

LENA BARTELL

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Multi-disciplinary scientist, equally comfortable in physics & bio-mechanics. Has a breadth of collaborative and self-directed research experience, including practical knowledge in data analysis and visualization, science communication, optical imaging, and mechanical testing. Keenly interested in data visualization and science for translating raw data into actionable insights.

EDUCATION

2011 – 2017 **Cornell University** – Ph.D. Applied Physics, Biomedical Engineering minor, 3.90 / 4.00 (expected)
2007 – 2011 **Penn State University** – B.S. Physics, Biomedical Engineering and Mathematics minors, 3.97 / 4.00

SKILLS & EXPERTISE

TECHNIQUES Data analysis • Image analysis & segmentation • Linear regression & logistic modeling •
Data visualization • Science communication • Microscopy • Mechanical testing • Sterile dissection & culture
LANGUAGES, ETC. MATLAB • Python • Inkscape (vector graphics) • Autodesk Inventor (3D CAD) • MS Office • LaTeX • GitHub • Tableau

RESEARCH

CURRENT **Custom data collection & analysis methods to study cartilage trauma**
• Designed custom mechanical testing stage that also interfaces with 1,000 FPS imaging
• Developed broadly-applicable image segmentation algorithm
• Analyzed microscopy images and applied linear regression to relate tissue mechanics with cell death
• Presented results in multiple peer-reviewed papers and podium presentations

Novel techniques for measuring the fracture mechanics of cartilage

• Wrote and successfully competed for NIH fellowship grant
• Developed new method to study crack initiation in cartilage
• Trained students in experiment design, data collection, data analysis, and science communication
• Applied MATLAB and Python algorithms to track and analyze samples over space and time

4D flow behavior of glass coatings, a collaboration with Corning Incorporated

• Managed collaboration and presented results in quarterly meetings
• Compiled and analyzed multi-dimensional data in Python and MATLAB

PAST **X-ray dosimeters for Digital Breast Tomosynthesis** – Designed, constructed, and modeled the response of a custom x-ray detector for improved radiation safety in diagnostic imaging
Eliminating noise from IceCube Neutrino Observatory data – Developed level-zero filter in C++ to eliminate noise from raw detector data

AWARDS & FELLOWSHIPS NIH F31 Predoctoral Fellowship • NSF Graduate Research Fellowship • Cornell Presidential Life Science Fellowship • Goldwater Scholarship • American Association of Physicists in Medicine Undergraduate Fellowship • Penn State Braddock Scholarship (4 years tuition, room & board)

PUBLICATIONS C.R. Henak, **L.R. Bartell**, L.J. Bonassar, I. Cohen. *Journal of Biomedical Engineering* 139, 031004 (2016).
L.R. Bartell, L.A. Fortier, L.J. Bonassar, I. Cohen. *Journal of Biomechanics* 48, 3400-3446 (2015).
L.R. Bradley, A.C. Carton, A.D.A. Maidment. *Proceedings of SPIE* 7622, 76225L (2010).

PRESENTATIONS Podium presentation, 2017. Orthopaedic Research Society, San Diego, CA.
Podium presentation, 2015. Orthopaedic Research Society, Las Vegas, NV.
Podium presentation, 2014. Society of Rheology, Philadelphia, PA.
Podium presentation, 2011. International Association of Physics Students, Budapest, Hungary.

OTHER EXPERIENCE

2015 – 2016 **Student Employee** – Cornell McGovern Center for Venture Development in the Life Sciences
2015 **Leadership Assessment for Managers Course** – Leadership exercises and self-assessment
2014 – 2015 **Advisory Board Member** – NIH Broadening Experiences for Scientific Training program at Cornell
2014 **Finding Your Scientific Voice Workshop** – Intensive presentation and public speaking workshop
2009 – 2011 **President** – Penn State University Society of Physics Students