

# SCIENTIFIC PROGRAMME

## **Monday, September 16, 2019**

10.00 – 2.00 Registration at Evangelische Akademie Tutzing

SET UP POSTERS

12.30 LUNCH

2.00 THOMAS C. G. BOSCH, THOMAS W. HOLSTEIN, ULI TECHNAU  
Welcome to “At the roots of bilaterian complexity: insights from early emerging metazoans”

### **Evolution of Multicellularity**

(CHAIR: Maya Adamska, Canberra)

2.15 H Suga (Hiroshima) Unicellular holozoans elucidate the evolution of metazoan multicellularity

2.30 A Hejnl (Bergen) The identification of cell types in the ctenophore *Mnemiopsis leidyi*

2.45 B Okamura (London) Myxozoans: A Major Cnidarian Success Story

3.00 B Schierwater (Hannover): The role of gravity and polarity for building the simplest extant metazoan

3.15 K Juravel (Munich) Sequence-independent phylogeny for resolving the non-bilaterian animal relations

3.30 COFFEE

4.00 D Miller (Townsville) Insights into coral diversity and evolution from whole genome sequencing

4.15 T Bosch (Kiel) Evolutionary transitions through various means of symbiosis

### **Cell Type Evolution**

(CHAIR: Monika Hassel, Marburg)

4.30 C Juliano (Davis) Stem cell differentiation trajectories in Hydra resolved at single cell resolution

4.45 A Cole (Vienna) Nematostella has four distinct muscle cell types with partially neuronal profile in ectodermal muscle cells

5.00 T Momose (Villefranche) Transgenic studies of cell lineages and their dynamics in Clytia hemisphaerica

5.15 B Zimmermann (Vienna) Ancient animal genome architecture reflects cell type identities

5.30 A Denner (Vienna) Searching for stem cells in Nematostella: insights from candidate genes and single cell transcriptomics.

5.45 RELAX AND ENJOY THE PARK

6.30 DINNER

## **EVENING SESSION I**

### **Germline and Sex**

(CHAIR: Chiemi Nishimiya-Fujisawa, Heidelberg)

- 8.00 T Holstein (Heidelberg) The stem cell germline linkage in hydra  
8.15 U Frank (Galway) Tfap2 is a molecular switch for cnidarian germ cell induction  
8.30 U Technau (Vienna) A cadherin switch marks germ layer formation in the diploblastic sea anemone *Nematostella vectensis*  
8.45 Tökölyi Jácint (Debrecen) Germline development and temperature-dependent sex change in *Hydra oligactis*  
9.00 M Grinblat (Townsville) What is the role of micro RNAs in coral sex determination?  
9.15 P Miramón (Bergen) Identification of a population of oocyte progenitor cells in the sea anemone *Nematostella vectensis*
- 9.30 KNOW ABOUT EACH OTHER IN THE BAR

## **Tuesday, September 17, 2019**

### **Evolution of the Nervous System**

(CHAIR: Brandon Weissbourd, Pasadena)

- 8.30 D Arendt (Heidelberg) Evolutionary origin of the nervous system - a sponge perspective  
8.45 A Klimovich (Kiel) Tracing the origin of neuronal diversity in *Hydra*  
9.00 M Layden (Bethlehem) Investigation of nervous system dynamics in *Nematostella vectensis*  
9.15 H Watanabe (OIST) Molecular characteristics and developmental mechanism of *Nematostella* neuronal assemblies
- 9.30 COFFEE
- 10.00 O Tournière (Bergen) NvPOU4/Brain3 is required for the terminal differentiation of neural cells in *Nematostella vectensis*  
10.15 H Shimizu (KAUST) Monitoring neural activity in freely behaving "miniature *Hydra*"  
10.30 J Bielecki (Kiel) The neuroscience of box jellyfish emotion
- 10.45 RELAX AND ENJOY THE PARK
- 12.30 LUNCH

### **Morphogenesis and Pattern formation**

(CHAIR: Patrick Steinmetz, Bergen)

- 2.00 N Funayama (Kyoto) Produce, carry/position, and connect: morphogenesis using rigid materials  
2.15 G Genikhovich (Vienna) Mechanism of the oral domain patterning in the *Nematostella* embryo  
2.30 M Gibson (Kansas) Axial patterning and tissue morphogenesis in *Nematostella vectensis*  
2.45 A Ikmi (Heidelberg) Mechanisms of feeding-dependent development in *Nematostella*  
3.00 J Ferenc (Basel) Mechano-chemical crosstalk in *Hydra* self-organization

3.15 J Kaandroop (Amsterdam) Cell-based boundary model of gastrulation by unipolar ingression in the hydrzoan

3.30 COFFEE

### **Signaling in Development I**

(CHAIR: Masha Broun, Toronto)

4.00 M Adamska (Canberra) Growth and regeneration of a reef-building coral *Acropora millepora* involves a surprisingly complex fgf pathway

4.15 M Lommel (Heidelberg) The Hydra Wnt Code

4.30 S Özbek (Heidelberg) A Wnt-specific astacin protease controls head formation in Hydra

4.45 A Tursch (Heidelberg) MAPK Signaling links Injury to Patterning in Hydra Regeneration

5.00 Y Moran (Jerusalem) The evolution of the microRNA pathway and its essential role in cnidarian development

5.15 M Brooun (Toronto) Atypical cadherins in Hydra development

5.30 RELAX AND ENJOY THE PARK

6.30 DINNER

### **EVENING SESSION II**

#### **INVITED LECTURE**

(CHAIR: Thomas Bosch, Kiel)

8.00 D Anderson (Pasadena):  
Emotions and emotion primitives: a comparative approach to internal states underlying innate behaviors

9.00 KNOW ABOUT EACH OTHER IN THE BAR

## **Wednesday, September 18, 2019**

### **Signaling in Development II**

(CHAIR: Dirk Fasshauer, Lausanne)

8.30 A Böttger (Munich) Investigating Notch-signalling in Hydra by differential gene expression profiling combined with analysing single cell sequencing data

8.45 PC Reddy (Pune) Epigenomic landscape of enhancer elements during Hydra head organizer formation

9.00 J Gahan (Bergen) The histone demethylase *Lsd1* is essential for normal development and nervous system formation in *Nematostella*

9.15 S Kremnyov (Moscow) cWnt signaling modulation results in a change of the colony architecture in a hydrozoa

9.30 L Leclère (Villefranche) *Pelagia noctiluca* as a model to uncover scyphozoan developmental mechanisms

9.45 COFFEE

## **Ecological Evolutionary Developmental Biology**

(CHAIR: Noriko Funayama, Kyoto)

- 10.15 J He (Kiel) Impact of symbiotic microbes on developmental processes of Hydra  
10.30 S Fraune (Düsseldorf) An environmentally regulated peptide modulates beta-catenin signaling in Hydra  
10.45 J Taubenheim (Düsseldorf) Temperature and insulin signaling regulate body size in Hydra by the WNT / TGF-beta pathway  
11.00 R Brunner (Townsville) Which receptors are responsible for coral larvae settlement?

11.15 RELAX AND ENJOY THE PARK

12.30 LUNCH

## **Immune Responses and Allorecognition**

(CHAIR: Siva Nadimpalli, Hyderabad)

- 2.00 N Andrade Rodriguez (Townsville) Inter-colony variation in response to stress: the challenge of coral biology  
2.15 M Lewandowska (Jerusalem) Evolutionary insights on mechanisms and triggers of antiviral immunity gained from *Nematostella vectensis*  
2.30 S Sanders (Pittsburgh) Intracellular binding partners of *Hydractinia* allorecognition proteins  
2.45 M Nicotra (Pittsburgh) A cnidarian sex determination locus

3.00 COFFEE

3.30 Andrew Moore (Editor BioEssays) Writing in the digital era (location: Main Lecture Hall)

3.30 Round-table meeting: Tutzing 2.0 (location: seminar room)

4.45 – 8.00 **BOAT EXCURSION AND BAVARIAN BUFFET  
ON STARNBERGER SEE**

8.00 – 10.00 **POSTER PRESENTATIONS**  
(WITH WINE AND BEER)

**Thursday, September 19, 2019**

## **Symbiotic Interactions in Hydra**

(CHAIR: Mayuko Hamada, Okayama)

- 8.30 J Bathia (Kiel) Understanding the tripartite symbiosis in *Hydra viridissima*
- 8.45 T Lachnit (Kiel) Function of phages in the acclimatization of *Hydra*
- 9.00 R Miyokawa (Fukuoka) Horizontal transmission of *Chlorococcum* causes morphological and gene expression changes in *Hydra vulgaris* 105 strain

## **Symbiotic Interactions in Corals**

(CHAIR: Masayuki Hatta, Tokyo)

- 9.15 C Voolstra (Konstanz) Disassembling a metaorganism: expanding the coral model *Aiptasia* for functional microbiome
- 9.30 G Cui (KAUST) Tissue-specific transcriptome analysis reveals the central role of ammonium in *Aiptasia-Symbiodiniaceae* symbiosis
- 9.45 COFFEE
- 10.15 N Rädercker (KAUST) Heat stress destabilizes nutrient cycling in symbiotic corals
- 10.30 A Guse (Heidelberg) Molecular Mechanisms of Cnidarian Endosymbiosis
- 10.45 M Aranda Lastra (KAUST) Host-dependent nitrogen recycling as a mechanism of symbiont control in *Aiptasia*
- 11.00 E Hambleton (Heidelberg) Mechanisms of symbiont-produced lipid exchange powering coral-algal symbiosis

### 11.15 **POSTER PRIZE AWARDS**

sponsored by Elsevier (**ZOOLOGY**) & Wiley (**BIOESSAYS**)

GENERAL DISCUSSION AND CONCLUDING REMARKS

**Take down posters!**

- 12.30 LUNCH

**DEPARTURE**

## Poster Presentations

### Morphogenesis and Patterning

- M1 S Kuen (Heidelberg) Molecular Analysis of Hydra Embryogenesis
- M2 K Garschall (Bergen) Nutritional regulation of juvenile growth and cell proliferation in *Nematostella vectensis*
- M3 M Ban (Yamanashi) Detection and characterization of the major yolk protein vitellogenin from outside yolk in a Japanese placozoan
- M4 A Gungi (Pune) Role of Histone methylation in regulation of axis patterning and regeneration in Hydra
- M5 T Bosch (Kiel) Boundary maintenance in Hydra depends on histone acetylation
- M6 B Hobmayer (Innsbruck) Cellular dynamics and mitochondrial dysfunction in ageing Hydra *oligactis*
- M7 B Hobmayer (Innsbruck) New aspects of cellular ultrastructure in Hydra visualized by high-pressure electron microscopy
- M8 M Mercker (Heidelberg) Pattern Information in Hydra: extending the Gierer-Meinhardt theory
- M9 T Bagaeva (Vienna) Double-ISH-based expression map of the oral-aboral patterning genes in *Nematostella*
- M10 N Garg (Heidelberg) The role of myosin in nematocyst morphogenesis
- M11 C Sinigaglia (Lyon) Systems properties of regenerating *Clytia* medusa
- M12 L Doonan (London) Worms vs Sacs: The draft genomics of the parasitic Cnidarians *Buddenbrockia Plumatellae* and *Tetracapsuloides Bryosalmonae*

### Signaling and Regulation of Development

- D1 J Cazet (Davis) Canonical Wnt signaling genes are upregulated during early head and foot regeneration in Hydra
- D2 M Hassel (Marburg) Separate signaling pathways control cortical and basal actomyosin organization in epitheliomuscle cells in Hydra

- D3 D Apel (Marburg) Tools to detect Rho–GTPases activity and PI- signaling in Hydra allow the identification of local and cell-specific signaling events
- D4 B Teefy (Davis) The PIWI-piRNA pathway represses transposons in Hydra somatic stem cells
- D5 A Tursch (Heidelberg) MAPK signaling links Injury to patterning in Hydra regeneration
- D6 SG Gornik (Heidelberg) Non-visual photoreceptors in symbiotic cnidarians
- D7 M Travert (Kansas) A medusa-specific homeobox gene in cnidarian
- D8 C Caglar (Canberra) Regulation of gene expression during initial injury response in the calcareous sponge sycon Capricorn
- D9 C Nishimiya-Fujisawa (Heidelberg) Isolation of germline-specific genes from hydra
- D10 J Gahan (Bergen) Pre-Bilaterian evolution of the genetic basis for PRC1 complex diversity
- D11 L S Krishnapati (Hyderabad) Differential expression of gremlin and noggin in hydra: antagonism between Wnt and BMP pathways
- D12 M Salinas-Saavedra (Galway) Mechanisms of de-differentiation in Hydractinia whole body regeneration
- D13 A Deshpande (Goa) Transcriptomic changes during regeneration in demosponge Cinachyrella cf caverosa

## **Neurobiology**

- N1 B Weissbourd (Pasadena) Establishing Clytia hemisphaerica as a model for evolutionary and systems neuroscience
- N2 F Varoqueaux (Lausanne) Neuropeptidergic signalling in placozoan
- N3 M Sachkova (Bergen) Study of neuropeptides in non-bilaterian metazoans
- N4 A Primack (Davis) Nervous system plasticity and regeneration in Hydra
- N5 S Minobe (Fukuoka) A novel Hydra neuropeptide, Tentflectin, induces a rhythmic movement of tentacles
- N6 L Hufnagel (Rhode Island), G Kass-Simon (Rhode Island), P Pierobon (Naples) Inhibitory amino acid neurotransmitters in Hydra
- N7 C Dupre (Harvard) Scalability in the nervous system of Hydra

- N8 T Fujisawa (Heidelberg) Classical neurotransmission in hydra
- N9 S Sprecher (Fribourg) Genetic tools to study the nervous system of *Nematostella vectensis*
- N10 JM Aguilar-Camacho (Jerusalem) Understanding the evolution of the DEG/ENAC ion channels
- N11 E Hayakawa (Heidelberg) Mass spectrometry-based neuropeptidomics to dissect Ctenophore nervous system

### **Ecology, Immunity and Development**

- E1 Y Nakajima (Tohoku) Temperature shift controls life cycle and morphological changes in jellyfish *Cladonema pacificum*
- E2 F Kuek (Townsville) Effects of environmental stress on dimethylsulphoniopropionate (dmSP) biosynthesis in coral-associated bacteria
- E3 S Yum (Geoje) Transcriptomic profiling of Hydra after exposure to Naproxen
- E4 SK Nadimpalli (Hyderabad) New insights into the lysosomal enzymes and their sorting receptors in Hydra
- E5 A Huene (Pittsburgh) The Hydractina ALR gene family bears novel immunoglobulin domains
- E6 JS Hwang (Sunway City) Seven Hydra actinoporin-like toxins (HALTs): gene duplication leads to expression in different cell types while maintaining toxin function
- E7 [B Rosental \(Ben Gurion University\)](#)

### **Symbiosis**

- S1 G Cui (KAUST) Tissue-specific transcriptome analysis reveals the central role of ammonium in *Aiptasia-Symbiodiniaceae* symbiosis
- S2 M Hatta (Tokyo) Specificity of symbiosis between Zooxanthellae and the primary polyp of *Acropora*
- S3 V Jones (Heidelberg) Integrin-mediated phagocytosis in the initiation of cnidarian-dinoflagellate endosymbiosis
- S4 C Pogoreutz (KAUST) The *Acropora-Endozoicomonas* association as a model to explore the role of bacterial functional traits in coral holobionts



- S5 T Minten (Düsseldorf) cROSstalk –Examination of signaling interactions between Hydra and *Curvibacter* sp
- S6 C Giez (Kiel) Spontaneous contractions of the body column are shaping the microbiota in Hydra