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Seattle University  
Department of Physics

**Career Objectives** • To explore fundamental soft matter physics problems in the mechanics of biological materials  
• To pursue a career in research and teaching

**Education** • **Ph.D.** Physics  
Georgetown University, 2017  
• **M.S.** Physics  
Georgetown University, 2014  
• **B.S.** Physics *cum laude*  
Gonzaga University, 2011

**Positions Held** • *Assistant Professor*, Seattle University, Department of Physics  
September 2020 – current.  
• *Postdoctoral Associate*, Yale University, Department of Biomedical Engineering  
June 2017 – May 2020. Advisor: Michael P. Murrell

**Publications -  
Most to Least  
Recent**

- W. Jung, **A.P. Tabatabai**, J.J. Thomas, S.M.A. Tabei, M.P. Murrell, and T. Kim, *Dynamic motions of molecular motors in the actin cytoskeleton*, Cytoskeleton (76) 2019.
- V. Yadav, D. Banerjee, **A.P. Tabatabai**, D. Kovar, T. Kim, S. Banerjee, and M.P. Murrell, *Filament nucleation tunes mechanical memory in active polymer networks*, Advanced Functional Materials (29) 2019. **-Highlighted as VIP**
- V. Ajeti\*, **A.P. Tabatabai\***, A.J. Fleszar, M.F. Staddon, D.S. Seara, C. Suarez, M.S. Yousafzai, D. Bi, D. Kovar, S. Banerjee, and M.P. Murrell, *Wound healing coordinates actin architectures to regulate mechanical work*, Nature Physics (15) 2019.
- **A.P. Tabatabai**, B.P. Partlow, N.R. Raia, D.L. Kaplan, and D.L. Blair, *Silk molecular weight affects the kinetics of enzymatically crosslinked silk hydrogel formation*, Langmuir 34 (50) 2018.
- D.S. Seara, V. Yadav, I.A. Linsmeier, **A.P. Tabatabai**, P.W. Oakes, S.M.A. Tabei, S. Banerjee, and M.P. Murrell, *Entropy production rate is maximized in non-contractile actomyosin*, Nature Communications (9) 2018. **-Highlighted by Nature in Active Matter Collection**
- M.F. Staddon, D. Bi, **A.P. Tabatabai**, V. Ajeti, M.P. Murrell, and S. Banerjee, *Cooperation of dual modes of cell motility promotes epithelial stress relaxation to accelerate wound healing*, PLoS Computational Biology 14 (10) 2018.
- **A.P. Tabatabai**, K.M. Weigandt, and D.L. Blair, *Acid-induced assembly of a reconstituted silk protein system*, Physical Review E (96) 2017.
- B.P. Partlow\*, **A.P. Tabatabai\***, G.G. Leisk, P. Cebe, D.L. Blair, and D.L. Kaplan, *Silk fibroin degradation and its impact on mechanical properties*, Macromolecular Bioscience (16) 2016.
- **A.P. Tabatabai**, D.L. Kaplan, and D.L. Blair, *Rheology of reconstituted silk fibroin protein gels: the epitome of extreme mechanics*, Soft Matter (11) 2015. **-Highlighted in Silk and Silk-Inspired Materials Collection**

\*These authors contributed equally

**Publications -  
Under Review**

- M.S. Yousafzai, V. Yadav, S. Amiri, M.F. Staddon, **A.P. Tabatabai**, Y. Errami, G. Jaspard, S. Amiri, S. Banerjee, and M.P. Murrell, *Tissue pressure is extensive and induces traction-independent cellular flows*.
- **A.P. Tabatabai\***, D.S. Seara\*, J. Tibbs, I. Linsmeier, and M.P. Murrell, *Catch bond kinetics induce non-equilibrium symmetries and phase transitions in actomyosin networks*

- Teaching**
- *Guest Instructor*, Yale University, Fall 2019  
Introduction to Biomechanics, Physics 353  
Role: Assist in lecturing and provide supplementary discussions on thermodynamics in biomechanics
  - *Guest Instructor*, Yale University, Spring 2019  
Molecular and Cellular Biomechanics, Engineering 556  
Role: Helped lead peer-based discussions on original research based class curriculum, moderate student run journal club, and deliver lectures
  - *Guest Lecturer*, Yale University, Fall 2018  
Introduction to Biomechanics, Physics 353  
Role: Provided lectures on thermodynamic and statistical mechanic approaches to polymer physics descriptions of biomolecules
  - *Guest Lecturer*, Yale University, Spring 2018  
Molecular and Cellular Biomechanics, Engineering 556  
Role: Helped generate discussions and organize class-wide research assignments into coherent simulation based study, deliver lectures
  - *Teaching Assistant*, Georgetown University, Department of Physics  
September 2011 – May 2013
  - *Teaching Assistant*, Gonzaga University, Department of Physics  
September 2008 – May 2011

- Mentorship**
- Daniel Green and Zachary Sun, Yale PhD Candidates, 2019 – current  
Controlling membrane nucleated actin growth with lipid phase separation
  - Frank Fazekas, Yale Undergraduate, 2018 – 2019  
Diffusion of semiflexible filaments within 2D nematics
  - Joseph Tibbs, REU Undergraduate, 2018  
Implementing a variable timestep in molecular dynamics simulations of the cytoskeleton
  - Clare Singer, High School/University of Chicago Undergraduate, 2013/2014  
Measuring the intrinsic viscosity of reconstituted silk fibroin

- Awards**
- Mayer Fellowship, Georgetown University, 2016
  - Mayer Fellowship, Georgetown University, 2015
  - NSF Research Experience for Undergraduates, Advisor: Daniel L. Blair, 2010
  - NSF Research Experience for Undergraduates, Advisor: Jeffrey S. Olafsen, 2009

- Invited Talks**
- Loyola Marymount University, February 2020  
Learning about non-equilibrium materials through cells: the mechanics of wound healing
  - Seattle University, February 2020  
Learning about non-equilibrium materials through cells: the mechanics of wound healing
  - Bryn Mawr College, January 2020  
Conservation of power in wound healing
  - University of Southern California, January 2020  
Conservation of power in wound healing
  - YINQE Seminar, Yale University, February 2019  
Force dependent binding kinetics and energy storage/dissipation within the cytoskeleton
  - Soft Matter Day, University of Massachusetts Amherst, July 2018  
What conserved physical principles govern the mechanical outputs of cells?
  - Tufts University, March 2016  
A silk protein's guide to aggregation
  - George Mason University, March 2016  
Associating microscopic structure with mechanical properties in silk gels
  - Technische Universität München, June 2015  
From cocoon to gel: making silk based materials

- Contributed Talks**
- American Physical Society March Meeting, 2013, 2014, 2016, 2017, 2019
  - 74th New England Complex Fluids, March 2018
  - Multidisciplinary University Research Initiative - Traction Force Workshop, March 2018
  - American Chemical Society Colloid and Surface Science Symposium, 2015, 2016
  - Society of Rheology Annual Meeting, 2014
- Poster Presentations**
- Cancer Systems Biology at Yale, May 2019
  - American Physical Society March Meeting 2019
  - Yale Systems Biology Retreat, November 2018
  - Cancer Systems Biology at Yale, May 2018
  - Cancer Systems Biology at Yale- Flipped Science Fair, May 2018
  - Multidisciplinary University Research Initiative, March 2018
  - Yale Systems Biology Retreat, November 2017 –**poster award**
  - Murdock Charitable Trust, 2010, 2011
- Proposals**
- Accepted, NIST Neutron Beam Time Proposal S32-21: 2.0 days of SANS
  - Accepted, NIST Neutron Beam Time Proposal U32-08: 6.0 days of USANS
- Schools/Workshops**
- An Introduction to Evidence-Based Undergraduate STEM Teaching, Summer 2019
  - Rheology of Dense Particulate Suspensions, Georgetown University, Summer 2016
  - SUPOLEN Workshop on Supramolecular Polymeric Assemblies, Capri Italy, Summer 2015
  - University of Delaware Colloidal Gel Day, January 2015
  - **Founder:** Georgetown Institute for Soft Matter Synthesis and Metrology Journal Club, 2014 – 2017
  - NIST Center for Neutron Research Fundamentals of Neutron Scattering, Summer 2014
  - Soft Solids and Complex Fluids, University of Massachusetts Amherst, Summer 2013
  - Mid-Atlantic Soft Matter Workshop, 2010 – 2017