Influence of Ovarian Germ Cell Depletion in Post-Menopausal Mice

Student Research Symposium
Tracy Habermehl
Outline

Introduction and Background

Hypothesis and Importance

Methods

Results

Summary
Introduction

- Menopause – ovaries become senescent
- Increases disease risk including, diabetes, cardiovascular disease, etc.
- Young ovary transplantation increased longevity and health in mice

Average lifespan: 644 days
Germ cells reprogram somatic cells to support reproduction. We hypothesize that ovarian germ cell depletion allows ovarian somatic cells to support organismal health.

Hypothesis

- Modern medicine has extended our time of dying but our health is still worsening
- Over 162 million women in the U.S.

Importance

Methods: Transplantation and Treatment

Germ cell depletion → Transplant Surgeries → Health Span Assays → Data Analysis

Controls
- Very old: 800 days (n=5)
- Old: 660 days (n=6)
- Young: 200 days (n=6)

Experimental
- GC Old transplant recipients: 650 days (n=9)
- GD Old transplant recipients: 650 days (n=10)
Methods: Assays

• Health Span Assays
  ▫ Rotorod
  ▫ Beam
  ▫ Tremor
  ▫ Grip
  ▫ Buried Pellet
  ▫ Burrow
  ▫ Open Field
  ▫ Novel Block
  ▫ MRI

Photographs by Kyleigh Tyler and Tracy Habermehl
Methods: Assays

• Health Span Assays
  ▫ Rotorod
  ▫ Beam
  ▫ Tremor
  ▫ Grip
  ▫ Buried Pellet
  ▫ Burrow
  ▫ Open Field
  ▫ Novel Block
  ▫ MRI

• Blood Assays
  ▫ Hormones
  ▫ Renal
  ▫ Lipid
  ▫ Glucose Tolerance Test
  ▫ Immunoassay

• Tissue Sampling
  ▫ Liver Protein and RNA
  ▫ Histopathology
  ▫ Stifle Micro CT
Results

Currently in the process of analyzing all data collected from physical assays

![Graph showing glucose metabolism with AUC values for different groups.](image)

- 7.3 month control: 662.83125
- Very old controls: 952.5
- Old controls: 785.8333333
- GD: 673.5
- GC: 583.5

(Mason et al., 2015)
Summary

Foxo signaling & the germ cell & somatic cell interactions

Adapt technique to be applicable in humans

Improve the health of all post-menopausal women
Questions?

Acknowledgements

Mason Laboratory
Dr. Jeff Mason
Kate Parkinson
Kyleigh Tyler
McKenna Walters
Crystal Collier
Anisa Samhouri

USTAR/LARC
Dr. Aaron Olsen
Lisa DeSoi

Committee
Dr. Irina Polejaeva
Dr. Clay Isom

Poisonous Plant Research Laboratory
Kevin Welsh
Shelly Wilson

http://www.arc.wa.gov.au/?page_id=1316