

NASCE 2011 Program Addenda

Correction of typographical errors in the program:

Symposium 14, oral presentation

Marta C. Romano, Universidad Nacional Autónoma de México “*Taenia crassiceps* WFU *cysticerci* synthesize glucocorticoids in vitro: Metirapone regulates the steroid production.”

NASCE 2011 Panels and Workshops, p. 19

Steven Wiseman’s title should be “*Expression of microRNAs in Chironomus dilutus* exposed to oil sands process affected water: insight into mechanisms of toxicity”

Withdrawals:

Abstract #P73 MOUSE HYPO E-40 CELLS: A MODEL SYSTEM FOR ANALYZING THE ENDOPROTEOLYTIC CLEAVAGE OF POMC BY PROPROTEIN CONVERTASE 1/3

Domicinda Hill, Liang Liang, and Robert M. Does

Abstract #S13-2 MOLECULAR DIVERSITY OF AQUAPORIN FOR WATER ADAPTATION STRATEGY IN ANURAN AMPHIBIANS

S. Tanaka and M. Suzuki

Additions:

Abstract #P51

THYROID HORMONE REGULATION OF OVARIAN STEROIDOGENESIS IN THE AMPHIBIAN, *SILURANA TROPICALIS*

Danielle L. Gordon, Ashleigh D. Allen and Natacha S. Hogan

Department of Biology, University of Prince Edward Island, Charlottetown, PE, Canada.

Adequate levels of circulating thyroid hormone (TH) are of primary importance for normal steroid hormone production in the vertebrate gonad. In this context, the presence of compounds in the environment that disrupt TH levels may pose a significant threat to the reproductive health of amphibians. This study was conducted to determine the effects of TH on gonadal steroidogenesis in an amphibian model species, *Silurana tropicalis*. In an *in vitro* steroidogenesis assay, ovarian tissue from adult females was incubated in the presence or absence of 10 IU hCG and various concentrations of the TH, triiodothyronine (T3; 0.1 nM-1 µM), for 18 hours. Hormone levels (testosterone, T; estradiol, E2) in the incubation media were measured by radioimmunoassay. Treatment with T3 had no effect on T but decreased E2 production in ovarian tissue at the highest T3 concentrations. To determine the potential sites of T3 action within the steroidogenic pathway, mRNA levels of key steroidogenic genes were evaluated using qPCR. There was no effect of treatment on the expression of steroidogenic genes. The results of this study demonstrate that T3 can modulate ovarian steroidogenesis but that this response is not related to transcript-level changes in steroidogenic genes, and could possibly be linked to phosphorylation and activation of transcription factors. Further studies will examine how changes in thyroid status can influence reproduction, responsiveness to other hormones and hormone-active contaminants. (Supported by NSERC Discovery Grant to NSH).

Abstract #P120**SEXING FROGS BY REAL-TIME PCR: USING CYP19 AROMATASE AS AN EARLY OVARIAN DIFFERENTIATION MARKER**

Laia Navarro-Martín(1)*, Yohana M. Velasco-Santamaría(2), Paula Duarte-Guterman(1) Chantal Lanctôt(1) and Vance L. Trudeau(1)

(1) Centre for Advanced Research in Environmental Genomics, Department of Biology, University of Ottawa, Ottawa, ON, Canada; (2) Research Group on Reproduction and Toxicology of Aquatic Organisms - GRITOX, Institute of Aquaculture, University of the Llanos, Villavicencio, Colombia.

Several studies have concluded that frogs are sensitive biomonitoring organisms of environmental contamination since pollutants can be absorbed through their permeable skin, increasing their susceptibility to the harmful effects of those compounds. Some of them act as endocrine disruptor chemicals, affecting sex differentiation and shifting sex ratios. On the other hand, sex differentiation mechanisms are highly conserved in poikilothermic vertebrates and candidate genes have been identified in fish. Most anurans have no identified sex-markers, therefore alternative methods for identification of early changes in sex ratios are required. In this study, *Lithobates sylvaticus* and *Silurana tropicalis* tadpoles were sampled at different developmental stages covering the entire process of sex differentiation. Some candidate genes known to be involved in fish sex differentiation, such as the steroidogenic enzymes *cyp17* (a 17-alpha-hydroxylase), *cyp19* (the enzyme converting androgens to estrogens) and the *cyp19* transcription factor *foxl2* were cloned for *L. sylvaticus*. *L. sylvaticus* cDNAs were 75-78% identical compared to *S. tropicalis* sequences. The expression of *cyp17*, *cyp19* and *foxl2* in the gonad-kidney complex was analyzed by real time-PCR. The results showed that although factors such as age or developmental stage need to be considered, there is a clear dimorphic pattern in the expression of *cyp19* and *foxl2*. Presumptive females have approximately 100 and 10 fold higher expression of *cyp19* and *foxl2* levels compared to presumptive males. This pattern was not evident with *cyp17*. Phenotypic sex identification in amphibian field studies has been traditionally analyzed by histological approaches, which is time consuming and requires tadpole samples from the late development stages. Our results suggest that gonadal *cyp19* gene expression may be an early marker of ovarian differentiation and sex ratios in frogs. (Funded by NSERC and the Long-term Experimental Wetlands Area group.)

*Corresponding author: laianavarromartin@gmail.com

Program Switches:

Symposium 13. Ion and Water Balance:

OR13-2 Stephen McCormick presenting becomes S13-2

P120 Wei Dai presenting becomes OR13-2