



# Precision Health: Molecular Basis, Technology and Digital Health

EMBO WORKSHOP



**We have moved our website to [embl.org/events](https://embl.org/events). The content below is no longer being updated.**

## **EMBL Courses and Conferences during the Coronavirus pandemic**

With the onsite programme paused, many of our events are now being offered in virtual formats.

Registration is open as usual for many events, with back-up plans in place to move further courses and conferences online as necessary. Registration fees for any events affected by the COVID-19 disruption are fully refundable.

More information for participants of events at EMBL Heidelberg can be found [here](#).

## Programme

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### Day 1 - Wednesday 13 November 2019

Time	Speaker
12:00 - 13:30	<b>Arrival and Registration</b> with light lunch
13:30 - 13:45	<b>Opening Remarks</b>

Time	Speaker
13:45 - 18:00	<p><b>Session 1</b> <b>Chair: Lars Steinmetz</b></p>
13:45 - 14:15	<p><b>Understand the similarities and differences between normal and malignant stem cells to develop more efficient therapies for AML patients</b> Caroline Pabst - University Hospital Heidelberg, Germany</p>
14:15 - 14:45	<p><b>Regulatory principles governing enhancer activity in development and disease</b> Emma Farley - University of California, San Diego, USA</p>
14:45 - 15:00	<p><b>Understanding genetic and epigenetic T cell regulatory mechanisms in autoimmune diseases</b> Neha Daga - EMBL Heidelberg, Germany</p>
15:00 - 15:30	<p><b>Translating immune disease GWAS variants to causal cell types and genes</b> Gosia Trynka - Wellcome Sanger Institute, UK</p>
15:30 - 16:00	<p><b>Coffee Break and Meet the Speakers in ATC Foyer with:</b> Caroline Pabst - University Hospital Heidelberg, Germany Emma Farley - University of California, San Diego, USA Gosia Trynka - Wellcome Sanger Institute, UK Emma Lundberg - Science for Life Laboratory, KTH Royal Institute of Technology, Sweden Christoph Bock - CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Austria Hiromitsu Nakauchi - Stanford University School of Medicine, USA</p>
16:00 - 16:30	<p><b>Dissecting spatiotemporal variations of the human proteome</b> Emma Lundberg - Science for Life Laboratory, KTH Royal Institute of Technology, Sweden</p>
16:30 - 16:45	<p><b>Whole genome sequencing insights into infertility: Preliminary results from WGS of couples with repeated IVF failure</b> Anna Mantzouratou - Bournemouth University, UK</p>
16:45 - 17:15	<p><b>Single cell sequencing of epigenetic disease landscapes and induced perturbations</b> Christoph Bock - CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Austria</p>
17:15 - 18:00	<p><b>Keynote Lecture: Growing organs in vivo: iPS cell derived, xeno created organs for transplantation</b> Hiromitsu Nakauchi - Stanford University School of Medicine, USA</p>

Time	Speaker
18:00 - 19:30	<b>Speed Networking Session in ATC Foyer</b>
19:30 - 21:00	<b>Dinner in EMBL Canteen</b>
21:00 - 23:00	<b>Welcome Reception in ATC Rooftop Lounge</b>

## Day 2 - Thursday 14 November 2019

Time	Speaker
09:00 - 12:30	<b>Session 2</b> <b>Chair: Julien Gagneur</b>
09:00 - 09:30	<b>Pinpointing disease causing regulatory genetic variants by multi omics and machine learning</b> Julien Gagneur - Technical University of Munich, Germany
09:30 - 09:45	<b>Characterizing the phenotypic effects of genetic variants associated with transcriptomic outliers in iPSC and differentiated cell types</b> Craig Smail - Stanford University, USA
09:45 - 10:00	<b>Data integration for prediction of time to insulin in type 2 diabetes patients</b> Rikke Linnemann Nielsen - Technical University of Denmark, Denmark
10:00 - 10:30	<b>The power of multi omics for finding novel disease stratifications</b> Wolfgang Huber - EMBL Heidelberg, Germany
10:30 - 11:00	<b>Coffee Break and Meet the Speakers in ATC Foyer with:</b> Julien Gagneur - Technical University of Munich, Germany Wolfgang Huber - EMBL Heidelberg, Germany Emmanouil Dermitzakis - University of Geneva Medical School, Switzerland Barbara Prainsack - University of Vienna, Austria
11:00 - 11:30	<b>Genetic variation in 3D cis and trans genome interactions in immune cells</b> Emmanouil Dermitzakis - University of Geneva Medical School, Switzerland
11:30 - 11:45	<b>A longitudinal big data approach for precision health</b> Sophia Miryam Schüssler-Fiorenza Rose - Stanford University, USA

- 11:45 - 12:00 **Multiplexed Cas12a Cpf1 based screening enables machine learning prediction of an optimal evolving barcoding strategy for lineage tracing**  
Nicholas Hughes - Stanford University, USA
- 12:00 - 12:30 **The value(s) of precision health: Patients and society**  
Barbara Prainsack - University of Vienna, Austria
- 12:30 - 14:00 **Lunch and Meet the Editors in ATC Foyer with:**  
Celine Carret - EMBO, Germany  
Joao Duarte - Springer Nature, Germany  
Maria Polychronidou - Molecular Systems Biology, Germany
- 14:00 - 18:00 **Session 3**  
*Chair: Ami Bhatt*
- 14:00 - 14:30 **Precision medicine from liquid biopsies**  
Stephen Quake - Stanford University, USA
- 14:30 - 14:45 **Microbiome in active and inactive older people**  
Nathan O'Callaghan - CSIRO, Australia
- 14:45 - 15:15 **Functional precision medicine for tailoring treatments to patients with acute myeloid leukemia**  
Olli Kallioniemi - Science for Life Laboratory, Karolinska Institutet, Sweden
- 15:15 - 15:45 **21st Century medicine: Big data, wellness and disease**  
Leroy Hood - Institute for Systems Biology, USA
- 15:45 - 16:15 **Coffee Break and Meet the Speakers in ATC Foyer with:**  
Stephen Quake - Stanford University, USA  
Olli Kallioniemi - Karolinska Institutet, Sweden  
Leroy Hood - Institute for Systems Biology, USA  
Ewan Birney - EMBL-EBI Hinxton, UK  
Edith Heard - EMBL Heidelberg, Germany
- 16:15 - 16:45 **Big data in health and biology**  
Ewan Birney - EMBL-EBI Hinxton, UK
- 16:45 - 17:30 **Keynote Lecture: Exploring the dynamic relationship between gene expression and chromosome organisation during X chromosome inactivation**  
Edith Heard - EMBL Heidelberg, Germany

**Flash Talks Session**

#47 Katharina Beuke - Sanofi, Germany

#48 Etienne Boileau - Klaus Tschira Institute for Integrative Computational Cardiology, Germany

#51 Giacomo Corleone - Istituti Fisioterapici Ospitalieri, Italy

#53 Annisa Fitriani - Ananda Purworejo Hospital, Indonesia

#60 Bence Keömley-Horváth - Pázmány Péter Catholic University, Hungary

17:30 - 18:00 #64 Roman Kurilov - German Cancer Research Center, Germany

#68 Chen Li - ETH Zürich, Switzerland

#70 Vladislav Lysenkov - Turku Bioscience, Finland

#72 Enrico Mossotto - University of Southampton, United Kingdom

#76 Wendelin Schramm - GECKO Institute, Heilbronn University, Germany

#81 George Spyrou - The Cyprus Institute of Neurology and Genetics, Cyprus

#82 Ben Story - EMBL Heidelberg, Germany

18:00 - 19:30 **Poster Session 1 (odd numbers)**  
with beer, wine and snacks19:30 - 21:00 **Dinner in EMBL Canteen****Day 3 - Friday 15 November 2019****Time      Speaker**09:00 - 12:30 **Session 4**  
**Chair: Emma Lundberg**09:00 - 09:30 **Microfluidic approaches in personalized cancer therapy**  
Christoph Merten - EMBL Heidelberg, Germany09:30 - 09:45 **Identification of a reproducible epigenetic risk profile for schizophrenia linked to post mortem brain methylation and prefrontal hippocampal connectivity**  
Emanuel Schwarz - Central Institute of Mental Health, Germany09:45 - 10:00 **The use of iPSCs for in vivo personalized organ generation using cross species chimeras: A primate model**  
Morteza Roodgar - Stanford University, USA10:00 - 10:30 **Harnessing big data for personalized medicine**  
Eran Segal - Weizmann Institute of Science, Israel

- Coffee Break and Meet the Speakers in ATC Foyer with:**  
 Christoph Merten - EMBL Heidelberg, Germany  
 Eran Segal - Weizmann Institute of Science, Israel  
 Angela Rogers - Stanford University, USA  
 Oliver Stegle - EMBL Heidelberg and German Cancer Research Center, Germany
- 10:30 - 11:00
- Personalizing ICU medicine: How 'omics is advancing our understanding of ARDS**  
 Angela Rogers - Stanford University, USA
- 11:00 - 11:30
- Integrated personalized diabetes management goes Europe: Adding value to diabetes care through digital innovation and integrated care**  
 Allan Jones - Roche Diabetes Care Deutschland, Germany
- 11:30 - 11:45
- Navigating causal reasoning pathways to identify personalize drug treatments through multi omics using multi task learning**  
 Rosa Hernansaiz Ballesteros - Heidelberg University, Germany
- 11:45 - 12:00
- Unravelling the genotype-to-phenotype map in human pluripotent cells**  
 Oliver Stegle - EMBL Heidelberg and German Cancer Research Center, Germany
- 12:00 - 12:30
- 12:30 - 14:00 **Lunch in ATC Foyer**
- 14:00 - 18:00 **Session 5**  
**Chair: Angela Rogers**
- 14:00 - 14:30 **Unlocking the secret genes and genomes from the human microbiome**  
 Ami Bhatt - Stanford University, USA
- 14:30 - 14:45 **DNA methylation relates to cardiac alternative splicing in dilated cardiomyopathy**  
 Weng-Tein Gi - Heidelberg University, Germany
- 14:45 - 15:00 **Single molecule, full length transcript sequencing reveals disease associated isoforms in human cells**  
 Chenchen Zhu - Stanford University, USA
- 15:00 - 15:15 **Pathological mutations in LSD1 interfere with ZEB1/2 transcription factor and alter developmental gene expression**  
 Daria Bunina - EMBL Heidelberg, Germany
- 15:15 - 15:45 **Patient centered data in real world medicine**  
 Christof von Kalle - Berlin Institute of Health - Charité Clinical Study Center, Germany

	<b>Coffee Break and Meet the Speakers in ATC Foyer with:</b>
	Ami Bhatt - Stanford University, USA
15:45 - 16:15	Christof von Kalle - Berlin Institute of Health - Charité Clinical Study Center, Germany
	Ruedi Aebersold - ETH Zürich, Switzerland
	Christina Curtis - Stanford University, USA
16:15 - 16:45	<b>The modular proteome and its clinical significance</b> Ruedi Aebersold - ETH Zürich, Switzerland
16:45 - 17:15	<b>From bench to bedside: Identifying and targeting the genomic drivers of breast cancer progression and therapeutic resistance</b> Christina Curtis - Stanford University, USA
17:15 - 18:00	<b>Industry Panel Discussion: Commercialising Precision Health</b> Moderator: Michael Snyder Panel members: Gitte Neubauer - Cellzome, Germany Eran Segal - Weizmann Institute of Science, Israel Christian Fegeler - MOLIT Institute, Germany
18:00 - 19:30	<b>Poster Session 2 (even numbers)</b> with beer, wine and snacks
19:30 - 21:00	<b>Conference Dinner in EMBL Canteen</b>
21:00 - 00:00	<b>Conference Party with Live Band "The Taylor Brothers" in ATC Foyer</b>

## Day 4 - Saturday 16 November 2019

Time	Speaker
09:00 - 12:15	<b>Session 6</b> <b>Chair: Judith Zaugg</b>
09:00 - 09:30	<b>Making meaningful biomarker measurements with digital ELISA technology</b> David Walt - Wyss Institute at Harvard University, Harvard Medical School, Brigham and Women's Hospital, USA
09:30 - 09:45	<b>The NASA Twins Study: A multidimensional analysis of a year-long human spaceflight</b> Tejaswini Mishra - Stanford University, USA
09:45 - 10:15	<b>Designing cell-based treatment strategies of the future</b> Martin Fussenegger - ETH Zurich, Switzerland

- Extracellular electrophysiological characterization of neurons and networks at subcellular resolution**  
10:15 - 10:45  
Andreas Hierlemann - ETH Zürich, Switzerland
- Coffee Break and Meet the Speakers in ATC Foyer with:**  
David Walt - Wyss Institute at Harvard University, Harvard Medical School, Brigham and Women's Hospital, USA
- 10:45 - 11:15  
Martin Fussenegger - ETH Zurich, Switzerland  
Andreas Hierlemann - ETH Zürich, Switzerland  
Patrick Aloy - Institute for Research in Biomedicine, Spain  
Benjamin Meder - University Hospital Heidelberg, Germany
- Extending the small molecule similarity principle to all levels of biology**  
11:15 - 11:45  
Patrick Aloy - Institute for Research in Biomedicine, Spain
- The failure uncovers heart's wonderful principles**  
11:45 - 12:15  
Benjamin Meder - University Hospital Heidelberg, Germany
- 12:15 - 12:30  
**Closing Remarks and Poster Prizes**
- 12:30  
**Packed Lunch and Departure**