American Academy of Nanomedicine (AANM)
Second Annual Meeting

The National Academy of Sciences Building
2100 C ST. N.W.
WASHINGTON, D.C. USA

SEPTEMBER 9-10, 2006

2006 Organizing and Program Committee

Chair:
Chiming Wei, MD, PhD

Vice Chairs:
Susan P. Gilbert, PhD
Donald A. Tomalia, PhD
Tachung Yih, PhD, PE

Members:

Ueli Aebi, PhD
Raj Bawa, PhD
Lajos P. Balogh, PhD
James Castracane, PhD
Rutledge G. Ellis-Behnker, PhD
Mauro Ferrari, Ph.D.
Marianna Foldvari, PhD
Hamid Ghandehari, PhD
Edward Grood, PhD
Peixuan Guo, PhD
Justin Hanes, PhD
Donald T. Haynie, PhD
Michael Heller. PhD
Eric Jakobsson, PhD
Yuri Lyubchenko, PhD
Stephen A. Merrill, PhD
Carlo D. Montemagno, PhD
Nancy A. Monteiro-Riviere, PhD
David Needham, PhD
Shuming Nie, PhD
Martin Philbert, PhD
Jason Sakamoto, PhD
Michael P. Sheetz, PhD
Shouheng Sun, PhD
Ryan Tian, PhD
Gregory Timp, PhD
Donna H. Wang, MD, FAHA
Shan Wang, PhD
Denis Wirtz, PhD

Academy Staff

Ling Xu, MD., MS, MSE, *Senior Coordinator*
Carolyn A. Carroll, PhD, *Conference Coordinator*
Zheng Li, PhD, *Conference Assistant*
Chunling Wang, MD, *Conference Assistant*
Juliet Luo, PhD, *Conference Registrar*
Lei Chen, MD, *Internet Coordinator*
Runan Zhang, *Legal Coordinator*

Contents

Welcome to Washington DC!

Dear Colleagues:

Welcome, everyone, to Washington DC. We sincerely appreciate everyone attending this very exciting Second Annual Meeting of the American Academy of Nanomedicine. We would also like to give special thanks to those who came from around the world to participate in this inaugural event.

Nanomedicine is medical diagnosis, monitoring, and treatment at the molecular level to cure disease or repair damaged tissues. A nanometer is one billionth of a meter, too small to be seen with a conventional microscope. Technology could potentially be used to develop nanoscale medical devices for a range of uses at the molecular level.

Because nanomedicine is the best of nanotechnology and medicine, it includes a broader range of professionals than most medical specialties or subspecialties. The American Academy of Nanomedicine membership and meeting attendees include clinical investigators, scientists, engineers, molecular and cell biologists, immunologists, chemists, mathematicians, physicians, and other health care professionals. The long-term goal for the Academy is to help develop strong research teams that combine medical and engineering science. This meeting will bring people together to form these collaborations.

The Second Annual Meeting of American Academy of Nanomedicine has proudly included 2 distinguished Nobel Prize Laureate Lectures and a Keynote Lecture. The current program includes 23 Symposia and more than 120 invited speakers from more than 10 countries. Those invited speakers are outstanding investigators in the nanomedicine research field, and they will present their state-of-the-art research at this meeting. We also have a poster presentation of outstanding investigations. We believe international collaboration is a very important issue to further develop academic research in nanomedicine. We would like to invite more basic and clinical researchers from all around the world to join us in this very exciting research area.

I would like to thank the members of our Board, for their wonderful works and suggestions.

I would like to thank the speakers and participants, investigators in different areas of nanomedicine who will present their results in this special meeting.

I would also like to thank the many individuals who provided suggestions for invited speakers and who reviewed abstracts. Thanks to all the abstract submitters who chose this meeting to present their science, share their work, and make the effort to develop communication among doctors, engineers, chemists, and physicists.

Thanks to everyone for showing support of this endeavor by attending the meeting. I am grateful as well to the individuals who have joined the Academy to become Fellows (F.A.A.N.) and Members. I would also like to ask those who have not yet joined to consider doing so. Thanks to everyone who helped spread the word about the meeting. I ask that people continue to help build awareness about the Academy.

I also would like to thank AANM staff team, Ling Xu, MD, Carolyn A. Carroll, PhD, Zheng Li, PhD, Chunling Wang, MD, Juliet Luo, PhD, Lei Chen, MD, and Runan Zhang, for their wonderful support and

hard works for the Academy's meeting, membership program, website, etc. This help has facilitated the organization of this meeting in such a short period.

We appreciate Elsevier, a scientific, technical, and medical publisher, for developing the journal, *Nanomedicine: Nanotechnology, Biology and Medicine*. This is an international, peer-reviewed quarterly journal featuring basic, clinical, and engineering research in nanomedicine. We think Elsevier for publishing our abstracts in this journal's December issue. We also would like to invite all abstract presenters to submit manuscripts (either original article or review article) to this journal. We believe that this journal will develop very quickly and will publish very important research articles in every research area of nanomedicine.

Since our goal for the Academy and meeting is to be a forum for presenting and exchanging nanomedicine research, building collaborations, and establishing new concepts in nanomedicine research, we sincerely appreciate your continued support of our Academy. Please provide valuable feedback by filling out the meeting evaluations, so we can make next year's meeting even more successful than this year's.

Thank you very much for your participation in this meeting. I wish everyone a wonderful time in Washington DC.

Sincerely,

Chiming Wei, M.D., Ph.D., F.A.C.C., F.A.H.A., F.A.A.N.

President
American Academy of Nanomedicine

Editor-in-Chief
Nanomedicine: Nanotechnology, Biology and Medicine

Johns Hopkins University School of Medicine

General Information

MEETING VENUE

The Second Annual Meeting of the American Academy of Nanomedicine will be held at the National Academy of Sciences Building, which is located at 2100 C ST. N.W., Washington, DC.

Underground and Guest Parking at the National Academy of Sciences Building during meeting times are free to all the meeting attendees. The closest metro station is Foggy Bottom.

CONFERENCE MEALS

Registration to the Academy's Second Annual Meeting includes a continental breakfast and a lunch, as well as coffee breaks, on Saturday and Sunday of the meeting. Meals will be available in the Great Hall of the Building.

OFFICIAL ACCOMMODATIONS

The Marriot Hotel Washington locates at 1221 N. 22ND St NW, Washington, DC. The hotel is located approximately 1.1 miles from the meeting facility at the National Academy of Sciences Building. The hotel phone is (202) 872-1500 and the toll free phone is 1-800-228-9290.

SHUTTLE BUS SCHEDULE

A shuttle bus will be provided from the Marriot Washington Hotel to the meeting at the National Academy of Sciences Building. The bus will pick-up from the Marriot Hotel at 1221 N. 22ND St NW, and drop-off at the National Academy of Sciences Building at 2100 C ST. N.W. The travel time in one direction is estimated at 10-15 minutes depending on traffic.

Saturday, September 9th	7:00 a.m. – 10:00 a.m.;	6:30 p.m. – 10:30 p.m.
Sunday, September 10th	6:30 p.m. – 10:30 p.m.;	4:00 p.m. – 8:00 p.m.

REGISTRATION HOURS

Friday, September 8th	3:00 pm – 6:00 pm	Marriot Hotel Washington
Saturday, September 9th	7:00 am – 6:00 pm	The National Academy of Sciences Building
Sunday, September 10th	7:00 am – 3:00 pm	The National Academy of Sciences Building

SPEAKER ROOM

The Speaker Room will be available at the National Academy of Sciences Building. The room will be open during the times listed below. You must check-in your slides at the designated times. For all morning sessions, all the slides must be loaded on the AANM provided computer at your speech room from 8:00 am to 8:45 am. All afternoon sessions, all the slides must be loaded on the AANM provided computer at your speech room during between 12:20 pm to 1:15 pm. Please report to your speck room for slides loading at the scheduled time. All presentations must be prepared using Microsoft PowerPoint software.

Saturday, September 9th	7:00 am – 3:30 pm
Sunday, September 10th	7:00 am – 3:30 pm

POSTER SCHEDULE

	Saturday, September 9th	Sunday, September 10th
Poster Set Up	7:30 am – 8:30 am	
Poster Viewing During Lunch (and all the coffee breaks – twice a day)	9:30 am – 10:00 am 12:30 pm – 1:30 pm 3:00 pm – 3:30 pm	9:30 am – 9:50 am 12:30 pm – 1:30 pm 4:00 pm – 4:30 pm
Poster Presentation	12:30 pm – 1:30 pm	12:30 pm – 1:30 pm
Poster Removal		5:00 pm – 5:45 pm

SPEAKER DISCLOSURES

AANM is committed to ensuring balance, independence, objectivity and scientific rigor in all educational activities. AANM requires that their presenters inform the audience of the presenters' (speakers', faculties', authors', and contributors') academic and professional affiliations, and disclose the existence of any financial interest or other relationships a presenter has with the manufacturer(s) of any commercial product(s) discussed in an educational presentation. For full-time employees of industry or government, the affiliation listed in the program will constitute full disclosure.

Disclosure should include any relationship that may bias one's presentation or which could give the perception of bias. These situations may include, but are not limited to:

1. stock options or bond holdings in a for-profit corporation or self-directed pension plan
2. research grants
3. employment (full- or part-time)
4. ownership or partnership
5. consulting fees or other remuneration (payment)
6. non-remunerative positions of influence as officer, board member, trustee, or public spokesperson
7. receipt of royalties
8. speakers bureau

DISCLAIMER

All authored abstracts, findings, conclusions, recommendations, or oral presentations are those of the author(s) and/or speaker(s) and do not reflect the reviews of AANM or imply any endorsement. No responsibility is hereby disclaimed, by AANM for any injury and/or damage to persons or property as a matter of product liability, negligence or otherwise, or from any use or operation of methods, products, instructions or ideas presented in the abstracts or at the Second Annual Meeting. Independent verification of diagnosis and drug dosages should be made. Discussions, views and recommendations regarding medical procedures, choices of drugs, and drug dosages are the responsibility of the authors and presenters.

AUDIO- AND VIDEOTAPING

AANM expects that attendees will respect each presenter's willingness to provide free exchange of scientific information without the abridgement of his or her rights or privacy and without the unauthorized copying and use of the scientific data shared during his or her presentation. Cameras and recording devices will not be permitted in the Scientific Sessions or the Poster Sessions, **without the prior written permission of the AANM**.

The use of cameras, audiotaping devices, and videotaping equipment is strictly prohibited within all Scientific Sessions and the Poster Session without the express written permission of the AANM. Unauthorized use of this taping equipment may result in the confiscation of the equipment or the individual may be asked to leave the Scientific Session. These rules will be strictly enforced.

MEETING EVALUATION

Your feedback is extremely important to us. Please take a moment to fill out the meeting evaluation form. Your input is greatly appreciated and we will use your feedback and comments to help us plan next year's meeting.

USE OF AANM NAME AND LOGO

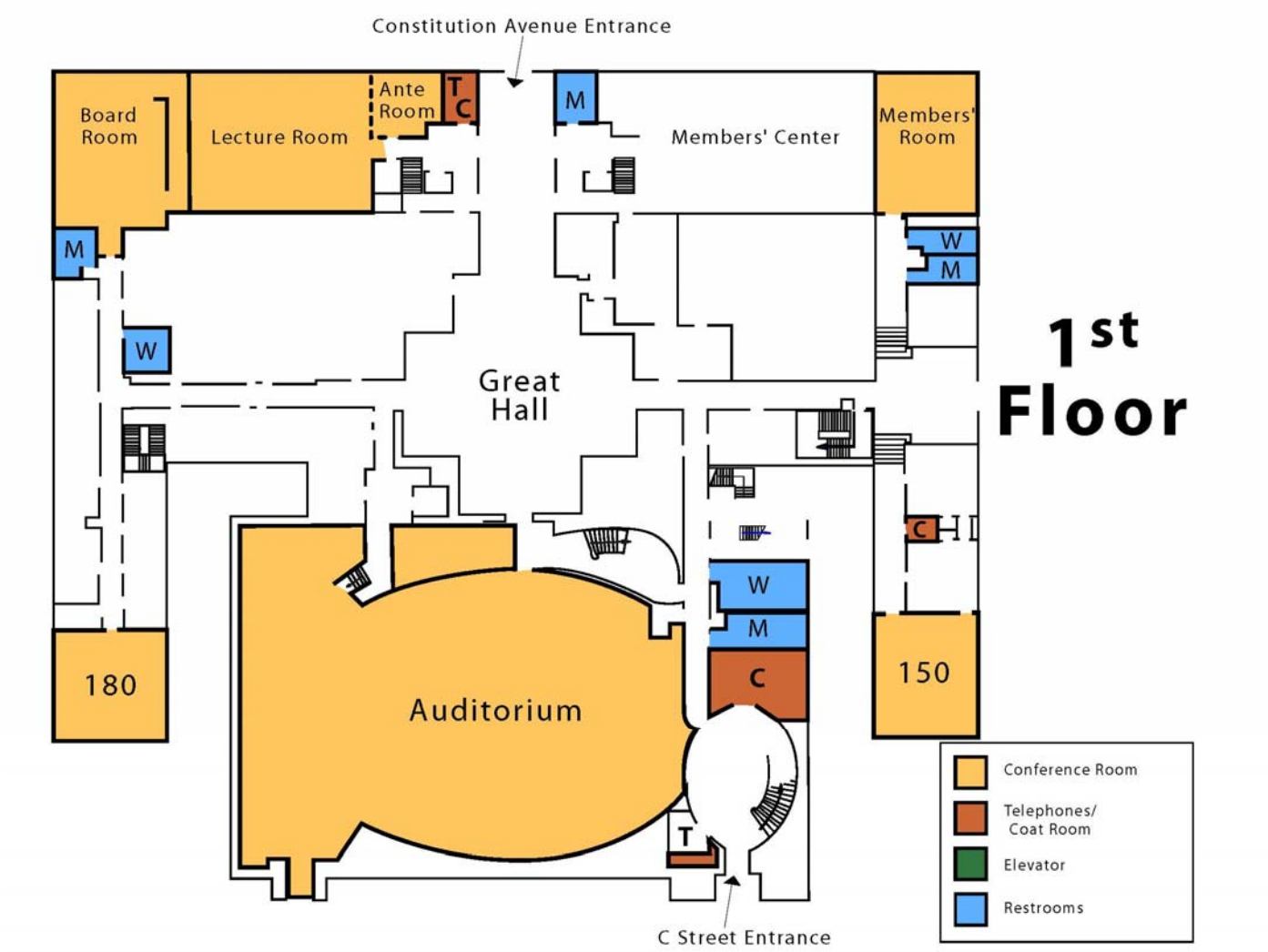
AANM reserve the right to approve use of their names in all material disseminated to the media, public and professionals. AANM's name, meeting name, logo(s), and meeting logo may not be used without permission. Use of the AANM logo is prohibited without the express written permission of the AANM Office and AANM Coordinator Dr. Ling Xu. All corporate supporters should share their media outreach plans with the AANM Office and AANM Coordinator before any release.

No abstract presented at the AANM Second Annual Meeting, may be released to the press before its official presentation date and time. Press release must be embargoed until one hour after the presentation.

AANM MEMBERSHIP

We encourage you to help us spread the word about opportunities for Founding Member status with the American Academy of Nanomedicine. More information about membership and a membership application can be found on the inside back cover of this *Program & Abstract* book. We also encourage you to meet Dr. Ling Xu, the AANM Office and AANM Coordinator, who will be attending the AANM Second Annual Meeting.

Building Map of the National Academy of Sciences Building



Auditorium	(Meeting Room)
Lecture Room	(Meeting Room)
Board Room	(Meeting Room)
NAS #180 Room	(Meeting Room)
Great Hall	(Reception)
Member Room	(Board Meeting room)
Gallery	(Poster Session)
Executive Dining Room	(Office and Speaker Ready Room)
NAS #142 Room	(Committee Meeting Room)
NAS #146 Room	(Committee Meeting Room)
NAS #148 Room	(Committee Meeting Room)

NOBEL LECTURE

Aquaporin Water Channels: from Atomic Structure to Clinical Medicine

Peter Agre, MD

Vice Chancellor for Science and Technology
Professor of Cell Biology
Professor of Medicine
Duke University School of Medicine

Aquaporin (AQP) water channel proteins enable high water permeability of certain biological membranes. Discovered in human red cells but expressed in multiple tissues, AQP1 has been thoroughly characterized and its atomic structure is known. Expression patterns of the thirteen known human homologs predict phenotype. Individuals lacking Colton blood group antigens have mutations in AQP1. In people with no AQP1, lack of water causes defective urine concentration and reduced fluid exchange between capillary and interstitium in lung. Mutations in AQP0, expressed in lens fiber cells, result in familial cataracts. Mutations in AQP2, expressed in renal collecting duct principal cells, result in nephrogenic diabetes insipidus. AQP2 underexpression is found in disorders with reduced urinary concentration, AQP2 overexpression in those with fluid retention. Mistargeting of AQP5, normally expressed in the apical membranes of salivary and lacrimal gland acini, can occur in Sjogren's syndrome. Aquaporins also are implicated in brain edema and muscular dystrophy (AQP4), anhidrosis (AQP5), renal tubular acidosis (AQP6), conversion of glycerol to glucose during starvation (AQP7 and AQP9) and cystic fibrosis (several).

Minnesota native Peter Agre studied chemistry at Augsburg College (B.A. 1970) and medicine at Johns Hopkins (M.D. 1974). He completed his residency at Case Western Reserve University in Cleveland, a Hem-Onc Fellowship at the University of North Carolina at Chapel Hill, and a postdoctoral fellowship in cell biology at Johns Hopkins. A Johns Hopkins faculty member since 1984, Agre was Professor of Biological Chemistry and Professor of Medicine when, in 2005, he moved to the Duke University School of Medicine to become Vice Chancellor for Science and Technology, Professor of Cell Biology and Professor of Medicine. In 2003, Agre shared the Nobel Prize in Chemistry for discovering aquaporins, a family of water channel proteins found throughout nature, responsible for numerous physiological processes in humans and implicated in multiple clinical disorders.

Among his awards, Agre received the 1999 Homer Smith Award from the American Society of Nephrology and the 2005 Karl Landsteiner Award from the American Association of Blood Banks. Agre was elected to the National Academy of Sciences in 2000 and the Institute of Medicine in 2005. He was also elected to the American Academy of Arts and Sciences in 2003 and the American Philosophical Society in 2004.

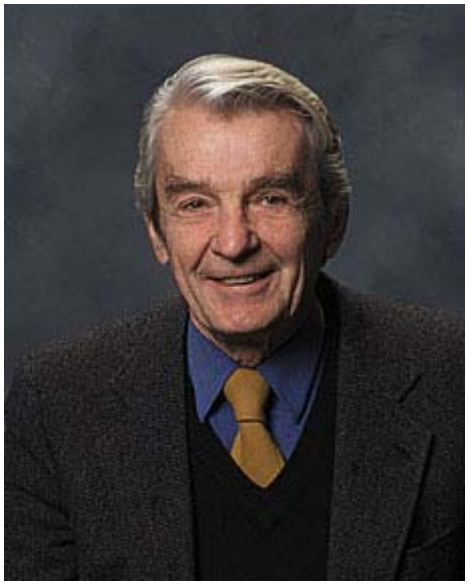
NOBEL LECTURE

Nanotechnology, Biology and Business

Ivar Giaever

Applied BioPhysics, Inc
Troy, New York USA

Nanotechnology has received a lot of attention lately and it holds much future promise to make things both cheaper and better. In this talk I will describe some of my attempts in this field. In particular I will talk about a general immunology detector that utilizes small indium particles to detect antibodies. I will also describe a whole cell bio-sensor using electrical fields to obtain information about the morphology of cells in tissue culture. Finally I will touch on how to bring nanotechnology to the market.



Biography

Ivar Giaever was born in Norway, but immigrated first to Canada and later to USA. He has worked as a staff member at General Electric Research Laboratory, as a professor at Rensselear Polytechnic Institute and is presently CEO of Applied BioPhysics, Inc. He has received many awards and honors, and shared the Nobel Prize for Physics in 1973.

The Second Annual Meeting of the American Academy of Nanomedicine

The National Academy of Sciences Building
2101 Constitution Avenue, NW, Washington DC 20418, USA
September 9-10, 2006

Saturday, September 9, 2006		
Time	**Topic, Speaker, Location**	**Abstract Number**
7:30 am	**BREAKFAST** ***Great Hall***	
8:30 am	**WELCOME AND ANNOUNCEMENTS** ***Auditorium***	
9:00 am	**PRESIDENTIAL LECTURE** ***Auditorium***	
	Chair: Tachung Yih, PhD	
	New Technology and Clinical Applications of Nanomedicine Chiming Wei, MD, PhD, Johns Hopkins University, Baltimore, MD, USA	1
9:30 am	**BREAK (Poster Viewing)** ***Gallery***	
10:00 am	**CONCURRENT SYMPOSIUM I: CLINICAL NANOMEDICINE** ***Auditorium***	
	Chairs: Yuri Lyubchenko, Ph.D., D.Sc. and Jean-Christophe Rochet, PhD	
10:00 am	**Summary of the Clinical Nanomedicine Symposium** Yuri Lyubchenko, PhD, University of Nebraska Medical Center, Omaha, Nebraska, USA	2
10:05 am	**Nanoimaging for Protein Misfolding Diseases** Yuri Lyubchenko, PhD, University of Nebraska Medical Center, Omaha, Nebraska, USA	3
10:35 am	**Effect of Oxidative Stress on α-Synuclein Aggregation in Parkinson's Disease** Jean-Christophe Rochet, PhD, Purdue University, West Lafayette, Indiana, USA	4
11:05 am	**Investigation of the Early Stages of Amyloid Aggregation by Single-molecule Force Spectroscopy** Boris Akhremitchev, PhD, Duke University, Durham, North Carolina, USA	5
11:35 am	**Molecular Structure of Amyloid and Prion Fibrils: Insights from Solid State NMR** Robert Tycko, PhD, NIDDK, National Institutes of Health, Bethesda, Maryland, USA	6
10:00 am	**CONCURRENT SYMPOSIUM II: GENETIC NANOMEDICINE** ***Board Room***	
	Chairs: Michael Heller, Ph.D. and **Marianna Foldvari, PhD**	
10:00 am	**Gemini Nanoparticles as Cutaneous Gene Delivery Systems for Localized Scleroderma** Marianna Foldvari, PhD, University of Saskatchewan Saskatoon, SK. Canada	7
10:25 am	**Towards A $1000 Human Genome** Xiaohua Huang, PhD, University of California at San Diego, San Diego, California, USA	8
10:50 am	**Modeling and Control of Gene Delivery for Gene Therapy** Mingjun Zhang, PhD, Agilent Technologies, California, USA.	9
11:15 am	**Sequence-Based Pathogen Diagnostics and Surveillance** Joel M. Schnur, PhD, Naval Research Laboratory, Washington, D.C., USA	10
11:40 am	**Nanotech Approaches to High Sensitivity/Selectivity Genotyping Diagnostics**	11

	Michael J. Heller, Ph.D., University of California at San Diego, San Diego, California, USA	
10:00 am	**CONCURRENT SYMPOSIUM III: DRUG DELIVERY NANOMEDICINE-1** ***Lecture Room***	
	Chairs: Hamid Ghandehari, PhD and Justin Hanes, PhD	
10:00 am	**New Polymeric Nanomedicines for Targeted and Controlled Drug Delivery** Justin Hanes, PhD, The Johns Hopkins University, Baltimore, Maryland, USA	12
10:25 am	**Microbubble-enhanced Targeting of Nanoparticles for Site-specific Drug Delivery** Richard Price, PhD, University of Virginia, Richmond, Virginia, USA	13
10:50 am	**CYT-6091 (Aurimune™): A Colloidal Gold-Based Tumor-Targeted Nanomedicine** Larry Tamarkin, PhD, CytImmune Sciences, Inc., Rockville, Maryland, USA	14
11:15 am	**Targeted Nanodelivery: Materializing the Potential of Nanomedicine for Cancer Treatment and Diagnosis** Esther H. Chang, Ph.D, Georgetown University Medical Center, Washington DC, USA	15
11:40 pm	**Targeted Delivery: Does Higher Definition at Nanoscale Matter?** Hamid Ghandehari, PhD, University of Maryland, Baltimore, Maryland, USA	16
10:00 am	**CONCURRENT SYMPOSIUM IV: NANOMATERIALS AND THERAPEUTIC APPLICATIONS** ***NAS Room #180***	
	Chairs: Irina Petrache, MD and Ryan Tian, PhD	
10:00 am	**New Nanobiomaterials for Potential Applications in Therapeutic, Diagnostic, and Regenerative Nanomedicines** Ryan Tian, PhD, University of Arkansas, Fayetteville, Arkansas, USA	17
10:25 am	**Modular Nanostructured Peptide Materials for Cell Sheet Regeneration** Joel Collier, PhD, University of Cincinnati, Cincinnati, OH, USA	18
10:50 am	**Fabrication of Nanobiological Materials through Molecular Self-assembly** Xiaojun Zhao, PhD, West China Hospital, Sichuan University, Chengdu, China	19
11:15 am	**Nanoparticle Tethered Biosensors For Autoregulated Gene Therapy in Hyperoxic Endothelium** Tarl Prow, PhD, Wilmer Eye Institute, The Johns Hopkins Hospital, Baltimore, MD, USA	20
11:40 pm	**The Use of Nanotechnology for the Development of Novel Cancer Biomarkers** Hirendranath Banerjee, PhD, Elizabethcity State University, Elizabethcity, NC, USA	21
12:05 pm	**LUNCH BREAK** ***Great Hall***	
12:30 pm	**International Academy of Nanomedicine (IANM): 1st Founding Member meeting (Lunch Meeting)** ***Member Room***	
12:30 pm	**POSTER VIEWING (presenters at their posters)** ***Gallery***	
1:30 pm	**Young Investigator Award Competition** ***Auditorium***	
	Chairs: Donald A. Tomalia, PhD and Susan Gilbert, PhD	
1:30 pm	**Predicting Drug Pharmacokinetics and Effect in Vascularized Tumors Using Computer Simulation** Vittorio Cristini, PhD, University of Texas, Houston, Texas, USA	73
1:41 pm	**New Polymeric Nanomedicines for Targeted and Controlled Drug Delivery** Justin Hanes, PhD, The Johns Hopkins University, Baltimore, Maryland, USA	12
1:52 pm	**Towards A $1000 Human Genome** Xiaohua Huang, PhD, University of California at San Diego, San Diego, California, USA	8
2:03 pm	**Determinants of Selectivity in Ion Transporters** Susan L. Beamis Rempe, PhD, Sandia National Laboratories, Albuquerque, NM, USA	113

2:14 pm	**Effect of Oxidative Stress on α-Synuclein Aggregation in Parkinson's Disease** Jean-Christophe Rochet, PhD, Purdue University, West Lafayette, Indiana, USA	4
2:25 pm	**Laser-Guided Assembly of 3D Living Cell Microarrays** Winston Timp, Graduate Student, MIT, Boston, MA, USA	P-12
2:36 pm	**Integrating Single-molecule Detection, Quantum Dot Nanosensors, and Microfluidic Manipulations for Analysis of Low-abundance Biomolecules** Tza-Huei (Jeff) Wang, PhD, Johns Hopkins University, Baltimore, Maryland, USA	54
2:47 pm	**Modeling and Control of Gene Delivery for Gene Therapy** Mingjun Zhang, PhD, Agilent Technologies, California, USA.	9
2:58 pm	**Nanowire Biosensors: A Tool for Medicine and Life Science** Gengfeng Zheng, PhD, Harvard University, Boston, MA, USA	27
1:30 pm	**CONCURRENT SYMPOSIUM V : CELLULAR NANOMEDICINE** ***Board Room***	
	Chairs: Donald T. Haynie, PhD and Denis Wirtz, PhD	
1:30 pm	**Mouse Genetic Models of Bone Stem Cells and Nano Scale Receptor Dynamics** Anja Nohe, PhD, University of Maine, Orono, Maine, USA	22
1:50 pm	**Instrumented Cellular Systems** Aristides Requicha, PhD, University of Southern California, California, USA	23
2:10 pm	**Functional Polymeric Micelle Technology for Tumor Extracellular pH Targeting and Multidrug Resistance** You Han Bae, PhD, University of Utah, Salt Lake City, Utah, USA	24
2:30 pm	**Polypeptide Multilayer Nanofilms: Science, Technology and Medicine** Donald T. Haynie, PhD, Artificial Cell Technologies, Inc. New Haven, Connecticut, USA	25
2:50 pm	**Cytoskeletal Dynamics During Ovarian Cancer Progression Probed by Nanorheology** Denis Wirtz, PhD, Johns Hopkins University, Baltimore, Maryland, USA	26
1:30 pm	**CONCURRENT SYMPOSIUM VI : BIOSENSOR NANOMEDICINE** ***Lecture Room***	
	Chairs: **Shouheng Sun, PhD and Tsuneo Urisu, PhD**	
1:30 pm	**Nanowire Biosensors: A Tool for Medicine and Life Science** Gengfeng Zheng, PhD, Harvard University, Boston, MA, USA	27
1:50 pm	**SI-based Planer Type Ionchannel Biosensor** Tsuneo Urisu, PhD, Institute for Molecular Science, Okazaki, Japan	28
2:10 pm	**Magneto-Nano Biosensors for Medicine** Shan Wang, PhD, Stanford University, Stanford, California, USA	29
2:30 pm	**Basic Science and Bio/Medical Application of Carbon Nanotubes** Morinobu Endo, PhD, Shinshu University, Wakasato, Nagano-shi, Shinshu, Japan	30
2:50 pm	**An Impedance Biosensor Based on Carbon Nanotubes** Mark J. Schulz, PhD, University of Cincinnati, Cincinnati, USA	31
1:30 pm	**CONCURRENT SYMPOSIUM VII : NANOMEDICINE POLICY AND PATENT** ***NAS Room #180***	
	Chairs: **Raj Bawa, PhD and Stephen A. Merrill, PhD**	
1:30 pm	**Emerging Issues and Trends in Nanotechnology Patent Law** Raj Bawa, PhD, Bawa Biotechnology Consulting, LLC, Ashburn, VA, USA	32
1:48 pm	**The Carbon Nanotube Patent Landscape in Nanomedicine** Drew L. Harris, J.D., Graves, Dougherty, Hearon & Moody, Austin, Texas, USA	33
2:06 pm	**Emerging Regulatory Framework for Nanomaterials** Mark Mansour, J.D., Foley & Lardner LLP, Washington, DC, USA	34
2:24 pm	**The Critical Role of the Inventor Under the Proposed Patent Rule Changes** Mark L. Hayman, PhD, J.D., Sughrue Mion PLLC, Washington, D.C. USA	35
2:42 pm	**Patent Policy in a World Where Most Patents are Worthless** Marvin Motsenbocker, Ph.D., J.D., Novak Druce, Washington, D.C. USA	36

3:00 pm	**The Challenges of Regulating Known Unknowns** Robin Fretwell Wilson, PhD, Washington & Lee University, Lexington, Virginia, USA	37
3:15 pm	**BREAK (Poster Viewing)** ***Gallery***	
3:30 pm	**CONCURRENT SYMPOSIUM VIII : DIAGNOSTIC NANOMEDICINE** ***Auditorium***	
	Chairs: Peter Burkhard, PhD and Hedi Matoussi, PhD	
3:30 pm	**Use of Quantum Dot-bioconjugates for Sensing and Probing Cellular Processes** Hedi Matoussi, Ph.D., US Naval Research Laboratory, Washington, DC, USA	38
4:00 pm	**The Arthroscopic SFM – A Minimally Invasive Nanotool For Probing Articular Cartilage** Urs Staufer, Ph.D., University of Neuchatel, Jaquet-Droz, Switzerland	39
4 :30 pm	**A Nanotool Box Spanning from 'In-vitro' to 'Bedside' to 'In-vivo' Diagnosis** Patrick Hunziker, MD, University Hospital of Basel, Switzerland	40
5:00 pm	**Design of Multifunctional Peptide Nanoparticles for Diagnostic Applications** Peter Burkhard, Ph.D., University of Connecticut, Storrs, Connecticut, USA	41
3:30 pm	**CONCURRENT SYMPOSIUM IX: COMMERCIALIZATION, ETHICS AND POLICY OF NANOMEDICINE** ***NAS Room #180***	
	Chairs: James Castracane, PhD and Philip H. Lippel, PhD	
3:30 pm	**Health and Medicine in the National Nanotechnology Initiative** Philip H. Lippel, PhD, National Nanotechnology Coordinating Office, Washington DC, USA	42
3:55 pm	**Implications of Nanoscale Technologies: National Policy Studies and Global Interests at the National Academies** Tamae Wong, PhD, National Academies' National Research Council, Washington DC, USA	43
4:20 pm	**Life on a Chip: Nanobioscience R & D at CNSE** James Castracane, PhD, University of Albany-SUNY, Albany, New York, USA	44
4:45 pm	**Journey from Basic Research to Marketable Product: Lessons from a Nanomedicine Company's Experience Getting Started** Tom Malone, Artificial Cell Technologies, Inc. New Haven, Connecticut, USA	45
5:10 pm	**Ethics in Nanomedicine: A Needs-Assessment and Proposals for the Future** Summer Johnson, PhD, Albany Medical College, Albany, New York, USA	46
3:30 pm	**CONCURRENT SYMPOSIUM X: CARDIOVASCULAR NANOMEDICINE** ***Board Room***	
	Chairs: Donna Wang, MD, FAHA and Prabhas Moghe, PhD	
3:30 pm	**Medical Nanotechnology for Preserving Cardiovascular Health and Treating Cardiovascular Diseases** Donna Wang, MD, FAHA, Michigan State University, East Lansing, Michigan, USA	47
3:55 pm	**Novel Imaging Approaches Providing a Driving Force in the Field of Vascular Cell Mechanotransduction** Michael A. Hill, PhD, University of Missouri, Columbia, Missouri, USA	48
4:20 pm	**Nano-Lipid Vesicles (NLVs) and Nano-Polymers (NPs) in Targeted Cardiovascular Imaging and Therapy** Ban-An Khaw, PhD, Northeastern University, Boston, MA, USA	49
4:45 pm	**NanoLipoBlockers: Nanoscale Assemblies for Potential Treatment of Atherosclerosis** Prabhas Moghe, PhD, Rutgers University, New Jersy, USA	50
5:10 pm	**Applications of Site-Targeted Perfluorocarbon Nanoparticles in Diagnosis and Therapy of Atherosclerotic Disease** Shelton D. Caruthers, PhD, Washington University School of Medicine, St. Louis, MO, USA	51

3:30 pm	**CONCURRENT SYMPOSIUM XI: MOLECULAR IMAGING NANOMEDICINE** ***Lecture Room***	
	Chairs: Martin Philbert, PhD and Igor Yaminsky, PhD	
3:30 pm	**Optical Nanosensors for Noninvasive Intracellular Measurement** Martin Philbert, PhD, University of Michigan School of Public Health, Ann Arbor, MI, USA	52
3:55 pm	**Three Dimensional Image Analysis in Biomedical Scanning Probe Microscopy** Igor Yaminsky, PhD, Moscow State University, Moscow, Russia	53
4:20 pm	**Integrating Single-molecule Detection, Quantum Dot Nanosensors, and Microfluidic Manipulations for Analysis of Low-abundance Biomolecules** Tza-Huei (Jeff) Wang, PhD, Johns Hopkins University, Baltimore, Maryland, USA	54
4:45 pm	**Monodisperse Magnetic Nanoparticles for Biomedical Applications** Shouheng Sun, PhD, Brown University, Providence, Rhode Island, USA	55
5:10 pm	**Mobile Microscopic Sensors for High-Resolution in Vivo Diagnostics** Tad Henry Hogg, PhD, Hewlett-Packard Laboratories, Polo Alto, California, USA	56
5:40 pm	**Nobel Prize Laureate Lecture** ***Auditorium***	
	Chair: Chiming Wei, MD, PhD	
	Aquaporin Water Channels and Nanomedicine Peter Agre, MD, Duke University School of Medicine, Durham, North Carolina, USA	
6:10 pm	**Nobel Prize Laureate Honor Reception** ***Great Hall***	
6:40 pm	***AWARD COMMITTEE MEETING (BY INVITATION)*** ***Board Room***	
7:00 pm – 7:30 pm	***ACADEMY BOARD OF DIRECTORS MEETING (BY INVITATION)*** ***Board Room***	
7:30 pm – 9:30 pm	**AANM Faculty Banquet (Ticket request)** ***Member Room***	

Sunday, September 10, 2006

7:00 am – 8:00 am	***Nanomedicine: Nanotechnology, Biology and Medicine*** **Editorial Board Meeting (By Invitation)** ***Board Room***	
8:10 am – 8:50 am	**AANM Business Meeting (All AANM Members and Attendees)** ***Auditorium***	
9:00 am – 9:30 am	**Nobel Prize Laureate Lecture** ***Auditorium***	
	Chair: Chiming Wei, MD, PhD	
	Nanotechnology, Biology and Business Ivar Giaever, PhD, Applied BioPhysics, Inc, Troy New York, USA	
9:30 am	**BREAK (Poster Viewing)** ***Gallery***	
9:50 am	**CONCURRENT SYMPOSIUM XII: BASIC NANOMEDICINE (NIH ROADMAP BASIC NANOMEDICINE CENTERS SYMPOSIUM)** ***Auditorium***	
	Chairs: Edward Grood, PhD and Mike Dustin, PhD	
9:50 am	**NIH Roadmap on Basic Nanomedicine** Richard Fisher, PhD, NIH/National Eye Institute, Bethesda, Maryland, USA	57
10:15 am	**Center for Protein Folding Machinery** Wah Chiu, PhD, Baylor Medical College, Houston, Texas, USA	58

10:40 am	**The National Center for the Design of Biomimetic Nanoconductors** Eric Jakobsson, PhD, University of Illinois at Urbana-Champaign, Illinois, USA	59
11:05 am	**The Engineering Principles of Cellular Control and Movement Systems** Wendell Lim, PhD, University of California- San Francisco, San Francisco, California, USA	60
11:30 am	**Cellular Sensing of Force and Geometry in Cancer and Immunity** Mike Dustin, PhD, Columbia University, New York, New York, USA	61
9:50 am	**CONCURRENT SYMPOSIUM XIII: PHARMACOLOGICAL NANOMEDICINE** ***Lecture Room***	
	Chairs: Susan Gilbert, PhD and David Needham PhD	
9:50 am	**Summary of the Pharmacology Nanomedicine Symposium** Susan Gilbert, PhD, University of Pittsburgh, Pittsburgh, PA, USA	62
10:00 am	**Discovery and Exploitation of Allosteric Sites for Control of Protein Function** Jeanne Hardy, PhD, University of Massachusetts, Amherst, Massachusetts, USA	63
10:30 am	**Optical Imaging Approaches for Molecularly-Targeted Drug Discovery and Development** Wafik S. El-Deiry, MD,PhD, University of Pennsylvania, Philadelphia, PA, USA	64
11:00am	**Miniaturized Drug Discovery and High Throughput Microarrays for Biological Discovery** Scott L. Diamond, MD, University of Pennsylvania, Philadelphia, PA, USA	65
11:30 am	**Mapping Engineering onto Biology at the Nanoscale: Nature's Encapsulation Technologies as Bioinspiration for Nano-Scale Anti-Tumor Drug Delivery** David Needham, Duke University, Durham, North Carolina, USA	66
9:50 am	**CONCURRENT SYMPOSIUM XIV: NANOTECHNOLOGY IN GENE DELIVERY AND THERAPY FOR CANCER OR VIRAL DISEASES** ***NAS Room #180***	
	Chairs: Peixuan Guo, PhD and Bogdan Dragnea, PhD	
9:50 am	**Studies of Self-assembly of Virus-like Particles** Bogdan Dragnea, Indiana University, Indianapolis, Indiana, USA	67
10:15 am	**Development of Tmor-targeted Nnoparticles for *In Vivo* Tumor Imaging and Drug Delivery** Lily Yang, Emory University School of Medicine, Atlanta, GA, USA	68
10:40 am	**Specific Delivery of siRNA, Ribozyme and Multiple Therapeutic Molecules to Cancer Cells using RNA Nanotechnology** Peixuan Guo, PhD, Purdue University, West Lafayette, Indiana, USA	69
11:05 am	**Targeted therapy using virus-based nanoparticles (VNPs)** Marianne Manchester, PhD, The Scripps Research Institute, La Jolla, California, USA	70
11:30 am	**Diagnostic and Therapeutic Applications of Bacteriophage and Adeno-associated Virus Technologies in Pulmonary Emphysema** Irina Petrache, MD, Indiana University School of Medicine, Indianapolis, Indiana, USA	71
9:50 am	**CONCURRENT SYMPOSIUM XV: ENGINEERING NANOMEDICINE** ***Board Room***	
	Chairs: Tachung Yih, PhD and Fredika Robertson, PhD	
9:50 am	**Summary of Engineering Nanomedicine Symposium** Tachung Yih, PhD, Oakland University, Michigan, USA	72
9:55 am	**Predicting Drug Pharmacokinetics and Effect in Vascularized Tumors Using Computer Simulation** Vittorio Cristini, PhD, University of Texas, Houston, Texas, USA	73
10:25 am	**Nanochips for Mining the Serum and Tumor Proteome** Fredika Robertson, The Ohio State University, Columbus, Ohio, USA	74
10:55 am	**In Vivo Biodistribution and Radiation Therapy with Radioactive Composite Nanodevices** Mohamed Khan, MD, PhD, Roswell Park Cancer Institute, Buffalo, New York, USA	75

11:25 am	**Interactions of Electrons with Isolated Biomolecules** Kit Bowen, PhD, Johns Hopkins University, Baltimore, Maryland, USA	76
12:00 pm	**LUNCH BREAK** ***Great Hall***	
12:30 pm	**POSTER SESSION II (presenters at their posters)** ***Gallery***	
1:30 pm	**KEYNOTE SPEAKER** ***Auditorium***	
	Chair: Chiming Wei, MD, PhD	
	Electron Cryomicroscopy of Biological Nano-Machines Wah Chiu, PhD, Baylor Medical College, Houston, Texas, USA	77
2:00 pm	**CONCURRENT SYMPOSIUM XVI: INTERNATIONAL NANOMEDICINE DEVELOPMENT** ***Auditorium***	
	Chairs: Donald A. Tomalia, PhD, Yuri Lyubchenko, PhD, and Marianna Foldvari, PhD	
2:00 pm	**Nanomedicine Research in Canada** Marianna Foldvari, PhD, University of Saskatchewan Saskatoon, SK. Canada	78
2:10 pm	**Nanomedicine Research in China** Xiaojun Zhao, PhD, West China Hospital, Sichuan University, Chengdu, China	79
2:20 pm	**Development of Nanomedicine in Hong Kong** Ken Wong, MD, Hong Kong University, Hong Kong	80
2:30 pm	**Status of Nanomedicine Research in India** N.K.Jain, PhD, Department of Pharmaceutical Sciences, University, Sagar, India	81
2:40 pm	**America-Japan Nanomedicine Society (AJNS)** Tsuneo Urisu, PhD, Institute for Molecular Science, Myodaiji, Okazaki, Japan	82
2:50 pm	**Current Research Status of Biomedical Micro and Nano Technologies in Korea** Yoon-Sik Lee, PhD, Seoul National University, Seoul, Korea	83
3:00 pm	**Outlook into the Nanomedicine Research in Russia** Igor Yaminsky, PhD, Lomonosov Moscow State University, Moscow, Russia	84
3:10 pm	**SINGAPORE – An Ideal R&D Hub for Bio-Nanotechnology** Jimmy Yun, PhD, Nanomaterials Technology Ltd, Singapore	85
3:20 pm	**Nanomedicine Research in Switzerland** Patrick Hunziker, MD, University Hospital of Basel, Switzerland	86
3:30 pm	**International Report on Nanomedicine in the U.S.A.** Donald A. Tomalia, PhD, Dendritic Nanotechnologies, Inc. and Central Michigan University, Mt. Pleasant, Michigan, U.S.A.	87
3:40 pm	**PANEL DISCUSSION**	
2:00 pm	**CONCURRENT SYMPOSIUM XVII: NEUROLOGY NANOMEDICINE** ***Board Room***	
	Chairs: Rutledge G. Ellis-Behnke, PhD and Jean D. Sipe, PhD	
2:00 pm	**Nanotechnology For Targeted Drug And Gene Delivery** Mansoor Amiji, PhD, Northeastern University, Boston, MA, USA	88
2:25 pm	**Bioengineering Instructive Cellular Nanoenvironments** Carlos Semino, PhD, Massachusetts Institute of Technology, Boston, Massachusetts, USA	89
2:50 pm	**The Extracellular Matrix: Amyloidosis, Tissue Engineering and Regenerative Medicine** Jean D. Sipe, PhD, Center for Science Review/NIH, Bethesda, Maryland, USA	90
3:15 pm	**Nanomedicine and Nanotechnology Research at the NIBIB and the NIH** William Heetderks, PhD, National Institute of Biomedical Imaging and Bioengineering, NIH Bethesda, Maryland, USA	91
3:40 pm	**Nano Neuro Knitting: Using Nanotechnology to Repair the Brain**	92

	Rutledge G. Ellis-Behnke, PhD, Massachusetts Institute of Technology, Boston, MA, USA	
2:00 pm	**CONCURRENT SYMPOSIUM XVIII: ONCOLOGY AND EXPERIMENTAL NANOMEDICINE** ***NAS Room #180***	
	Chairs: Michael Heller, PhD and Lajos P. Balogh, PhD	
2:00 pm	**Nanotechnology for Cancer Diagnostics and Therapeutics** Michael Heller, PhD, University of California San Diego, San Diego, California, USA	93
2:25 pm	**Nanocomposite Labeling and Selective Destruction of Cells using Laser Induced Optical Breakdown (LIOB)** Lajos P. Balogh, PhD, Roswell Park Cancer Institute, Buffalo, New York, USA	94
2:50 pm	**Nanotechnologies for the Creation of Better Vascular Grafts and Stents** Tom Webster, PhD, Brown University Providence, Rhode Island, USA	95
3:15 pm	**Basic Nanomedicine System Methodology and Emerging Novel Nanotechnology Promising Health Care Advancements not Otherwise Possible** Nicholas De Claris, Sc.D., University of Maryland, Baltimore and College Park, MD, USA	96
3:40 pm	**Dissecting the Disruptive Nature of Nanomedicine** Robert Best, PhD, University of South Carolina, South Carolina, USA	97
2:00 pm	**CONCURRENT SYMPOSIUM XIX: TOXICOLOGY NANOMEDICINE** ***Lecture Room***	
	Chairs: Nancy A. Monteiro-Riviere, PhD and Petia P. Simeonova, MD, PhD	
2:00 pm	**Nanomaterials and the Skin** Nancy A. Monteiro-Riviere, Ph.D., North Carolina State University, Raleigh, NC, USA	98
2:25 pm	**In Vivo Toxicity of Nanoparticles for Gene Therapy in the Eye** G.A. Lutty, Wilmer Eye Institute, The Johns Hopkins University, Baltimore, Maryland, USA	99
2:50 pm	**Biocompatibility of Carbon Nanostructures for Therapeutic and Diagnostic Applications** Jodie L. Conyers, Ph D, University of Texas Health Science Center, Houston, Texas, USA	100
3:15 pm	**Toxicity of Polymer Nanoparticles: The Rules of Toxicity Still Apply** Randal J. Schneider, PhD, Medical College of Wisconsin, Wisconsin, USA	101
3:40 pm	**Evaluation of Carbon Nanotube Toxicity** Petia P. Simeonova, MD, PhD, National Institute for Occupational Safety and Health, Morgantown, West Virginia, USA	102
4:05 pm	**BREAK (Poster Viewing)** ***Gallery***	
4:30 pm	**CONCURRENT SYMPOSIUM XX: NANOTECHNOLOGY IN BIOMEDICAL AND CLINICAL APPLICATION** ***Board Room***	
	Chairs: Shuming Nie, PhD and Hidezo Mori, PhD	
4:30 pm	**Nanotechnology for Personalized and Predictive Medicine** Shuming Nie, Emory University and Georgia Institute of Technology, Atlanta, Georgia, USA	103
4:55 pm	**Structural Biological Approach to Fundamental Protein in Human Diseases Explores Nanophysiology and Nanomedicine** Hidezo Mori, National Cardiovascular Center Research Institute, Suita, Osaka, Japan	104
5:20 pm	**Topical Delivery of Silver Nanoparticles Reduces Systemic Inflammation of Burn and Promotes Wound Healing** Ken Wong, Department of Surgery, Hong Kong University, Hong Kong	105
5:45 pm	**Nanobiodevice for Biomedical Applications** Yoshinobu Baba, PhD, Nagoya University, Nagoya, Japan	106
6:10 pm	**Controlling Biology with Light** Joseph P. Y. Kao, PhD, University of Maryland, Maryland, USA	107

4:30 pm	**CONCURRENT SYMPOSIUM XXI: DENDRIMER BASED NANOMEDICINE** ***Auditorium***	
	Chairs: Donald A. Tomelia, PhD and Anil Patri, PhD	
4:30 pm	**Dendrimers : Key Properties of Importance to Nanomedicine** Donald A. Tomalia, PhD, Dendritic Nanotechnologies Inc./Central Michigan University, Mt. Pleasant, Michigan, USA	108
4:40 pm	**Glycodendrimers: Novel Bacterial Adhesion Inhibitors** René Roy, PhD, University of Montreal, Montreal, Canada	109
5:05 pm	**Dendritic Polymers and Hydrogels for Biomedical Applications** Mark Grinstaff, PhD, Boston University, Boston, MA, USA	110
5:30 pm	**Preclinical Assessment of Dendrimer Platform for Biomedical Applications** Anil Patri, PhD, Nanotechnology Characterization Laboratory/NCI, Bethesda, MD, USA	111
5:55 pm	**Dendrimer-based Multi-functional Drug Delivery Nanodevices: From Chemistry to Clinical Applications** R. Kannan, PhD, Wayne State University, Detroit, Michigan, USA	112
6:20 pm	**Dendrimers as Multi-purpose Nanodevices for Oncology Drug Delivery and Diagnostic Imaging** Donald A. Tomalia, PhD, Dendritic Nanotechnologies Inc./Central Michigan University, Mt. Pleasant, Michigan, USA	113
4:30 pm	**CONCURRENT SYMPOSIUM XXII: EXPERIMENTAL NANOMEDICINE** ***Lecture Room***	
	Chairs: Gregory Timp, PhD and Eric Jakobsson, PhD	
4:30 pm	**Determinants of Selectivity in Ion Transporters** Susan Rempe, Sandia National Laboratories, Albuquerque, New Mexico, USA	114
4:55 pm	**Integrative micro- and nano-scale control of cell function** Andre Levchenko, Johns Hopkins University, Baltimore, Maryland, USA	115
5:20 pm	**Synthetic Nanopores for Bio-Molecular Analysis** Gregory Timp, PhD, Synthetic Nanopores for Bio-Molecular Analysis, U of Illinois, USA	116
5:45 pm	**Supported Membrane Configuration: A Versatile Model for Deciphering Lipid-protein Interplay at Cellular Membranes** Atul Parikh, PhD, University of Califonia, Davis, California, USA	117
6:10 pm	**Performance Limits of Nanobiosensors: Elementary Considerations and Interpretation of Experimental Data** Muhammad (Ashraf) Alam, Purdue University, West Lafayette, Indiana, USA	118
4:30 pm	**CONCURRENT SYMPOSIUM XXIII: DRUG DELIVERY NANOMEDICINE-2** ***NAS Room #180***	
	Chairs: Kate Stebe, PhD and Hai-Quan Mao, PhD	
4:30 pm	**The Production of Engineered Nanoparticles to Improve the Delivery of Pharmaceutical Drugs** Jimmy Yun, PhD, Nanomaterials Technology Pte Ltd, Singapore	119
4:55 pm	**Importance of Interfacial Phenomena to Therapeutic Nanoparticles** Kate Stebe, PhD, Johns Hopkins University, Baltimore, Maryland, USA	120
5:20 pm	**Functionalized Polymeric Nanoparticles in Nanomedicine** N.K.Jain, PhD, University, Sagar, India	121
5:45 pm	**Tau Tubulin Kinase-1 and Amyloid-beta Peptide Oligomer Induce Tau Phosphorylation, Aggregation, and Reduced Microtubule Polymerization** Tsuneya Ikezu, PhD, University of Nebraska Medical Center, Omaha, Nebrask, USA	122
6:10 pm	**Block Copolymer/DNA Micelles for Liver Targeted-Gene Delivery** Hai-Quan Mao, PhD, Johns Hopkins University, Baltimore, Maryland, USA	123
6:40 pm - 7:40 pm	**Reception and YIA Award, Fellowship Award, Best Poster Award** ***Great Hall***	

POSTERS

Title and Presenter	Poster Number
Study of Designed Polypeptide Multilayer Nanofilms for Controlled Drug Releas Ling Zhang, Rebecca Currier, and Donald T. Haynie. Artificial Cell Technologies, Inc. New Haven, CT, USA	P-01
Adsorption of Protein/Polypeptide on Bioimplant Surfaces by Monte Carlo Simulations A. M. Al-Mekhnaqi, M. S. Mayeed, G. M. Newaz. Department of Mechanical Engineering, Wayne State University, Detroit, Michigan, USA	P-02
Synthesis and Characterization of Radioactive Composite Nanodevices Lajos P. Balogh[1]*, Leah D. Minc[2], Wojciech G. Lesniak[1], and Mohamed K. Khan[1]. 1 NanoBiotechnology Center at Roswell Park Cancer Institute (NBC at RPCI), Elm and Carlton Streets, Buffalo, New York, USA, 2 OSU Radiation Center, Oregon State University, Corvallis Oregon, USA	P-03
Slow Phase Separation – Preliminary Stages in the Filament Formation Olga Tcherkasskaya. Department of Biochemistry and Molecular Biology, Georgetown University School of Medicine, Washington DC, USA	P-04
Nanocrystal-Based Electrochemical Biosensors of Glycan-Lectin Interactions Suitable for Point-of-Care Use Joseph Wang, Zong Dai, Abdel-Nasser Kawde, Yun Xiang, Jeffrey T. La Belle, Jared Gerlach, Veer P. Bhavandan, Sergei Svarovsky and Lokesh Joshi*. The Biodesign Institute at Arizona State University, Tempe, Arizona, USA	P-05
Protein Receptor Interaction Studied on the Nanoscale Kira A. Young[1], James Cook[1], Beth Bragdon[1], Cal Vary[2], Anja Nohe[1]. 1Chemical Engineering, University of Maine, Orono, ME, USA, 2Maine Medical Research Center, Scarborough, Maine, USA.	P-06
Hybrid Integration for Autonomous, Closed-Loop Cell Culture and Incubation Jennifer Blain Christen, Andreas Andreou. Johns Hopkins University, Baltimore, Maryland, USA	P-07
Detection Of Biomolecules With Amorphous Silicon Nanostructures John Lund, Ranjana Mehta, Babak Parviz. Department of Electrical Engineering, University of Washington, Seattle, Washington, USA	P-08
A Simulation framework for Cell Manipulation L. Zhang, J. Cecil. Department of Industrial Engineering, Center for Information Based Manufacturing (CINBM), New Mexico State University, Las Cruces, New Mexico, USA	P-09
Synthesis and Characterization of PAMAM Dendrimer based Multifunctional Nanodevices for Targeted Tumor Detection Wojciech G. Lesniak*, Muhammad S. T. Kariapper, Bindu M. Nair, Mohamed K. Khan, Lajos P. Balogh. NanoBiotechnology Center at Roswell Park Cancer Institute (NBC at RPCI), Buffalo, New York, USA	P-10
Enhanced Early MRI Detection of Cancer Using a Tumor Cell-Targeting Nanoimmuno Delivery System Kathleen F. Pirollo, Matthew Freedman, John Dagata, Qi Zhou, Paul Wang, Esther H. Chang. Department of Oncology, Georgetown University Medical Center, Washinton DC, USA	P-11
Laser-Guided Assembly of 3D Living Cell Microarrays W. Timp, U. Mirsaidov, K. Timp, G. Timp, P. Matsudaira. MIT/Whitehead Institute, Boston, Massachusetts, USA	P-12
Size and Charge Greatly Affect the Biodistribution of Composite Nanodevices in vivo. Lajos P. Balogh*, Muhammed S. T. Kariapper, Bindu M. Nair, Wojciech G. Lesniak, Shraddha S. Nigavekar, Lok Yun Sung, Mohamed K. Khan. NanoBiotechnology Center at Roswell Park Cancer Institute (NBC at RPCI), Buffalo, New York, USA	P-13
Programming molecular arrays on microfabricated chips with genetically engineered polypeptides Ranjana Mehta[1], Mustafa Gungormus[2], Xiaorong Xiong[3], Candan Tamerler[2], Mehmet Sarikaya[2], Babak Amir Parviz[1]. 1 Department of Electrical Engineering, 2 Material Science and Engineering, University of Washington, Seattle, Washington, USA, 3 Intel Corporation, Chandler, Arizona, USA	P-14

Towards Programmed Genetic Transformations in a Living Cell Array Nirveek Bhattacharjee, Yien-Che Tsai, Prashant Mali, Nitish V. Thakor. The Johns Hopkins University, Baltimore, Maryland, USA	P-15
Nano Neuro Knitting: Peptide nanofiber scaffold for brain repair and axon regeneration with functional return of vision. Where do we go from? Rutledge G. Ellis-Behnke[1,3,4], Yu-Xiang Liang[3], Si-Wei You[5], David K.C. Tay[3], Shuguang Zhang[2], Gerald E. Schneider [1,3], Kwok-Fai So[3,4]. 1Department of Brain & Cognitive Science, 2Center for Biomedical Engineering, 3 , 4 , Massachusetts Institute of Technology, Boston, Massachusetts, USA, The University of Hong Kong, Hong Kong, Fourth Military Medical University	P-16
Effect of oxidative stress on α-synuclein aggregation in Parkinson's disease Jeremy L. Schieler, Fang Liu, Hamid Mirzaei, Tytus S. Bernas, J. Paul Robinson, Fred E. Regnier, and *Jean-Christophe Rochet. Purdue University, West Lafayette, Indiana, USA	P-17
Huntingtin oligomeric structures and their potential neurotoxic role in Huntington's disease Yair Porat, Zhipeng Hou, Christopher A. Ross, and Michelle Poirier. Division of Neurobiology, Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA	P-18
Nanoparticle Probes with Surface Enhanced Raman Spectroscopic Tags (SERS Dots) for Cellular Cancer Targeting Jong-Ho Kim,†,₣ Jun-Sung Kim,‡,₣ Heejeong Choi,§ Sang-Myung Lee,† Bong-Hyun Jun,† Kyeong-Nam Yu,‡ Eunye Kuk,§ Yong-Kweon Kim,≠ Dae Hong Jeong,*,§ Myung-Haing Cho*,‡ and Yoon-Sik Lee*,†. † School of Chemical and Biological Engineering, ‡ College of Veterinary Medicine, § Department of Chemistry Education, ≠ School of Electrical Engineering and Computer Science, Seoul National University, Seoul, Korea	P-19
Synthesis and Characterization of Nanodevices for Targeted Tumor Therapy Wojciech G. Lesniak*, Muhammad S. T. Kariapper, Bindu M. Nair, Mohamed K. Khan and Lajos P. Balogh. NanoBiotechnology Center at RPCI, Department of Radiation Medicine, Roswell Park Cancer Institute, Buffalo, New York, USA	P-20
Nanotechnology: The Challenges of Regulating Known Unknowns Wilson, Robin. Washington & Lee University, Lexington, Virginia, USA	P-21
Semiconductor Nanoparticle Uptake and Toxicity Correlates With Particle Size and Core Degradation K. Young, B. Bragdon, A. Johnson, J. Cook, K. Young, J. Nadeau, G. Mayer, and A. Nohe. Chemical Engineering, University of Maine, Orono, Maine, USA	P-22

Monday, September 11, 2006	
10:00 am	**Tour Visiting Johns Hopkins University Rockville Campus (in Washington DC area): Living Cell Imaging Center, Cell Culture Center, Molecular Biological Center, etc.**
11:00 am	**Introduce Johns Hopkins Program and Future Development Plan**

Abstract Key