ABSTRACT BOOK

SEB CENTENARY CONFERENCE 2023
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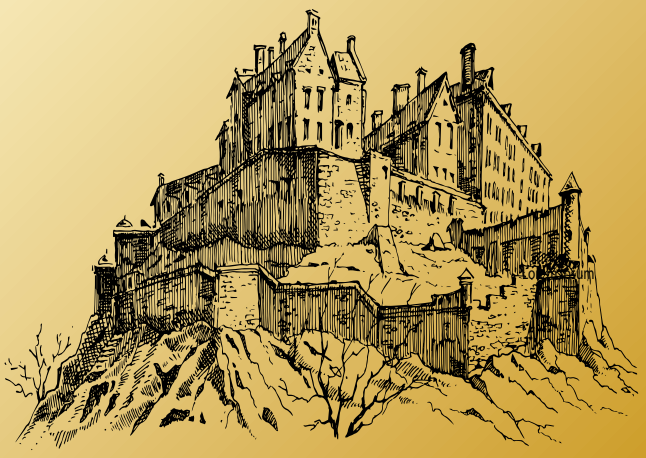

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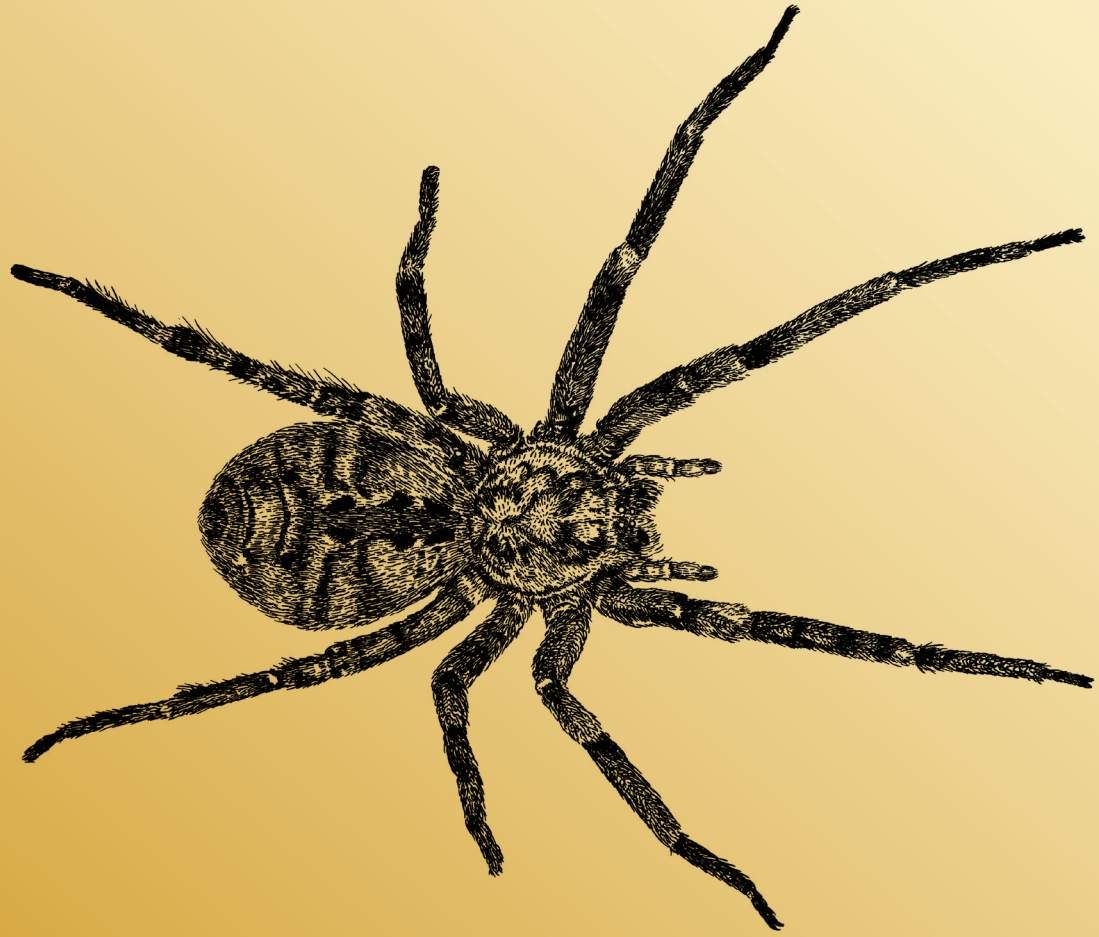

role of telomeres and (3) reproductive senescence. I will stress that knowledge on natural biology of the species, and the evolutionary adaptations to their habitats, are key to comprehend the outcomes of many laboratory studies.

A1.8 ON THE INTERPLAY BETWEEN REGENERATION AND AGEING: INSIGHTS FROM THE SALAMANDER

Wednesday 5 July 2023 **15:00**

Max H Yun (CRTD-Center for Regenerative Therapies Dresden MPI - Molecular Cell Biology and Genetics, Germany)

maximina.yun@tu-dresden.de

Extensive regeneration of the body plan is found in a few exceptional vertebrates, including salamanders such as the axolotl (Ambystoma mexicanum) and the Spanish ribbed newt (Pleurodeles waltl). In these organisms, regeneration of complex structures relies on the modulation of cellular plasticity for the generation of regenerative progenitors, which often arise from dedifferentiation or transdifferentiation of mature adult cells instead of stem cells. Further to this, salamanders display additional noteworthy traits, namely extraordinary longevity, indefinite regenerative potential, and lack of traditional signs of age-related decay or 'negligible senescence'. As such, they constitute valuable models for addressing the nature of organismal senescence and the interplay between regeneration and ageing.

Here, I will present our lab's efforts towards understanding how salamanders regulate key hallmarks of ageing through regeneration and lifespan, and discuss the potential of salamander models to illuminate the nature of complex regeneration and the basis of negligible senescence.

A1.9 THE IMPACT OF ANTHROPOGENIC POLLUTION ACROSS MAJOR LIFE TRANSITIONS: A META-ANALYSIS OF OXIDATIVE STRESS IN AMPHIBIANS

Wednesday 5 July 2023 **15:30**

Colette Martin (University of Glasgow, United Kingdom), Pablo Capilla-Lasheras (University of Glasgow, United Kingdom), Pat Monaghan (University of Glasgow, United Kingdom), Pablo Burraco (Estación Biológica de Doñana, United Kingdom)

coletteannemartin@hotmail.co.uk

Pollution is a significant contributor to the global decline of wildlife. In particular, anthropogenic chemical pollutants are driving many amphibian populations to the brink of extinction. They are expected to impact amphibians' antioxidant machinery, negatively affecting individual health and performance. The extent to which pollutants affect amphibians, and whether this is developmental-stage dependent, remain poorly understood. We conducted a meta-analysis of 81 studies (2007 estimates) published between 1998 and 2021 to evaluate the impact of pollutants on the oxidative stress machinery of amphibians, with a focus on pre-and post-metamorphic stages. We investigated whether oxidative responses are influenced by tissue type, climate, and life mode. Our meta-analysis revealed that the effect of pollutants on the antioxidant response varied across life stages. In tadpoles, pollutant exposure increased the antioxidant response and did not affect lipid peroxidation, a marker of oxidative damage. In adults, the antioxidant response remained unaltered, but the lipid peroxidation levels experienced a huge increase in response to pollutants. We also found that pollutants increased the antioxidant response in species with aquatic life modes and from tropical regions. The effect of pollutants on the antioxidant response was similar across tissue types. Our findings suggest that amphibians have evolved a strong antioxidant response to pollutants during the larval stage, whereas this antioxidant capacity seems to be canalised in post-metamorphic stages. Additionally, the impact of pollutants on oxidative stress is influenced by other factors including climate and life mode. These findings have important implications for conservation efforts to protect amphibians from pollution.

A1.10 POND DRYING CONDITIONS DO NOT ALTER WHOLE-BODY CORTICOSTERONE CONTENT AND METAMORPHIC TIME OF YELLOW-BELLIED TOAD (BOMBINA VARIEGATA) METAMORPHS

Wednesday 5 July 2023 **15:45**

Ana Kijanović (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Tanja Vukov (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Marko Mirč (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Aleksandar Mitrović (Institute for Application of Nuclear Energy, Serbia), Marko Prokić (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Tamara Petrović (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Tijana Radovanović (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Branka Gavrilović (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Svetlana Despotović (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Jelena Gavrić (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia), Nataša Tomašević Kolarov (Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, Serbia)

ana.kijanovic@ibiss.bg.ac.rs

Amphibian species that inhabit temporary ponds for reproduction maximize larval growth under favorable conditions and accelerate their development to undergo rapid metamorphosis under stressful conditions such as pond drying. Corticosterone controls development, metabolism, and growth, and has an invaluable role in anuran metamorphosis under stress conditions. In this study, we evaluated whether the whole-body corticosterone (CORT) level is related to drying conditions in species that cannot accelerate the developmental rate in response to pond drying. Specifically, we investigated the effects of different water levels in combination with exogenous CORT and corticosteroid synthesis inhibitor metyrapone (treatments: high water level, high water level with exogenous CORT, low water level,

low water level with metyrapone) on the whole-body corticosterone (at prometamorphosis and metamorphic climax), life history and morphological traits at the metamorphic climax. We found that these conditions did not alter the whole-body content of CORT and the developmental rate in treatments, although low water levels and exogenous CORT in high water level negatively affected other life history traits and tail shape. Individuals from a high water level with exogenous CORT had the smallest body size and mass and changed tail shape at metamorphosis, while changes in life history traits did not affect the tail shape in the other treatments. Our findings indicate that the absence of developmental response (i.e. canalized development) in the timing of metamorphosis of B. variegata may be explained by a modification of endocrine regulation but further studies that would include closely related species are required.