A12.27 THE USE OF PULSATILE UREA EXCRETION TO CHEMICALLY COMMUNICATE REPRODUCTIVE STATUS IN GULF TOADFISH, *OPSANUS BETA*

WEDNESDAY 5 JULY, 2017 **POSTER SESSION**

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Gulf toadfish *(Opsanus beta)* are uniquely capable of switching from excreting ammonia as their primary nitrogenous waste to excreting predominantly urea in distinct pulses across the gill. Previous studies suggest that these pulses may be used for intraspecific chemical communication. Many aquatic organisms release sex pheromones, but little is known about the use of pheromones in marine teleosts. To determine if pulsatile urea excretion communicates reproductive status, toadfish were sexed using ultrasound and delivered pre-conditioned seawater (PC-SW) that previously housed a conspecific of the opposite sex, a prey cue made of shrimp homogenate (attraction control), or a conspecific chemical alarm cue (avoidance control). Behaviour was monitored to measure attraction to or avoidance of the cues and water samples were collected to determine changes in the pattern of pulsatile urea excretion. Toadfish did not have a directional response to any of the chemical cues, but significantly more toadfish pulsed within 7 hours of PC-SW delivery (67%) compared to control seawater (38%). Pulse frequency was also 1.6 times greater in response to PC-SW than control seawater. In comparison, toadfish did not pulse in response to the prey or alarm cues. Although none of the cues attracted or repelled toadfish, the results suggest that toadfish of either sex pulse to communicate with conspecifics when exposed to chemosensory cues from the opposite sex. Further experiments will investigate the role of sex hormones in the control of pulsatile urea excretion, possible reproductive pheromones released in pulses, and the adaptive significance of chemical communication in toadfish.

A12.28 MIXTURES OF ZINC, COPPER AND CADMIUM CAUSE DIFFERENT RESPONSES IN CAENORHABDITIS ELEGANS

WEDNESDAY 5 JULY, 2017 **POSTER SESSION**

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An increase in metal accumulation is seen the last decades, which can lead to serious health hazards for diverse animals including humans, resulting in a persistent (eco)toxicological concern. In contrast to the increasing understanding of the toxic effects of single metals, much less is known about their effects upon interaction, which frequently occurs in the natural environment. Especially soils, sediments and surface waters can be contaminated with metal mixtures. Since soil nematodes live within the interstitial waters of soil particles, they are in direct contact with dissolved contaminants and are thus good models for these toxicity tests. The aim of this study was to gain insights into the sensitivity to the selected metals (Cu, Cd, Zn), and to investigate whether and how these sensitivities are affected in mixture exposure scenarios. To do so, we fully exploited the benefits of the free-living soil nematode Caenorhabditis elegans as a unique model to investigate the effects of metal exposure on population growth and locomotory behaviour. Crawling speed on agar plates and trashing behaviour in liquid medium was evaluated by using video tracking. These experiments were preceded by mortality experiments to determine LC20 concentrations used in the behavioural tests. C. elegans exhibited a different sensitivity to the three metals, both as individual metals as in combination. Different interaction effects were observed for the mixtures ZnCd, ZnCu, CuCd and ZnCuCd. Our study showed that even at low concentrations the locomotion, both on agar plates and in liquid medium, was disturbed.

A12.29 SPATIAL SUMMATION IN HAWKMOTH LAMINA MONOPOLAR CELLS

WEDNESDAY 5 JULY, 2017 **POSTER SESSION**

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Many nocturnal animals rely on vision as their primary sense. The challenging conditions at night - low signal and a high noise background - are met by adaptations in the eyes and retina. In insects, neural processing in the brain further increases sensitivity by summing visual signals in space and time, thus boosting the correlated signal while reducing the uncorrelated noise, yet at the expense of spatial and temporal resolution. The neurons responsible for this summation remain unknown, although clues exist that lamina monopolar cells (LMCs) - found in the first visual processing area of the insect brain - have the necessary morphology to perform spatial summation. Here we give the first physiological evidence