

Scientific programme

Sunday 16 July 2017

12:30–14:00	EBSA EC First Meeting (closed) <i>Harris Room 1</i>
13:30–18:00	Registration <i>Atrium</i>
14:30–15:30	PUBLIC LECTURE Chair: Frank Gunn-Moore, University of St Andrews, UK Alzheimer's Disease: Addressing a Twenty-First Century Plague Christopher M Dobson, University of Cambridge, UK Sponsored by Alzheimer's Research (UK), Scottish Network <i>Lennox Suite</i>
16:45–17:15	Welcome Address <i>Lennox Suite</i>
17:15–18:00	PLENARY LECTURE Chair: Andrew Turberfield, University of Oxford, UK <i>Lennox Suite</i> IUPAB Ramachandran Lecture: The termination of translation in bacteria and eukaryotes Venki Ramakrishnan, LMB Cambridge, UK
18:00–19:30	Welcome Reception (open to all registered delegates) <i>Cromdale and Strathblane Halls</i>

Monday 17 July 2017

08:00–18:00	Registration <i>Atrium</i>									
09:00–09:45	PLENARY LECTURE Chair: Ilpo Vattulainen, EBSA, University of Helsinki, Finland <i>Lennox Suite</i> Towards a mechanistic understanding of ribosomal function Helmut Grubmüller, Max Planck Institute for Biophysical Chemistry, Germany									
09:55–12:40	S01 – MULTISCALE BIOPHYSICS OF MEMBRANES Chairs: Claudio M Soares and John Seddon <i>Lennox Suite</i>									
	<table border="1"> <tr> <td>09:55 (Invited) Mechanisms of Membrane Curvature Generation Tobias Baumgart, University of Pennsylvania, USA</td> <td>10:25 (Invited) Structure on the nanoscopic scale of complex biomembrane mimetics Georg Pabst, University of Graz, Austria</td> <td>10:55 Developing ESCRT-III as a toolkit for bottom-up construction of eukaryote-like artificial cells Andrew Booth, University of Leeds, UK</td> </tr> <tr> <td colspan="3" style="text-align: center;">11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i></td> </tr> <tr> <td>11:40 (Invited) Physical model of cellular organelles biogenesis and transport Pierre Sens, Institut Curie, France</td> <td>12:10 Anomalous diffusion in artificial lipid bilayers Helena Coker, University of Oxford, UK</td> <td>12:25 Cholesterol and polyunsaturated lipids working in concert to modulate G protein-coupled receptors Ilpo Vattulainen, University of Helsinki, Finland</td> </tr> </table>	09:55 (Invited) Mechanisms of Membrane Curvature Generation Tobias Baumgart, University of Pennsylvania, USA	10:25 (Invited) Structure on the nanoscopic scale of complex biomembrane mimetics Georg Pabst, University of Graz, Austria	10:55 Developing ESCRT-III as a toolkit for bottom-up construction of eukaryote-like artificial cells Andrew Booth, University of Leeds, UK	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>			11:40 (Invited) Physical model of cellular organelles biogenesis and transport Pierre Sens, Institut Curie, France	12:10 Anomalous diffusion in artificial lipid bilayers Helena Coker, University of Oxford, UK	12:25 Cholesterol and polyunsaturated lipids working in concert to modulate G protein-coupled receptors Ilpo Vattulainen, University of Helsinki, Finland
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09:55–12:40	S02 – MOLECULAR MACHINERY Chairs: Robert Cross and Claudia Veigel <i>Pentland Auditorium</i>		
	09:55 (Invited) Shape remodeling of active cytoskeletal vesicles Andreas Bausch, Technical University Munich, Germany	10:25 (Invited) Engineering controllable biomolecular motors Zev Bryant, Stanford University, USA	10:55 Structural dynamics of the 70S ribosome during translocation monitored by single-molecule FRET Sarah Adio, MPI biophysical Chemistry, Germany
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) Navigating the cytoskeleton: using light to dissect and direct intracellular transport Lukas Kapitein, Utrecht University, Netherlands	12:10 Stepping motion and chemo-mechanical coupling of chitinase resolved by single-molecule analysis Ryota Iino, National Institutes of Natural Sciences, Japan	12:25 Single-molecule dissection of cytoplasmic dynein force sensing Arne Gennerich, Albert Einstein College of Medicine, USA
09:55–12:40	S03 – QUANTITATIVE APPROACHES TO GENE REGULATION Chairs: Pietro Cicuta and Mike Tyers <i>Lomond Suite</i>		
	09:55 (Invited) Sequence specificity of unconventional RNA binding proteins Tim Hughes, University of Toronto, Canada	10:25 (Invited) Nutrient dependent levels of SBF and MBF are key factors controlling start in budding yeast Cathy Royer, Rensselaer Polytechnic Institute, USA	10:55 Nucleosome mobility and the regulation of gene expression: insights from single-molecule studies Ariel Kaplan, Technion – Israel Institute of Technology, Israel
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) DNA repair at the single cell level in bacteria Meriem El Karoui, University of Edinburgh, UK	12:10 Heat triggers specific mRNA localization to regulatory RNA-protein granules in budding yeast Edward Wallace, University of Edinburgh, UK	12:25 Beyond sequence: implications of DNA structure and dynamics in genome function Agnes Noy, University of York, UK
09:55–12:40	S04 – SYNTHETIC BIOLOGY Chairs: Justin Gallivan and Petra Oyston <i>Sidlaw Auditorium</i>		
	09:55 (Invited) Metal nanoparticle biosynthesis Louise Horsfall, University of Edinburgh, UK	10:25 (Invited) Exploiting nano- and macroscale insights into water-repellent microbes and soil for anticorrosion Geertje van Keulen, Swansea University, UK	10:55 Artificial cell reactor array technology Hiroyuki Noji, The University of Tokyo, Japan
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) Programmable on-chip DNA compartments as ‘artificial cells’ Roy Bar-Ziv, Weizmann Institute of Science, Israel	12:10 Bioinspired sensor material for broad-banded molecular scale, wavelength selective detection Javier Vinals, University of Oxford, UK	12:25 The development of hybrid biomaterials for regenerative engineering Adam Perriman, University of Bristol, UK


09:55–12:40	S05 – PROTEIN-NUCLEIC ACID INTERACTIONS Chairs: Brian Smith and María Spies <i>Fintry Auditorium</i>		
	09:55 (Invited) Direct visualization of ParB-DNA interactions using combined Magnetic Tweezers and TIRF microscopy Fernando Moreno-Herrero, Centro Nacional de Biotecnología, Spain	10:25 (Invited) Single-molecule insight into target recognition by CRISPR-Cas enzymes Ralf Seidel, Leipzig University, Germany	10:55 Real-time investigation of the assembly dynamics of artificial virus-like particles Margherita Marchetti, Vrije Universiteit Amsterdam, Netherlands
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) Structural insights into Endonuclease G in regulating life and death of a cell Hanna Yuan, Academia Sinica, Taiwan	12:10 NMR reveals how phosphorylation of the retinoic acid nuclear receptor regulates gene expression Bruno Kieffer, IGBMC, France	12:25 Structural information of PTBP1/EMCV complex by combining orthogonal spin labelling with pulse EPR Christoph Gmeiner, ETH Zurich, Switzerland
12:40–14:40	Poster Session 1, lunch and exhibits <i>Cromdale and Strathblane Halls</i>		
12:40–14:40	HFSP Support for Biophysicists (open to all) <i>Fintry Auditorium</i>		
12:40–13:40	Japan Bid Presentation <i>Ochil Room</i>		
13:00–14:00	Physics of Life Steering Group meeting (closed) <i>Carrick Room 2</i>		
13:00–14:30	EBSA National Societies' Presidents meeting (by invitation only) <i>Menteith</i>		
13:30–14:40	Biophysical Reviews, Springer-Nature Editorial Board Meeting <i>Harris Room 2</i>		
14:40–15:25	PLENARY LECTURE Chair: Zihe Rao, President IUPAB, Beijing, China <i>Lennox Suite</i>		
	Bei Lecture: Single cell genomics: stochasticity meets precision in biology and medicine Xiaoliang Sunney Xie, Harvard University, USA		
15:25–15:50	EBSA Young Investigator Award 2017 Chair: Manuel Prieto, Past President, EBSA, University of Lisbon, Portugal Towards mass spectrometry of single molecules with light Philipp Kukura, University of Oxford, UK <i>Lennox Suite</i>		
16:00–18:00	IUPAB Council meeting (closed) <i>Harris Room 2</i>		
16:00–18:45	S06 – PROTEIN STRUCTURE TO FUNCTION Chairs: Jacqueline Cherfils and Malcolm Walkinshaw <i>Lennox Suite</i>		
	16:00 (Invited) Dynamic complexes and complex dynamics: from fundamental biophysics to physiological function Martin Blackledge, Institut de Biologie Structurale Grenoble, France	16:30 (Invited) MicroED opens a new era for biological structure determination Tamir Gonen, Howard Hughes Medical Institute, USA	17:00 Observation of water-channel opening of cytochrome c oxidase by time-resolved XFEL crystallography Minoru Kubo, RIKEN, Japan
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	17:45 (Invited) The structure of the nuclear pore complex André Hoelz, California Institute of Technology, USA	18:15 Bacterial surface-layer-protein assemblies at atomic scale Tea Pavkov-Keller, University of Graz, Austria	18:30 A tri-ubiquitin bridges two ABIN2 dimers to form a higher-order signaling complex Yu-Chih Lo, National Cheng Kung University, Taiwan

16:00–18:45	S07 – NANOBIOPHYSICS		
	Chairs: Hagan Bayley and Jesús Pérez-Gil <i>Pentland Auditorium</i>		
	16:00 (Invited) Linking mechanochemistry with protein folding with single bond resolution Sergi Garcia-Manyes, King's College London, UK	16:30 (Invited) Single-molecule label-free analysis of sequence specific protein-DNA interactions David Rodriguez-Larrea, University of the Basque Country, Spain	17:00 Using AFM to study red blood cells' morphology and elasticity on Amyotrophic Lateral Sclerosis Catarina Sousa Lopes, Instituto de Medicina Molecular, Portugal
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Ion channels and porins made from DNA Ulrich Keyser, University of Cambridge, UK	18:15 Probing early virus binding steps towards living cells using force-distance curve-based AFM Melanie Koehler, Université Catholique de Louvain, Belgium	18:30 The mechanical properties of HIV-1 capsid during reverse transcription: insights into uncoating Itay Rousso, University of the Negev, Israel	
16:00–18:45	S08 – FORCES IN AND BETWEEN CELLS: FILAMENTS, MEMBRANES AND WALLS		
	Chairs: Jamie Hobbs and Michael Sheetz <i>Lomond Suite</i>		
	16:00 (Invited) Mechano-devo: how growth and form derived mechanical forces channel morphogenesis Olivier Hamant, École Normale Supérieure de Lyon, France	16:30 (Invited) Sensing matrix rigidity: transducing mechanical signals from integrins to the nucleus Pere Roca-Cusachs Soulere, Universitat de Barcelona, Spain	17:30 Correlative AFM and cryo-EM approach for probing the nuclear lamina mechanics Tanuj Sapra, University of Zurich, Switzerland
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Forces in plant cell walls during growth and under stress conditions Ksenija Radotić, University of Belgrade, Serbia	18:15 Bulk cytoplasmic actomyosin contractions drive streaming in zebrafish eggs Shayan Shamipour, Institute of Science and Technology, Austria	18:30 Stiffening and softening of cytoskeletal networks: rheological insights from minimal systems Anders Aufderhorst-Roberts, AMOLF, Netherlands	
16:00–18:45	S09 – SYSTEMS BIOLOGY		
	Chairs: Robert Endres and Franziska Matthäus <i>Sidlaw Auditorium</i>		
	16:00 (Invited) Inferring cause and effect in complex molecular systems from image fluctuations Gaudenz Danuser, UT Southwestern, USA	16:30 (Invited) On stochasticity, determinism and survival Stanislas Leibler, The Rockefeller University, USA	17:00 Escherichia coli's strategies for maintaining proton motive force when exposed to photodamage Ekaterina Krasnopeeva, University of Edinburgh, UK
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Yeast mating in space and time Edda Klipp, Humboldt University of Berlin, Germany	18:15 Applications of stochastic lumping analysis to fluctuations in systems and structure biology Cheng-Hung Chang, National Chiao Tung University, Taiwan	18:30 Chemically-driven kinetics of phase separated membrane-free organelles Jean David Wurtz, Imperial College London, UK	

16:00–18:45	S10 – QUANTUM BIOLOGY Chairs: Jim Al-Khalili and Martin Plenio <i>Fintry Auditorium (300)</i>		
	16:00 (Invited) Photon and electron counting statistics of single photosynthetic complexes Alexandra Olaya-Castro, University College London, UK	16:30 (Invited) The quantum design of photosynthesis Rienk van Grondelle, Vrije Universiteit Amsterdam, Netherlands	17:00 Quantum calculations on the voltage sensing domain (VSD) of the Kv1.2 potassium channel Michael Green, City College of New York, USA
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	17:45 (Invited) Electron-vibrational coupling: from natural and artificial light-harvesting to olfaction Martin Plenio, Ulm University, Germany	18:15 Quantum vibrational excitations and protein folding <i>in vivo</i> Leonor Cruzeiro, University of Algarve, Portugal	18:30 Multi-scale modelling of large biomolecular complexes Pierre-André Cazade, University of Limerick, Ireland
19:00–21:00	Whisky reception and craft beer tasting (open to all registered participants) Exhibition and posters <i>Cromdale and Strathblane Halls</i>		

Tuesday 18 July 2017

08:00–18:00	Registration <i>Atrium</i>		
09:00–09:45	PLENARY LECTURE Chair: Robert Gilbert, EBJ Managing Editor, EBSA, University of Oxford, UK <i>Lennox Suite</i>		
	The challenges and opportunities of understanding protein folding and misfolding in health and disease <i>Sheena Radford, University of Leeds, UK</i>		
09:55–12:40	S11 – COMPUTATIONAL BIOPHYSICS Chairs: Helmut Grubmüller and Jeremy Craven <i>Lennox Suite</i>		
	09:55 (Invited) Enhanced sampling approaches for cryptic site discovery Francesco Luigi Gervasio, University College London, UK	10:25 (Invited) Modeling experiments in simulations and simulations in experiments: Combining modeling with low and medium resolution structural biology Erik Lindahl, Stockholm University, Sweden	10:55 Getting the ion-protein interactions right in Molecular Dynamics simulations Elise Duboue-Dijon, Czech Academy of Sciences, Czech Republic
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) Structural ensembles of intrinsically disordered proteins using all-atom molecular simulation Sarah Rauscher, Max Planck Institute for Biophysical Chemistry, Germany	12:10 Structural dynamics of monomeric alpha-synuclein on the ps-μs time scale derived from MD simulations Reinhard Klement, MPI for biophysical Chemistry, Germany	12:25 Codon recognition on the ribosome-free energy and QM/MM calculations Lennart Nilsson, Karolinska Institutet, Sweden

09:55–12:40	S12 – PROTEIN MISFOLDING		
	Chairs: Tuomas Knowles and Ronald Melki <i>Pentland Auditorium</i>		
	09:55 (Invited) Assignment and atomic-resolution structure of an Aβ(1–42) amyloid fibril Anja Böckmann, IBCP, France	10:25 (Invited) Molecular mechanisms of neurodegeneration and therapeutic intervention Gabriele Kaminski-Schierle, University of Cambridge, UK	10:55 Interaction between amyloid oligomers and plasma membrane. A single cell force spectroscopy study Claudio Canale, Istituto Italiano di Tecnologia, Italy
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Secondary nucleation in amyloid formation Sara Linse, Lunds Universitet, Sweden	12:10 DNA PAINTing amyloid aggregates Mathew Horrocks, University of Cambridge, UK	12:25 Functional amyloids from the fungal pathogen <i>Aspergillus fumigatus</i> Ináki Guijarro, Institut Pasteur, NMR of Biomolecules Unit, France	
09:55–12:40	S13 – MECHANOSENSING AND MECHANOREGULATION		
	Chairs: Kristian Franze and Henk Granzier <i>Lomond Suite</i>		
	09:55 (Invited) Myosin-II filaments, microtubules, and cell-matrix adhesions: mechanical and signalling interactions Alexander D Bershadsky, National University of Singapore, Singapore	10:25 (Invited) Strain dependent mechanisms in regulation of striated muscle Tom Irving, Illinois Institute of Technology, USA	10:55 Topological defects in epithelia govern cell death and extrusion Amin Doostmohammadi, University of Oxford, UK
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Physical forces driving migration, division and folding of epithelial sheets Xavier Trepate, Institute for Bioengineering of Catalonia (IBEC), Spain	12:10 Nanoscale mechanical modification in the brain tumour micro-environment Eleonora Minelli, Physics Institute, UCSC, Italy	12:25 Binding of ZO-1 to α5β1 regulates the mechanical properties of α5β1-fn links V́ctor González-Tarragó, Institute for Bioengineering of Catalonia (IBEC), Spain	
09:55–12:40	S14 – CORRELATIVE, MULTISCALE AND FUNCTIONAL IMAGING		Sponsored by:
	Chairs: Pierre-Emmanuel Milhiet and Paul Verkade <i>Sidlaw Auditorium</i>		
	09:55 (Invited) Resolution passion Paolo Bianchini, Istituto Italiano di Tecnologia (IIT), Italy	10:25 (Invited) Correlation of 3D structure and chemical determination at whole cell level by near-edge soft X-rays nanotomography José L Carrascosa, CNB-CSIC, Spain	10:55 Using STORMForce for understanding how bacteria grow and die Raveen Tank, University of Sheffield, UK
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Integrating 3D light and electron microscopy for multiscale correlative imaging Lucy Collinson, The Francis Crick Institute, UK	12:10 Study on acoustic signal features influenced by thermoacoustic effects in magnetoacoustic tomography Xiaoqing Zhou, Chinese Academy of Medical Sciences & Peking Union Medical College, China	12:25 Cell-temperature mapping by Eu-doped TiO₂ nanothermometers Janez Strancar, Stefan Institute Ljubljana, Slovenia	

09:55–12:40	S15 – EVOLUTION, ECOLOGY, COLLECTIVE AND EMERGENT BEHAVIOUR			Sponsored by: 	
	Chairs: Rosalind J Allen and Stanislas Leibler <i>Fintry Auditorium</i>				
	09:55 (Invited) Tolerance and persistence promote the evolution of antibiotic resistance Nathalie Balaban, The Hebrew University of Jerusalem, Israel	10:25 (Invited) Evolutionary dynamics in the polarity network in budding yeast Liedewij Laan, TU Delft, Netherlands	10:55 Dynamics of bacterial community architecture governs viral protection and dispersal mechanisms Knut Drescher, Philipps University Marburg, Germany		
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>				
11:40 (Invited) Gene regulation from an evolutionary perspective Olivier Rivoire, Collège de France, France	12:10 Stochasticity and division of labour in toxin production in two-strain bacterial competition in <i>E. coli</i> Benedikt von Bronk, Ludwig-Maximilians-Universität München, Germany	12:25 Collective feeding in <i>C. elegans</i> Linus Schumacher, Imperial College London, UK			
12:40–14:40	Poster session, lunch and exhibition <i>Cromdale and Strathblane Halls</i>				
12:40–13:00	BBS AGM (open to all BBS members) <i>Pentland Auditorium</i>				
13:00–13:45	Physics of Life Network (open to all interested delegates) Presentation of a UK research network, <i>Fintry Auditorium</i>				
14:00–18:10	IUPAB – EGA and GA Meeting, followed by formal bids <i>Lammermuir Suite</i>				
14:40–15:25	PLENARY LECTURE				
	Chair: Jamie Hobbs, University of Sheffield, UK <i>Lennox Suite</i>				
	Resource allocation theory of bacterial physiology Terry Hwa, University of California, USA				
15:25–15:50	NEW & NOTABLE				
	Chair: Jamie Hobbs, University of Sheffield, UK Structural disorder of monomeric α-synuclein persists in mammalian cells Francois-Xavier Theillet, CNRS, France <i>Lennox Suite</i>				
16:00–18:45	S16 – MOLECULAR AND CELLULAR PROCESSES OF ENERGY TRANSDUCTION				
	Chairs: Edmund Kunji and Leonid Sazanov <i>Lennox Suite</i>				
	16:00 (Invited) Efficient energy transduction in respiratory complexes and supercomplexes Carola Hunte, Albert Ludwig University of Freiburg, Germany	16:30 (Invited) Structure and mechanism of respiratory complex I: from bacterial to mammalian systems Leonid Sazanov, IST, Austria	17:00 Protons at the membrane water interface Peter Pohl, Johannes Kepler University Linz, Austria		
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>				
17:45 (Invited) Structure of complete ATP synthase and its role as new drug target against tuberculosis Thomas Meier, Imperial College London, UK	18:15 Coupling fluorescence microscopy and electrochemistry to investigate single mitochondria metabolism Stephane Arbault, University of Bordeaux, France	18:30 Retinal thermal equilibrium, photocycle and energy conversion in the microbial seven-transmembrane photoreceptors Xin Zhao, East China Normal University, China			

16:00–18:45	S17 – MEMBRANE PERMEATION: CHANNELS		
	Chairs: Mauro Dalla Serra and Mark Wallace <i>Pentland Auditorium</i>		
	16:00 (Invited) Single-molecule spectroscopy of folding and assembly of the cytolitic pore toxin ClyA Ben Schuler, University of Zurich, Switzerland	16:30 (Invited) Direct pharmacological targeting of a mitochondrial ion channel eliminates cancer cells <i>in vivo</i> Ildiko Szabo, University of Padova, Italy	17:00 The structure of an open activated sodium channel reveals the molecular basis of gating and disease Bonnie Ann Wallace, University of London, UK
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Roles of Aquaporins in health and disease: promising targets for drug discovery Graça Soveral, University of Lisbon, Portugal	18:15 Mechanism of loop C closure in the glycine receptor and its relevance for partial agonism Marc Dämgen, University of Oxford, UK	18:30 The mechanism of drilling β-barrel pores into lipid membranes by an earthworm protein Lysenin Marjetka Podobnik, National Institute of Chemistry, Slovenia	
16:00–18:45	S18 – MODELLING, INFERENCE, BIG DATA		
	Chairs: Guy Grant and Joshua Ho <i>Lomond Suite</i>		
	16:00 (Invited) Software scalability and validation in big data analysis Joshua W K Ho, Victor Chang Cardiac Research Institute, Australia	16:30 Transforming protein sequence and composition into numbers: A BIG DATA analysis tool for proteomes Rajaram Swaminathan, Indian Institute of Technology Guwahati, India	16:45 Colonization dynamics of bacteria in mice Florence Bansept, Laboratoire Jean Perrin, UPMC-CNRS, France
	17:00–17:30 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:30 (Invited) From single cells to populations: statistical models for heterogeneous biological systems Christopher Yau, University of Oxford, UK	18:00 Neuronal signaling pathways estimated from whole-brain imaging data of <i>C. elegans</i> Yuishi Iwasaki, Ibaraki University, Japan	18:15 MDbox: a cloud-based repository for molecular dynamics simulations Karmen Condic-Jurkic, Australian National University, Australia	18:30 Understanding cancer phenomena using a thermodynamic-based approach Nataly Kravchenko-Balasha, The Hebrew University of Jerusalem, Israel
16:00–18:45	S19 – EXPERIMENTAL AND COMPUTATIONAL APPROACHES TO PROTEIN DESIGN		
	Chairs: Beth Bromley and Yechiel Shai <i>Sidlaw Auditorium</i>		
	16:00 (Invited) Minimalist design of protein and peptide catalysts Ivan Korendovych, Syracuse University, USA	16:30 (Invited) Advancing metallopeptide design for non-biological function Anna Peacock, University of Birmingham, UK	17:00 Function conversion between CPD and (6-4) photolyases Daichi Yamada, Ochanomizu University, Japan
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Reaching the Pareto frontier in multi-objective protein design Vikas Nanda, Rutgers University, USA	18:15 Designing artificial TIM-barrel proteins from scratch: the Octarellin model Cristina Martina, University of Liège, Belgium	18:30 Engineered deglycosylating enzyme to enhance activity towards larger substrates Federica Rigoldi, Politecnico di Milano, Italy	

16:00–18:45	S20 – ACTIVE MATTER Chairs: Andreas Bausch and Julia Yeomans <i>Fintry Auditorium</i>		
	16:00 (Invited) Surface-bound enzymatic reactions organize microcapsules and protocells in solution Anna Balazs, University of Pittsburgh, USA	16:30 (Invited) Active nematics at interfaces Francesc Sagues, Universitat de Barcelona, Spain	17:00 Swimming and rafting of <i>E. coli</i> microcolonies at air-liquid interfaces Mauro Chinappi, University of Rome Tor Vergata, Italy
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	17:45 (Invited) Extensile actomyosin? Martin Lenz, University of Paris-Sud, France	18:15 Flagella-mediated unspecific adhesion of <i>Chlamydomonas</i> to surfaces is switchable by light Oliver Bäümchen, Max Planck Institute for Dynamics, Germany	18:30 Spatial confinement of active microtubule networks induces large-scale rotational cytoplasmic flow Makito Miyazaki, Waseda University, Japan
19:00–20:00	EBSA General Assembly (open to all) <i>Fintry Auditorium</i>		

Wednesday 19 July 2017

08:00–18:00	Registration <i>Atrium</i>		
09:00–09:45	PLENARY LECTURE Chair: Helmut Grubmüller, President, EBSA, Max Planck Institute for Biophysical Chemistry, Germany <i>Lennox Suite</i>		
	Avanti/EBSA Award winner: A novel cross-talk between membrane lipids and the innate system is mediated by toll-like receptors Jean-marie Ruyschaert, Université libre de Bruxelles Belgium		
09:55–12:40	S21 – MEMBRANE PERMEATION: TRANSPORTERS Chairs: Robert Tampé and Simon Newstead <i>Lennox Suite</i>		
	09:55 (Invited) Structural basis for proton coupled amino acid and peptide transport Simon Newstead, University of Oxford, UK	10:25 (Invited) Protein-lipid interplay revealed by X-ray solvent contrast modulation with calcium pump crystals Chikashi Toyoshima, University of Tokyo, Japan	10:55 Using bacteria to fight bacteria: Parasitisation of ferredoxin-uptake receptors in <i>Pectobacterium</i> Catriona Thompson, University of Glasgow, UK
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) A novel high-throughput screening method for the identification of transport proteins Edmund R S Kunji, University of Cambridge, UK	12:10 Membrane protein diffusion in living <i>E. coli</i>: from fundamentals to insight in protein translocation Yves Bollen, Vrije Universiteit Amsterdam, Netherlands	12:25 An emerging technique for the characterization of transport proteins: SSM-based electrophysiology Andre Bazzone, Nanion Technologies, Germany

09:55–12:40	S22 – IMAGING THE CELL		
	Chairs: José Carrascosa and Mark Leake <i>Pentland Auditorium</i>		
	09:55 (Invited) Advances in adaptive optics for microscopy and nanoscopy Martin Booth, University of Oxford, UK	10:25 (Invited) Using cryo-electron tomography to determine protein structures within complex environments John Briggs, EMBL, Germany	10:55 Application of indirect optical micromanipulation in fluorescent 3D live cell imaging Lóránd Kelemen, Biological Research Centre, Hungary
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Cryo X-ray tomography: 3D cellular ultrastructure of intact cells without fixation or staining James McNally, Helmholtz-Zentrum Berlin, Germany	12:10 Transcription factor clusters regulate gene expression in yeast <i>Saccharomyces cerevisiae</i> Sviatlana Shashkova, University of York, UK	12:25 Pair correlation analysis of fixed PALM and live PALM applied on the water channel AQP3 Eva Arnsparng Christensen, University of Southern Denmark, Denmark	
09:55–12:40	S23 – BIOMIMETIC STRUCTURES AND SYSTEMS		Sponsored by: 
	Chairs: Adam Perriman and William M Shih <i>Lomond Suite</i>		
	09:55 (Invited) Precision measurements of biomolecular interactions and structure, supported by DNA origami Hendrik Dietz, Technische Universität München, Germany	10:25 (Invited) Synthetic genetics: Beyond DNA and RNA Philipp Holliger, MRC Laboratory of Molecular Biology, UK	10:55 Characterization of matrix vesicles biomimetic systems: interaction with collagen fibers during biomineralization Pietro Ciancaglini, USP, Ribeirão Preto, Brazil
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Building life-like systems: artificial cells and organelles Jan van Hest, Technische Universiteit Eindhoven, Netherlands	12:10 Protein assembly, from small molecule to polymer mediators Peter B Crowley, NUI Galway, Ireland	12:25 Super-resolution DNA-origami barcodes: a labeling system for spatially resolved deep-sequencing Ferenc Födös, Karolinska Institutet, Sweden	
09:55–12:40	S24 – DRUG DISCOVERY AND DELIVERY		
	Chairs: Rob Cooke and Natalie Strynadka <i>Sidlaw Auditorium</i>		
	09:55 (Invited) Driving GPCR drug discovery with structure and biophysics Rob Cooke, Heptares Therapeutics, UK	10:25 (Invited) Fragment screening using native state mass spectrometry Sally-Ann Poulsen, Griffith University, Australia	10:55 Intrinsic vs. observed thermodynamic and kinetic parameters of carbonic anhydrase-ligand interaction Vaida Linkuviene, Vilnius University, Lithuania
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
11:40 (Invited) Mechanisms of microbubble mediated drug delivery Eleanor Stride, University of Oxford, UK	12:10 Development and characterization of polymeric nanoparticle Beatriz Patricio, Laboratório de Física Biológica, Brazil	12:25 Anti-transferrin receptor antibody conjugated PLGA nanoparticles for temozolomide delivery Maria Ramalho, LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy, Portugal	

09:55–12:40	S25 – MOTILITY AND MIGRATION Chairs: Alexander D Bershadsky and Rhoda Hawkins <i>Fintry Auditorium</i>		
	09:55 (Invited) Actin turnover in motile cells Kinneret Keren, Technion Israel Institute of Technology, Israel	10:25 (Invited) Self-generated chemotactic gradients, and what they mean for biology and medicine Robert Insall, CRUK Beatson Institute, University of Strathclyde, UK	10:55 4D fast quantitative imaging of vascular invasion: the role of cell-matrix mechanical interaction Christian Steuwe, KU Leuven, Belgium
	11:10–11:40 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	11:40 (Invited) Rigidity sensing is regulated by receptor tyrosine kinases to inhibit transformed growth Michael Sheetz, Mechanobiology Institute, Singapore	12:10 Instabilities of competing tissues with mechanically-cued proliferation John Williamson, The Francis Crick Institute, UK	12:25 Spontaneous and induced gait-switching in microswimmers Kirsty Wan, University of Cambridge, UK
12:40–14:40	Poster session and lunch <i>Cromdale and Strathblane Halls</i>		
12:40–14:40	3Rs and Biophysics (open to all) Chairs: Cris dos Remedios and Michelle Peckham <i>Fintry Auditorium</i>		
12:40–14:40	Bridging the gap: Undergraduate education across the disciplines (open to all) Chairs: Rhoda Hawkins and Jeremy Craven, University of Sheffield, UK <i>Ochil Room</i>		
12:40–14:00	European Biophysical Journal, Springer-Nature Editorial Board Meeting <i>Harris Room 2</i>		
13:30–14:30	EBSA 2019 committee meeting (closed) <i>Carrick Room 2</i>		
14:40–15:25	PLENARY LECTURE Chair: Cristobal dos Remedios, IUPAB, University of Sydney, Australia <i>Lennox Suite</i>		
	IUPAB Engström Lecture: Biophysics with minimal biological systems Petra Schwille, MPI Martinsried, Germany		
15:25–15:50	NEW & NOTABLE Chair: Mark Wallace, Kings College, London, UK Tracking and localization microscopy of single mitochondrial proteins in living cells Timo Appelhans, Universität Osnabrück, Germany <i>Lennox Suite</i>		
16:00–18:00	IUPAB New Council meeting (closed) <i>Harris 1</i>		

16:00–18:45	S26 – APPLICATIONS IN BIOMEDICAL AND MATERIALS SCIENCE		
	Chairs: Tony Cass and Viola Vogel <i>Lennox Suite</i>		
	16:00 (Invited) Force propagation in biomolecular complexes and sensory kinases Hermann Gaub, Ludwig-Maximilians-Universität München, Germany	16:30 (Invited) Virus force spectroscopy for measuring interactions and targeting virus infection of single animal cells Rajib Schubert, ETH Zürich, Switzerland	17:00 Micro-structured compartment models for synthetic biology Hiro Eto, Max-Planck-Institute of Biochemistry, Germany
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Lego-style construction of future therapeutics from DNA William Shih, Harvard University, USA	18:15 Cellular sensing platform for biomedical applications Luciana Stanica, International Centre of Biodynamics, Romania	18:30 Atomic force microscopy as a tool to evaluate the risk of cardiovascular diseases in patients Ana Guedes, Universidade de Lisboa, Portugal	
16:00–18:45	S27 – PROTEIN FOLDING AND ASSEMBLY		
	Chairs: Jane Clarke and André Matagne <i>Pentland Auditorium</i>		
	16:00 (Invited) Cellular mechanisms for the folding of complex protein topologies Patricia Clark, University of Notre Dame, USA	16:30 (Invited) Touring the Protein Energy Landscape: the view depends on how and when you look Susan Marqusee, University of California Berkeley, USA	17:00 Disorder-to-order transitions involved in secretion, folding and functions of a bacterial toxin Alexandre Chenal, Institut Pasteur, CNRS, France
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Conditional interactions in cellular hubs Birthe Kragelund, University of Copenhagen, Denmark	18:15 Self-organizing amyloid in bacteria Daniel Otzen, Aarhus University, Denmark	18:30 Dual function of the trigger factor chaperone in nascent protein folding Christian Kaiser, Johns Hopkins University, USA	
16:00–18:45	S28 – MORPHOGENESIS AND DEVELOPMENT		
	Chairs: Ewa Paluch and Pierre-François Lenne <i>Lomond Suite</i>		
	16:00 (Invited) The mechanical control of nervous system development Kristian Franze, University of Cambridge, UK	16:30 (Invited) Cell morphogenesis across scales, from molecular processes to cell surface mechanics Ewa Paluch, University College London, UK	17:00 The physical basis of coordinated tissue spreading in zebrafish gastrulation Silvia Grigolon, The Francis Crick Institute, UK
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
17:45 (Invited) Cell wall architecture and the development of cell shape in <i>S. aureus</i> and <i>E. coli</i> Jamie Hobbs, University of Sheffield, UK	18:15 Decoding temporal interpretation of the morphogen Bicoid in the early <i>Drosophila</i> embryo Timothy Saunders, National University of Singapore, Singapore	18:30 Epithelium adaptation to external curvature <i>in vitro</i> Caterina Tomba, University of Geneva, Switzerland	

16:00–18:45	S29 – OPTOGENETICS AND NEURAL SYSTEMS			
	Chairs: Ernst Bamberg and Frank Gunn-Moore <i>Sidlaw Auditorium</i>			
	16:00 (Invited) <i>In vivo</i> two-photon optogenetics with sculpted light Valentina Emiliani, Paris Descartes University, France	16:30 (Invited) Hearing the light: optogenetic stimulation of the auditory pathway Tobias Moser, Georg-August-Universität Göttingen, Germany	17:00 Signaling states of short LOV proteins and their implications for construction of optogenetic tools Renu Batra-Safferling, Forschungszentrum Juelich, Germany	
	17:15–17:45 Refreshment break <i>Cromdale and Strathblane Halls</i>			
17:45 (Invited) Closed-loop real-time all-optical interrogation of neural circuits <i>in vivo</i> Michael Hausser, University College London, UK	18:15 A novel neurophotonics approach to study neural networks <i>in vitro</i> Wardiya Afshar Saber, University of St Andrews, UK	18:30 Orchestrating cells on a chip employing standing surface acoustic waves towards neural networks Manuel Brugger, University of Augsburg, Germany		
16:00–19:00	S30 – IONIC LIQUIDS MEET BIOMOLECULES			
	Chairs: Antonio Benedetto and Hans-Joachim Galla <i>Fintry Auditorium</i>			
	16:00 (Invited) Ionic liquids as biocompatible co-solvents for the stability of biomolecules Venkatesu Pannur, University of Delhi, India	16:30 (Invited) Ionic liquids meet biomolecules Antonio Benedetto, University College Dublin, Ireland	17:00 Probing Interactions of Cellulose, Lignin and Ionic Liquids towards Enabling Sustainability Seema Singh, Sandia National Laboratories, USA	
	17:15–17:30 Refreshment break <i>Cromdale and Strathblane Halls</i>			
17:30 (Invited) Experimental visualization of interactions between ionic liquids, water and biomolecules Valentine Ananikov, Russian Academy of Science, Russia	18:00 (Invited) Liquid-liquid phase separation of highly charged hen egg white lysozyme and heparin at pH = 2.0 Damien Hall, Australian National University, Australia	18:30 Biophysical and biological activities of imidazolium-based lipid analogues Hans-Joachim Galla, University of Muenster, Germany	18:45 Interaction of imidazolium-based ionic liquids with soft supported lipid membrane Sajal Kumar Ghosh, Shiv Nadar University, India	
19:30 onwards	Conference dinner and ceilidh (open to all registered participants) <i>Atrium, Strathblane Hall, Cromdale Hall</i>			

Thursday 20 July 2017

08:00–13:30	Registration <i>Atrium</i>		
09:00–11:45	S31 – IMAGING MOLECULES OF LIFE Chairs: Richard Henderson and Chikashi Toyoshima <i>Lennox Suite</i>		
	09:00 (Invited) Electron cryomicroscopy of rotary ATPases John Rubinstein, University of Toronto, Canada	09:30 (Invited) Directly watching biomolecules in action by high-speed atomic force microscopy Toshio Ando, Kanazawa University, Japan	10:00 Peptide directed synthesis of continuous DNA nanowires for analysis of large DNA molecules with SEM Jung Heon Lee, Sungkyunkwan University, South Korea
	10:15–10:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	10:45 (Invited) Antigens on the move – Structure and mechanism of translocation machineries in adaptive immunity Robert Tampé, Goethe University Frankfurt, Germany	11:15 Single-molecule dynein, kinesin and IFT particle dynamics at the <i>C. elegans</i> ciliary tip Jaap van Krugten, Vrije Universiteit, Netherlands	11:30 Near infrared fluorescent nanosensors for chemical imaging of chemical communication between cells Sebastian Kruss, Göttingen University, Germany
09:00–11:45	S32 – RECEPTORS AND SIGNALLING Chairs: Simon Davis and Laszlo Mátyus <i>Pentland Auditorium</i>		
	09:00 (Invited) Optogenetics: basics, applications and chances Ernst Bamberg, Max-Planck-Institut für Biophysik, Germany	09:30 (Invited) Tethered signalling reactions on immune receptors Omer Dushek, University of Oxford, UK	10:00 Impact of membrane lipid composition on Dopamine D2 receptor activation Isabel Alves, University of Bordeaux, France
	10:15–10:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	10:45 (Invited) Imaging the early events of T-cell triggering David Klenerman, University of Cambridge, UK	11:15 Unraveling the mystery of the seemingly too short linker in bivalent ligands of opioid receptors Kristyna Pluhackova, University of Erlangen-Nurnberg, Germany	11:30 Proton-induced conformational switching in GPCRs is tailored to the membrane interface Karim Fahmy, Helmholtz-Zentrum Dresden, Germany
09:00–11:45	S33 MEMBRANE-ACTIVE PEPTIDES Chairs: John Sanderson and Frances Separovic <i>Lomond Suite</i>		
	09:00 (invited) Membrane structural transitions during peptide binding: Implications for drug design Marie-Isabel Aguilar, Monash University, Australia	09:30 (Invited) Mechanisms of abnormal aggregation and toxicity of amyloid β-protein on neuronal membranes Katsumi Matsuzaki, Kyoto University, Japan	10:00 Single-molecule visualization of dynamic transitions of pore-forming peptides Ming Li, Chinese Academy of Sciences, China
	10:15–10:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	10:45 (Invited) Antimicrobial peptides: The underlying parameters important for biofilm inhibition and degradation Yechiel Shai, Weizmann Institute of Science, Israel	11:15 Beta amyloids aggregation at the surface of model functional membrane domains Elena del Favero, University of Milan, Italy	11:30 Single-molecule microscopy of Staphylococcal pore-forming toxins on live mammalian cells Adam Wollman, University of York, UK

09:00–11:45	S34 – WHY DISORDER MATTERS Chairs: Martin Blackledge and Cait MacPhee <i>Sidlaw Auditorium</i>		
	09:00 (Invited) Mechanistic studies of folding upon binding Jane Clarke, University of Cambridge, UK	09:30 (Invited) Investigating the role of N-terminal acetylation on alpha-synuclein structure and function Elisabeth Rhoades, University of Pennsylvania, USA	10:00 Mapping the link between disorder and function of an IDP-network with single-molecule spectroscopy Renee Vancaenenbroeck, Weizmann Institute of Science, Israel
	10:15–10:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	10:45 (Invited) The role of structural disorder in protein degradation <i>in vitro</i> and <i>in vivo</i> Peter Tompa, VIB Structural Biology Research Center, Belgium	11:15 Interplay between surface solvation and molecular recognition in IDPs Aritra Chowdhury, European Molecular Biology Laboratory, Germany	11:30 Structural and dynamic aspects of antibody recognition of intrinsically disordered antigens Raymond Norton, Monash University, Australia
09:00–11:45	S35 – PHYSICS OF CANCER Chairs: Robert H Austin and Jeffrey Holly <i>Fintry Auditorium</i>		Sponsored by: 
	09:00 (Invited) Driving GPCR drug discovery with structure and biophysics Robert Austin, Princeton University, USA	09:30 (Invited) Cancer treatment as perturbation of a complex dynamic system: exploiting evolutionary dynamics to optimize therapy Robert A Gatenby, Moffitt Cancer Center, USA	10:00 The application of scanning near field infrared microscopy to cancer Peter Weightman, University of Liverpool, UK
	10:15–10:45 Refreshment break <i>Cromdale and Strathblane Halls</i>		
	10:45 (Invited) Cancer research: paradigm instability and the need for a new approach Jeff Holly, University of Bristol, UK	11:15 Cancer risk and the tree of somatic cell divisions Imre Derenyi, Eotvos University, Hungary	11:30 AFM and graph analysis to study P-cadherin/SFK mechanotransduction signalling in breast cancer cells Nuno Santos, Universidade de Lisboa, Portugal
12:00–12:45	PLENARY LECTURE Chair: Anthony Watts, University of Oxford, UK <i>Pentland Auditorium</i>		
	IUPAB Katchalski Lecture: Seven transmembrane receptors Robert J Lefkowitz, Duke University, USA		
12:45–13:15	Closing ceremony and poster prize presentations <i>Pentland Auditorium</i>		
13:30–14:30	EBSA Executive Committee Second Meeting (closed) <i>Harris 1</i>		