Line. Bus departure from the Royal Sonesta Hotel will be at 7:00 PM. If you are not staying at the Royal Sonesta Hotel, The Odyssey is located at Rowes Wharf and can be reached by MBTA. Consult the concierge at your hotel for directions.

For more information please visit the symposium website: **www.nanodds.org**

PROGRAM

FIFTH INTERNATIONAL NANOMEDICINE AND DRUG DELIVERY SYMPOSIUM

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FRIDAY, NOVEMBER 2, 2007

7:30–8:00 AM *Registration/Continental Breakfast/Poster Mounting*

8:00–8:15 AM *Introductory Remarks*
Vladimir Torchilin, Symposium Chair

8:15–9:00 AM *Keynote Presentation*
Robert Langer, Institute Professor, Massachusetts Institute of Technology, Cambridge, MA

Session I: DNA Delivery

Chairs – Robert Campbell and Volkmar Weissig

9:15–9:45 AM DNA as a Material in Drug Delivery and Nanomedicine
Dan Luo, Cornell University, Ithaca, NY

9:45–10:15 AM Systemic Delivery of siRNAs and Antagomirs: From Mice to Monkey, On the Way to Man
Muthiah Manoharan, Alnylam Pharmaceuticals, Boston, MA

10:15–10:45 AM Multifunctional Envelope Type Nano Device for Non-Viral Gene Delivery
Hideyoshi Harashima, Hokaydo University, Japan

10:45–11:15 AM *Coffee Break*

Section 2. New Technologies in Nanomedicine and Drug Delivery

Chairs – Tatyana Levchenko and Kalle Levon

11:15–11:45 AM Layer-by-Layer Nanocoating for Pharmaceuticals: From Microcapsules to Nanoshells
Yuri Lvov, Louisiana Tech, Ruston, LA

11:45 AM–12:15 PM Adapting Fabrication Processes from the Electronics Industry for Use in Nano- medicine
Joseph DeSimone, University of North California, Chapel Hill, CA

12:15–12:45 PM Tailored Polymers for Drug Delivery
Etienne Schacht, University of Gent, Belgium

12:45–3:00 PM *Lunch/Poster and Posters Viewing*

Section 3. Multifunctional and Stimuli-Sensitive Nanosystems

Chairs – Christine Allen and Etienne Schacht

3:00–3:30 PM Targeted Multicomponent Nanocarriers in Cancer Diagnosis and Treatment Diagnosis and Treatment
Tamara Minko, Rutgers University, NJ

3:30–4:00 PM Multifunctional Nanotherapeutic Strategies for Drug and Gene Delivery
Mansoor Amiji, Notheastern University, Boston, MA

4:00–4:30 PM A Toolkit for Lipid-Based Nanocarriers–Scaffolds, Adaptors and Sensors
Francis Szoka, University of California, San Francisco, CA

4:30–5:00 PM pH-Responsive Polymeric Drug Carriers
Patrick Stayton, University of Washington, Seattle, WA

5:00–5:30 PM Multi-Component Nanorods for Genetic Vaccination Applications
Aliasger Salem, University of Iowa, Iowa City, IA

7:00–10:00 PM *Conference Dinner Cruise*

SATURDAY, NOVEMBER 3, 2007

Section 4. From Mice to Man

Chairs – Dan Luo and Yuri Lvov

8:30–9:00 AM Industrial Development of Nanomedicines
Neil Desai, Abraxis Biosciences, USA

9:00–9:30 AM Nanomedicine for CNS Drug Delivery
Alexander Kabanov, University of Nebraska, Omaha, NE

9:30–10:00 AM Dendritic Biomaterial for Oral Drug Delivery
Hamid Ghandehari, University of Maryland, Baltimore, MD

10:00–10:30 AM Ratiometric Dosing Systems for Combination Chemotherapy
Lawrence Mayer, Celator, Vancouver, Canada

10:30–11:00 AM *Coffee Break*

Section 5. Nanosystems for Imaging

Chairs – Ban An Khaw and Alexander Wei

11:00–11:30 AM Targeted Multicomponent Nanocarriers in Cancer Diagnosis and Treatment
Anna Moore, MGH/Harvard Medical School, Boston, MA

11:30 AM–12:00 PM Multimodal NanoPlatform for In vivo Imaging
Christine Allen, University of Toronto, Canada

12:00–12:30 PM Using Fluorescent Nanosensors to Measure the Intracellular Environment
Jonathan Aylott, University of Nottingham, UK

12:30–2:00 PM *Lunch and Posters Viewing*

Section 6. New Targets and New Means

Chairs – Tara Pouyani and Ahmed Busnania

2:00–2:30 PM Mitochondrial Nanomedicine
Volkmar Weissig, Northeastern University, Boston, MA

2:30–3:00 PM Plasmon-Resonant Nanorods as Multifunctiona Agents for Biomedical Imaging and Therapy
Alexander Wei, Purdue University, West Lafayette, IN

3:00–3:30 PM Design of Programmable, Multifunctional, Nanomedical Systems for Cancer Diagnostics and Therapeutics
James Leary, Purdue University, West Lafayette, IN

3:30–4:00 PM Nanotechnology for Crossing Biological Barriers
Claus M. Lehr, Saarland University, Germany

4:00–4:30 PM *Coffee Break*

4:30 PM *Best Poster Award*
Short Presentations by the Winners

5:30 PM *Closing Remarks*

For more information please visit the symposium website: **www.nanodds.org**

PROGRAM SPONSORS

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BIOGRAPHICAL SKETCHES

Christine Allen, PhD

Christine Allen is an Associate Professor in the Faculty of Pharmacy at the University of Toronto. She is cross-appointed in the Departments of Chemistry, Chemical Engineering and Applied Chemistry and the Institute of Biomaterials and Biomedical Engineering. Her research is focused on the rational design and development of new materials and technologies for the delivery of drugs and contrast agents (Lab Website: http://phm.utoronto.ca/~allen/). Allen completed her doctoral research in the Department of Chemistry at McGill University and post-doctoral research in the Department of Advanced Therapeutics at the B.C. Cancer Agency. She joined University of Toronto in 2002, from Celator Pharmaceuticals Inc. (Vancouver, B.C.) where she had worked as a scientist and Assistant Director of materials research. She has numerous publications, patent applications, review articles and book chapters on both lipid and polymer-based delivery systems. In 2004, she was awarded a CIHR-Rx&D Career Award (2004-2009) for her research on the design and development of technologies for cancer treatment. In 2006, she was awarded the Association of Faculties of Pharmacy of Canada/ AstraZeneca New Investigator Research Award and the Canadian Society Pharmaceutical Science/ GlaxoSmithKline Early Career Award.

Mansoor M. Amiji, PhD

Dr. Amiji received his undergraduate degree in pharmacy from Northeastern University in 1988 and his PhD in pharmaceutics from Purdue University in 1992. His areas of specialization include polymeric biomaterials, advanced drug delivery systems, and nanomedical technologies.

Dr. Amiji is Professor and Associate Chairman of Pharmaceutical Sciences Department and Co-Director of Northeastern University Nanomedicine Education and Research Consortium (NERC). NERC oversees a doctoral training program in Nanomedicine Science and Technology that is co-funded by the NIH and NSF. He has three published books, Applied Physical Pharmacy (McGraw-Hill, 2003) and Polymeric Gene Delivery: Principles and Applications (Taylor & Francis, 2005) and Nanotechnology for Cancer Therapy (Taylor & Francis, 2007), along with numerous manuscripts and abstracts. Dr. Amiji has received a number of awards including the 2006 NSTI Award for Outstanding Contributions towards the Advancement of Nanotechnology, Microtechnology, and Biotechnology.

Dr. Amiji teaches in the Doctor-of-Pharmacy (PharmD) program and graduate programs (MS and PhD) in the Pharmaceutical Sciences, Biotechnology, and Nanomedicine.

Jonathan Aylott, PhD

Jon completed his degree and PhD in chemistry at the University of East Anglia (England) before undertaking his postdoctoral research at the University of Michigan in Ann Arbor, where he worked under Professor Raoul Kopelman's mentorship. He returned to the UK to take a faculty position at the Department of Chemistry, University of Hull. In 2004, Jon moved to the School of Pharmacy, University of Nottingham where he has been developing new technologies for bioanalytical applications.

Neil P Desai, PhD

Neil Desai is currently Vice President of Research and Development at Abraxis Bioscience, Inc., in Los Angeles, California, USA, where he is responsible for the development of the company's growing product pipeline and the development of the company's intellectual property portfolio. These responsibilities include the development of products from the early discovery phase through preclinical testing, late stage clinical studies and development for commercial manufacturing. Dr. Desai is an inventor of ABI's nanotechnology and nanoparticle-albumin bound (nabTM) drug delivery platform, was primarily responsible for the development of its nanotechnology drug, Abraxane® and the discovery of the novel targeted biological pathway utilized by nabTM-drugs. This platform has been proven to enhance the efficacy and safety of cytotoxic drugs though the novel targeted biological pathway. Abraxane was approved by the FDA in January 2005 as the first in a new class of nanotherapeutics for the treatment of metastatic breast cancer.

Prior to joining ABI, Dr. Desai was Senior Director of Biopolymer Research at VivoRx, Inc. where he 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.

Dr. Desai has more than 17 years of experience in the research and development of novel drug delivery systems and biocompatible polymers. He holds over 60 issued US and foreign patents, has authored over 30 peer-reviewed publications, made over 60 presentations at scientific meetings and is also active in the research community having organized and chaired several symposia in the areas of biocompatible polymers and nanotechnology-based delivery systems. Dr. Desai holds an MS and PhD in Chemical Engineering from the University of Texas at Austin and a BS in Chemical Engineering from the University of Bombay.

BIOGRAPHICAL SKETCHES

Dr. Joseph M. DeSimone, PhD

Joseph DeSimone is the William R. Kenan Jr. Distinguished Professor of chemistry at the University of North Carolina at Chapel Hill (UNC-CH) and professor of chemical engineering at North Carolina State University. DeSimone has published over 200 scientific articles and has over 110 issued patents in his name. In 2005 DeSimone was elected into the National Academy of Engineering and the American Academy of Arts and Sciences. DeSimone was also the recipient of the 2005 ACS Award for Creative Invention. In 1999, DeSimone became director of the $40 million NSF Science and Technology Center for Environmentally Responsible Solvents and Processes. In 2000 DeSimone received the Oliver Max Garner Award from the University of North Carolina. In 2002, DeSimone, along with Dr. Richard Stack a cardiologist at Duke, co-founded Bioabsorbable Vascular Solutions (BVS) to commercialize a fully bioabsorbable, drug-eluting stent. BVS was acquired by Guidant Corporation in 2003 and these stents were recently brought into the clinic with a 60 patient clinical trial. DeSimone's group is now heavily focused on learning how to bring the precision, uniformity and mass production techniques associated with the fabrication of nanoscale features found in the microelectronics industry to the nano-medicine field for the fabrication and delivery of therapeutic, detection and imaging agents for the diagnosis and treatment of diseases. In 2005 DeSimone reported (J. Am. Chem. Soc. 2005, 127, 10096) a breakthrough called PRINT (Particle Replication in Non-wetting Templates) to directly fabricate uniform populations of monodisperse, shape-specific nano-biomaterials capable of delivering various therapeutic, detection and imaging agents to specific sites within living organisms. DeSimone recently launched Liquidia Technologies (www.liquidia.com) along with three former members of his laboratory (Dr. Jason Rolland, Dr. Ginger Denison and Dr. Ben Maynor), to commercialize these recent breakthroughs from his laboratory. These results from DeSimone's laboratory most recently became a foundation for the new $25 million Carolina Center for Cancer Nanotechnology Excellence funded by the National Cancer Institute. DeSimone is the co-PI of this newly established Center along with Dr. Rudy Juliano.

Hamid Ghandehari, PhD

Dr. Ghandehari received his BS in Pharmacy (1989) and PhD in Pharmaceutics & Pharmaceutical Chemistry (1996) both from the University of Utah, Salt Lake City, Utah. He is Associate Professor of Pharmaceutical Sciences and Founder of Center for Nanomedicine and Cellular Delivery at the University of Maryland, Baltimore. The focus of his research is on novel methods of controlled drug delivery using polymeric biomaterials and inorganic nanoconstructs. He is author of more than 55 publications, Executive Editor of Advanced Drug Delivery Reviews, Associate Editor of Journal of Drug Targeting and Nanomedicine: Nanotechnology, Biology and Medicine, member of Board of Directors of the American Academy of Nanomedicine and on advisory boards of several other organizations. Current work in his lab is funded by grants from the National Institutes of Health, National Science Foundation, Department of Defense, Maryland Industrial Partnership and several other agencies.

Hideyoshi Harashima, PhD

1985–1987: Assistant Professor of Pharmacy, University of Tokyo. 1987–1989: Postdoctral fellowship at Department of Anesthesiology, Stanford University School of Medicine (Associate Professor Donald. R. Stanski) 1989–1999: Associate Professor of Biopharmacy, Department of Biopharmacy, Faculty of Pharmaceutical Sciences, The University of Tokushima. 1999–now: Professor of Laboratory for Molecular Design of Pharmaceutics, Faculty of Pharmaceutical Sciences, Hokkaido University.

Major Publication:
1) S. Hama et al. Nucleic Acid Res. 35(5): 1533-43 (2007).
2) S. Hama, et al. Molecular Therapy 13(4): 786-94 (2006).
3) I. A Khalil, et al. J. Biol. Chem. 281(6): 3544-51 (2006).
4) T. Oya, et al. J Am Chem Soc. 2006 :128(12):3852-3 (2006).
5) I. A. Khalil, et al. Pharmacological Review 58(1): 32-45 (2006).

Awards:
1) 2007.3: The Pharmaceutical Society of Japan Award for Divisional Scientific Promotion
2) 2007.5: The Japanese Society of Drug Delivery System: The Nagai Award

Alexander V. Kabanov, PhD, DSc

Dr. Alexander Kabanov is a Parke-Davis Professor and the Director of the Center for Drug Delivery and Nanomedicine at the University of Nebraska Medical Center, Omaha, Nebraska. He is a leader in polymer-based drug delivery and has made substantial contributions in micellar enzymology, block polyelectrolyte complexes, and nanomedicine. Among his many contributions are the use of synthetic polyelectrolytes and polymeric micelles for delivery of drugs and DNA (1989), amphiphilic block copolymers to overcome multidrug resistance in cancer (1994), block ionomer complexes and nanogels for delivery of nucleic acids (1999), and “polymer genomics” (2002). His work has resulted in clinical trials using block copolymers for cancer treatment. He has published over 160 scientific papers, edited 5 books and journal issues, has over 100 patents worldwide, and has been cited over 5,000 times. He co-founded several biotech and chemical companies including Supratek Pharma Inc., Montreal, Canada. He is currently the chair of the Biomaterials and Biointerfaces Study Section at the National Institutes of Health (NIH). He has organized scientific meetings in nanomedicine and drug delivery, and co-chaired a Gordon Research Conference on Drug Carriers in Medicine and Biology in 2006. His awards include the USSR Lenin’s Komsomol Prize, the United States National Science Foundation (NSF) Career Award, the 2007 University of Nebraska Outstanding Research and Creative Activity Award, and numerous grants from NIH, NSF, Department of Defense (DoD), and industry.

BIOGRAPHICAL SKETCHES

James F. Leary, PhD

Dr. Leary moved to Purdue University in 2005 and became the SVM (School of Veterinary Medicine) Endowed Professor of Nanomedicine and a tenured full professor in the Department of Basic Medical Sciences and the Weldon School of Biomedical Engineering. He is a Member of the Purdue Cancer Center, Birck Nanotechnology Center, Oncological Science and the Bindley Biosciences Center at the Discovery Park where his laboratories are located. Earlier he was Professor of Internal Medicine at the University of Texas Medical Branch for 10 years and Assistant and Associate Professor of Pathology at the University of Rochester Medical School for 16 years.

As part of the research related to his talk at the NanoDDS'07 Conference, he has been developing multilayered, smart nanosystems containing cell targeting, entry facilitation and localization molecules, with molecular biosensors controlling delivery of therapeutic genes into single cells. These are the subject of a number of peer-reviewed publications and pending patents.

Claus-Michael Lehr, PhD

Claus-Michael Lehr is professor and head of the Department of Biopharmaceutics and Pharmaceutical Technologyat Saarland University, Germany. His scientific interest is focusing on biological barriers. One line of his research is dedicated to new cell culture models (e.g. lung, skin, eye), another one to advanced drug carrier systems (e.g. nanoparticles, liposomes and specific bioadhesion). His work was recently recognized by the APV Research Award 2006 for outstanding achievements in the Pharmaceutical Sciences.

Currently, his office at Saarland University coordinates the EU-funded GALENOS network (www.galenos.net). Its program “Euro-PhD in Advanced Drug Delivery”, funded by the EU-Marie-Curie Program, aims to foster and to certificate in-depth scientific training and international mobility.

Yuri M. Lvov, PhD

Dr. Yuri M. Lvov is Chemistry Professor, and Tolbert Pipes Endowed Chair on Micro and Nanosystems at Louisiana Tech University. He earned his PhD degree in Physical Chemistry from Moscow State University and later worked in the best research centers in Germany, Japan, and USA. In 1999, he came to LaTech from Naval Research Laboratory, Washington DC. His area of specialization is nanoassembly of ultrathin organized films, bio/nanocomposites, nanocapsules for drug delivery and controlled release. Y. Lvov was among pioneers of the layer-by-layer nanoassembly technique based on alternate adsorption of oppositely charged components. He published two books and more than 160 peer reviewed papers. Dr. Lvov's total citation index is above 4,000. His funding exceeded $6 mln in the last five years. His research found industrial applications in drug encapsulation and cellulose microfiber processing for better paper. In November 2006, Lvov was named the Louisiana State's Top Researcher in New Technologies.

Dan Luo, PhD

Dr. Dan Luo is an associate professor in the department of Biological and Environmental Engineering at Cornell University. Dr. Luo obtained his BS degree in Biology in 1989 from the University of Science and Technology of China. He received his PhD in 1997 from The Ohio State University in Molecular, Cellular, and Developmental Biology. After a postdoctoral training in the School of Chemical Engineering at Cornell, he joined Cornell faculty in 2001. Dr. Luo is an Associate Editor for "J. of Biomedical Nanotechnology", Editorial Board Member for "Nanomedicine" and also for "Nano Today". Dr. Luo was a recipient of National Science Foundation's CAREER award (2006), Cornell Provost's Award for Distinguished Scholarship (2007), and New York State Faculty Development Award (2007). More information can be found on the website: http://luolabs.bee.cornell.edu

References:

Nature Materials 5, 797-801 (2006)
Nature Protocols 1, 995-1000 (2006)
Nature Biotechnology 23, 885-889, (2005)
Nature Materials 3, 38-42, (2004)

Muthiah Manoharan PhD

Dr. Manoharan was born in Madurai, India and received his BSc and MSc degrees in chemistry at the American College, Madurai, India. He earned his PhD with Professor Ernest Eliel at the University of North Carolina, Chapel Hill in 1983. He started working in the field of oligonucleotides with Professor John Gerlt at Yale University in 1983 as a post-doctoral research associate, and delineated mechanisms of DNA repair enzymes using 13C labeled synthetic oligonucleotides.

In 1988, Dr. Manoharan joined Lifecodes Corporation in Valhalla, NY and started his industry career in the then-nascent field of therapeutic oligonucleotides. In 1990, he moved to Isis Pharmaceuticals in Carlsbad, CA, a pharmaceutical company focused on antisense oligonucleotide-based therapeutics. He joined Isis as a senior scientist and eventually became the Executive Director of Medicinal Chemistry. Since 2003 he has served as the Vice President of Drug Discovery at Alnylam Pharmaceuticals headquartered in Cambridge, MA. Alnylam is the leading RNA interference company and Dr. Manoharan directs chemistry efforts for discovery and development of RNAi-based drugs. During his career Dr. Manoharan has authored over 130 publications and over 150 abstracts and is an inventor on 115 issued U.S. patents.

BIOGRAPHICAL SKETCHES

Lawrence D. Mayer, PhD

Dr. Mayer is President and Head of Research at Celator Pharmaceuticals, a biopharmaceutical company which is focused on developing novel drug combination products for the treatment of cancer. He received his PhD degree in Biochemistry from the University of Minnesota in 1983 and subsequently did post-doctoral research on liposomal drug delivery systems at the University of British Columbia before taking Scientific Director positions at the Canadian Liposome Company followed by QLT, Inc. in Vancouver, BC. Dr. Mayer returned to academia in 1993 at the BC Cancer Agency in Vancouver where he established the Investigational Drug Program and brought several experimental cancer treatments from bench to bedside. His research on applying drug delivery systems to drug combinations led him to co-found Celator Pharmaceuticals where he currently oversees research activities at its Vancouver laboratories. Dr. Mayer has authored over 200 scientific publications and has more than 35 patents awarded or pending.

Tamara Minko, PhD

Dr. Tamara Minko is a Professor of Pharmaceutics at Rutgers, The State University of New Jersey. Her current research interests include drug delivery; biopharmaceutics; nanotechnology for cancer detection and treatment; molecular targeting; antisense oligonucleotides, siRNA and peptides in cancer therapy; mechanisms of multidrug resistance; intracellular fate and molecular mechanisms of action of anticancer drugs: apoptosis and necrosis, signal transduction, antiapoptotic cellular defensive mechanisms; use of macromolecules for drug delivery; preclinical evaluation of anticancer drugs; tumor hypoxia; modulation of cell death mechanisms during hypoxia. Professor Minko is an author and co-author of more than 80 peer-reviewed papers, 16 book chapters and almost 200 conference proceedings. Her research is supported by grants from National Institutes of Health, American Lung Association and several other national and international sources.

Anna Moor, PhD

Dr. Anna Moore graduated from Moscow State University, Moscow Russia. She holds a PhD in bioorganic chemistry from the Russian Academy of Sciences. She joined a molecular imaging program at Massachusetts General Hospital in 1991, first as a postdoctoral fellow and then as a junior faculty. Currently, she is an Associate Professor in Radiology and a Director of Molecular Imaging Laboratory at the Martinos Center for Biomedical Imaging. She is a member of the Affiliated Faculty of the Harvard-MIT Division of Health Sciences and Technology. Her research deals with non-invasive imaging of molecular targets in cancer, diabetes and neurological disorders.

Aliasger Salem, PhD

Dr. Salem received his PhD from the School of Pharmaceutical Sciences at the University of Nottingham, U.K. Dr. Salem then carried out a Postdoctoral Fellowship at the Johns Hopkins School of Medicine developing nanoscale non-viral gene delivery vectors for immunotherapeutic vaccination applications. Dr. Salem then joined the College of Pharmacy at the University of Iowa. Dr. Salem's current research interests are primarily focused on self-assembling systems, the rational design of novel drug and gene delivery systems and on the development of sophisticated scaffolds for tissue-specific regeneration. In tissue engineering, Dr. Salem's laboratory applies micro and nanofabrication techniques to novel biomaterials to provide spatial control over tissue formation and to integrate minimally invasive scaffold delivery strategies. In drug/gene delivery, he is currently exploring the synergistic application of degradable micro and nanoparticle technology, CpG oligonucleotides and heat shock proteins for generating sustained immunotherapeutic responses against cancer.

Patrick Stayton, PhD

Patrick Stayton received a BS degree summe cum laude in biology from Illinois State University, a PhD degree in Biochemistry from the University of Illinois in 1989, and performed Postdoctoral Research training at the Beckman Institute at the University of Illinois. Professor Stayton is currently the Washington Research Foundation Endowed Professor of Bioengineering. He has received the Clemson Award from the Society for Biomaterials, has been elected as a Fellow of the American Institute for Medical and Biological Engineering, and has received the Controlled Release Society's-Cygnus Recognition Award, the Kobe University Visiting Professorship, the Department of Bioengineering's Distinguished Teacher and Mentor Award, and the UW Minority Science Engineering Program Award.

Francis C. Szoka, PhD

Francis C. Szoka is a Professor of Biopharmaceutical Sciences and Pharmaceutical Chemistry at the University of California, San Francisco. He directs a group that uses chemical and biophysical methods to devises drug and gene carriers and to examine their mechanism of action in cells and animals. His group has published their findings on liposomes, peptides and dendritric polymers in over 185 manuscripts and 25 US patents. Dr. Szoka received his PhD in Biochemistry in 1976 from SUNY/Buffalo and did a postdoctoral fellowship with Professor Demetri Papahadjopoulos at Roswell Park Cancer Institute, Buffalo, NY. He is the co-founder of Sequus, a liposome drug delivery company that created Doxil™ , now owned by Johnson & Johnson, and of GeneMedicine, Inc., a gene therapy company, now known as Valentis, Inc.

BIOGRAPHICAL SKETCHES

Alexander Wei, PhD

Alexander Wei is an associate professor of chemistry in the College of Science at Purdue University. He received his PhD in chemistry from Harvard University in 1995 and was a Fulbright and Chateaubriand Scholar at the Université Louis Pasteur in Strasbourg, France before starting his independent position at Purdue in 1997. He is an active member of the Purdue Cancer Center, the Birck Nanotechnology Center, and the Oncological Sciences Center in the Discovery Park hub at Purdue University, and was recently appointed by the College of Science as a University Faculty Scholar.

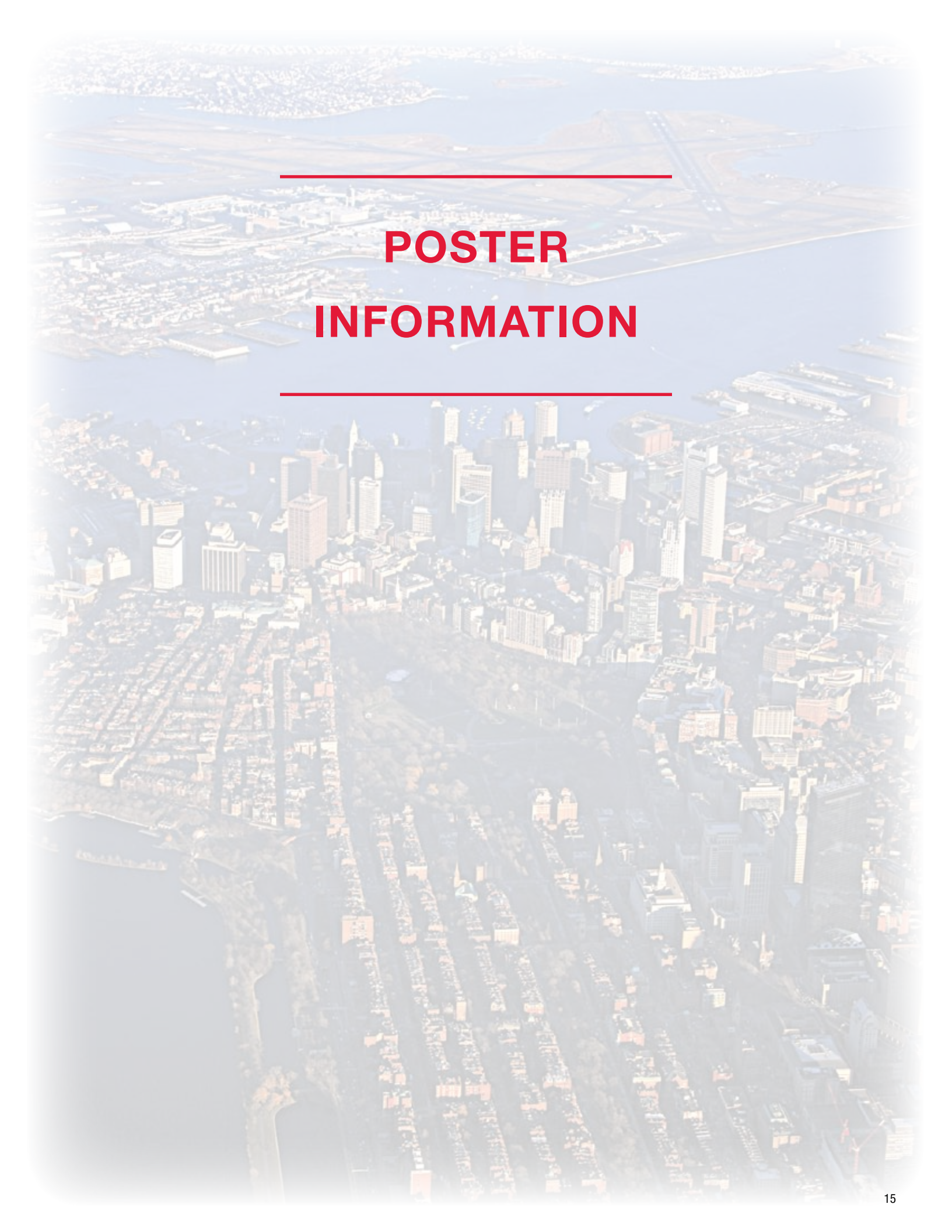
Professor Wei's research interests are rooted at the interface of organic chemistry and materials science, and their applications to biological systems. His interests include supramolecular surface science, nanoscale self-assembly, nanophotonics and nanomagnetism, cell-surface carbohydrates, and bionanotechnology. He is currently the overseas editor for Science and Technology of Advanced Materials (Elsevier).

Volkmar Weissig, PhD, ScD

Volkmar Weissig, PhD, ScD is Assistant Professor in the Department of Pharmaceutical Sciences at Northeastern University. He received his BSc, MSc and PhD in Chemistry from the College of Advanced Technology in Leuna-Merseburg, Germany and his postdoctoral ScD ("Habilitation") in Biochemistry from the Martin-Luther University in Halle-Wittenberg.

He did postdoctoral studies at the Royal Free College School of Medicine in London, the Academy of Medical Sciences in Moscow, the Academy of Science in Prague and at the University of Florida in Gainesville. He also spent one year as a Research Fellow at the Massachusetts General Hospital and Harvard Medical School in Boston.

Dr. Weissig has authored and co-authored over 70 original papers, review papers and book chapters and over 140 abstracts. He holds also 13 patents. Dr. Weissig is Associate Editor for the Journal of Liposome Research. Since the end of the 1990's Dr. Weissig has been pioneering the field of mitochondrial nanotechnology and pharmaceutics.



POSTER INFORMATION

POSTER INFORMATION

1. **Novel Curcumin Loaded Liposome for Antimalarial Activity**
   NP Aditya, G Chimote, K Gunalan, Ri Banerjee, S Patankar, B Madhusudhan

2. **Targeting Metabolic Pathways by an Amphiphilic Block Copolymer to Sensitize Multidrug Resistant Cells**
   DY Alakhova, NY Rapoport, EV Batrakova, AA Timoshin, S Li, VY Alakhov, AV Kabanov

3. **Nanosensors for pH and Proteases: New Sensing Mechanisms**
   J Aylott, A Brown, B Moore, K Welser

4. **N-2-(Hydroxypropyl) Methacrylamide (HPMA) Copolymer-RGDfK Conjugates: Influence of Polymer Charge and Size on Binding and Biodistribution**
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