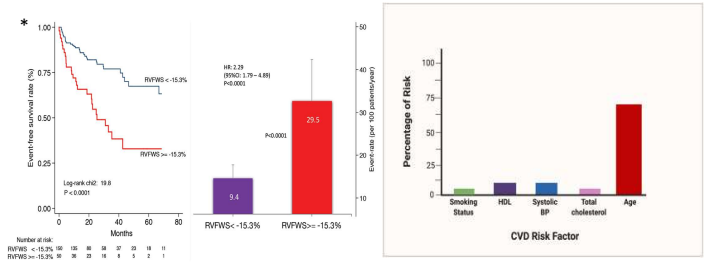
Characterizing Right Ventricle Function in Physiologically Aged Male Mice

Caleb Hoopes[1], Benjamin McNair[2], Joshua Thornburg[2], Danielle Bruns[1,2]
[1]University of Washington School of Medicine; [2]Division of Kinesiology and Health, University of Wyoming

UW Medicine
UW SCHOOL OF MEDICINE

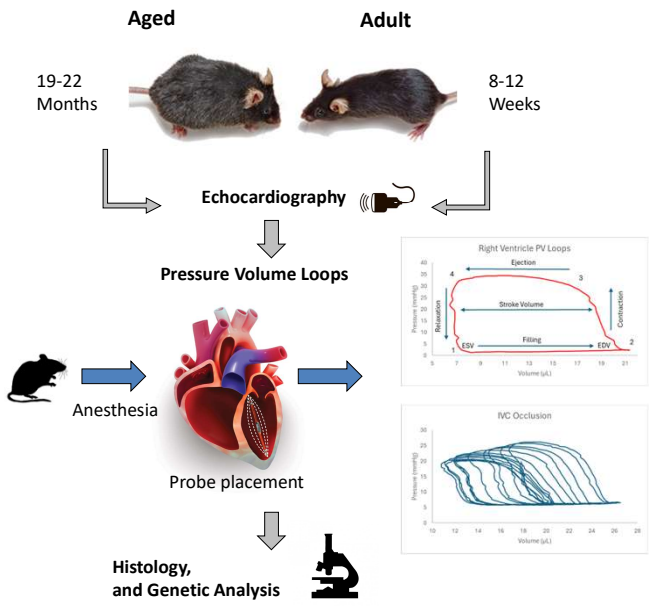
H.E.A.R.T Lab

BACKGROUND



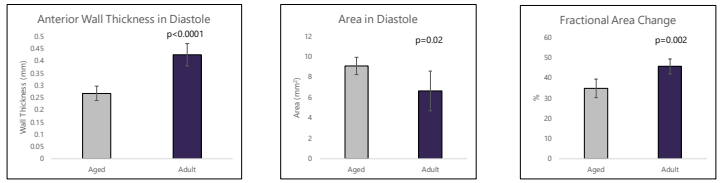
Study Goal: Characterize the differences in right ventricle function between adult and aged mice using pressure volume and echocardiographic analysis.

METHODS



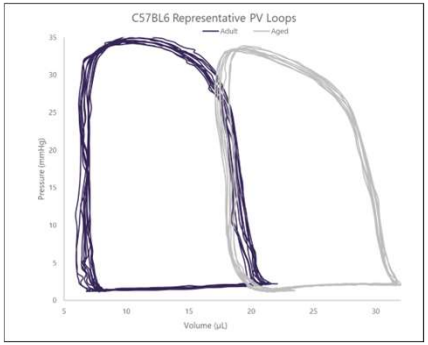
RESULTS

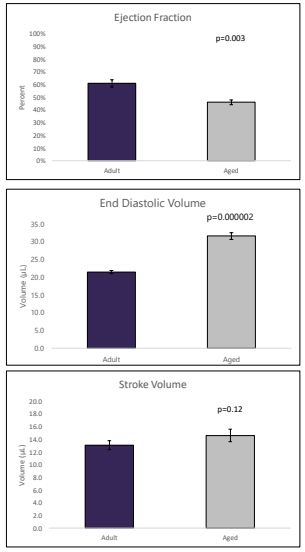
Echocardiography:



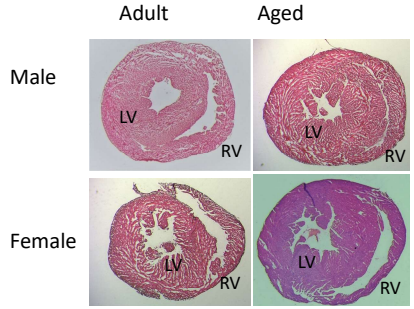
*P<0.05 is statistically significant

Pressure Volume Loops:

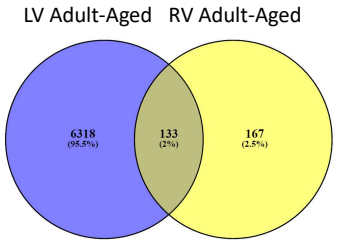




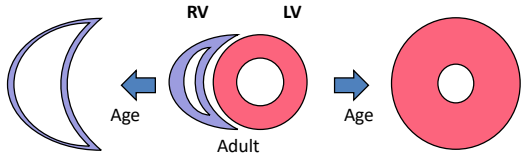
Histology:



Genetics:



DISCUSSION



- Eccentric Remodeling
- Decreased EF
- Thinned Ventricle Wall
- Larger Volumes

- Concentric Remodeling
- Preserved EF
- Thickened Ventricle Wall

- The RV and LV differ on a molecular level. As they age, genes are regulated differently and only a small minority are expressed equally over time.
- **Moving forward:** Sex differences in cardiac function have been demonstrated in the literature. Female studies are ongoing.
- **Limitations:** PV loops in the RV likely underestimate CO and SV due to the small size and crescent shape of the RV.

CONCLUSIONS

- Currently, no drugs have been shown to improve RV function
- Novel pharmacological therapies can be developed for the RV specifically by focusing on molecular targets unique to the RV.

ACKNOWLEDGEMENTS

Wyoming WWAMI Medical Education
HEART Lab members
NIA K01 AG058810; Wyoming INBRE 2P20GM103432
Bud Chew, PhD

REFERENCES

*Carluccio, et. al. (2018). Prognostic value of right ventricular dysfunction in heart failure with reduced ejection fraction. Circulation: Cardiovascular Imaging