

Kerim B. Kaylan

University of Illinois College of Medicine

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Education

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| 2021 (expected) | M.D.
University of Illinois College of Medicine, Chicago, IL. |
| 2017 | Ph.D. , <i>Bioengineering</i> .
University of Illinois at Urbana–Champaign, Urbana, IL.
Dissertation: Dissecting combinatorial microenvironmental regulation of cell fate and function using a multi-modal arraying platform. |
| 2016 | M.S. , <i>Bioengineering</i> .
University of Illinois at Urbana–Champaign, Urbana, IL.
Thesis: Engineered microenvironments for studying liver progenitor differentiation. |
| 2012 | B.S.E. , <i>Biomedical Engineering</i> .
University of Michigan, Ann Arbor, MI.
Graduated <i>magna cum laude</i> . |

Research and Industry Experience

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| 1/2018–Present | Microfabricated Tissue Models Laboratory , Department of Bioengineering, University of Illinois at Chicago.
Advisor: Prof. Salman R. Khetani. <ul style="list-style-type: none">○ Developed and documented a generalized pipeline to analyze data from cell microarrays.○ Investigated the functional regulation of primary human and iPSC-derived hepatocytes by matrix proteins and substrate stiffness. |
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- 8/2012–7/2017 **Tissue Development and Engineering Laboratory**, *Graduate Research Assistant*, Department of Bioengineering, University of Illinois at Urbana–Champaign.
Advisor: Prof. Gregory H. Underhill.
- Designed a cell-based microarray platform with multiple readouts to deconstruct combined biochemical and biomechanical regulation of cell fate and function.
 - Characterized the regulation of liver progenitor differentiation by biochemical factors (TGF β , Notch, and MAPK signaling) and biomechanical cues (substrate stiffness and interfacial effects).
 - Mapped the response of lung tumor cells to chemotherapeutic drugs as a function of both support by matrix protein presentation and expression of the oncogene *ASCL1*.
- 6/2011–12/2011 **Genentech, Inc.**, *Cooperative*, Biological Technologies, South San Francisco, CA.
Manager: Dr. Guoying Jiang.
- Designed a functional cell-based assay for a therapeutic monoclonal antibody (MAb1).
 - Investigated alternative assay formats reflective of the MOA of MAb1.
 - Screened alternative cell lines for response and efficacy in the assay.
- 9/2010–5/2011 **NeuroNexus, Inc.**, *Student Engineer*, Ann Arbor, MI.
Manager: Dr. John Seymour.
- Catalogued design requirements of novel optical neural stimulation systems for use in optogenetics research.
 - Prototyped a portable optical neural stimulation system for mice.
 - Optimized diode coupling efficiency using simulations and experiments.
- 9/2009–5/2011 **Micro/Nano/Molecular Biotechnology Laboratory**, *Undergraduate Research Assistant*, Department of Biomedical Engineering, University of Michigan.
Principal Investigator: Prof. Shuichi Takayama.
Advisor: Dr. Hossein Tavana.
- Adapted polymeric aqueous two-phase systems (ATPS) for patterning of biomolecules and cells.
 - Designed and validated a high-throughput ATPS migration assay for studying changes in cancer cell migration with drug treatment.
 - Formulated and implemented SOPs for automated lab equipment.

Awards and Honors

- 2019 **Chancellor's Student Service Award**, University of Illinois at Chicago.
Honors students who have made an outstanding contribution to the university through service to campus and community.
- 2017 **Teacher Ranked as Excellent**, *Cell and Tissue Biology*, University of Illinois College of Medicine.
Top 25% of teaching assistants ranked by students in Spring 2017 semester.

- 2016 **Teacher Ranked as Excellent**, *Cell and Tissue Biology*, University of Illinois College of Medicine.
Outstanding; top 10% of teaching assistants ranked by students in Fall 2016 semester.
- 2008 **Michigan Promise Scholarship**, \$1,000, State of Michigan.
- 2008 **Michigan Competitive Scholarship**, \$1,300, State of Michigan.

Grants and Fellowships

- 2016 **Medical Student Interest Group Matching Grant Program**, \$500, Intersociety Council for Pathology Information.
Awarded to the Pathology Interest Group at the University of Illinois College of Medicine to continue supporting programs facilitating interactions between faculty and students in addition to providing education on pathology as a career choice.
- 2016 **National Science Foundation I-Corps**, \$2,000, University of Illinois at Urbana–Champaign Site Cohort 11.
Awarded with Dr. Andreas P. Kourouklis for the use of lean methodologies to develop new, clinically-relevant technologies in liver tissue engineering.
- 2015 **Medical Student Interest Group Matching Grant Program**, \$750, Intersociety Council for Pathology Information.
Awarded to the Pathology Interest Group at the University of Illinois College of Medicine to support interactions between faculty and students and provide education on pathology as a career choice.
- 2014 **O'Morchoe Leadership Fellowship**, \$1,500, University of Illinois College of Medicine.
Awarded to support the activities of Out in Medicine, chiefly education relating to the care of intersex patients.
- 2010 **Summer Biomedical and Life Science Fellowship**, \$4,000, University of Michigan Undergraduate Research Opportunity Program.
Supported research with Prof. Shuichi Takayama to develop a novel cell migration assay using ATPS.

Publications

Journal Articles

Asterisk (*) indicates equal authorship.

- [A1] **K. B. Kaylan**, I. C. Berg, M. J. Biehl, A. Brougham-Cook, I. Jain, S. M. Jamil, L. H. Sargeant, N. J. Cornell, L. T. Raetzman, and G. H. Underhill. "Spatial patterning of liver progenitor cell differentiation mediated by cellular contractility and Notch signaling". In: *eLife* 7 (Dec. 2018). DOI: 10.7554/elife.38536.

- [A2] M. J. Biehl, **K. B. Kaylan**, R. J. Thompson, R. V. Gonzalez, K. E. Weis, G. H. Underhill, and L. T. Raetzman. “Cellular fate decisions in the developing female anteroventral periventricular nucleus are regulated by canonical Notch signaling”. In: *Developmental Biology* 442.1 (June 2018), pp. 87–100. DOI: 10.1016/j.ydbio.2018.06.005.
- [A3] R. C. A. Eguiluz, **K. B. Kaylan**, G. H. Underhill, and D. E. Leckband. “Substrate stiffness and VE-cadherin mechano-transduction coordinate to regulate endothelial monolayer integrity”. In: *Biomaterials* 140 (Sept. 2017), pp. 45–57. DOI: 10.1016/j.biomaterials.2017.06.010.
- [A4] **K. B. Kaylan**, A. P. Kourouklis, and G. H. Underhill. “A high-throughput cell microarray platform for correlative analysis of cell differentiation and traction forces”. In: *Journal of Visualized Experiments: JoVE* 121 (Mar. 2017). DOI: 10.3791/55362.
- [A5] **K. B. Kaylan**, S. D. Gentile, L. E. Milling, K. N. Bhinge, F. Kosari, and G. H. Underhill. “Mapping lung tumor cell drug responses as a function of matrix context and genotype using cell microarrays”. In: *Integrative Biology* 8.12 (Oct. 2016), pp. 1221–1231. DOI: 10.1039/c6ib00179c.
- [A6] A. P. Kourouklis*, **K. B. Kaylan***, and G. H. Underhill. “Substrate stiffness and matrix composition coordinately control the differentiation of liver progenitor cells”. In: *Biomaterials* 99 (Aug. 2016), pp. 82–94. DOI: 10.1016/j.biomaterials.2016.05.016.
- [A7] E. Atefi, D. Fyffe, **K. B. Kaylan**, and H. Tavana. “Characterization of aqueous two-phase systems from volume and density measurements”. In: *Journal of Chemical & Engineering Data* 61.4 (Mar. 2016), pp. 1531–1539. DOI: 10.1021/acs.jced.5b00901.
- [A8] **K. B. Kaylan***, V. Ermilova*, R. C. Yada, and G. H. Underhill. “Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, TGF β , and extracellular matrix”. In: *Scientific Reports* 6.23490 (Mar. 2016). DOI: 10.1038/srep23490.
- [A9] H. Tavana, **K. Kaylan**, T. Bersano-Begey, K. E. Luker, G. D. Luker, and S. Takayama. “Rehydration of polymeric, aqueous, biphasic system facilitates high throughput cell exclusion patterning for cell migration studies”. In: *Advanced Functional Materials* 21.15 (Aug. 2011), pp. 2920–2926. DOI: 10.1002/adfm.201002559.

Book Chapters

- [B1] **K. B. Kaylan** and G. H. Underhill. “Hydrogels for hepatic tissue engineering”. In: *Gels Handbook: Fundamentals, Properties and Applications Volume 2: Applications of Hydrogels in Regenerative Medicine*. 2016, pp. 427–462. DOI: 10.1142/9789813140394_0015.

Conference Abstracts and Proceedings

- [C1] C. P. Monckton, A. Brougham-Cook, **K. B. Kaylan**, G. H. Underhill, and S. R. Khetani. “Engineering robust chemomechanical microenvironments for human hepatocytes using cell microarrays”. Biomedical Engineering Society Annual Meeting. Oct. 2019.

- [C2] G. Underhill and **K. B. Kaylan**. "Spatial patterning of liver progenitor cell differentiation mediated by cell contractility and Notch signaling". In: *Nanotechnology in Medicine II: Bridging Translational In Vitro and In Vivo Interfaces*. Ed. by M. Sullivan, J. Sznitman, I. L. Eniola-Adefeso, and S. Kidambi. ECI Symposium Series. June 2018. URL: http://dc.engconfintl.org/nanotech_med_ii/24/.
- [C3] **K. Kaylan**, I. Berg, and G. Underhill. "Notch signaling coordinates with cell contractility to regulate biliary differentiation of liver progenitor cells". Biomedical Engineering Society: Cellular and Molecular Bioengineering Conference. Jan. 2018. URL: https://www.bmes.org/files/CMBE_P58.pdf.
- [C4] **K. Kaylan**, I. Berg, and G. Underhill. "Notch Signaling Coordinates with Cell Contractility to Drive Biliary Differentiation of Liver Progenitor Cells". Biomedical Engineering Society Annual Meeting. Oct. 2017.
- [C5] M. J. Biehl, **K. B. Kaylan**, G. H. Underhill, and L. T. Raetzman. "Cell Fate Decisions in the Developing Hypothalamic Anteroventral Periventricular Nucleus Are Regulated By Canonical Notch Signaling". In: *Endocrine Reviews*. Vol. 38. 3. June 2017. URL: <https://endo.confex.com/endo/2017endo/meetingapp.cgi/Paper/32664>.
- [C6] R. A. Eguiluz, M. Munim, **K. B. Kaylan**, G. H. Underhill, and D. E. Leckband. "VE-Cadherin Signals and Substrate Stiffness Regulate Force Transduction through Endothelial Monolayers-Cadherin Signals and Substrate Stiffness Regulate Force Transduction through Endothelial Monolayers". In: *AIChE Annual Meeting Proceedings*. Nov. 2016. URL: <https://www.aiche.org/conferences/aiche-annual-meeting/2016/proceeding/paper/68g-ve-cadherin-signals-and-substrate-stiffness-regulate-force-transduction-through-endothelial>.
- [C7] A. Kourouklis, **K. Kaylan**, and G. Underhill. "Combinatorial ECM Arrays Reveal the Role of Biomechanics in Liver Progenitor Differentiation". In: *AIChE Annual Meeting Proceedings*. Nov. 2016. URL: <https://www.aiche.org/conferences/aiche-annual-meeting/2016/proceeding/paper/725e-combinatorial-ecm-arrays-reveal-role-biomechanics-liver-progenitor-differentiation>.
- [C8] A. Kourouklis, **K. Kaylan**, and G. Underhill. "The Role of ECM Biomechanics in Liver Progenitor Differentiation". In: *AIChE Annual Meeting Proceedings*. Nov. 2016. URL: <https://www.aiche.org/conferences/aiche-annual-meeting/2016/proceeding/paper/136i-role-ecm-biomechanics-liver-progenitor-differentiation>.
- [C9] A. P. Kourouklis, **K. B. Kaylan**, and G. H. Underhill. "Combinatorial ECM Arrays Reveal the Effects of Biomechanics in Liver Progenitor Differentiation". Biomedical Engineering Society Annual Meeting. Oct. 2016.
- [C10] L. T. Raetzman, M. J. Biehl, **K. B. Kaylan**, and G. H. Underhill. "Uncovering the role of Notch signaling in early hypothalamic fate choices using primary neurospheres and microenvironment arrays". Gordon Research Conference: Notch Signaling in Development, Regeneration and Disease. June 2016.

- [C11] A. P. Kourouklis, **K. B. Kaylan**, and G. H. Underhill. “Matrix Composition and Biophysical Characteristics Coordinately Influence Liver Progenitor Differentiation”. American Society of Mechanical Engineers NanoEngineering for Medicine and Biology Conference. Feb. 2016. URL: <https://www.asme.org/wwwasmeorg/media/ResourceFiles/Events/NEMB/NEMB2016FinalProgram.pdf>.

Presentations

Oral Presentations

- [O1] **K. B. Kaylan**. “Dissecting mechanisms of liver progenitor fate specification using cellular microarrays”. Medical Scholars Program Retreat in Monticello, IL. Aug. 2017.
- [O2] **K. B. Kaylan**, S. D. Gentile, L. E. Milling, K. N. Bhinge, F. Kosari, and G. H. Underhill. “Mapping tumor cell drug response as a function of matrix context using combinatorial cell microarrays”. Biomedical Engineering Society Annual Meeting in Minneapolis, MN. Oct. 2016.
- [O3] **K. B. Kaylan**. “Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, $TGF\beta$, and extracellular matrix”. oSTEM Minority Research Symposium in Urbana, IL. Apr. 2016.
- [O4] **K. B. Kaylan**, V. Ermilova, R. C. Yada, and G. H. Underhill. “Cellular microarrays reveal combinatorial effects of Notch ligands, $TGF\beta$, and extracellular matrix on liver progenitor differentiation”. American Society of Mechanical Engineers NanoEngineering for Medicine and Biology Conference in Houston, TX. Feb. 2016. URL: <https://www.asme.org/wwwasmeorg/media/ResourceFiles/Events/NEMB/NEMB2016FinalProgram.pdf>.
- [O5] **K. B. Kaylan**. “Combinatorial microenvironmental regulation of liver progenitor differentiation by Notch ligands, $TGF\beta$, and extracellular matrix”. Bioengineering Graduate Student Seminar Series in Urbana, IL. Sept. 2015.

Poster Presentations

- [P1] **K. B. Kaylan**. “Engineering microenvironments for studying liver development”. Ideas on Tap Research Mixer in Chicago, IL. July 2018.
- [P2] **K. B. Kaylan**. “Engineering microenvironments for studying liver development”. College of Medicine Research Day in Chicago, IL. Dec. 2017.
- [P3] **K. B. Kaylan**, S. D. Gentile, L. E. Milling, K. N. Bhinge, F. Kosari, and G. H. Underhill. “Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response”. Medical Scholars Program Retreat in Monticello, IL. Aug. 2015.
- [P4] **K. B. Kaylan**, S. D. Gentile, L. E. Milling, K. N. Bhinge, F. Kosari, and G. H. Underhill. “Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response”. College of Medicine Research Day in Urbana, IL. Apr. 2015.

- [P5] **K. B. Kaylan**, S. D. Gentile, L. E. Milling, K. N. Bhinge, F. Kosari, and G. H. Underhill. "Combinatorial cell microarrays for analyzing ECM regulation of tumor cell drug response". American Physician Scientists Association Annual Meeting in Chicago, IL. Apr. 2015.
- [P6] **K. Kaylan**, V. Ermilova, and G. Underhill. "Arrayed microenvironments for probing liver progenitor cell fate decisions". Biomedical Engineering Society Meeting in San Antonio, TX. Oct. 2014.
- [P7] **K. Kaylan**, V. Ermilova, and G. Underhill. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays". Graduate Cancer Community Fall Symposium in Urbana, IL. Sept. 2014.
- [P8] **K. Kaylan**, V. Ermilova, and G. Underhill. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays". Medical Scholars Program Retreat in Monticello, IL. Aug. 2014.
- [P9] **K. Kaylan**, V. Ermilova, and G. Underhill. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays". Bioengineering Days in Urbana, IL. Feb. 2014.
- [P10] **K. Kaylan**, V. Ermilova, and G. Underhill. "Deconstructing combinatorial microenvironmental regulation in hepatoblastoma using cell microarrays". College of Medicine Research Day in Urbana, IL. Feb. 2014.
- [P11] **K. Kaylan**, I. Lesaca, G. Jiang, and H. Gazzano-Santoro. "Development of a functional assay for MAb1 utilizing peptide uptake". Genentech Analytical Development and Quality Control Poster Mixer in South San Francisco, CA. Oct. 2011.
- [P12] **K. Kaylan**, I. Lesaca, G. Jiang, and H. Gazzano-Santoro. "Development of a functional assay for MAb1". Genetech Intern Poster Day in South San Francisco, CA. Aug. 2011.
- [P13] **K. Kaylan**, H. Tavana, and S. Takayama. "A novel cell migration assay utilizing polymeric aqueous two-phase systems". Student Biomedical Research Forum in Ann Arbor, MI. Nov. 2010.

Teaching Experience

Graduate and Professional

University of Illinois College of Medicine

- 1/2016–5/2017 **Cell and Tissue Biology**, *Teaching Assistant*.
Primary instructor: Prof. Benjamin Williams.
Semesters: Spring 2016, Fall 2016, Spring 2017.
Contact hours: 3/week, 48 weeks.
Student evaluations: 4.2/5.0 (Spring 2016), 4.8/5.0 (Fall 2016), 4.5/5.0 (Spring 2017).
 - Supervised weekly lab sessions providing active review of histology and identification of structures.
 - Held discussions sections on disease pathophysiology, provided written feedback on student case presentations.

University of Illinois at Urbana–Champaign

- 2/2014 **Quantitative Biotechnology**, *Guest Lecturer*, Department of Bioengineering.
Primary instructor: Prof. Sua Myong.
Contact hours: 2.
 - Served as guest lecturer for 1 class session.

Undergraduate

University of Illinois at Urbana–Champaign

- 8/2015–12/2015 **Introduction to Bioengineering**, *Mentor*, Department of Bioengineering.
Primary instructor: Mark Gryka.
Contact hours: 12.
 - Introduced 3 mentees to bioengineering research.
- 1/2014–5/2014 **Stem Cell Bioengineering**, *Grader*, Department of Bioengineering.
Primary instructor: Prof. Gregory H. Underhill.
Semesters: Spring 2014.
 - Graded problem sets and provided written feedback to students.
- 8/2012–7/2017 **Tissue Development and Engineering Laboratory**, *Undergraduate Mentor*.
Advisor: Prof. Gregory H. Underhill.
Contact hours: 2/week.
 - Trained new lab members in lab-specific safety guidelines, experimental protocols, analysis of data, and interpretation of results.
 - Established goals and specific projects for each mentee in addition to assuring development of specific technical skills.
 - Held weekly subgroup and 1:1 meetings with undergraduate mentees (16 total) to design independent experiments and discuss project progress.

University of Michigan

- 1/2012–4/2012 **Quantitative Cell Biology**, *Instructional Aid*, Department of Biomedical Engineering.
Primary instructor: Prof. Shuichi Takayama.
Semesters: Winter 2012.
Contact hours: 2/week, 16 weeks.
Student evaluations: 4.5/5.0 (Winter 2012).
 - Graded problem sets and administered exams.
 - Held weekly office hours, organized review sessions for exams.
- 8/2011–5/2012 **Peer Mentor Program**, *Peer Mentor*, Engineering Advising Center, College of Engineering.
Contact hours: 4.
 - Advised freshman mentee on gaining research and industry experience.
 - Provided information regarding academics and course scheduling specific to the Department of Biomedical Engineering.

K-12

- 7/2016 **Worldwide Youth in Science and Engineering Camp**, *Facilitator*, College of Engineering, University of Illinois at Urbana–Champaign.
Primary instructor: Prof. Gregory H. Underhill.
Contact hours: 8.
 - Redesigned module on PCR in response to previously identified issues.
 - Taught PCR module to high school students.
- 7/2015, 7/2016 **Discover Bioengineering Camp**, *Facilitator*, College of Engineering, University of Illinois at Urbana–Champaign.
Primary instructors: Prof. Gregory H. Underhill, Prof. Jennifer Amos.
Contact hours: 16.
 - Designed, revised, and taught module on PCR to high school students.
- 2/2013 **Bioengineering the Future**, *Organizer and Primary Instructor*, University Lab High School, Urbana, IL.
Contact hours: 4.
 - Organized and taught a week-long bioengineering course targeted at high school students.
 - Engaged and coordinated multiple graduate student and faculty speakers.

Service

Departmental, College, and University Service

University of Illinois College of Medicine

- 11/2018–3/2019 Search Committee for Associate Dean of Curriculum.
- 9/2017–9/2018 USMLE Preparedness Committee.

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| 4/2017 | Medical Scholars Program Steering Committee. |
| 3/2017 | Teaching Excellence and Innovation in Education Award Selection Committee. |
| 9/2012–8/2014 | Medical Scholars Program Retreat Committee. |

University of Illinois at Urbana–Champaign

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| 11/2012–12/2012 | Climate Survey Steering Committee. |
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Extracurricular University Service

University of Illinois College of Medicine

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| 9/2017–Present | <p>Student Curricular Board.</p> <p><i>Special Projects Chair (5/2018–4/2019).</i></p> <ul style="list-style-type: none"> ○ Designed a lean startup-based approach to student-driven curricular change focused on the build-measure-learn process, actionable metrics, minimum viable solutions, and pivoting. ○ Collected qualitative and quantitative feedback on availability of study resources and preparedness for USMLE exams. ○ Organized and executed two town halls focused on unaddressed student needs and other curricular issues. ○ Assembled and communicated student feedback to faculty regarding the design of the neurology and psychiatry block for M2 students. <p><i>Special Projects Team Member (9/2017–4/2018).</i></p> <ul style="list-style-type: none"> ○ Developed and carried out a tutorial series on Osmosis, a spaced-repetition tool integrated with the college's curriculum. |
| 9/2016–7/2017 | <p>Medical Scholars Program Advisory Committee, Co-Chair.</p> <ul style="list-style-type: none"> ○ Maintained communication between students and faculty through implementation of plans to sunset the regional campus of the college. ○ Initiated changes to the structure of the committee to adapt to changes in the demographics of the student body. |
| 9/2015–7/2017 | <p>Pathology Interest Group, Organizer.</p> <ul style="list-style-type: none"> ○ Planned and carried out activities to promote interactions between pathology faculty and students, including panels of recently-matched students and lunch talks with practicing pathologists. ○ Held informational meetings regarding career options in pathology, subspecialization options, and the outlook of the field. |
| 5/2014–7/2017 | <p>Out in Medicine at Illinois, Co-President.</p> <ul style="list-style-type: none"> ○ Held mixers and socials to build community for students, staff, and faculty who identify as sexual or gender minorities. ○ Organized seminars on the health of sexual or gender minorities, specifically the care of transgender and intersex patients. |

- 9/2013–8/2014 **Medical Scholars Program Retreat Committee, Co-Chair.**
- Oversaw preparations for the Medical Scholars Program Retreat, including securing a venue, contracting with caterers, selecting and scheduling activities, and inviting students and alumni to speak.
 - Served as master of ceremonies on the day of the retreat.

University of Illinois at Urbana–Champaign

- 8/2013–5/2016 **Graduate Cancer Community Illinois, Organizer.**
- Planned and hosted 6 seminars on cancer biology from local faculty.
 - Assisted in organizing the Graduate Cancer Community Fall Symposium, which brought students and regional faculty together to present posters and talks on their cancer research.
 - Helped carry out the Pioneers in Cancer seminar series, which brought 3 highly-respected faculty members in the cancer field from across the country to speak to and interact with graduate students.

University of Michigan

- 9/2010–5/2011 **Biomedical Engineering Society, Executive Board Member.**
- Kept chapter website updated, improved and upgraded backend code.

Professional Affiliations

- 2017 American College of Physicians.
Medical student member.
- 2014 Biomedical Engineering Society.
- 2014 Tau Beta Pi—The Engineering Honor Society.
- 2013 American Physician Scientists Association.

Skills

Software

- Software OS X, Windows, GNU/Linux (Ubuntu, Red Hat).
- Programming R, MATLAB, \LaTeX , Git, HTML, CSS, C++.
- Applications RStudio, NIH ImageJ (Fiji), CellProfiler, GIMP, Inkscape, LabVIEW, SolidWorks.

Wet laboratory

- Cell biology Cell culture, viral transduction, cell migration assays.
- Molecular biology Immunoblotting, immunocytochemistry and immunofluorescence, *in situ* hybridization, qRT-PCR, ELISA, biolayer interferometry.

Imaging	Phase contrast, fluorescence, and confocal microscopy.
Fabrication	Protein microarraying, hydrogel fabrication (PDMS, polyacrylamide).
Automation	Automated microscopy, robotic liquid handling, spotting robots.

Analytical

Statistics	Basic hypothesis testing, single and multiple linear regression, ANOVA, clustering analysis, principal components analysis.
Image analysis	Automated high-content image cytometry (ImageJ, CellProfiler).

Interests

Reading, programming, viola, aikido, strength training.