Axel C. Moore

Personal Details:

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Training:

- Third Assistant Engineers License, U.S. Coast Guard Certified
- Certified Engineer in Training, 2012
- EPA Certified Universal Technician, 2010

Education:

- University of Delaware GPA 4.00 (13 Cr.) May 2012-2016
  Ph.D. in Biomedical Engineering

- California Maritime Academy GPA 3.98 2008- May 2012
  B.S. in Marine Engineering Technology, 3rd Assistant Engineer
  Summa Cum Laude
  Cadet Chief Engineer

- Sussex Technical High School GPA 3.96 2004-2008
  Carpentry and Custom Mill Work Apprenticeship Program

Experience:

- University of Delaware Newark, DE May 2012-Current
  Graduate Research Assistant
  - Design and conduct experiments of soft tissues, mainly articular cartilage
  - Maintain inventory in the bio-tribology lab such that experiments are not delayed
  - Direct and assist undergraduate researchers in joint projects, in general engineering advice, and lab safety
  - Assist in proposal drafting by running pilot tests and collecting data
  - Assist in publication drafting through literature review, data summaries, and image collection

- California Maritime Academy Vallejo, CA 2011-2012
  Cadet Chief Engineer
  - Responsible for T/S Golden Bear (500 ft ex-military training ship with twin V-16 diesel engines with a rated output of ~25,000 hp running a single 5 bladed propeller) Responsibilities involved directing the repair and installation of machinery, personnel management, engineer training, safety, and drill procedures
  - Training Program: Design of bi-monthly ship training evolutions designed to enhance the training of underclassmen

- Space Systems Loral Palo Alto, CA July-Sept 2011
  Main Body Bus Sub System, Engineering Intern

- Mass Projection Management: This involved using heritage and current crafts to better estimate total designed mass. Mass projection is vital to satellite design as a heavier craft costs substantially more to place in orbit

Refereed Publications:

- **An analytical model to predict interstitial lubrication of cartilage in migrating contact areas**, Moore A, Burris DL, *Journal of Biomechanics*, 2013

Extended Abstracts:

- **Relating the structure of articular cartilage to function**, A.C. Moore and D.L. Burris, *Tribology lubrication technology*, Accepted

Oral Presentations:

- **Effect of location on the local interstitial lubrication response of cartilage in the bovine stifle joint**, A.C. Moore and D.L. Burris, *University of Delaware Graduate Student Forum*, Newark, DE, May 2013

- **Effect of location on the local interstitial lubrication response of cartilage in the bovine stifle joint**, A.C. Moore and D.L. Burris, *Society of Tribologists and Lubrication Engineers*, Detroit, MI, May 2013

- **Effect of location on the local interstitial lubrication response of cartilage in the bovine stifle joint**, A.C. Moore and D.L. Burris, *Center for Biomedical Engineering Research*, Newark, DE, May 2013

Poster Presentations:

- **A simple analytical model for cartilage contacts**, A.C. Moore and D.L. Burris, *McNair Graduate Student Fair*, Newark, DE, October 2013

- **A simple analytical model for biphasic materials**, A.C. Moore and D.L. Burris, *Society of Tribologists and Lubrication Engineers*, Detroit, MI, May 2013

- **Lubrication as a biomechanical contributor to osteoarthritis**, A.C. Moore, E.D. Bonnevie, V. Baro, L. Wang, and D.L. Burris, *University of Delaware Biomedical Engineering Symposium*, Newark, DE, May 2012

- **Lubrication as a biomechanical contributor to osteoarthritis**, A.C. Moore, E.D. Bonnevie, V. Baro, L. Wang, and D.L. Burris, *National IDeA Biomedical Engineering Symposium*, Washington, DC, June 2012

Awards:

- **Poster Presentation (Engineering, 1st Place), McNair Graduate Student Fair, 2013**, A simple analytical model for biphasic materials

- **Poster Presentation (Gold), STLE Annual Meeting, 2013**, A simple analytical model for biphasic materials

- **George W. Laird Merit Fellowship, 2013**

- **Force and Motion Scholarship, 2013**, Effects of localized damage to articular cartilage

Outreach and Mentoring:

- K-12 Engineering Outreach Newark, DE 2012-Current
  Graduate Student Instructor
    - Responsible for developing and teaching relevant engineering modules on my research—cartilage mechanics, tribology, osteoarthritis, anatomy, and bone mechanics
    - Developed demonstrations and activities to make learning more interactive
        1. Build a custom air hockey table to describe cartilage mechanics. Air hockey is surprisingly one of the best analogies for cartilage mechanics, lubrication, and osteoarthritis
        2. Fundamental exercises in measuring the friction coefficient of different materials
        3. Mock orthopaedic devices were implanted in surrogate bone to demonstrate bone loading mechanics and orthopaedic device repair
        4. Bovine stifle joint, cow knee, dissection has been one of the most popular activities for the students. Students learn anatomy, scalpel blade handling, and lab safety

- Graduate Studies Workshop Newark, DE November 2013
  Biomedical Engineering Host
    - Motivate students from diverse backgrounds to attend graduate school

- Undergraduate Research Newark, DE 2012-Current
  Research Supervisor
    - To date I have trained three undergraduate engineers—Benjamin Henry, Thomas McDowell, and Nick Negron—in the field of bio-tribology. I helped each student develop their own independent project that complements my research
    - Benjamin has run baseline studies on the stress thresholds in cartilage
    - Thomas has been investigating the evolution of cartilage degradation and movement of interstitial fluid due to dynamic stimulation
    - Nick Negron has gathered data for contact lens pilot studies

Interests:

- I enjoy going to new places, eating new foods, and learning how to cook new things