## **CHALMERS**





# **Nobel Workshop**

Organized by The Royal Swedish Academy of Sciences and the Chalmers Life Science Engineering Area of Advance

Monday May 4<sup>th</sup>, 2015 Date:

**MOLECULES IN LIFE SCIENCE RESEARCH** Topic: Chairs: Prof. Jens Nielsen and Prof. Andrew Ewing

Venue: RunAn Conference Hall, Chalmers University of Technology,

Chalmersplatsen 1. SE-412 58 Göteborg, Sweden

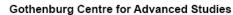
	Chaimersplatsen 1, 3E-412 36 doteborg, Sweden
08:35-08:40	Welcome note: Prof Karin Markides, Chalmers President
08:40-08:45	Opening note: Prof Jens Nielsen, Director of Life Science Engineering
08:45-09:25	Prof <b>DAVID LILLEY</b> , University of Dundee, United Kingdom
	How does RNA act like an enzyme
09:25-10:05	Prof PETER von HIPPEL, University of Oregon, United States
	The multiple roles of the non-(sequence)-specific binding of genome-regulatory proteins to
	DNA in vitro and in vivo.
10.05-10:35	Coffee break
10:35-11:15	Prof JENS NIELSEN, Chalmers University of Technology, Sweden
	Metagenome analysis of the human gut microbiome
11:15-11:55	Prof TOSHIO YANAGIDA, Osaka University, Japan
	Role of fluctuations for driving bio-molecular machines
11:55-12:55	Lunch break
12:55-13:35	Nobel Laureate ARIEH WARSHEL, University of Southern California, United States
	Evaluating and using free energy landscapes for biological functions
13:35-14:15	Nobel Laureate MICHAEL LEVITT, Stanford University, United States
	Solving Large & Difficult Structures with Less Experimental Data
14:15-14:55	Prof. <b>DINA PETRANOVIC</b> , Chalmers University of Technology, Sweden
	Yeast as a model for human diseases
14:55-15:25	Coffee break
15:25-16:05	Prof <b>RICHARD LERNER</b> , The Scripps Research Institute, United States
	Selecting Antibodies from Combinatorial Libraries for the Treatment of Cancer
16:05-16:45	Prof ANDREW McCAMMON, University of California, San Diego, United States
	Molecular Dynamics and Drug discovery
16:45-18:00	Panel discussion: Opportunities and Challenges in Life Science Research
	(Moderators: Jens Nielsen and Andrew Ewing)















## **CHALMERS**





## **Nobel Workshop**

### Organized by The Royal Swedish Academy of Sciences and the Chalmers Energy and Nanoscience and Nanotechnology Areas of Advance

Tuesday May 5<sup>th</sup>, 2015 Date:

**MOLECULES IN NANO AND ENERGY RESEARCH** Topic:

Prof. Bo Albinsson and Dr. Anders Ådahl Chairs:

Venue: RunAn Conference Hall, Chalmers University of Technology,

Chalmersplatsen 1, SE-412 58 Göteborg, Sweden

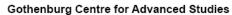
	Chaimersplatsen 1, SE-412 58 Goteborg, Sweden
08:25-08:30	Opening note: Prof Bo Albinsson, Director of Nanoscience and Nanotechnology and Dr.
	Anders Ådahl, Director of Energy
08:30-09:10	Prof HARRY GRAY, California Institute of Technology, United States:
	The Currents of Life: Electron Flow through Proteins
09:10-09:50	Nobel Laureate ROGER KORNBERG, Stanford University, United States
	Metal nanoparticles: atomic structures and applications in cryo-electron microscopy
09:50-10:20	Coffee break
10:20-11.00	Prof REIKO KURODA, Tokyo University of Science, Japan
	A twisting story: how a single gene twists a snail
11:00-11:40	Prof WAYNE HENDRICKSON, Columbia University, United States
	Distinctions and Shared Principles in Transmembrane Ion Channels
11:40-12:20	Nobel Laureate KURT WÜTHRICH, The Scripps Research Institute, United States, and ETH
	Zürich, Switzerland.
	Sunset of the NIH Protein Structure Initiative – What Next?
12:20-13:20	Lunch break
13:20-14:00	Nobel Laureate JEAN-MARIE LEHN, University of Strasbourg, France
	Towards adaptive chemistry
14:00-14:40	Nobel Laureate BARRY SHARPLESS, The Scripps Research Institute, United States
	Exploring the Sulfate World
14:40-15:10	Coffee break
15:10-15:50	Prof <b>JOSEF MICHL</b> , University of Colorado at Boulder, United States, and Institute of Organic
	Chemistry and Biochemistry ASCR, Prague, Czech Republic
	Unconventional solar energy – singlet fission
15:50-16:30	Prof Sir JOHN MEURIG THOMAS, University of Cambridge, United Kingdom
	Some of Tomorrow's Catalysts: Actual and Desired
16:30-18:00	Panel discussion: Opportunities and Challenges in Nanotechnology and Energy Research
	(Moderators: Bo Albinsson and Anders Ådahl)















## **CHALMERS**





# **Nobel Workshop**

Organized by The Royal Swedish Academy of Sciences and the Chalmers Materials Sciences Area of Advance

Wednesday May 6<sup>th</sup>, 2015 Date:

**MOLECULES IN MATERIALS RESEARCH** Topic:

Chairs: Prof. Aleksandar Matic and Prof. Fredrik Höök

Venue: RunAn Conference Hall, Chalmers University of Technology,

Chalmersplatsen 1, SE-412 58 Göteborg, Sweden

08:25-08:30	Opening note: Prof Aleksandar Matic, Director Materials Science
08:30-09:10	Nobel Laureate <b>STEFAN HELL</b> , University of Göttingen, Germany
	Nanoscopy with focused light
09:10-09:50	Nobel Laureate <b>WILLIAM E. MOERNER</b> , Stanford University, United States
03.10 03.30	Single-Molecule Spectroscopy, Blinking, and Photocontrol: Foundations for Super-Resolution
	Microscopy
09:50-10:20	Coffee break
10:20-11:00	Prof ROBERT LANGER, Massachusetts Institute of Technology, United States
10.20-11.00	Advances in biomaterials and drug delivery
11:00-11:40	Prof <b>TOM BROWN</b> , University of Oxford, United Kingdom
11.00 11.10	Extending the Boundaries of Nucleic Acid Chemistry
11:40-12:20	Nobel Laureate <b>ANDREW FIRE</b> , Stanford University, United States
11.40 12.20	Taming opportunistic RNAs
12:20-13:20	Lunch break
13:20-14:00	Prof JAMES BARBER, Imperial College London, United Kingdom
13.20-14.00	From natural to artificial photosynthesis for renewable fuels
14.00 14.40	
14:00-14:40	Prof <b>PAUL ALIVISATOS</b> , University of California Berkeley, United States
	Nanocrystals as a fundamental building block of nanoscience and nanotechnologies
14:40-15:20	Prof YAHLI LORCH, Stanford University, United States
	Chromatin remodeling
15:20-15:50	Coffee break
15:50-16:30	Dr RICHARD HENDERSON, MRC LMB, Cambridge, United Kingdom
	Structure of membrane proteins involved in signal transduction
16:30-18:00	Panel discussion: Opportunities and Challenges in Materials Research

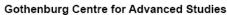




(Moderators: Aleksandar Matic and Fredrik Höök)















## **Molecular Frontiers Symposium**

#### DAY 1

### Organized by The Royal Swedish Academy of Sciences and Molecular Frontiers Foundation

Thursday May 7<sup>th</sup>, 2015 Date:

FRONTIERS IN MOLECULAR SCIENCES Topic: Prof Bengt Norden and Prof Richard Zare Chairs:

RunAn Conference Hall, Chalmers University of Technology, Venue:

Chalmersplatsen 1, SE-412 58 Göteborg, Sweden

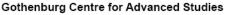
08:40-08:45	Welcome note: Prof Bengt Nordén, Chair of Molecular Frontiers Foundation
08:45-09:25	Nobel Laureate AHMED ZEWAIL, California Institute of Technology, United States
	Seeing with Electrons in Four Dimensions
09:25-10:05	Prof <b>GEORGE WHITESIDES</b> , Harvard University, United States
	Water in Biomolecular Recognition
10:05-10:35	Coffee break
10:35-11:15	Nobel Laureate ARVID CARLSSON, with Prof ELIAS ERIKSSON, University of Gothenburg,
	Sweden
	Small molecules for signaling in the brain
11:15-11:55	Prof JACQUELINE BARTON, California Institute of Technology, United States
	DNA mediated signaling
11:55-12:55	Lunch break
12:55-13:35	Prof DAVID BUCKINGHAM, University of Cambridge, United Kingdom
	Chiral discrimination in NMR spectroscopy
13:35-14:15	Prof <b>PETER DERVAN</b> , California Institute of Technology, United States
	Transcription Factor Antagonists: From Discovery to Oncology
14:15-14:55	Prof SUSAN LINDQUIST, Massachusetts Institute of Technology, United States
	Lamarck was right: better living through chemistry.
14:55-15:25	Coffee break
15:25-16:40	Youth Forum (Moderators Prof. Magdalena Eriksson and Dr Per Thoren)
16:40-17:00	Let's all talk about science (Dr Per Thoren and Dr Elizabeth Ball)



















## **Molecular Frontiers Symposium**

#### DAY 2

### Organized by The Royal Swedish Academy of Sciences and Molecular Frontiers Foundation

Friday May 8<sup>th</sup>, 2015 Date:

FRONTIERS IN MOLECULAR SCIENCES Topic: Prof Bengt Norden and Prof Dina Petranovic Chairs:

RunAn Conference Hall, Chalmers University of Technology, Venue:

Chalmersplatsen 1, SE-412 58 Göteborg, Sweden

08:30-09:10	Prof FRANCES ARNOLD, California Institute of Technology, United States
	Evolution to expand the enzyme universe
09:10-09:50	Prof CHRIS DOBSON, University of Cambridge, United Kingdom
	Mechanisms and Consequences of Protein Misfolding
09:50-10:20	Coffee break
10:20-11:00	Prof RICHARD ZARE, Stanford University, United States
	Understanding chemical reactions at the molecular level
11:00-11:40	Prof. DINSHAW PATEL, Memorial Sloan Kettering Cancer Center, United States
	Cutting-edge RNA slicers
11:40-12:40	Lunch break
12:40-13:20	Prof. WAH CHIU, Baylor College of Medicine, Houston, USA
	Electron Cryo-Microscopy of Molecular Machines
13:20-14:00	Nobel Laureate SHUJI NAKAMURA, University of California Santa Barbara, United States
	Invention of Blue LED, Laser and Solid State Light
14:00-14:20	Coffee break
14:20-15.30	Panel discussion: Science and engineering in and outside of the classroom
	(Moderators: Bengt Norden and Dina Petranovic)
15:30-16:00	Announcement of the winners of the 2015 Molecular Frontiers Inquiry Prize
	(Moderators Dr Per Thoren and Deborah Donnelly McLay)
16:00-16:15	Conclusion: Prof. BARBARA CANNON, President of the Royal Swedish Academy of Sciences
16:15-16:30	Closure: Prof. BENGT NORDEN, Founding Chairman of the Molecular Frontiers Foundation









