

The background of the entire page is a dark blue field filled with a complex network of thin, light blue lines connecting various circular nodes. Some nodes are larger and glow with a bright cyan light, while others are smaller and dimmer. The network is dense and interconnected, creating a sense of a complex system or data flow.

Physics of Life 2025

24–27 MARCH
HARROGATE CONVENTION CENTRE,
HARROGATE, UK

IOP Institute of Physics

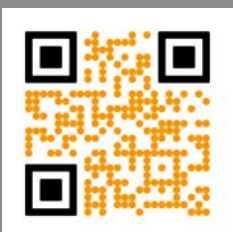
WHERE PHYSICS MEETS BIOLOGY

FIDA technology allows structural biologists to bridge the gap between static structural data & dynamic interaction analysis.

By measuring **absolute size** in nanometers, it enables precise, **in-solution** characterisation of binding interactions and multi-component assemblies, complementing X-ray crystallography, cryo-EM, SAXS and NMR.

Unlike other biophysical techniques, such as SPR and BLI, which rely on assumptions, **FIDA delivers absolute data**. It provides 10 precise parameters offering a unique and reliable approach to studying dynamic assembly processes in structural biology. All this with nanoliters sample usage.

Discover how it works:



FIDA ONE

BRIDGE THE GAP BETWEEN STATIC STRUCTURES & THE MECHANISMS OF ASSEMBLY

- Sample characterisation in minutes
- Absolute molecular size measure
- With quantification of aggregates
- With viscosity compensation
- Nanoliters sample usage
- Concentration Indifferent





The Royal Microscopical Society (RMS) is an inclusive society dedicated to furthering science and supporting the microscopy, imaging, analysis and flow cytometry communities.

Find out more about how you can be involved!

RMS Membership

Become part of the only truly international microscopical society. Membership of the RMS means membership of a broad and vibrant Society that is committed to advancing science, developing careers and supporting the wider understanding of science and microscopy.

We encourage our members to be actively involved in all areas of the Society and have a steadily expanding number of high profile members contributing to our scientific and educational activities.

We offer members a range of benefits including:

- Subscription to our online quarterly membership magazine **infocus**
- Subsidised subscription rates to the Journal of Microscopy
- Subsidised registration to all RMS courses and meetings
- Opportunity to network and socialise with other members at RMS organised events
- Fellowship of the Society*
- Access to bursaries for conferences in the UK and overseas**
- Discount on books purchased from Wiley
- Membership of the European Microscopy Society

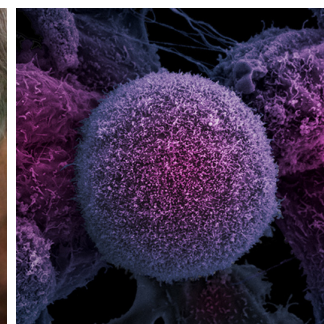
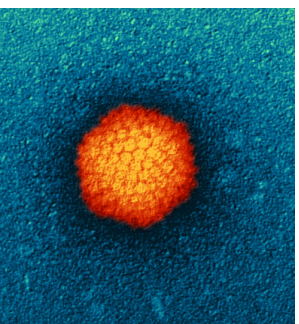
* to qualify for Fellowship members must have held ordinary membership for three consecutive years and satisfy certain other criteria. ** applicable after completing twelve months of continuous membership prior to application.

RMS Ambassadors

Ambassadors are enthusiastic, active and engaged members of the RMS who act as the key contact for the RMS within their workplace. Increasing the reach of the Society, you will represent the RMS at several internal events per year, representing the RMS, promoting the work of the Society, and engaging new and current members with Society opportunities and the benefits of membership.

Benefits include:

- Access to a full package of resources which will enable you to fulfil your role as an RMS Ambassador
- Opportunities to engage with a rich and vibrant network of international scientists from a range of research fields.
- Skills development – e.g. delivering talks and presentations
- Exposure to current issues being addressed by the RMS and a platform for you to share your views about the future of your community and career
- Free registration to some of our online events and some 'in person' meetings
- Expenses covered for your RMS work as an Ambassador
- An opportunity for you to create 'regional' hubs for your field and in your community with a supported and resourced outreach agenda



Royal Microscopical Society

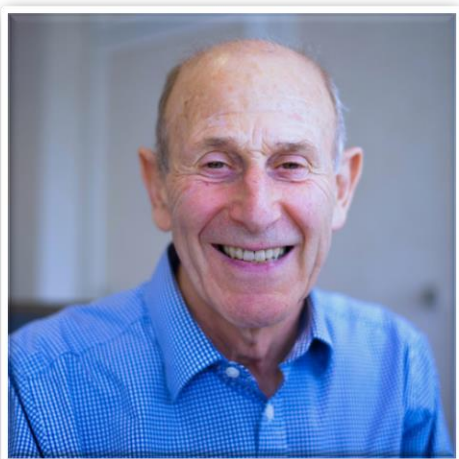


Find out
more online



Rosetrees

Supports the best medical research



Rosetrees, founded in 1987, is a private charity that funds innovative medical research. Established by a philanthropic family, it is now led by chairman Richard Ross, who continues their legacy.

Rosetrees focuses on translational research with a strong emphasis on patient impact, funding projects across all areas of biomedical research.



We support a diverse range of grants from small Seedcorn grants (£20k) to Interdisciplinary awards (£330k).

Visit our website for more information on our grants and how to apply:

<https://rosetrees.org.uk/>



ROYCE

The Henry Royce Institute is the UK's national institute for advanced materials research and innovation.

Royce has established a new Research Area for Imaging and Characterisation to provide and support access to the cutting-edge techniques applicable across the entire scope of materials innovation.

Our state-of-the-art equipment and facilities are open to all, easy to access and technically supported, with dedicated access routes and funding available for industrial and academic users.



Join the Royce Imaging and Characterisation team at stand 515 or visit our website to find out more.



royce.ac.uk

@RoyceInstitute 

henryroyceinstitute 

Henry Royce Institute 

Physics of Life 2025



Monday 24 March

8:30 AM - 9:00 AM	Mezzanine area outside Auditorium (Level 5)	Early Career Satellite Event (ECSE) Registration and Refreshments
9:00 AM - 9:15 AM	Auditorium	Welcome (ECSE)
9:15 AM - 10:15 AM	Auditorium	<p>Session 1 Full Oral Talks (ECSE)</p> <p>9:15 AM - 9:35 AM Gabriel Abrahams: Quantum spin resonance in engineered magneto-sensitive fluorescent proteins enables multi-modal sensing in living cells</p> <p>9:35 AM - 9:55 AM Richard Henshaw: How small is too small: a spatio-temporal spectroscopic quantification of single-cell exchange between marine microbes</p> <p>9:55 AM - 10:15 AM Rosa Catania: Optimising hybrid vesicles for membrane protein reconstitution: applications and insights</p>
10:15 AM - 10:35 AM	Auditorium	<p>Session 2 Flash Talks (ECSE)</p> <p>10:15AM - 10:18AM Catherine Fan: Protein capture using synthetic co-transcriptionally folded RNA condensates in mammalian cells</p> <p>10:18AM - 10:21AM Luca Sesta: Detecting epistasis from SARS-CoV-2 genomic data</p> <p>10:21AM - 10:24AM Sarah Graham: Exploring the frameshifting element in SARS-CoV-2 using smFRET</p> <p>10:24AM - 10:27AM Alice Attenborough: Using whispering gallery modes to monitor single-enzyme turnover events of NanoLuc</p> <p>10:27AM - 10:30AM Zachary Sun: Feedback between F-actin organization and active stress govern criticality and energy localization in the cell cytoskeleton</p>
10:35 AM - 11:15 AM	Mezzanine area outside Auditorium (Level 5)	Morning Break (ECSE)

Physics of Life 2025

11:15 AM - 12:15 PM	Auditorium	Session 3 Full Oral Talks (ECSE) 11:15 AM - 11:35 AM Maria Zacharopoulou: Designing modular DNA-protein nanostructures against hard-to-treat cancer targets 11:35 AM - 11:55 AM Lee-Ya Chu: Microtubule tip-generated forces drive bipolar spindle organization and chromosome segregation 11:55 AM - 12:15 PM Shunsuke Ichii: Enhanced enzyme diffusion as Maxwell's Demon: Selective increase of exothermal reaction
12:15 PM - 12:35 PM	Auditorium	Session 4 Flash Talks (ECSE) 12:15PM - 12:18PM Douglas Brown: Friction controls spatial patterning in active fluids 12:18PM - 12:21PM Avishuman Ray: Mechanics of force sensing in Piezo ion channels 12:21PM - 12:24PM Ryota Orii: Structural response of microtubule and actin cytoskeletons to direct intracellular loads 12:24PM - 12:27PM Qi Zhou: Transport dynamics of red blood cells in the microcirculation 12:27PM - 12:30PM Jan Kocka: Topological states in out-of-equilibrium allosteric molecular assemblies
12:35 PM - 1:10 PM	Mezzanine area outside Auditorium (Level 5)	Lunch (ECSE)
1:05 PM - 2:00 PM	Mezzanine area outside Auditorium (Level 5)	Conference Registration and Arrival Tea/Coffee and Cake
1:30 PM - 2:00 PM	Queen B Queen's Suite	Lunchtime Talk: From Great Science to Great Business Neville Young, Director of Enterprise and Innovation, Health Innovation Yorkshire and Humber
2:10 PM - 2:15 PM	Auditorium	Welcome
2:15 PM - 3:00 PM	Auditorium	Keynote Speaker Lorna Dougan: Hierarchical biomechanics: understanding and exploiting the physics of protein networks
3:00 PM - 3:30 PM	Mezzanine area outside Auditorium (Level 5)	Afternoon Break 1

Physics of Life 2025



3:30 PM - 5:30 PM	Auditorium	<p>Protein Structure, Dynamics and Interactions 3:30 PM - 4:00 PM Laura Itzhaki: Engineering the folding and function of tandem-repeat proteins: Teaching old proteins new tricks 4:00 PM - 4:15 PM Matteo Degiacomi: Learning (from) protein dynamics 4:15 PM - 4:30 PM Charlotte Dodson: Direct experimental measurement of conformational interconversion in protein kinases and its modification by phosphorylation and ligand binding 4:30 PM - 4:45 PM Charley Schaefer: Self-assembly of topological networks of intrinsically disordered proteins 4:45 PM - 5:00 PM James Garnett: Legionella regulation of biofilm growth through a unique protein conformational switching mechanism 5:00 PM - 5:30PM Ehmke Pohl: Structural biology of the Viroisphere</p>
	Queen A Queen's Suite	<p>Differentiation and Development 3:30 PM - 4:00 PM Takashi Hiiragi: Optimality for developmental robustness 4:00 PM - 4:15 PM Olivier Witteveen: Optimising information transmission in the canonical Wnt pathway 4:15 PM - 4:30 PM Tom Hiscock: How does a finger get its knuckles? Reaction diffusion models in the tetrapod limb and beyond 4:30 PM - 4:45 PM Joel Hochstetter: Stem cell density regulation in mouse skin homeostasis 4:45 PM - 5:00 PM Blanca Pijuan-Sala: Visualizing chromatin accessibility spatially during early stages of embryogenesis 5:00 PM - 5:30 PM Ewa Paluch: Cross-talk between cell mechanics, cell shape and cell state</p>

Physics of Life 2025



	Queen B Queen's Suite	<p>Evolution, Ecology and Epidemiology</p> <p>3:30 PM - 4:00 PM Zena Hadjivasiliou: Chance and constraints in the evolution of GRN-driven developmental patterning</p> <p>4:00 PM - 4:15 PM Paula García-Galindo: RNA plasticity emerges as an evolutionary response to fluctuating environments</p> <p>4:15 PM - 4:30 PM Réka Borbély: Evolutionary optimization of gene regulation</p> <p>4:30 PM - 4:45 PM Hassan Alam: A general framework for designing evolutionary experiments to select specific phage phenotypes using neural networks, statistical simulations, and symbolic regression</p> <p>4:45 PM - 5:00 PM Mike Evans: Modelling evolution of risk-aversion and extreme altruism</p> <p>5:00 PM - 5:30 PM Richard Neher: Mutation, purifying selection, and adaptive evolution of SARS-CoV-2</p>
5:30 PM - 7:30 PM	Studio One	Poster Session 1, Drinks Reception and Exhibition Commences
7:30 PM - 10:00 PM	Cold Bath Brew Co.	<p>Early Career Drinks Reception (ECSE)</p> <p>This session is oversubscribed. To accommodate everyone who has registered, there will be two sittings: 7:30 pm to 9:00 pm and 9:00 pm to 11:00 pm. Places will be allocated on a first-come, first-served basis upon arrival.</p> <p>Cold Bath Brewing Co. 44-46 King's Road, Harrogate, HG1 5JW</p>

Physics of Life 2025



Tuesday 25 March

8:30 AM - 9:00 AM	Studio One	Arrival Tea/Coffee and Pastries
9:00 AM - 9:45 AM	Auditorium	Keynote Speaker L Mahadevan: Evolutionary tales of biological shape: bodies, guts and beaks
9:45 AM - 10:15 AM	Studio One	Morning Break
10:15 AM - 12:15 PM	Auditorium	Imaging and Single Molecule Biology 10:15 AM - 10:45 AM Sandrine Leveque-Fort: Alternative intrinsic properties of single molecule emission for enhanced super-resolution microscopy 10:45 AM - 11:00 AM Sophie Theis: Quantifying 3D cell shape and cell organisation during myotome formation 11:00 AM - 11:15 AM Christian Bortolini: Complement-mediated killing of Escherichia coli by mechanical destabilisation of the cell envelope 11:15 AM - 11:30 AM Erin Cutts: Single-molecule visualisation of human topoisomerase 2a decatenation reveals substrate requirements 11:30 AM - 11:45 AM Alice Attenborough: Using whispering gallery modes to monitor single-enzyme turnover events of NanoLuc 11:45 AM - 12:15 PM Chris Dunsby: High-speed and high-content 3D light-sheet fluorescence microscopy

Physics of Life 2025



	Queen A Queen's Suite	<p>Patterns, Waves, Transport, Collective Phenomena and Microswimmers</p> <p>10:15 AM - 10:45 AM Kirsty Wan: Pattern formation and wave propagation in ciliated organisms</p> <p>10:45 AM - 11:00 AM Tianxiang Ma: Hidden Spatiotemporal Biomechanics underlying Multicellular Coherent Motions</p> <p>11:00 AM - 11:15 AM Viridiana Carmona Sosa: How is the swimming of exogenous microorganisms affected by the beating of cilia?</p> <p>11:15 AM - 11:30 AM Cedric Stefens: Mesoscopic multiphoton calcium imaging reveals a confluence of overlapping avalanches with varying distance to criticality and distinct roles</p> <p>11:30 AM - 11:45 AM Joseph Knight: The physics of a microbial railway network</p> <p>11:45 AM - 12:15 PM Nir Gov: Modelling how lamellipodia-driven cells maintain persistent migration and interact with external barriers</p>
	Queen B Queen's Suite	<p>Biomolecular Assemblies and Condensates</p> <p>10:15 AM - 10:45 AM Janet Kumita: Designing synthetic biomolecular condensates for specific client protein recruitment to facilitate protein degradation</p> <p>10:45 AM - 11:00 AM Nicola Galvanetto: Mesoscale properties of biomolecular condensates emerge from nanoscale dynamics</p> <p>11:00 AM - 11:15 AM Andres R. Tejedor: Modelling of aberrant phase transitions in biomolecular condensates via multiscale molecular simulations</p> <p>11:15 AM - 11:30 AM Ruth Veevers: Controlled liquid-liquid phase separation via the simulation-guided, targeted engineering of the RNA-binding protein PARCL</p> <p>11:30 AM - 11:45 AM Rebecca Chandler-Bostock: RNA virus genome structure determination by X-Ray Footprinting</p> <p>11:45 AM - 12:15 PM Halim Kusumaatmaja: Biomolecular Condensates and Surface Tension Phenomena</p>
12:15 PM - 1:15 PM	Studio One	Lunch
12:45 PM - 1:05 PM	Auditorium	<p>Lunchtime Talk: The Royal Microscopical Society in 2025</p> <p>Sali Davis, Chief Executive, RMS</p>

Physics of Life 2025

	Queen A Queen's Suite	Lunchtime Talk: Maximising the Benefits of IOP Membership Matthew Lovell, Member Operations Manager, IOP
	Queen B Queen's Suite	Lunchtime Talk: Flow Induced Dispersion Analysis, Fidabio Joanne M Walter, Strategic Accounts Director Fida Biosystems ApS, Fidabio
1:15 PM - 2:00 PM	Auditorium	Keynote Speaker Aleksandra Walczak: How personalised is your immune repertoire?
	Auditorium	Physics of the Nucleus 2:15 – 2:45 PM Rosana Collepardo Guevara: Physicochemical regulation of chromatin phase transitions 2:45 PM - 3:00 PM Jack Shepherd: Generating and measuring DNA plectonemes with COMBI-Tweez 3:00 PM - 3:15 PM Andrew Stannard: Measuring homologous pairing using synthetic DNA scissors 3:15 PM - 3:30 PM Giada Forte: Investigating the relationship between chromatin structure and dynamics 3:30 PM - 3:45 PM Alia Dos Santos: Ultrastructure of protein complexes in the nucleus of human sperm cells revealed by cryo-ET 3:45 PM - 4:15 PM Davide Marenduzzo: HiP-HoP: predictive polymer modelling of 3D structure and transcription in human chromatin
2:15 PM - 4:15 PM	Queen A Queen's Suite	Clocks, Timers and Cell Cycle Dynamics 2:15 PM - 2:45 PM Andrew Charles Oates: Timers, clocks and echoes in embryonic development 2:45 PM - 3:00 PM Veronica Biga: Interactions between HES1 and HES5 give rise to dynamic diversity in spinal cord neural progenitors 3:00 PM - 3:15 PM Alastair Phelan: Optimising the signal in cell cycle analysis by dual labelling experiments 3:15 PM - 3:30 PM Govind Menon: Transcriptional control mechanisms with different dynamical characteristics combine to enable flexible response to complex environmental signals 3:30 PM - 3:45 PM Haeun Sun: NREM-REM cycle model with incorporation of thermodynamics 3:45 PM - 4:15 PM Nancy Papalopulu: NGN3 oscillatory expression controls the timing of human pancreatic endocrine differentiation

Physics of Life 2025



	Queen B Queen's Suite	<p>Engineering Tissues and Organoids and Biohybrids</p> <p>2:15 PM - 2:45 PM Manuel Salmeron-Sanchez: Engineered viscoelasticity in cell microenvironments</p> <p>2:45 PM - 3:00 PM Athullya Baby: Investigating the influence of mechanical stresses on ciliary dynamics using advanced in vitro airway models</p> <p>3:00 PM - 3:15 PM Benedikt Hartl: Evolutionary implications of self-assembling cybernetic materials with collective problem-solving intelligence at multiple scales</p> <p>3:15 PM - 3:30 PM Nicola Pellicciotta: Microscopic transport powered by swimming bacteria and applications in biohybrid micro-robotics.</p> <p>3:30 PM - 3:45 PM Sebastian W. Krauss: Exploring DNA linkers for biomimetic cell adhesion of red blood cells</p> <p>3:45 PM - 4:15 PM Yuval Elani: Engineering symbiosis between living cells and synthetic cell compartments</p>
4:15 PM - 4:45 PM	Studio One	Afternoon Break
4:45 PM - 5:30 PM	Auditorium	<p>Keynote Speaker Nathalie Balaban: A statistical physics approach to bacteria under strong perturbations</p> <p>Sponsor talk by Alice Pyne: The Henry Royce Institute - Shared facilities to support innovation</p>
5:30 PM - 7:30 PM	Studio One	Poster Session 2, Drinks Reception and Exhibition

Physics of Life 2025



Wednesday 26 March

8:30 AM - 9:00 AM	Studio One	Arrival Tea/Coffee and Pastries
9:00 AM - 9:45 AM	Auditorium	Keynote Speaker: Satyajit Mayor: The membrane of a living cell: an ATP fuelled fabric
9:45 AM - 10:15 AM	Studio One	Morning Break
10:15 AM - 12:15 PM	Auditorium	<p>Cell Architecture and Forces</p> <p>10:15 AM - 10:45 AM Gijsje Koenderink: A deep dive into the material world of the human body</p> <p>10:45 AM - 11:00 AM Alexander Mietke: Mechanics of asymmetric cell division</p> <p>11:00 AM - 11:15 AM Margarita Staykova: Interstitial hydrodynamic instabilities sculpt cell adhesion contacts</p> <p>11:15 AM - 11:30 AM Francois Nedelec: Refined collision statistics support a force-based model of cortical microtubule organisation</p> <p>11:30 AM - 11:45 AM Lazar Novakovic: Punching holes and pulling threads: Cell Wall, the most complex tapestry of nature</p> <p>11:45 AM - 12:15 PM Matthieu Piel: Water movements in and out of the cell nucleus</p>
	Queen A Queen's Suite	<p>Emerging Areas in the Physics of Life (Session sponsored by the British Biophysical Society)</p> <p>10:15 AM - 10:45 AM Hannah Smithson: The physics of small-scale eye movements</p> <p>10:45 AM - 11:00 AM Abimbola Feyisara Adedeji-Olulana: Alternative mode of cell division in MRSA</p> <p>11:00 AM - 11:15 AM Victor Velasco Berrelleza: TORCphysics: A physical model of supercoiling mediated regulation in synthetic gene circuits</p> <p>11:15 AM - 11:30 AM Steven Quinn: Golden signals: transforming blood-based biomarker detection with next-generation photonic biosensors</p> <p>11:30 AM - 11:45 AM Mitra Rezaei: General molecular communication model in multi-layered spherical channels</p> <p>11:45 AM - 12:15 PM Aakash Basu: Deciphering the mechanical code of DNA and its impact on DNA:protein interactions</p>

Physics of Life 2025

	Queen B Queen's Suite	<p>Microbes Across Length Scales</p> <p>10:15 AM - 10:45 AM Rosalind Allen: Modelling bacterial colonisation of a urinary catheter: different factors control long-term versus short-term clinical outcomes</p> <p>10:45 AM - 11:00 AM Ayantika Saha: Phase transition induced wrinkling in Bacillus Subtilis biofilm: The role of γ-PGA and EPS</p> <p>11:00 AM - 11:15 AM Klaudia Staśkiewicz: Substrate geometry affects population dynamics in a bacterial biofilm</p> <p>11:15 AM - 11:30 AM Leonardo Mancini: Lung-like spatial limits and mechanical forces enable C. albicans survival in a pathogenic polymicrobial community</p> <p>11:30 AM - 11:45 AM Hannah Ochner: Correlated cryo-EM and cryo-FIB-SIMS enables spatial and chemical imaging of biological specimens</p> <p>11:45 AM - 12:15 PM Achilles Kapanidis: Organising bacterial transcription via liquid-liquid phase separation of transcription factors</p>
12:15 PM - 1:30 PM	Studio One	Lunch
	Auditorium	Lunchtime Talk: Henry Royce Institute (12:45 PM - 1:05 PM)
	Queen A Queen's Suite	Lunchtime Talk: EPSRC (12:30 PM - 1:10 PM)
	Queen B Queen's Suite	<p>Lunchtime Talk: Medical Physics and Biophysics at IOP Publishing (12:45 PM - 1:05 PM)</p> <p>Sara Bebbington Physical Biology Publisher, Carol Clark Physics in Medicine and Biology Publisher, IOP Publishing</p>
1:30 PM - 3:00 PM	Auditorium	<p>Physics of Life Roadmap Session</p> <p>1:30 PM - 2:15 PM Community Session: Guided by Alice Pyne and Raveen Tank</p> <p>2:15 PM - 3:00 PM Roadmap Discussion: Guided by Mark Leake and Jamie Hobbs</p>
3:00 PM - 3:30 PM	Studio One	Afternoon Break

Physics of Life 2025



3:30 PM - 5:30 PM	Auditorium	<p>Tissue Growth, Mechanics and Mechanosensing</p> <p>3:30 PM - 4:00 PM Naomi Nakayama: Predicting future biological forms through mechano-eco-evo-devo</p> <p>4:00 PM - 4:15 PM Melissa Tomkins: Rethinking stomatal mechanics: Insights from a new model of onion stomata</p> <p>4:15 PM - 4:30 PM Carina Dunlop: Active control of focal adhesions and contractility in cells and tissues: understanding the role of mechanical coupling</p> <p>4:30 PM - 4:45 PM Sangwoo Kim: A nuclear jamming transition in embryonic tissues</p> <p>4:45 PM - 5:00 PM Rastko Sknepnek: Cell-level modelling of active forces in early-stage development</p> <p>5:00 PM - 5:30 PM Sonia Contera: Nanoscale viscoelasticity of living tissues with AFM: physics of biological growth and shape across temporal and spatial scales</p>
	Queen A Queen's Suite	<p>Bioelectricity Across Scales</p> <p>3:30 PM - 4:00 PM Jenny Zhang: Photosynthesis on an electrode</p> <p>4:00 PM - 4:15 PM Elisa Nerli: Fast electrical signals trigger proliferation underlying organ regeneration</p> <p>4:15 PM - 4:30PM TBC</p> <p>4:30 PM - 4:45 PM Edoardo Cianflone: Phototaming of bacterial bioelectricity</p> <p>4:45 PM - 5:00 PM TBC</p> <p>5:00 PM - 5:30 PM Ashley Nord: Probing spatiotemporal electrochemical dynamics on single bacterial cells</p>
	Queen B Queen's Suite	<p>Immunity, Resistance and Host/Pathogen Dynamics</p> <p>3:30 PM - 4:00 PM Somenath Bakshi: Time-resolved measurement of phage infection cycles in individual cells</p> <p>4:00 PM - 4:15 PM Aaron Smith: An agent-based model of the bacteriophage lytic cycle to understand the evolutionary impact of stochasticity in life history parameters</p> <p>4:15 PM - 4:30 PM Cameron Boggon: Single-cell bacterial patterning to dissect interspecies interactions in a minimal nose microbiome that inhibits Staphylococcus aureus</p> <p>4:30 PM - 4:45 PM Yael Lebel: A simple four archetype model of infection space</p> <p>4:45 PM - 5:00 PM Amy Briffa: Engineering gene regulatory networks to design disease resistant crops</p> <p>5:00 PM - 5:30 PM Jennifer Rohn: Bladder battleground: probing host/pathogen interactions in advanced human cell-based urothelial microtissue models</p>

Physics of Life 2025



5:45 PM - 6:30 PM	Auditorium	Keynote Speaker Otger Campàs: Sculpting life through rigidity transitions
6:30 PM - 7:15 PM	Harrogate Convention Centre	Coaches Depart for the Conference Dinner
7:15 PM - 11:00 PM	Pavilions Of Harrogate,	Drinks Reception and Conference Dinner Pavilions Of Harrogate, Great Yorkshire Showground, Harrogate, North Yorkshire, HG2 8QZ

Physics of Life 2025



Thursday 27 March

9:00 AM - 11:00 AM	Auditorium	<p>Physics of Disease (Session sponsored by the Rosetrees Trust)</p> <p>9:00 AM - 9:30 AM Sally Peyman: Dismantling the fibrotic fortress: modelling the biophysical barriers to drug delivery in Pancreatic Cancer</p> <p>9:30 AM - 9:45 AM Katharina Beck: Shedding light on lipid order in frozen COVID-19 vaccines using fluorescence spectroscopy</p> <p>9:45 AM - 10:00 AM Helen Chappell: Ab initio molecular dynamics of phospholipid-mineral interactions suggest a critical role for organic material in the growth of kidney stones</p> <p>10:00 AM - 10:15 AM David Bensimon: In vivo targeted and deterministic single cell cancer induction</p> <p>10:15 AM - 10:30 AM Alexis Farman: Enhancing immunotherapies: Insights from the mathematical modelling of a microfluidic device</p> <p>10:30 AM - 11:00 AM Julia Yeomans: Self organisation of invasive breast cancer driven by the interplay of active and passive nematic dynamics</p>
	Queen A Queen's Suite	<p>Cell Metabolism and Growth</p> <p>9:00 AM - 9:30 AM Riki Eggert: Lipid composition defines Endoplasmic Reticulum morphology and function</p> <p>9:30 AM - 9:45 AM Julien Hurbain: Cellular prediction during variation in carbon availability</p> <p>9:45 AM - 10:15 AM Maria Makarova: Coevolution of diplopterol and asymmetric acyl tails enables eukaryotic survival in oxygen-deprived niches through metabolic adaptation</p> <p>10:15 AM - 10:30 AM Yoselin Benitez-Alfonso: Untangling plant cell walls biophysics and the regulation of intercellular communication</p> <p>10:30 AM - 11:00 AM Marco Cosentino-lagomarsino: Laws for cellular growth, and models to frame them</p>

Physics of Life 2025



	Queen B Queen's Suite	<p>Natural and Synthetic Molecular Machines</p> <p>9:00 AM - 9:30 AM Jonathan Heddle: Progress towards programmable biological matter</p> <p>9:30 AM - 9:45 AM Roger Rubio Sanchez: Lipid membrane biophysics and bioengineering with DNA nanostructures</p> <p>9:45 AM - 10:00 AM Harrison Laurent: Bionanomachine Networks - Development of functional all-enzyme hydrogels for responsive biomaterials in healthcare</p> <p>10:00 AM - 10:15 AM Francisca D'Rozario: Surface-immobilized, pH-responsive DNA Nanoswitches for electronic actuation</p> <p>10:15 AM - 10:30 AM Jocelyn Etienne: Mechanics of entropic biopolymer networks from the thermodynamics of molecular motors</p> <p>10:30 AM - 11:00 AM Atlanta Cook: Seeing double: using integrative structural methods to understand dsRNA recognition by nuclear factor proteins</p>
11:00 AM - 11:30 AM	Studio One	Morning Break
11:30 AM - 12:15 PM	Auditorium	Keynote Speaker Margaret Gardel: Mechanical Information Processing in Adherent Cells
12:15 PM - 12:30 PM	Auditorium	Conclusions and Close
12:30 PM - 1:30 PM	Studio One	Lunch and Depart