



Synthetic Morphogenesis: From Gene Circuits to Tissue Architecture

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2019 Symposia

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Location & dates

EMBL Heidelberg, Germany 17 - 20 Mar 2019

Deadlines

Registration closed Abstract submission closed



Programme

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Day 1 - Sunday 17 March 2019

Time	Speaker
12:00 - 13:30	Arrival and Registration with light refreshments
13:30 - 13:45	Opening Remarks
13:45 - 18:40	Session 1 - Artificial cell/Tissue Chair: Stefano De Renzis

Time	Speaker
13:45 - 14:20	Programming the formation of synthetic tissues Wendell Lim - University of California, San Francisco and Howard Hughes Medical Institute, United States of America
14:20 - 14:55	Engineering tissue architecture through microfabrication and polymer engineering Milica Radisic - University of Toronto, Canada
14:55 - 15:10	Building the human embryo in vitro: one step at a time Marta Shahbazi - University of Cambridge, United Kingdom
15:10 - 15:40	Coffee Break and Meet the Speakers in ATC Foyer with: Wendell Lim - University of California, San Francisco and Howard Hughes Medical Institute, United States of America Milica Radisic - University of Toronto, Canada Dora Tang - Max Planck Institute of Molecular Cell Biology and Genetics, Germany Christopher Chen - Boston University and Harvard Wyss Institute for Biologically Inspired Engineering, United States of America Buzz Baum - University College London, United Kingdom
15:40 - 16:15	Synthetic cellularity Dora Tang - Max Planck Institute of Molecular Cell Biology and Genetics, Germany
16:15 - 16:30	Blue light switchable cell-cell interactions provide reversible and spatiotemporal control towards bottom-up tissue engineering Seraphine Wegner - Max Planck Institute for Polymer Research, Germany

Time	Speaker
16:30 - 17:05	Making. Tissues. Function. How simple is complex enough? Christopher Chen - Boston University and Harvard Wyss Institute for Biologically Inspired Engineering, United States of America
17:05 - 17:35	Coffee Break
17:35 - 17:50	Theoretical tool bridging cell polarities with development of robust morphologies Silas Boye Nissen - University of Copenhagen, Denmark
17:50 - 18:05	Changes in gene expression shift and switch genetic interactions Xianghua Li - Centre for Genomic Regulation, Spain
18:05 - 18:40	Morphogenesis in evolved systems Buzz Baum - University College London, United Kingdom
18:40 - 20:10	Dinner in EMBL Canteen
20:10 - 21:30	Welcome Reception with Live Music by Blue Note Jazz Duo in ATC Rooftop Lounge with beer and wine

Day 2 - Monday 18 March 2019

Time	Speaker
09:35 - 12:05	Session 2 - Patterning and self-organisation <i>Chair: Wendell Lim</i>

Time	Speaker
09:35 - 10:10	Coordination of progenitor specification and growth in the developing spinal cord Anna Kicheva - Institute of Science and Technology Austria, Austria
10:10 - 10:25	Pattern formation by multi-species bacterial colonies with programmed population-to-population interactions Jiandong Huang - The University of Hong Kong, Hong Kong
10:25 - 10:55	Coffee Break
10:55 - 11:30	From circuits to organs: towards a dynamic computer simulation of limb development James Sharpe - EMBL Barcelona, Spain
11:30 - 12:05	Mechanisms underlying robust tissue behavior in changing environments Darren Gilmour - University of Zurich, Switzerland
12:05 - 14:10	Lunch and Meet the Speakers in ATC Foyer with: Anna Kicheva - Institute of Science and Technology Austria, Austria James Sharpe - EMBL Barcelona, Spain Darren Gilmour - University of Zurich, Switzerland Naama Barkai - Weizmann Institute of Science, Israel Justin Crocker - EMBL Heidelberg, Germany Veronica Grieneisen - Cardiff University, United Kingdom
14:10 - 17:05	Session 3 - Gene expression dynamics/Gene circuits <i>Chair: Miki Ebisuya</i>
14:10 - 14:45	Visualizing morphogen shuttling in the early Drosophila embryo Naama Barkai - Weizmann Institute of Science, Israel

Time	Speaker
14:45 - 15:00	An ab-initio derivation of the Drosophila gap gene system from an optimization principle Thomas Sokolowski - Institute of Science and Technology Austria, Austria
15:00 - 15:30	Coffee Break and Meet the Editors in ATC Foyer with: Kerstin Brachhold - Wiley, Germany Gonzalo Cordova - Springer Nature, The Netherlands Ieva Gailite - The EMBO Journal, Germany Stefan Galander - The Company of Biologists, United Kingdom Thomas Lemberger - EMBO, Germany Amos Matsiko - Nature Publishing Group, United Kingdom Martina Rembold - EMBO, Germany
15:30 - 16:05	Decoding development: from gene regulatory structure to function Justin Crocker - EMBL Heidelberg, Germany
16:05 - 16:40	Coupling gene circuits through tissue polarity to achieve adaptive tissue responses Veronica Grieneisen - Cardiff University, United Kingdom

Time	Speaker
16:40 - 17:05	<p>Flash Talks Session I</p> <p>Sangram Bagh (abstract no. 39) - Saha Institute of Nuclear Physics, India</p> <p>Cristina C. Barrias (abstract no. 41) - i3S-Instituto de Investigação e Inovação em Saúde; INEB-Instituto de Engenharia Biomédica, Portugal</p> <p>Alazne Dominguez (abstract no. 53) - University of Edinburgh, United Kingdom</p> <p>Luciano Marcon (abstract no. 65) - Andalusian Center for Developmental Biology, Spain</p> <p>Jose Muñoz (abstract no. 71) - Polytechnic University of Catalonia, Spain</p> <p>Jose Negrete Jr (abstract no. 75) - École Polytechnique Fédéral de Lausanne, Switzerland</p> <p>Melinda Perkins (abstract no. 79) - University of California, Berkeley, United States of America</p>
17:05 - 19:05	<p>Poster Session I (odd numbers)</p> <p>with beer and snacks</p>
19:05 - 20:35	<p>Dinner in the EMBL Canteen</p>
20:35 - 22:00	<p>After Dinner Drinks in ATC Rooftop Lounge</p>

Day 3 - Tuesday 19 March 2019

Time	Speaker
09:00 - 12:00	<p>Session 4 - Organoids</p> <p>Chair: Anna Kicheva</p>
09:00 - 09:35	<p>Hepatic organoids for the understanding of liver regeneration and disease</p> <p>Meritxell Huch - University of Cambridge, United Kingdom</p>

Time	Speaker
09:35 - 10:10	The genetic blueprint of the mammalian embryo: a synthetic approach Alfonso Martinez Arias - University of Cambridge, United Kingdom
10:10 - 10:25	Blastoids: blastocyst-like structures generated solely from stem cells Nicolas Rivron - Hubrecht Institute and MERLN, The Netherlands
10:25 - 10:55	Coffee Break and Meet the Editors in ATC Foyer with: Kerstin Brachhold - Wiley, Germany Gonzalo Cordova - Springer Nature, The Netherlands Ieva Gailite - The EMBO Journal, Germany Stefan Galander - The Company of Biologists, United Kingdom Thomas Lemberger - EMBO, Germany Amos Matsiko - Nature Publishing Group, United Kingdom Martina Rembold - EMBO, Germany
10:55 - 11:10	Dissecting human-specific brain development by studying single cell expression dynamics of great ape cerebral organoids Sabina Kanton - Max Planck Institute for Evolutionary Anthropology, Germany
11:10 - 11:25	Human time vs. mouse time with in vitro segmentation clock Miki Ebisuya - EMBL Barcelona, Spain and RIKEN BDR, Japan
11:25 - 12:00	Scrutinizing organoid formation to understand the principles of organogenesis: the pancreas example Anne Grapin-Botton - DanStem, University of Copenhagen, Denmark

Time	Speaker
12:00 - 13:30	Lunch and Meet the Speakers in ATC Foyer with: Merixell Huch - University of Cambridge, United Kingdom Alfonso Martinez Arias - University of Cambridge, United Kingdom Miki Ebisuya - EMBL Barcelona, Spain and RIKEN BDR, Japan Anne Grapin-Botton - DanStem, University of Copenhagen, Denmark Manuel Théry - Hôpital Saint-Louis, France Michael Levin - Tufts University, United States of America
13:30 - 16:40	Session 5 - Mechanics <i>Chair: Veronica Grieneisen</i>
13:30 - 14:05	Energy dissipation by molecular motors Manuel Théry - Hôpital Saint-Louis, France
14:05 - 14:20	Topological transitions of epithelial surfaces Keisuke Ishihara - Max Planck Institute for Molecular Cell Biology and Genetics, Germany
14:20 - 14:55	Sequential bottom-up assembly of synthetic cells Joachim Spatz - Max Planck Institute for Medical Research, Germany
14:55 - 15:25	Coffee Break
15:25 - 15:40	Assembly of lung progenitors into developmentally-relevant tube structures drives differentiation patterning via cellular tension Alison McGuigan - University of Toronto, Canada

Time	Speaker
15:40 - 16:15	Endogenous bioelectric circuits: morphological computation in real and synthetic organisms Michael Levin - Tufts University, United States of America
16:15 - 16:40	Flash Talks Session II Chaitanya Athale (abstract no. 38) - Indian Institute of Science Education and Research, Pune, India Margaux Dastor (abstract no. 52) - ETH Zurich, Switzerland Ziyin Han (abstract no. 58) - Temasek Life Sciences Laboratory; National University of Singapore, Singapore Alphy John (abstract no. 60) - University of Côte d'Azur, France Iftach Nachman (abstract no. 72) - Tel Aviv University, Israel Kristina Stapornwongkul (abstract no. 85) - Francis Crick Institute, United Kingdom Satoshi Toda (abstract no. 86) - University of California, San Francisco, United States of America Melda Tozluoglu (abstract no. 87) - University College London, United Kingdom
16:40 - 18:40	Poster Session II (even numbers) with beer and snacks
18:40 - 20:40	Conference Dinner in EMBL Canteen
20:40 - 00:00	Conference Party with Live Music by DJ Jenz in ATC Rooftop Lounge

Day 4 - Wednesday 20 March 2019

Time	Speaker
09:00 - 12:20	Session 6 - Controlling tissues Chair: James Sharpe

Time	Speaker
09:00 - 09:35	Optogenetic-guided tissue morphogenesis Stefano De Renzis - EMBL Heidelberg, Germany
09:35 - 10:10	Circuits and devices for real-time control of cellular systems Mustafa Khammash - ETH Zurich, Switzerland
10:10 - 10:25	Thermal activation of gene expression in 3D printed tissues Daniel Corbett - University of Washington, United States of America
10:25 - 10:55	Coffee Break and Meet the Speakers in ATC Foyer with: Stefano De Renzis - EMBL Heidelberg, Germany Mustafa Khammash - ETH Zurich, Switzerland Zev Gartner - University of California San Francisco, United States of America Ron Weiss - Massachusetts Institute of Technology, United States of America
10:55 - 11:10	ESC differentiation on micro-patterned substrate to study Antero-Posterior axis formation in mouse and human Benoit Sorre - Paris Diderot University, France
11:10 - 11:45	Building tissues to understand how tissues build themselves Zev Gartner - University of California San Francisco, United States of America
11:45 - 12:20	Mammalian synthetic biology: foundations and applications to programmable organoids Ron Weiss - Massachusetts Institute of Technology, United States of America

Time

Speaker

12:20 -

Closing Remarks and Poster Prize

12:35

12:35

Packed Lunch and Departure