

The Use of High Frequency Ultrasound for In Vivo Pregnancy to Monitor and Assess Fetal Development After Endocrine Disruption

Rikki N. Nelson¹ M.S., Eva K. Koplin², Sydney M. Polson², Danielle R. Bruns^{1,2}, Emily E. Schmitt^{1,2} Ph.D.

¹University of Washington School of Medicine, ²University of Wyoming Division of Kinesiology and Health

Background

- ❖ Endocrine disrupting chemicals (EDCs) are known to induce cancers, developmental disorders, and birth defects
- ❖ Benzyl butyl phthalate (BBP) is an estrogenic EDC ubiquitous in personal care products and plastics
- ❖ Current EPA guidelines describe safe exposure doses of BBP as less than $0.2 \text{ mg}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}$ regardless of pregnancy status

Methods

- ❖ Female mice 6-12 weeks old and males with known fertility were mated
- ❖ Vaginal plugs were visualized to determine "Day 0.5" of pregnancy and females were singly housed
- ❖ Pregnancy was confirmed on e5.5 via high frequency ultrasound (HFUS)
- ❖ HFUS was performed on days e9.5-12.5, e13.5-16.5, or on 4 non-consecutive days of gestation
- ❖ Pregnant female mice were treated with BBP in sesame oil or control sesame oil via gavage on e9.5-e15.5

Results

- ❖ 6/6 mice that underwent 4 consecutive days of HFUS were euthanized due to extreme barbering wounds
- ❖ HFUS on non-consecutive days in resulted in live-pup births 7/10 times

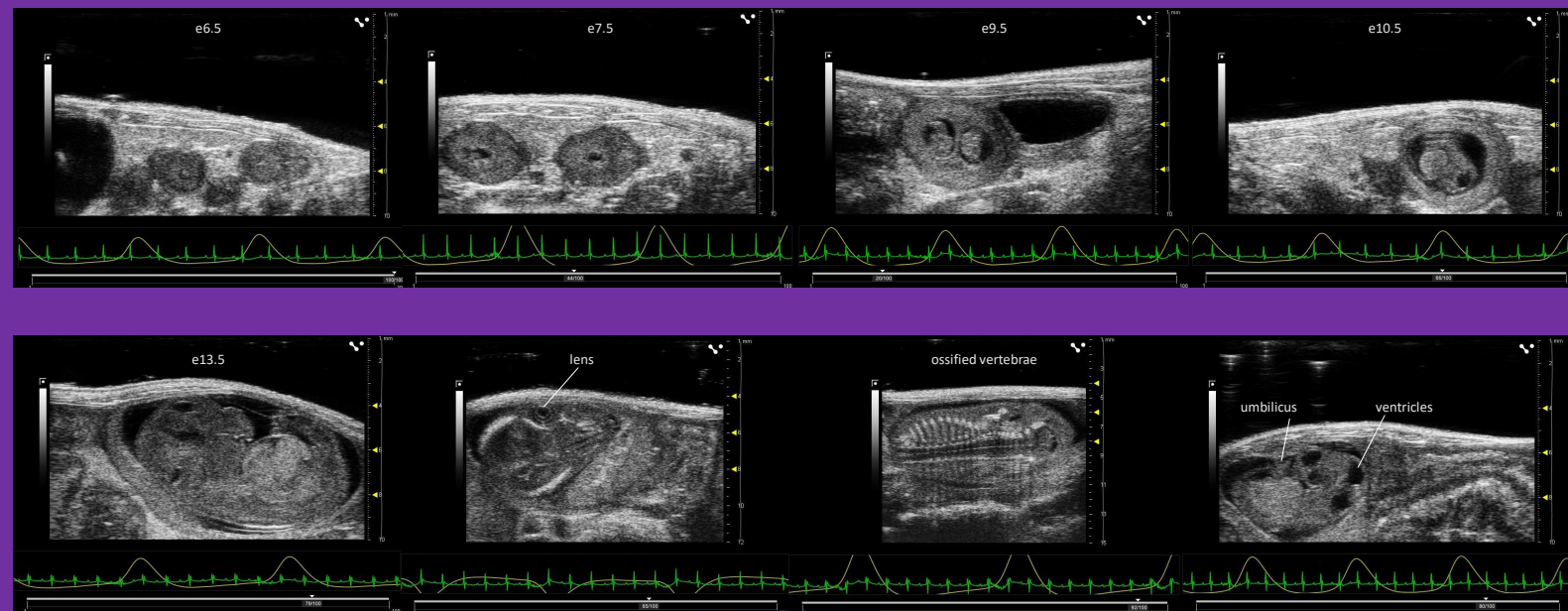
Future Direction

- ❖ To quantify fetal development in mice exposed to BBP or control

UW Medicine

UW SCHOOL
OF MEDICINE

Optimal conditions for HFUS monitoring of murine pregnancy include individual housing, minimal time spent under anesthesia, and scheduled recovery days between bouts of anesthesia.



UNIVERSITY
OF WYOMING

College of Health Sciences
Division of Kinesiology
and Health