Influence of Ovarian Germ Cell Depletion in Post-Menopausal Mice

Student Research Symposium
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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

Photographs by Dr. Jeff Mason (Mason et al., 2011, 2016)
Hypothesis

Germ cells reprogram somatic cells to support reproduction. We hypothesize that ovarian germ cell depletion allows ovarian somatic cells to support organismal health.

Importance

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

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

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**
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- **Blood Assays**
  - Hormones
  - Renal
  - Lipid
  - Glucose Tolerance Test
  - Immunoassay

- **Tissue Sampling**
  - Liver Protein and RNA
  - Histopathology
  - Stifle Micro CT

Photographs by Kyleigh Tyler and Tracy Habermehl
Results

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

![Graph showing glucose metabolism](image)

- 7.3 month control: 662.83125
- Very old controls: 952.5
- Old controls: 785.833333
- GD: 673.5
- GC: 583.5

(Mason et al., 2015)
Improve the health of all post-menopausal women

Adapt technique to be applicable in humans

Foxo signaling & the germ cell & somatic cell interactions
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