

John-William Sidhom, M.D., Ph.D.

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EDUCATION

Mount Sinai Hospital

- Internal Medicine / Research Track Resident

New York, NY
2021 - 2023

Johns Hopkins University School of Medicine

Johns Hopkins Whiting School of Engineering

- MD-PhD Candidate
 - Doctorate of Medicine
 - Doctorate of Philosophy in Biomedical Engineering

Baltimore, MD.
2012 - 2021

Johns Hopkins University School of Medicine

Johns Hopkins Whiting School of Engineering

- M.S.E. in Biomedical Engineering
- Center for Bioengineering, Innovation, and Design (CBID)
Medtronic Fellow – Graduate Fellowship

Baltimore, MD
2011 – 2012
GPA: 3.87/4.00

University of Michigan, College of Engineering

- B.S.E in Biomedical Engineering
- Minor in Mathematics
- Certificate of Entrepreneurship

Ann Arbor, MI
2007 - 2011
GPA: 3.78/4.00

Other Educational Experiences

- Udacity Deep Learning Nanodegree

2018

RESEARCH

Microsoft Research

Cambridge, MA

Visiting Scholar

2019

- During the final 6 months of my PhD, I was sponsored by Microsoft Research as part of a collaboration with Johns Hopkins to develop methods using deep learning and causal inference to analyze whole-exome and panel-based sequencing data from immunotherapy treated vs non-immunotherapy treated cohorts of patients.
- Participated in lab-sponsored journal clubs, networking and collaborating with individuals across a variety of scientific and academic backgrounds.
- At conclusion of my time at MSR, I presented my work at a symposium open to all Microsoft Research lab members as well as at an internal MSR/SU2C Convergence meeting in Fall 2019.

The Bloomberg~Kimmel Institute for Cancer Immunotherapy

Baltimore, MD

Graduate Student

2016 - 2021

Thesis Advisor: Dr. Drew Pardoll, MD., PhD.

- Deep Learning Algorithms of the Immune Synapse
 - AI-MHC: an allele-integrated deep learning framework for improving Class I & Class II binding predictions.
 - *Sidhom, J.W., et al. Biorxiv (2018)*
 - DeepTCR: deep learning algorithms for analyzing TCR-Seq data via learning structural features that distinguish data from various clinical and basic science applications.
 - *Sidhom, J.W., et al. Nature Communications (2021)*
 - *Sidhom, J.W., et al. Deep learning predicts reveals predictive sequence concepts within immune repertoires to immunotherapy. In review (2022)*
 - Oral presentations at SITC 2018, SITC 2021, AACR 2019, Nature Conferences 2018, & industry-sponsored Immuno-Oncology Summit
 - Young Investigator Awards at SITC 2018, SITC 2021
- Deep Learning Algorithms for Digital Pathology
 - ICIAR 2018 Challenge - *Convolving Pre-Trained Convolutional Neural Networks at Various Magnifications to Extract Diagnostic Features for Digital Pathology.*
 - Placed 16/51 in the world.
 - *Sidhom, J.W. & Baras, A.S. Biorxiv (2018)*
 - In collaboration with Heme/Path at JHU, developed a deep learning algorithm to distinguish between Acute Promyelocytic Anemia (APL) from other subtypes of Acute Myeloid Leukemia (AML).
 - *Sidhom, J.W., et al. npj Precision Oncology (2021)*
- TCR-Seq Analytics
 - Developed computational algorithms to analyze data from assay developed within the lab called MANAFEST (Mutation-Associated Neo-antigen Functional Expansion of Specific T-cells) in order to provide antigen-specific repertoire information for patients undergoing checkpoint blockade therapy.
 - *Ludmila, D. et. al. Cancer Immunology Research (2018).*
- High-Dimensional Flow Cytometry Analysis
 - Developed the ExCYT package, a MATLAB-based Graphical User Interface (GUI) that allows users to analyze their cytometry data via commonly employed analytical techniques for high-dimensional data including dimensionality reduction via t-SNE and diffusion maps, a variety of automated and manual clustering methods, heatmaps, and novel high-dimensional flow plots.
 - *Sidhom, J.W., et. al. Jove (2019),*
 - *Ma, H.S., et. al. Cancer Immunology Research (2019)*
 - Utilized ExCYT in collaboration with Dr. Jelani Zarif's lab studying the myeloid compartment in primary untreated Renal Cell Carcinoma.
 - *Theodros, D., et. al. Molecular & Cellular Proteomics (2020)*

Dr. Jonathan Schneck's Lab

Baltimore, MD

Graduate Student

2014 - 2016

- Developing artificial antigen presenting cells (aAPC's) to expand tumor-specific T-cells
 - Optimizing aAPC's and protocol for rapid and specific expansion of tumor-specific CD8+ cells.
 - Identification of high valuable targets for selective CD8 expansion and treatment
- Development of ImmunoMAP, a novel bioinformatic approach for analyzing TCR-Seq repertoire data.
 - *Sidhom et. al. Cancer Immunology Research (2017)*
 - *Rudqvist et. al. Cancer Immunology Research (2017)*
 - Oral presentations at SITC 2016, AACR 2017.
 - Young Investigator Award at SITC 2016
- TCR-Seq Analytics for the lab as well as collaborators at other institutions.
 - *Kosmidis, A.K. et. al. ACS nano (2017)*
 - *Riaz, N. et. al. Cell (2017)*

Extracorporeal Life Support Research Laboratory Department of Surgery at the University of Michigan

Ann Arbor, MI

Surgery 499 Student

2010 - 2011

- Learning and conducting various experimental surgical procedures on animals.
 - Basic concepts in surgery, anesthesiology, critical care, and animal physiology.
- Resuscitating Organs for Transplantation (DCD)
 - The goal of this project is to develop methodologies for resuscitation and transplantation of organs from donors that have experience uncontrolled cardiac death.
- Creating Atrial Septal Defect (ASD) to treat Pulmonary Hypertension
 - The goal of this project is to study pulmonary hypertension and various methods to treat severe cases. An ASD in conjunction with extracorporeal membrane oxygenation (ECMO) is used on sheep to test treatment method.

Research Assistant

- Organ Perfusion & Culture
 - Goal of project is to perfuse an organ (i.e. kidney) outside of the body indefinitely.

BIOTECHNOLOGY & ENTREPRENEURSHIP

Momo Scientific

Baltimore, MD

Student Engineer

2011 - 2012

- Global Health Design Project for Master's Degree
- Working with Jhpiego, a leading NGO in global health, our student team tackled the problem of delivering low-cost and appropriate point-of-care treatment of cervical cancer in the developing world.
- Developed the CryoPop, a low-cost cryotherapy unit that utilized readily available carbon dioxide tanks in the developing world to create dry-ice for the treatment of cervical cancer.
 - Completed bench testing & animal testing within first year to obtain proof of concept.
 - Won numerous awards including 1st place in BMEIDEa, 1st place in Johns Hopkins Business Plan Competition, Semi-finalist in Rice Business Plan Competition, and winning the Women's Health and Wellness Innovations Award at Rice Business Plan Competition.
 - Awarded \$18,500 through NCIIA E-team grant to continue development of technology through 2012-2013.
 - Patent was issued from USPTO in 2017. *U.S. Patent No. 9,717,546*
 - CryoPop completed its first clinical trial (NCT02367625) at the University of Philippines in Manila demonstrating non-inferiority to freeze cervical tissue in healthy woman undergoing hysterectomy. Primary outcome: width of necrosis on cervical pathologic specimen.
 - Currently enrolling in its second clinical trial (NCT04154644) at Jawaharlal Nehru Medical College to assess efficacy for treating women with abnormal cytology. Primary outcome: negative pap smear 6 months following treatment.
 - CryoPop is currently commercially available for clinical use through Pregna International Ltd.

OrthoPure

Baltimore, MD

Student Engineer

2011 – 2013

- United States Healthcare System Design Project of Master's Degree
- Working with Dr. Valaik, an orthopedic surgeon at Johns Hopkins University, our team tackled the problem of revision artificial knee surgeries caused by the wear osteolysis.
- Developed orthopedic filtration technology to filter out immunogenic wear particles associated with failure of artificial knee and hip joints.
 - Awarded \$20,00 through NCIIA E-team grant to continue development of technology through 2012-2013.
 - Working through proof-of-concept stages within the Johns Hopkins Translational Tissue Engineering Center (TTEC) under the guidance of Dr. Jennifer Elisseeff.
 - Work was presented at the 2013 AMA Conference.
- Personal Responsibilities: Mechanical Design & Computational Modeling

Magnetic Ventures, L.L.C.

Ann Arbor, MI

Co-Founder

2008 - 2010

- Designed new artificial joint interface which shows potential to lower wear of current artificial joints in an attempt extend current device longevity. Intellectual Property was filed in 2010.
 - Met with professors, surgeons, and venture capitalists, and received numerous letters of support for an NIH Small Business Innovative Research (SBIR) Grant and NCIIA Advanced E-Team Grant.
 - Applied and Received NCIIA Advanced E-Team Grant in Spring & Summer 2009 - \$16,700
 - Created basic working prototype of technology as proof of concept in Spring 2010.
 - This work received multiple awards including:
 - 1000 Pitches Competition – Grand Prize Winning pitch in Health Innovation - \$1000 , Fall 2008
 - Bay Area Innovators Competition 3rd Place - \$500, Winter 2008
 - Michigan Business Challenge – “Most Successful Undergraduate Team” - \$2500, Winter 2010
 - Notably, for my entrepreneurial and creative passion at the University of Michigan, I was designated as one of 10 Students of the Year at the University of Michigan for the graduating class of 2011.

LEADERSHIP & COMMUNITY SERVICE

Coptic Medical Association of North America (CMANA) Student Chapter

Treasurer

2013 – Present

- In 2013, I became involved with CMANA, a medical mission organization, as part of a medical mission to Bolivia in 2013. Since that time, I have been actively involved with the student chapter, taking on a leadership role on the board in 2017 as the current student chapter treasurer.
- As part of the leadership of the student chapter, I have helped organize our annual conferences and local events that allow medical trainees at all stages to experience medical missions through the mother organization.
- Our student chapter also organizes opportunities for networking including online talks/forums, an annual Gala, and quarterly newsletter.
- Our team meets monthly to discuss upcoming events as well as stay in touch with the needs of our community.
- My personal responsibilities as treasurer include overlooking the budget for all local events and the annual conference.

St. Mary's, St. Barnabas and St. Susanna Coptic Orthodox Churches

Baltimore, MD

Youth Mentor

2011 - 2021

- When I moved to Baltimore, I became involved in my local churches as a youth mentor for high school and college students. I volunteered within St. Mary's COC in Savage, MD from 2011 – 2015 where I would spend weekends holding youth meetings, giving talks, and personally mentoring students through everything from academic to personal circumstances.
- In 2015, I helped start a local church within Baltimore City (St. Barnabas and St. Susanna COC) as part of the diaconate of the church. Additionally, I volunteered my time with logistics such as setup of the church as for the initial years, we rented space from local hotels and venues.

PUBLICATIONS

- Kosmides, A. K., **Sidhom, J. W.**, Fraser, A., Bessell, C. A., & Schneck, J. P. (2017). Dual Targeting Nanoparticle Stimulates the Immune System To Inhibit Tumor Growth. *ACS nano*.
- Riaz, N., Havel, J. J., Makarov, V., Desrichard, A., Urba, W. J., Sims, J. S., Hodi, F.S., Martin-Algarra, S., Mandal, R., Sharfman, W.H., Bhatia, S., Hwu, W.J., Gajewski, T.F., Slingluff Jr, C.L., Chowell, D., Kendall, S.M., Chang, H., Shah, R., Kuo, F., Morris, L.G.T., **Sidhom, J.W.**, Schneck, J.P., Horak, C.E., Weinhold, N., Chan, T.A. (2017). Tumor and Microenvironment Evolution during Immunotherapy with Nivolumab. *Cell*.
- Rudqvist, N.P., Pilonis, K.A., Lhuillier, C., Wennerberg, E., **Sidhom, J.W.**, Emerson, R.O., Robins, H.S., Schneck, J.P., Formenti, S.C., Demaria, S. (2017). Radiotherapy and CTLA-4 blockade shape the TCR repertoire of tumor-infiltrating T cells. *Cancer Immunology Research*
- **Sidhom, J.W.**, Bessell, C.A., Havel, J.J., Kosmides, A., Chan, T.A., Schneck, J.P. (2017). ImmunoMap: A Novel Bioinformatics Tool for T-Cell Repertoire Analysis. *Cancer Immunology Research*
- **Sidhom, J.W.**, Baras, A., (2018). Convolving Pre-Trained Convolutional Neural Networks at Various Magnifications to Extract Diagnostic Features for Digital Pathology. *bioRxiv*, 333773. (*ICIAR 2018 Challenge*)
- Forde P.M., Chaft J.E., Smith K.N., Anagnostou V, Cottrell T.R., Hellmann M.D., Zahurak M, Yang S.C., Jones D.R., Broderick S, Battafarano R.J., Velez M.J., Rektman N, Olah Z, Naidoo J, Marrone K.A., Verde F, Guo H, Zhang J, Caushi J.X., Chan H.Y., **Sidhom J.W.**, Scharpf R.B., White J, Gabrielson E, Wang H, Rosner G.L., Rusch V, Wolchok J.D., Merghoub T, Taube J.M., Velculescu V.E., Topalian S.L., Brahmer J.R., Pardoll D.M. (2018). Neoadjuvant PD-1 Blockade in Resectable Lung Cancer. *New England Journal of Medicine*
- Ludmila, D., Anagnostou, V., Caushi, J.X., **Sidhom, J.W.**, Guo, H., Chan, H.Y., Suri, P., Tam, A.J., Zhang, J., El Asmar, M., Marrone, K.A., Naidoo, J., Brahmer, J.R., Forde, P.M., Baras, A.S., Cope, L., Velculescu, V.E., Pardoll, D., Housseau, F., Smith, K.N. (2018) The Mutation-Associated Neoantigen Functional Expansion of Specific T cells (MANAFEST) assay: a sensitive platform for monitoring antitumor immunity. *Cancer Immunology Research*
- **Sidhom, J.W.**, Pardoll, D., Baras, A.S. (2018) AI-MHC: an allele-integrated deep learning framework for improving Class I & Class II HLA-binding predictions. *bioRxiv*, 318881.
- Ma, H.S., Poudel B., Roussos Torres E.T., **Sidhom J.W.**, Robinson T.M., Christmas B.J., Scott B.A., Cruz K.A., Woolman S., Wall V.Z., Armstrong T.D., Jaffee E.M. (2019). A CD40 agonist and PD-1 antagonist antibody reprogram the microenvironment of non-immunogenic tumors to allow T cell-mediated anticancer activity. *Cancer Immunology Research*
- **Sidhom, J. W.**, Theodros, D., Murter, B., Zarif, J. C., Ganguly, S., Pardoll, D. M., Baras, A. (2019). ExCYT: A Graphical User Interface for Streamlining Analysis of High-Dimensional Cytometry Data. *J. Vis. Exp.*
- Smith, K.N., Llosa, J.N., Cottrell, T.R., Siegel, N., Fan, H., Suri, P., Chan, H.Y., Guo, H., Oke, T., Awan, A.H., Verde, F., Danilova, L., Anagnostou, V., Tam, A.J., Lubner, B.S., Bartlett, B.R., Aulakh, L.K., **Sidhom, J.W.**, Zhu, Q., Sears, C.L., Cope, L., Sharfman, W.H., Thompson, E.D., Riemer, J., Marrone, K.A., Naidoo, J., Velculescu, V.E., Forde, P.M., Vogelstein, B., Kinzler, K.W., Papadopoulos, N., Durham, J.N., Wang, H., Le, D.T., Justesen, S., Taube, J.M., Diaz, L.A., Brahmer, J.R., Pardoll, D.M., Anders, R.A., Housseau, F. (2019). Persistent mutant oncogene specific T cells in two patients benefitting from anti-PD-1. *Journal for ImmunoTherapy of Cancer*.
- Zhang, J., Ji, Z., Caushi, J.X., El Asmar, M., Anagnostou, V., Cottrell, T.R., Chan, H.Y., Suri, P., Guo, H., Merghoub, T., Chaft, J.E., Reuss, J.E., Tam, A.J., Blosser, R.L., Abu-Akeel, M., **Sidhom, J.W.**, Zhao, N., Ha, J.S., Jones, D.R., Marrone, K.A., Naidoo, J., Gabrielson, E., Taube, J.M., Velculescu, V.E., Brahmer, J.R., Housseau, F., Hellmann, M.D., Forde, P.M., Pardoll, D.M., Ji, H., Smith, K.N. (2019). Compartmental analysis of T cell clonal dynamics as a function of pathologic response to neoadjuvant PD-1 blockade in resectable non-small cell lung cancer. *Clinical Cancer Research*.
- **Sidhom, J.W.**, Baras, A.S. (2020) Analysis of SARS-CoV-2 specific T-cell receptors in ImmuneCode reveals cross-reactivity to immunodominant Influenza M1 epitope. *bioRxiv*, 16049
- Theodros, D., Murter, B.M., **Sidhom, J.W.**, Nirschl, T.R., Clark, D.J., Chen, L., Tam, A., Blosser, R.L., Schwen, Z.R., Johnson, M.H., Pierorazio, P.M., Zhang, H., Ganguly, S., Pardoll, D.M., Zarif, J.C. (2020).

High-Dimensional Cytometry (ExCYT) and Mass Spectrometry of myeloid infiltrate in clinically localized clear cell Renal Cell Carcinoma identifies novel potential myeloid targets for immunotherapy. *Molecular & Cellular Proteomics*.

- Anaya, J., **Sidhom, J.W.**, Cummings, C.A., Baras, A.S. (2020). Aggregation Tool for Genomic Concepts (ATGC): A deep learning framework for sparse genomic measures and its application to tumor mutational burden. *bioRxiv*, 237206
- Song, N., Sengupta, S., Khoruzhenko, S., Welsh, R.A., Kim, A., Kumar, M.R., Sonder, S.U., **Sidhom, J.W.**, Zhang, H., Chunfa, J., Siliciano, R.F., Sadegh-Nasseri, S. (2020). Multiple genetic programs contribute to CD4 T cell memory differentiation and longevity by maintaining T cell quiescence. *Cellular Immunology*.
- Anagnostou, V., Bruhm, D.C., Niknafs, N., White, J.R., Shao, X.M., **Sidhom, J.W.**, Stein, J., Tsai, H., Wang, H., Belcaid, Z., Murray, J., Balan, A., Ferreira, L., Ross-Macdonald, P., Wind-Rotolo, M., Baras, A.S., Taube, J., Karchin, R., Scharpf, R.B., Grasso, C., Ribas, A., Pardoll, D.M., Topalian, S.L., Velculescu, V.E. (2020). Integrative Tumor and Immune Cell Multi-omic Analyses Predict Response to Immune Checkpoint Blockade in Melanoma. *Cell Reports Medicine*.
- **Sidhom, J. W.**, Larman, H. B., Pardoll, D. M., & Baras, A. S. (2021). DeepTCR is a deep learning framework for revealing sequence concepts within T-cell repertoires. *Nature Communications*.
- **Sidhom, J.W.**, Siddharthan, I.J., Lai, B.S., Luo, A., Hambley, B., Bynum, J., Duffield, A.S., Streiff, M.B., Moliterno, A.R., Imus, P.H., Gocke, C.B., Gondek, L.P., DeZern, A.E., Baras, A.S., Kickler, T.S., Levis, M.J., Shenderov, E. (2021). Deep learning for diagnosis of Acute Promyelocytic Leukemia via recognition of genomically imprinted morphologic features. *npj Precision Oncology*.
- Cheung, L.S., Chen, L., Oke, T.F., Schaffer, T.B., Boudadi, K., Ngo, J.T., Gross, J.M., Kemberling, H., Dias, L.A., Lipson, E., **Sidhom, J.W.**, Taube, J., Anders, R., Pardoll, D.M., Le, D.T., Meyer, C.F., Llosa, N. (2021). Anti-PD-1 elicits regression of undifferentiated pleomorphic sarcomas with UV-mutation signatures. *Journal for ImmunoTherapy of Cancer*.
- **Sidhom, J.W.** & Baras, A.S. (2021). Deep learning identifies antigenic determinants of severe SARS-CoV-2 infection within T-cell repertoires. *Scientific Reports*.
- **Sidhom, J.W.**, Oliveria, G., Ross-MacDonald, P., Wind-Rotolo, M., Wu, C.J., Pardoll, D.M. & Baras, A.S. (2022). Deep learning predicts reveals predictive sequence concepts within immune repertoires to immunotherapy. *Science Advances*.
- Anaya, J., **Sidhom, J.W.**, Cummings, C.A., Baras, A.S. (2023). Probabilistic mixture models improve calibration of panel-derived tumor mutational burden in the context of both tumor-normal and tumor-only sequencing. *Cancer Research Communications*.

PATENTS

- **Sidhom, J.W.**, (2010). Device and method for force management within a joint. *U.S. Patent Application No. 12/329,494*. Washington, DC: U.S. Patent and Trademark Office
 - **Sidhom, J.W.***, Varady, M.*, Dawood, S.T.*, & Lu.E.* (2017) Cryotherapy device and method for the treatment of cervical precancerous lesions. *U.S. Patent No. 9,717,546*. Washington, DC: U.S. Patent and Trademark Office
- * Co-Inventors

ACADEMIC ACTIVITIES

- Peer-Reviewer
 - *Bioinformatics*
 - *Briefings in Bioinformatics*
 - *Cell Reports*
 - *Communications Biology*
 - *Frontiers in Immunology*
 - *iScience*
 - *Journal for ImmunoTherapy of Cancer (JITC)*
 - *Science Advances*
 - *Theranostics*

PRESENTATIONS

Oral Presentations

- 2012 OrthoPure: Increasing the Longevity of Artificial Knee Joints
Center for Bioengineering, Innovation, and Design (CBID) Design Day
Baltimore, MD
- 2012 CryoPop: Enabling Affordable Prevention of Cervical Cancer in Developing Countries
Center for Bioengineering, Innovation, and Design (CBID) Design Day
Baltimore, MD
- 2016 ImmunoMap: A Novel Bioinformatics Tool for Analysis of T cell receptor repertoire data in model systems and clinical settings
31st Annual Society for Immunotherapy of Cancer
Young Investigator Award
Fort Washington, Maryland
- 2017 ImmunoMap – A Novel Bioinformatics Tool for Immune Repertoire Analysis
AACR Annual Meeting
Washington D.C.
- 2017 Immunogenomic analyses of tumor cells and microenvironment in patients with advanced melanoma before and after treatment with Nivolumab, Co-Author
AACR Annual Meeting
Washington D.C.
- 2017 Machine Learning for TCR analytics
AstraZeneca
Waltham, MA
- 2018 Deep Learning of the Immune Synapse
Big Data and Cancer Precision Medicine Conference
Nature Conferences
Boston, MA
- 2018 Deep Learning of the Immune Synapse
33rd Annual Society for Immunotherapy of Cancer
Young Investigator Award
Fort Washington, Maryland
- 2019 DeepTCR: A Deep Learning Framework For Revealing Structural Concepts within TCR Repertoire
AACR Annual Meeting
Atlanta, GA
- 2019 DeepTCR: A Deep Learning Framework For Revealing Structural Concepts within TCR Repertoire
Cambridge Healthtech Institute's 7th Immuno-Oncology Summit
Boston, MA
- 2019 Deep Learning of the Immune Synaps
Microsoft Research & SU2C Convergence 2.0
Cambridge, MA
- 2019 DeepTCR: A Deep Learning Framework For Revealing Structural Concepts within TCR Repertoire
Johns Hopkins Annual MSTP Retreat
Cambridge, MD

- 2021 Deep learning reveals predictive sequence concepts within immune repertoires to immunotherapy
36th Annual Society for Immunotherapy of Cancer
Young Investigator Award
Washington D.C.

Poster Presentations

- 2010 Magnetically-Assisted Artificial Joint
NCIIA Annual Conference
San Francisco, CA
- 2012 OrthoPure: Increasing the Longevity of Artificial Knee Joints
Center for Bioengineering, Innovation, and Design (CBID) Design Day
Baltimore, MD
- 2012 CryoPop: Enabling Affordable Prevention of Cervical Cancer in Developing Countries
Center for Bioengineering, Innovation, and Design (CBID) Design Day
Baltimore, MD
- 2012 CryoPop: Enabling Affordable Prevention of Cervical Cancer in Developing Countries
NCIIA 14th Annual Conference
San Francisco, CA
- 2013 Design & Development of Novel Filtration Device for the Removal of Immunogenic Wear Debris in Artificial Joints
2013 AMA Conference
Fort Washington, Maryland
- 2016 ImmunoMap: A Novel Bioinformatics Tool for Analysis of T cell receptor repertoire data in model systems and clinical settings
31st Annual Society for Immunotherapy of Cancer
Young Investigator Award
Fort Washington, Maryland
- 2017 ImmunoMap – A Novel Bioinformatics Tool for Immune Repertoire Analysis
Keystone Symposia – Cancer Immunology and Immunotherapy: Taking a Place in Mainstream Oncology (C7)
Whistler, BC
- 2017 ImmunoMap – A Novel Bioinformatics Tool for Immune Repertoire Analysis
AACR Annual Meeting
Washington D.C.
- 2018 Deep Learning of the Immune Synapse
33rd Annual Society for Immunotherapy of Cancer
Young Investigator Award
Fort Washington, Maryland
- 2020 Deep Learning for Distinguishing Morphological Features of Acute Promyelocytic Leukemia
62nd American Society of Hematology Annual Meeting & Exposition
Virtual Meeting

HONORS AND AWARDS

- 2007 – 2011 College of Engineering Dean’s List and University Honors
Fall ’07, ’08, ’09, Winter ’09, ’10
- 2008 Bay Area Innovators Competition 3rd Place
University of Michigan
Ann Arbor, MI
- 2008 Bay Area Business Pitch Competition – Most Promising Business
San Francisco, CA
- 2008 1000 Pitches Competition – Grand Prize Winning Pitch in Health Innovation
University of Michigan
Ann Arbor, MI
- 2009 Michigan Business Challenge Second Round Qualifier
Ross School of Business
University of Michigan
Ann Arbor, MI
- 2009 NCAA E-Team Grant Recipient – Magnetic Ventures
University of Michigan
Ann Arbor, MI
- 2010 Michigan Business Challenge Second Round Qualifier
Ross School of Business
University of Michigan
Ann Arbor, MI
- 2010 Michigan Business Challenge – Most Successful Undergraduate Team
Ross School of Business
University of Michigan
Ann Arbor, MI
- 2008 Dare to Dream Assessment Grant Recipient – Magnetic Ventures
Ross School of Business
University of Michigan
Ann Arbor, MI
- 2011 Dare to Dream Assessment Grant Recipient – GastroAnalytics
Ross School of Business
University of Michigan
Ann Arbor, MI
- 2011 Center for Entrepreneurship Jump Start Grant – GastroAnalytics
College of Engineering
University of Michigan
Ann Arbor, MI
- 2011 Michigan Daily’s Student of the Year
University of Michigan
Ann Arbor, MI

- 2011 Summa Cum Laude
University of Michigan
Ann Arbor, MI
- 2011 James B. Angell Scholar
University of Michigan
Ann Arbor, MD
- 2011 Medtronic Fellow
Graduate Fellowship at Johns Hopkins University
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2012 NCIIA E-Team Grant Recipient – OrthoPure
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2012 NCIIA E-Team Grant Recipient – CryoPop
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2012 Semi-finalist in Dell Social Innovation Challenge – CryoPop
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2012 1st Place in Social Enterprises - CryoPop
Johns Hopkins University Business Plan Competition
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2012 Women’s Health and Wellness Innovations Award - CryoPop
Rice Business Plan Competition
Houston, Tx
- 2012 1st Place - BMEIdea Competition
Point of Diagnosis Screening & Prevention of Cervical Cancer
Center for Bioengineering, Innovation, and Design
Whiting School of Engineering
Johns Hopkins University
Baltimore, MD
- 2013 Paul & Daisy Soros Fellowship Finalist
Johns Hopkins University School of Medicine
Baltimore, MD

SKILLS

- Experience with numerous technical documents, including memos and progress reports (Fluent in Word, Excel, PowerPoint)
- Grant Writing Experience (Dare to Dream Grants, NCIIA Advanced E-Team Grant)
- Proficient in Python & MATLAB, basic knowledge of basic C++, Linux
- Proficient building/training deep neural networks with Google's Tensorflow Library
- Experience with CAD (SolidWorks, Rhinoceros®)/Rapid Prototype
- Familiar with 2D Finite Element Method Magnetics, COMSOL, Altair Hypermesh, Abaqus/CAE
- Creating anatomical models with the use of Mimics®
- Business Pitches, Business Plans, Market and Industry Research, Financial Modeling (VC & LBO Analysis)

PERSONAL INTERESTS & HOBBIES

Music Creation & Production

- Since childhood, I have played multiple instruments including piano, alto & baritone saxophone, and guitar as well as sang in multiple choirs and within my church.
- I have also been involved and interested in audio visual productions, recording and producing music that I publish to a SoundCloud page as well as other social media platforms. Some of my songs have been put on other music platforms by others interested in sharing music.
- I have also collaborated with other music artists doing music production within my home studio.

Competitive Olympic Weightlifting

- In 2013, I began competitively training in CrossFit and Olympic weightlifting, having trained at multiple gyms within Baltimore city and competed in local CrossFit competitions. In the spring of 2017, I qualified to lift on the national stage at the American Open Series.