

# EURO EVO DEVO

22–25 July 2014 | Vienna, Austria

## Previous Meetings

2006 Prague  
2008 Ghent  
2010 Paris  
2012 Lisbon

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# Society Committees

## EED Executive Committee

Frietson Galis – VU University Medical Centre, Amsterdam and NCB Naturalis, Leiden  
Ronald Jenner – Natural History Museum, London  
Gerd B. Müller (President) – Department of Theoretical Biology, University of Vienna  
Peter Olson – Natural History Museum, London  
Michael Schubert – Laboratoire de Biologie du Développement de Villefranche-sur-Mer  
Charlie Scutt – Ecole Normale Supérieure de Lyon

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## Local Organizing Committee

Philipp Mitteröcker – Department of Theoretical Biology, University of Vienna  
Gerd B. Müller (Chair) – Department of Theoretical Biology, University of Vienna  
Isabella Sarto-Jackson – KLI Institute  
Uli Technau – Department of Molecular Evolution and Development, University of Vienna  
Kristin Tessmar-Raible – Max-Perutz Laboratories, Vienna Biocenter

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Frietson Galis – VU University Medical Centre, Amsterdam and NCB Naturalis, Leiden  
Ronald Jenner – Natural History Museum, London  
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Charlie Scutt – Ecole Normale Supérieure de Lyon  
Uli Technau – Department of Molecular Evolution and Development, University of Vienna

## Program Committee

Frietson Galis (Chair) – VU University Medical Centre, Amsterdam & NCB Naturalis  
Philipp Mitteröcker – Department of Theoretical Biology, University of Vienna  
Ronald Jenner – Natural History Museum, London

# Welcome from the president

“Servus” to all participants of the 5th meeting of the European Society for Evolutionary Developmental Biology!

Since its founding in 2006, our society has grown steadily and so did the number of attendees at its biennial conferences. This time, nearly 600 evolutionary developmental biologists from all over the world will enjoy three days of exchange and open discussion of the latest research in the field. EvoDevo has matured into a robust scientific discipline, analyzing developmental evolution at all levels of scale, from molecules and proteins to complex structures and populations. It is this broad interpretation of EvoDevo that our society intends to foster. Therefore, this year, in addition to many experimental subjects, the topics include theory, history, and philosophy of EvoDevo, as well as quantitative, bioinformatic, and behavioral EvoDevo. It will be exciting to hear from all these different perspectives.

The extraordinary number of registrations for the meeting indicates a healthy proliferation of EvoDevo research, but it also has its downsides. More parallel sessions had to be established, and the posters will have to be displayed in two separate locations. At certain times, movement between lecture halls may become congested. We ask you to take this as an indication of high interest in our field of science, and we beg your pardon for any inconveniences that may arise. The number of events associated with the EED conference has also increased. In addition to the traditional *Tribolium* satellite meeting, this time there will also be an *Amphioxus* satellite meeting. Both are held a day prior to our conference.

We are grateful to the sponsors who have provided support for various activities and to the conference management team of the University of Vienna for their very professional attitude. We would also like to thank the members of all committees for working hard to make this event possible. In particular, we are most grateful to Isabella Sarto-Jackson from the KLI Institute and the local organizing team for their enthusiasm and the many hours they have invested in the preparation of this meeting.

*We wish you all an inspiring and exciting conference – enjoy Vienna!*  
On behalf of the Executive Committee,



Gerd B. Müller  
President EED

# General Information

## Dates & Venue

Tuesday 22 to Friday 25 July 2014  
 Campus of the University of Vienna  
 Spitalgasse 2 (Hof 2)  
 1090 Vienna, Austria

## Registration

The registration office is in the Aula (see map). If you have registered previously, it will be possible to pay the registration fee on-site. Social events during and after the conference can also be booked and paid on-site.

## Opening hours

Monday 21 July	12.00 – 16.00
Tuesday 22 July	14.00 – 19.00
Wednesday 23 July	8.00 – 18.00
Thursday 24 July	8.30 – 18.00
Friday 25 July	8.30 – 19.00

## Fees

Late registration fee	EUR 300,-
Late registration fee for students <small>(Student certificate required)</small>	EUR 250,-
Conference Dinner, 25 July	EUR 45,-
Boattrip to the Wachau region, 26 July	EUR 95,-
Art performance "Theory of Flight", 26 July	EUR 25,-

## Fees include:

- Access to all sessions
- Welcome Reception at the venue
- Reception at Vienna City Hall (advanced registration was required)
- Delegates' documents (printed program booklet, pdf of abstracts on USB stick)
- Certificate of attendance
- Lunches in one of three restaurants on Campus
- Coffee breaks

## Badges and security

Please wear your name badge at all times while at the congress venue and during the social events, as well as during the breaks. It is the official entrance pass to the scientific sessions, the welcome reception, and the campus restaurants for the free lunches on 23, 24, and 25 July.

## Cancellation policy

Those who made cancellations more than one month prior to the start of the congress will be refunded 50% of the registration fee. Later cancellations cannot be considered.

## Lunches

Please wear your badge!

Lunch is provided in three restaurants on Campus (see map). Due to the large number of participants, the restaurants may be crowded. Please move to another restaurant in case your first choice has no more seats available and take slightly longer waiting times into consideration. Lunches include 0.5 l of water, 0.25 l non-alcoholic drinks, a soup, and one of two main courses per day:

Wednesday 23 July

Schnitzel & potatoes or cabbage-and-noodle casserole & salad

Thursday 24 July

Rissole & salad or spinach strudel & herbed sour cream

Friday 25 July

Grilled perch & potatoes or pumpkin lasagna & salad

## Social Events

### Welcome Reception

The welcome reception will be held on Tuesday 22 July, at 19:00, in front of the lecture halls C1 & C2. The reception is free, but you will need to wear your badge to have access. The reception is sponsored by Springer.



### Reception at Vienna City Hall

A reception sponsored by the City of Vienna will be held at Vienna City Hall on 23 July, 20.30 (see map). City Hall is within walking distance from the venue (about 10 to 15 minutes). Participation is free, but due to space limitations you need to have booked your attendance in advance. If you have registered for the reception, you will obtain an official invitation at the reception desk. Please bring your invitation as well as your conference badge to ensure access.

## Conference Dinner

The conference dinner will take place on 25 July, 19:30, at the traditional Viennese "Heurigen" Schübel-Auer (for directions refer to the map at the end of the booklet). Special "Euro Evo Devo" trams will take registered participants to the Heurigen. Two trams will wait at the tram stop at the corner Alser Strasse/Spitalgasse at 19.30.

## Boattrip to the Wachau

There are still vacancies for the boat trip on the Danube on 26 July. The destination is the Wachau region, a UNESCO World Inheritance site. If you would like to participate, please consult the registration desk.

## "Theory of Flight" art performance at the KLI Institute in Klosterneuburg

Boston artist Anna Lindemann will perform her piece "Theory of Flight" on 26 July at 17:00. Anna Lindemann is devoted to integrating art and science. Her work combines animation, music, video, and performance to explore the emerging field of EvoDevo. She received an MFA in Integrated Electronic Arts from Rensselaer Polytechnic Institute and a BS in Biology from Yale University. Please register early if you intend to participate. The announcement in your delegate's bag has a map showing how to reach the KLI Institute.

## Technical Information

### WiFi Access

All registered participants receive individual access to the Wi-Fi network of the University of Vienna for the duration of the conference. A password is included with the registration materials. Eduroam is also available.

### Oral Presentations

Speakers are asked to transfer their presentation (Powerpoint or pdf) from a USB stick onto the PCs in the lecture rooms before their session starts: between 8.30 and 8.55 for the morning sessions, or during the breaks immediately preceding their session. Speakers may use their own laptop computer if they prefer. In this case, they should also come to the lecture room before the start of their session, as mentioned above, in order to check whether the projection is working. It is best to have a copy of your presentation on a USB stick, in case of a problem. We kindly ask chairs to be present at least 15 minutes prior to the start of their session.

The maximum duration of symposia talks is 25 minutes (including 5 minutes for questions) and 15 minutes for contributed talks (including 3 minutes for questions)

Note: Speakers in the contributed sessions C11 to C14 exceptionally have 25 minutes available (20 + 5). Due to the large number of talks and the running of up to 5 sessions in parallel, we ask speakers to keep closely to the time schedule and session chairs to be very strict in not allowing speakers to go over the allotted times.

### Poster Presentations

The poster boards are suitable for posters of the A0 format (1.2 m height x 0.9 m width). All posters can remain posted throughout the meeting. Presenters should put up their posters on Tuesday evening or Wednesday morning. Please be present at your poster during the poster sessions on Wednesday (even numbers) and Thursday (odd numbers). Materials for the fixing of the posters will be available. Posters should be removed before the end of the meeting, i.e., at the latest during the coffee break on Friday afternoon.

### Poster Prize Competition

Doctoral or Master's students presenting a first-author poster will take part in the poster competition if they indicated their participation upon submission of their abstract. There will be **THREE equal-first prizes** (Apple iPad-mini tablet computer) awarded by the poster competition committee. We are grateful to both BioEssays and Annals of Botany for sponsoring this competition!



Please have one or two key images from your poster ready on a USB stick for projection at the prize-giving ceremony (around 17:20 on Friday 25 July) in case your poster is one of the winners.

### Live Transmission from room C1 to room C2

Due to the large audience to be expected for the Welcome Ceremony, the Keynote Lectures, the award of the Kowalevsky Medal, the student poster Prize Ceremony, and the Conference Closing there will be a live transmission from lecture hall C1 to lecture hall C2. Please move to lecture hall C2 when you notice that lecture hall C1 is full.

# Program at a Glance

## Preconference Meetings

**Monday, July 21<sup>st</sup>**

	ROOM C1		ROOM C2
13.45 – 19.00	Satellite Meeting <b>Amphioxus</b>	14.25 – 19.30	Satellite Meeting <b>Tribolium</b>

**Tuesday, July 22<sup>nd</sup>**

	ROOM C1		ROOM C2
09.00 – 12.00	Satellite Meeting <b>Amphioxus</b>	08.50 – 12.00	Satellite Meeting <b>Tribolium</b>
14.00 – 17.00	Satellite Meeting <b>Amphioxus</b>	13.30 – 17.00	Satellite Meeting <b>Tribolium</b>

## EURO EVO DEVO 2014

**Tuesday, July 22<sup>nd</sup>**

	ROOM C1	ROOM C2
18.00 – 18.20	<b>EURO EVO DEVO 2014</b> Opening	Live transmission from C1 to C2
18.20 – 19.00	Keynote Lecture (K1) <b>Jean-Jacques Hublin</b>	Live transmission from C1 to C2
19.00	<b>Welcome Reception at the Venue</b>	

**Wednesday, July 23<sup>rd</sup>**

	ROOM A	ROOM B	ROOM C1	ROOM C2	ROOM D
09.00 – 10.40	Symposium S1 <b>Mechanical development I</b>	Symposium S2 <b>EvoDevo of colour</b>	Symposium S3 <b>Phenotypic change &amp; NGS</b>	Symposium S4 <b>Extended Synthesis</b>	
10.40 – 11.10	<b>Coffee break</b>				
11.10 – 12.25	Contributed C1 <b>Living fossils</b>	Contributed C2 <b>Quantitative variation</b>	Contributed C3 <b>Phenotypic change &amp; NGS I</b>	Contributed C4 <b>Ext. Synthesis &amp; Quo vadis</b>	Contributed C5 <b>Developmental evolution I</b>
12.25 – 14.00	<b>Lunch break</b>				
14.00 – 15.40	Symposium S5 <b>Mechanical development II</b>	Symposium S6 <b>EvoDevo of symmetry</b>	Symposium S7 <b>Wnt signaling</b>	Symposium S8 <b>Quo vadis EvoDevo?</b>	
15.40 – 16.10	<b>Coffee break</b>				
16.10 – 17.10	Contributed C6 <b>Plant EvoDevo</b>	Contributed C7 <b>EvoDevo of symmetry</b>	Contributed C8 <b>Wnt signaling I</b>	Contributed C9 <b>Mechanical development</b>	Contributed C10 <b>Complexity in gene networks</b>
17.10 – 17.20	<b>Break</b>				
17.20 – 18.00			Keynote Lecture (K2) <b>Veronica Grieneisen</b> (live transmission from C1 to C2)		
18.00 – 20.00	<b>Poster Session 1</b> (even numbers) Corridors in front of rooms C1 & C2 and room E				
20.30	<b>Reception at Vienna City Hall</b> (see map)				

# Program at a Glance

## EURO EVO DEVO 2014

**Thursday, July 24<sup>th</sup>**

	ROOM A	ROOM B	ROOM C1	ROOM C2	ROOM D
09.00 – 10.40	Symposium S9 <b>Plant EvoDevo</b>	Symposium S10 <b>Bioinformatics in EvoDevo I</b>	Symposium S11 <b>Ecology &amp; environment I</b>	Symposium S12 <b>Quantitative variation</b>	
10.40 – 11.10	Coffee break				
11.10 – 12.50	Symposium S13 <b>Vertebrate dentitions</b>	Symposium S14 <b>Bioinformatics in EvoDevo II</b>	Symposium S15 <b>Ecology &amp; environment I</b>	Symposium S16 <b>Developmental robustness</b>	
12.50 – 14.20	Lunch break				
14.20 – 16.00	Symposium S17 <b>EvoDevo of communication</b>	Contributed C11 <b>Bioinformatics in EvoDevo</b>	Contributed C12 <b>Wnt signaling II</b>	Contributed C13 <b>Ecology &amp; environment I</b>	Contributed C14 <b>Developmental evolution II</b>
16.00 – 16.30	Coffee break				
16.30 – 17.00	Contributed C15 <b>EvoDevo of communication</b>	Contributed C16 <b>Quo vadis EvoDevo?</b>	Contributed C17 <b>Regeneration EvoDevo</b>	Contributed C18 <b>Ecology &amp; environment II</b>	Contributed C19 <b>Amphioxus EvoDevo</b>
17.00 – 17.10	Break				
17.10 – 17.20			Award of the Kowalevsky Medal to <b>Denis Duboule</b> (live transmission from C1 to C2)		
17.20 – 18.00			Keynote Lecture (K3) <b>Ulrich Technau</b> (live transmission from C1 to C2)		
18.00 – 20.00	Workshop <b>Live Imaging</b> (Demonstration in room F)	<b>Poster Session 2</b> (odd numbers) Corridors in front of rooms C1 & C2 and room E			

**Friday, July 25<sup>th</sup>**

	ROOM A	ROOM B	ROOM C1	ROOM C2	ROOM D
09.00 – 10.40	Symposium S18 <b>Cranial neural crest</b>	Symposium S19 <b>Quantitative EvoDevo I</b>	Symposium S20 <b>Loss of gene function</b>	Symposium S21 <b>EcoEvoDevo</b>	
10.40 – 11.10	Coffee break				
11.10 – 12.25	Contributed C20 <b>Neural crest &amp; dentition</b>	Contributed C21 <b>Quantitative EvoDevo I</b>	Contributed C22 <b>Loss of gene function</b>	Contributed C23 <b>EcoEvoDevo</b>	Contributed C24 <b>Origin of regeneration</b>
12.25 – 14.00	Lunch break				
14.00 – 15.40	Symposium S22 <b>Marine sensory systems</b>	Symposium S23 <b>Quantitative EvoDevo II</b>	Symposium S24 <b>Origin of regeneration</b>	Symposium S25 <b>Living fossils</b>	
15.40 – 16.10	Coffee break				
16.10 – 17.10	Contributed C25 <b>Marine sensory systems</b>	Contributed C26 <b>Quantitative EvoDevo II</b>	Contributed C27 <b>Developmental robustness</b>	Contributed C28 <b>Phenotypic change &amp; NGS</b>	Contributed C29 <b>Developmental evolution III</b>
17.10 – 17.20	Break				
17.20 – 17.35			<b>Student Poster Prizes</b> (live transmission from C1 to C2)		
17.35 – 18.15			Keynote Lecture (K4) <b>Stuart Newman</b> (live transmission from C1 to C2)		
18.15 – 18.20			<b>Conference Closing</b> (live transmission from C1 to C2)		
18.20 – 19.10			<b>EED Business Meeting</b>		
19.30	Joint departure for <b>Conference Dinner</b> (see map)				

Notes

Detailed Program

# Detailed Program

Tuesday, July 22<sup>nd</sup>

**14.00 – 18.00** Registration

**18.00 – 18.20** Opening

**Welcome address by Gerd B. Müller**

(President of the EED and Chair of the Local Organizing Committee)

**18.20 – 19.00** Keynote Lecture (K1)

**Becoming Fully Human**

**Jean-Jacques Hublin**

(Max Planck Institute for Evolutionary Anthropology, Leipzig, GER)

*Chair:* Gerd B. Müller

**19.00 – 21.00** Welcome Reception at the Venue

sponsored by Springer



Wednesday, July 23<sup>rd</sup>

**09.00 – 10.40** Symposium S1:  
**Mechanical mechanisms of development I**

**ROOM A**

**S1-01** **Patterning under pressure**

Bennett, Malcolm (University of Nottingham, GBR); Goh, Tatsuaki (Kobe University, JPN / University of Nottingham, GBR); Guyomarc'H, Soazig (IRD, UMR DIADE (IRD/UM2), FRA); Fukaki, Hidehiro (Kobe University, JPN); Laplaze, Laurent (IRD, UMR DIADE (IRD/UM2), FRA)

**S1-02** **Getting the mechanics right:**

**The coordination of the lateral expansion of plant stems**

Werner, Stephanie (Gregor Mendel Institute, Vienna, AUT); Suer, Stephanie (Gregor Mendel Institute, Vienna, AUT); Wolf, Sebastian (Ruprecht Karl University of Heidelberg, GER); Greb, Thomas (Gregor Mendel Institute, Vienna, AUT)

**S1-03** **Cell and tissue mechanics in zebrafish gastrulation**

Heisenberg, Carl-Philipp (IST Austria, Klosterneuburg, AUT)

**S1-04** **Sequential rings of cells turn into sequential body parts and sequential evolution by physical pattern formation**

Fleury, Vincent (Laboratoire MSC/UMR7057, Paris, FRA)

**09.00 – 10.40** Symposium S2:  
**EvoDevo of colour**

**ROOM B**

*Organizer:* Beverley Glover  
*Chair:* Beverley Glover

**S2-01** **Under the rainbow: Understanding how plants build microscopic structures to produce iridescence**

Moyroud, Edwige (University of Cambridge, GBR); Vignolini, Silvia (University of Cambridge, GBR); Rudall, Paula (Royal Botanic Gardens Kew, London, GBR); Steiner, Ullrich (University of Cambridge, GBR); Glover, Beverley (University of Cambridge, GBR)

- S2-02 Plant genes that alter pollinator preference**  
Sheehan, Hester (University of Berne, CHE); Klahre, Ulrich (University of Berne, CHE); Dell'Olivo, Alexandre (University of Berne, CHE); Moser, Michel (University of Berne, CHE); Hermann, Katrin (University of Berne, CHE); Esfeld, Korinna (University of Berne, CHE); Summers, Holly (University of Berne, CHE); Caze, Ana Luiza (Universidade Federal do Rio Grande do Sul, Porto Alegre, BRA); Kuhlemeier, Cris (University of Berne, CHE)
- S2-03 Evolution of a novel pigmentation pattern through regulatory rewiring**  
Martins, Talline (Duke University, Durham, NC, USA); Rausher, Mark (Duke University, Durham, NC, USA)
- S2-04 How chameleons change colour**  
Milinkovitch, Michel (University of Geneva, CHE); Teyssier, Jeremie (University of Geneva, CHE); Saenko, Suzanne (University of Geneva, CHE); van der Marel, Dirk (University of Geneva, CHE)
- 09.00 – 10.40 Symposium S3: Uncovering the genomic bases of phenotypic change in the NGS era**

**ROOM C1**



- S3-01 NG sequencing technology and comparative genomics of non-model systems**  
Hejnol, Andreas (University of Bergen, NOR); Ryan, Joe F. (University of Bergen, NOR); Vellutini, Bruno C. (University of Bergen, NOR); Martín-Durán, José María (University of Bergen, NOR); Pang, Kevin (University of Bergen, NOR); Børve, Aina (University of Bergen, NOR)
- S3-02 Mechanisms of gene regulatory evolution during the origin of mammalian pregnancy**  
Lynch, Vincent J. (The University of Chicago, IL, USA)
- S3-03 Understanding extreme non-coding conservation**  
Lenhard, Boris (Imperial College London, GBR)
- S3-04 Big mice on small islands: The origin and evolution of the Faroese house mouse**  
Chan, Frank (Friedrich Miescher Laboratory of the Max Planck Society, Tübingen, GER)

- 09.00 – 10.40 Symposium S4: Extended Evolutionary Synthesis**  
Organizers: Gerd B. Müller and Werner Callebaut  
Chair: Gerd B. Müller
- ROOM C2**
- S4-01 Niche construction, developmental bias and the Extended Evolutionary Synthesis**  
Laland, Kevin (University of St Andrews, GBR); Uller, Tobias (University of Oxford, GBR)
- S4-02 An evolutionary view of brain development and dynamics and its theoretical consequences**  
Szathmáry, Eörs (Parmenides Foundation, Pullach, GER)
- S4-03 A new vision of heredity to build an inclusive Evolutionary Synthesis**  
Danchin, Etienne (CNRS, Toulouse, FRA)
- S4-04 The role of EvoDevo in extending the Evolutionary Synthesis**  
Callebaut, Werner (The KLI Institute, Klosterneuburg, AUT); Müller, Gerd B. (University of Vienna, AUT)

- 11.10 – 12.25 Contributed Session C1: "Living fossils", myth or reality?**  
Chairs: Didier Casane and Patrick Laurenti

**ROOM A**

- C1-01 Sharks, stems, and shedding the living fossil tag**  
Coates, Michael (The University of Chicago, IL, USA); Criswell, Katharine (The University of Chicago, IL, USA)
- C1-02 Skeletogenesis in cartilaginous fish**  
Enault, Sébastien (ISEM - Université Montpellier 2, FRA); Da Silva, Willian (ISEM - Université Montpellier 2, FRA); Venteo, Stephanie (INM- Université Montpellier 2, FRA); Debiais-Thibaud, Mélanie (ISEM Université Montpellier 2, FRA)
- C1-03 *Limulus polyphemus* is not quite a "living fossil", especially from a developmental point of view**  
Haug, Carolin (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER)
- C1-04 Cockroach-like insects: Successful since 300 million years and therefore "living fossils"?**  
Hörning, Marie K. (Ernst-Moritz-Arndt-University of Greifswald, GER); Haug, Carolin (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER); Haug, Joachim T. (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER)
- C1-05 Segmentation in brachiopod larvae? The expression of common segment patterning genes during development of larval lobes**  
Vellutini, Bruno (University of Bergen, NOR); Hejnol, Andreas (University of Bergen, NOR)

**11.10 – 12.25 Contributed Session C2:  
Developmental basis of quantitative variation**

**ROOM B**

- C2-01 How do you shave a baby? *Cis*-regulatory region occupancy as the basis for morphological evolution**  
Preger-Ben Noon, Ella (Janelia Farm Research Campus, Ashburn, VA, USA); Stern, David (Janelia Farm Research Campus, Ashburn, VA, USA)
- C2-02 Tissue sensitivity to Hox protein levels underlies the adaptive leg morphology of water striders**  
Refki, Peter (Institute of Functional Genomics (IGFL); UCBL, Lyon, FRA); Armisen, David (IGFL-ENS, Lyon, FRA); Crumière, Antonin (IGFL-ENS, Lyon, FRA); Viala, Séverine (IGFL-ENS, Lyon, FRA); Khila, Abderrahman (IGFL-ENS, Lyon, FRA)
- C2-03 Developmental mechanisms underlying natural variation in organ size**  
Ramaekers, Ariane (VIB-KU Leuven, BEL); Weinberger, Simon (VIB-KU Leuven, BEL); Buchner, Erich (University of Würzburg, GER); Wolf, Reinhard (University of Würzburg, GER); Hassan, Bassem A. (VIB-KU Leuven, BEL)
- C2-04 Investigating the genetic and developmental origins of limb bone length using mice selectively bred for increased tibia length**  
Marchini, Marta (University of Calgary, AB, CAN); Krueger, Carsten B. (University of Calgary, AB, CAN); Sparrow, Leah M. (University of Calgary, AB, CAN); Dowhanik, Alexandra S. (University of Calgary, AB, CAN); Cosman, Miranda N. (University of Calgary, AB, CAN); Rolian, Campbell (University of Calgary, AB, CAN)
- C2-05 Pattern modulation produces a highly regular grid of defensive hairs in the spiny mouse (*Acomys dimidiatus*)**  
Tzika, Athanasia (University of Geneva, CHE); Montandon, Sophie (University of Geneva, CHE); Manukyan, Liana (University of Geneva, CHE); Milinkovitch, Michel (University of Geneva, CHE)

**11.10 – 12.25 Contributed Session C3:  
Uncovering the genomic bases of phenotypic change in the NGS era I**

**ROOM C1**  
Chairs: Manuel Irimia and Juan Pascual

- C3-01 Two novel, complementary next generation sequencing approaches to reveal the dorso-ventral gene regulatory network of *Tribolium castaneum***  
Stappert, Dominik (University of Cologne, GER); Frey, Nadine (University of Cologne, GER); Roth, Siegfried (University of Cologne, GER)

**C3-02 Convergent evolution of proteins with repetitive, low complexity domains in biomimeticizing taxa**

McDougall, Carmel (University of Queensland, Brisbane, AUS); Woodcroft, Ben (University of Queensland, Brisbane, AUS); Degnan, Bernard (University of Queensland, Brisbane, AUS)

**C3-03 Cnidarian microRNAs frequently regulate their targets by cleavage**

Praher, Daniela (University of Vienna, AUT); Moran, Yehu (The Hebrew University of Jerusalem, ISR); Fredman, David (University of Vienna, AUT); Li, Xin (University of Massachusetts, Worcester, MA, USA); Wee, Liang-Meng (University of Massachusetts, Worcester, MA, USA); Rentzsch, Fabian (University of Bergen, NOR); Zamore, Philip (University of Massachusetts, Worcester, MA, USA); Seitz, Hervé (CNRS, Montpellier, FRA); Technau, Ulrich (University of Vienna, AUT)

**C3-04 Transcriptome profiling of a key morphological innovation: The propelling fan of the water walking bug *Rhagovelia obesa***

Santos, Emilia (Institute of Functional Genomics (IGFL), Lyon, FRA); Khila, Abderrahman (IGFL, Lyon, FRA)

**C3-05 Phenotypic plasticity and epigenetics in the honeybee ovary**

Leask, Megan (University of Otago, Dunedin, NZL); Dearden, Peter (University of Otago, Dunedin, NZL); Duncan, Elizabeth (University of Otago, Dunedin, NZL)

**11.10 – 12.25 Contributed Session C4:  
Extended Evolutionary Synthesis & Quo vadis EvoDevo?**

**ROOM C2**

- C4-01 The origination of novelty: Qualitative changes from quantitative variation**  
Peterson, Tim (University of Vienna, AUT); Müller, Gerd B. (University of Vienna, AUT)
- C4-02 Adaptive dynamics modelling with evolving epigenetic switches**  
Van Dooren, Tom J. M. (Institute of Ecology and Environmental Sciences Paris, FRA)
- C4-03 The timing of development**  
Nicoglu, Antonine (Institut d'Histoire et de Philosophie des Sciences et des Techniques, Paris, FRA)
- C4-04 How a better understand of developmental mechanisms would transform the bases of evolutionary biology**  
Salazar-Ciudad, Isaac (Institute of Biotechnology, Helsinki, FIN)
- C4-05 Computing the concept of evolvability**  
Nuño de la Rosa, Laura (The KLI Institute, Klosterneuburg, AUT)

**11.10 – 12.25 Contributed Session C5:**  
**Developmental mechanisms underlying evolutionary change I**

**ROOM D**  
Chair: Constanze Bickelmann

**C5-01 Hox expression in salamanders: Preaxial polarity revisited**

Bickelmann, Constanze (Museum für Naturkunde, Berlin, GER); Schneider, Igor (Instituto de Ciencias Biológicas, Belém, BRA); Fröbisch, Nadia B. (Museum für Naturkunde, Berlin, GER)

**C5-02 An embryological perspective on lung structure of early amniotes**

Lambertz, Markus (University of Bonn, GER); Grommes, Kristina (University of Bonn, GER); Kohlsdorf, Tiana (Universidade de São Paulo, Ribeirão Preto, BRA); Perry, Steven F. (University of Bonn, GER)

**C5-03 The intricate relationship between selection and developmental constraints: the evolution of the *Drosophila* sex comb length**

Malagon, Juan (University of Toronto, CAN)

**C5-04 A burst of microRNA innovation in the early evolution of butterflies and moths**

Quah, Shan (University of Oxford, GBR); Holland, Peter (University of Oxford, GBR)

**C5-05 Stem cell genes characterization in *Oscarella lobularis* (Porifera, Homoscleromorpha): The stepping stone towards understanding somatic and germ lines origin**

Fierro, Laura (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology (IMBE), Marseille, FRA); Schenkelaars, Quentin (IMBE, Marseille, FRA); Borchiellini, Carole (IMBE, Marseille, FRA); Ereskovsky, Alexander (IMBE, Marseille, FRA); Renard, Emmanuelle (IMBE, Marseille, FRA)

**14.00 – 15.40 Symposium S5:**  
**Mechanical mechanisms of development II**

**ROOM A**  
Organizers: Naomi Nakayama and Annemiek Cornelissen  
Chairs: Naomi Nakayama and Annemiek Cornelissen

**S5-01 Directional mechanical signals add robustness to plant morphogenesis**

Hamant, Olivier (ENS Lyon, FRA)

**S5-02 Mechanics of cell contacts during tissue morphogenesis**

Lenne, Pierre-François (IBDM, Marseille, FRA)

**S5-03 Mechanical development of veins controls shape, position and movements of plants leaves**

Douady, Stéphane (Université Paris-Diderot / CNRS, FRA)

**S5-04 Mechanical basis of seashell morphogenesis**

Moulton, Derek (University of Oxford, GBR); Goriely, Alain (University of Oxford, GBR); Chirat, Régis (Université Lyon 1, Villeurbanne, FRA)

**14.00 – 15.40 Symposium S6:**  
**EvoDevo of symmetry in animals and plants**

**ROOM B**  
Organizers: Sophie Nadot and Catherine Damerval  
Chair: Catherine Damerval

**S6-01 Do asymmetric flies fly in circles? Functional consequences of a genetically induced asymmetry on flight performance in *Drosophila melanogaster***

Debat, Vincent (UMR7502 ISyEB, Museum National d'Histoire Naturelle, Paris, FRA); Aponte, Jose David (Florida State University, Tallahassee, FL, USA); Cornette, Raphaël (UMR7502 ISyEB, Museum National d'Histoire Naturelle, Paris, FRA); Herrel, Anthony (UMR7504 FUNEVOL, Museum National d'Histoire Naturelle, Paris, FRA); Peronnet, Frédérique (UMR Biologie du Développement, UPMC, Paris, FRA)

**S6-02 Role of myosin ID in *Drosophila* and zebrafish left-right asymmetry**

Noselli, Stephane (IBV - CNRS UMR7277, Nice, FRA)

**S6-03 Corolla monosymmetry: Evolution of a morphological novelty in the angiosperms**

Zachgo, Sabine (Osnabrück University, GER)

**S6-04 CYCLOIDEA-like genes and floral symmetry in Ranunculaceae**

Jabbour, Florian (National Museum of Natural History, Paris, FRA); Cossard, Guillaume (University of Lausanne, CHE); Le Guilloux, Martine (CNRS, Gif-sur-Yvette, FRA); Sannier, Julie (Université Paris-Sud, Orsay, FRA); Nadot, Sophie (Université Paris-Sud, Orsay, FRA); Damerval, Catherine (CNRS, Gif-sur-Yvette, FRA)

**14.00 – 15.40 Symposium S7:**  
**The Roche Discovery Oncology Symposium: Perspectives on Wnt signaling**

**ROOM C1**  
Organizers: Wim Damen and Cornelius Eibner  
Chairs: Wim Damen and Cornelius Eibner



- S7-01 Cancer mutations derail Wnt signalling via conformational conversion of the scaffold protein Axin**  
 Maurice, Madelon (Utrecht University, NLD); Anvarian, Zeinab (Utrecht University, NLD); Nojima, Hisashi (MRC National Institute for Medical Research, Mill Hill, London, GBR); Madl, Tobias (Utrecht University, NLD); Spit, Maureen (Utrecht University, NLD); van Kappel, Eline (Utrecht University, NLD); Scherpenzeel, Revina (Utrecht University, NLD); Low, Teck Y. (Utrecht University, NLD); Kuper, Ineke (Utrecht University, NLD); Jordens, Ingrid (Utrecht University, NLD); Gerlach, Jan P (Utrecht University, NLD); Heck, Albert J. R. (Utrecht University, NLD); Vincent, Jean-Paul (MRC National Institute for Medical Research, Mill Hill, London, GBR); Rüdiger, Stefan G. D. (Utrecht University, NLD)
- S7-02 Wnt signaling in the annelid *Platynereis dumerilii***  
 Demilly, Adrien (Institut Jacques Monod CNRS, Paris, FRA); Gazave, Eve (Institut Jacques Monod CNRS, Paris, FRA); Steinmetz, Patrick (University of Vienna, AUT); Marchand, Lauriane (Institut Jacques Monod CNRS, Paris, FRA); Kerner, Pierre (Institut Jacques Monod CNRS, Paris, FRA); Vervoort, Michel (Institut Jacques Monod CNRS, Paris, FRA)
- S7-03 Wnt signaling shapes planarians**  
 Adell, Teresa (University of Barcelona, ESP); Sureda, Miquel (University of Barcelona, ESP); Almuedo-Castillo, María (University of Barcelona, ESP); Martín-Durán, José María (University of Barcelona, ESP); Rojo-Laguna, Jose Ignacio (University of Barcelona, ESP); Saló, Emili (University of Barcelona, ESP)
- S7-04 Dissecting Wnt-signaling dependent transcription in the mouse**  
 Cantù, Claudio (University of Zurich, CHE)

**14.00 – 15.40 Symposium S8:  
Quo vadis EvoDevo?**

**ROOM C2**  
 Organizers: Manfred Laubichler and Cassandra Extavour  
 Chair: Manfred Laubichler  
 Discussion leader: Ronald Jenner

- S8-01 EvoDevo in the Americas: A report on a community workshop to consolidate and advance the field of Evolutionary Developmental Biology**  
 Extavour, Cassandra (Harvard University, Cambridge, MA, USA)
- S8-02 The future of evo-devo**  
 Jaeger, Johannes (Center for Genomic Regulation, Barcelona, ESP)
- S8-03 Quo vadis EvoDevo?**  
 Laubichler, Manfred (Arizona State University, Tempe, USA)

**16.10 – 17.10 Contributed Session C6:  
Plant EvoDevo: Linking cross-species genetic and morphological variation**

**ROOM A**

- C6-01 Deep homology in the land plant stomatal development programmed**  
 Chater, Caspar (University of Sheffield, GBR); Caine, Robert (University of Sheffield, GBR); Kamisugi, Yasuko (University of Leeds, GBR); Cuming, Andrew (University of Leeds, GBR); Fleming, Andrew (University of Sheffield, GBR); Beerling, David (University of Sheffield, GBR); Gray, Julie (University of Sheffield, GBR)
- C6-02 Through the periscope: Understanding early grass leaf development**  
 Richardson, Annis (John Innes Centre, Norwich, GBR); Rebocho, Xana (John Innes Centre, Norwich, GBR); O'Connor, Devin (Cambridge University, GBR); Hake, Sarah (University of California Berkeley, CA, USA); Coen, Enrico (John Innes Centre, Norwich, GBR)
- C6-03 Three ancient hormonal cues co-ordinate shoot branching in a moss**  
 Couder, Yoan (University of Cambridge, GBR); Palubicki, Wojtek (Cambridge University, GBR); Leyser, Ottoline (Cambridge University, GBR); Harrison, Jill (University of Cambridge, GBR)
- C6-04 Stay high or get low: Can epigenetic variation lead to recurrent speciation?**  
 Paun, Ovidiu (University of Vienna, AUT); Flatscher, Ruth (University of Vienna, AUT); Frajman, Bozo (University of Innsbruck, AUT); Trucchi, Emiliano (University of Vienna, AUT); Schönswitter, Peter (University of Innsbruck, AUT)

**16.10 – 17.10 Contributed Session C7:  
EvoDevo of symmetry in animals and plants**

**ROOM B**  
 Chair: Sophie Nadot

- C7-01 A computational model of cleavage patterns in metazoa and its evolution**  
 Brun-Usan, Miguel (Universitat Autònoma de Barcelona, Bellaterra, ESP); Salazar-Ciudad, Isaac (EvoDevo Helsinki Community, FIN)
- C7-02 The establishment of left-right asymmetry during spiralian development in the serpulid annelid *Pomatoceros lamarcki***  
 Namigai, Erica (University of Oxford, GBR); Shimeld, Sebastian (University of Oxford, GBR)
- C7-03 Colony symmetry in thecate hydroids (Cnidaria, Hydroidomedusa, Leptomedusae): Transition from radial to bilateral symmetry**  
 Kosevich, Igor (Lomonosov Moscow State University, RUS)

- C7-04 Evolution of a novel flower trait in the Brassicaceae**  
Busch, Andrea (University of Osnabrück, GER); Horn, Stefanie (University of Osnabrück, GER); Zachgo, Sabine (University of Osnabrück, GER)
- 16.10 – 17.10 Contributed Session C8: Perspectives on Wnt signaling I**  
**ROOM C1**  
Chair: Reinhard Schröder
- C8-01 A Wnt landscape regulates segment polarity in the annelid *Platynereis***  
Balavoine, Guillaume (Institut Jacques Monod, Paris, FRA); Gazave, Eve (Institut Jacques Monod / CNRS, Paris, FRA)
- C8-02 Functional analysis of Wnt signalling in early spider development shows diverse roles in embryonic patterning**  
Eibner, Cornelius (Friedrich Schiller University Jena, GER); Pohl, Kerstin (Friedrich Schiller University Jena, GER); Beyerlein, Anna (Friedrich Schiller University Jena, GER); Holzem, Michaela (Friedrich Schiller University Jena, GER); Damen, Wim GM (Friedrich Schiller University Jena, GER)
- C8-03 Characterization of the gene regulatory network for posterior development in the spider *Parasteatoda tepidariorum***  
Schoenauer, Anna (Oxford Brookes University, GBR); Schwager, Evelyn (Oxford Brookes University, GBR); Hilbrant, Maarten (Oxford Brookes University, GBR); Damen, Wim G. M. (Friedrich Schiller Universität Jena, GER); McGregor, Alistair P. (Oxford Brookes University, GBR)
- C8-04 Anterior/posterior patterning of the dorsal mesoderm in vertebrates evolved as a novelty from the ancestral chordate mesoderm by a heterotopic shift**  
Onai, Takayuki (RIKEN Center for Developmental Biology, Kobe, JPN); Aramaki, Toshihiro (Osaka University, Osaka, JPN); Inomata, Hidehiko (RIKEN Center for Developmental Biology, Kobe, JPN); Hirai, Tamami (RIKEN Center for Developmental Biology, Kobe, JPN); Kuratani, Shigeru (RIKEN Center for Developmental Biology, Kobe, JPN)
- 16.10 – 17.10 Contributed Session C9: Mechanical mechanisms of development**  
**ROOM C2**  
Chair: Derek Moulton
- C9-01 The 3D Crocs project: Physical mechanisms generate a diversity of cranial scale patterns among Crocodylia**  
May, Catherine (University of Geneva, CHE); Milinkovitch, Michel (University of Geneva, CHE)

- C9-02 Epithelial cell shaping in response to mechanical cues is an evolutionary conserved way for sculpting an embryo**  
Kraus, Yulia (Lomonosov Moscow State University, RUS); Kremnyov, Stanislav (Lomonosov Moscow State University, RUS); Frank, Uri (National University of Ireland, Galway, IRL)
- C9-03 Comparative tissue dynamics of late embryogenesis in flies and midges**  
Fraire-Zamora, Juan J. (Centre de Regulacio Genomica, Barcelona, ESP); Solon, Jerome (Centre de Regulacio Genomica, Barcelona, ESP); Jaeger, Johannes (Centre de Regulacio Genomica, Barcelona, ESP)
- C9-04 Shaping the snapdragon's mouth using a CUP**  
Rebocho, Xana (John Innes Centre, Norwich, GBR); Abley, Katie (John Innes Centre, Norwich, GBR); Bradley, Desmond (John Innes Centre, Norwich, GBR); Copsey, Lucy (John Innes Centre, Norwich, GBR); Bagham, Andrew (University of East Anglia, Norwich, GBR); Coen, Enrico (John Innes Centre, Norwich, GBR)
- 16.10 – 17.10 Contributed Session C10: Complexity in gene networks and structures**  
**ROOM D**  
Chair: Andrew Cridge
- C10-01 Constraining and buffering: Regulation and evolution of complex gene networks**  
Cridge, Andrew (University of Otago, Dunedin, NZL); Dearden, Peter (University of Otago, Dunedin, NZL)
- C10-02 Structure, function and development of an extraordinary insect eye**  
Buschbeck, Elke (University of Cincinnati, OH, USA); Stahl, Aaron (University of Cincinnati, OH, USA); Cook, Tiffany (Cincinnati Children's Hospital Medical Center, OH, USA)
- C10-03 Evolution of morphological complexity and modularity in the primate skull using anatomical network analysis**  
Esteve-Altava, Borja (University of Valencia, Paterna, ESP); Boughner, Julia (University of Saskatchewan, Saskatoon, SK, CAN); Diogo, Rui (Howard University, Washington DC, USA); Rasskin-Gutman, Diego (University of Valencia, Paterna, ESP)
- C10-04 Elastin gene neo-functionalization endows teleost-specific heart component, "bulbus arteriosus", in fish development and evolution**  
Moriyama, Yuuta (University of Tokyo, JPN); Takeuchi, Jun K. (University of Tokyo, JPN); Koshiba-Takeuchi, Kauzko (University of Tokyo, JPN)

<b>17.20 – 18.00</b>	Keynote Lecture (K2) <b>A "Devo-Evo" approach to unravel the hidden logic of cell and tissue polarity in plants and animals</b>
<b>ROOMS C1&amp;2</b>	<b>Veronica Grieneisen</b> (John Innes Centre, Norwich, GBR) <i>Chair:</i> Charlie Scutt
<b>18.00 – 20.00</b>	Poster Session 1 <b>Corridors C and ROOM E</b>
<b>20.30</b>	Reception at Vienna City Hall

Thursday, July 24<sup>th</sup>

<b>09.00 – 10.40</b>	<b>Symposium S9: Plant EvoDevo: Linking cross-species genetic and morphological variation</b>
<b>ROOM A</b>	<i>Organizers:</i> John Bowman and Christian Hardtke <i>Chair:</i> Christian Hardtke
	
<b>S9-01</b>	<b>Inverted regulatory logic in hormone pathway interactions shapes different root system types</b> Hardtke, Christian (University of Lausanne, CHE)
<b>S9-02</b>	<b>Genetic determinants of petal number variation between <i>Arabidopsis thaliana</i> and <i>Cardamine hirsuta</i></b> Monniaux, Marie (Max Planck Institute for Plant Breeding Research, Cologne, GER)
<b>S9-03</b>	<b>A division in PIN-mediated Auxin patterning during organ initiation in grasses</b> O'Connor, Devin (Cambridge University, GBR); Runions, Adam (University of Calgary, AB, CAN); Sluis, Aaron (University of California Albany, CA, USA); Bragg, Jennifer (USDA, Albany, CA, USA); Vogel, John (USDA, Albany, CA, USA); Prusinkiewicz, Przemyslaw (University of Calgary, AB, CAN); Hake, Sarah (University of California, Albany, CA, USA)
<b>S9-04</b>	<b>Towards understanding the genetic basis for diversification of leaf forms</b> Tsiantis, Miltos (Max Planck Institute for Plant Breeding Research, Cologne, GER)

<b>09.00 – 10.40</b>	<b>Symposium S10: What should bioinformatics do for EvoDevo?</b>
<b>ROOM B</b>	<i>Organizers:</i> Günter Plickert, Mark Blaxter, Paula Mabee and Ann Burke <i>Chair:</i> Paula Mabee
<b>S10-01</b>	<b>Bioinformatics for Evo Devo: Connecting evolutionary morphology and model organism genetics</b> Mabee, Paula (University of South Dakota, Vermillion, SD, USA)
<b>S10-02</b>	<b>Insights into the evolution and development of planarian regeneration from the genome of the flatworm, <i>Girardia tigrina</i></b> Kumar, Sujai (University of Oxford, GBR); Kao, Damian (University of Oxford, GBR); Aboobaker, Aziz (University of Oxford, GBR)
<b>S10-03</b>	<b>From the wet lab to the computer and back: A stage specific RNAseq analysis elucidates the molecular underpinnings and evolution of Hydrozoan development</b> Schiffer, Philipp (University of Cologne, GER)

<b>S10-04</b>	<b>Insights into the evolution of early development of parthenogenetic nematodes by second generation sequencing</b> Kraus, Christopher (University of Cologne, GER); Schiffer, Philipp (Universität of Cologne, GER); Kroher, Michael (University of Cologne, GER); Schierenberg, Einhard (University of Cologne, GER)
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<b>09.00 – 10.40</b>	<b>Symposium S11: Ecological and environmental impacts on the evolution of organismal development I</b>
<b>ROOM C1</b>	<i>Organizers:</i> Chris Lowe, John Willis and Angelika Stollewerk <i>Chair:</i> Angela Stollewerk

<b>S11-01</b>	<b>EcoEvoDevo and the origins of morphological complexity in the worker caste in ants</b> Rajakumar, Rajendran (McGill University, Montreal, QC, CAN); Fave, Marie-Julie (McGill University, Montreal, QC, CAN); Abouheif, Ehab (McGill University, Montreal, QC, CAN)
<b>S11-02</b>	<b>Inducible defenses in Daphnia</b> Laforsch, Christian (University of Bayreuth, GER)
<b>S11-03</b>	<b>Genetics of larval mode in the poecilogenous polychaete, <i>Streblospio benedicti</i></b> Rockman, Matthew (New York University, NY, USA)

- S11-04 Determination of sexual fate in the temperature dependent red-eared slider turtle, *Trachemys scripta elegans***  
 Capel, Blanche (Duke University, Durham, NC, USA); Czerwinski, Mike (Duke University, Durham, NC, USA); Mork, Lindsey (Duke University, Durham, NC, USA); Looger, Loren (Janelia Farm Research Campus, Ashburn, VA, USA); Nataraajan, Anirudh (Duke University, Durham, NC, USA)
- 09.00 – 10.40 Symposium S12: Developmental basis of quantitative variation**  
**ROOM C2**  
 Organizers: Mihaela Pavlicev and Günter Wagner  
 Chair: Mihaela Pavlicev
- S12-01 The evolution of pleiotropy in relation to integration, modularity, and individuation**  
 Cheverud, James M. (Loyola University, Chicago, USA)
- S12-02 Mutational variation in epistatic pleiotropy and the genotype-phenotype map of multi-drug resistance in HIV-1**  
 Guillaume, Frederic (University of Zurich, CHE)
- S12-03 Highly monotone genotype-phenotype maps emerging from gene regulatory networks**  
 Gjuvsland, Arne (Norwegian University of Life Sciences, Ås, NOR); Wang, Yunpeng (Norwegian University of Life Sciences, Ås, NOR); Plahte, Erik (Norwegian University of Life Sciences, Ås, NOR); Omholt, Stig W. (Norwegian University of Science and Technology, Trondheim, NOR)
- S12-04 Managing the pleiotropy of “pleiotropic” transcription factor genes**  
 Wagner, Günter (Yale University, New Haven, CT, USA); Lynch, Vincent (The University of Chicago, IL, USA); Nnamani, Mauris (Yale University, New Haven, CT, USA); Pavlicev, Mihaela (University of Cincinnati, OH, USA)

- 11.10 – 12.50 Symposium S13: Structural organization in vertebrate dentitions: Molecules, morphology and function**  
**ROOM A**  
 Organizers: Abigail Tucker and Moya Smith  
 Chair: Moya Smith
- S13-01 Teeth inside and outside the mouth: Topographic relationships in sawshark and sawfish dentitions (Elasmobranchii; Chondrichthyes)**  
 Welten, Monique (Natural History Museum, London, GBR); Meredith Smith, Moya (King's College London, GBR); Underwood, Charlie (University of London, GBR); Fraser, Gareth (University of Sheffield, GBR); Johanson, Zerina (Natural History Museum, London, GBR)

- S13-02 Mechanical constraints during cusp pattern development in rodent molars**  
 Renvoise, Elodie (University of Helsinki, FIN); Kavanagh, Kathryn (University of Massachusetts, Dartmouth, MA, USA); Kallonen, Aki (University of Helsinki, FIN); Häkkinen, Teemu (University of Helsinki, FIN); Rice, Ritva (University of Helsinki, FIN); Jernvall, Jukka (University of Helsinki, FIN)
- S13-03 Development and fate of the dental lamina in amniotes**  
 Buchtova, Marcela (Academy of Sciences of the Czech Republic, Brno, CZE)
- S13-04 What the Myotragus evolutionary lineage tell us about the selective pressures that drive dentition patterning in mammals**  
 Jordana, Xavier (Institut Català de Paleontologia Miquel Crusafont, Bellaterra, ESP); Moncunill-Solé, Blanca (Institut Català de Paleontologia Miquel Crusafont, Bellaterra, ESP); Köhler, Meike (Institut Català de Paleontologia Miquel Crusafont and ICREA, Bellaterra, ESP)
- 11.10 – 12.50 Symposium S14: What should bioinformatics do for EvoDevo? II**  
**ROOM B**  
 Organizers: Günter Plickert, Mark Blaxter, Paula Mabee, and Ann Burke  
 Chairs: Günter Plickert and Mark Blaxter
- S14-01 Petaloidy, polarity and pollination: The evolution of organ morphology networks**  
 Specht, Chelsea (University of California Berkeley, CA, USA); Yockteng, Roxana (University of California Berkeley, CA, USA); Almeida, Ana M. R. (University of California Berkeley, CA, USA); Pineyro-Nelson, Alma (University of California Berkeley, CA, USA)
- S14-02 Aligning phonemes and genomes to understand the evolution of multicellular organisms**  
 Donoghue, Philip (University of Bristol, GBR); Deline, Bradley (University of West Georgia, Carrollton, GA, USA); Greenwood, Jennifer (University of Bristol, GBR); Taylor, Richard (University of Bristol, GBR); Hetherington, Alexander (University of Bristol, GBR); Tarver, James (University of Bristol, GBR); Peterson, Kevin (Dartmouth College, Hanover, NH, USA)
- S14-03 Online databases provide critical insights into the evolution of appendage modularity during the fin to limb transition**  
 Dececchi, Alex (University of South Dakota, Vermillion, SD, USA); Mabee, Paula (University of South Dakota, Vermillion, SD, USA); Marcot, Jonathan (University of Illinois, Urbana, IL, USA); Sears, Karen (University of Illinois, Urbana, IL, USA)
- S14-04 Evolutionally conserved mechanisms of regeneration in chordates: Uncovering pathways active during WBR in *Botrylloides leachi***  
 Zondag, Lisa (University of Otago, Dunedin, NZL); Rutherford, Kim (University of Otago, Dunedin, NZL); Wilson, Megan (University of Otago, Dunedin, NZL)

**11.10 – 12.50 Symposium S15:**  
**Ecological and environmental impacts on the evolution of organismal development II**

**ROOM C1**

Organizers: Chris Lowe, John Willis, and Angelika Stollewerk  
 Chair: Angela Stollewerk



- S15-01 **Evolutionary lability of plant epidermal morphology in response to changing interactions with animals**  
 Glover, Beverley (University of Cambridge, GBR)
- S15-02 **New genes, new chemistry and new cells in phenotypic plasticity and the evolution of novelty in nematodes**  
 Sommer, Ralf (Max-Planck Institute for Developmental Biology, Tübingen, GER)
- S15-03 **Understanding strategies used by the *C. elegans* reproductive system to cope with uncertain environments**  
 Ruvinsky, Ilya (The University of Chicago, IL, USA)
- S15-04 **Experimental evolution of multicellularity**  
 Travisano, Michael (University of Minnesota, Saint Paul, MN, USA); Ratcliff, William (Georgia Institute of Technology, Atlanta, GA, USA)

**11.10 – 12.50 Symposium S16:**  
**How does developmental robustness facilitate the evolution of biodiversity?**

**ROOM C2**

Organizers: Rainer Melzer and Günter Theissen  
 Chairs: Günter Theissen and Rainer Melzer

- S16-01 **How do clades explore morphological character space throughout their evolution?**  
 Wills, Matthew (University of Bath, GBR); Hughes, Martin (Natural History Museum, London, GBR); Gerber, Sylvain (University of Cambridge, GBR); Oyston, Jack (University of Bath, GBR); Wagner, Peter (National Museum of Natural History, Washington DC, USA)
- S16-02 **The evolution of canalization and evolvability in changing environments**  
 Hansen, Thomas F. (University of Oslo, NOR)
- S16-03 **Developmental robustness in *C. elegans*: From quantification to mechanisms**  
 Barkoulas, Michalis (Imperial College, London, GBR); Felix, Marie-Anne (Ecole Normale Supérieure, Paris, FRA)
- S16-04 **Genetic basis of petal number variation in *Cardamine hirsuta***  
 Hay, Angela (Max Planck Institute for Plant Breeding Research, Cologne, GER)

**14.20 – 16.00 Symposium S17:**  
**EvoDevo as an approach to understanding communication**

**ROOM A**

Organizers: D. Kimbrough Oller and Ulrike Griebel  
 Chair: D. Kimbrough Oller

- S17-01 **Language evolution and change: The impact of modern evolutionary thinking**  
 Dediu, Dan (Max Planck Institute for Psycholinguistics, Nijmegen, NLD)
- S17-02 **The building blocks of language: From molecules to neuronal circuits**  
 Verenes, Sonja (Max Planck Institute for Psycholinguistics, Nijmegen, NLD)
- S17-03 **Computational models of human vocal development and evolution**  
 Warlaumont, Anne (University of California Merced, CA, USA)
- S17-04 **Human vocal development and animal communication in an EvoDevo approach to language**  
 Oller, D. Kimbrough (University of Memphis, TN, USA); Griebel, Ulrike (University of Memphis, TN, USA)

**14.20 – 16.00 Contributed Session C11:**  
**What should Bioinformatics do for EvoDevo?**

**ROOM B**

- C11-01 **Phylogenomics of MADS-box genes in flowering plants to identify EvoDevo genes**  
 Theissen, Guenter (Friedrich Schiller University Jena, GER); Gramzow, Lydia (Friedrich Schiller University Jena, GER)
- C11-02 **Illuminating the evolutionary origin of the turtle shell by a comparative tissue-specific transcriptome analysis**  
 Pascual-Anaya, Juan (RIKEN Center for Developmental Biology, Kobe, JPN); Kuratani, Shigeru (RIKEN Center for Developmental Biology, Kobe, JPN)
- C11-03 **Blastodermal segmentation in the milkweed bug, *Oncopeltus fasciatus***  
 Chipman, Ariel (The Hebrew University of Jerusalem, ISR); Stahi, Reut (The Hebrew University, Jerusalem, ISR)
- C11-04 **The origins of arthropod innovations: Insights from the non-insect arthropods, the cherry shrimp and rusty millipede**  
 Kenny, Nathan (The Chinese University of Hong Kong, HKG); Qu, Zhe (The Chinese University of Hong Kong, HKG); Wong, Nicola (The Chinese University of Hong Kong, HKG); Lam, Hon Ming (The Chinese University of Hong Kong, HKG); Chu, Ka Hou (The Chinese University of Hong Kong, HKG); Hui, Jerome (The Chinese University of Hong Kong, HKG)

**14.20 – 16.00 Contributed Session C12:  
Perspectives on Wnt signaling II**

**ROOM C1**

- C12-01 **Repeated evolution of novel embryonic axis determinants in dipteran insects**  
Schmidt-Ott, Urs (The University of Chicago, USA)
- C12-02 **Antagonizing Wnt signaling in the *Tribolium* embryo**  
Schröder, Reinhard (University of Rostock, GER); Prühs, Romy (University of Rostock, GER); Sharma, Rahul (University of Rostock, GER); Beermann, Katharina (University of Rostock, GER); Beermann, Anke (Eberhard Karls University of Tübingen, GER)
- C12-03 **Wnt-Myc interaction in *Hydra* stem cell proliferation**  
Hobmayer, Bert (University of Innsbruck, AUT); Gufler, Sabine (University of Innsbruck, AUT); Glasauer, Stella (University of Innsbruck, AUT); Bister, Klaus (University of Innsbruck, AUT); Hartl, Markus (University of Innsbruck, AUT)
- C12-04 **How regulatory beta-catenin modules impinge on early annelid GRNs**  
Schneider, Stephan (Iowa State University, Ames, IA, USA); Pruitt, Margaret (Iowa State University, Ames, IA, USA); Bastin, Benjamin (Iowa State University, Ames, IA, USA); Chou, Hsien-chao (Iowa State University, Ames, IA, USA)

**14.20 – 16.00 Contributed Session C13:  
Ecological and environmental impacts on the evolution of organismal development I**

**ROOM C2**  
Chair: Angelika Stollewerk

- C13-01 **Combining molecular, developmental, and ecological approaches to understanding the relationship between genotype, phenotype, and the selective environment**  
Khila, Abderrahman (Institute of Functional Genomics of Lyon, FRA)
- C13-02 **Evolution of the olfactory sensory system in the blind cavefish *Astyanax mexicanus***  
Retaux, Sylvie (CNRS, Gif-sur-Yvette, FRA); Bibliowicz, Yoni (CNRS, Gif-sur-Yvette, FRA); Hinaux, Hélène (CNRS, Gif-sur-Yvette, FRA); Blin, Maryline (CNRS, Gif-sur-Yvette, FRA); Alié, Alexandre (CNRS, Gif-sur-Yvette, FRA); Espinasa, Luis (Marist College, Poughkeepsie, NY, USA)
- C13-03 **Optogenetics illuminates the neural circuit regulating swimming behavior in the marine annelid *Platynereis dumerilii***  
Tosches, Maria Antonietta (European Molecular Biology Laboratory, Heidelberg, GER); Bucher, Daniel (European Molecular Biology Laboratory, Heidelberg, GER); Arendt, Detlev (European Molecular Biology Laboratory, Heidelberg, GER)

**C13-04 Genetic and epigenetic bases of abdominal pigmentation plasticity in *Drosophila melanogaster***

Gibert, Jean-Michel (UMR7622 CNRS-UPMC IBPS, Paris, FRA); Mouchel-Vielh, Emmanuèle (UMR7622 CNRS-UPMC IBPS, Paris, FRA); De Castro, Sandra (UMR7622 CNRS-UPMC IBPS, Paris, FRA); Coulpier, Fanny (Genomic Paris Centre, IBENS, Paris, FRA); Le Crom, Stéphane (Genomic Paris Centre, IBENS, Paris, FRA); Peronnet, Frédérique (UMR7622 CNRS-UPMC IBPS, Paris, FRA)

**14.20 – 16.00 Contributed Session C14:  
Developmental mechanisms underlying evolutionary change II**

**ROOM D**

- C14-01 **A mechanism for reproductive constraint in the honeybee**  
Duncan, Elizabeth (University of Otago, Dunedin, NZL); Dearden, Peter (University of Otago, Dunedin, NZL)
- C14-02 **EvoDevo of *Astyanax mexicanus* cavefish: A new time frame and its consequence on the underlying evolutionary mechanisms**  
Fumey, Julien (LEGS, UPR9034 CNRS, Gif-sur-Yvette, FRA); Noirot, Céline (Genotoul, INRA, Auzeville, FRA); Hinaux, Hélène (Neurobiology & Development Laboratory UPR3294, Gif-sur-Yvette, FRA); Rétaux, Sylvie (Neurobiology & Development Laboratory UPR3294, Gif-sur-Yvette, FRA); Casane, Didier (LEGS, UPR9034 CNRS, Gif-sur-Yvette, FRA)
- C14-03 **Notch signalling is necessary for environmentally-induced transdifferentiation in the sponge, *Amphimedon queenslandica***  
Degnan, Bernie (University of Queensland, Brisbane, AUS); Nakanishi, Nagayasu (University of Queensland, Brisbane, AUS); Richards, Gemma (University of Queensland, Brisbane, AUS)
- C14-04 **The evolutionary role of microRNA gene regulation in development: Insights from hemichordates**  
Gray, Jessica (Harvard Medical School, Boston, MA, USA); Freeman, Jr., Robert (Harvard Medical School, Boston, MA, USA); Gerhart, John (University of California Berkeley, CA, USA); Kirschner, Marc (Harvard Medical School, Boston, MA, USA)

**16.30 – 17.00 Contributed Session C15:**  
**EvoDevo as an approach to understanding communication: Modeling, genetics, and developmental research in vocal communication and its neurological underpinnings**

**ROOM A**

- C15-01 **Endless forms of reward. A combinatorial solution for convergent behavioural traits**  
Berra, Irene (University of Amsterdam, NLD / University of Messina, ITA)
- C15-02 **Language acquisition as an organic developmental process**  
Blasco Máñez, Teresa (The KLI Institute, Klosterneuburg, AUT / University of Oviedo, ESP); Lorenzo, Guillermo (University de Oviedo, ESP); Balari, Sergio (Universitat Autònoma de Barcelona, Bellaterra, ESP)

**16.30 – 17.00 Contributed Session C16:**  
**Quo vadis EvoDevo?**

**ROOM B**

- C16-01 **Remaining questions of the developmental hourglass model**  
Irie, Naoki (University of Tokyo, JPN); Kuratani, Shigeru (RIKEN Center for Developmental Biology, Kobe, JPN)
- C16-02 **Arthropod developmental patterns through time: Is there a decline of diversity?**  
Haug, Joachim (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER); Haug, Carolin (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER)

**16.30 – 17.00 Contributed Session C17:**  
**Regeneration EvoDevo**

**ROOM C1**

- C17-01 **Distinct mechanisms underlie proximal and distal regeneration in the cnidarian, *Hydractinia echinata***  
Bradshaw, Brian (National University of Ireland, Galway, IRL; Frank, Uri (National University of Ireland, Galway, IRL)
- C17-02 **Homoscleromorpha (Porifera) ectosome regeneration: Morphallaxis and metaplasia**  
Ereskovsky, Alexander (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology (IMBE), Marseille, FRA); Borisenko, Ilya (Saint-Petersburg State University, RUS); Gazave, Eve (Institut Jacques Monod, CNRS, Université Paris-Diderot Paris 7, FRA); Renard, Emmanuelle (Aix-Marseille University, FRA); Borchiellini, Carole (Aix-Marseille University, FRA)

**16.30 – 17.00 Contributed Session C18:**  
**Ecological and environmental impacts on the evolution of organismal development II**

**ROOM C2**

- C18-01 **Regulatory gene networks that shape the development of adaptive phenotypic plasticity in a cichlid fish**  
Schneider, Ralf Friedrich (University of Konstanz, GER); Li, Yuanhao (University of Konstanz, GER); Meyer, Axel (University of Konstanz, GER); Gunter, Helen M (University of Konstanz, GER)
- C18-02 **Running for life: Developmental and biomechanical constraints on homeotic transformations in mammals**  
Galí, Frietson (Naturalis Biodiversity Center, Leiden, NLD); Carrier, David (University of Utah, Salt Lake City, UT, USA); van Alphen, Joris (Groningen University, NLD); Metz, Johan (IIASA, Laxenburg, AUT); Ten Broek, Clara (Naturalis Biodiversity Center, Leiden, NLD)

**16.30 – 17.00 Contributed Session C19:**  
**Amphioxus EvoDevo**

**ROOM D**

- C19-01 **Molecular patterning of amphioxus CNS reveals unexpected evolutionary relationships between midbrain and diencephalon**  
Albuixech-Crespo, Beatriz (University of Barcelona, ESP); Irimia, Manuel (University of Barcelona, ESP); Maeso, Ignacio (University of Barcelona, ESP); Sánchez-Arrones, Luisa (CSIC-UAM, Madrid, ESP); Somorjai, Ildiko (University of St Andrews, GBR); Pascual-Anaya, Juan (Riken Center for Developmental Biology, Kobe, JPN); Bovolenta, Paola (CSIC-UAM, Madrid, ESP); Garcia-Fernández, Jordi (University of Barcelona, ESP); Ferran, José Luis (University of Murcia, ESP); Puelles, Luis (University of Murcia, ESP)

- C19-02 **Functional study of neural induction in the cephalochordate, *Branchiostoma lanceolatum***  
Le Pétillon, Yann (UPMC – Laboratoire Arago, Banyuls-sur-Mer, FRA)

**17.10 – 17.20 Kowalevsky Medal to Denis Duboule**  
**ROOMS C1&2**

- 17.20 – 18.00 Keynote Lecture (K3)**  
**The evolution of key bilaterian traits: Insights from regulatory developmental networks in Cnidaria**  
**Ulrich Technau**  
(University of Vienna, AUT)  
Chair: Michael Schubert

**18.00 – 20.00** **Workshop:**  
**Advances in live imaging morphogenesis**

**ROOM A**  
[& ROOM F]

Chairs: Frederike Alwes and Carsten Wolff  
Demonstration



**W-01** **High-speed light sheet microscopy and real-time image processing**

Huisken, Jan (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER)

**W-02** **SPIM imaging of spiralian development**

Handberg-Thorsager, Mette (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER); Tomer, Raju (Stanford University, CA, USA); Amat, Fernando (Janelia Farm Research Campus, Ashburn, VA, USA); Girstmair, Johannes (University College London, GBR); Telford, Max (University College London, GBR); Arendt, Detlev (European Molecular Biology Laboratory, Heidelberg, GER); Keller, Philipp (Janelia Farm Research Campus, Ashburn, VA, USA); Tomancak, Pavel (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER)

**W-03** **Imaging and quantifying 4D growth patterns during flower development**

Das, Pradeep (ENS Lyon, Lyon, FRA)

**W-04** **Multi-level studies of appendage morphogenesis in the crustacean model, *Parhyale hawaiensis***

Pavlopoulos, Anastasios (Howard Hughes Medical Institute, Ashburn, VA, USA); Tinevez, Jean-Yves (Institut Pasteur, Paris, FRA); Pietzsch, Tobias (Max Planck Institute, Dresden, GER); Wolff, Carsten (Humboldt-Universität, Berlin, GER); Tomancak, Pavel (Max Planck Institute, Dresden, GER)

**W-05** **Light sheet microscopy as a tool for studying early insect development**

Tomancak, Pavel (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER)

**18.00 – 20.00** **Poster Session 2**  
**Corridors C**  
**and ROOM E**

**Friday, July 25<sup>th</sup>**

**09.00 – 10.40** **Symposium S18:**  
**EvoDevo of cranial neural crest populations across developmental systems**

**ROOM A**  
Organizer: Georgy Koentges  
Chair: Georgy Koentges

**S18-01** **Characterizing evolutionary conserved regulatory networks in zebrafish craniofacial development**

Eberhart, Johann (University of Texas at Austin, TX, USA); Swartz, M. E. (University of Texas at Austin, TX, USA); Wells, M. B. (University of Texas at Austin, TX, USA); Li, Q. (University of Texas at Austin, TX, USA); Sheehan-Rooney, Kelly (University of Texas at Austin, TX, USA); Rozacky, Jenna (University of Texas at Austin, TX, USA); Dixon, M. J. (University of Manchester, GBR); Vokes, Steven A. (University of Texas at Austin, TX, USA)

**S18-02** **Variation in craniofacial derivation and development: Insights from extreme model systems**

Gross, Joshua (University of Cincinnati, OH, USA)

**S18-03** **Elaborating a forebrain: Role of the neural crest in vertebrate evolution**

Creuzet, Sophie (Institut de Neurobiologie Alfred Fessard, Gif-sur-Yvette, FRA)

**S18-04** **Comparative rhombomeric fate mapping of neural crest and its evolutionary implications**

Koentges, Georgy (University of Warwick, Coventry, GBR)

**09.00 – 10.40** **Symposium S19:**  
**Quantitative EvoDevo in model and non-model organisms I**

**ROOM B**  
Organizers: Benedikt Hallgrímsson, Chris Klingenberg, Philipp Mitteroecker and Ruth Flatscher  
Chair: Christian Klingenberg

**S19-01** **Morphometrics and the developmental genomics of canalization in craniofacial development**

Hallgrímsson, Benedikt (University of Calgary, AB, CAN); Gonzalez, Paula M. (Universidad Nacional de La Plata, ARG); Mio, Washington (Florida State University, FL, USA); Young, Nathan M. (University of California San Francisco, CA, USA); Percival, Christopher (University of Calgary, AB, CAN); Liberton, Denise (Pennsylvania State University, University Park, PA, USA); Jamniczky, Heather (University of Calgary, AB, CAN); Marcucio, Ralph (University of California San Francisco, CA, USA)

- S19-02 An information theoretic approach to identifying cranial modularity with 3-D morphometric data**  
Goswami, Anjali (University College London, GBR); Finarelli, John (University College Dublin, Dublin)
- S19-03 Streptophyta): Quantitative morphometrics at the cellular level**  
Neustupa, Jiri (Charles University in Prague, CZE)
- S19-04 Developmental canalization in the vertebrate cranium: A morphometric approach**  
Mitteroecker, Philipp (University of Vienna, AUT)
- 09.00 – 10.40 Symposium S20:  
Less is more: Loss of gene functions as a driving force of developmental evolution**  
**ROOM C1**  
Organizers: Cristian Cañestro and Ingo Braasch  
Chairs: Cristian Cañestro and Ingo Braasch
- S20-01 Dynamic gain and loss of genes in animal evolution**  
Holland, Peter (University of Oxford, GBR); Quah, Shan (University of Oxford, GBR); Maeso, Ignacio (University of Oxford, GBR); Marletaz, Ferdinand (University of Oxford, GBR); Paps, Jordi (University of Oxford, GBR); Olson, Peter (Natural History Museum, London, GBR); Martin, Kyle (University of Oxford, GBR); Hui, Jerome (The Chinese University of Hong Kong, CHN)
- S20-02 Ohnologs: Why do basal bony fish hold'em but crown groups fold'em?**  
Braasch, Ingo (University of Oregon, Eugene, OR, USA); Batzel, Peter (University of Oregon, Eugene, OR, USA); Amores, Angel (University of Oregon, Eugene, OR, USA); Ferrara, Allyse (Nicholls State University, Thibodaux, LA, USA); Fontenot, Quenton (Nicholls State University, Thibodaux, LA, USA); Bobe, Julien (Laboratoire de Physiologie et génomique des poissons, INRA, Rennes, FRA); Postlethwait, John (University of Oregon, Eugene, OR, USA); Guiguen, Yann (Laboratoire de Physiologie et génomique des poissons, INRA, Rennes, FRA)
- S20-03 Revealing cryptic pan-vertebrate gene repertoire in developmental phylome**  
Kuraku, Shigehiro (RIKEN Center for Developmental Biology, Kobe, JPN)
- S20-04 A systematic approach to identify gene losses in genome alignments**  
Hiller, Michael (Max Planck Institute for Molecular Cell Biology and Genetics (MPI CBG) & Max Planck Institute for the Physics of Complex Systems (MPI PKS), Dresden, GER); Sharma, Virag (MPI CBG & MPI PKS, Dresden, GER); Langer, Bjoern (MPI CBG & MPI PKS, Dresden, GER); Foerster, Leo (MPI CBG & MPI PKS, Dresden, GER); Kiruvale, Pradeep (MPI CBG & MPI PKS, Dresden, GER)

- 09.00 – 10.40** **Symposium S21:  
EcoEvoDevo: Symbiosis and epigenetic inheritance**  
**ROOM C2**  
Organizers: Scott Gilbert and Yoav Soen  
Chairs: Yoav Soen and Scott Gilbert
- S21-01 EvoDevo of the holobiont**  
Gilbert, Scott (University of Helsinki, FIN)
- S21-02 Experimental evolution of legume endosymbionts**  
Masson, Catherine (Laboratory of Plant-Microbe Interactions, INRA, Toulouse, FRA)
- S21-03 Transgenerational inheritance of small RNAs in *C. elegans***  
Rechavi, Oded (Tel Aviv University, ISR)
- S21-04 Linking EcoDevo with EvoDevo by non-mendelian inheritance of epigenetic and symbiotic changes**  
Soen, Yoav (Weizmann Institute of Science, Rehovot, ISR)
- 11.10 – 12.25 Contributed Session C20:  
EvoDevo of cranial neural crest and dentition**  
**ROOM A**  
Chairs: Moya Smith and Georgy Koentges
- C20-01 An epithelial stem cell niche and a core gene network regulate continuous tooth regeneration in sharks**  
Martin, Kyle (University of Sheffield, GBR); Rasch, Liam (University of Sheffield, GBR); Fraser, Gareth (University of Sheffield, GBR)
- C20-02 Morphogenetics of coordinated tooth and jaw development and evolution in mammals**  
Boughner, Julia (University of Saskatchewan, Saskatoon, CAN); Raj, Muhammad (University of Saskatchewan, Saskatoon, CAN); Uppal, Jasmene (University of Saskatchewan, Saskatoon, CAN)
- C20-03 Quantitative modeling of dental stem cell niche evolution and constant change in tooth height over 50 million years**  
Mushegyan, Vagan (University of California San Francisco, CA, USA); Eronen, Jussi (University of Helsinki, FIN & Senckenberg Research Institute and Natural History Museum, Frankfurt, GER); Lawing, Michelle (Texas A&M University, College Station, TX, USA); Sharir, Amnon (University of California San Francisco, CA, USA); Janis, Christine (Brown University, Providence, RI, USA); Klein, Ophir D. (University of California San Francisco, CA, USA)
- C20-04 Cellular cartilage predates vertebrates and was coopted by the neural crest during vertebrate head skeleton evolution**  
Jandzik, David (University of Colorado at Boulder, CO, USA); Garnett, Aaron T. (University of Colorado at Boulder, CO, USA); Square, Tyler A. (University of Colorado at Boulder, CO, USA); Cattell, Maria V. (University of Colorado at Boulder, CO, USA); Yu, Jr-Kai (Academia Sinica, Taipei, TWN); Medeiros, Daniel M. (University of Colorado at Boulder, CO, USA)

C20-05	<b>Afferent projections mirror the evolutionary origins of trigeminal sensory neurons</b> Butts, Thomas (King's College, London, GBR); Graham, Anthony (King's College, London, GBR)	<b>11.10 – 12.25</b>	<b>Contributed Session C22: Less is more: Loss of gene functions as a driving force of developmental evolution</b> <i>Chairs:</i> Cristian Cañestro and Ingo Braasch
<b>11.10 – 12.25</b>	<b>Contributed Session C21: Quantitative EvoDevo in model and non-model organisms I</b> <i>Chair:</i> Philipp Mitteroecker	<b>ROOM C1</b>	
<b>ROOM B</b>			
C21-01	<b>Adaptive integration in the human pelvis</b> Fischer, Barbara (Centre for Ecology and Evolutionary Synthesis, Oslo, NOR); Mitteroecker, Philipp (University of Vienna, AUT)	C22-01	<b>The repertoires of developmental transcription factors in sponges were shaped by extensive independent gene loss events</b> Fortunato, Sofia (University of Bergen, NOR); Adamski, Marcin (University of Bergen, NOR); Adamska, Maja (University of, NOR)
C21-02	<b>Grasping flexibility: Evolutionary modularity and developmental origin of carapace integration in Chelonians</b> Djurakic, Marko (University of Novi Sad, SRB); Herrel, Anthony (UMR 7179 CNRS/MNHN, Paris, FRA); Jojic, Vida (Institute for Biological Research "Sinisa Stankovic", University of Belgrade, SRB)	C22-02	<b>Lens defects in <i>Astyanax mexicanus</i> blind cavefish: Focus on crystallins evolution and function</b> Rétaux, Sylvie (CNRS Gif-sur-Yvette, FRA); Hinaux, Hélène (CNRS Gif-sur-Yvette, FRA); Alié, Alexandre (CNRS Gif-sur-Yvette, FRA); Blin, Maryline (CNRS Gif-sur-Yvette, FRA)
C21-03	<b>Systematic knock-down analysis of the gap gene network in the scuttle fly <i>Megaselia abdita</i> reveals quantitative system drift</b> Wotton, Karl (Center for Genomic Regulation, Barcelona, ESP); Jimenez-Guri, Eva (Center for Genomic Regulation, Barcelona, ESP); Crombach, Anton (Center for Genomic Regulation, Barcelona, ESP); Jaeger, Johannes (Center for Genomic Regulation, Barcelona, ESP)	C22-03	<b>Evolution and development of the bifurcated axial skeletal system in the twin-tail goldfish</b> Abe, Gembu (Academia Sinica, Yilan, TWN); Lee, Shu-Hua (Academia Sinica, Yilan, TWN); Chang, Mariann (Academia Sinica, Yilan, TWN); Liu, Shih-Chieh (Academia Sinica, Yilan, TWN); Ota, Kinya (Academia Sinica, Yilan, TWN)
C21-04	<b>Evolution of skull shape in <i>Triturus newts</i>: An ontogenetic and phylogenetic perspective</b> Ivanovic, Ana (University of Belgrade, SRB); Cvijanovic, Milena (Institute for Biological Research "Sinisa Stankovic", Belgrade, SRB); Arntzen, Jan W. (Naturalis Biodiversity Center, Leiden, NDL); Zelditch, Miriam (University of Michigan, MI, USA)	C22-04	<b>A mollusk retinoic acid receptor (RAR) ortholog sheds light on the evolution of ligand binding</b> Schubert, Michael (Laboratoire de Biologie du Développement de Villefranche-sur-Mer, FRA)
C21-05	<b>Evolution of salamander limbs: Influence of different functional demands of larvae and adults</b> Vukov, Tanja (University of Belgrade, SRB); Üzüm, Nazan (Adnan Menderes Üniversitesi, Aydin, TUR); Urosevic, Aleksandar (University of Belgrade, SRB); Slijepcevic, Maja (University of Belgrade, SRB); Tomasevic Kolarov, Natasa (University of Belgrade, SRB)	C22-05	<b>Darwin's „living fossil“ as a new model: Spotted Gar and the genomic basis of vertebrate EvoDevo</b> Braasch, Ingo (University of Oregon, Eugene, OR, USA); Batzel, Peter (University of Oregon, Eugene, OR, USA); Loker, Ryan (University of Oregon, Eugene, OR, USA); Amores, Angel (University of Oregon, Eugene, OR, USA); Fontenot, Quentin (Nicholls State University, Thibodaux, LA, USA); Ferrara, Allyse (Nicholls State University, Thibodaux, LA, USA); Postlethwait, John H. (University of Oregon, Eugene, OR, USA)
		<b>11.10 – 12.25</b>	<b>Contributed Session C23: EcoEvoDevo: Symbiosis and epigenetic inheritance</b> <i>Chairs:</i> Scott Gilbert and Yoav Soen
		<b>ROOM C2</b>	
		C23-01	<b>Development of symbiotic organ: Hox genes regulate development of bacteriome and localization of bacterial symbiont in seed bug <i>Nysius plebeius</i></b> Matsuura, Yu (Hokkaido University, Sapporo, JPN); Kikuchi, Yoshitomo (Bioproduction Research Institute, AIST, Hokkaido, Sapporo, JPN); Koga, Ryuichi (Bioproduction Research Institute, AIST, Tsukuba, JPN); Miura, Toru (Hokkaido University, Sapporo, JPN); Fukatsu, Takema (Bioproduction Research Institute, AIST, Tsukuba, JPN)
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- C23-02 Ancestral developmental potential facilitates parallel evolution of a novel supersoldier caste in the hyperdiverse ant genus *Pheidole***  
**Rajakumar, Rajendran** (McGill University, Montreal, QC, CAN); San Mauro, Diego (McGill University, Montreal, QC, CAN); Dijkstra, Michiel B. (McGill University, Montreal, QC, CAN); Huang, Ming H. (University of Arizona, Tucson, AZ, USA); Wheeler, Diana E. (University of Arizona, Tucson, AZ, USA); Hiou-Tim, François (McGill University, Montreal, QC, CAN); Khila, Abderrahman (McGill University, Montreal, QC, CAN); Cournoyea, Michael (McGill University, Montreal, QC, CAN); Abouheif, Ehab (McGill University, Montreal, QC, CAN)
- C23-03 Investigating the role of genetic assimilation in an adaptive radiation**  
**Gunter, Helen** (University of Konstanz, GER); Karner, Immanuel (University of Graz, AUT); Schneider, Ralf (University of Konstanz, GER); Sturmbauer, Christian (University of Graz, AUT); Meyer, Axel (University of Konstanz, GER)
- C23-04 Genetic assimilations: How they impact blind variation**  
**Danchin, Etienne** (Evolution & Diversité Biologique, UMR 5174, CNRS, UPS, ENFA, Toulouse, FRA); **Pocheville, Arnaud** (University of Pittsburgh, PA, USA)
- C23-05 The propensity interpretation of fitness and the Modern Synthesis**  
**Chiu, Lynn** (University of Columbia-Missouri, MO, USA)
- 11.10 – 12.25 Contributed Session C24: Origin and diversification of regeneration**  
**Chair:** Jeremy Brookes  
**ROOM D**
- C24-01 Using sponges to investigate the evolution of stem cell gene regulatory networks**  
**Revilla-i-Domingo, Roger** (Max F. Perutz Laboratories / University of Vienna, AUT); Steudle, Friederike (Max F. Perutz Laboratories / University of Vienna, AUT); Raible, Florian (Max F. Perutz Laboratories / University of Vienna, AUT)
- C24-02 Transcriptional activation of Tgf-beta and Wnt pathways during whole body regeneration in sponges**  
**Adamski, Marcin** (University of Bergen, NOR); Laplante, Mary (University of Bergen, NOR); Liu, Jing (University of Bergen, NOR); Bråte, Jon (University of Oslo, NOR); Leininger, Sven (University of Bergen, NOR); Leon Florian, Luis Anthony (University of Bergen, NOR); Ereskovsky, Alexander (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology (IMBE), Marseille, FRA); Adamska, Maja (University of Bergen, NOR)
- C24-03 Unexpected capacity for the primary body plan regeneration in *Nematostella vectensis* embryos dissociated into single cells**  
**Kozyreva, Anastasia** (Lomonosov Moscow State University, Faculty of Biology, Moscow, RUS); Genikhovich, Grigory (University of Vienna, AUT); Technau, Ulrich (University of Vienna, AUT)

- C24-04 Posterior elongation in the annelid *Platynereis dumerilii* involves stem cells molecularly related to primordial germ cells**  
**Gazave, Eve** (CNRS — Institut Jacques Monod, Paris, FRA); Béague, Julien (CNRS - Institut Jacques Monod, Paris, FRA); Laplane, Lucie (CNRS — Institut Jacques Monod, Paris, FRA); Demilly, Adrien (CNRS — Institut Jacques Monod, Paris, FRA); Balavoine, Guillaume (CNRS — Institut Jacques Monod, Paris, FRA); Vervoort, Michel (CNRS — Institut Jacques Monod, Paris, FRA)
- C24-05 Early evolution of limb regeneration in tetrapods – evidence from a Palaeozoic amphibian**  
**Fröbisch, Nadia** (Museum für Naturkunde Berlin, GER); Bickelmann, Constanze (Museum für Naturkunde, GER); Witzmann, Florian (Museum für Naturkunde, GER)

**14.00 – 15.40 Symposium S22: 'NEPTUNE' ITN: The evolution of sensory systems in the marine environment**

**ROOM A**

- S22-01 Novel photoreceptors in brachiopod embryos**  
**Passamanek, Yale** (University of Hawaii, Honolulu, HI, USA); Martindale, Mark (University of Florida, St. Augustine, FL, USA)
- S22-02 Mechanism of phototaxis in *Platynereis* larvae and the origin of visual eyes**  
**Jékely, Gáspár** (Max Planck Institute for Developmental Biology, Tübingen, GER)
- S22-03 Eye evolution: Common use and independent recruitment of genetic components**  
**Vopalensky, Pavel** (Academy of Sciences of the Czech Republic, Prague, CZE); Pergner, Jiri (Academy of Sciences of the Czech Republic, Prague, CZE); Kozmíkova, Iryna (Academy of Sciences of the Czech Republic, Prague, CZE); Kozmík, Zbynek (Academy of Sciences of the Czech Republic, Prague, CZE)
- S22-04 Opsins and the evolution of eyespots in the Acoelomorpha**  
**Pang, Kevin** (University of Bergen, NOR); Hejnol, Andreas (University of Bergen, NOR)

**14.00 – 15.40 Symposium S23: Quantitative EvoDevo in model and non-model organisms II**

**ROOM B**

- S23-01 Yin and yang of EvoDevo: Evolutionary transitions and developmental experiments**  
**Jernvall, Jukka** (University of Helsinki, FIN)

- S23-02** **Wnt signalling underlies craniofacial variability in Lake Malawi cichlids**  
 Parsons, Kevin (Institute of Biodiversity, Animal Health, and Comparative Medicine, Glasgow, GBR); Taylor, Trent (University of Massachusetts Amherst, MA, USA); Powder, Kara (University of Massachusetts Amherst, MA, USA); Albertson, R. Craig (University of Massachusetts Amherst, MA, USA)
- S23-03** **Using false flowers to study evolution of modularity and integration**  
 Armbruster, W. Scott (University of Portsmouth, GBR)
- S23-04** **Looking for modularity in morphometric data: Exploratory search without a hypothesis**  
 Klingenberg, Chris (University of Manchester, GBR)

**14.00 – 15.40** **Symposium S24:**  
**Origin and diversification of regeneration**

**ROOM C1**  
 Organizer: Florian Raible  
 Chair: Florian Raible

- S24-01** **Taxon-specificity in Salamander limb development and regeneration**  
 Brockes, Jeremy (University College London, GBR)
- S24-02** **Planarians as model system for the evolution of regeneration**  
 Rink, Jochen (Max Planck Institute for Molecular Cell Biology and Genetics, Dresden, GER)
- S24-03** **Germline replacement in the Crustacean, *Parhyale hawaiensis***  
 Patel, Nipam (University of California Berkeley, CA, USA)
- S24-04** **Injury-induced cell death, an evolutionarily-conserved force to drive regeneration?**  
 Galliot, Brigitte (University of Geneva, CHE); Reiter, Silke (CHE); Wenger, Ivan (CHE); Chara, Osvaldo (CHE); Martinvalet, Denis (CHE); Buzgariu, Wanda (CHE)

**14.00 – 15.40** **Symposium S25:**  
**"Living fossils", myth or reality?**

**ROOM C2**  
 Organizers: Patrick Laurenti and Didier Casane  
 Chairs: Didier Casane and Patrick Laurenti

- S25-01** **"Living fossils" the facts beyond the myth**  
 Laurenti, Patrick (CNRS, Université Paris-Diderot, Sorbonne Paris Cité, Gif-sur-Yvette, FRA); Casane, Didier (CNRS, Université Paris-Diderot, Sorbonne Paris Cité, Gif-sur-Yvette, FRA)
- S25-02** **Coelacanth and the myth of living fossil**  
 Dutel, Hugo (RIKEN Center for Developmental Biology, Kobe, Hyogo, JPN)

- S25-03** **Evolution and diversity of the Chondrichthyes**  
 Cuny, Gilles (Natural History Museum of Denmark, Copenhagen, DNK)
- S25-04** **Embryology of the hagfish and early evolution of vertebrates**  
 Kuratani, Shigeru (RIKEN Center for Developmental Biology, Kobe, Hyogo, JPN), Ota, Kinya G. (Marine Research Station, Yilan, TWN), Oisi, Yasuhiro (Max Planck Florida Institute for Neuroscience, Jupiter, FL, USA)

**16.10 – 17.10** **Contributed Session C25:**  
**'NEPTUNE' ITN: The evolution of sensory systems in the marine environment**

**ROOM A**

- C25-01** **An ancient neuropeptide regulates both larval settlement and feeding in the marine worm *Platynereis dumerilii***  
 Williams, Elizabeth (Max Planck Institute for Developmental Biology, Tübingen, GER); Conzelmann, Markus (Max Planck Institute for Developmental Biology, Tübingen, GER); Jékely, Gáspár (Max Planck Institute for Developmental Biology, Tübingen, GER)
- C25-02** **Regulation of apical sense organ formation in the sea anemone *Nematostella vectensis* by Frizzled 5/8 and Glypcan 4/6**  
 Bause, Markus (University of Bergen, NOR); Rentzsch, Fabian (University of Bergen, NOR); Leclère, Lucas (Observatoire Océanologique de Villefranche sur Mer, FRA); Sinigaglia, Chiara (Observatoire Océanologique de Villefranche sur Mer, FRA)
- C25-03** **Expression of neuropeptides in the brachiopod, *Terebratalia transversa***  
 Thiel, Daniel (University of Bergen, NOR); Jékely, Gáspár (Max Planck Institute for Developmental Biology, Tübingen, GER); Hejnol, Andreas (University of Bergen, NOR)
- C25-04** **Evolution and development of photoreceptors in Polyplacophora**  
 Vöcking, Oliver (University of Bergen, NOR); Hausen, Harald (University of Bergen, NOR)

**16.10 – 17.10 Contributed Session C26:  
Quantitative EvoDevo in model and non-model  
organisms II**

**ROOM B**  
Chair: Philipp Mitteroecker

**C26-01 A differentially expressed gene network in the head of divergent arctic charr morphs is potentially regulated by Ets-2**

Pashay Ahi, Ehsan (University of Iceland, Reykjavik, ISL); Hristova Kapralova, Kalina (University of Iceland, Reykjavik, ISL); Pálsson, Arnar (University of Iceland, Reykjavik, ISL); Maier, Valerie Helene (University of Iceland, Reykjavik, ISL); Gudbrandsson, Jóhannes (University of Iceland, Reykjavik, ISL); Snorrason, Sigurður (University of Iceland, Reykjavik, ISL); Franzdóttir, Sigríður R. (University of Iceland, Reykjavik, ISL); Jónsson, Zophonías O. (University of Iceland, Reykjavik, ISL)

**C26-02 Gap domain shifts caused by damped oscillations represent a dynamic fossil of short-gerband evolution**

Verd, Berta (Center for Genomic Regulation, Barcelona, ESP); Crombach, Anton (Center for Genomic Regulation, Barcelona, ESP); Jaeger, Johannes (Center for Genomic Regulation, Barcelona, ESP)

**C26-03 Quantification of developmental variation in rainbow trout using geometric morphometric image analysis**

Mayer, Christine (University of Vienna, AUT); Metscher, Brian (University of Vienna, AUT); Müller, Gerd B. (University of Vienna, AUT); Mitteroecker, Philipp (University of Vienna, AUT)

**C26-04 Compartmentalization and spatial complexity of gene expression through development**

Salvador-Martínez, Irepán (University of Helsinki, FIN); Salazar-Ciudad, Isaac (University of Helsinki, FIN)

**16.10 – 17.10 Contributed Session C27:  
How does developmental robustness facilitate the evolution of biodiversity?**

**ROOM C1**  
Chairs: Günter Theissen and Rainer Melzer

**C27-01 The significance of developmental robustness for the biodiversity of life**

Melzer, Rainer (Friedrich Schiller University Jena, GER); Theissen, Günter (Friedrich Schiller University Jena, GER)

**C27-02 A computational approach to the evolution of development under conservative selection**

Zimm, Roland (University of Helsinki, FIN); Salazar-Ciudad, Isaac (University of Helsinki, FIN)

**C27-03 Divergent role of the Hox gene *Antennapedia* in spiders is responsible for the convergent evolution of abdominal limb repression**

Khadjeh, Sara (University of Göttingen, GER); Turetzek, Natascha (University of Göttingen, GER); Prpic-Schäper, Nikola-Michael (University of Göttingen, GER)

**C27-04 Designing a mesodermal molecular toolkit in the marine annelids *Alitta virens* and *Platynereis dumerilii***

Kozin, Vitaly V. (St. Petersburg State University, RUS); Raible, Florian (Max F. Perutz Laboratories, University of Vienna, AUT); Kostyuchenko, Roman P. (St. Petersburg State University, RUS)

**16.10 – 17.10 Contributed Session C28:  
Uncovering the genomic bases of phenotypic change in the NGS era II**

**ROOM C2**  
Chairs: Juan Pascual and Ignacio Maeso

**C28-01 Evolution of the eye transcriptome under constant darkness in *Sinocyclocheilus* cavefish**

Meng, Fanwei (Chinese Academy of Sciences, Beijing, CHN); Braasch, Ingo (University of Oregon, Eugene, OR, USA); Phillips, Jennifer (University of Oregon, Eugene, OR, USA); Zhang, Chungen (Chinese Academy of Sciences, Beijing, CHN); Postlethwait, John (University of Oregon, Eugene, OR, USA)

**C28-02 Evolution of the head developmental gene regulatory network in three closely related *Drosophila* species**

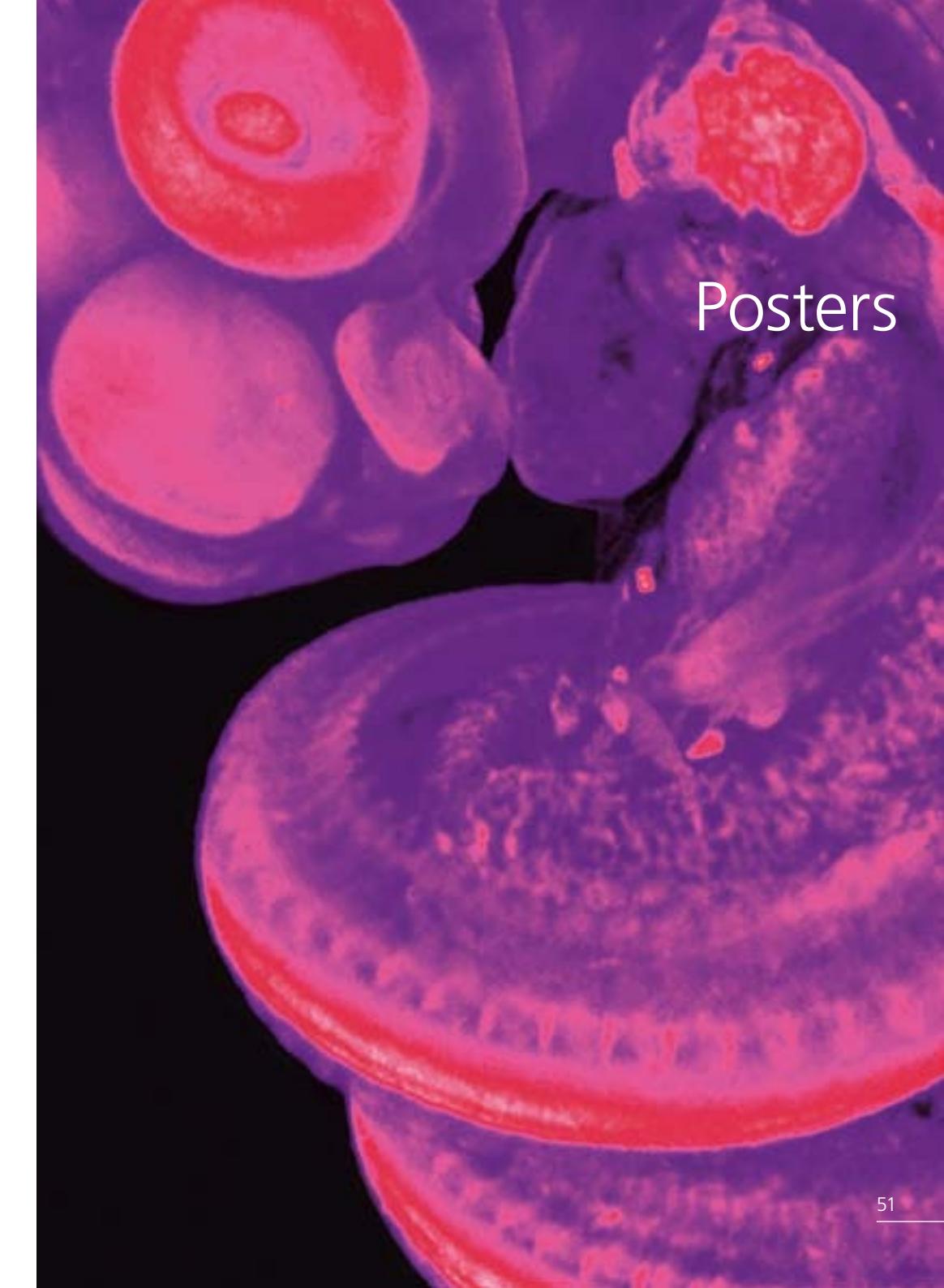
Torres Oliva, Montserrat (Georg August University of Göttingen, GER); Almudi, Isabel (Oxford Brookes University, GBR); Nunes, Maria D. S. (Oxford Brookes University, GBR); McGregor, Alistair P. (Oxford Brookes University, GBR); Posnien, Nico (Georg August University of Göttingen, GER)

**C28-03 Evolutionary innovation by rewiring of gene networks:  
Origin of sense organs in the vertebrate "new head"**

Riddiford, Nick (National University of Ireland, Galway, IRL); Schlosser, Gerhard (National University of Ireland, Galway, IRL)

**C28-04 Expression and diversification of *CYCLOIDEA* genes in Asteraceae: A case from the highly derived tribe Anthemideae**

Bello Gutiérrez, M. Angélica (Real Jardín Botánico, Madrid, ESP); Cubas, Pilar (Centro Nacional de Biotecnología, Madrid, ESP); Álvarez, Inés (Real Jardín Botánico, Madrid, ESP); Durán, Fátima (Real Jardín Botánico, Madrid, ESP); Sanjuanbenito, Guillermo (Real Jardín Botánico, Madrid, ESP); Fuertes Aguilar, Javier (Real Jardín Botánico, Madrid, ESP)



# Posters

**16.10 – 17.10** Contributed Session C29:  
**Developmental mechanisms underlying evolutionary change III**

**ROOM D**

*Chair:* Jack Green

**C29-01** **Evolution of the germ cells: Insights from a centipede**

Green, Jack (University of Cambridge, GBR)

**C29-02** **DNA methylation and phenotypic plasticity: Is DNA methylation a conserved mechanism for phenotypic plasticity in insects?**

Duncan, Elizabeth (University of Otago, Dunedin, NZL); O'Neill, Meaghan (University of Otago, Dunedin, NZL); Dearden, Peter (University of Otago, Dunedin, NZL)

**C29-03** **Modification of anterior-posterior patterning system toward fin-to-limb transformation: Origin of thumbs and radius**

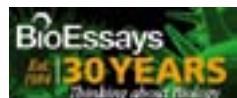
Onimaru, Koh (Tokyo Institute of Technology, Yokohama, JPN); Kuraku, Shigehiro (RIKEN Center for Developmental Biology, Kobe, JPN); Takagi, Wataru (University of Tokyo, Kashiwa, JPN); Hyodo, Susumu (University of Tokyo, Kashiwa, JPN); Tanaka, Mikiko (Tokyo Institute of Technology, Yokohama, JPN)

**C29-04** **Evolution of neurosecretory brain centres: A cell population with an apical-organ-like transcriptional profile pioneers the central nervous system in the centipede, *Strigamia maritima***

Hunnekohl, Vera (Cambridge University, GBR); Akam, Michael (Cambridge University, GBR)

**17.20 – 17.35** Student Poster Prizes

**ROOMS C1&2**



**17.35 – 18.15** Keynote Lecture (K4)  
**Ancient genes, mesoscale physics, and the origins of animal development**

**ROOMS C1&2**

**Stuart Newman**

(New York Medical College, USA)

*Chair:* Frietson Galis

**18.15 – 18.20** Conference Closing

**ROOMS C1&2**

**18.20 – 19.10** EED Business Meeting

**ROOM C1**

**19.30** Joint departure for Conference Dinner

# Posters

**P-001 A comparative genomics and transcriptomics approach to the study of *Hox3/zen* gene evolution in insects**

Vargas Jentzsch, Iris (Cologne Biocenter, GER); **Gurska, Daniela** (Cologne Biocenter, GER); Panfilio, Kristen A. (Cologne Biocenter, GER)

**P-002 A comprehensive pipeline for identifying lncRNAs on the basal-branching chordate Amphioxus**

Herrera, Carlos (University of Barcelona, ESP); Rossell, Ariadna (University of Barcelona, ESP); Burguera, Demian (University of Barcelona, ESP); Irimia, Manuel (University of Barcelona, ESP); Garcia-Fernández, Jordi (University of Barcelona, ESP)

**P-003 A developmental model for variation in floral organ number**

Kitazawa, Miho (Osaka University, Toyonaka, JPN); Fujimoto, Koichi (Osaka University, Toyonaka, JPN)

**P-004 A direct transgenic assay to identify highly conserved regulatory sequences acting in *Drosophila* development**

Schmied, Christopher (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER); Kalinka, Alexander (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER); Tomancak, Pavel (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER)

**P-005 A new self-regulatory model for DV patterning in a basal insect**

Sachs, Lena (University of Cologne, GER); Chen, Yen-Ta (University of Cologne, GER); Roth, Siegfried (University of Cologne, GER)

**P-006 A 3D developmental atlas of *Euprymna scolopes* (Cephalopoda: Sepiolidae)**

Klimpfinger, Claudia (University of Vienna, AUT); Metscher, Brian (University of Vienna, AUT)

**P-007 Adult prothorax patterning during insect typical metamorphosis**

Hu, Yonggang (Georg August University of Göttingen, GER); Bucher, Gregor (Georg August University of Göttingen, GER)

**P-008 An annelid homolog of the chordate notochord**

Brunet, Thibaut (European Molecular Biology Laboratory, Heidelberg, GER); Lauri, Antonella (European Molecular Biology Laboratory, Heidelberg, GER); Handberg-Thorsager, Mette (Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, GER); Fischer, Antje H. L. (Harvard University, Cambridge, MA, USA); Simakov, Oleg (European Molecular Biology Laboratory, Heidelberg, GER); Steinmetz, Patrick R. H. (University of Vienna, AUT); Marlow, Heather (European Molecular Biology Laboratory, Heidelberg, GER); Tomer, Raju (Janelia Farm Research Campus, Ashburn, VA, USA); Keller, Philipp J. (Janelia Farm Research Campus, Ashburn, VA, USA); Arendt, Detlev (European Molecular Biology Laboratory, Heidelberg, GER)

**P-009 Analysis of embryonic eye development in the spider *Parasteatoda tepidariorum***

Schomburg, Christoph (Georg August University of Göttingen, GER); Schacht, Magdalena (Georg August University of Göttingen, GER); Schneider, Julia (Georg August University of Göttingen, GER); Kirfel, Phillip (Georg August University of Göttingen, GER); Posnien, Nico (Georg August University of Göttingen, GER); Prpic-Schäper, Nikola-Michael (Georg August University of Göttingen, GER)

**P-010 Anatomical Network Analysis (AnNA) in morphological EvoDevo**

Rasskin-Gutman, Diego (University of Valencia, Paterna, ESP); Esteve-Altava, Borja (University of Valencia, Paterna, ESP)

**P-011 Axis determination and pattern formation in the pea aphid: Implications of the expression pattern of conserved developmental genes**

Hsiao, Yi-min (National Taiwan University, Taipei, TWN); Chung, Chen-yo (National Taiwan University, Taipei, TWN); Lu, Hsiao-ling (National Taiwan University, Taipei, TWN); Cook, Charles E. (European Molecular Biology Laboratory — European Bioinformatics Institute, Cambridge, GBR); Chang, Chun-che (National Taiwan University, Taipei, TWN)

**P-012 Axis patterning of the tick, *Boophilus microplus***

Tobias Santos, Vitoria (Universidade Federal do Rio de Janeiro, Macaé, BRA); Monteiro de Barros, Cintia (Universidade Federal do Rio de Janeiro, Macaé, BRA); Logullo, Carlos (Universidade Estadual do Norte Fluminense Darcy Ribeiro, Campos dos Goytacazes, Rio de Janeiro, BRA); Ribeiro, Lupis (Universidade Estadual do Norte Fluminense Darcy Ribeiro, Campos dos Goytacazes, Rio de Janeiro, BRA); Martins Feitosa, Natalia (Universidade Federal do Rio de Janeiro, Macaé, BRA); Campos, Eldo (Universidade Federal do Rio de Janeiro, Macaé, BRA); Marcolla Araujo, Helena (Universidade Federal do Rio de Janeiro, BRA); Fontenele, Marcio (Universidade Federal do Rio de Janeiro, BRA); Nunes da Fonseca, Rodrigo (Universidade Federal do Rio de Janeiro, Macaé, BRA)

- P-013 Bio-cultural ontogenies in Mesoamerica: Data, epistemic issues, and the archaeological roots of EcoEvoDevo and niche construction theory**  
Vergara-Silva, Francisco (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX)
- P-014 Biophysical dynamic module for the polarization of auxin efflux carriers PIN-FORMED (PIN)**  
Hernández-Hernández, Valeria (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX); Garay, Adriana (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX); Barrio, Rafael (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX); Alvarez-Buylla Roces, Elena (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX); Benitez, Mariana (Universidad Nacional Autonoma de Mexico, Mexico DC, MEX)
- P-015 Brain development of the Hagfish, with reference to the vertebrate brain evolution**  
Sugahara, Fumiaki (Hyogo College of Medicine, Nishinomiya, JPN); Oisi, Yasuhiro (RIKEN Center for Developmental Biology (CDB), Kobe, Hyogo, JPN); Pascual-Anaya, Juan (RIKEN CDB, Kobe, Hyogo, JPN); Kuraku, Shigehiro (RIKEN CDB, Kobe, Hyogo, JPN); Aota, Shin-ichi (RIKEN CDB, Kobe, Hyogo, JPN); Adachi, Noritaka (RIKEN CDB, Kobe, Hyogo, JPN); Murakami, Yasunori (Ehime University, Matsuyama, Japan, JPN); Kuratani, Shigeru (RIKEN CDB, Kobe, Hyogo, JPN)
- P-016 Can a subtle change in morphology propel groups of organisms into adaptive radiation?**  
Crumière, Antonin (Institute of Functional Genomics, Lyon, FRA); Khila, Abderrahman (Institute of Functional Genomics, Lyon, FRA)
- P-017 Cell and tissue dynamics during *Tribolium castaneum* embryogenesis revealed by versatile fluorescence labelling approaches**  
Benton, Matthew A (University of Cologne, GER); Akam, Michael (University of Cambridge, GBR); Pavlopoulos, Anastasios (Howard Hughes Medical Institute Janelia Farm Research Campus, Ashburn, VA, USA)
- P-018 Cellular and molecular analysis of muscles in two Cnidarian species (*Nematostella vectensis*, *Aurelia aurita*)**  
Jahnel, Stefan (University of Vienna, AUT); Walzl, Manfred (University of Vienna, AUT); Technau, Ulrich (University of Vienna, AUT)
- P-019 Characterizing the gene regulatory network active in early embryogenesis of the milkweed bug, *Oncopeltus fasciatus***  
Novikov, Anastasia (The Hebrew University of Jerusalem, Jerusalem, ISR); Chipman, Ariel (The Hebrew University of Jerusalem, ISR)
- P-020 Cis-regulatory evolution and functional diversification of gene duplicates**  
Tanaka, Kohtaro (Instituto Gulbenkian de Ciência, Lisboa, PRT); Hazbun, Alexis (Instituto Gulbenkian de Ciência, Oeiras, PRT); Diekmann, Yoan (Instituto Gulbenkian de Ciência, Oeiras, PRT); Gonzalez, Luís (Instituto Gulbenkian de Ciência, Oeiras, PRT); Vreede, Barbara (Instituto Gulbenkian de Ciência, Oeiras, PRT); Roch, Fernando (Université de Toulouse, FRA); Sucena, Élio (Instituto Gulbenkian de Ciência, Oeiras, PRT)
- P-021 Commissureless regulation of Slit-Robo signalling in insects**  
Seeger, Mark (Ohio State University, Columbus, OH, USA)
- P-022 Comparative cephalochordate transcriptomics: Linking genotype and phenotype at the root of chordate evolution**  
Benito, Elia (European Molecular Biology Laboratory, Heidelberg, GER); Simakov, Oleg (European Molecular Biology Laboratory, Heidelberg, GER); Larsson, Tomas (European Molecular Biology Laboratory, Heidelberg, GER); Van Dongen, Stijn (University of Cambridge, GBR); Arendt, Detlev (European Molecular Biology Laboratory, Heidelberg, GER); Enright, Anton (University of Cambridge, GBR)
- P-023 Comparative expression analyses of homeobox genes in mollusks**  
Wollesen, Tim (University of Vienna, AUT); Rodríguez-Monje, Sonia Victoria (University of Vienna, AUT); Fritsch, Martin (University of Vienna, AUT); Todt, Christiane (University Museum of Bergen, NOR); McDougall, Carmel (University of Queensland, Brisbane, AUS); Degnan, Bernard M. (University of Queensland, Brisbane, AUS); Wanninger, Andreas (University of Vienna, AUT)
- P-024 Comparative transcriptomics to study habitat change and adaptive radiation in water striders**  
Armisen, David (Institute of Functional Genomics (IGFL), Lyon, FRA); Refki, Peter (IGFL, Lyon, FRA); Khila, Abderrahman (IGFL, Lyon, FRA)
- P-025 Composition of pre-nervous serotonergic signaling system in early embryonic development of sea urchin, clawed frog and mouse**  
Nikishin, Denis (Russian Academy of Sciences, Moscow, RUS); Kramova, Yulia (Lomonosov Moscow State University, RUS); Kremnyov, Stanislav (Lomonosov Moscow State University, RUS); Shmukler, Yuri (Russian Academy of Sciences, Moscow, RUS)
- P-026 Conserved core and exchangeable modulators of the BMP signaling**  
Genikhovich, Grigory (University of Vienna, AUT)

- P-027 Correlative, quantitative, and molecular 3D imaging for Evo-Devo**  
Metscher, Brian (University of Vienna, AUT)
- P-028 CRISPR/Cas9 induced mutations in the *Tribolium* single-minded gene (*Tc-sim*) expose functions in ventral midline and growth zone patterning**  
Rode, Angelika (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Kalb, Katharina (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Helm, Martin (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Musazzi, Dorothea (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Klingler, Martin (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER)
- P-029 Descriptive and statistical analysis of colour pattern evolution in two species of lizards**  
Manukyan, Liana (University of Geneva, CHE); Montandon, Sophie A. (University of Geneva, CHE); Milinkovitch, Michel C. (University of Geneva, CHE)
- P-030 Detecting homoplasy in the origin and evolution of adipose fins**  
Stewart, Thomas (The University of Chicago, IL, USA); Coates, Michael (The University of Chicago, IL, USA)
- P-031 Development and evolution of asymmetric male genitalia in the *Drosophila nannoptera* species group**  
Lang, Michael (Institut Jacques Monod, Paris, FRA); Lemire, Andrew (Janelia Farm Research Campus, Ashburn, VA, USA); Stern, David (Janelia Farm Research Campus, Ashburn, VA, USA); Orgogozo, Virginie (Institut Jacques Monod, Paris, FRA)
- P-032 Development and evolution of dentition pattern for spatial order of tooth replacement in the Batoidea (Chondrichthyes)**  
Underwood, Charlie (Birkbeck College, University of London, GBR); Johanson, Zerina (Natural History Museum, London, GBR); Welten, Monique (Natural History Museum, London, GBR); Rasch, Liam (University of Sheffield, GBR); Fraser, Gareth (University of Sheffield, GBR); Meredith Smith, Moya (King's College London, GBR)
- P-033 Development of wing pattern diversity in *Heliconius* butterflies**  
Hanly, Joe (University of Cambridge, GBR); Wallbank, Richard (University of Cambridge, GBR); Jiggins, Chris (University of Cambridge, GBR)
- P-034 Developmental basis of morphological diversity in the large African barbs from the Lake Tana (Ethiopia) species flock**  
Borisov, Vasily (Russian Academy of Sciences, Moscow, RUS); Shkil, Fedor (Russian Academy of Sciences, Moscow, RUS)
- P-035 Developmental pattern in mantis shrimps: Today and in the past**  
Wiethase, Joris (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER); Haug, Joachim (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER); Haug, Carolin (Ludwig Maximilian University of Munich, Planegg-Martinsried, GER)
- P-036 Developmental plasticity of germline development in the pea aphid *Acyrthosiphon pisum***  
Chang, Chun-che (National Taiwan University, Taipei, TWN); Lin, Gee-way (National Taiwan University, Taipei, TWN); Lu, Hsiao-ling (National Taiwan University, Taipei, TWN); Cook, Charles E (European Molecular Biology Laboratory — European Bioinformatics Institute, Cambridge, GBR); Miura, Toru (Graduate School of Environmental Science, Hokkaido University, Sapporo, JPN)
- P-037 Developmental studies on the cucullaris muscle in the Mexican Axolotl (*Ambystoma mexicanum*)**  
Naumann, Benjamin (Friedrich Schiller University of Jena, GER); Olsson, Lennart (Friedrich Schiller University of Jena, GER)
- P-038 Differential canonical Wnt and Hh signaling in head and growth zone of a short germ embryo**  
Oberhofer, Georg (Georg August University of Göttingen, GER); Bucher, Gregor (Georg August University of Göttingen, GER)
- P-039 Disentangling oocyte polarity in panoistic ovaries. The role of Capicua in *Blattella germanica***  
Elshaer, Nashwa (Pompeu Fabra University, Barcelona, ESP); Piulachs, Maria-Dolors (Pompeu Fabra University, Barcelona, ESP)
- P-040 Dissecting the genetic basis and evolution of form using haploid wasps**  
Cohen, Lorna (University of Illinois at Chicago, IL, USA); Lynch, Jeremy A. (University of Illinois at Chicago, IL, USA)
- P-041 Dorsocross in the evolution of insect (extra)embryonic development**  
Horn, Thorsten (University of Cologne, GER); Panfilio, Kristen A. (University of Cologne, GER)

- P-042 Dual role of the canonical Wnt pathway in endoderm and posterior development in the brachiopod *Terebratalia transversa***  
Martín-Durán, José María (University of Bergen, NOR); Vellutini, Bruno C. (University of Bergen, NOR); Hejnol, Andreas (University of Bergen, NOR)
- P-043 Dynamic evolution of Crx-related homeobox loci in mammals: Birth and death from an unstable genomic region**  
Maeso, Ignacio (University of Oxford, GBR); Marlétaz, Ferdinand (University of Oxford, GBR); Irimia, Manuel (Center for Genomic Regulation, Barcelona, ESP); Holland, Peter W. H. (University of Oxford, GBR)
- P-044 Early leg development in *Tribolium castaneum*: The inside out phenotype of the new gene Tc-flipflop**  
Thümecke, Susanne (Eberhard Karls University of Tübingen, GER); Beermann, Anke (Eberhard Karls University of Tübingen, GER)
- P-045 Effects of artificially induced heterochronies on serial skeletal elements of teleosts**  
Shkil, Fedor (Russian Academy of Sciences, Moscow, RUS); Kapitanova, Daria (Russian Academy of Sciences, Moscow, RUS); Smirnov, Sergey (Russian Academy of Sciences, Moscow, RUS)
- P-046 Endoderm out of the head: Pharyngeal origin of cement glands and external gills in bichir**  
Minarik, Martin (Charles University in Prague, CZE); Crkvova, Barbora (Charles University in Prague, CZE); Metscher, Brian (University of Vienna, Wien, AUT); Cerny, Robert (Charles University in Prague, CZE)
- P-047 Evaluating if phenotypic classifiers capture genetic and geographical structure in Panther Chameleons (*F. pardalis*)**  
Grbic, Djordje (University of Geneva, CHE); Saenko, Suzanne (University of Geneva, CHE); Milinkovitch, Michel (University of Geneva, CHE)
- P-048 Evidence for an Inhibitory cascade in the development of limbs and digits**  
Kavanagh, Kathryn (University of Massachusetts Dartmouth, MA, USA)
- P-049 Evo-diversification and evolution of integration: A phylogenetic approach to understand the evolutionary history of morphological traits**  
Benitez, Hugo (University of Manchester, GBR); Klingenberg, Chris (University of Manchester, GBR)
- P-050 Evolution of bivalve by the modification of the cleavage pattern**  
Hashimoto, Naoki (University of Tsukuba, JPN); Kurita, Yoshihisa (University of Kyusyu, Fukutsu, JPN); Wada, Hiroshi (University of Tsukuba, JPN)
- P-051 Evolution of brachury: Role in animal development**  
Andrikou, Carmen (University of Bergen, NOR); Arnone, Ina (Stazione Zoologica Anton Dohrn, Naples, ITA); Schwaiger, Michaela (University of Vienna, AUT); Technau, Ulrich (University of Vienna, AUT)
- P-052 Evolution of cephalopod eyes by comparative transcriptome analysis of squid and nautilus**  
Ogura, Atsushi (Nagahama Institute of Bio-Science and Technoogy, Nagahama, JPN); Shigeno, Shuichi (JAMSTEC, Yokohama, JPN); Yoshida, Masa-aki (National Institute of Genetics, Mishima, JPN)
- P-053 Evolution of early development of lophotrochozoa: Insight from lophotrochozoa specific homeobox genes**  
Morino, Yoshiaki (University of Tsukuba, JPN); Hashimoto, Naoki (University of Tsukuba, JPN); Wada, Hiroshi (University of Tsukuba, JPN)
- P-054 Evolution of germ line segregation and *Nanos* regulation in echinoderms**  
Swartz, Zachary (Brown University, Providence, RI, USA); Fresques, Tara (Brown University, Providence, RI, USA); Kikuchi, Mani (University of Tokyo, JPN); Wessel, Gary M. (Brown University, Providence, RI, USA)
- P-055 Evolution of metal response element (MRE)-binding transcription factors in three *Branchiostoma* species**  
Materna, Christopher (Roger Williams University, Bristol, RI, USA); Shin, Paul (City University of Hong Kong, Kowloon, HKG); Sorger, Thomas (Roger Williams University, Bristol, RI, USA)
- P-056 Evolution of pancreatic cell types: Insights from the sea urchin *Strongylocentrotus purpuratus***  
Perillo, Margherita (Stazione Zoologica Anton Dohrn, Naples, ITA); Arnone, Maria Ina (Stazione Zoologica Anton Dohrn, Naples, ITA)
- P-057 Evolution of placode-derived neurons assessed by cell type-specific transcriptional profiling**  
Pathey, Cedric (University of Umeå, SWE); Clifford, Harry (University of Oxford, GBR); Begbie, Jo (University of Oxford, GBR); Shimeld, Sebastian (University of Oxford, GBR)

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Coppola, Ugo (Stazione Zoologica Anton Dohrn, Naples, ITA); Ristoratore, Filomena (Stazione Zoologica Anton Dohrn, Naples, ITA); D'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Naples, ITA)

**P-059 Evolution of sex determining systems in the genus *Silene***

Janousek, Bohuslav (Academy of Sciences of the Czech Republic, Brno, CZE); Slancarova, Veronika (Academy of Sciences of the Czech Republic, Brno, CZE); Zdanska, Jana (Academy of Sciences of the Czech Republic, Brno, CZE); Zluvova, Jitka (Academy of Sciences of the Czech Republic, Brno, AUT); Talianova, Martina (Academy of Sciences of the Czech Republic, Brno, CZE); Zschach, Christian (Academy of Sciences of the Czech Republic, Brno, CZE); Siroky, Jiri (Academy of Sciences of the Czech Republic, Brno, CZE); Kovacova, Viera (Academy of Sciences of the Czech Republic, Brno, CZE); Blavet, Hana (Academy of Sciences of the Czech Republic, Brno, CZE); Danihelka, Jiri (Masaryk University, Brno, CZE); Oxelman, Bengt (University of Gothenburg, SWE); Widmer, Alex (ETH Zurich, CHE); Vyskot, Boris (Academy of Sciences of the Czech Republic, Brno, CZE)

**P-060 Evolution of the GRN underlying eye differentiation in closely related *Drosophila* species**

Torres-Oliva, Montserrat (Georg August University of Göttingen, GER); Almudí, Isabel (Oxford Brookes University, GBR); Posnien, Nico (Georg August University of Göttingen, GER); McGregor, Alistair P. (Oxford Brookes University, GBR)

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Pers, Daniel (University of Illinois at Chicago, IL, USA)

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Vick, Philipp (University of Hohenheim, Stuttgart, GER); Schweickert, Axel (University of Hohenheim, Stuttgart, GER); Thumberger, Thomas (University of Heidelberg, GER); Blum, Martin (University of Hohenheim, Stuttgart, GER)

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Racovski, Thibault (Egenis, University of Exeter, GBR)

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Strasser, Bettina (Medical University Vienna, AUT); Mlitz, Veronika (Medical University Vienna, AUT); Hermann, Marcela (Medical University Vienna, AUT); Alibardi, Lorenzo (Università di Bologna, ITA); Tschachler, Erwin (Medical University Vienna, AUT); Eckhart, Leopold (Medical University Vienna, AUT)

**P-065 Evolution-development congruence in pattern formation dynamics: Bifurcations in gene expressions and regulation of networks structures**

Kohsokabe, Takahiro (Graduate School of Arts and Sciences, University of Tokyo, Tokyo, JPN); Kaneko, Kuihiko (University of Tokyo, JPN)

**P-066 Evolving modular gene networks in a multicellular context**

Calcott, Brett (Johns Hopkins University, Baltimore, MD, USA)

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Scott, Nadia (Max Planck Institute for Evolutionary Anthropology, Leipzig, GER); Strauss, Andre (Max Planck Institute for Evolutionary Anthropology, Leipzig, GER); Neubauer, Simon (Max Planck Institute for Evolutionary Anthropology, Leipzig, GER); Hublin, Jean-Jacques (Max Planck Institute for Evolutionary Anthropology, Leipzig, GER); Gunz, Philipp (Max Planck Institute for Evolutionary Anthropology, Leipzig, GER)

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Collaudin, Samuel (ENS de Lyon, FRA); Das, Pradeep (ENS de Lyon, FRA)

**P-069 From hair to spine: Development of enlarged and asymmetrical awl hair in the spiny mouse (*Acomys dimidiatus*)**

Montandon, Sophie A. (University of Geneva, CHE); Tzika, Athanasia C. (University of Geneva, CHE); Martins, António F. (University of Geneva, CHE); Chopard, Bastien (University of Geneva, CHE); Milinkovitch, Michel C. (University of Geneva, CHE)

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Sharma, Rahul (University of Rostock, GER); Beer, Katharina (University of Rostock, GER); Schmöhl, Felix (University of Rostock, GER); Iwanov, Katharina (University of Rostock, GER); Schröder, Reinhard (University of Rostock, GER)

**P-071 Functional consequences of lineage-specific duplications: The example of retinoic acid degradation mechanisms in developing *Amphioxus***

Carvalho, João E. (Laboratoire de Biologie du Développement de Villefranche-sur-Mer (CNRS/UPMC), FRA); Theodosiou, Maria (Institut de Génomique Fonctionnelle de Lyon (CNRS/ENS Lyon), FRA); Chevret, Pascale (Laboratoire de Biométrie et Biologie Evolutive (CNRS/UCBL), Villeurbanne, FRA); Chen, Jie (Institut de Génomique Fonctionnelle de Lyon (CNRS/ENS Lyon), FRA); de Lera, Angel R. (University of Vigo, Pontevedra, ESP); Laudet, Vincent (Institut de Génomique Fonctionnelle de Lyon (CNRS/ENS Lyon), FRA); Schubert, Michael (Laboratoire de Biologie du Développement de Villefranche-sur-Mer (CNRS/UPMC), FRA)

- P-072 Gene expression patterns in salamander limb development and their potential role in the evolution of preaxial polarity**  
 Triepel, Sandra (Museum für Naturkunde Berlin, GER); Schneider, Igor (Universidade Federal do Para, Belém, BRA); Mitgutsch, Christian (Museum für Naturkunde Berlin, GER); Fröbisch, Nadia (Museum für Naturkunde Berlin, GER)
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 Alwes, Frederike (ENS-Lyon, Institute of Functional Genomics (IGFL), Lyon, FRA); Enjolras, Camille (ENS-Lyon, IGFL, Lyon, FRA); Averof, Michalis (ENS-Lyon, IGFL, Lyon, FRA)
- P-074 Genetic and evolutionary basis of sensory diversity**  
 Weinberger, Simon (VIB Center for the Biology of Disease, Leuven, BEL); Hassan, Bassem (VIB Center for the Biology of Disease, Leuven, BEL); Ramaekers, Ariane (VIB Center for the Biology of Disease, Leuven, BEL)
- P-075 Genetic basis of the evolution of differences in eye size between *D. simulans* and *D. mauritiana***  
 Almudi, Isabel (Oxford Brookes University, GBR); Santos Nunes, Daniela (Oxford Brookes University, GBR); Torres, Montserrat (Georg August University of Göttingen, GER); Arif, Saad (Oxford Brookes University, GBR); Posnien, Nico (Georg August University of Göttingen, GER); McGregor, Alistair Peter (Oxford Brookes University, GBR)
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 Tills, Oliver (Plymouth University, GBR); Rundle, Simon (Plymouth University, GBR); Spicer, John (Plymouth University, GBR)
- P-077 Genomic analysis of life cycle evolution in *Culex* mosquitos**  
 Scobeyeva, Victoria (Moscow State University, RUS); Asgharian, Hosseinali (University of Southern California Los Angeles, CA, USA); Chang, Peter (University of Southern California Los Angeles, CA, USA); Reisen, William (University California Davis, CA, USA); Lysenkov, Sergey (Moscow State University, Moscow, RUS); Nuzhdin, Sergey (University of Southern California Los Angeles, CA, USA)
- P-078 Geometric morphometrical analysis of the evolutionary development of carnassial teeth in extant canids**  
 Marquez Gonzalez, Paola Andrea (Universidad Nacional de Colombia, Bogota, COL); Muñoz Duran, Joao (Universidad Nacional de Colombia, Bogota, COL)
- P-079 Germline stem cells and cluster formation in the polytrophic meroistic ovary of *Nasonia vitripennis* (Hymenoptera)**  
 Griebel, Klaus (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Rübsam, Ralph (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER)

- P-080 Gonad regeneration in medusae of the hydrozoan *Clytia hemisphaerica***  
 Sinigaglia, Chiara (Laboratoire de Biologie du Développement de Villefranche sur Mer UMR7009 CNRS/UPMC Observatoire Océanologique, FRA); Leclère, Lucas (Laboratoire de Biologie du Développement de Villefranche sur Mer UMR7009 CNRS/UPMC Observatoire Océanologique, FRA)
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 Borisenko, Ilya (Saint-Petersburg State University, RUS); Adamska, Maja (University of Bergen, NOR); Ereskovsky, Alexander (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology, CNRS, University Aix-Marseille, FRA)
- P-083 Heads and tails: To be or not to be?**  
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 Kapitanova, Daria (Russian Academy of Sciences, Moscow, RUS); Shkil, Fedor (Russian Academy of Sciences, Moscow, RUS)
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 Marin-Riera, Miquel (Universitat Autònoma de Barcelona, Cerdanyola del Vallès, ESP); Salazar-Ciudad, Isaac (University of Helsinki, FIN)
- P-086 Hyoid first: Heterochronic development of bichir hyoid metamere**  
 Stundl, Jan (Charles University in Prague, CZE); Crkvova, Barbora (Charles University in Prague, CZE); Cerny, Robert (Charles University in Prague, Prague, CZE)

- P-087 Identification of a preformed germ plasm in the sexual oviparous pea aphid: A non-canonical case in the Hemimetabola**  
**Lin, Gee-way** (National Taiwan University, Taipei, TWN); **Cook, Charles E.** (European Molecular Biology Laboratory — European Bioinformatics Institute, Cambridge, GBR); **Miura, Toru** (Graduate School of Environmental Science, Hokkaido University, Sapporo, JPN); **Chang, Chun-che** (National Taiwan University, Taipei, TWN)
- P-088 Identification of MADS-box genes of the AP1/FUL clade in *Passiflora edulis* (Passifloraceae)**  
**Scorza, Livia** (University of Campinas, BRA); **Dornelas, Marcelo** (University of Campinas, BRA)
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**Frey, Nadine** (University of Cologne, GER); **Stappert, Dominik** (University of Cologne, GER); **Roth, Siegfried** (University of Cologne, GER)
- P-090 Identification of target genes of the terminal system in *Tribolium castaneum* by next-generation-sequencing**  
**Pridöhl, Fabian** (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); **Weißkopf, Matthias** (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); **Schoppmeier, Michael** (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER)
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**Alligood, Kristin** (University of Oregon, Eugene, OR, USA); **Kimmel, Charles** (University of Oregon, Eugene, OR, USA); **Cresko, William** (University of Oregon, Eugene, OR, USA)
- P-092 Independent evolution of snakelike morphologies in Squamata: Do lineages with equivalent morphologies share molecular signatures in developmental genes?**  
**Kohlsdorf, Tiana** (University of São Paulo, Ribeirão Preto, BRA); **Grizante, Mariana** (University of São Paulo, Ribeirão Preto, BRA); **Milograna, Sarah** (University of São Paulo, Ribeirão Preto, BRA); **Singarete, Marina** (University of São Paulo, Ribeirão Preto, BRA); **Nery, Mariana** (University of São Paulo, Ribeirão Preto, BRA); **Guimarães, Pedro** (Universidade Federal de Uberlândia, Patos de Minas, BRA)
- P-093 Inferring chewing motion and development from adult dental morphology**  
**Labonne, Gaëlle** (UMR CNRS Biogéosciences 6282, Dijon, FRA); **Navarro, Nicolas** (UMR CNRS Biogéosciences 6282, Dijon, FRA); **Laffont, Rémi** (UMR CNRS Biogéosciences 6282, Dijon, FRA); **Montuire, Sophie** (UMR CNRS Biogéosciences 6282, Dijon, FRA)
- P-094 Integrating phylogenetics, ecology and evo-devo to understand the origin of plant species: The role of spur length evolution in speciation of the genus *Linaria***  
**Fernandez-Mazuecos, Mario** (University of Cambridge, GBR); **Glover, Beverley** (University of Cambridge, GBR)
- P-095 Investigating complex leaf development with the Bladderwort *Utricularia gibba***  
**Bushell, Claire** (John Innes Centre, Norwich, GBR); **Lee, Karen** (John Innes Centre, Norwich, GBR); **Coen, Enrico** (John Innes Centre, Norwich, GBR)
- P-096 Is the successional dental lamina initiated in species with one generation of teeth?**  
**Dosedelova, Hana** (University of Veterinary and Pharmaceutical Sciences, Brno, CZE); **Glocova, Kristyna** (University of Veterinary and Pharmaceutical Sciences, Brno, CZE); **Tichy, Frantisek** (University of Veterinary and Pharmaceutical Sciences, Brno, CZE); **Buchtova, Marcela** (Academy of Sciences of the Czech Republic, Brno, CZE)
- P-097 Left-right asymmetric control in hemichordate acorn worm embryos**  
**Su, Yi-Hsien** (Academia Sinica, Taipei, TWN)
- P-098 Localization of beta1 integrin and fibronectin during mussel development**  
**Maiorova, Mariia** (Russian Academy of Sciences, Vladivostok, RUS); **Dyachuk, Vyacheslav** (Russian Academy of Sciences, Vladivostok, RUS); **Odintsova, Nelly** (Russian Academy of Sciences, Vladivostok, RUS)
- P-099 Mapping ephippia color variation in *Daphnia magna***  
**Marcelino, Ana** (CEFE, CNRS, Montpellier, FRA); **Haag, Christoph** (CEFE, CNRS, Montpellier, FRA); **Ebert, Dieter** (University of Basel, CHE)
- P-100 Mapping the corn snake pigmentation and colour pattern mutations using NGS technology**  
**Saenko, Suzanne** (University of Geneva, CHE); **Andersson, Leif** (Uppsala University, SWE); **Milinkovitch, Michel** (Laboratory of Artificial & Natural Evolution, Geneva, CHE)
- P-101 Mechanically gated ion channels during early *Xenopus* embryogenesis**  
**Kremnyov, Stanislav** (Lomonosov Moscow State University, RUS); **Nikishin, Denis** (Lomonosov Moscow State University, RUS)
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**Almeida, Ana Maria** (UC Berkeley San Francisco, CA, USA)

- P-103 Minimal regulatory network predicts the differentiation and plasticity of T CD4+ lymphocytes**  
Martínez Sánchez, Mariana (Universidad Nacional Autónoma de México, Mexico City, MEX)
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Jasek, Sanja (Max Planck Institute for Developmental Biology, Tübingen, GER); Jékely, Gáspár (Max Planck Institute for Developmental Biology, Tübingen, GER)
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Hohagen, Jennifer (Georg-August University Göttingen, GER); Jackson, Daniel J. (Georg-August University Göttingen, Göttingen, GER)
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Medialdea, Laura (Universidad Autónoma de Madrid, Spain, Madrid, ESP); Fruciano, Carmelo (University of Konstanz, GER); Romero, Alejandro (University of Alicante, ESP); González, Armando (Universidad Autónoma de Madrid, ESP)
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Vroomans, Renske (Utrecht University, NLD); Hogeweg, Paulien (Utrecht University, NLD); ten Tusscher, Kirsten (Utrecht University, NLD)
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Burguera, Demian (University of Barcelona, ESP); Navas, Enrique (University of Barcelona, ESP); Cuomo, Claudia (Stazione Zoologica Anton Dohrn, Naples, ITA); Racioppi, Claudia (Stazione Zoologica Anton Dohrn, Naples, ITA); Esposito, Rosaria (Stazione Zoologica Anton Dohrn, Naples, ITA); Herrera, Carlos (University of Barcelona, ESP); Albuxech, Beatriz (University of Barcelona, ESP); Andrikou, Carmen (Stazione Zoologica Anton Dohrn, Naples, ITA); D'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Naples, ITA); Spagnuolo, Antonietta (Stazione Zoologica Anton Dohrn, Naples, ITA); Ristoratore, Filomena (Stazione Zoologica Anton Dohrn, Naples, ITA); Arnone, Maria Ina (Stazione Zoologica Anton Dohrn, Naples, ITA); Irimia, Manuel (Center for Genomic Regulation, Barcelona, ESP); Garcia-Fernández, Jordi (University of Barcelona, ESP)
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Weber, Melanie (University of Vienna, AUT); Eriksson, Joakim (University of Vienna, AUT)
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Steger, Julia (University of Bergen, NOR); Richards, Gemma (University of Bergen, NOR); Rentzsch, Fabian (University of Bergen, NOR)
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Quan, Honghu (University of Illinois at Chicago, IL, USA)
- P-112 Nitric oxide-neuropeptide interaction in the settlement behavior regulation of the marine annelid, *Platynereis dumerilii***  
Ueda, Nobuo (Max Planck Institute for Developmental Biology, Tübingen, GER); Jékely, Gáspár (Max Planck Institute for Developmental Biology, Tübingen, GER)
- P-113 NO chordate evolution**  
Annona, Giovanni (Stazione Zoologica Anton Dohrn, Naples, ITA); Palumbo, Anna (Stazione Zoologica Anton Dohrn, Naples, ITA); D'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Naples, ITA)
- P-114 Nodal signaling regulates the innate asymmetry of the *Amphioxus* pharynx**  
Soukup, Vladimir (Academy of Sciences of the Czech Republic, Prague, CZE); Kozmík, Zbyněk (Academy of Sciences of the Czech Republic, Prague, CZE)
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Jimenez-Guri, Eva (Center for Genomic Regulation, Barcelona, ESP); Alcaine, Anna (Center for Genomic Regulation, Barcelona, ESP); Wotton, Karl R. (Center for Genomic Regulation, Barcelona, ESP); Jaeger, Johannes (Center for Genomic Regulation, Barcelona, ESP)
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Strobl, Frederic (Buchmann Institute for Molecular Life Sciences, Frankfurt am Main, GER)
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Kari, Willi (University Innsbruck, AUT); Bertrand, Vincent (IBDM, Marseille, FRA); Rothbächer, Ute (University Innsbruck, AUT)

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**Novakovic, Ivana** (University of Belgrade, SRB); Cvetkovic, Dragana (University of Belgrade, SRB); Aleksic-Babic, Kristina (University of Belgrade, SRB); Toljic, Bosko (University of Belgrade, SRB); Dobricic, Valerija (Neurology Clinic CCS, Belgrade, SRB); Milasin, Jelena (University of Belgrade, SRB)
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**Pérez, Enrique** (University of Barcelona, ESP); d'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Napoli, ITA); Garcia-Fernández, Jordi (University of Barcelona, ESP)
- P-121 Origins of modularity in the Soay sheep skull**  
**Damasceno, Elis** (University of Manchester, GBR); Klingenberg, Chris (University of Manchester, GBR)
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**Dong, Rui** (Capital Medical University, Beijing, CHN); Liu, Xiaoliang (School and Hospital of Stomatology, Wuhan, CHN); Ge, Lihua (Capital Medical University, Beijing, CHN); Fan, Mingwen (School and Hospital of Stomatology, Wuhan, CHN)
- P-123 Overexpression of human scute homolog genes in Drosophila**  
**Sun, Boyuan** (Sichuan Agricultural University, Chengdu, CHN); Simpson, Pat (University of Cambridge, GBR); **Mingyao, Yang** (Sichuan Agricultural University, Chengdu, CHN)
- P-124 Phenotypic divergence among spadefoot toad species reflects accommodation of mechanisms underlying developmental plasticity**  
**Gomez-Mestre, Ivan** (Donana Biological Station, Seville, ESP); Kulkarni, Saurabh (Yale University, New Haven, CT, USA); Buchholz, Daniel (University of Cincinnati, OH, USA)
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**Diehl, Daniel Jacob** (University of Vienna, AUT); Paun, Ovidiu (University of Vienna, AUT); Lorenzo Romero, Maria (University of Vienna, AUT); Balao, Francisco (University of Seville, ESP)
- P-126 Photoreceptor cell evolution in ambulacrarian larvae, a first contribution**  
**Valero Gracia, Alberto** (Stazione Zoologica Anton Dohrn, Naples, ITA); Ullrich-Lüter, Esther (Museum für Naturkunde, Berlin, GER); D'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Napoli, ITA); Delroisse, Jerome (University of Mons, BEL); Arnone, Maria Ina (Stazione Zoologica Anton Dohrn, Napoli, ITA)
- P-127 *Pipistrellus pipistrellus* (Chiroptera, Vespertilionidae) postnatal baculum development**  
**Herdina, Anna Nele** (University of Vienna, AUT); Plenk Jr., Hanns (Medical University of Vienna, AUT); Benda, Petr (National Museum, Prague, CZE); Lina, Peter H. C. (Naturalis Biodiversity Center, Leiden, NLD); Herzig-Straschil, Barbara (Natural History Museum, Vienna, AUT); Hilgers, Helge (University of Vienna, AUT); Metscher, Brian D. (University of Vienna, AUT)
- P-128 Placode size evolution in *Astyanax mexicanus* blind cavefish**  
**Rétaux, Sylvie** (CNRS Gif-sur-Yvette, FRA); Hinaux, Hélène (CNRS Gif-sur-Yvette, FRA); Alié, Alexandre (CNRS Gif-sur-Yvette, FRA); Blin, Maryline (CNRS Gif-sur-Yvette, FRA)
- P-129 Positive selection drives gene duplications to fixation in *Drosophila***  
**Cardoso Moreira, Margarida** (University of Lausanne, CHE); Arguello, J. Roman (University of Lausanne, CHE); Grenier, Jennifer K. (Cornell University, Ithaca, NY, USA); Clark, Andrew G. (Cornell University, Ithaca, NY, USA)
- P-130 Pro-differentiation state of Deuterostomes' nervous system in an evolutionary perspective**  
**Anishchenko, Evgeniya** (Stazione Zoologica Anton Dohrn, Napoli, ITA); Arnone, Maria Ina (Stazione Zoologica Anton Dohrn, Naples, ITA); D'Aniello, Salvatore (Stazione Zoologica Anton Dohrn, Naples, ITA)
- P-131 Quantitative mechanisms explain system drift in the dipteran gap gene network**  
**Crombach, Anton** (Center for Genomic Regulation, Barcelona, ESP); Wotton, Karl (Center for Genomic Regulation, Barcelona, ESP); Jimenez-Guri, Eva (Center for Genomic Regulation, Barcelona, ESP); Jaeger, Johannes (Center for Genomic Regulation, Barcelona, ESP)
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**Lassi, Glenda** (Istituto Italiano di Tecnologia, Genova, ITA); Tucci, Valter (Istituto Italiano di Tecnologia, Genova, ITA)

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Mikosch-Wersching, Melanie (Ruprecht Karls University of Heidelberg, GER)
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Bolshakov, Fedor (Lomonosov Moscow State University, Moscow, RUS); Kosevich, Igor (Lomonosov Moscow State University, Moscow, RUS)
- P-135 Retention of ancestral developmental potential for dentition in the teleost fish (*Astyanax mexicanus*)**  
Stock, David W. (University of Colorado at Boulder, CO, USA); Jandzik, David (University of Colorado at Boulder, CO, USA)
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Laetsch, Dominik (University of Edinburgh, GBR); Blaxter, Mark (University of Edinburgh, GBR)
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Majumdar, Upalparna (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER); Klingler, Martin (Friedrich Alexander University Erlangen-Nuremberg, Erlangen, GER)
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Guerrero-Bosagna, Carlos (Linköping University, SWE)
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Nikishin, Denis (Lomonosov Moscow State University, RUS); Kremnyov, Stanislav (Lomonosov Moscow State University, RUS)
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Zieger, Elisabeth (Laboratoire de Biologie du Développement de Villefranche-sur-Mer (UMR 7009 → CNRS/UPMC), FRA); Garbarino, Greta (University of Genova, ITA); Candiani, Simona (University of Genova, Genova, ITA); Croce, Jenifer (Laboratoire de Biologie du Développement de Villefranche-sur-Mer (UMR 7009 - CNRS / UPMC), FRA); Schubert, Michael (Laboratoire de Biologie du Développement de Villefranche-sur-Mer (UMR 7009 - CNRS / UPMC), FRA)
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Samadi, Leyli (University of Vienna, AUT); Eriksson, Joakim (University of Vienna, AUT)
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Navarro, Nicolas (CNRS UMR6282 Biogeosciences, Dijon, FRA)
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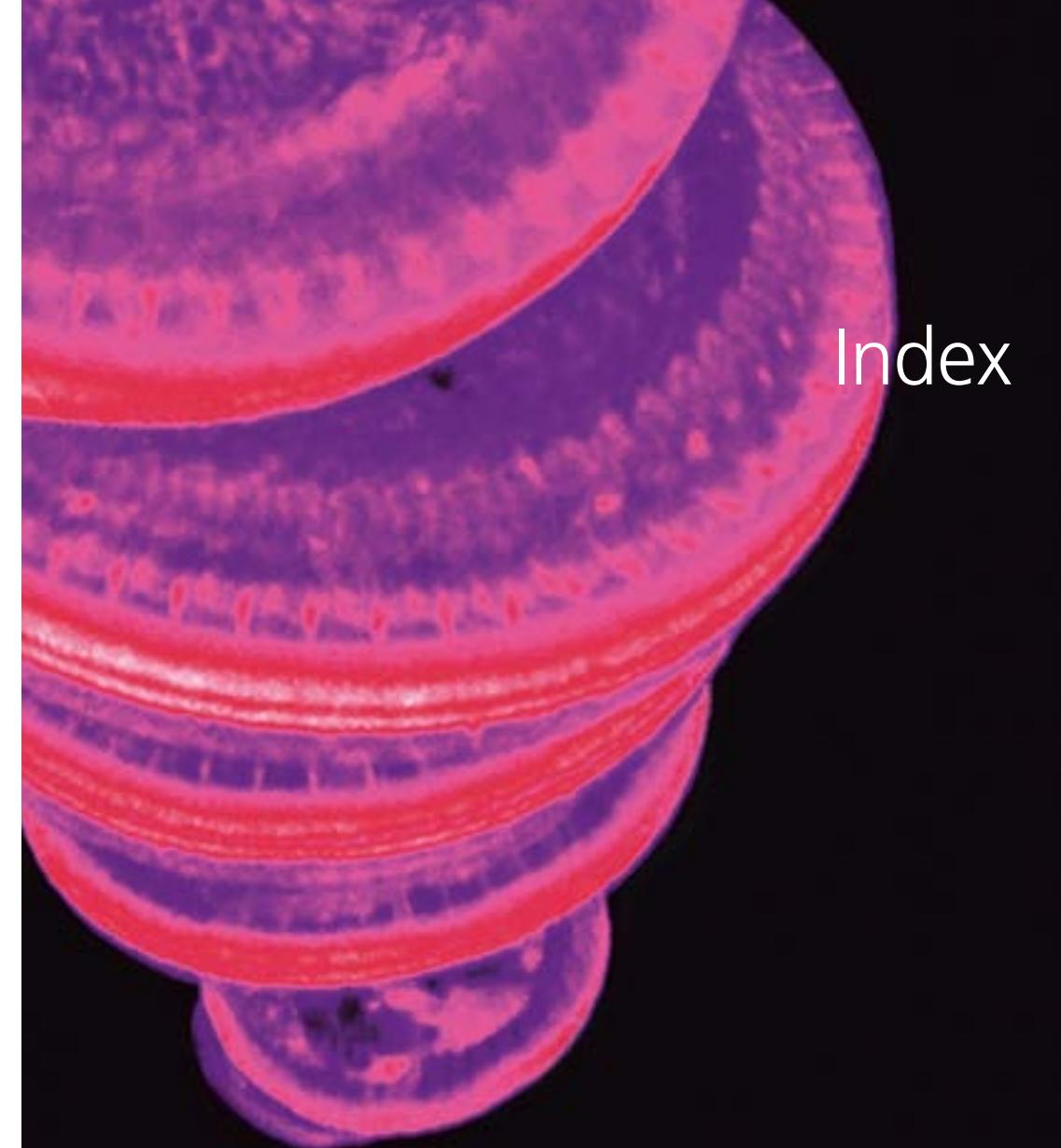
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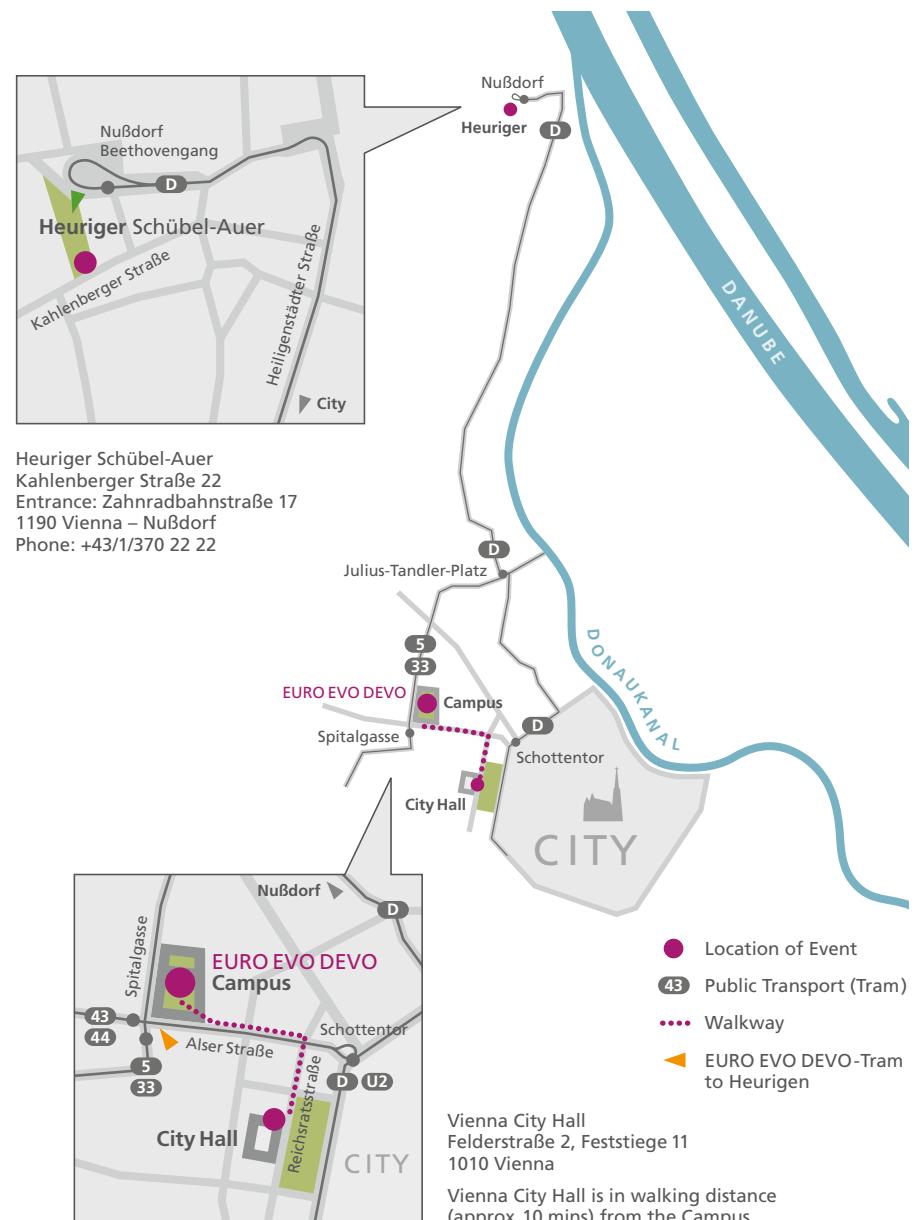
## Orientation Map Campus



Campus of the University of Vienna  
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Austria

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