SUPPLIERS:

- PennEngineering - eye on a chip https://blog.seas.upenn.edu/penn-engineering-s-blinking-eye-on-a-chip-used-for-disease-modeling-and-drug-testing-b98392ece6cf/
- https://www.nei.nih.gov/about/news-and-events/news/penn-engineerings-blinking-eye-chip-used-disease-modeling-and-drug-testing
- Emulate - liver on a chip https://emulatebio.com/organ-chips-vs-nhps-cost-calculator/
- Bio/ondSkeletal Muscle on a chip: https://www.gobiond.com/musbit/
-

Mission stakeholders:

Engineers looking to improve protective space wear for long extra-terrestrial trips would benefit. Commercial space travel, Air Force pilots, healthcare professionals, physicists, and, of course, astronauts will all advance with the newfound knowledge to improve organ survivability.

There are multiple target audiences for this mission; however, it is primarily aimed to benefit NASA astronauts. This is because the results of this mission will provide more knowledge on muscle atrophy and other organ reactions during accelerated ascent and descent. Consequently, researchers, scientists, and space suit designers will benefit from these missions, as it will provide them with more data on how organs respond. Another target audience will be the commercial and tourism sectors regarding space, as this information may help them speed up the travel time. To conclude, medical fields in aerospace as well as research on muscle atrophy, will benefit from the results of this mission, making them another target audience. Primarily, the American people will be funding this mission through tax dollars. In addition to this, the GRIT mission will be in partnership with Peraton and the Aerospace Medical Association (AsMA). Peraton is one of the leading programs in sounding rocket instrumentation research, and the AsMA specializes in advancing scientific knowledge to advance safety for those in the aerospace fields.

- Stakeholders include principal investigators, who are our team members, who asked the initial question of how shifts in gravity force affect the human body.
- Additionally, the team with the principal investigators is our stakeholder. This includes co-investigators, engineers, and interns.
- The Sounding Rocket Program Office and NASA are also stakeholders because they provide the resources for development and testing. Additionally, these two programs will be utilizing the data collected.
- Public

Mission partners:

- Peraton: leader in sounding rocket instrumentation research?
- Aerospace Medical Association:
    - Mission Statement for the AsMA:

- Apply and advance scientific knowledge to promote and enhance the health, safety and performance of those involved in aerospace and related activities.

https://www.asma.org/about-asma/association-info

Association Information. AsMA | Aerospace Medical Association. (2025). https://www.asma.org/about-asma/association-info

Legal aspects:
https://www.nas.nasa.gov/hecc/support/kb/itarexport-control_154.html
Moyer, M., & Chang, S. (Eds.). (2015, June 24). ITAR/Export Control - HECC Knowledge Base. NASA. https://www.nas.nasa.gov/hecc/support/kb/itarexport-control_154.html

- ITAR - international traffic in arms regulations
  - We need to follow the regulations set by the International Traffic in Arms Regulations (ITAR), as we will be launching a sounding rocket with sensitive technology. To prevent any legal issues, we need to carefully track and protect all of our data.
- U.S. Food and Drug Administration (FDA)
  - The U.S. Food and Drug Administration will also need to qualify our organ-on-a-chip research. Specifically, the Center for Biologics Evaluation and Research (CBER) will need to regulate our mission, as the organs on a chip are biological products.

https://www.fda.gov/drugs/drug-safety-and-availability/fdas-istand-pilot-program-accepts-submission-first-organ-chip-technology-designed-predict-human-drug
Center for Drug Evaluation and Research. (2024, September 24). FDA accepts first ISTAND proposal. U.S. Food and Drug Administration. https://www.fda.gov/drugs/drug-safety-and-availability/fdas-istand-pilot-program-accepts-submission-first-organ-chip-technology-designed-predict-human-drug

https://www.fda.gov/about-fda/fda-organization/center-biologics-evaluation-and-research-cber

Center for Biologics Evaluation and Research. (2025, May 13). Center for Biologics Evaluation and Research (CBER). U.S. Food and Drug Administration. https://www.fda.gov/about-fda/fda-organization/center-biologics-evaluation-and-research-cber