

BRENT SCOTT

About Me

I am a PhD Candidate in the Kinesiology department at UMass Amherst with a research emphasis in single molecule biophysics and molecular muscle physiology. Specifically, I am interested in understanding how myosin transduces chemical energy into the mechanical forces that drive human motion with additional interest in the regulation of this process via the proteins troponin and tropomyosin. The primary experimental techniques I use are the laser trap and in vitro motility assays.

EDUCATION

ETA
Spring
2022

University of Massachusetts Amherst

PhD in Kinesiology (currently pursuing)

Amherst, MA

Thesis: What is the relative timing between myosin's powerstroke and phosphate release?

2019

University of Massachusetts Amherst

MS in Kinesiology

Amherst, MA

Thesis: Tropomyosin-based effects of acidosis on thin-filament regulation during fatigue.

2016

Belmont University

BS in Exercise Science

Nashville, TN

RESEARCH EXPERIENCE

2016-
Current

Graduate Research Assistant

Muscle Biophysics Lab - University of Massachusetts Amherst

Amherst, MA

- Perform single molecule/mini-ensemble laser trap experiments and large ensemble experiments with the *in vitro* motility assay
- Protein isolation (myosin and actin)
- Programmed apps to automate the workflows for the analysis of laser trap and in vitro motility data using R.

2015-
2016

Undergraduate Research Assistant

Neuromuscular Physiology Lab - Vanderbilt University Medical Center

Nashville, TN

- Used non-invasive techniques to study skeletal muscle blood flow *in vivo*.

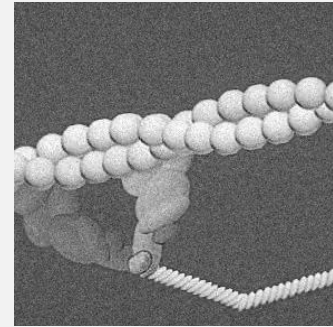
TEACHING EXPERIENCE

3x

Exercise Physiology - KIN 470 (online)

Instructor of Record for course using Moodle.

UMass Amherst



CONTACT INFO

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💻 brentscott.us

🐙 github.com/brentscott93

☎ (239) 877-0347

For more information, please contact me via email.

SKILLS

Highly trained in collection and analysis of single molecule laser trapping data

Experience in isolation and purification of proteins

Computer programming: proficient in R. Familiar with Bash, Markdown, HTML, and CSS.

Last updated on 2021-08-30.

- 3x ● **Human Performance & Nutrition - KIN 110**
Instructor of Record for course using Moodle. 📍 UMass Amherst
- 2x ● **Human Performance & Nutrition - KIN 110 (online)**
Instructor of Record for course using Blackboard. 📍 UMass Amherst
- 6x ● **Human Performance & Nutrition - KIN 110**
Graduate teaching assistant leading discussion sections. 📍 UMass Amherst
- 3x ● **Applied Exercise Testing - KIN 394**
Teaching assistant for online and in-person labs. 📍 UMass Amherst
- 1x ● **Exercise Physiology - KIN 470 (online)**
Teaching assistant for online labs. 📍 UMass Amherst
- 1x ● **Intro to Kinesiology - KIN 100**
Graduate teaching assistant leading lab sections. 📍 UMass Amherst

SELECTED PUBLICATIONS

- 2021 ● **Myosin's powerstroke occurs prior to the release of phosphate from the active site.**
Cytoskeleton. <https://doi.org/10.1002/cm.21682>.
Scott B, Marang C, Woodward M, Debold EP.
- 2020 ● **FRET and optical trapping reveal mechanisms of actin-activation of the power stroke and phosphate-release in myosin V.**
J Biol Chem. <https://doi.org/10.1074/jbc.RA120.015632>.
Gunther LK, Rohde JA, Tang W, Cirilo JA Jr, Marang CP, Scott BD, Thomas DD, Debold EP, Yengo CM.
- 2020 ● **Positional Isomers of a Non-Nucleoside Substrate Differentially Affect Myosin Function.**
Biophysical Journal 119(3), 567-580. <https://doi.org/10.1016/j.bpj.2020.06.024>.
Woodward M, Ostrander E, Jeong S, Liu X, Scott B, Unger M, Chen J, Venkataraman D, Debold EP.

PRESENTATIONS

- 2021 ● **Biophysical Society 65th Annual Meeting**
Platform: Actin and Associated Proteins - Myosins 📍 Virtual
• Myosin's powerstroke occurs with phosphate still in the active site
- 2019 ● **ACSM National Meeting**
Rapid Fire Presentation 📍 Orlando, FL
• Tropomyosin based effects of acidosis on thin- filament regulation during muscle fatigue



GRANTS

- 2020 • **UMass KIN Travel Grant**
\$150
- 2017 • **UMass UMOVE Callaboration Seed Grant**
\$5,000 (for MS Thesis)



CERTIFICATIONS

- 2016-2021 • **Certified Strength & Conditioning Specialist (CSCS)**
National Strength & Conditioning Association (NSCA)
- 2018 • **UMass Continuing & Professional Education Online Instructor Certification**



MENTORSHIP

- 2018 • **Undergraduate Teaching Assistantships**
Human Performance & Nutrition - KIN 110  UMass Amherst
 - Joshua Robert, B.S. Kinesiology 2018
 - Mary Griffin, B.S. Kinesiology 2019
 - Sara Keelan, B.S., Kinesiology 2019
 - Emily Donovan, B.S. Kinesiology 2020
 - Joseph Howard, B.S. Kinesiology 2020
- 2018-2020 • **Undergraduate Research Projects**
Muscle Biophysics Lab  UMass Amherst
 - Sabrina Harrath, B.S. Biology 2020
 - Cindy Nguyen, B.S. Kinesiology 2020