

# Megan M. Pendleton, MD, PhD

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## EDUCATION

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|-----------------------------------------------------|-----------------------------------------|---------------------------|
| <b>Emergency Medicine Residency (PGY-4)</b>         | Stanford University                     | <i>Expected June 2026</i> |
| <b>Doctor of Medicine</b>                           | University of California, San Francisco | <i>May 2022</i>           |
| <b>Doctor of Philosophy, Mechanical Engineering</b> | University of California, Berkeley      | <i>May 2018</i>           |
| <b>Master of Science, Mechanical Engineering</b>    | University of California, Berkeley      | <i>May 2014</i>           |
| <b>Bachelor of Science, Aerospace Engineering</b>   | Georgia Institute of Technology         | <i>May 2012</i>           |

## RESEARCH EXPERIENCE

### **Graduate Biodesign Research** *January 2025 – present*

Stanford University

*Advisors: Josh Makower, MD/MBA, Zachary Edmonds, MD, & Lyn Denend, MBA*

- Completed the graduate-level Biodesign course focused on small bowel obstructions. Our proposed solution won summer extension funding and is now progressing toward patent submission and animal studies.

### **NASA Aerospace Medicine Research**

*October 2024*

NASA Johnson Space Center, Houston, TX

*Advisors: Derek Nusbaum, MD/PhD & Alex Garbino, MD/PhD*

- Generated new Python code to model risk of an astronaut getting decompression sickness based on proposed lunar mission profiles (e.g. cycling between habitat pressure to spacesuit pressure).

### **Medical Education Research**

*March 2021 – May 2022*

University of California, San Francisco

*Advisor: Sally Graglia, MD, Department of Emergency Medicine*

- Project: Integration of Point-of-Care Ultrasound within UCSF School of Medicine Bridges Curriculum
- Developed formal ultrasound education curriculum and worked with educators from all system blocks (e.g. Cardiovascular, Renal, GI, etc.) to integrate ultrasound education within small group cases.

### **Clinical Research**

*June 2019 - August 2019*

University of California, San Francisco

*Advisor: Theodore Miclau, MD, Vice Chair, Department of Orthopedic Surgery*

- Project Title: Estudio de Fractura de Tibia Abierta (Open Tibia Fracture Study in Latin America)
- Observational, multicenter cohort study across Latin America to identify optimal treatment protocols (e.g. antibiotics, debridement, fixation methods) to improve quality of life after an open tibia fracture. My role included training residents in Monterrey and Mexico City to enroll patients in the study.

### **Doctoral Research**

*August 2012 - August 2018*

University of California, Berkeley

NASA Ames Research Center

*Advisor: Tony Keaveny, PhD, Department of Mechanical Engineering & Department of Bioengineering*

*Fellowship Advisor: Joshua Alwood, PhD, NASA Ames Research Center, Space Biosciences Division*

- Doctoral Dissertation: Effects of Spaceflight- and Clinically-relevant Ionizing Radiation Exposure on Bone Biomechanics
- Conducted experimental research using a mouse model to test effects of varying levels of radiation (i.e. space and radiotherapy treatment) to identify factors contributing to increased fracture risk.
- Master's Thesis: Ductility of Individual Trabeculae in Bone

## WORK EXPERIENCE

### **Emergency Medicine Resident PGY4** *June 2022 – June 2026*

Stanford University Hospital, Kaiser Santa Clara Hospital, & Santa Clara Valley Medical Center (County Hospital)

**SpaceX Medical Student Clerkship**  
SpaceX Headquarters, Hawthorne, CA  
Medical Division

*January 2022*

- Designed and conducted vacuum-chamber testing of common medications intended for human-rated spaceflight to assess viability prior to the Polaris Dawn mission.

**Graduate Student NASA Pathways Intern**

NASA Johnson Space Center, Houston, TX  
Space Suit and Crew Survival Branch (EC5)

*May 2014 - August 2014*

- Built and integrated displays and hand controllers for Orion Mock-up. Designed a modular hand-controller mount to allow for emergency egress.

Space Suit and Crew Survival Branch (EC5)

*May 2013 - August 2013*

- Designed and fabricated life cycle analysis test bed for linear actuators in next generation portable life support system (PLSS) (i.e. life support “backpack” of space suit)

Space Suit and Crew Survival Branch (EC5)

*May 2012 - August 2012*

- Flew on Reduced Gravity Aircraft (simulated weightlessness) to test space suit/Orion seat interface
- Designed ventilation loop components for next generation PLSS

**Undergraduate Student NASA Pathways Intern**

NASA Johnson Space Center, Houston, TX  
Space Suit and Crew Survival Branch (EC5)

*August 2010 - December 2010*

- Designed and built a mock-up section of Orion console to run suit/seat integrated testing

Systems Architecture & Integration Branch (EA3)

*May 2010 - August 2010*

- Designed and built a medium-fidelity flight model seat for astronaut crew evals

Flight Design & Dynamics Division (DM3)

*May 2009 - August 2009*

- Developed an on-board lesson to train astronauts on the International Space Station for an upcoming mission with the first Japanese cargo vehicle, H-II Transfer Vehicle (HTV).

Life Support & Habitability Branch (EC3)

*January 2009 - May 2009*

- Tested mixtures of hygiene water in a rotary evaporator in support of the Distillation Comparison Test, which tested waste water removal systems to be used on a future lunar base

**TEACHING EXPERIENCE**

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**Senior Resident Emergency Department**

*June 2024 – present*

Stanford University

- Supervision of junior ED residents and medical student rotators. In the Alpha Chief role, I lead both resident teams in our highest-volume zone and supervise care across all 24 patient beds.

**Sub-Internship ECG Didactic Sessions**

*June 2025 – September 2025*

Stanford University

- Built a website ([medicinewithmegan.com](http://medicinewithmegan.com)) that covers various ECG topics (e.g. STEMIs, MI mimics, arrhythmias, etc.) and taught weekly didactic sessions to the visiting sub-interns. Used this resource to teach ECG technicians strategies to improve ECG acquisition quality.

**Conference Lectures**

*June 2023 - present*

Stanford University

- Designed and illustrated multiple lectures with drawings and diagrams to explain challenging medical concepts (e.g. resuscitation, troubleshooting ventilators for our Critical Care Conference).

**Small Group Instructor**

*October 2021*

University of California, San Francisco, CA

- Taught small group sessions for first-year medical students at UCSF in their cardiovascular block, “ABC1”. Two small group sessions per week for five weeks.
- Attended instructor meetings to prepare material and help grade exams.

**Peer Teaching Program (PTP)**

*April 2019 - December 2019*

University of California, San Francisco, CA

- Served as an MS2 student instructor for the incoming MS1 medical students to summarize key concepts and review material from the curriculum via whiteboard sessions.

**Graduate Student Instructor (i.e. Teaching Assistant)**

*January - May 2014, August - December 2013*

University of California, Berkeley, CA

- Taught ME135 & ME235: Micro-processor Based Design of Mechanical Systems; a project-based course using LabVIEW and Single-Board RIO to junior/senior level undergraduate students & graduate students
- Taught E28: Engineering Design and Graphics drafting and 3D parametric modeling in AutoCAD and Solidworks platforms to sophomore and junior level undergraduate students

**LEADERSHIP & SERVICE**

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**Search Committee Member for UCSF Dean of Admissions**

*March 2019 - May 2019*

University of California, San Francisco, CA

- Asked to serve as one of three student representatives on the faculty search committee to vet and interview applicants for the position of UCSF School of Medicine Dean of Admissions

**Aerospace Medicine Interest Group (AMIG)**

*April 2019 - January 2020*

University of California, San Francisco, CA

- Served as student coordinator for AMIG to organize and hold an elective where medical professionals working in the field of aerospace medicine present to MD and graduate students

**Orthopedic Surgery Interest Group (OSIG)**

*January 2019 - December 2019*

University of California, San Francisco, CA

- Interviewed and selected to serve as one of two student coordinators

**Bay Area Scientists in Schools (BASIS) Volunteer**

*August 2012 - May 2018*

University of California, Berkeley, CA

- Taught a variety of lessons (e.g. toothpick bridge competitions, chicken bone experiments) every 2-3 months to elementary & middle school students in the East Bay school districts.

**Dinner with a Scientist Volunteer**

*May 2016 & May 2017*

University of California, Berkeley, CA

- Attended the annual dinner for Oakland School District to recognize exceptional students and teachers. I was a scientist that hosted a table and brought results of a bone experiment for students to explore.

**NASA High-School Aerospace Scholars Mentor**

*May 2009 - August 2012*

NASA Johnson Space Center, Houston, TX

- Mentored teams of high school students at NASA from across the state to help them design a mock mission to Mars; this was a program I attended in high school.

**Georgia Tech Ambassadors**

*August 2010 - May 2012*

Georgia Institute of Technology, Atlanta, GA

- Served as a student body representative for Georgia Tech as official hosts for institute events

**Georgia Tech Women's Club Volleyball**

*August 2007 - May 2010*

Georgia Institute of Technology, Atlanta, GA

- Served as captain of the GT Women's club volleyball team with travel to nationals in 2008, 2009, & 2010.

**PEER REVIEWED PUBLICATIONS (ORIGINAL RESEARCH)**

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- Wu T, Bonnheim NB, **Pendleton MM\***, Emerzian SR, Keaveny TM "Radiation-induced changes in load-sharing and structure-function behavior in murine lumbar vertebrae." Computer Methods in Biomechanics and Biomedical Engineering. July 2023. PMID 37504955. \*Collected mouse data: husbandry, irradiation, sacrifice and tissue collection and imaging; critical revision of manuscript; obtaining funding for animal experiments.

- **Pendleton MM**, Emerzian SR, Sadoughi S, Li A, Liu JW, Tang SY, O'Connell GD, Sibonga JD, Alwood JS, Keaveny TM. "*Relations between bone quantity, microarchitecture, and collagen-crosslinks on mechanics following in vivo irradiation in mice.*" JBMR Plus. September 2021. PMID: 34761148.
- Steczina S, Tahimic CGT, **Pendleton MM\***, M'Saad O, Lowe M, Alwood JS, Halloran BP, Globus RK, Schreurs AS. "*Dietary countermeasure mitigates simulated spaceflight-induced osteopenia in mice.*" Scientific Reports. April 2020. PMID: 32300161. \*Critical revision of the manuscript, husbandry of mice for animal studies
- **Pendleton MM**, Emerzian SR, Liu JW, Tang SY, O'Connell GD, Alwood JS, Keaveny TM. "*Effects of ex vivo radiation on collagen structure and whole-bone mechanical properties of mouse vertebrae.*" Bone. November 2019. PMID: 31445224.
- **Pendleton MM**, Sadoughi S, Li A, O'Connell GD, Alwood JS, Keaveny TM. "*High-precision method for cyclic loading of small-animal vertebrae to assess bone quality.*" Bone Reports. December 2018. PMID: 30417036.

#### NON PEER-REVIEWED PUBLICATIONS

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- **Pendleton, MM.** "*Effects of spaceflight- and clinically-relevant ionizing radiation exposure on bone biomechanics.*" University of California, Berkeley. (Dissertation) August 2018.

#### ORAL PRESENTATIONS (REGIONAL-INVITED)

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- **Pendleton, MM.** "Space Medicine & Innovation" Research Invitational Seminar. UC Davis Center for Spaceflight Research. Davis, CA. February 2026.
- **Pendleton, MM.** "*Potpourri of Procedural Plights.*" Stanford EM Conference. Palo Alto, CA. July 2024.
- **Pendleton, MM.** "*Welcome to my TEG Talk!*" Stanford EM Conference. Palo Alto, CA. August 2023.

#### ORAL PRESENTATIONS (REGIONAL-AWARDED)

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- **Pendleton, MM.** "*Open Tibia Fracture Study in Latin America.*" Heiman Fellowship Dinner. University of California, San Francisco. San Francisco, CA. November 2019.
- **Pendleton, MM.** "*Air, Fire, Water, Ice, & Bananas – A new way to recall the Hs&Ts of resuscitation.*" Cal ACEP Conference. Cal ACEP. Pasadena, CA. September 2025.

#### ORAL PRESENTATIONS (NATIONAL-INVITED)

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- **Pendleton, MM.** "*Can space radiation affect bone mechanics?*" Life Science and Engineering Divisions Monthly Seminar. NASA Johnson Space Center. Houston, TX. July 2016.

#### ORAL PRESENTATIONS (NATIONAL-AWARDED)

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- **Emerzian et al.** "*Effect of ex vivo ionizing radiation on static and fatigue properties of mouse vertebral bodies.*" Orthopedic Research Society (ORS). ORS. New Orleans, LA. March 2018.
- **Pendleton, MM.** "*Design of fatigue test for ex vivo mouse vertebra.*" Summer Biomechanics, Bioengineering, and Biotransport (SB<sup>3</sup>) Conference. SB<sup>3</sup>. National Harbor, MD. June 2016.

#### ORAL PRESENTATIONS (INTERNATIONAL-INVITED)

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- **Pendleton, MM.** "*Bone mechanics for clinical and spaceflight applications.*" Multidisciplinary Resident Morning Conference. Mexican Institute for Social Security (IMSS) Hospital. Mexico City, Mexico. July 2019.

#### ABSTRACTS

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- **Pendleton MM.** "*App to Compare Risk of DCS and Acute Mountain Sickness Based on New Proposed Mission Profiles.*" Aerospace Medical Association's Annual Scientific Meeting. Atlanta, GA. June 2025.
- Stabenau et al. "*Hard vacuum chamber testing of common medications in spaceflight.*" Aerospace Medical Association's Annual Scientific Meeting. Chicago, IL. May 2024.
- Flores et al. "*Barriers to and outcomes of initiating clinical research at two trauma centers in Mexico.*" Academic Surgical Congress. Orlando, FL. February 2022.
- Emerzian et al. "*Ionizing radiation from ex vivo sterilization diminished fatigue but not static murine vertebral body mechanics.*" Orthopedic Research Society. Austin, TX. February 2019.
- Emerzian et al. "*Exposure to ex vivo sterilization doses of ionizing radiation diminished collagen integrity and mechanical properties of whole bones.*" World Congress of Biomechanics. Dublin, Ireland. July 2018.
- **Pendleton, MM.** "*Effect of spaceflight-relevant ionizing radiation on mechanical properties of mouse vertebra for repetitive loading.*" American Society of Bone & Mineral Research (ASBMR). Denver, CO. September 2017.

- **Pendleton, MM.** “*Effect of ionizing radiation on cyclic mechanics of mouse vertebra.*” NASA Human Research Program Investigators’ Workshop. Galveston, TX. January 2017.
- **Pendleton, MM.** “*Effect of ionizing radiation on fatigue mechanics of mouse vertebra.*” American Society of Bone & Mineral Research (ASBMR). Atlanta, GA. September 2016.

#### **AWARDS & HONORS**

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|-------------------------------------------------------------------------|---------------------------------------|
| • Stanford EM Save of the Month                                         | <i>April 2024 &amp; December 2024</i> |
| • Dean’s Prize Award – Deep Explore Research                            | <i>2022</i>                           |
| • Heiman Fellowship: Summer Orthopedic Research Funding                 | <i>2019</i>                           |
| • ASBMR Poster Competition Diversity Award                              | <i>2016</i>                           |
| • California Legislative Grant Award                                    | <i>2012</i>                           |
| • Graduate Division Block-Grant Award                                   | <i>2012</i>                           |
| • Graduate Highest Honors, Aerospace Engineering Honors Program         | <i>2012</i>                           |
| • NASA JSC Outstanding Co-op Award                                      | <i>2010</i>                           |
| • NASA JSC Systems Architecture & Integration Employee Award            | <i>2010</i>                           |
| • Lockheed Martin Women in Engineering Scholarship                      | <i>2010</i>                           |
| • Georgia Tech Dean’s List / Faculty Honors                             | <i>2007-2012</i>                      |
| • Georgia Tech President’s Scholarship: 4-year full tuition and stipend | <i>2007-2012</i>                      |

#### **GRANTS**

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|---------------------------------------------------------------------------------------|-------------|
| • NASA Science & Technology Research Fellowship (4-year tuition and research funding) | <i>2014</i> |
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#### **OTHER CERTIFICATES**

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- Professional Association of Diving Instructors (PADI) scuba diving certifications: Advanced Open-Water, Enriched Air Nitrox, Dry Suit
  - Aviation: Private Pilot’s License, VFR Airplane Single-Engine Land (ASEL)