ANNOUNCEMENT

Interested Members of the University community are invited to attend the Final Oral Examination for the degree of Doctor of Philosophy of

Anja Stojsin

of the Department of Biomedical Sciences (Ontario Veterinary College) on Monday, December 19th, 2016 at 9:00am in Biomedical Sciences Room 1642 (Seminar); and Room 3648 (Examination)

Thesis Title

Anti-Mullerian Hormone as a Marker of Oocyte Quantity, Quality, and Fetal Sex

Examination Committee
Dr. W. Allan King
Dr. Michael Neal
Dr. Eduardo Ribeiro
Dr. Roger Moorehead
Dr. Crystal Chan (Toronto) – External Examiner

Advisory Committee
Dr. W. Allan King
Dr. Julang Li
Dr. Neil MacLusky
Dr. Michael Neil
Dr. Pavneesh Madan

ABSTRACT

Delayed childbearing age, increased environmental pollutants accompanying modern lifestyle, and an increase in inbreeding due to high demand for milk and meat yield have resulted in the decline in human and bovine reproduction respectively. Anti-Mullerian hormone (AMH) is expressed starting from 7-8 weeks of gestation in males and 20 weeks of gestation in females, in up to 100x higher concentration in males. AMH has been described as a non-invasive and accurate marker of ovarian quantitative fertility parameters in both humans and cattle. However, it is still unknown how AMH levels correlate to different fertility parameters in different cattle breeds; can AMH levels in the mother be used as a fetal sex marker during pregnancy in cows? In humans,
can AMH collected in the single follicular fluid (mono FF), as well as granulosa cell (GC) AMH receptor 2 (AMHR2) be used as an embryo developmental potential marker? Here we present evidence of the higher levels of systemic and follicular AMH in Zebu compared to European cattle, corresponding to higher levels of AFC and oocytes. In cows pregnant with a male fetus, plasma AMH was significantly higher compared to the cows pregnant with a female fetus, when measured between day 35 and 135 during gestation. The placenta and cotyledon were found to express AMHR2 between day 38 and 80, however not significantly different between pregnancies with an opposite sex fetus. In the human study, systemic and average mono FF AMH, and average mono GC AMHR2 expression were significantly negatively correlated with the patient’s blastocyst rate. When patients were divided into normal and high groups based on the their systemic AMH levels, the following was observed: normal systemic AMH level patients had a higher average FF AMH level and a higher blastocyst rate compared to the higher systemic AMH level patients. Also, in normal systemic AMH patients, blastocysts corresponded to follicles with a lower level of AMH and GC AMHR2 expression, while in high systemic AMH patients blastocysts corresponded to follicles with a higher level of AMH and GC AMHR2 expression.

**BIOGRAPHY**

Anja graduated from the University of Guelph with a Bachelor of Science and Major Molecular Biology and Genetics. In the last year of her undergraduate degree she met Dr. Allan King and completed a research project in his lab on the topic of cloned bull reproduction. For her Masters Degree, Anja went to Sweden to and worked with Dr. Ulrike Nuber at Lund University, Department of Biomedicine. Upon completing her Masters Anja returned to her home country of Serbia to train and work as an embryologist in a human fertility clinic for two years. In 2012, Anja returned to the University of Guelph and Dr. King’s lab to pursue her doctorate degree in the area of human and bovine reproduction. Her work was completed in collaboration with One Fertility Burlington and researchers at the Federal University of Pará, Brazil. In parallel to her PhD, Anja is also the mother of a two-year-old boy and enjoys all the adventures that it brings.

**AWARDS**

- **Southern Ontario Reproductive Conference**
  - Annual Meeting in **Toronto**, Canada; May 2, 2014; 2nd place for a poster presentation

- **Ontario Veterinary College (OVC) Graduate Scholarship**
  - May 2012 - April 2015

- **Industrial Natural Sciences and Engineering Research Council of Canada (NSERC) scholarship**
- September 2013 - December 2016

- **Julie May (Goode) Whittaker Graduate Travel Scholarship**
  - May 2013 – July 2013

- **Canada-Brazil Doctoral Research Exchange Award**
  - May 2013 – July 2013

**PUBLICATIONS:**


**Abstracts:**


