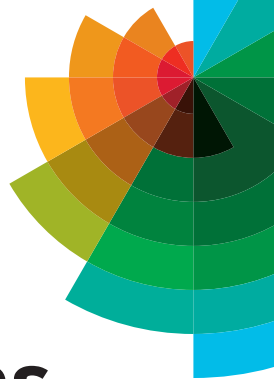
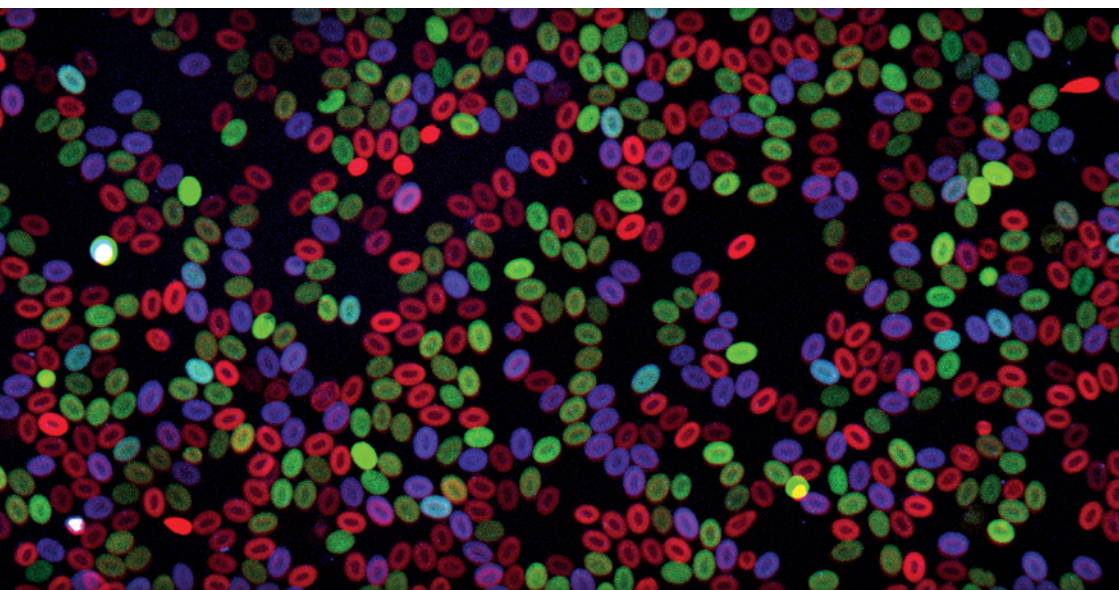


Programme



# **Blood Disorders: Models, Mechanisms and Therapies**



Joseph B. Martin Conference Center, Boston, USA  
29 September – 1 October 2019



## **Disease Models & Mechanisms**

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# Welcome

Welcome to the Blood Disorders: Models, Mechanisms and Therapies Meeting from Disease Models & Mechanisms (DMM) and its publisher, The Company of Biologists.

DMM was launched in 2008 to help connect and support members of the disease research community, bridging the gap between clinician scientists and basic researchers. Advancing basic research findings to the clinic remains a daunting task. Despite this, researchers working on blood disorders have made significant progress by translating discoveries from model systems to the clinic. To highlight these achievements, this meeting brings together diverse front-line researchers, stimulating discussions across basic research and clinical disciplines, and fostering collaborative links among researchers.

Talks will feature basic research advances acquired across multiple model systems, as they are applied to human blood disorders, to promote knowledge transfer of preclinically developed therapies to the clinical setting.

As a not-for-profit publisher and registered charity, The Company of Biologists is dedicated to supporting and inspiring the biological community through its journals and charitable activities. In addition to providing funds to support other conferences, we host a number of small workshops each year, as well as meetings such as this one. We see this meeting as a key forum to discuss recent and unpublished research, exchange ideas and forge new collaborations. We encourage all attendees to make the most of the many opportunities for interaction.

We hope that you enjoy the meeting.



Monica Justice



Nancy Speck



Paresh Vyas



Leonard Zon



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**Disease Models & Mechanisms** publishes original research, resources and invited reviews that focus on the use of model systems to better understand, diagnose and treat human disease. The primary aim of DMM is to promote human health by inspiring collaboration between basic and clinical researchers in translational science. The journal is committed to presenting highly significant research that meets this goal. The interdisciplinary nature of DMM means that a diverse range of diseases, approaches and models fall within its scope.

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**#DMMblood**

**Disease Models  
& Mechanisms**



# General information

## Meeting schedule

All times and locations are clearly listed in the programme; if there are any last-minute changes, these will be announced.

## Posters

All posters should be put up by the end of the coffee break on Sunday afternoon in the Second Floor Lounge. The posters are numbered and the odd number posters will be presented during the Sunday evening poster session with the even numbers on the Monday evening. Please ensure that you are at your poster for at least the first hour of your allocated session. Please can you remove your poster at the end of the poster session on the Monday evening.

## Internet access

There is Wi-Fi access throughout the conference center - "HMS Public" and there is no password.

## Social media policy

The official hashtag for the meeting is #DMMblood. You are welcome to use social media during this meeting. However, please note that presentations and posters must be considered as personal communications, so please do not mention unpublished data without having obtained permission from the relevant presenting author. Use of photographic or other recording devices is prohibited in talk and poster sessions.

## Group photo and filming

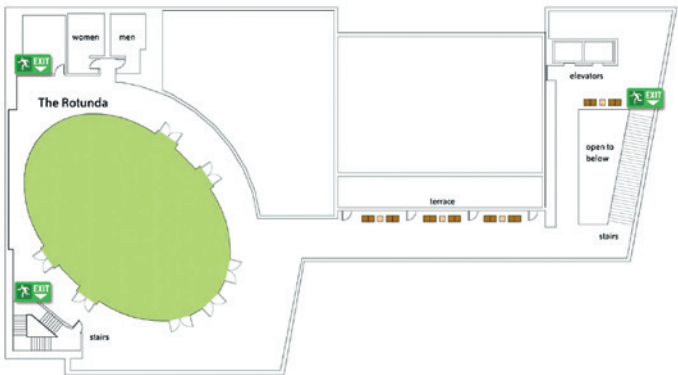
We will take an official group photo on Sunday afternoon. All delegates will receive an electronic copy of the photo after the meeting. We will also be taking photos and doing some filming between sessions. If you would prefer not to be filmed or photographed, please let us know.

## Catering

Please see the programme for the location of all refreshment breaks. Please do not bring any outside food or drink into the building.

## Fire

In the event of an alarm, please remain calm and seated. A conference center representative will come address the situation with the meeting planner and inform you if the entire group needs to evacuate. Some alarms do not require full evacuation. In the event of an evacuation, a conference center staff member will be wearing a neon green vest and holding a conference center sign. Please then follow this person outside the building, onto the sidewalk and turn left down Avenue Louis Pasteur. The conference center staff will lead the group to the Merck parking area to await further instruction or re-entry from the HMS Security Department.



# Meet the Disease Models & Mechanisms team



**Monica Justice**  
Editor-in-Chief



**Rachel Hackett**  
Managing Editor



**Julija Hmeljak**  
Reviews Editor



**Claire Moulton**  
Publisher



**Paresh Vyas**  
Director  
The Company of  
Biologists



**Peter Rigby**  
Director  
The Company of  
Biologists



**Jane Elsom**  
Meetings Organiser



**Nicky Le Blond**  
Meetings Organiser

## Why choose Disease Models & Mechanisms?

- Submissions handled by expert academic Editors
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- Preprint-friendly policies and format-free submission
- Strong commitment at first decision – over 95% of invited revisions accepted
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- Easy one-click transfer option to Biology Open
- Not-for-profit publisher

# Programme

**Sunday 29 September 2019**

**08:30 – 09:45 Registration & coffee outside the Rotunda**

**09:45 – 10:00 Welcome in the Rotunda**

**Monica Justice**, Editor-in-Chief, Disease Models & Mechanisms, UK,  
The Hospital for Sick Children, Canada

**Rachel Hackett**, Managing Editor, Disease Models & Mechanisms, UK

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## **Blood development: mechanisms and pathology**

**Chair: Benjamin Ebert, Dana-Farber Cancer Institute, USA**

**10:00 – 10:20 Nancy Speck, University of Pennsylvania, USA**

Single-cell transcriptome analyses reveal a developmental bottleneck and two waves of blood progenitor formation from arterial endothelium

**10:30 – 10:50 Fernando Camargo, Boston Children's Hospital, USA**

Lineage and function in native hematopoiesis

**11:00 – 11:10 Alexa Burger, University of Colorado Anschutz Medical Campus, USA**

RBM8A deficiency in TAR syndrome impairs blood lineage formation in the lateral plate mesoderm

**11:15 – 11:25 Momoko Yoshimoto, University of Texas Health Science Center at Houston, USA**

Pre-HSCs at E10.5 AGM region are B-1 lymphocyte-biased before maturing into HSCs

**11:30 – 11:50 Trista North, Boston Children's Hospital, Harvard Medical School, USA**

Extrinsic regulation of vertebrate hematopoietic stem cell formation

**12:00 – 13:00 Lunch outside the Rotunda**

**13:00 – 13:20 David Traver, University of California, San Diego, USA**

Wnt signaling in hematopoietic stem cell development

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## **Epigenetic regulation of blood development**

**Chair: Scott Armstrong, Dana-Farber Cancer Institute, USA**

**13:30 – 13:50 Maria Figueroa, University of Miami, USA**

Epigenetic deregulation in aging HSC: clues to the pathogenesis of AML and MDS

**14:00 – 14:20 Merav Socolovsky, University of Massachusetts Medical School, USA**

The early hematopoietic and erythroid hierarchies through the lens of single-cell RNA-seq

- 14:30 – 14:40** **Meaghan Boileau, McGill University, Canada**  
Histone H3 mutations induce pre-leukemic human hematopoietic stem cell expansion and contribute to aggressiveness in acute myeloid leukemia
- 14:45 – 15:30** **Coffee break outside the Rotunda and group photo**
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### **Erythropoiesis and red cell disorders**

**Chair: Fernando Camargo, Boston Children's Hospital, USA**

- 15:30 – 15:50** **Stuart H. Orkin, Harvard Medical School/HHMI, USA**  
Turning fetal hemoglobin on and off through BCL11A: mechanism and therapy
- 16:00 – 16:20** **Vijay Sankaran, Boston Children's Hospital, Harvard Medical School, USA**  
Genetic insights into human hematopoiesis in health and disease
- 16:30 – 16:50** **Giuliana Ferrari, San Raffaele Telethon Institute for Gene Therapy, Italy**  
Gene therapy for transfusion-dependent  $\beta$ -thalassemia: a lesson from patients
- 17:00 – 17:10** **Marlies Rossmann, Harvard University, USA**  
TIF1 $\gamma$  transcriptionally regulates mitochondrial metabolic pathways to drive erythropoiesis
- 17:15 – 17:30** **Poster flash talks**
- **Alexandra Bacquelaine Veloso, Massachusetts General Hospital, Harvard Medical School, USA (P 3)**
  - **Heather Duncan, McGill University, Canada (P 11)**
  - **Elliott Hagedorn, Boston Children's Hospital, Harvard Medical School, USA (P 19)**
  - **Elizabeth Howell, University of Pennsylvania, USA (P 21)**
  - **Alejandra Lagos Monzon, Harvard Medical School & Stem Cell Program, Boston Children's Hospital, USA (P 25)**
  - **Max Petersen, Brown University, USA (P 33)**
- 17:30 – 19:30** **Poster session with drinks and hors d'oeuvres in the Second Floor Lounge**
- 19:30** **Depart**

**Targeting blood cancers**

**Chair: Trista North, Boston Children's Hospital & Harvard Medical School, USA**

- 08:45 – 09:05** **Paresh Vyas, University of Oxford & The Company of Biologists, UK**  
Mechanisms of initiation and transformation in acute myeloid leukaemia
- 09:15 – 09:25** **Julia Skokowa, University Hospital Tuebingen, Germany**  
Modelling pre-leukemia bone marrow failure *in vitro*: CRISPR/Cas9 makes it possible
- 09:30 – 09:40** **Alan Cunningham, University of Groningen, The Netherlands**  
The methionine cycle as an AML-specific vulnerability
- 09:45 – 10:05** **Kimberly Stegmaier, Dana-Farber Cancer Institute, USA**  
Application of functional genomic screens to discover new therapeutic targets in AML
- 10:15 – 10:45** **Coffee break in the Second Floor Lounge**
- 10:45 – 11:05** **Scott Armstrong, Dana-Farber Cancer Institute, USA**  
Targeting epigenetic mechanisms in leukemia
- 11:15 – 11:35** **George Daley, Harvard Medical School, USA**  
Blood from a Petri dish
- 11:45 – 11:55** **Lauren Tracey, The Hospital for Sick Children, University of Toronto, Canada**  
The pluripotency regulator PRDM14 requires hematopoietic regulator CBFA2T3 to initiate leukemia in mice
- 12:00 – 12:10** **Alan Cantor, Harvard Medical School, USA**  
Modeling RUNX1 mutated therapy-related myelodysplastic syndrome in the mouse
- 12:15 – 13:15** **Lunch outside the Rotunda**

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**Clonal hematopoiesis**

**Chair: Merav Socolovsky, University of Massachusetts Medical School, USA**

- 13:15 – 13:35** **John Dick, Princess Margaret Cancer Centre, University Health Network, Canada**  
Fate regulation of human LT-HSC: insights from epigenetics
- 13:45 – 14:05** **Peter Campbell, Wellcome Sanger Institute, UK**  
Somatic mutations in normal blood cells
- 14:15 – 14:35** **Benjamin Ebert, Dana-Farber Cancer Institute, USA**  
Genetics and biology of clonal hematopoiesis

- 15:00 – 15:30** **Coffee break in the Second Floor Lounge**
- 15:30 – 15:50** **Neal Young**, National Institutes of Health, USA  
Animal models of human bone marrow failure
- 16:00 – 16:20** **Margaret Goodell**, Baylor College of Medicine, USA  
Mechanisms of HSC competition leading to clonal hematopoiesis
- 16:30 – 16:40** **Alejo Rodriguez-Fraticelli**, Harvard Medical School and Stem Cell Program, Boston Children's Hospital, USA  
Simultaneous profiling of state and fate in single HSPCs reveals mechanisms of functional heterogeneity
- 16:45 – 17:00** **Poster flash talks**
- **Ayşegül Erdem**, University of Groningen, The Netherlands (P 12)
  - **Eva Fast**, Harvard University, USA (P 14)
  - **Maneesha Inamdar**, Jawaharlal Nehru Centre for Advanced Scientific Research, India (P 22)
  - **Mohamad Najia**, Massachusetts Institute of Technology, USA (P 30)
  - **Shin-Young Park**, Boston Children's Hospital, Harvard University, USA (P 32)
  - **Ann Samarakkody**, Boston Children's Hospital, Harvard Medical School, USA (P 38)
  - **Audrey Sporrij**, Harvard University, USA (P 40)
- 17:00 – 19:00** **Posters and pre-dinner drinks in the Second Floor Lounge**
- 19:00** **Meeting dinner in Elements Café**

## Tuesday 1 October 2019

### Manipulating the stem cell niche

**Chair: Nancy Speck**, University of Pennsylvania, USA

- 09:00 – 09:20** **Emmanuelle Passegué**, Columbia University Medical Center, USA  
Hematopoietic stem cell in stress, disease and aging
- 09:30 – 09:40** **Konstantinos Kokkalis**, Massachusetts General Hospital, Harvard Medical School, USA  
Quantitative full-bone imaging reveals combinatorial niche signatures of hematopoietic stem cells
- 09:45 – 09:55** **Olin Liang**, Brown University, USA  
RUNX1-dependent hematopoietic transformation of endothelial progenitor cells contributes to the pathogenesis of pulmonary arterial hypertension

- 10:00 – 10:20** **Tannishtha Reya, University of California, San Diego, USA**  
Stem cell signals in cancer heterogeneity and therapy resistance
- 10:30 – 11:00** **Coffee outside the Rotunda**
- 11:00 – 11:10** **Thomas Look, Harvard Medical School, USA**  
Synthetic lethal targeting of clonal hematopoiesis with indeterminate potential (CHIP) using zebrafish models
- 11:15 – 11:25** **Melanie Mumau, University of Pennsylvania, USA**  
Using single-cell RNA seq to understand pre-hematopoietic stem cell maturation in the fetal liver
- 11:30 – 11:40** **Owen Tamplin, University of Illinois at Chicago, USA**  
The hematopoietic stem and progenitor pool is regulated by  $\gamma$ -aminobutyric acid signaling
- 11:45 – 12:05** **Leonard Zon, Boston Children's Hospital, USA**  
Pathways regulating hematopoietic stem cell self-renewal and migration
- 12:15 – 12:30** **Leonard Zon, Boston Children's Hospital, USA**  
Closing remarks
- 12:30 – 13:30** **Lunch outside the Rotunda**
- 13:30** **Depart**

# We are The Company of Biologists

The Company of Biologists is a not-for-profit publishing organisation dedicated to supporting and inspiring the biological community. We are run by distinguished practising scientists. We exist to profit science, not shareholders. We inspire new thinking and support the worldwide community of biologists.

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## Posters

Poster	Presenter	Title
1	Md Almamun	MDS/leukemia predisposition in ANKRD26-related thrombocytopenia associated with defective DNA damage response
2	Patricia Arreba Tutusaus	Inter cellular communication in myeloid malignancies - uncovering novel mechanisms to target leukemic stem cells
3	Alexandra Bacquellaine Veloso	Characterization of leukemia stem cells and underlying mechanisms responsible for progression and relapse in acute lymphoblastic leukemia
4	Chloé Baron	Cell type purification by single-cell transcriptome-trained sorting
5	Laura Bennett	TLR signalling contributes to hematopoietic cluster formation in the mouse embryo
6	Meaghan Boileau	Histone H3 mutations induce pre-leukemic human hematopoietic stem cell expansion and contribute to aggressiveness in acute myeloid leukemia
7	Alan Cantor	Modeling RUNX1 mutated therapy-related myelodysplastic syndrome in the mouse
8	Jane-Jane Chen	HRI coordinates translation necessary for protein homeostasis and mitochondrial function in erythropoiesis
9	Avik Choudhuri	Variants in signaling transcription factor binding sites drive majority of human genetic traits
10	Alan Cunningham	The methionine cycle as an AML-specific vulnerability
11	Heather Duncan	G protein-coupled receptor 56 (GPR56) as a potential functional regulator of normal and leukemic human stem cells
12	Ayşegül Erdem	Integrative metabolome and proteome screen identifies PDK1 as a vulnerability in AML
13	Michael Fairchild	Characterizing how stromal cells in the niche support the division of hematopoietic stem cells
14	Eva Fast	Identification of endogenously activated long-term hematopoietic stem cells
15	Pietro Genovese	Precise gene editing preserves hematopoietic stem cell function following transient p53-mediated DNA damage response
16	Laura Goldberg	The effects of aging on stem cell capacity within un-separated murine whole bone marrow
17	Helen Goodridge	Independent production of distinct monocyte subsets by granulocyte-monocyte progenitors (GMPs) and monocyte-dendritic cell progenitors (MDPs)
18	Rajesh Gunage	Red blood cell fate is governed by globin m-RNA transcriptional stability and translational regulation via N6-methyladenosine modification

19	<b>Elliott Hagedorn</b>	Transcription factor induction of ectopic vascular blood stem cell niches <i>in vivo</i>
20	<b>Shuning He</b>	Identification of drugs with specific activity <i>in vivo</i> against high-risk Early Thymocyte Progenitor (ETP) all using zebrafish embryos
21	<b>Elizabeth Howell</b>	Identifying necessary chromatin states and targets for hemogenic specification and reprogramming
22	<b>Maneesha Inamdar</b>	Organelle dysfunction in Asrij/OCIAD1 knockout mice leads to hematopoietic stem cell aging
23	<b>Olga Kashpur</b>	Evaluation of endothelial-trophoblast signaling pathways that regulate mouse and human placental vascular development
24	<b>Agnese Kocere</b>	Hematopoietic progenitor defects in a zebrafish model for TAR syndrome
25	<b>Alejandra Lagos Monzon</b>	Aberrant early hematopoietic progenitor formation during human embryonic development marks the onset of the hematopoietic defect in Shwachman-Diamond syndrome
26	<b>Divya Malik</b>	The retinal determination gene network in acute myeloid leukaemia
27	<b>Michael Milyavsky</b>	ERG enhancer-based reporter identifies leukemia cells with elevated leukemogenic potential driven by ERG-USP9X feed-forward regulation
28	<b>Ken Morita</b>	Drugging transcription in human leukemia cells with potent activators of the PP2A protein phosphatase tumor suppressor
29	<b>Melanie Mumau</b>	Using single-cell RNA seq to understand pre-hematopoietic stem cell maturation in the fetal liver
30	<b>Mohamad Najia</b>	Chromatin accessibility dynamics of human iPS cell-based endothelial-to-hematopoietic transition
31	<b>Trieu Hai Nguyen</b>	Frizzled-6 promotes hematopoietic stem/progenitor cell mobilization and survival during LPS-induced emergency myelopoiesis
32	<b>Shin-Young Park</b>	The vasculopathy in the bone marrow microenvironment of humanized sickle cell mice is reversible by blood transfusion
33	<b>Max Petersen</b>	Loss of Abelson interactor-1 is linked to inflammatory hematopoiesis and accelerated aging of hematopoietic system
34	<b>Anne Robertson</b>	A chemical genetic screen identifies a CBF $\beta$ inhibitor as an expander of hematopoietic stem cells during embryogenesis
35	<b>Justine Roderick</b>	RIPK1 maintains hematopoiesis by preventing ZBP1-mediated necroptosis
36	<b>Alejo Rodriguez-Fraticelli</b>	Simultaneous profiling of state and fate in single HSPCs reveals mechanisms of functional heterogeneity
37	<b>Marlies Rossmann</b>	TIF1 $\gamma$ transcriptionally regulates mitochondrial metabolic pathways to drive erythropoiesis

<b>38</b>	<b>Ann Samarakkody</b>	Pharmacological enhancement of wild-type RUNX1 protein activity in FPD/AML
<b>39</b>	<b>Julia Skokowa</b>	Different approaches of the CRISPR/Cas9-based gene therapy for congenital neutropenias
<b>40</b>	<b>Audrey Sporrij</b>	Prostaglandin E2 induces enhancer accessibility and activity through histone variant H2A.Z acetylation in human hematopoietic stem cells
<b>41</b>	<b>Owen Tamplin</b>	The hematopoietic stem and progenitor pool is regulated by gamma-aminobutyric acid signaling
<b>42</b>	<b>Mouna Tlili</b>	Role of Wnt4 in hematopoietic stem cell maintenance
<b>43</b>	<b>Joanna Tober</b>	Single cell RNA-sequencing analysis of pre-hematopoietic stem cell development
<b>44</b>	<b>Ozge Vargel Bolukbasi</b>	Dissecting the role of Fos early activation gene in hematopoietic stem cell migration, expansion and differentiation
<b>45</b>	<b>Samuel Wattrus</b>	Embryonic macrophage-hematopoietic stem cell interactions determine adult HSC clone number
<b>46</b>	<b>Douglas Widman</b>	Selective Inhibitors of Nuclear Export (SINE) compounds ameliorate multiple pathogenic immune responses in a murine model of systemic lupus erythematosus

## Delegates

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### Understanding Human Birth Defects in the Genomic Age

Mustafa Khokha, Karen Liu and John Wallingford  
10 – 13 November 2019

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### Data Science in Cell Imaging

Meghan Driscoll, Rick Horwitz and Assaf Zaritsky  
2 – 5 February 2020

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### The Cytoskeletal Road to Neuronal Function

Andrew Carter, Carsten Janke and Oren Schuldiner  
19 – 22 April 2020

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### 2020 Vision: Building Bridges in Visual Ecology

Eleanor Caves, Sönke Johnsen and Lorian Schweikert  
14 – 17 June 2020

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### Inflammaging and Regeneration: Pain or Partnership

Helen Blau and Nadia Rosenthal  
19 – 22 July 2020

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### Cell State Transitions: Approaches, Experimental Systems and Models

Kevin Chalut and Austin Smith  
18 – 21 October 2020

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### Toxic Metabolites in the Biology of Ageing and Cancer

KJ Patel and Liz Patton  
15 – 18 November 2020

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All of the above Workshops are held at Wiston House, Steyning, West Sussex, UK.

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