

# Noah P. Mitchell

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Kavli Institute for Theoretical Physics  
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## Academic Appointments

<b>University of Chicago</b> , Dept of Molecular Genetics & Cell Biology Asst. Professor	(starting April 2024)
<b>Kavli Institute for Theoretical Physics &amp; University of California Santa Barbara</b> K99/R00 Fellow	2023-2024
Helen Hay Whitney Postdoctoral Fellow	2020-2023
Otis William Postdoctoral Fellow	2019-2020

## Education & Training

Ph.D. <b>University of Chicago</b> , Physics <i>Mentor</i> : William T. M. Irvine <i>Topics</i> : Mechanics of thin sheets, topological materials, and fluid dynamics	Dec 2018
M.S. <b>University of Chicago</b> , Physics <b>University of Minnesota</b> , visiting undergraduate & research assistant <i>Mentor</i> : Evan Skillman [astrophysics]	Dec 2013 2011-2012
B.A. <b>St. Olaf College</b> , Physics, <i>summa cum laude</i> , with distinction <i>Mentors</i> : David Nitz [atomic physics], David Dahl [theoretical physics]	May 2012

## Awards

NIH K99/R00 Award, NICHD	2023-present
Best Talk, Developmental Biology Gordon Research Seminar	June 2023
Helen Hay Whitney Foundation Fellowship	2020-2023
Clare Waterman Award, Cell Signaling & Adhesion Gordon Research Conference	July 2022
Otis Williams Postdoctoral Fellowship	2019-2020
Springer Thesis Award	2019
Yodh Prize, for top experimentalist, University of Chicago	2017
Best poster, Soft Condensed Matter Gordon Research Seminar	2017
Robert A. Millikan Fellow, University of Chicago	2015-16
Robert G. Sachs Fellow, University of Chicago	summer 2013
Wentzel Teaching Prize, University of Chicago	2013
NSF GRFP Honorable Mention	2013
McCormick Fellow, University of Chicago	2012-14
David B. Fossan Endowed Scholar, for excellence in Physics	2011-12
Buntrock Regent Scholar, top academic scholarship, St. Olaf College	2008-2012
National Merit Scholarship	2008-2012

## Publications (key publications marked with ★)

### Biology & Soft Matter

- [22] W. Hur\*, A. Mukherjee\*, L. Hayden, Z. Lu, A. Chao, **N. P. Mitchell**, S. J. Streichan, M. Vergassola, S. Di Talia, "Scale-independent topological interactions drive the first fate decision in the *Drosophila* embryo." *bioRxiv* 10.1101/2023.10.11.561879 (2023).
- [21] A. M. Gabbert, **N. P. Mitchell**, E. G. Gemmill, J. A. Mondo, J. P. Campanale, D. J. Montell, "Protocol for 3D surface texture modeling and quantitative spectral decomposition analysis in *Drosophila* border cell clusters." *submitted to STAR Protocols*.
- [20] T. Matsuzawa, **N. P. Mitchell**, S. Perrard, W. T. M. Irvine. "Turbulence through Sustained Vortex Ring Collisions." *In press Physical Review Fluids* (2023).
- ★ [19] **N. P. Mitchell**\*, D. J. Cislo\*. "TubULAR: Tracking in toto deformations of dynamic tissues via constrained maps." [*accepted at Nature Methods*] *bioRxiv* 10.1101/2022.04.19.488840 (2022).
- ★ [18] **N. P. Mitchell**\*, M. F. Levebvre\*, V. Jain-Sharma\*, N. Claussen, M. K. Raich, H. J. Gustafson, A. R. Bausch, S. J. Streichan. "Morphodynamic atlas of *Drosophila* development." *bioRxiv* 10.1101/2022.05.26.493584 (2022). [Featured in: *The Node: preLights* (2022)]
- [17] A. M. Gabbert, J. A. Mondo, J. P. Campanale, **N. P. Mitchell**, A. Myers, S. J. Streichan, N. Miolane, D. J. Montell, "Septins regulate border cell shape and surface geometry downstream of Rho." *Developmental Cell* (2023).
- ★ [16] T. Matsuzawa, **N. P. Mitchell**, S. Perrard, W. T. M. Irvine. "Creation of an isolated turbulent blob fed by the injection of

vortex loops." *Nature Physics* (2023). [Featured in: *Quanta Magazine*; *Nature* (Research Highlight); *Nature Physics* (Research Briefing); and many others]

- [15] M. F. Lefebvre\*, N. H. Claussen\*, **N. P. Mitchell**, H. J. Gustafson, S. J. Streichan, "Geometric control of Myosin-II orientation during axis elongation." *eLife* **12**:e78787 (2023).
- ★ [14] **N. P. Mitchell**, D. J. Cislo, S. Shankar, Y. Lin, B. I. Shraiman, S. J. Streichan. "Visceral organ morphogenesis via calcium-patterned muscle constrictions." *eLife* **11**:e77355 (2022). [Featured in: D. Devenport, *eLife Insights* **11**:e80416 (2022).]
- [13] A. Khanra, L. L. Jia, **N. P. Mitchell**, A. Balchunas, R. A. Pelcovits, T. R. Powers, Z. Dogic, P. Sharma. "Controlling the shape and topology of two-component colloidal membranes." *Proceedings of the National Academy of Sciences* **119** (32) e2204453119 (2022).
- [12] B. Lemma, **N. P. Mitchell**, R. Subramanian, D. J. Needleman, Z. Dogic. "Active microphase separation in mixtures of microtubules and tip-accumulating molecular motors." *Physical Review X* **12**, 031006 (2022).
- [11] **N. P. Mitchell**, A. M. Turner, W. T. M. Irvine. "Real-space origin of topological band gaps, localization, and re-entrant phase transitions in gyroscopic metamaterials." *Physical Review E* **104**, 025007 (2021).
- [10] **N. P. Mitchell**, *Geometric Control of Fracture and Topological Metamaterials*. Springer Nature Thesis Series (2020).
- ★ [9] **N. P. Mitchell**\*, R. Carey\*, J. Hannah, Y. Wang, M. Cortes Ruiz, S. McBride, H. Jaeger. "Conforming nanoparticle sheets to surfaces with Gaussian curvature." *Soft Matter* **14**, 9107-9117 (2018).
- [8] **N. P. Mitchell**, L. M. Nash, W. T. M. Irvine. "Tunable band topology in gyroscopic lattices." *Physical Review B* **98**, 174301 (2018). [Featured in: C. Middleton. *Physics Today* 10.1063 (2018).]
- [7] **N. P. Mitchell**, L. M. Nash, W. T. M. Irvine. "Realization of a topological phase transition in a gyroscopic lattice." *Physical Review B* **97**, 100302(R) (2018). [Featured in: C. Middleton. *Physics Today* 10.1063 (2018).]
- ★ [6] **N. P. Mitchell**, L. M. Nash, D. Hexner, A. Turner, W. T. M. Irvine. "Amorphous topological insulators constructed from random point sets." *Nature Physics* **14**, 380-385 (2018). [Featured in several media outlets.]
- ★ [5] **N. P. Mitchell**, V. Koning, V. Vitelli, W. T. M. Irvine, "Fracture in sheets draped on curved surfaces." *Nature Materials* **16**, 89-93 (2017). [Featured in: K. Kamrin, *Nature Materials* **16**, 8-9 (2017).]

#### *Astrophysics & Atomic Physics*

- [4] K. B. W. McQuinn, E. D. Skillman, T. N. Heilman, **N. P. Mitchell**, T. Kelley. "Galactic outflows, star formation histories, and timescales in starburst dwarf galaxies from STARBIRDS." *Monthly Notices of the Royal Astronomical Society* **477**, Issue 3, 3164-3177 (2018).
- [3] D. E. Nitz, J. J. Curry, M. Buuck, A. DeMann, **N. P. Mitchell**, W. Shull, "Transition probabilities of Ce I obtained from Boltzmann analysis of visible and near-infrared emission spectra." *Journal of Physics B: Atomic, Molecular and Optical Physics* **51** 045007 (2018).
- [2] K. B. W. McQuinn, E. D. Skillman, A. E. Dolphin, **N. P. Mitchell**. "Calibrating UV star formation rates for dwarf galaxies from STARBIRDS." *The Astrophysical Journal* **808** 109 (2015).
- [1] K. B. W. McQuinn, **N. P. Mitchell**, E. D. Skillman. "The Panchromatic Starburst Irregular Dwarf Survey (STARBIRDS): Observations and Data Archive." *The Astrophysical Journal Supplement Series* **218** 29 (2015).

#### Invited Talks

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- [upcoming] Joint Physics-Biology Colloquium. St Olaf College. *March 6, 2024*.
- [upcoming] Physics Colloquium. University of Chicago. *November 30, 2023*.
- Developmental Biology Gordon Research Conference. Mount Holyoke, MA. *June 29, 2023*.
- Developmental Biology Gordon Research Seminar. Mount Holyoke, MA. *June 25, 2023*.
- Marine Biological Laboratory Light Sheet Fluorescence Microscopy Workshop. Woods Hole, MA. *May 9, 2023*.
- Invited speaker at American Physical Society March Meeting 2023. Las Vegas, NV. *March 10, 2023*.
- Cornell University LEPP Seminar. Ithaca, NY. *Feb 20, 2023*.
- Northwestern University Engineering Seminar. Evanston, IL. *Feb 16, 2023*.
- University of Michigan Biophysics Seminar. Ann Arbor, MI. *Feb 6, 2023*.
- Carnegie-Mellon University joint Physics & Biological Sciences Seminar. Pittsburgh, PA. *Jan 30, 2023*.
- Cornell University LASSP Seminar. Ithaca, NY. *Jan 26, 2023*.
- University of Chicago MGCB Seminar. Chicago, IL. *Jan 5, 2023*.
- Northwestern University Cell & Developmental Biology Seminar. Chicago, IL. *Dec 15, 2022*.
- Caltech Biology & Bioengineering Seminar. Pasadena, CA. *Nov 30, 2022*.
- Soft Living Active & Adaptive Matter (SLAAM) Seminar. Virtual. *Nov 7, 2022*. "How biology uses physics to sculpt an inner organ."
- Helen Hay Whitney Foundation Fellowship Meeting. Dedham, MA. *Nov 6, 2022*.
- Developmental Mechanics Seminar. Virtual. *Nov 3, 2022*. "Visceral organ morphogenesis via calcium-patterned muscle constrictions."
- GSA Drosophila Research Conference. San Diego, CA. *April 9, 2022*.
- Princeton/CUNY Physics of Life Symposium. NYC, NY. *March 25, 2022*.
- BPPB Seminar. Virtual. *January 21, 2022*.
- Harvard University Applied Math Seminar. Cambridge, MA. *Nov 10, 2021*.

UC Santa Barbara MCDB-BMSE Symposium. Santa Barbara, CA. *October 23, 2021*. "Multi-scale mechanical interactions across layers drive folding morphogenesis in the gut."

GRC Stochastic Physics in Biology. *October 11, 2021*. "Active Folding Via Bilayer Morphogenesis In Vivo."

KITP Big Ideas Public Seminar. *Nov 18, 2020*. "Physics of form in living matter."

Emory University YEP Colloquium. *July 7, 2020*. "Tissue folding in a developing organ."

University of Washington MechE Seminar. *August 31, 2018*. "Spinning topology in ordered and amorphous metamaterials."

ETH Zürich Physics Dept. *April 19, 2018*. "Spinning topology in ordered and amorphous metamaterials."

ETH Zürich Materials Dept. *April 17, 2018*. "Fracture in sheets draped on curved surfaces."

NYU Center for Soft Matter Research Seminar. *April 11, 2018*. "Spinning topology in ordered and amorphous metamaterials."

University of California Santa Barbara. *March 29, 2018*. "Spinning topology in ordered and amorphous metamaterials."

Cornell University LASSP Seminar. *March 22, 2018*. "Spinning topology in ordered and amorphous metamaterials."

Syracuse University Physics Seminar. *March 19, 2018*. "Spinning topology in ordered and amorphous metamaterials."

Stanford University BioEngineering Seminar. *March 1, 2018*. "Spinning topology in ordered and amorphous metamaterials."

University of Chicago JFI Friday Seminar. *August 25, 2017*. "Chiral waves from spinning tops: topology without long-range order."

University of Chicago JFI Seminar. *May 15, 2015*. "Guiding cracks with geometry."

St. Olaf College Physics Colloquium Series. *April 29, 2015*. "Guiding cracks with geometry."

Chicago Soft|Meta Matter Conference. *September 30, 2014*. "Geometrically frustrated fracture mechanics."

## Internal Talks at UChicago (2023-present)

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UChicago Molecular Biosciences Retreat. Chicago, IL. *Oct 21, 2023*.

UChicago Introduction to Research Faculty Talk. Chicago, IL. *Oct 19, 2023*.

UChicago Physics Orientation Faculty Talk. Chicago, IL. *Sept 21, 2023*.

UChicago Biophysics Faculty Research Talk. Chicago, IL. *Sept 21, 2023*.

## Conference Talks Presented

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- N. P. Mitchell**, D. J. Cislo, S. Shankar, Y. Lin, B. I. Shraiman, S. J. Streichan. "From genes to geometry: How biology uses physics to sculpt an inner organ." Society of Developmental Biology. Chicago, IL. *July 21, 2023*.
- N. P. Mitchell**, D. J. Cislo, S. Shankar, Y. Lin, B. I. Shraiman, S. J. Streichan. "Multi-scale mechanical interactions across layers drive folding morphogenesis in the gut." APS March Meeting. Chicago. *March 14-18, 2022*.
- N. P. Mitchell**, D. Cislo, S. Shankar, Z. Dogic, B. Shraiman, S. Streichan, "Patterned shear drives folding during organogenesis." Virtual APS March Meeting. *March 18, 2021*.
- N. P. Mitchell**, D. Cislo, S. Shankar, Z. Dogic, B. Shraiman, S. Streichan, "Active folding and coiling *in vivo*." Virtual APS March Meeting. *March 5, 2020*.
- N. P. Mitchell**, L. M. Nash, W. T. M. Irvine. "Realization of a Topological Phase Transition in a Gyroscopic Lattice." APS March Meeting. Los Angeles, CA. *March 6, 2018*.
- N. P. Mitchell**, L. M. Nash, D. Hexner, A. M. Turner, W. T. M. Irvine. "Amorphous Topological Insulators Constructed from Random Point Sets." APS March Meeting. Los Angeles, CA. *March 6, 2018*.
- N. P. Mitchell**, L. M. Nash, D. Hexner, A. M. Turner, W. T. M. Irvine. "Amorphous Gyroscopic Topological Metamaterials." APS March Meeting. New Orleans, LA. *March 13, 2017*.
- N. P. Mitchell**, V. Koning, V. Vitelli, W. T. M. Irvine. "Fracture in Sheets Draped on Curved Surfaces." APS March Meeting. Baltimore, MD. *March 15, 2016*.
- N. P. Mitchell**, V. Koning, V. Vitelli, W. T. M. Irvine. "Geometrically Frustrated Fracture Mechanics." APS March Meeting. San Antonio, TX. *March 3, 2015*.
- N. P. Mitchell**, V. Koning, V. Vitelli, W. T. M. Irvine. "Fracture on Curved Surfaces." APS March Meeting 2014. Denver, CO. *March 5, 2014*.
- N. P. Mitchell**, K. B. W. McQuinn, E. D. Skillman. "UV-derived Star Formation Rates in Nearby Starburst Dwarf Galaxies." Physics at University of Minnesota Expo. Minneapolis, MN. *August 10, 2011*.

## Posters Presented

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- N. P. Mitchell**, D. Cislo, S. Shankar, Y. Lin, B. I. Shraiman, S. J. Streichan. "Visceral organ morphogenesis via calcium-patterned muscle constrictions".
  - Gordon Research Conference, Mount Holyoke, MA. June 25-30, 2022.
  - Gordon Research Seminar, Mount Holyoke, MA. June 24-25, 2022. **Best talk**.
  - Santa Cruz Developmental Biology Conference, Santa Cruz, CA. Aug 13-17, 2022.
  - Signaling via Adhesion Receptors Gordon Research Seminar & Conference. Manchester, NH. July 16-22, 2022. Won **Clare**

### Waterman Award.

- N. P. Mitchell**, D Cislo, S Shankar, Y Lin, B. I. Shraiman, S. J. Streichan. "Morphing an organ via calcium signaling in muscles". Gordon Research Seminar & Conference. Ventura, CA. Oct 10-16, 2021.
- N. P. Mitchell**, L. M. Nash, D. Hexner, A. M. Turner, W. T. M. Irvine. "Topological phase transitions in ordered and amorphous gyrosopic metamaterials." Gordon Research Conference: Soft Condensed Matter Physics. New London, NH. Aug 11-16, 2019.
- N. P. Mitchell**, R. L. Carey, J. Hannah, Y. Wang, M. Cortes Ruiz, S. P. McBride, X. Lin, H. M. Jaeger, "Conforming nanoparticle sheets to surfaces with Gaussian curvature." Gordon Research Seminar & Conference: Complex Active and Adaptive Material Systems. Ventura, CA. January 23 - February 1, 2019.
- N. P. Mitchell**, L. M. Nash, D. Hexner, A. M. Turner, W. T. M. Irvine. "Amorphous Gyrosopic Topological Insulators." Gordon Research Conference. New London, NH. August 12-18, 2017. Won prize for **best poster**. Won **Winstein Travel Prize** to attend. Elected **GRS chair**.
- N. P. Mitchell**, V. Koning, V. Vitelli, W. T. M. Irvine. "Fracture in Sheets Draped on Curved Surfaces."  
- Industry Associates Meeting at the University of Chicago. Chicago, IL. October 27, 2016.  
- Physics and Mechanics of Soft Complex Materials, Institut d'Études Scientifiques de Cargèse. August 8-20, 2016. Won **Winstein Travel Prize** to attend.
- N. P. Mitchell**, K. B. W. McQuinn, E. D. Skillman. "UV derived Star Formation Rates and Emission Timescale in Nearby Starburst Dwarf Galaxies."  
- 79<sup>th</sup> Annual Meeting of the Minnesota Academy of Science. Northfield, MN. January 21, 2012.  
- American Astronomical Society Meeting. Austin, TX. January 8-12, 2012.
- N. P. Mitchell**, M. Buuck, D. E. Nitz. "Measurement of Atomic Transition Probabilities for Neutral Cerium."  
- St. Olaf Science Symposium. Northfield, MN. May 6, 2011.  
- Midstates Consortium for Math and Science at Washington University in St. Louis. St. Louis, MO. November 12-14, 2010.

### Teaching

Instructor	UChicago Imaging Bootcamp [intensive graduate course], October 1-14, 2023.	<b>Marine Biological Laboratory</b>
Instructor	Image Analysis for Quantitative Biology, July 24-25, 2019.	<b>KITP, UC Santa Barbara</b>
Guest Lecturer	Introductory Physics (PHYS 6), Dec. 5, 2019.	<b>Dept Physics, UC Santa Barbara</b>
Guest Lecturer	Adv. Classical Mechanics (PHYS 104), March 6, 2019.	
Grader	Soft Condensed Matter (Graduate course, PHYS 367), Winter 2018	<b>Dept Physics, University of Chicago</b>
T.A.	Experimental Physics (PHYS 211), Autumn 2016	
T.A.	Electronics (PHYS 226), Spring 2016	
Grader	Advanced Electrodynamics (Graduate course, PHYS 322), Winter 2016	
T.A.	Advanced Electrodynamics (Graduate course, PHYS 322), Winter 2015	
T.A.	Experimental Physics (PHYS 211), Spring 2014	
T.A.	Optics and Waves (PHYS 133), Spring 2013	
T.A.	Electricity and Magnetism (PHYS 132), Winter 2013	
T.A.	Mechanics (PHYS 131), Fall 2012	
Guest Lecturer	Statistical Mechanics (PHYS 379), April 29, 2015. "Entropy-driven self-assembly"	<b>Dept Physics, St. Olaf College</b>
T.A.	Introductory Astronomy (PHYS 112), Spring 2012	
T.A.	Principles of Physics I (PHYS 124), Fall 2011	
Grader	Principles of Physics II (PHYS 125), Spring 2010	

### Students Supervised

Vishank Jain-Sharma. Graduate researcher [UCSB] 2019-present	
Yuzheng Lin. Undergraduate researcher [UCSB] 2019-2022	<i>After: Princeton PhD</i>
Bezia Lemma. Graduate researcher [Harvard/UCSB] 2019-2021	<i>After: Princeton Pdoc</i>
Isaac Breinyn. Undergraduate researcher [UCSB] 2019-2020	<i>After: Princeton PhD</i>
Jelani Hannah. Bridge masters student [UChicago] 2017-2018	<i>After: UChicago PhD</i>
Remington Carey. Masters student [UChicago] 2017-2018	<i>After: Cambridge PhD</i>
Jingyang Zheng. REU undergraduate intern from U. Minnesota [UChicago] 2016	<i>After: Cornell PhD</i>
Maria Cortes Ruiz. REU undergraduate intern from CCNY [UChicago] 2015	<i>After: KTH PhD (Sweden)</i>

### Extended Stays

Princeton University, Wieschaus Lab, September 2019

## Workshops

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Light Sheet Fluorescence Microscopy. Marine Biological Laboratory. **Invited speaker.**  
Symmetry, Thermodynamics, & Topology in Active Matter. KITP. *March-May 2020*. **Discussion Leader.**  
Gordon Research Seminar & Conference: Soft Condensed Matter Physics. New London, NH. *Aug 10-16, 2019*. **Chair** for associated GRS.  
Morphogenesis in Animals and Plants: Search for Principles. *July 22 - Aug 23, 2019*. **Instructor.**  
Gordon Research Seminar & Conference: Complex Active and Adaptive Material Systems. Ventura, CA. *January 23 - February 1, 2019*. **Session Chair** for GRS.  
Illinois Soft Materials Workshop. University of Illinois at Urbana-Champaign. *June 6, 2018*.  
Gordon Research Seminar & Conference: Soft Condensed Matter Physics. New London, NH. *Aug 12-18, 2017*.  
Physics and Mechanics of Soft Complex Materials, Institut d'Études Scientifiques de Cargèse. Cargèse, France. *August 8-20, 2016*.  
Topological Matter at H-Zero, Lorenz Center at University of Leiden. *May 9-13, 2016*.  
Crafting the Lecture: A Student-Centered Approach, UChicago GRAD. *April 14, 2016*.  
Dark Matter Detectors Summer School, KICP and Fermilab. *July 2012*.

## Honor Societies

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Phi Beta Kappa 2012  
Sigma Pi Sigma (*Society of Physics Students' Honor Society*) 2011  
National Merit Finalist 2008  
National Honor Society 2007, Saint Louis University High School chapter

## Service & Outreach

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**Early Career Member-At-Large**, APS Division of Biological Physics, 2023-2025

**Reviewer** *Biophysical Journal, Annual Reviews of Condensed Matter Physics, Cells & Development, Soft Matter, Physical Review Letters, Physical Review X, Physical Review E, Physical Review B, Physical Review Research, Physical Review Applied, ACS Nano, New Journal of Physics, Extreme Mechanics Letters, PNAS*

**Chair**  
- Symmetries in Morphogenesis KITP Monthly Seminar 2021.  
- Symmetries in Morphogenesis KITP Conference *October 21-22, 2020*.  
- Gordon Research Seminar: Soft Condensed Matter Physics. *Aug 10-11, 2019*.

**Session Chair**  
- Symmetry, Thermodynamics, & Topology in Active Matter. KITP (Virtual session). *May 1, 2020*.  
- APS March Meeting 2020 (Virtual session). "Active Matter in Living Matter." *March 5, 2020*.  
- Gordon Research Seminar: Complex Active and Adaptive Material Systems. *January 26, 2019*.  
- APS March Meeting 2014, Session M17: Fracture and Other Problems in Statistical Physics. *March 5, 2014*.

**Panelist** - Extreme Mechanics Letters Seminar 2021 (Virtual session, held via Zoom). *September 15, 2021*.

**KITP Outreach Programs**, Big Ideas Talk (Nov 2020), Coffee with a Scientist (July 2, 2020), Highschool teacher's event (Jan 18, 2020)

**Instructor**  
- Artifice Tech Education Program, *Fall 2015 – Spring 2016, weekly*. Designed and led courses on coding, electronics, and robotics for ages 12-15 at UChicago Woodlawn Charter School.  
- Science and Technology Outreach Mentoring Program, *Oct. 2014-June 2015, weekly*. Designed and led courses on science and technology activities for students in middle school at North Kenwood Oakland Elementary School.  
- Bike Physics With A Bang! *June-July 2015, July 2016*. I co-established this 4-week program for preteens and teens on Chicago's South Side at the nonprofit Experimental Station. I designed and led activities using bicycles as a centerpiece for concepts from physics and materials science. The program continues and has since expanded.

**Group Leader** - Expanding Your Horizons symposium for middle-school girls. *March 2017*.

**Exhibitor**  
- *The Art of Science*, Second Friday Pilsen Art Show. Science-based visual art show  
- Science Art Show, Feb. 25, 2016. Finalist in competition of science-based art  
- Interdivisional Science-Art Show, June 4, 2015. Exhibition of science-based art

**Demonstrator/Volunteer**  
- Women in Physics Conference, *Jan 18, 2014*.  
- Physics With A Bang, *2012-2018, 1 day/yr*.  
- Young Scholar's Program, *2013-2016 1 day/yr*.  
- Science Night, Lee Elementary, *Oct 2, 2014*.  
- *Science on the Screen*, UChicago, *Apr 21, 2013*.  
- Harte Elementary School Science Fair, *Nov 6, 2013*.  
- *Science Club*, Carnegie Elementary, *2013-2014, monthly*.

**Dept. Mentor** - mentor to first-year physics majors during senior undergraduate year, *2011-12*.