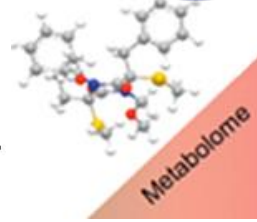


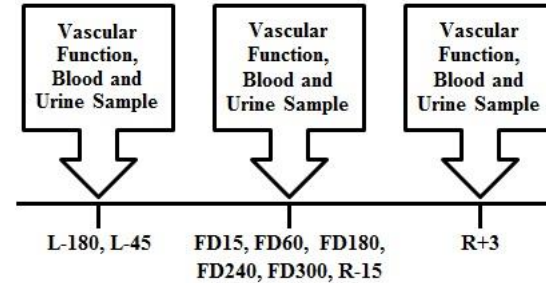
METABOLOMIC AND GENOMIC MARKERS OF ATHEROSCLEROSIS IN TWIN ASTRONAUTS



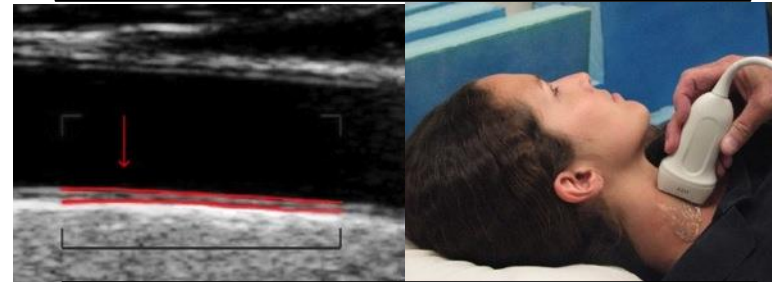
Stuart Lee

Specific Aims

- To study the effects of long-duration spaceflight on the cardiovascular system independent of genotype
- To investigate relationships between gene expression, metabolomic profiles, biomarkers in blood and urine, and arterial structure and function using the space-flown and the ground-based identical twin



Pre- and Post-flight Testing



Inflight Operations



Implications of the Research for Space & Earth



Space: Determine if the spaceflight environment perturbs genomic and metabolomic profiles and accelerates development of atherosclerosis (occupational health)



Earth: Develop novel insights of how longitudinal changes in genomic and metabolomic profiles are related to risk factors for atherosclerosis