EMBO WORKSHOP ON CELL-CELL FUSION
Ein Gedi, Israel, November 3-7, 2013

WORKSHOP PROGRAMME

(Updated October 3, 2013)

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SUNDAY, NOVEMBER 3, 2013

PRE-WORKSHOP MINI SYMPOSIUM
SCULPTING AND FUSION OF CELL MEMBRANES
Weizmann Institute of Science (WIS), Rehovot

08:00
Registration opens at the Weizmann Institute of Science

09:00 – 09:15
Welcome Address
Botnar Auditorium

GREETINGS AND INTRODUCTION

Eyal D. Schejter, Weizmann Institute of Science, Rehovot, Israel

09:15 – 10:45
Plenary Session I
Botnar Auditorium

MECHANISMS OF MEMBRANE SCULPTING

Discussion Leader: Leonid V. Chernomordik, National Institutes of Health, Bethesda, USA

09:15
A fast clathrin-independent endocytic mechanism
Harvey T. McMahon, MRC-LMB, Medical Research Council Laboratory of Molecular Biology, Cambridge, UK

09:45
Mechanisms shaping the endoplasmic reticulum
Michael M. Kozlov, Tel Aviv University, Israel

10:15
Class II viral membrane fusion proteins: virus/host gene exchanges and cell-cell fusion events in multicellular organisms
Félix A. Rey, Institut Pasteur/CNRS, Paris, France

10:45
Coffee Break

11:15 – 12:45
Plenary Session II
Botnar Auditorium

DEVELOPMENTAL CELL AND VIRUS-CELL FUSION

Discussion Leader: Benny Shilo, Weizmann Institute of Science, Rehovot, Israel

11:15
A critical function of actin-propelled membrane protrusions in cell-cell fusion
Elizabeth H. Chen, Johns Hopkins University, Baltimore, USA

11:45
Myoblast fusion in Drosophila: Common and differential players create individual types of muscles
Renate Renkawitz-Pohl, Philipps-Universität, Marburg, Germany

12:15
Lipid dependencies of developmental and viral fusion
Leonid V. Chernomordik, National Institutes of Health, Bethesda, USA
SUNDAY, NOVEMBER 3, 2013 (continued)

13:00  Lunch
14:00  Buses depart from the Weizmann Institute to Ein Gedi
16:00  Registration and check in

CELL – CELL FUSION WORKSHOP PROGRAMME
Kibbutz Ein Gedi

17:00  Registration opens
19:00  Dinner

20:15 – 20:30  Welcome Address  Arugot Hall

GREETINGS AND INTRODUCTION

Benjamin Podbilewicz, Technion-Israel Institute of Technology, Haifa, Israel

20:30 – 21:30  Plenary Session III  Arugot Hall

INTRACELLULAR MEMBRANE FUSION AND SCULPTING

Discussion Leader: Michael M. Kozlov, Tel Aviv University, Israel

20:30  Keynote Lecture
      How an organelle gets into shape
      Tom A. Rapoport, Harvard Medical School, Boston, USA

21:30  Welcome Reception
MONDAY, NOVEMBER 4, 2013

09:00 – 10:30  Plenary Session IV  Arugot Hall

INTRACELLULAR MEMBRANE FUSION

Discussion Leader:  Benjamin Podbilewicz, Technion-Israel Institute of Technology, Haifa, Israel

09:00  Keynote Lecture

Exocytosis of synaptic vesicles

Reinhard Jahn, MPI for Biological Chemistry, GGBN, Göttingen, Germany

10:00  Correlated fluorescence and 3D electron microscopy can reveal membrane dynamics during clathrin mediated endocytosis

Ori Avinoam, European Molecular Biology Laboratory (EMBL), Germany

10:15  Live cell video microscopy of viral glycoprotein-induced syncytium formation

Menelaos Symeonides, The University of Vermont, Burlington, USA

10:30  Coffee Break

11:00 – 13:15  Plenary Session V  Arugot Hall

BIOPHYSICS OF MEMBRANE FUSION

Discussion Leader:  Tom Shemesh, Harvard Medical School, Boston, USA

11:00  Lipid acrobatics in the membrane fusion arena

Siewert J. Marrink, University of Groningen, The Netherlands

11:30  The fusion protein machinery at work

H. Jelger Risselada, MPI for Biophysical Chemistry, Göttingen, Germany

12:00  Mechanism of membrane bending

Ralf Langen, University of Southern California, Los Angeles, USA

12:30  Structural motifs to interface proteins and lipids in health and disease

Joshua Zimmerberg, National Institutes of Health, Bethesda, USA

13:00  Forces between membranes at short distances

Yulia Smirnova, Göttingen University, Germany

13:15  Lunch and Time at Leisure
MONDAY, NOVEMBER 4, 2013 (continued)

17:00 – 18:45  Plenary Session VI  Arugot Hall

FERTILIZATION

Discussion Leader: Alexander Lichius, University of Technology, Austria

17:00  

Roles of egg CD9 tetraspanin and sperm IZUMO protein in gamete interaction during mammalian fertilization
Christine Gourier, École Normale Supérieure de Paris, France

Bioinformatics quest for the yeast cell-cell fusogen
Pablo Aguilar, Institut Pasteur de Montevideo, Uruguay

17:30

Cell fusion and network formation in fungi
Nick D. Read, University of Manchester, UK

18:00  

Biochemical Journal Best Abstract Award Presentation
Variable and concerted cooperativity in SNARE-mediated membrane fusion
Matias Hernandez, Max Planck Institute for Biochemistry, Germany

18:45  

Dinner

20:00  

Poster Session I
TUESDAY, NOVEMBER 5, 2013

04:30  Masada at Sunrise

10:30  Coffee Break

11:00 – 13:15  Plenary Session VII  Arugot Hall

**VIRUS-CELL FUSION**

Discussion Leader:  **Eduard Baquero**, Laboratory of Molecular and Structural Virology - CNRS, France

11:00  **Host membrane manipulation by herpesviruses (On the way in and out)**  
Katya Heldwein, Tufts University, Boston, USA

11:30  **Visualization of virus entry into acidic endosomes and low pH-mediated fusion**  
Gregory Melikian, Emory University, Atlanta, USA

12:00  **Cell entry and immune system evasion: Two functions mediated by one protein, HIV-1 gp41**  
Yechiel Shai, Weizmann Institute of Science, Rehovot, Israel

12:30  **Intermediate structures in the fusion associated transition of vesiculovirus glycoprotein**  
Yves Gaudin, CNRS, Gif-sur-Yvette, France

13:00  **Peptide and small molecule HIV fusion inhibitors targeting gp41**  
Shibo Jiang, Fudan University, Shanghai, China

13:15  Lunch

14:00 – 16:00  Plenary Session VIII  Arugot Hall

**MYOBLAST FUSION**

Discussion Leader:  **Khurts Shilagardi**, Johns Hopkins University, Baltimore, USA

14:00  **PIP2 regulates myoblast fusion by maintaining Arp2/3 at the fusion site**  
Mary Baylies, Memorial Sloan-Kettering Institute, New York, USA

14:30  **Role of the novel receptor FGFRL1 in cell-cell fusion**  
Beat Trueb, University of Bern, Switzerland

15:00  **Myoblast fusion during formation of Drosophila flight muscles**  
Eyal D. Schejter, Weizmann Institute of Science, Rehovot, Israel
14:00 – 16:00  
Plenary Session VIII (continued)  
Arugot Hall

15:30  
The architecture on membranes of the natively anchored full-length cell-cell fusion proteins EFF-1 and AFF 1 visualised by electron cryo tomography  
Tzviya Zeev-Ben-Mordehai, University of Oxford, UK

15:45  
Endocytosis controls EFF-1 mediated cell fusion  
Ksenia Smurova, Technion-Israel Institute of Technology, Israel

16:00  
Coffee Break

16:30 – 18:30  
Plenary Session IX  
Arugot Hall

INTRACELLULAR MEMBRANE FUSION

Discussion Leader:  
Valentina Salzman, Institute Pasteur de Montevideo, Uruguay

16:30  
Molecular mechanism of calcium-triggered synaptic vesicle fusion  
Axel T. Brunger, Stanford University, USA

17:00  
Mechanistic insight into mitofusin-mediated membrane fusion  
Junjie Hu, Nankai University, Tianjin, China

17:30  
Alternatively spliced Mitofusin 2 variants keep the endoplasmic reticulum in shape and close to mitochondria  
Luca Scorrano, University of Padua, Italy

18:00  
Atg8 proteins and autophagosomes formation  
Zvulun Elazar, Weizmann Institute of Science, Rehovot, Israel

18:30  
Dinner

20:00  
Poster Session II
**FUSION OF EPITHELIUM AND NEURONS**

Discussion Leader: Debra Goldman-Wohl, Hadassah University Hospital, Jerusalem, Israel

09:00  *The « captured » retroviral envelope genes syncytins: role in syncytiotrophoblast formation and placentation*  
Thierry Heidmann, Institut Gustave Roussy, Villejuif, France

09:30  *Trophoblast fusion: from key molecules to live-cell imaging*  
Hongmei Wang, Chinese Academy of Sciences, Beijing, P.R. China

10:00  *Cell fusion is the sculptor of nematode epithelia and some neurons*  
David Hall, Einstein Yeshiva University, Bronx, USA

10:30  *Axonal fusion in regenerating axons shares molecular components with the apoptotic pathway*  
Massimo Hilliard, University of Queensland, Brisbane, Australia

11:00  *Coffee Break*

**FUSION OF MACROPHAGES AND NANOTUBES**

Discussion Leader: Daniella Yeheskely-Hayon, Technion-Israel Institute of Technology, Haifa, Israel

11:30  *Role of tunneling nanotubes in the spreading of prions and prion-like proteins in neurodegenerative diseases*  
Chiara Zurzolo, Institut Pasteur, Paris, France

12:00  *Macrophage fusion in health and disease*  
Agnès Vignery, Yale University School of Medicine, New Haven, USA

12:30  *Characteristics and dynamics of bacterial nanotubes*  
Sigal Ben-Yehuda, The Hebrew University of Jerusalem, Israel

13:00  *Optically induced cell fusion using bispecific gold nanoparticles and femtosecond laser pulses*  
Dvir Yelin, Technion-Israel Institute of Technology, Haifa, Israel

13:15  *Crystal structure of rift valley fever virus glycoprotein C*  
Moshe Dessau, Yale University, New Haven, USA

13:30  *Lunch and Time at Leisure*
17:00 – 19:00  
Plenary Session XII  
Arugot Hall  

**CANCER AND STEM CELL FUSION**

Discussion Leader: *Agnès Vignery*, Yale University School of Medicine, New Haven, USA

**17:00**  
*The role of macrophage-tumor cell fusion in cancer progression*  
*Melissa Wong*, Oregon Health and Science University, Portland, USA

**17:30**  
*The problem of colliding networks and its relation to cell fusion and cancer*  
*Yuri Lazebnik*, Yale University Cardiovascular Research Center, New Haven, USA

**18:00**  
*Wnt/β-Catenin signalling controls cell fusion-mediated reprogramming and tissue regeneration*  
*Maria Pia Cosma*, Center for Genomic Regulation, Barcelona, Spain

**18:30**  
*snRNAs are reduced in syncytiotrophoblast: a possible mechanism for regulation of human placental protein production*  
*Debra Goldman-Wohl*, Hadassah University Hospital, Jerusalem, Israel

**18:45**  
*ERVWE1-mediated cell fusion causes cellular senescence*  
*Valery Krizhanovsky*, Weizmann Institute of Science, Rehovot, Israel

**19:30**  
Gala Dinner in the Desert at “Metzoke Dragot”
VIRUS-CELL AND CELL-CELL FUSION

Discussion Leader: Leonid V. Chernomordik, National Institutes of Health, Bethesda, USA

09:00  Cell biology of virus penetration
       Ari Helenius, ETH Institute of Biochemistry, ETH Zürich, Switzerland

10:00  Regulation of cell-cell fusion by the cytoplasmic domains of the fusion complex glycoproteins gB and gH governs varicella zoster virus pathogenesis
       Stefan Oliver, Stanford University School of Medicine, USA

10:15  Lateral interaction of the herpesvirus fusion glycoprotein-B on membranes indicates its role in fusion pore expansion
       Kay Grünewald, University of Oxford, UK

10:30  Coffee Break

THE FUTURE OF CELL-CELL FUSION RESEARCH

12:00  Lunch

13:00  Departures or participation in optional tours