



# Day 1 – 5<sup>th</sup> October 2015

## Programme

8:45 - 9:20      **Registration and coffee**

9:20 – 9:30      **Welcome**  
Liz Carpenter, SGC, Oxford, UK

### **Membrane Protein Expression/Purification**

**Chair:** Liz Carpenter, SGC, Oxford, UK

09:30 – 10:00      **James Love, Einstein, NY, USA**  
*Production of Human Membrane Proteins for Structural and Functional Studies*

10:00 – 10:30      **Nicola Burgess-Brown, SGC, Oxford, UK**  
*Expressing Human Integral Membrane Proteins*

10:30– 11:00      **Imre Berger, Bristol, UK**  
*ACEMBLing a Multiprotein Transmembrane Complex: The Functional SecYEG-DecDF-YajC-YidC Holotranslocon Protein Secretase/Insertase*

11:00 – 11:30      **Coffee**  
**Chair:** Vadim Cherezov, USC, USA

11:30 – 12:00      **Chris Tate, Cambridge, UK**  
*Optimising functional expression of membrane proteins in mammalian cells*

### **Free electron laser crystallography**

12:00 – 12:30      **Petra Fromme, Arizona State, USA**  
*Femtosecond Crystallography opens a new era in Membrane Protein Structural Biology*

12:30 – 13:00      **Jim Naismith, St. Andrews, UK**  
*SFX @ EU XFEL and MscS*

13:00 – 14:00      **Lunch and Posters**

### **Electron Microscopy**

**Chair:** Juha Huiskonen, OPIC, WTCHG, Oxford

14.00 - 14.30      **Sjors Scheres, LMB, Cambridge, UK**  
*How cryo-EM is revolutionizing structural biology*



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14.30 - 15.00 **K. Vinothkumar**, LMB, Cambridge, UK  
*Arrangement of supernumerary subunits in mammalian mitochondrial complex I*

15.00 - 15.30 **Werner Kühlbrandt**, Frankfurt, Germany  
*High-resolution electron cryo-microscopy of membrane protein complexes*

15.30 - 16.00 **Tea**

## **Simulations and ion channel function**

**Chair:** Jim Naismith, St Andrews, UK

16.00 - 16.30 **Mark Sansom**, Biochemistry, Oxford, UK  
*Membrane Proteins in Membranes: Using Simulations to Transplant Structures Back to their Cellular Environment*

16.30 - 17.00 **Bert de Groot**, Goettingen, Germany  
*The molecular dynamics of channel permeation, inhibition and gating*

17.00 - 17.30 **Stephen Tucker**, Physics, Oxford, UK  
*Functional validation of a model for hydrophobic gating in a K<sup>+</sup> channel*

## **Talks selected from poster abstracts**

**Chair:** Nicola Burgess-Brown, SGC, Oxford, UK

17.30 – 17.45 **Juni Andréll**, LMB, Cambridge, UK  
*Using flow cytometry to optimise overproduction of integral membrane proteins in inducible mammalian cell lines*

17.45 – 18.00 **Veronika Heinz**, Regensburg, Germany  
*Structural characterization of stressosome complexes by Single-particle cryo-electron microscopy*

18.00 – 18.15 **Pikye Ma**, Trinity College Dublin, Republic of Ireland  
*The Cubicon Method for Concentrating Membrane Proteins in the Cubic Mesophase*

18.15 – 18.30 **Dirk Slotboom**, Groningen, Netherlands  
*The structural basis of toppling in ECF-type ABC transporters*

*End of day 1*

# Day 2 – 6<sup>th</sup> October 2015

## Ion Channels

Chair: Bonnie Wallace, Birkbeck College, London

9.00 – 9.30

**Raimund Dutzler**, Zurich, Switzerland

*The structure and function of calcium activated TMEM16 channels and scramblases*

09.30 – 10.00

**Liz Carpenter**, SGC, Oxford, UK

*From the SGC pipeline to an understanding of TREK channel mechanosensitivity and inhibition*

10.00 – 10.30

**Radu Aricescu**, STRUBI, Oxford, UK

*Crystal structure of a human GABAA receptor*

10.30– 11.00

**Katharina Dür**r, Vollum Institute, Oregon, USA

*Structural insights into activation and desensitization of AMPA receptors*

11.00 – 11.30

Coffee

## Ion Channels

Chair: Poul Nissen, Aarhus, Denmark

11.30 – 12.00

**Bonnie Wallace**, Birkbeck, London, UK

*Sodium Channels: Structure, Function, Ion Selectivity, and Drug Binding*

12.00 – 12.30

**Christopher Koth**, Genentech, USA

*Engineering Membrane Proteins for Structure and Drug Discovery: The Painful Route to Painless Views of Nav1.7*

12.30 – 13.00

**Eduardo Perozo**, Chicago, USA

*Asymmetric Conformational Transition Underlies Mg<sup>2+</sup>-Driven Gating in CorA*

13.00 – 14.00

Lunch

## Solute carriers

Chair: Eduardo Perozo, Chicago, USA

14.00 - 14.30

**Bob Stroud**, UCSF, USA

*What can we learn from the structures of membrane secondary transporters?*



# Day 2 – 6<sup>th</sup> October 2015

**14.30 - 15.00**     **Simon Newstead**, *Biochemistry, Oxford, UK*  
*Crystal structures of a dual-topology, double-barrelled fluoride ion channel*

**15.00 - 15.30**     **Bjørn Pedersen**, *Aarhus, Denmark*  
*Example of Symport in the Major Facilitator Superfamily from a Structural Perspective*

**15.30 - 16.00**     **Christine Ziegler**, *Regensburg, Germany*  
*Transport regulation mechanism in BetP*

**16.00 - 16.30**     **Tea**

## **GPCRs**

**Chair:** Bob Stroud, UCSF, USA

**16.30 - 17.00**     **Ray Stevens**, *USC, USA*  
*Structural Coverage of the Complete GPCR Superfamily*

**17.00 - 17.30**     **Gebhard Schertler**, *PSI, Switzerland*  
*The impact of Free Electron Lasers on membrane protein structural biology*

**17.30 - 18.00**     **Vadim Cherezov**, *USC, USA*  
*Serial Crystallography of GPCRs*

## **Talks selected from poster abstracts**

**Chair:** Ray Stevens, USC, USA

**18.00 – 18.15**     **Phil Stansfeld**, *Biochemistry, Oxford, UK*  
*MemProtMD: Restoring Membrane Protein Structures to Lipid Bilayers*

**18.15 – 18.30**     **Chitra Shintre**, *SGC, Oxford, UK*  
*Structural studies of a human ABC transporter, ABCB10, reveal an occluded conformation, as well as open-inwards states.*

**18.30 – 18.45**     **Patricia Dijkman**, *Biochemistry, Oxford, UK*  
*Dynamic GPCR dimerisation probed by ensemble and single-molecule FRET, DEER, and simulations*

**18.45 – 19.00**     **Andreas Blees**, *Frankfurt, Germany*  
*Function and Structure of the MHC I Peptide-Loading Complex*

*End of day 2*



# Day 3 – 7<sup>th</sup> October 2015

## **Pumps and ATPases**

**Chair:** Christine Ziegler, Regensburg, Germany

- 9.00 – 9.30**      **Poul Nissen, Aarhus, Denmark**  
*P-type ATPases on the move – structure, mechanism and dynamics*
- 9.30 – 10.00**    **Thomas Meier, Imperial, London, UK**  
*Structure of complete rotary ATP synthase and its role as new drug target against tuberculosis*
- 10.00 – 10.30**    **Adrian Goldman, Leeds, UK**  
*From pyrophosphate-primed proton pumps*
- 10.30– 11.00**    **Coffee**
- ## **ABC transporters**
- Chair:** Fran Ashcroft, DPAG, Oxford, UK
- 11.00 – 11.30**    **Kaspar Locher, ETH Zurich, Switzerland**  
*Structure and mechanism of an ATP-driven flippase of lipid-linked oligosaccharides*
- 11.30 – 12.00**    **Robert Tampé, Frankfurt, Germany**  
*New insights into heterodimeric ABC transporters via integrative structural biology*
- 12.00 – 12.30**    **Carol Robinson, Chemistry, Oxford, UK**  
*Mass spectrometry of membrane proteins - the lipid connection*
- 12.30 – 12.45**    **Poster prizes and wrap up session**
- 12.50**            **End of meeting**