The Identity and Evolution of Cell Types

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2019 Symposia
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- Human Past
- Probing Neural Dynamics

- Cell Types
  - Speakers and Organisers

- Programme
  - Registration and Abstract Submission
  - Childcare
  - Accommodation and Shuttles
  - Sponsors
  - Lunchtime Workshop
  - Financial Assistance
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Programme - The Identity and Evolution of Cell Types - 15 - 18 May 2019

- Mechanical Forces in Development
- Microbiology
- Multiomics
- Systems Genetics
- Seeing is Believing
- Non-Coding Genome
- Metabolism Meets Epigenetics

Location & dates
EMBL Heidelberg, Germany 15 - 18 May 2019

Deadlines
Registration closed Abstract submission closed

Programme

Got something to say? Tweet it! #EESCellTypes

Day 1 - Wednesday 15 May 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
</tr>
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<tbody>
<tr>
<td>11:30-13:15</td>
<td>Arrival and Registration with light refreshments</td>
</tr>
<tr>
<td>13:15-13:30</td>
<td>Opening Remarks</td>
</tr>
<tr>
<td>13:30-17:30</td>
<td>Session 1 - From cell types to tissue types</td>
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<td></td>
<td>Chair: Gunter Wagner</td>
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<tr>
<td>Time</td>
<td>Speaker</td>
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</tbody>
</table>
| 13:30-14:00 | **Gene regulatory network recruitment and the evolutionary origin of cell type identity**  
Gunter Wagner - Yale University, USA |
| 14:00-14:30 | **The role of cell interactions in the evolution of cell types**  
Mihaela Pavlicev - Cincinnati Children's Hospital Medical Center, USA |
| 14:30-14:45 | **Building the mammalian airway: from form to function**  
Mu He - University of California, San Francisco, USA |
| 14:45-15:00 | **Spatio-temporal dynamics of mesothelial lineage formation**  
Karin Prummel - University of Zurich, Switzerland |
| 15:00-15:30 | **Evolutionary origin of cartilage**  
Martin Cohn - University of Florida, USA |
| 15:30-16:00 | **Coffee Break**                                                                                                                      |
| 16:00-16:30 | **How old cells make new senses - The evolution of cranial placodes in vertebrates**  
Gerhard Schlosser - National University of Ireland Galway, Ireland |
| 16:30-16:45 | **Discrete and Continuous Cell Identities of the Adult Murine Striatum**  
Geoffrey Stanley - Stanford, USA |
| 16:45-17:15 | **Evolution of the vertebrate New Head by progressive acquisition of neural crest regulatory subcircuits**  
Marianne Bronner - California Institute of Technology, USA |
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:15-19:00</td>
<td>Speed Networking</td>
</tr>
<tr>
<td>19:00</td>
<td>Dinner in the EMBL Canteen</td>
</tr>
<tr>
<td>21:00-23:00</td>
<td>Welcome Drinks in the ATC Rooftop Lounge</td>
</tr>
</tbody>
</table>

Day 2 - Thursday 16 May 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-12:00</td>
<td>Session 2 - Vertebrate multi-omics</td>
</tr>
<tr>
<td>09:00-09:30</td>
<td>Henrik Kaessmann - Center for Molecular Biology of Heidelberg University, Germany</td>
</tr>
<tr>
<td>09:30-10:00</td>
<td>A comparison of developmental dynamics between vertebrate species</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td>Aparna Bhaduri - University of California, San Francisco, USA</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>The gene regulatory logic of convergent cell fate specification in the developing vertebrate skeleton</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
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<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11:00-</td>
<td><strong>How can hundreds of cell types be built from a single genome?</strong></td>
</tr>
<tr>
<td>11:30</td>
<td><strong>Evolutionary mechanisms for proteome specialization</strong></td>
</tr>
<tr>
<td></td>
<td>Manuel Irimia - Centre for Genomic Regulation, Spain</td>
</tr>
<tr>
<td>11:30-</td>
<td><strong>Brain-seq or sequencing of entire brains at the single-cell resolution:</strong></td>
</tr>
<tr>
<td>12:00</td>
<td><strong>principles of molecular classification and periodic system of neurons</strong></td>
</tr>
<tr>
<td></td>
<td>Leonid L. Moroz - University of Florida, USA</td>
</tr>
<tr>
<td>12:00-</td>
<td>Meet the Speakers and Lunch</td>
</tr>
<tr>
<td>13:30-</td>
<td><strong>Session 3 - Regulatory mechanisms of neuron type identity</strong></td>
</tr>
<tr>
<td>16:45</td>
<td>Chair: Oliver Hobert</td>
</tr>
<tr>
<td>13:30-</td>
<td><strong>Homeoboxes build the C. elegans nervous system</strong></td>
</tr>
<tr>
<td>14:00</td>
<td>Oliver Hobert - Columbia University, USA</td>
</tr>
<tr>
<td>14:00-</td>
<td><strong>Uncovering Eminens neurons ontogeny and function using single cell transcriptomics</strong></td>
</tr>
<tr>
<td>14:15</td>
<td>Laurence Lemaire - Princeton University, USA</td>
</tr>
<tr>
<td>14:15-</td>
<td><strong>Pioneer factor promiscuity requires co-factors to ensure faithful cell fate specification</strong></td>
</tr>
<tr>
<td>14:30</td>
<td>Moritz Mall - German Cancer Research Center, Germany</td>
</tr>
<tr>
<td>14:30-</td>
<td><strong>Mosaic evolution of cell types in the vertebrate brain</strong></td>
</tr>
<tr>
<td>15:00</td>
<td>Maria Antonietta Tosches - Max Planck Institute for Brain Research, Germany</td>
</tr>
<tr>
<td>15:00-</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:30</td>
<td></td>
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<tr>
<td>Time</td>
<td>Speaker</td>
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</tr>
<tr>
<td>15:30-16:00</td>
<td>Diploblastic sea anemones have distinct cell types with signatures reminiscent of bilaterian muscle Ulrich Technau - University of Vienna, Austria</td>
</tr>
<tr>
<td>16:00-16:15</td>
<td>Neuronal Diversity in the Sea Urchin Larva at a Single Cell Resolution Periklis Paganos - Stazione Zoologica Anton Dohrn, Italy</td>
</tr>
<tr>
<td>16:15-16:30</td>
<td>Hypothalamic cell type diversity in surface and cave morphs of Astyanax mexicanus using single-cell RNA-seq Maxwell Shafer - University of Basel, Switzerland</td>
</tr>
<tr>
<td>16:30-16:45</td>
<td>Developmental diversification of inhibitory forebrain neurons Christian Mayer - Max Planck Institute of Neurobiology, Germany</td>
</tr>
<tr>
<td>16:45-17:15</td>
<td>Flash Talk Session I: #55, 63, 65, 67, 71, 79, 91, 93, 99</td>
</tr>
<tr>
<td>17:15-19:15</td>
<td>Poster Session I (odd numbers) with beer and snacks</td>
</tr>
<tr>
<td>19:15-20:00</td>
<td>Meet the Journal Editors Session in ATC Helix Seminar Room A01</td>
</tr>
<tr>
<td>19:15-21:00</td>
<td>Dinner in the EMBL Canteen</td>
</tr>
<tr>
<td>21:00-23:00</td>
<td>After Dinner Drinks in the ATC Rooftop Lounge</td>
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Day 3 - Friday 17 May 2019
<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>09:00-12:00</td>
<td>Session 4 - The origins of cell types - evolution of multicellularity</td>
</tr>
<tr>
<td></td>
<td>Chair: Nicole King</td>
</tr>
<tr>
<td>09:00-09:30</td>
<td>Light-regulated morphogenesis in a shape-shifting choanoflagellate</td>
</tr>
<tr>
<td>09:30-10:00</td>
<td>The evolutionary origin of synaptic signalling machinery and animal cell differentiation</td>
</tr>
<tr>
<td>10:00-10:15</td>
<td>Evolutionarily conserved mechanisms governing branched cytoskeletal network growth in the aggregatively multicellular Rhizarian amoeba, Filoreta ramosa</td>
</tr>
<tr>
<td>10:15-10:30</td>
<td>Choanoflagellates and the origin of animal contractile cells</td>
</tr>
<tr>
<td>11:00-11:30</td>
<td>Cell types in unicellular relatives of animals</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>A parallel world of complex multicellularity: elucidating cell type evolution in social amoeba</td>
</tr>
<tr>
<td>11:45-12:00</td>
<td>Sponges as a window into the evolutionary origin of stem cells</td>
</tr>
<tr>
<td>Time</td>
<td>Speaker</td>
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<td>------------</td>
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<tr>
<td>12:00-13:30</td>
<td>Meet the speakers and Lunch</td>
</tr>
<tr>
<td><strong>13:30</strong></td>
<td><strong>Session 5 - Cell type diversification in animal evolution</strong></td>
</tr>
<tr>
<td><strong>17:00</strong></td>
<td><strong>Chair: Detlev Arendt</strong></td>
</tr>
<tr>
<td>13:30-14:00</td>
<td><strong>The cell tree of life</strong></td>
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<tr>
<td></td>
<td>Detlev Arendt - EMBL Heidelberg, Germany</td>
</tr>
<tr>
<td>14:00-14:30</td>
<td><strong>Vertebrate electoreceptors: developmental and evolutionary relationships with mechanosensory hair cells</strong></td>
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<td></td>
<td>Clare Baker - University of Cambridge, UK</td>
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<tr>
<td>14:30-14:45</td>
<td><strong>Molecular and functional characterisation of blood cells in the priapulid Priapulus caudatus (ecdysozoa)</strong></td>
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<td></td>
<td>Carmen Andrikou - Univesity of Bergen, Norway</td>
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<td>14:45-15:00</td>
<td><strong>Great ape cerebral organoids reveal human-specific features of brain development</strong></td>
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<td></td>
<td>Gray Camp - Institute of Molecular and Clinical Ophthalmology Basel, Switzerland</td>
</tr>
<tr>
<td>15:00-15:30</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>15:30-16:00</td>
<td><strong>Evolution of cell-type specific networks and their associated regulatory inputs</strong></td>
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<td>Heather Marlow - Institute Pasteur, France</td>
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<tr>
<td>16:00-16:30</td>
<td><strong>Tracking cell identity during development, regeneration and reprogramming</strong></td>
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<td>Barbara Treutlein - ETH Zürich, Switzerland</td>
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<tr>
<td>Time</td>
<td>Speaker</td>
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<tr>
<td>16:30-</td>
<td>Bilateral ciliary photoreceptors in sea urchin larvae</td>
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<td>16:45</td>
<td>express a partially conserved regulatory state</td>
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<td></td>
<td>Roberto Feuda - University of Bristol, UK</td>
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<tr>
<td>16:45-</td>
<td>Single-cell RNAseq identifies neural elements in a sponge</td>
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<tr>
<td>17:00</td>
<td>Jakob Musser - EMBL Heidelberg, Germany</td>
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<tr>
<td>17:00-</td>
<td>Flash Talk Session II: # 46, 52, 58, 60, 62, 70, 80, 86, 88, 92</td>
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<tr>
<td>17:30-</td>
<td>Poster Session II (even numbers)</td>
</tr>
<tr>
<td>17:30-</td>
<td>with beer and snacks</td>
</tr>
<tr>
<td>19:30-</td>
<td>Conference Dinner in EMBL Canteen</td>
</tr>
<tr>
<td>21:00-</td>
<td>Party in the ATC Foyer with &quot;The Wright Thing&quot;</td>
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<tr>
<td>09:00-</td>
<td>Session 6 - Computational approaches to unravel single-cell gene regulatory networks</td>
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<tr>
<td>11:45</td>
<td>Chair: Stein Aerts</td>
</tr>
<tr>
<td>09:00-</td>
<td>Deciphering gene expression programs from scATAC-seq and scRNA-seq data</td>
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<tr>
<td>09:30</td>
<td>Stein Aerts - KU Leuven, Belgium</td>
</tr>
<tr>
<td>09:30-</td>
<td>Spatially resolved single-cell transcriptomics: identifying how position and cell-type specific programs are coupled</td>
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<tr>
<td>09:45</td>
<td>Sébastien Bastide - Institut Pasteur, France</td>
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<tr>
<td>09:45-</td>
<td>Reference-free comparative single-cell transcriptomics</td>
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<tr>
<td>10:00</td>
<td>Olga Botvinnik - Chan Zuckerberg Biohub, USA</td>
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<tr>
<td>Time</td>
<td>Speaker</td>
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<tr>
<td>10:00- 10:15</td>
<td>Are cell type transcriptional profiles replicable across species?</td>
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<td>Maggie Crow - Cold Spring Harbor Laboratory, USA</td>
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<tr>
<td>10:15</td>
<td>Coffee Break</td>
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<td>10:45</td>
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<tr>
<td>10:45- 11:15</td>
<td>Modeling the cell type transcriptome evolution: tree likeness and correlated evolution</td>
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<td>Cong Liang - Tianjin University, China</td>
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<td>11:15</td>
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<tr>
<td>11:15- 11:45</td>
<td>Mapping and comparing transcriptional spaces of whole organisms robustly using Metacells</td>
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<td>Amos Tanay - Weizmann Institute of Science, Israel</td>
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<tr>
<td>11:45</td>
<td>Panel Discussion and Closing Remarks</td>
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<tr>
<td>12:15</td>
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<tr>
<td>12:00</td>
<td>Packed Lunches &amp; Shuttle to Downtown</td>
</tr>
<tr>
<td>12:15</td>
<td>Packed Lunches &amp; Shuttle to Frankfurt Airport/ Downtown</td>
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