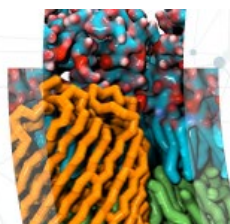


# Structural and functional asymmetry of plasma membranes

23-25 April 2025 | London, UK



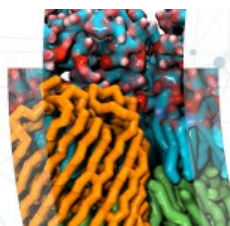
**Faraday Discussions**

## Wednesday 23 April 2025

11:30	Registration with lunch served from 11:45
12:45	<b>Welcome and introductions</b> <i>Chair of Scientific Committee</i>
12:55	<b>Outline of Discussion format</b> Robin Brabham & Kieran Nicholson, <i>Royal Society of Chemistry Publishing Editors</i>
13:00	<b>Introductory Lecture – Spiers Memorial Lecture</b> (Session chair: Georg Pabst) <u>Gerald W. Feigenson</u> <i>Cornell University, USA</i>
	<b>Session 1: Plasma membrane asymmetry and lipid homeostasis</b> (Session chair: Georg Pabst)
14:00	<b>Effect of a scramblase activator upon scrambling and membrane domain formation in HEK293T cells</b> <u>Erwin London</u> , Shinako Kakuda <i>Stony Brook University, USA</i>
14:05	<b>Immune cell activation produces locally scrambled foci of plasma membrane lipids</b> Kandice Levental, Daryna Sputay, Milka Doktorova, Sze Ham Chan, Emma Han Guo, Hong-Yin Wang, Joseph H. Lorent, Ilya Levental <i>Virginia University, USA</i>
14:10	<b>Nonequilibrium asymmetry in the living cell membrane</b> <u>Madan Rao</u> , Ajay Kumar Bansal <i>National Centre for Biological Sciences, India</i>
14:15	Discussion
15:30	Refreshments
	<b>Session 2: Engineering plasma membrane mimics</b> (Session chair: Karin Riske)
16:00	<b>Asymmetric phase transitions in lipid bilayers: Coupling or bending?</b> <u>Heiko Heerklotz</u> , Mona Krompers, Miriam Jaki, Sinja Götz, Jan Lembeck, Laurine Kaul, Martin Holzera <i>University of Freiburg, Germany</i>
16:05	<b>Melting point matters: Designing lipid nanocarriers for improved T cell activation</b> <u>Neha Kamat</u> , Carina S. Fedosejevs, Lariana Cline <i>Northwestern University, USA</i>
16:10	<b>Fabrication and characterization of phosphoinositide containing asymmetric vesicles in physiological salt conditions</b> <u>**Arne Gericke</u> , Trevor A. Paratore, Alonzo H. Ross <i>Worcester Polytechnic Institute, USA</i>
16:15	<b>Engineering of lipid membranes asymmetrically functionalized with chondroitin sulfate</b> <u>Francisco Barrera</u> , Teresa Rodriguez-Garcia, Loretta Akakpo, Sadie L. Nickles, Ryan J. Schuck, Daiane S. Alves, Katherine G. Schaefer, Frederick A. Heberle, Gavin M. King <i>University of Tennessee, USA</i>
16:20	Discussion
18:00	Lightning presentations – (by invitation of the Scientific Committee)
18:15	Poster session and drinks reception
19:45	Close

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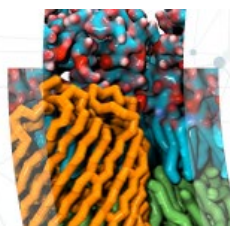
**Thursday 24 April 2025**

	<b>Session 3: Structure and dynamics of asymmetric membranes</b> (Session chair: Syma Khalid)
09:00	<b>The interplay of composition and mechanics in the thermodynamics of asymmetric ternary lipid membranes</b> <u>Markus Deserno</u> , Malavika Varma <i>Carnegie Mellon University, USA</i>
09:05	<b>The many faces of membrane tension for biomembranes and vesicles</b> <u>Reinhard Lipowsky</u> <i>Max Planck Institute of Colloids and Interfaces, Germany</i>
09:10	<b>Interaction of lipid domains originating from differential domain-monolayer contact energy</b> <u>Michael Kozlov</u> , Avishai Barnoy <i>Tel Aviv University, Israel</i>
09:15	Discussion
10:30	Refreshments
	<b>Session 3 continued: Structure and dynamics of asymmetric membranes</b> (Session chair: Rumiana Dimova)
11:00	<b>Characterization of lipid chain order and dynamics in asymmetric membranes by solid-state NMR spectroscopy</b> <u>Daniel Huster</u> , Oskar Engberg, Viola Döbel, Kathrin M. Engel <i>University of Leipzig, Germany</i>
11:05	<b>Exploring the sensitivities of experimental techniques to various types of membrane asymmetry using atomistic simulations</b> <u>Milka Doktorova</u> , Frederick A. Heberle <i>University of Virginia School of Medicine, USA</i>
11:10	<b>Measuring the mechanical properties of asymmetric membranes in computer simulations - new methods and insights</b> <u>Oded Farago</u> <i>Ben Gurion University, Israel</i>
11:15	Discussion
12:30	Lunch
	<b>Session 3 continued: Structure and dynamics of asymmetric membranes</b> (Session chair: Syma Khalid)
13:45	<b>Membrane potential fluctuations and water asymmetry on plasma cell and model lipid membranes: origins, implications and properties</b> <u>Sylvie Roke</u> , Zhi Li, Iwona Swiderska, Lena Dalifoski, Seonwoo Lee, Nelson Alonso Correa-Rojas, David Roesel, Maksim Eremchev, Mischa Flor, Orly B. Tarun, Arianna Marchioro <i>EPFL, Switzerland</i>
13:50	<b>Using phase-resolved vibrational sum-frequency imaging to probe the impact of head-group functionality on the hierarchical domain structure in lipid membranes</b> <u>Alexander Fellows</u> , Ben John, Sarabjeet Kaur, Martin Wolf, Martin Thämer <i>Fritz Haber Institut, Germany</i>
13:55	<b>Phosphatidylserine affinity for and flip-flop dependence on Ca<sup>2+</sup> and Mg<sup>2+</sup> ions</b> <u>John Conboy</u> , Preston P. Hymas <i>University of Utah, USA</i>

14:00	Discussion
15:15	Refreshments
	<b>Session 3 continued:</b> (Session chair: Rumiana Dimova)
15:45	<b>Fusion of asymmetric membranes: The emergence of a preferred direction</b> <u>Gonen Golani</u> , Petr Shendrik, Raya Sorkin <i>Haifa University, Israel</i>
15:50	<b>Elucidating the mechanical properties of asymmetric membranes by direct derivation of their energetics</b> <u>Giacomo Fiorin</u> , Lucy R. Forrest <i>National Institutes of Health, USA</i>
15:55	<b>The influence of higher order geometric terms on the asymmetry and dynamics of membranes</b> <u>Axel Voigt</u> , Jan Magnus Sischka, Ingo Nitschkea <i>TU Dresden, Germany</i>
16:00	Discussion
17:15	Close of session
18:45	Pre dinner drinks
19:15	Conference dinner – Library, Burlington House

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**Friday 25 April 2025**

	<b>Session 4: Proteins in asymmetric membranes</b> (Session chair: Raya Sorkin)
09:30	<b>Lipid-GPCR interactions in an asymmetric plasma membrane model</b> <u>Edward Lyman</u> , Jingjing Ji <i>University of Delaware, USA</i>
09:35	<b>Does plasma membrane transbilayer asymmetry coupled to lipid nanodomains drive fast kinetics of FGF2 membrane translocation into the extracellular space?</b> <u>Fabio Lolicato</u> , Manpreet Kaur, Ana Marija Knez, Roberto Saleppico, Walter Nickel <i>Heidelberg University, Germany</i>
09:40	Discussion
10:30	Refreshments
	<b>Session 4 continued: Proteins in asymmetric membranes</b> (Session chair: John Seddon)
11:00	<b>Protein-induced membrane asymmetry modulates OMP folding kinetics and stability</b> <u>Jonathan Machin</u> , Sheena E. Radford, Neil A. Ranson <i>University of Leeds, UK</i>
11:05	<b>Asymmetric membrane properties through a protein lens</b> Joseph Lorent, Angela Cabrera-Jojo, Kandice R. Levental, Ilya Levental and Edward Lyman <i>UCLouvain, Belgium</i>
11:10	Discussion
12:00	<b>Concluding remarks lecture</b> (Session chair: John Seddon) Felix Goni <i>University of Basque Countries, Spain</i>
12:30	<b>Acknowledgements and presentation of poster prizes</b>
12:45	<b>Close of meeting and lunch</b>

Please note that this is a draft programme and timings may change.

Underline denotes presenting author

\*\* presenting online