Winston-Salem, NC USA

Katelyn Greene

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Education:

Wake Forest School of Medicine
PhD Biomedical Engineering | Expected: 2022
University of California, Berkeley
B.S. Bioengineering | May 2017

Relevant Coursework:

- Advanced Impact Biomechanics
- Advanced Human Modeling
- Injury Physiology
- Discrete Mathematics and Probability Theory
- Introduction to Artificial Intelligence
- Statistical Concepts in Computing with Data

Research Experience:

Graduate Research Assistant — Aug 2017 -Present
Center for Injury Biomechanics, Virginia Tech-Wake Forest University

Quantitative CT and MRI-based Modeling Assessment of Dynamic Vertebral Strength and Fracture Risk Following Long-Duration Spaceflight

- Designed computational models to quantify the musculoskeletal changes of lumbar spine with microgravity. Implemented subject-specific finite element models to assess injury risk in extreme loading environments.

Undergraduate Research Assistant — 2016-2017
Dudley Lab, UC Berkeley

- Studied gecko locomotion biomechanics to elucidate the connection between morphology and aerial gliding performance. Also analyzed the influence of wing length and wingbeat frequency on aerial performance of robotic gliding machines.

Biomedical Engineering Research Intern — June-Aug 2016
Center for Injury Biomechanics, Wake Forest School of Medicine

- NSF funded Research Experience for Undergraduates (REU) program (Award #1559700). Investigated the effects of postural changes on thoracoabdominal organs for Medtronic by developing 3D anatomical models.

Research Intern – Paint and Coatings Laboratory — June-Aug 2015
Imerys Talc Europe, Toulouse, France

- Independently conducted industrial paint formulation and performance testing to compare the application specific attributes (whiteness, opacity, gloss, etc.) of various paints produced by the company.

Undergraduate Research Assistant — Sept-Dec 2014
Koehl Lab, UC Berkeley

- Investigation into the influence of biomechanics leaf fluttering on sporocarp liberation and transport.

Leadership Activities:

IEEE Engineering in Medicine & Biology Student Society — 2017-2019
Wake Forest University, Winston-Salem, NC (Section Chair – 2018-2019, Vice Chair – 2017-2018)

- Organized monthly professional development events and socials for engineering graduate students. Coordinated student involvement in the community through STEM outreach and mentorship.

CS Kickstart Organizer — 2013-2016
CS Kickstart, UC Berkeley (1-week program for incoming UC Berkeley women interested in computer science)

- Designed promotional graphics materials and social media content to increase program visibility

First Robotics Team 1717 – Mechanical Design Engineer — 2009-2013
Dos Pueblos Engineering Academy, Santa Barbara, CA

- Extensive use of SolidWorks and machining to design and fabricate a competition robot.

STEM Outreach:

First Lego League Mentor and Volunteer: — 2011-2018
Santa Barbara, CA and Winston-Salem, NC

- Technical design judge for 2017 and 2018 Winston-Salem Robot Run FIRST Lego League competition.
- Mentored several FIRST teams and instructed students at FIRST robotics enrichment summer workshops.

Leaders in Training Student Mentor — Oct 2018 -Present
Winston-Salem Preparatory Academy – Winston-Salem, NC

- Facilitate small lunch workshop groups to prepare middle school girls to become leaders by encouraging self-confidence and the appreciation of diversity in thought, culture, and career paths.

Girls Who Code Club Facilitator — Aug 2018 -Present
Malloy Jordan East Winston Heritage Center - Winston-Salem, NC

- Educate and inspire elementary school girls from historically underrepresented backgrounds to pursue technology by exposing them to fundamentals of coding syntax through a custom project-based curriculum.

Perry Initiative Outreach Program - Site Volunteer — 2018-2019
Wake Forest Biotech Place - Winston-Salem, NC

- Assisted with one-day workshop to introduce young women in high school to fracture fixation techniques and power tools and encourage them to pursue careers in engineering and orthopedic medicine.

Awards

2018 SBES Student Research Symposium *(Winston-Salem, NC)* May 2018
Students' Choice Poster Award in Biomechanics

2016 Wake Forest IMPACT REU Symposium *(Winston-Salem, NC)* Aug 2016
Best Oral Presentation Award

National Center for Women in Technology Award for Aspirations in Computing *(San Luis Obispo, CA)* 2013
National Runner-Up & Central California Regional Affiliate

Conference Abstracts

1. **Greene KA**, McNamara KP, Moore AM, Dang J, Khattab K, Lenchik L, Weaver AA. "Quantifying Lumbar and Cervical Musculature Changes with Long-Duration Spaceflight using MRI." **NASA Human Research Program Investigators' Workshop**, Galveston, TX, January 2019 [Oral Presentation].
2. McNamara KP, **Greene KA**, Khattab K, Lenchik L, Weaver AA. "Modeling Spaceflight-Induced Changes in cervical and Lumbar Injury Risk." **NASA Human Research Program Investigators' Workshop**, Galveston, TX, January 2019.
3. **Greene KA**, McNamara K, Moore A, Subramanian N, Maez L, Weaver AA. "Quantifying Lumbar Musculature and Adipose Tissue Changes with Spaceflight using qCT Analysis." **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, October 2018.
4. McNamara K, **Greene KA**, Weaver AA. "Quantifying the Effects of aRED on Astronaut Lumbar Musculature Following Long-Duration Spaceflight." **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, October 2018.
5. Kubik AJ, **Greene KA**, McNamara K, Beavers KM, Brown JK, Lenchik L, Beavers DP, Houston DK, Weaver AA. "DECT-based Quantification of BMAT and an Analysis of Variability within the Lumbar Vertebrae." **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, October 2018.
6. Khattab K, McNamara KP, **Greene KA**, Lenchik L, Weaver AA. "Neck Injury Risk During Landing for Astronauts with Spaceflight Induced Changes in Muscle Size." **Biomedical Engineering Society Annual Meeting**, Atlanta, GA, October 2018.
7. McNamara K, **Greene KA**, Weaver AA. "THUMS Modeling to Assess Dynamic Vertebral Strength Changes Pre- vs Post-Spaceflight on Long-Duration ISS Missions." **THUMS USA Users' Meeting**, Dearborn, MI, June 2018.
8. McNamara KP, **Greene KA**, Lenchik L, Moore AM, Maez LM, Subramanian N, Weaver AA. "Lumbar Muscle Loss in Long-Duration Spaceflight." SBES Graduate Research Symposium, Wake Forest University, Winston-Salem, NC, May 2018.
9. Weaver AA, McNamara KP, **Greene KA**, Subramanian N. "Spaceflight-induced changes in the lumbar vertebrae and musculature." **NASA Human Research Program Investigators' Workshop**, Galveston, TX, January 2018.
10. Weaver AA**, Greene K**, Gaewsky JP, Gayzik FS. "Postural Influence on Thoracoabdominal Organs of 5th, 50th, and 95th Percentile Male Subjects." **BMES/FDA Frontiers in Medical Devices Conference**; Washington, DC; May 2017.
11. **Greene KA**, Gaewsky JP, Gayzik FS, Weaver AA. "Influence of Posture on Thoracoabdominal Organs Among 5th, 50th, and 95th Percentile Male Subjects." **Research Experiences for Undergraduates Symposium**; Arlington, VA; October 2016.
12. **Greene KA**, Gaewsky JP, Gayzik FS, Weaver AA. "Influence of Posture on Thoracoabdominal Organs Among 5th, 50th, and 95th Percentile Male Subjects." **Biomedical Engineering Society Annual Meeting**; Minneapolis, MN; October 2016.

Publications

McNamara KP, **Greene KA**, Moore AM, Lenchik L, Weaver AA. "Lumbar Muscle Changes Following Long-Duration Spaceflight." ***Frontiers in Physiology***, [Accepted 05/2019].

Students Mentored

Current Mentees (6 Undergraduates, 1 High School Student):
Thomas Noonan, Denas Kisonas, Isabelle Ricke, Sakina Barthe-Sukhera, Ava Burgess, Tyanna Robinson, Megan Anderson
Past Mentees (6 Undergraduates):
Karim Khattab, Angela Kubik, Michael Arboleda, Jade Dang, Alexis Abillar, Alex Higdon

Relevant Skills:

Expertise processing and visualizing large datasets in Python, Java, and R/ Experience developing and running human finite elements models using SolidWorks, Materialise Mimics, and LS-DYNA/ Professional proficiency in French