A small, brown mouse is sitting on a white, textured surface. The mouse is facing forward, looking slightly to the left. It has large, upright ears and a long, thin tail. The background is a plain white surface.

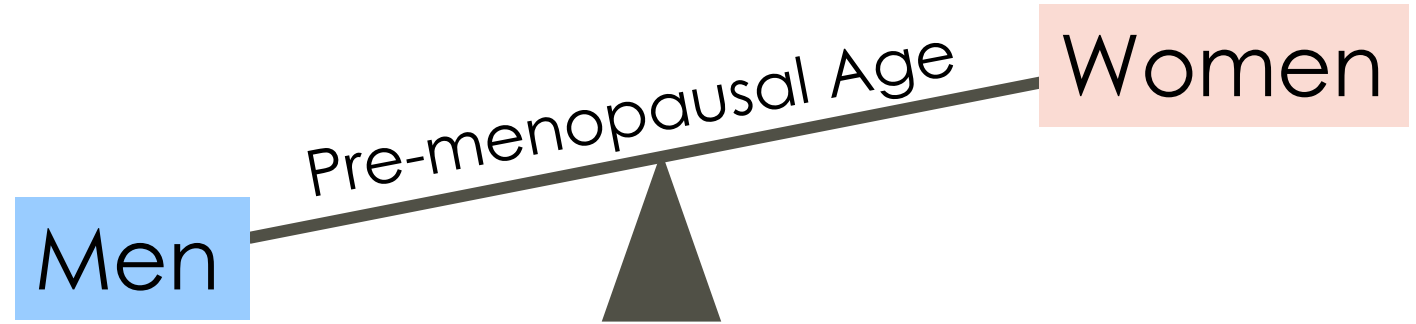
The Effects of Ovarian Somatic Cells on Post- Menopausal Health

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R. Walters, Steven T. Gawrys, Jeffrey B. Mason

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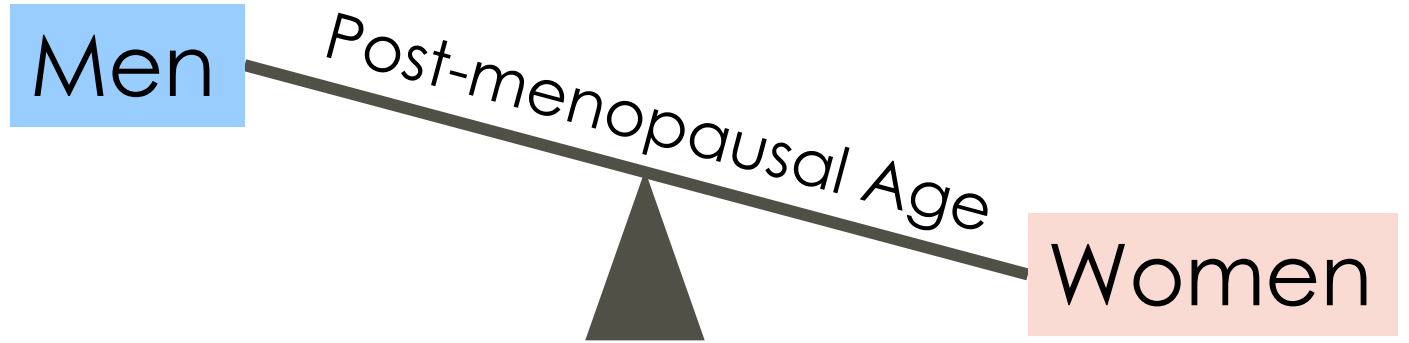
Background

Young women possess a significant health advantage over similarly-aged men



Background

Menopause: the natural cessation of menstruation and senescence of cyclic ovarian function



Importance

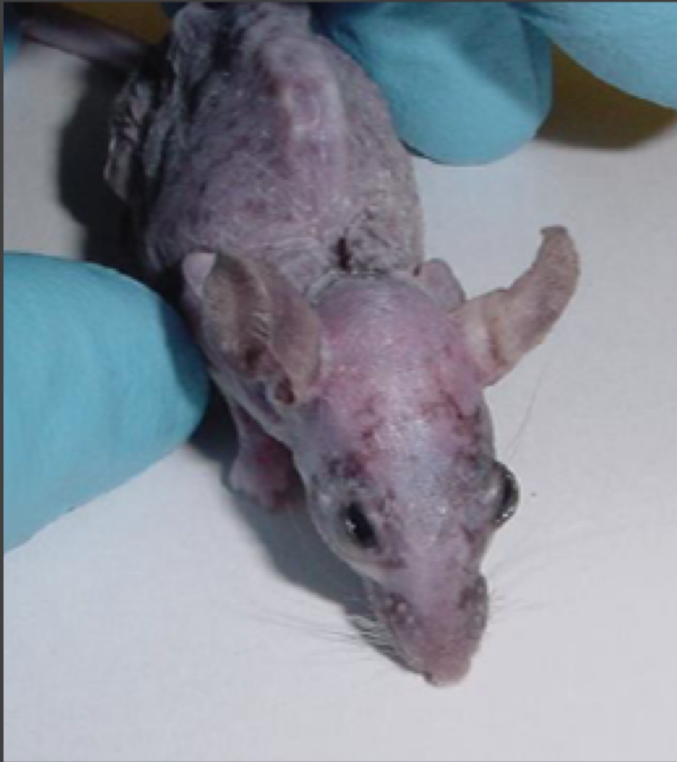
- Modern medicine has extended our time of dying while our health continues to worsen
- Over **164 million** women in the United States
- Over **3.5 billion** women in the world



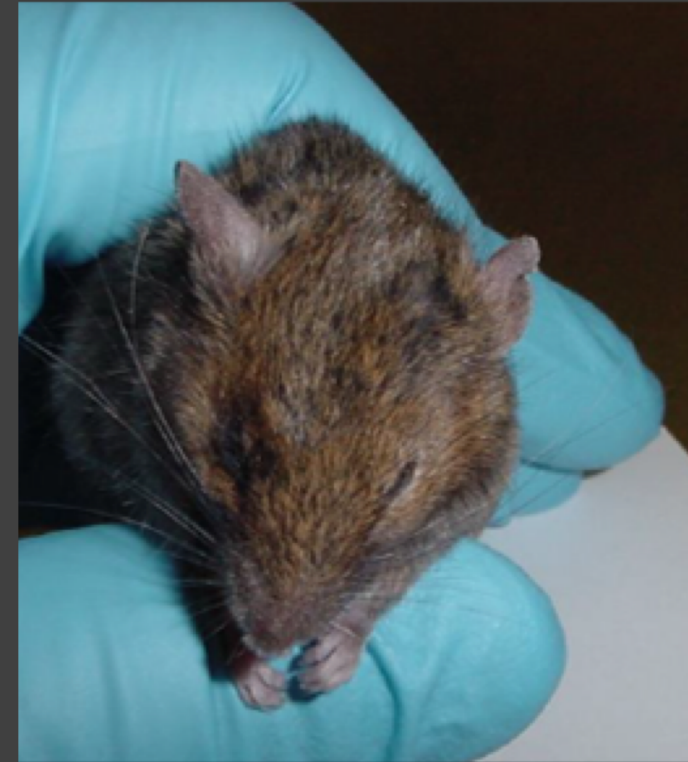
(Peterson, et al., 2016) | (Mason, et al. 2015)
| (Mason, et al., 2011)

Previous Studies

Aged Female Mouse



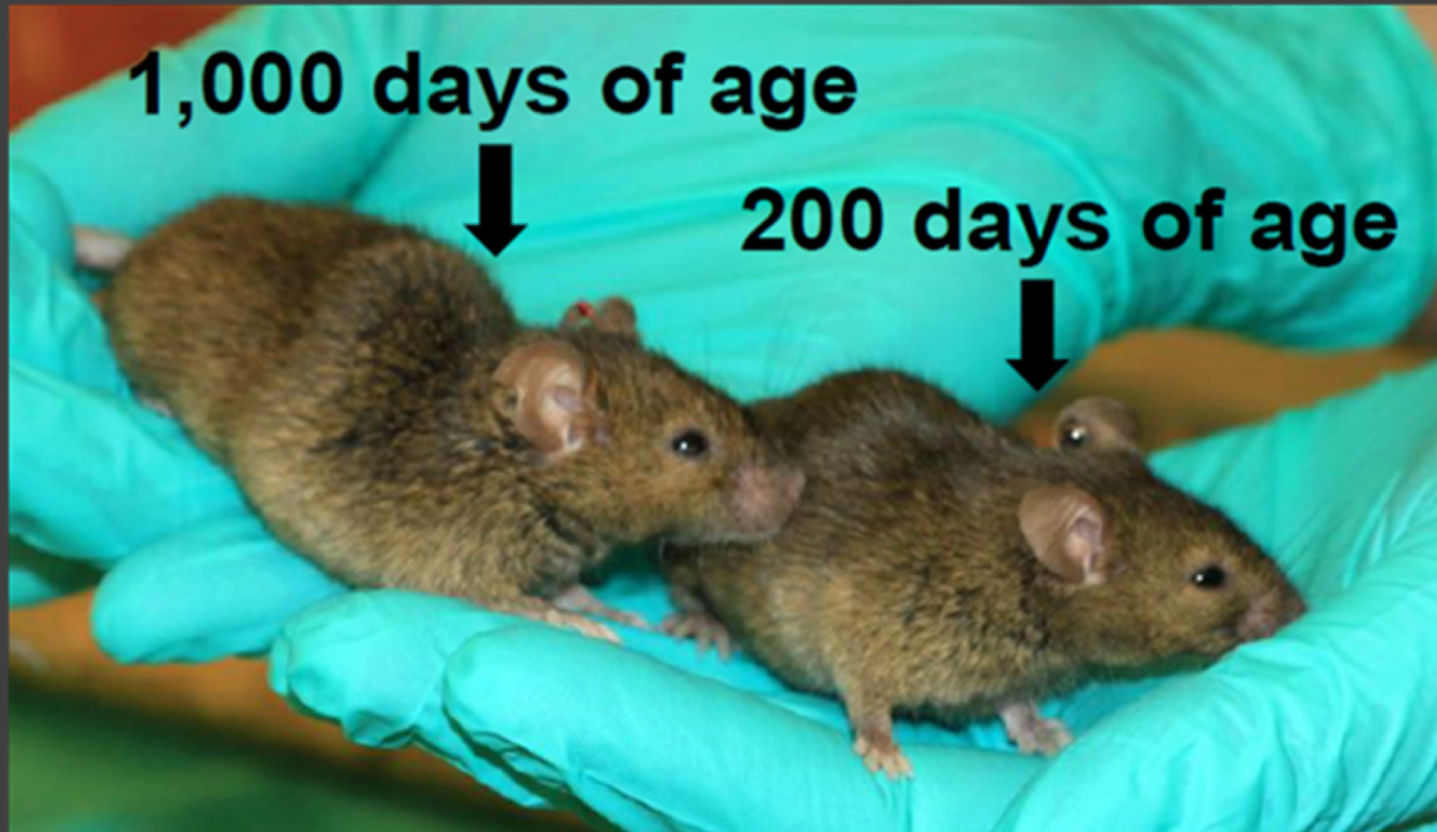
Aged Mouse with Young Ovaries



Average Lifespan is 650 days of age (~ 21 months)

Previous Studies

Ovarian germ cell depletion increased longevity

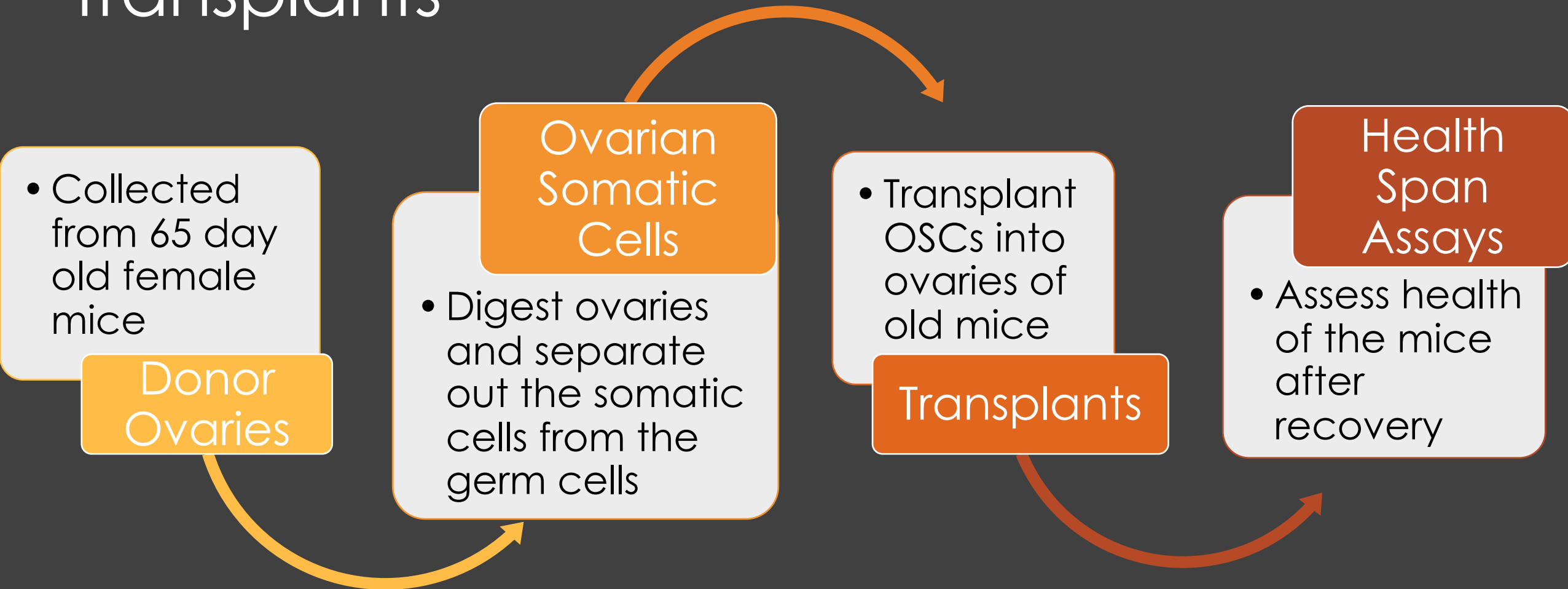




Hypothesis

- absence of germ cell signaling prompts the ovarian somatic cells to support organismal health
- preserving the perceived potential for germline transmission by improving health

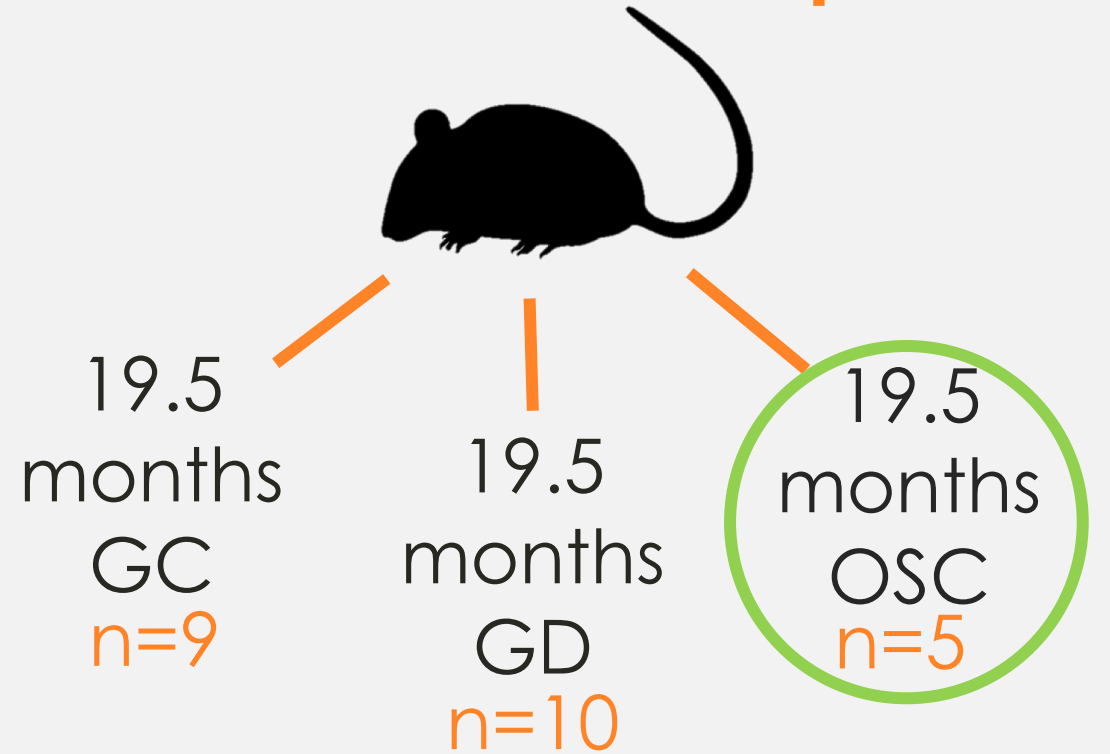
Methods for Ovarian Somatic Cell Transplants



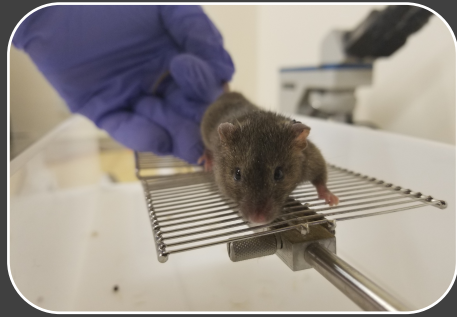
Control Group



Treatment Group



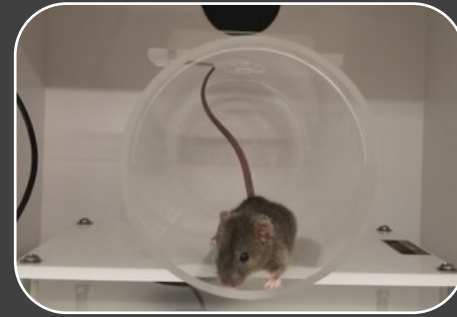
Health Span Assays



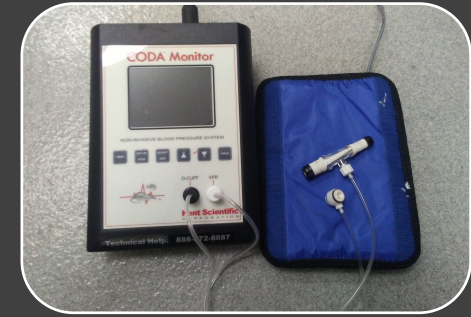
Musculoskeletal



Cognition



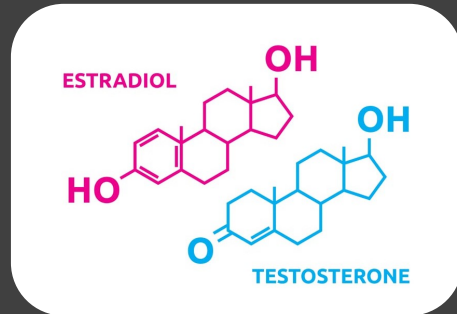
Tremors



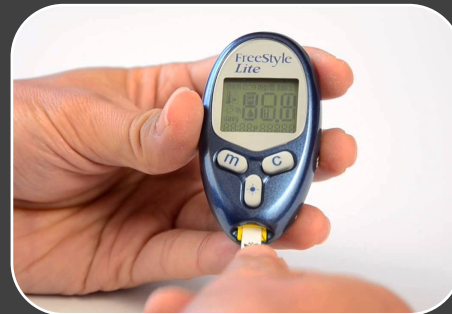
Cardiovascular



Arthritis



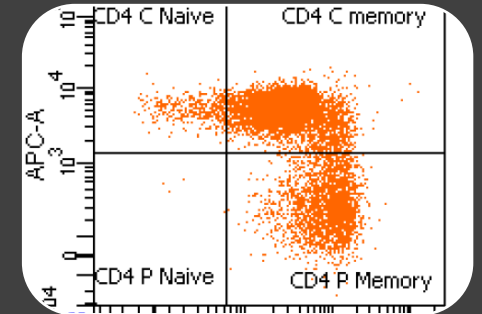
Hormones



Metabolism

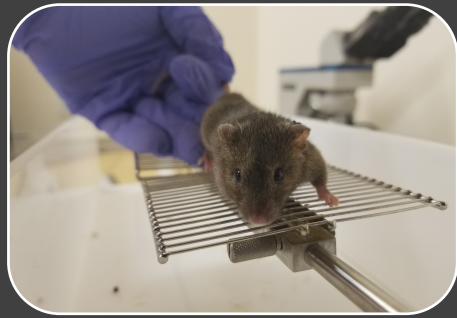


Olfactory



Immunity

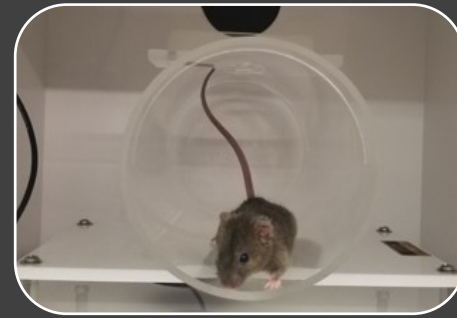
Health Span Assays



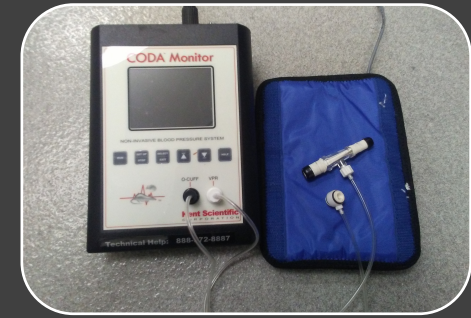
Musculoskeletal



Cognition



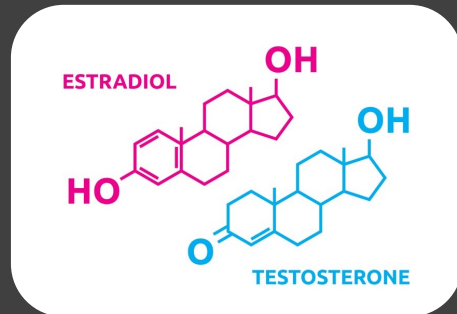
Tremors



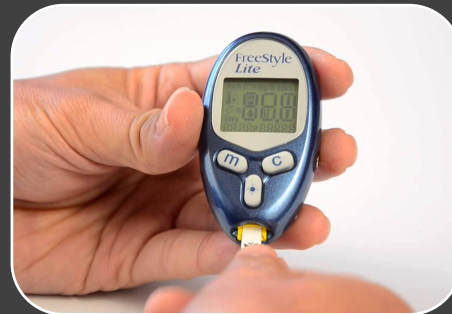
Cardiovascular



Arthritis



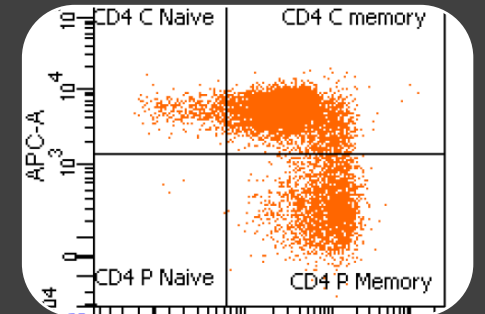
Hormones



Metabolism



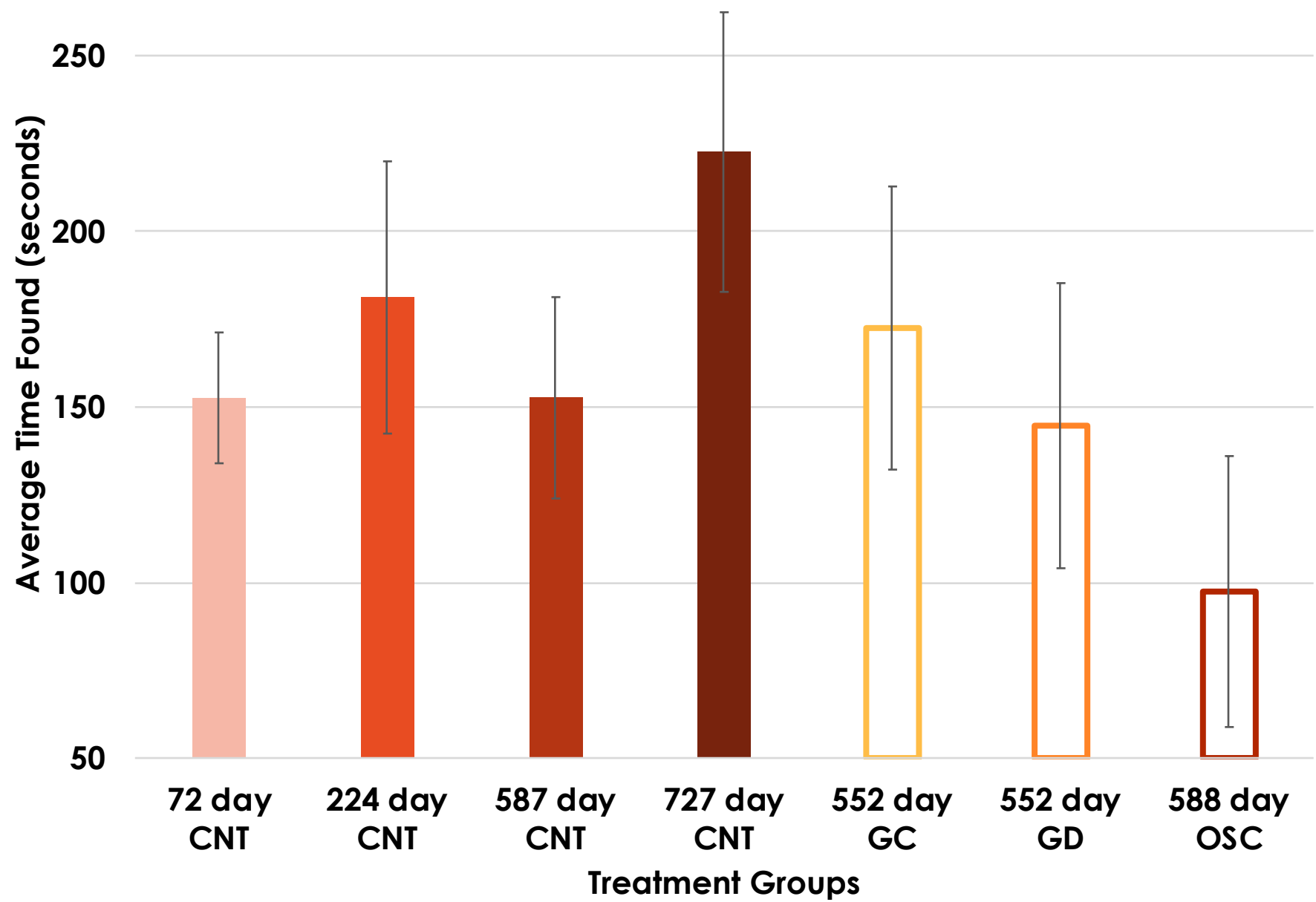
Olfactory



Immunity

Buried Pellet

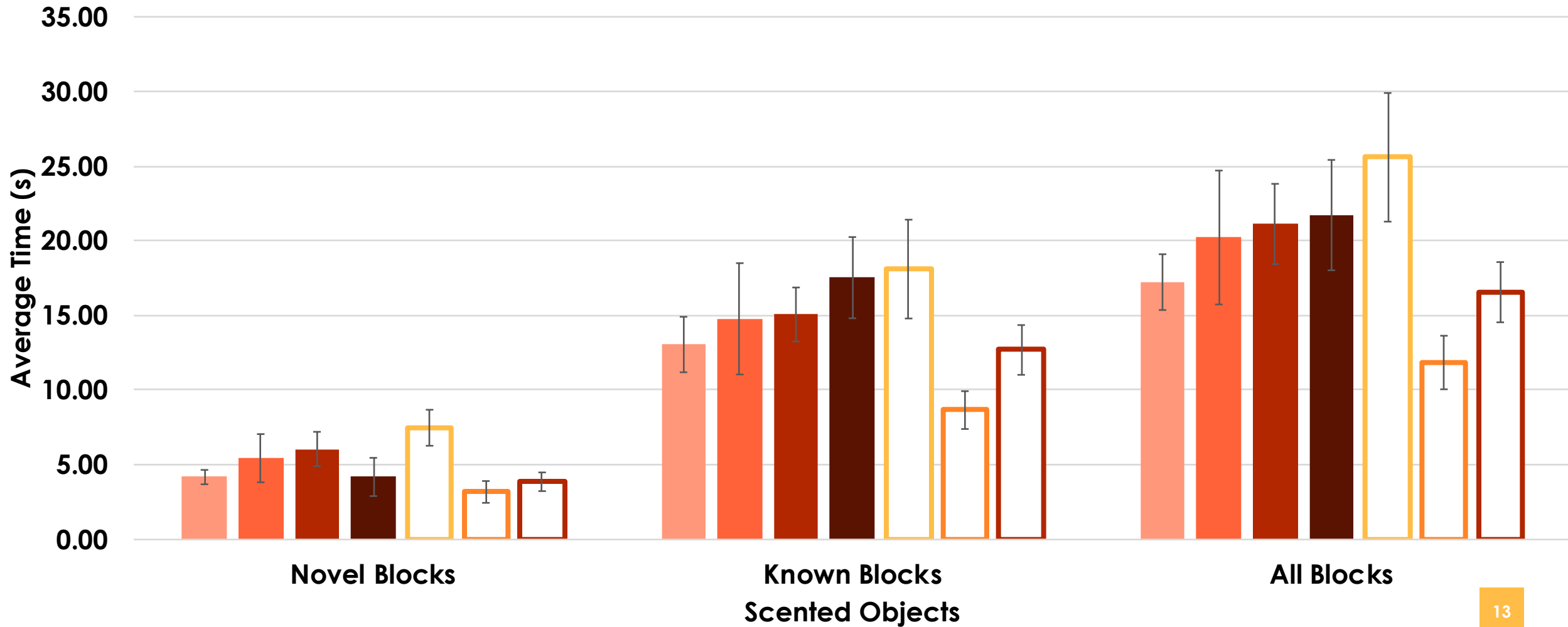
Trial 1-5



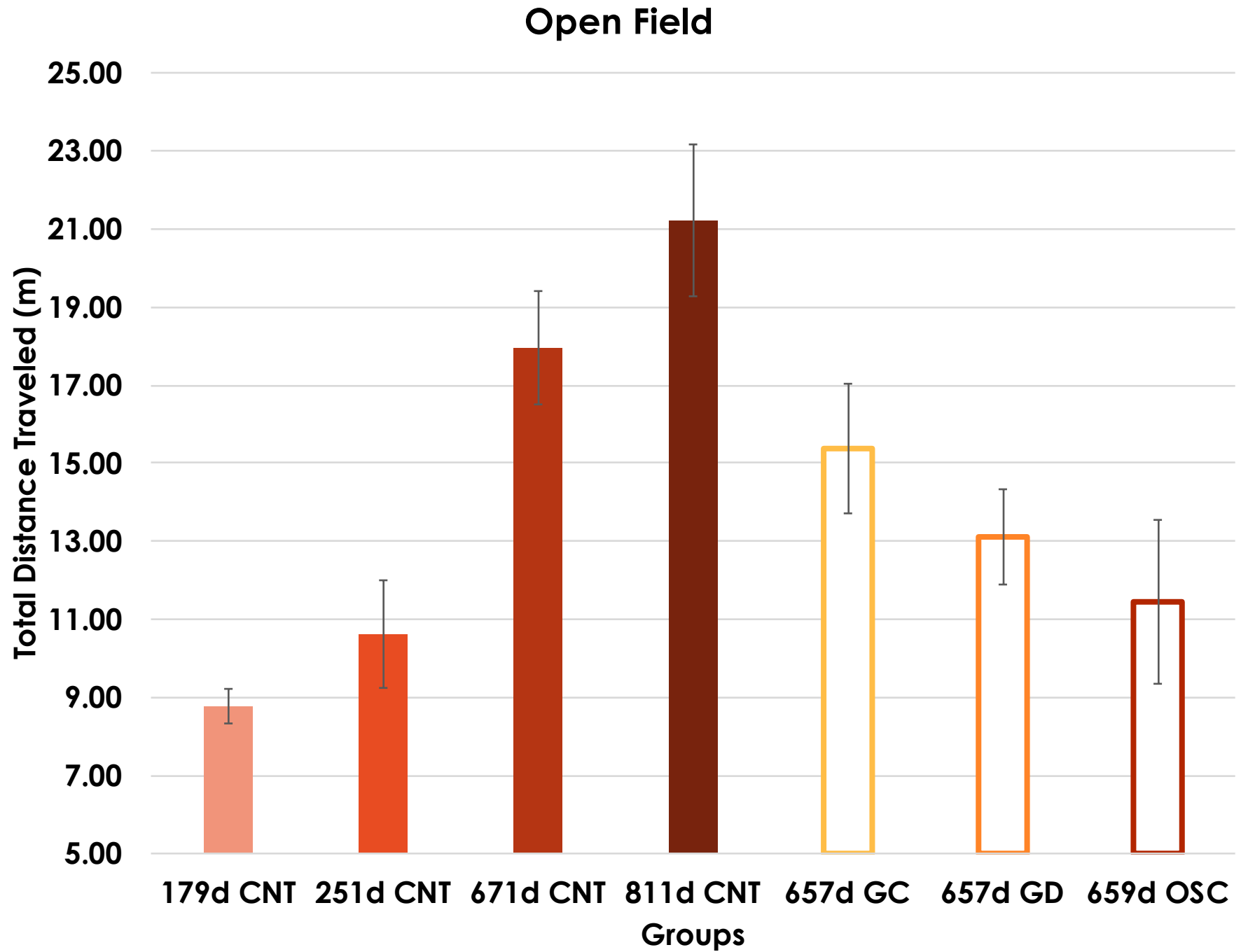
Novel Block

Average Time Spent with the Different Types of Blocks

183d CNT 251d CNT 671d CNT 811d CNT 663d GC 663d GD 664d OSC



Open Field



Conclusion

Young
ovarian germ
cell depleted
transplants
improve
aspects of
health

Young
ovarian
somatic cell
transplants
improve
aspects of
health

Potential
germ cell
independent
influence on
health span

Future Directions

Gene
Therapy
with
Fibroblast
Cells



Identify the genes responsible for the increase in health



Transfect the desired genes into easily attainable cells



Assess the treatment on health

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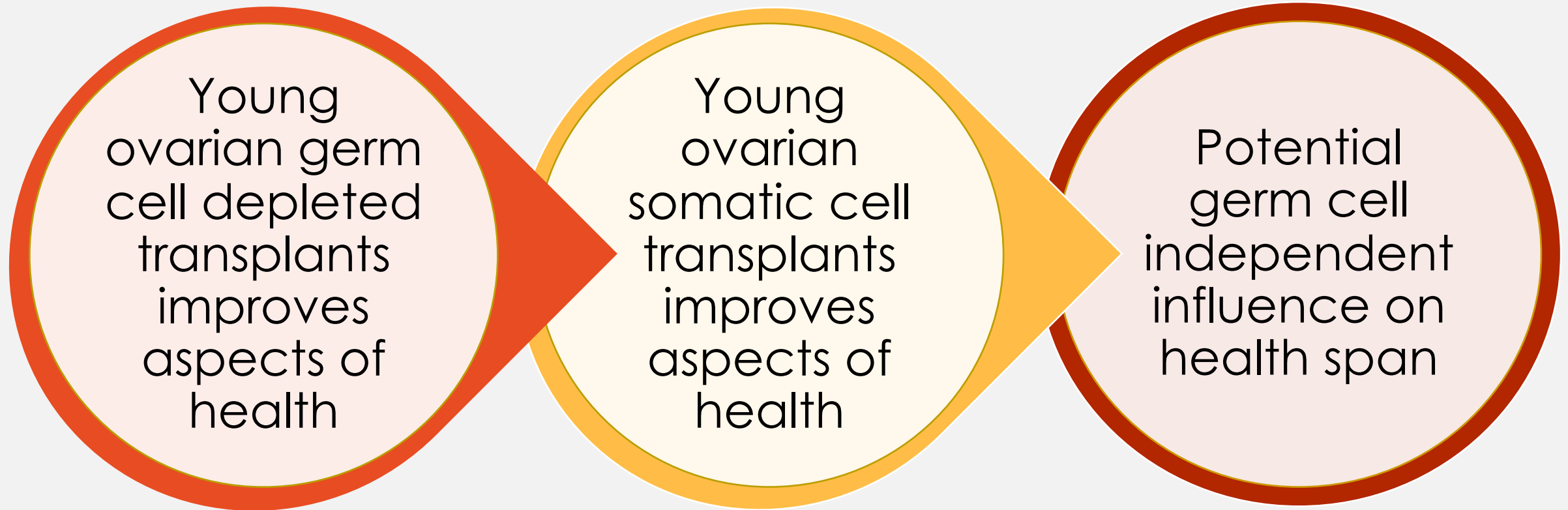
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Conclusion



Potential therapeutic treatment for post-menopausal decline in health with further understanding of ovarian somatic cells.