



# UNDERSTANDING THE Physics of Life

January 2018 Newsletter

Happy New Year!

**EPSRC**

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bioscience for the future

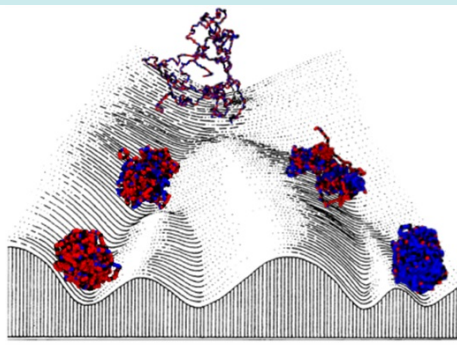
## Physics of Life Events

### Sandpit: How do ATPase proteins work?

23 January, Sheffield University

**Organisers: Martin Cann, Rhoda Hawkins, Sarah Harris, Jim Reid, Natalia Martinsovich.**

The aim of this sandpit is to develop a work plan towards computational tools suitable for answering questions about energy transfer and conformational change in ATPase proteins. This work plan will form the basis of a future grant application. Sandpits are small groups of academics interested in collaborating on focussed research questions. Academics interested in collaborating on this topic are invited to email [Martin Cann](mailto:Martin.Cann@durham.ac.uk) (Durham University) to find out more.



**16-17 April 2018, Higgs  
Centre for Theoretical  
Physics, Edinburgh**

### Biophysics of epigenetic and chromatin dynamics

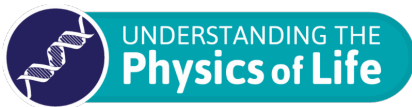
This workshop will gather biologists, physicists, experimentalists and modellers working on topics of epigenetics and chromatin organisation with a focus on dynamics and inheritance.

**Topics will include:**

- Computational models of epigenetic dynamics
- Cellular Senescence
- Epigenetic Memory
- Centromere Inheritance
- 3D Genome Dynamics

**Invited speakers:**

Martin Howard, Wendy Bickmore, Enzo Orlandini, Kim Sneppen, Akis Papantonis, Vladamir Teif, Karsten Rippe, Patrick Heun, Yuki Ogiyama, Cedric Vaillant.

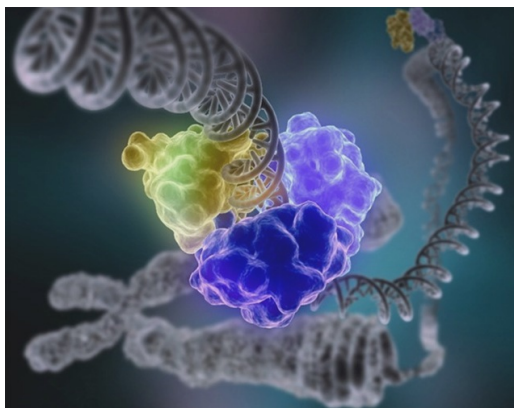
**Registration:**

Registration for this event is FREE with spaces allocated on a first come, first serve basis.

**Workshop organisers:**

Daive Michieletto, Chris Brackley, Davide Marenduzzo

[Register for Epigenetics here](#)



**16-20 July 2018**  
**Grey College, Durham University**

**Registration:**

**Fee:** £100 (includes accommodation and all meals 16-20 July).  
£135 (accommodation, including, additional night stay on 15 July and all meals)

**Deadline:** On or before 29 May 2018 (dependent on place availability; places allocated on a first come, first serve basis).

[Register now](#)

**Member of BBS?**

Two [BBS](#) bursaries have been made available to help with travel to this event. These are available to help with travel for young [BBS members](#) (postgraduate, or first three years postdoc) who are attending this summer school.

## Physics of Life Summer School: New Approaches to Biomolecular structure, dynamics and function

This summer school, aimed at UK-based early stage researchers, will present state-of-the-art computational, theoretical and experimental techniques used to explore how biomolecular dynamics depend on molecular structure and connects to and determines biological function. This is a rapidly expanding field which combines many different aspects of biology and physics. Aimed at early-career researchers from either life-science or physical-science background, it will assist in effective working in the interdisciplinary world that connects them.

The summer school will cover a broad range of topics within this theme, including:

- X-ray/synchrotron technologies ([Martin Walsh](#) and [Ehmke Pohl](#))
- High resolution microscopies ([Rob Pal](#))
- Multiscale modelling ([Gerhard Gompper](#))
- Protein Dynamics ([Sarah Harris](#))
- Dissecting the structural and mechanistic basis of epigenetic memory ([Martin Howard](#))
- NMR-based technologies ([Anastasia Zhuravleva](#))

- Protein Evolution ([Bhavin Khatri](#))
- Working across disciplines ([Tom McLeish](#), [Martin Cann](#), [John Girkin](#), [Olwyn Byron](#))

## Funding Opportunities

### Physics of Life Sandpit fund

Sandpit funding is available to gather groups of academics to discuss collaborative ideas that have potential to develop into grant applications.

Key details:

- £5k available for 2 day sandpits (funds can be spent on organisation of the event as well as funding the travel of key European or international collaborators).
- Successful collaborations seeded from sandpits can receive > a further £5-10k to pump prime any proof of concept research in support of grant applications.
- This is an OPEN, all year call.
- Funded physics of life events receive free administrative support to organise sandpits



[Click here for sandpit funding information](#)

## Other activities of interest

### EVENTS 2018

[Changing views of translation: from ribosome profiling to high resolution imaging of single molecules in vivo](#), 5-7 March, Kavli Centre Royal Society.

[The Astbury Conversation](#), 16-17 April 2018, University of Leeds.

The event will bring together some of the world's most prominent molecular/chemical/structural biologists for a two day symposium and public event, with our keynote speaker being Stanford University's Nobel Laureate Professor Brian Kobilka. **Registration fee** £49 (no accommodation) or £139 (including overnight accommodation).

[BBS Biennial Meeting](#), 11-13 July, Southampton University. Save the date!

[Physics of Cells: From Biochemical to Mechanical \(PhysCell 2018\)](#), 2-7 September 2018, The Majestic Hotel, Harrogate, HG1 2HU.

[EMBO Workshop: Physical Biology of Morphogenesis](#), 11-22 September 2018, Cargèse, France

[84th Harden Conference: Single-molecule bacteriology](#), 9-12 September 2018, Lady Margaret Hall, Oxford

**For a full list of events of interest to PoLNET2 members go here:**  
<http://www.physicsoflife.org.uk/other-events.html>

## OPPORTUNITIES

**[PhD Deep learning of fungal phenotypes from high-throughput imaging](#)**, Dr Robert Endres, Imperial College London, Department of Life Sciences & Centre for Integrative Systems Biology. 3 year BBSRC DTP-funded CASE PhD.

What if we could just look at cells and organisms to determine whether they are healthy or sick, or what their phenotypic states are? The overall aim of this project is to develop a deep-learning approach to predict the phenotypic states of fungi based on high-throughput imaging data (wild-type, mutants, drug-treated), and to link this back to known modes of action of fungicides. At a fundamental level, the study will have the potential to elucidate the fundamental link between cell morphology, phenotype, and behaviour.

**[PhD Nanomechanics of bacterial carbon-fixation organelles](#)**, Dr. Luning Liu, Institute of Integrative Biology, University of Liverpool.

If you would like to advertise an event of interest or opportunity of relevance to Physics of Life members, please email: [k.h.baker@dur.ac.uk](mailto:k.h.baker@dur.ac.uk).

[Visit Physics of Life Website](#)

