



From Engineering to Aerospace Medicine

Rob Mulcahy, MD, MPH
Rice '08 / ChBE



Who Am I?



❖ Rice University – Class of 2008

- Chemical & Biomolecular Engineering
- Hanszen College

❖ University of Texas Medical Branch (UTMB)

- Medical School – Class of 2012
- Aerospace Medicine/Internal Medicine Residency – Class of 2016

❖ NASA Johnson Space Center

- Flight Surgeon



Why Did I Decide on Medicine?



- ❖ Enjoyed engineering in school
- ❖ During summer internship, realized that I didn't enjoy engineering in practice
- ❖ Always fascinated by medicine
 - Mom was a nurse
 - Roommates were pre-med
- ❖ But medical training is a long road
- ❖ Decided that the extra time spent in training was a solid investment if I enjoyed the job for the rest of my life



Careers in Medicine for Engineers



❖ Positives that made it a better choice than engineering for me

- Care for others
- Social interaction
- Engineering problem-solving skills are very useful
- Medical school is easy compared to engineering problem sets!

❖ Negatives

- Human body is not as predictable as inorganic things
- Long training pathway (your engineering classmates will be earning money while you're taking loans)
- Work hours may be longer than typical engineering jobs



How is Aerospace Medicine Different?



- ❖ Engineering knowledge and communication skills can be very helpful
- ❖ Less clinical care (i.e. only a few clinic visits per week)
- ❖ Job certification exams & occupational medicine
- ❖ Strong focus on prevention
- ❖ Operational medical support
- ❖ Multitude of non-clinical projects/tasks
 - Astronaut selection
 - Health Stabilization Program (i.e. pre-launch quarantine)
 - Medical requirements for new space vehicle design (e.g. Artemis missions to the moon)
 - Mission Control
 - NBL
 - T-38



NASA Flight Surgeon Duties



Launch at Kennedy Space Center





Launch at Kennedy Space Center





Mission Control





Mission Control





Mission Control



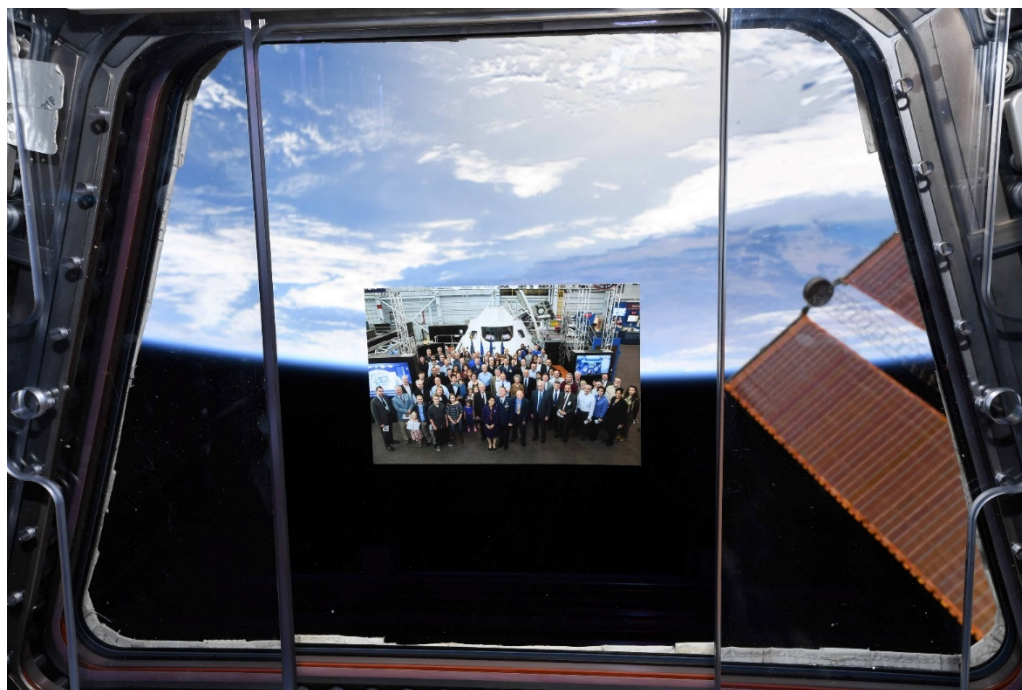


Space Station





Space Station





Landing in Kazakhstan





Landing in Kazakhstan





Centrifuge





Centrifuge



NASA astronaut Zena Cardman speaks with a NASA physician after her spin in the centrifuge during testing in the Air Force Research Laboratory on Nov. 1-2.
(U.S. Air Force photos/Richard Eldridge)

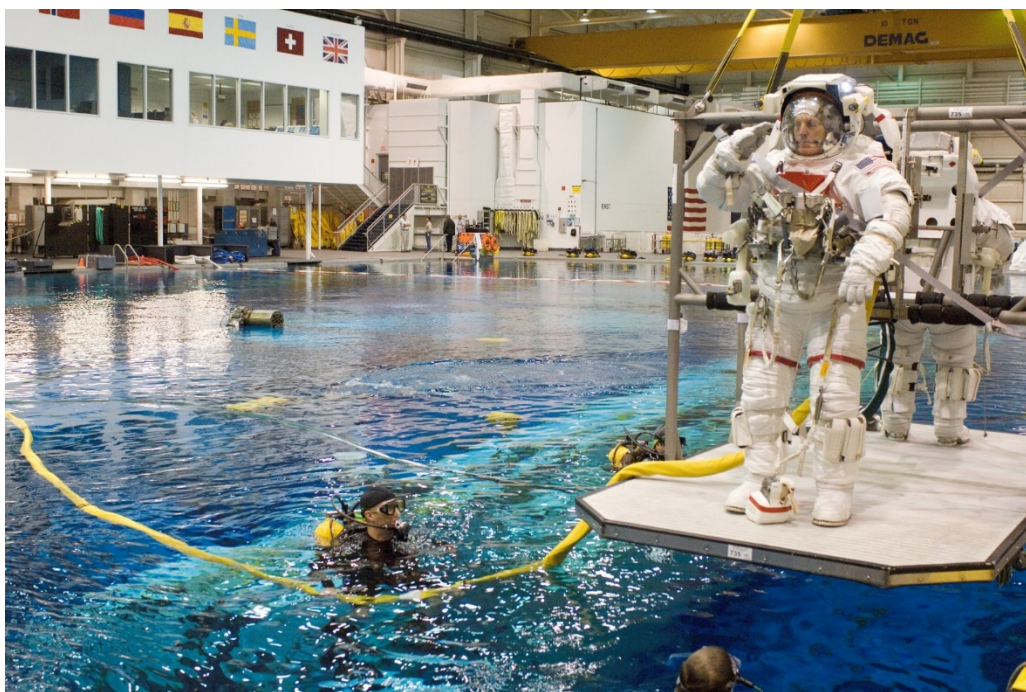


Centrifuge





Neutral Buoyancy Lab





Neutral Buoyancy Lab





Space Station Mock-Ups





Space Station Mock-Ups





Space Station Mock-Ups





T-38





Vomit Comet





Vomit Comet





Flight Surgeon Training





Antarctica





SpaceX





US Air Force





US Air Force





Questions?
