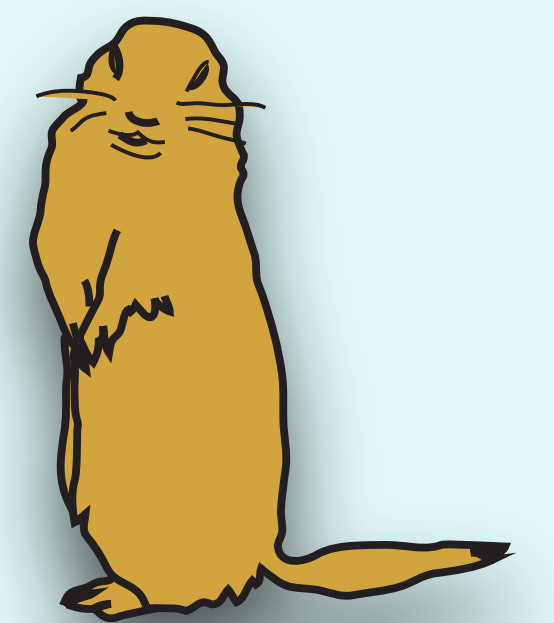


Translating Hibernation Research to Promote Healthy Aging

Kelly Drew, PhD, Center Director and PI and Denise Daniello, M.A. PC

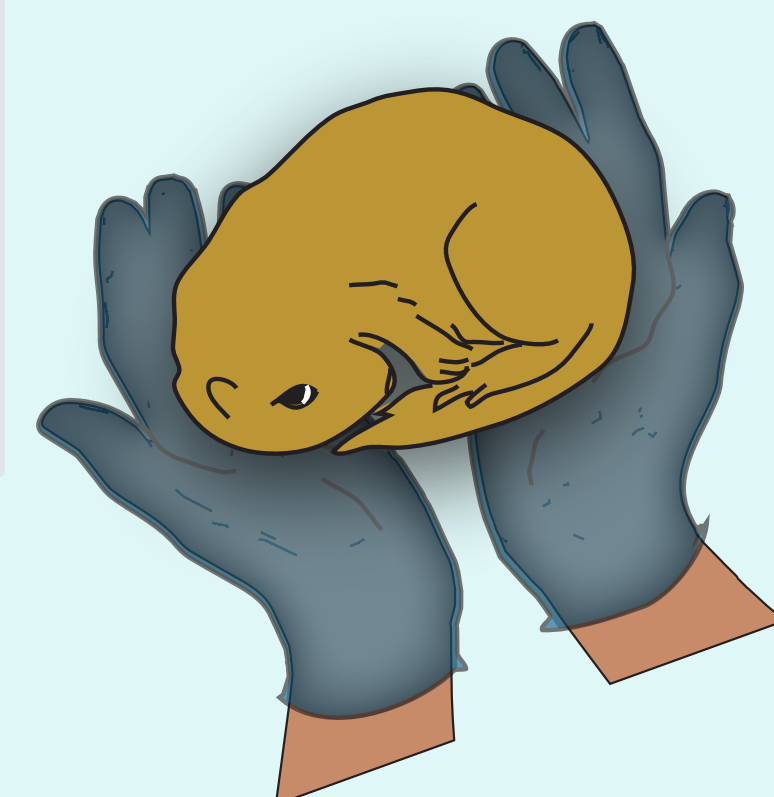
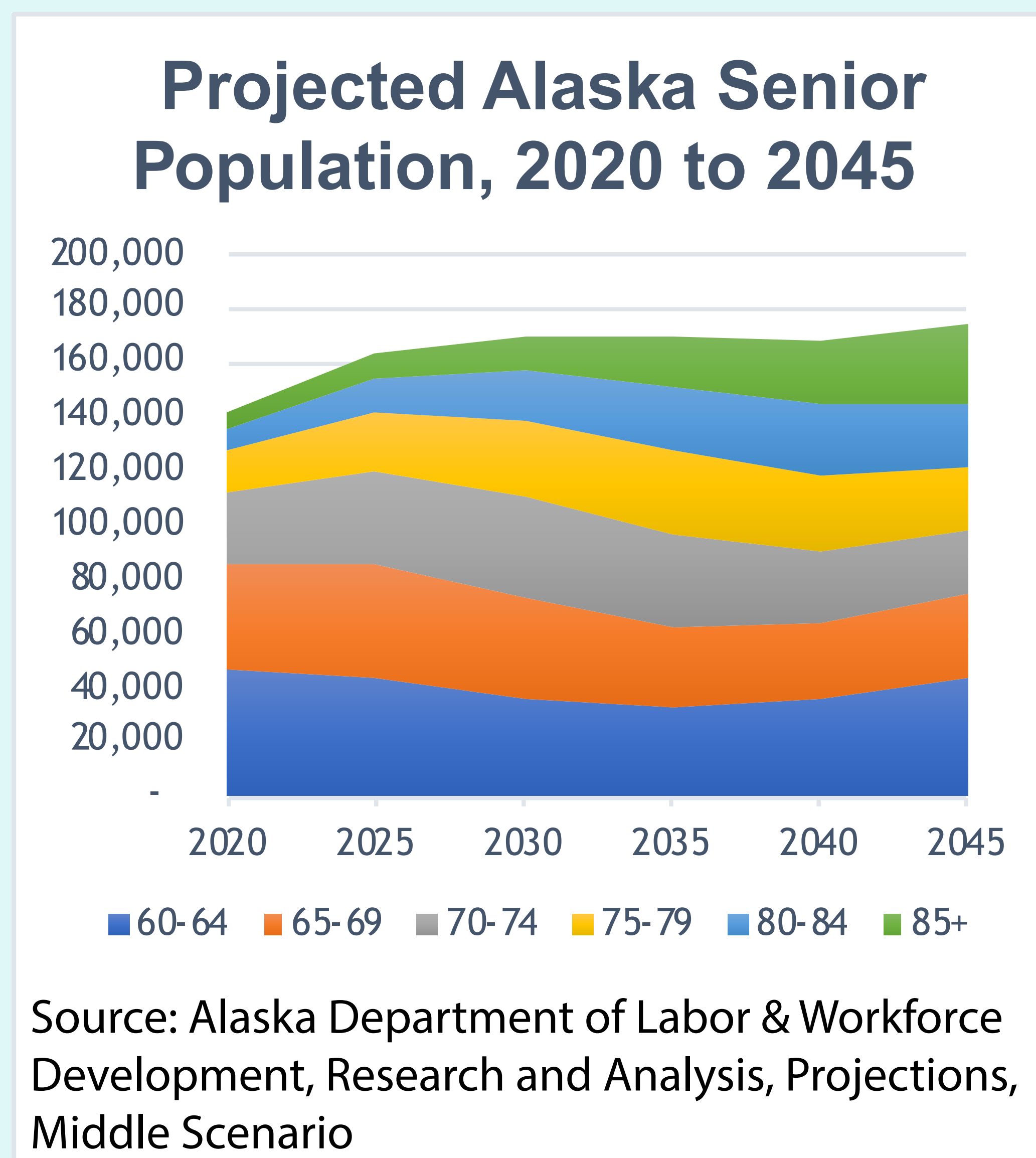
UA Center for Transformative Research in Metabolism (TRiM)

University of Alaska Fairbanks & University of Alaska Anchorage Partnership



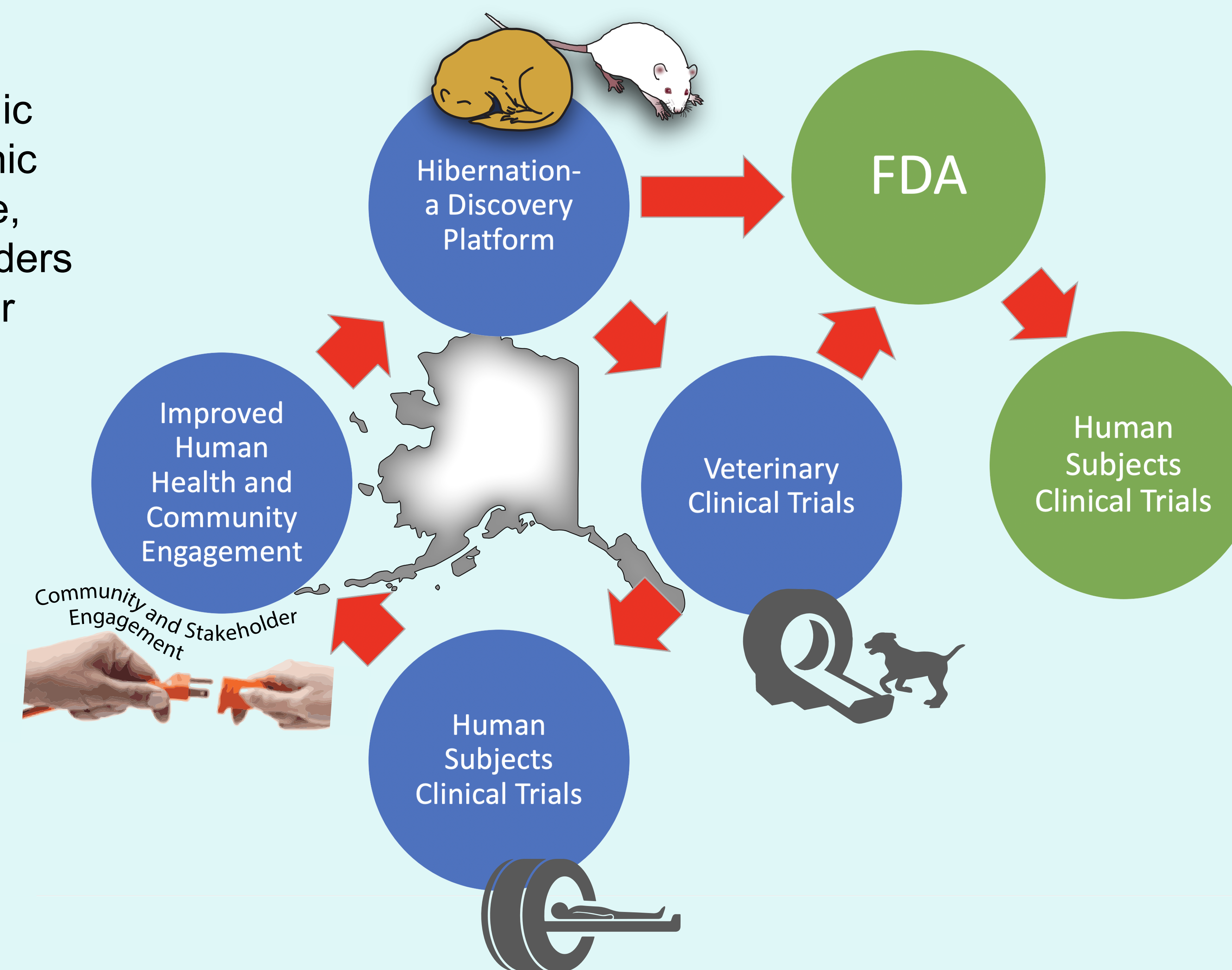
Introduction

Older adults, the fastest growing age demographic on the planet, are at high risk for frailty and chronic metabolic health disorders that can lead to stroke, diabetes, disuse muscle atrophy, and brain disorders associated with Alzheimer's disease and vascular dementia. TRiM's research seeks to identify metabolic mechanisms allowing hibernators to comfortably survive Alaska's cold winters and to mimic what they do in humans to reduce risk for frailty and metabolic disease.



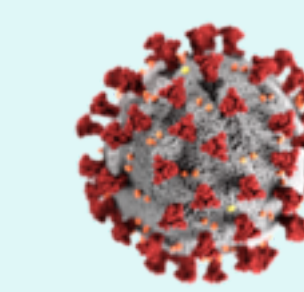
Program Description

The UA Center for TRiM is an interdisciplinary biomedical research center at the University of Alaska to study the metabolic extremes exhibited in hibernation through pre-clinical and clinical initiatives that connect hibernation discoveries to innovative treatments for metabolic & related diseases, with clinical relevance for aging. Alaska has the fastest growing population of older adults in the U.S.



Biomedical Applications

- TRiM's research has discovered that Arctic ground squirrels break down muscle and convert free nitrogen into amino acids used for building new tissue for lungs, kidney, and skeletal muscle (Rice, et al Journal of Nature Metabolism 2020), a process that has potential to prevent muscle loss in the elderly and cancer patients.
- Identified a natural mechanism in hibernating Arctic ground squirrels and black bears that turns on during winter hibernation to make new bone tissue during prolonged disuse of hibernation (Fedorov and Goropashnaya, Scientific Reports 2020). This discovery can be used to develop targeted therapies for people in LTC settings at risk of losing muscle strength mass and strength due to disuse.

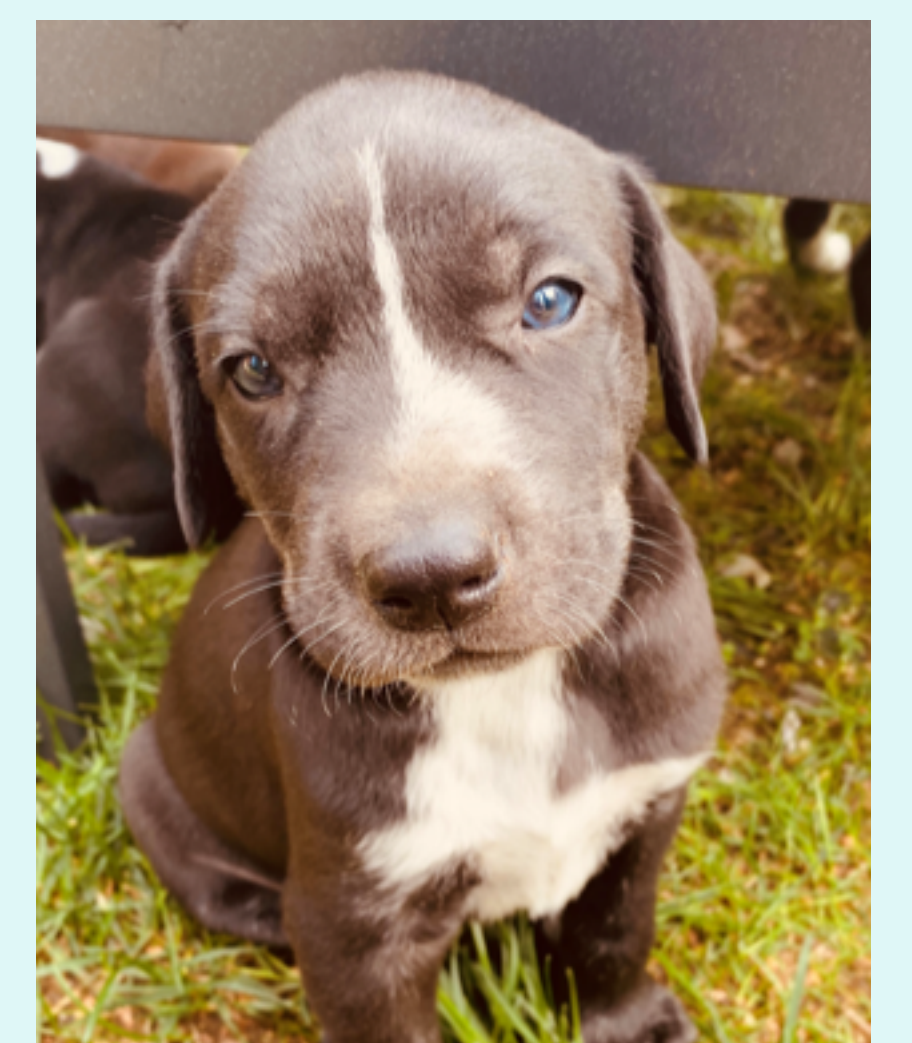


COVID New Opportunities

- Develop remote opportunities for scientific collaborations.
- Utilized TRiM's AIMS Core for community wastewater surveillance to detect SARS-COV-2 in order to inform public health officials and improve community protection.
- Implemented a strict COVID Mitigation Plan for human subjects clinical trials.

Future Directions

- Employ the canine model as a new intervention platform for TRiM to test novel treatments to prevent or reverse brain aging. Because canines age faster, but with similar risks for cognitive dysfunction as humans, this platform can return clinically relevant results within months while a human trial can take years to show benefit.
- Strengthen community engagement to increase awareness, inform research, and build stakeholder support.



Acknowledgements

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