

COE CST First Annual Technical Meeting:

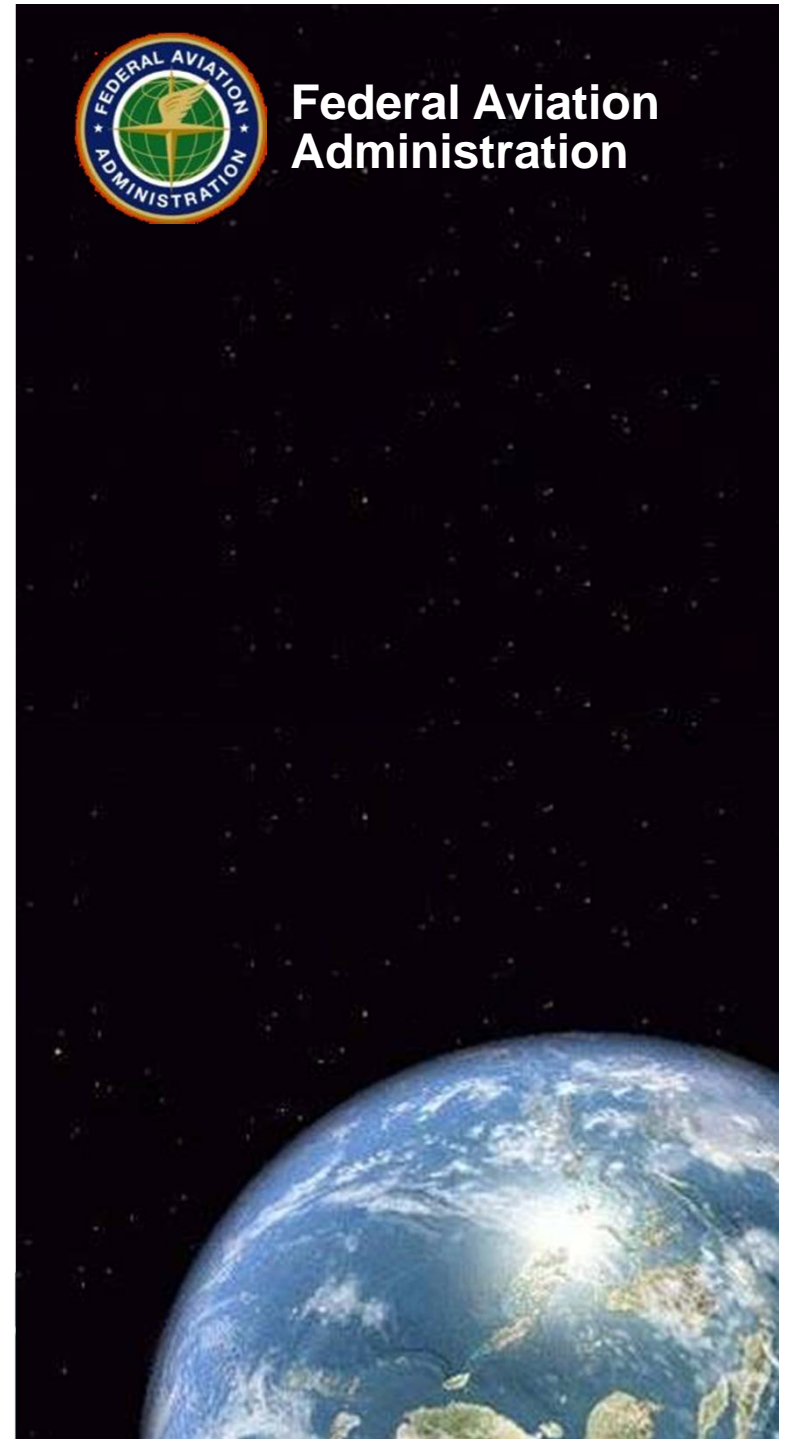
3. Tolerance of Centrifuge- induced G-force by Disease State

James Vanderploeg, MD

November 10, 2011



**Federal Aviation
Administration**



Overview

- Team Members
- Purpose of Task
- Research Methodology
- Results or Schedule & Milestones
- Next Steps
- Contact Information



Team Members

- PI: Jim Vanderploeg, MD (UTMB Aerospace Med.)
- Student: Becky Blue, MD (UTMB Aerospace Med.)
- Student: James Pattarini, MD (UTMB Aerosp. Med.)
- Co-I: Richard Jennings, MD (UTMB Aerospace Med)
- Brienna Henwood (NASTAR Center)
- Julia Tizard, Ph.D. (Virgin Galactic)

NASTAR Center



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Purpose of Task

- Purpose:
 - Use centrifuge-induced G-force to evaluate subjects with defined disease states under the G-loads expected during commercial space flights
- Disease States
 - Controlled hypertension
 - Controlled diabetes
 - Controlled cardiovascular/coronary disease
 - Respiratory disease
 - Spinal disease or injury

Objectives

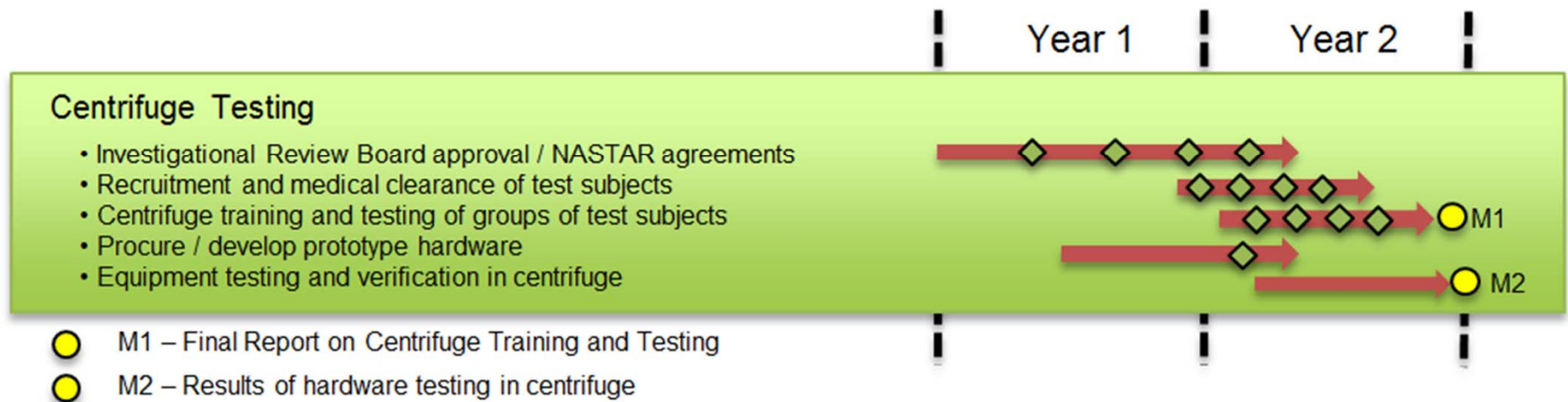
- Conduct training and evaluation of future passengers with a range of medical conditions so we can characterize their responses to the G environment
- Evaluate biomedical monitoring equipment under the G profiles of commercial space flights to ascertain the suitability of proposed wearable biomedical monitoring equipment and to verify that the quality of the data captured by the devices provides the information needed by the operational and research personnel
- Develop optimal training protocols for passengers so they can be trained efficiently and effectively in countermeasures to the G forces they will experience
- Conduct training and evaluation of flight crew members in the G profiles of various operators vehicles to verify that the G environment does not adversely impact on their ability to control the vehicle.

Goals

- The expected benefits from this project include:
 - Characterization of responses of individuals with several common medical conditions
 - Development of risk mitigation strategies for individuals with those medical conditions
 - Validation of wearable biomedical monitoring equipment for use during commercial space flights.

Schedule & Milestones

● Major Milestone ◆ Intermediate Milestone



Next Steps

- Finalize IRB approval
- Finalize NASTAR arrangements
- Recruit subjects
- Conduct training and evaluation in centrifuge
- Evaluate biomedical monitoring equipment

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