

# **Scientific program**

(talks with \* are student talks entering the competition)

## **TUESDAY 09.08.2022**

09:00 Opening remarks (Lecture Hall 1)

### **09:30-10:30 Plenary talk (Lecture Hall 1)**

**Kakani Katija: Fantastic beasts and where to find them: Giant larvaceans in the ocean's midwaters**

10:30-11:00 Coffee Break

### **Session 1 Functional Morphology (Lecture Hall 1)**

**Chair: Harald Krenn**

**11:00-11:30: Keynote talk: Oliver Betz: Linking insect functional morphology to ecology and evolution: basic concepts explained via specific examples**

11:30-11:45: **Jakob Krieger**: Architectural constraints on speciation? Remodeled homes and adaptive radiation in hermit crabs

11:45-12:00: **Alexandre Casadei-Ferreira**: Biomechanical implications of shape variation in ectatommine ants sting

12:00-12:15: \***Julian Katzke**: Evolution of morphological diversity in ant mandibles

12:15-12:30: \***Erich L. Spiessberger**: Mouthparts and internal head morphology in rove beetles (Coleoptera, Staphylinidae)

### **Session 2 Morphology, Taxonomy, Phylogeny (Lecture Hall 2)**

**Chair: Gerhard Steiner**

**11:00-11:30: Keynote talk: Rich Mooi: No heads or tails in echinoderm origins: Uniquely derived body axes in development and evolutionary history**

11:30-11:45: **Magdalini Christodoulou**: Insights in the echinoderm "dark" abyssal biodiversity

11:45-12:00: **Greg Rouse**: Observations on deep-sea *Xenoturbella*

12:00-12:15: \***Lenke Tödter**: The challenging identification of the meiofaunal cnidarian *Halammohydra*

12:15-12:30: **Annemarië Avenant-Oldewage**: Additional information on the morphology of *Rhabdochona essenia* from *Labeobarbus aeneus* in the Vaal River in South Africa as revealed through novel methods

## **Session 3 Technological Advances in Microscopy and Imaging** **(Seminar room 1.5)**

**Chair: Thomas Schwaha & Stephan Handschuh**

**11:00-11:30: Keynote talk: Pavel Tomancak: Imaging tools to study morphogenesis across species**

11:30-11:45: **M. Carmen Cobo**: High resolution computed tomography for the study and characterization of hard parts in Solenogastres (Mollusca, Aplacophora)

11:45-12:00: **Anna J. Philips**: Using microCT to document macrobdellid leech morphology

12:00-12:15: **Emma J. Long**: Using confocal microscopy to model the first land animals in 3D

12:15-12:30: **Sebastian Schmelzle**: The Darmstadt insect scanner DISC3D and its application in the digitization of insect collections

**12:30-14:00 Lunch break**

## **Session 4 Functional Morphology (Lecture Hall 1)**

**Chair: Oliver Betz**

14:00-14:15: **Wencke Krings**: Functional gradients in gastropod radular teeth reflect trophic adaptations, a combined approach

14:15-14:30: **Sebastian Büsse**: How dragonfly larvae catch prey: functional morphology and biomechanics

14:30-14:45: **Leif Moritz**: Fluid feeding in millipedes and its consequences for their internal organs

14:45-15:00: **Matthew S. Lehnert**: Adaptations for gas exchange enabled the elongation of lepidopteran proboscises

15:00-15:15: **\*Simon Züger**: Are centipedes heavy metal? Investigation of cuticular components and metals in the centipede forcipule

15:15-15:30: **Miloš Vittori**: The formation and putative function of microscopic spheres on the cuticular surface of the terrestrial isopod *P. pruinosus*

15:30-15:45: **M. Andrew Jansen**: Functionally graded cuticle in Polyneopteran head capsules

15:45-16:00: **\*Giovanni Sanna**: Investigating the 3D skeletal architecture of deep-water corals in relation to hydrodynamics

## **Session 5 Molecular Basis of Morphological Diversity (Lecture Hall 2)**

**Chair: Elisabeth Zieger**

**14:00-14:30: Keynote talk: Christina Zakas: Maternal genotype changes transcriptomic provisioning of oocytes**

14:30-14:45: \***Tobias Theska**: Old tools for novel tasks: the roles of conserved nuclear receptors in the evolution of phenotypically plastic “teeth” in diplogastrid nematodes

14:45-15:00: **Shoyo Sato**: Peeling back the Onychophora: an exploration of the genes in the genome of *Epiperipatus broadwayi* with notes on the evolution of ecdysis

15:00-15:15: **Felipe Aguilera**: The genome of *Tetrapyrgus niger* reveals a conserved biomineralization protein repertoire over 200 million years of sea urchin evolution

15:15-15:30: \***Meghan K. Yap-Chiongco**: Genomic underpinnings of sclerite biomineralization in aplousobranch molluscs

15:30-15:45: **David Salamanca-Diaz**: How to build a bivalve: Lessons from gene expression and single cell RNA sequencing analyses

15:45-16:00: \***Petra Kovacikova**: A neoblast-like cell population in nemertodermatid species *Meara stichopi*

## **Session 6 Morphology In Deep Time (Seminar room 1.5)**

**Chair: Ariel Chipman**

**14:00-14:30 Keynote talk: Xiaoya Ma: A can of Cambrian worms**

14:30-14:45: **Joachim T. Haug**: Conceptual & practical challenges & chances of using quantitative morphology as a tool for comparing diversity through time – lacewing larvae as an example

14:45-15:00: **Jeffrey R. Thompson**: Origins of the echinozoan body plan

15:00-15:15: \***Francesc Perez-Peris**: Phylogenetics and systematics of the trilobite subfamilies Cheirurinae and Deiphoninae: shedding light on the basal relationships

15:15-15:30: **Jakub Prokop**: Hidden cuticular microstructures revealed by application of modern microscopy techniques on compressed insect fossils and amber inclusions

15:30-15:45: \***Joshua Gauweiler**: Please don't eat me - mechanical caterpillar defences through time

15:45-16:00: **Viktor Baranov**: Multiple losses and re-acquisitions of blood feeding in non-biting midges

**16:00-16:30: Coffee break**

**Forum Discussion Morphology In Deep Time (Lecture hall 1)**

**Chair: Andreas Schmidt-Rhaesa**

16:30-18:30

**Pawel Burkhardt:** The evolutionary origin of neuronal signalling machinery and animal cell differentiation

**Jordi Paps:** The origin and evolution of the animal kingdom, a genomic view.

**Darrin Schultz:** Ancient gene linkages show that ctenophores are sister to other animals

**18:30-19:00 Break**

**Public talk (Lecture Hall 1)**

19:00: **Günther Pass:** At the crossroads of ecology and history: Vienna from a biologist's perspective

## WEDNESDAY 10.08.2022

09:00-10:00 Plenary talk (Lecture Hall 1)

**Néva Meyer:** All brains no brawn: Evidence for autonomous specification of the ventral nerve cord in the annelids *Capitella teleta* and *Platynereis dumerilii*

10:00-10:30 Coffee Break

### Session 7 Morphology, Taxonomy, Phylogeny (Lecture Hall 1)

**Chair: Nesrine Akkari**

10:30-10:45: **\*Piotr Gasiorek:** Phylogeny of armoured microbears (Tardigrada: Echiniscidae): plates, hairs and bristles

10:45-11:00: **Matteo Vecchi:** Evolution of sperm morphology in Macrobiotidea (Tardigrada)

11:00-11:15: **James P. Bernot:** The evolution of parasitism in copepods: phylogeny, diversity, and morphology

11:15-11:30: **Martin Schwentner:** Testing the success of palaeontological methods in the delimitation of extant clam shrimp species (Crustacea: Branchiopoda) - an integrative approach

11:30-11:45: **Zita Roithmair:** Insights into the morphology of secondary sexual characters of male lithobiid centipedes (Chilopoda, Lithobiomorpha)

11:45-12:00: **Markus Koch:** Homology of the labium in Remipedia and Hexapoda revisited

12:00-12:15; **Margarita I. Yavorskaya:** Anatomy of the highly specialized beaver beetle *Platypsyllus castoris* (Leiodidae, Coleoptera)

12:15-12:30: **Joel Vikberg Wernström:** Meiofaunal diversity in the Barents Sea

## **Session 8 MorphoEvoDevo (Lecture Hall 2)**

**Chair: Andreas Wanninger**

**10:30-11:00: Keynote talk: Patricia Álvarez-Campos: Annelid regeneration and reproduction: from morphology to single-cell sequencing**

11:00-11:15: **Pedro Martinez**: The acoel body plan. Morphology and Genomics

11:15-11:30: **Jörn von Döhren**: Is the prototroch derived from an ancient transitory epidermis in Spiralia?

11:30-11:45: **\*Hugh Carter**: Making stars: understanding the drivers behind different larval strategies through investigation of starfish at micro- and macroscopic scales

11:45-12:00: **Maryna P. Lesoway**: Precocious sperm exchange in the simultaneously hermaphroditic nudibranch, *Berghia stephanieae*

12:00-12:15: **Katrine Worsaae**: How to reduce body size: a dwarf male's tale

12:15-12:30: **Gonzalo Giribet**: From the Poles to southern Europe: discovery of Micrognathozoa in the Val d'Aran (Spanish Pyrenees).

## **12:30-14:00 Lunch break & Wiley lunch workshop**

## **Session 9 Functional Morphology (Lecture Hall 1)**

**Chair: Manfred Drack**

14:00-14:15: **Martin Horstmann**: Unravelling the adaptive benefit of predator-induced defences

14:15-14:30: **\*Florian Braig**: Phenotypic plasticity in body morphology during development in the European shore crab

14:30-14:45: **\*Alice Guenther**: A unique yet technically simple type of joint allows for the high mobility of scorpion tails

14:45-15:00: **Fábio G. L. Oliveira**: On springtails (Hexapoda: Collembola): A morphofunctional study of the jumping apparatus

15:00-15:15: **Alejandro Damian-Serrano**: The evolution of salp colony architectures and its consequences for multi-jet locomotion

15:15-15:30: **\*Julian Thomas**: Investigation of the topography and material properties of the adhesive secretion of Phasmatodea

15:30-15:45: **Peter Smirnov**: Miracidia with passive strategy of infection. Obscured life of highly miniaturized organisms (Trematoda: Digenea)

15:45-16:00: **Jessica A. Goodheart**: Movement and storage of nematocysts across development in the nudibranch *Berghia stephanieae*

## **Session 10 MorphoEvoDevo (Lecture Hall 2)**

### **Chair: Neva Meyer**

14:00-14:15: \***Paul Kalke**: Annelid head appendages in a nutshell - lessons from the diversity of anterior head structures in Nereididae

14:15-14:30: **Ekin Tilic**: Tiny 3D printers of bristle worms - the dynamic development of annelid chaetae

14:30-14:45: **Thomas Bartolomaeus**: Structure, developmental fate and evolutionary transformations of head kidneys in Annelida

14:45-15:00: **Ivo S. Oliveira**: Structure and development of the tracheal system in Onychophora (velvet worms)

15:00-15:15: \***Iulia Barutia**: How to build a leg: regeneration and development in post-embryonic stages of *Scutigera coleoptrata* (Chilopoda)

15:15-15:30: **Maria Herranz**: How do mud dragons (Kinorhyncha) grow? Insights from an integrative developmental study

15:30-15:45 : **Emanuel Redl**: Development of the chaetodermomorph aplacophoran *Scutopus schanderi* (Mollusca, Caudofoveata)

15:45-16:00: \***Ana Zippel**: Hidden within the plant: morphology of fossil xylophagous beetle larvae

**16:00-17:00 Flash talks (posters) (Lecture hall 1 & 2)**

**17:00 Poster session (ground floor)**

## THURSDAY 11.08.2022

09:00-10:00 Plenary talk (Lecture Hall 1)

**Shannon B. Olsson: The chemical ecology of invertebrates in the Anthropocene**

10:00-10:30 Coffee Break

### Session 11 Functional Morphology (Lecture Hall 1)

Chair: Harald Krenn

10:30-10:45: **Kostya Kornev**: Insect antennae: how morphology controls movement

10:45-11:00: **Carsten H.G. Müller**: Feeling with a fingernail: Extero-mechanoreceptive sensilla in the tarsal claws of the wasp spider *A. bruennichi*

11:00-11:15: **\*Nicole Schröter**: A comparison of the functional morphology of the reproductive systems of three 'swimming crabs'

11:15-11:30: **Andrey Ostrovsky**: Everything is not like in everyone: coenocytes and exaptations in cyclostome bryozoans

11:30-11:45: **Alexandre Lobo-da-Cunha**: Microscopical morphology of the gill of *Aplysia depilans* (Mollusca, Euopisthobranchia)

11:45-12:00: **Sanja Jasek**: Desmosomal connectomics of somatic musculature in a marine annelid

12:00-12:15: **Brian K. Penney**: Connective tissue patterns in dolid nudibranch mantle

12:15-12:30: **Günter Purschke**: Transition of metanephridial into protonephridial systems in annelid species with reduced coelom and blood vascular system



## **Session 12 Senses, Neurons and Behavior (Lecture Hall 2)**

**Chair: Andy Sombke**

**10:30-11:00: Keynote talk: Georg Brenneis: When external morphology is not enough: the neuroanatomy of sea spiders illuminates in-group relationships and informs current debates on chelicerate evolution**

11:00-11:15: **Alexandra Kerbl**: One of the smallest spiralian nervous systems reconstructed at ultrastructural level in the marine annelid *D. gyrociliatus*

11:15-11:30: **Patrick Beckers**: Mushroom bodies in Annelida

11:30-11:45: **Max S. Farnworth**: Evolutionary patterns in spatial orientation centres of Heliconiini butterfly brains

11:45-12:00: **Marios Chatzigeorgiou**: A functional dissection of the neuronal basis of settlement & metamorphosis in the ascidian *Ciona intestinalis*

12:00-12:15: **Aleksei A. Miroljubov**: Parasitic barnacles: puppet masters & their mysterious interactions with the host nervous system

12:15-12:30: **\*Ana Rato**: Electrophysiological evidence that the osphradium is a chemosensory organ in bivalves

**12:30 Group photo**

**15:00-18:00 Guided tours at the Natural History Museum of Vienna**

## FRIDAY 12.08.2022

### 09:00-10:00 Plenary talk (Lecture Hall 1)

**Gerhard Haszprunar: A silver age of morphology? An integrative point of view**

10:00-10:30 Coffee Break

### Session 13 Morphology, Taxonomy, Phylogeny (Lecture Hall 1)

#### Chair: Andreas Kroh

10:30-10:45: **Franziska S. Bergmeier**: Variety is the spice of life: Morphological diversity of digestive systems related to different food sources in Solenogastres (Mollusca, Aplacophora)

10:45-11:00: \***Sophie Greistorfer**: Luminescence as defence – A study on the glowing mucus and the underlying gland system of *Latia neritoides* (Gastropoda)

11:00-11:15: **Julian Müller**: Phylogenetic significance of the chaetal arrangement in Annelida

11:15-11:30: **Brett Gonzalez**: 'My eyes have seen you...'

11:30-11:45: \***Laia Moreno-Martínez**: Morphological and molecular analysis of Indo-Pacific *Syllis* annelids

11:45-12:00: **Paula Moreno-Martín**: Integrative taxonomy to study syllid annelids in Bermuda

12:00-12:15: **Nadezhda Rimskaya-Korsakova**: Neurogenesis in the frenulate *Siboglinum fiordicum* (Siboglinidae, Annelida)

12:15-12:30: **Mildred J. Johnson**: Comparing the morphological characteristics of bryozoans in the genus *Immergentia*

### Session 14 Molecular Basis of Morphological Diversity (Lecture Hall 2)

#### Chair: Patricia Álvarez-Campos

10:30-10:45: **Laurent Formery**: A new model to relate echinoderm pentaradial symmetry with the ancestral bilateral symmetry

10:45-11:00: **Allan M. Carrillo-Baltodano**: Ancestral synergy of TGF-beta and MAPK during dorsal-ventral specification in Spiralia

11:00-11:15: \***Paul Knabl**: Developmental roles of BMP signaling in Cnidaria

11:15-11:30: **Katharina Stracke**: Hox gene expression in juveniles of the nemertean *Lineus ruber*

11:30-11:45: **Ahmed J. Saadi**: Phylogenomics reveals deep relationships and diversification within phylactolaemate bryozoans

11:45-12:00: **Tim Wollesen**: Molluscan cell types shed light on the evolution of a complex bilaterian body plan

12:00-12:15: **Andreas Hejnol**: The evolution of blood and haemolymph cells from a penis worm perspective

12:15-12:30: **Elisabeth Zieger**: How to analyze the evolution of gene co-expression across animal development?

## **Session 15 Morphology In Deep Time (Seminar room 1.5)**

### **Chair: Xiaoya Ma**

10:30-10:45: **Casey W. Dunn**: Complex morphological traits don't have simple evolutionary histories

10:45-11:00: **Ariel Chipman**: Serial homology and segment identity in the arthropod head

11:00-11:15: \***Lorenzo Lustri**: Stalked eyes and exopodial gills preserved in the oldest known (480 Ma) horseshoe crabs

11:15-11:30: **Brendon E. Boudinot**: Running to success: Ant forelegs were uniquely modified during the Early Cretaceous

11:30-11:45: \***Christine Kiesmüller**: The raptorial appendages of adult praying mantises and predatory lacewings 100 million years ago and today

11:45-12:00: **Carolyn Haug**: Think big – physogastry in 100-million-year-old lacewing larvae

12:00-12:15: **Marie K. Hörnig**: Reproductive strategies within insects - hints for evolutionary reconstructions based on fossils

12:15-12:30: **Lukáš Laibl**: Drifting with trilobites: the invasion of trilobite early post-embryonic stages to the pelagic realm

**12:30-14:00 Lunch break & Zeiss workshop**

## **Session 16 Morphology, Taxonomy, Phylogeny (Lecture Hall 1)**

### **Chair: Gerhard Steiner**

14:00-14:15: \***Nickellaus G. Roberts**: Entoprocta, small animals with big implications for Lophotrochozoa

14:15-14:30: \***Julian Bibermaier**: *Plumatella fruticosa*, the non-plumatellid freshwater bryozoan? A morphological approach

14:30-14:45: \***Sebastian Hellmuth Decker**: Unravelling systematics and phylogenetic position of the boring bryozoan family Penetrantiidae

## **Session 17 Senses, Neurons and Behavior (Lecture Hall 2)**

### **Chair: Georg Brenneis**

14:00-14:15: \***Shubham Gautam**: Evolution of odorant receptor repertoire size & tempo across major Hymenopteran lineages

14:15-14:30: \***Mohammad Belal Talukder**: Chemosensing in Spiders: an ultrastructural perspective

14:30-14:45: \***Clara Lemaire**: Mechanical feedback by a specialized comb during fibre production in spiders

**14:45-15:15 Coffee break**

**15:15 Presidential talk**

**Natalia M. Biserova**: Morpho-functional evolution of the tapeworms

**16:00 Board meeting (Lecture hall 1)**

**17:15 General Assembly (Lecture hall 1)**

**20:00 Conference Dinner at Schreiberhaus**

## List of posters:

- P01 Nitzan Alon:** Detailed mapping of embryonic brain orphogenesis in the hemimetabolous insect *Oncopeltus fasciatus*
- P02 Chryssa Anastasiadou:** Morphological variability of the commercial marine shrimps' populations in the most important fishing grounds of Greece
- P03 Juliana Bahia:** Twofold complication: *Phrikoceros* or *Tytthosoceros* (Platyhelminthes: Pseudocerotidae) in South America?
- P04 Urban Bogataj:** Structural modifications of hindgut epithelium during differentiation coincide with major transitions in *Porcellio scaber* embryonic and postembryonic development
- P05 Ekaterina Bogomolova:** Excretory organs in sea spiders (Pycnogonida)
- P06 Bastian Brenzinger:** Using colour volume rendering for virtually dissecting an Animal
- P07 Isabel L. Dittmann:** Ultrastructure of the apical organ of a polyclad larva
- P08 Jules Duruz:** Early evolution of Spiralia: arrow worms are showing the way
- P09 Sarah B. Flensburg:** The influence of light on the contraction-expansion behaviour in the demosponge *Tethya wilhelma*
- P10 Santiago Gaviria:** Description of a new species of *Kovalevskiella* (Ostracoda, Limnocytheridae, Timiriaseviinae) from groundwater of the Danube river in Austria.
- P11 Svetlana Grützke:** High mountain crabs - What does the gonopod morphology tell about the systematics?
- P12 Fenja I. Haug:** Get a grip – quantitative aspects of claw morphology in clawed lobsters and crayfish
- P13 Gideon T. Haug:** We are Venom – a quantitative comparison of venom-injecting mouthparts of crustaceans in the wide sense
- P14 Joshua Huster:** Morphology of the olfactory sensory neurons in *Daphnia*
- P15 Valentyna Inshyna:** Continuous morphospace approach to the Tardigrada eggs' morphology
- P16 Pushpalata Kayastha:** Is *Paramacrobotus fairbanksi* Schill, Förster, Dandekar & Wolf, 2010 - a cosmopolitan tardigrade?
- P17 Rabea Klingberg:** Evolution and development of glial cells in Annelida
- P18 Michael Klinger:** Myoanatomy of a velvet worm (Onychophora)
- P19 Simon Engelberger:** Blaschkas' glass models of invertebrates in the University of Vienna's zoological collection: preserving a fragile legacy

**P20 Zonglai Liang:** Ano10 mediates convergent extension and tubulogenesis during notochord

**P21 Oliver Link:** The origin and evolution of striated muscle cells

**P22 Arianna Lord:** Exploring the moulting pathway at the root of Ecdysozoa: Insights from the genome of the priapulan *Tubiluchus corallicola*

**P23 Sofía Lucio García:** Digital catalog of Syllidae marine worms from the Iberian Peninsula

**P24 Christine Martin:** The velvet worm brain—homologies and novelties across panarthropods

**P26 Niklas Metzendorf:** Localization of the circadian clock neurons in a velvet worm (6nychophora)

**P27 Benjamin Naumann:** In flagranti - Functional morphology of copulatory organs of helminthomorph diplopods

**P28 Marco Niekampf:** The prothoracic repellent glands of neotropical stick insects (Phasmatodea: Pseudophasmatidae)

**P29 Jan Raeker:** The larva of *Tubiluchus lemburgi* (Priapulida): a morphological investigation of selected traits

**P30 Katerina Rosova:** New insects from the late Carboniferous of Piesberg extend morphological disparity in Palaeodictyoptera

**P31 Mario Schädel:** Shape from Shading as an inexpensive tool to study surface details of even small insect fossils

**P32 Johanna A. Seegel:** Early development of the olfactory system in *Parhyale hawaiiensis* (Crustacea, Amphipoda)

**P33 Martin V. Sørensen:** Confocal imaging of loriciferans reveals concealed morphological characters

**P34 Beatrice Steinert:** Formation of a cellular square grid in the *Parhyale hawaiiensis* embryo

**P35 Benedict Stocker:** Comparative functional mouthpart morphology in selected rove beetles (Staphylinidae)

**P36 Polina Tikanova:** From essential to selfish: the evolution of tRNA synthetase-based toxin in *Caenorhabditis tropicalis*

**P37 Anne Urban:** A morphology comparison of the reproductive systems between two members of the Panopeidea.

**P38 Karol Wałach:** African cornucopia: discovering the *Milnesium* (Tardigrada, Milnesiidae) biodiversity by the means of integrative taxonomy

**P39 Daishi Yamazaki:** Morphological diversification of the intertidal snail in the narrow distribution range: a case of *Littorina horikawai* endemic to the western Kyushu, Japan

**P40 Berit Zemann:** The brain of a giant: 3D-anatomical reconstruction of the brain of *Bathochordaeus stygius*, Garstang 1937 reveals traces of evolutionary miniaturization

**P41 Nicolás Zúñiga-Soto:** In the quest for the molecular fingerprint of myogenesis in a sea urchin embryo

**P42 Mariusz Kanturski:** Sentio ergo sum - Antennal sensilla of Aphids (Hemiptera: Aphididae). Comparative morphology and significance

**P43 Marco Meyer:** Nanofiber processing by cribellate spiders