Krishna Suresh

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EDUCATION

UNIVERSITY OF PENNSYLVANIA – School of Engineering and Applied Science — Philadelphia, PA
Bachelor of Science in Engineering (B.S.E) in Bioengineering, Minor in Chemistry — May 2021

- *Cumulative GPA*: 3.97/4.0
- *MCAT*: 524 (100th percentile)
- *Honors and Organizations*: Herman P. Schwan Award, Penn Engineering Technology and Innovation Senior Design Award, Bioengineering Senior Design Competition Winner, Tau Beta Pi Engineering Honor Society, Summa Cum Laude, Dean's List

APPOQUINIMINK HS — Newark, DE
High School Diploma, Class Valedictorian — June 2017

- *Honors*: GPA: 4.0 (unweighted), 4.8 (weighted); 2380 SAT (100th percentile); Secretary of Education Scholar; Governor's Youth Service Award for Health and Special Needs; National AP Scholar; Presidential Scholar Candidate; Eagle Scout

PROFESSIONAL EXPERIENCE

UPENN RADHAKRISHNAN LAB — Philadelphia, PA
Research Assistant (20 hours per week) — September 2018 - Present

- We are examining the molecular mechanism of mutation-driven constitutive kinase activation and drug resistance and developing efficient computational methods for predicting the oncogenic potential of novel mutations. We also investigate the signaling functions of receptor tyrosine kinase (RTK) pseudokinases.
- Created machine learning algorithm for determining whether a novel mutation results in the constitutive activation of the particular RTK, which leads to cancer.
- Developed molecular models for psuedokinases, yet to be crystallized, and investigated structural features that contribute towards their signaling functions.
- Conducting Molecular Dynamics (MD) simulations of ALK and MEK RTKs to investigate structural features that contribute towards their stability and activity in developmental signaling pathways (in collaboration with Simons Foundation)
- My work and pay was funded by 2 grants from the Physical Science in Oncology Center (PSOC) and the Cancer Systems Biology Consortium (CSBC), both part of the National Institute of Health (NIH)

OTOAI — Philadelphia, PA
Co-Founder (10 hours per week) — June 2020 - Present

- Venture that aims to develop a flexible, digital otoscope powered by artificial intelligence (AI)
- Developed a prototype capable of taking and storing high-quality images of the ear canal and identifying abnormal pathology with 90% diagnostic accuracy.
- Won the Penn Engineering Technology and Innovation Senior Design Award and Bioengineering Senior Design Competition
- Awarded seed funding via the Validation Award from the Wharton Innovation Fund
- Working with Dr. Steven Eliades, our clinical mentor, to conduct a clinical trial with the Department of Otorhinolaryngology at the University of Pennsylvania Hospital to validate the efficacy of our device

UPENN BIOLINES LAB — Philadelphia, PA
Research Assistant (4 hours per week (semester), 30 hours per week (summer)) — September 2017 – August 2018

- Developed high-throughput model of organs-on-chips for fabrication and rapid fluid handling of hundreds of devices synchronously. In particular, helped design and develop robotic fluid handler with ability to collect and process microfluidic multidimensional detailed data while visualizing and operating in a multi-device system.
- Studied and developed microengineered biomimetic models of human organs known as organs-on-chips; in particular, worked on the "Pancreas on a Chip" model.

UPENN INTRODUCTION TO SCIENTIFIC COMPUTING (ENGR 105) — Philadelphia, PA
Teaching Assistant (10 hours per week) — September 2020 – December 2020

- Grade assignments and provide office hour support for students using MATLAB to solve engineering problems

UNIVERSITY OF DELAWARE EDWARDS LAB — Newark, DE
Research Assistant (4 hours per week (semester), 30 hours per week (summer)) — September 2015 – September 2016

- Researched the correlation between Chronic Kidney Disease (CKD), cardiovascular function, and habitual physical activity to provide rationale for study investigating effect of exercise intervention on hypertension symptoms in CKD patients. Presented poster on this work at the MARC ACSM conference.

PROFESSIONAL EXPERIENCE

SCIENCE HOUR, MARY CAMPBELL CENTER — Wilmington, DE
Founder, President (~400 hours total) — January 2014 – Present

- Initiative that aims to excite and educate children and adult residents with disabilities about science through interactive demonstrations, such as experiments and hands-on activities. Won the Governor's Youth Service Award for Health and Special Needs for founding and leading this program.

- Manage operations, which include scheduling volunteers and maintaining supplies for program, and lead Science Hour sessions with the residents.
- Memorable moment: Dan, a resident at the Mary Campbell Center and frequent participant of Science Hour, attained the rank of Eagle Scout by leading an Eagle Project to create science kits and a research book of experiments for the program. I worked very closely with Dan throughout the project.

PENN ENGINEERS IN MEDICINE *Philadelphia, PA*
President (2 hours per week) September 2017 – December 2020

- Spearhead planning of events to expose members to medicine and biotech/healthcare industry through doctor talks, company visits, and expert panels
- Led partnership with Penn Health-Tech's Medical Device Club, allowing students in Engineers in Medicine to work on projects with graduate students, medical students, and physicians to solve pressing issues in medicine.
- Coordinate with physicians to host doctor dinners, and lead engaging discussions with them about their careers, experience with engineering applications in medicine and cutting-edge research in their field.
- Starting program that connects students in the community interested in non-traditional engineering pathways (consulting, biotech, medicine, law) with mentors in Penn Engineers in Medicine

PENN MEDICAL DEVICE CLUB *Philadelphia, PA*
Project Lead (4 hours per week) September 2017 – Present

- Leading project on "Transcatheter approach to prevention of left ventricular outflow tract obstruction (LVOTO) during mitral valve implantation" with the objective of developing a device that can be implanted after a Transcatheter Mitral Valve Replacement (TMVR) should LVOTO develop which would clip the anterior leaflet to the new mitral prosthesis to keep it out of the outflow tract. The project is funded by Penn Health-Tech.
- We are currently developing a refined prototype, through further in vitro testing, and filing for a patent

PENN HEALTH TECH BOARD *Philadelphia, PA*
Student Ambassador (2 hours per week) April 2019 – Present

- Help coordinate and run various Penn Health-Tech events aiming to unite people and resources across campus and explore interdisciplinary approaches to pressing issues in medicine and technology.
- Planning and executing event showcasing applications of virtual and artificial reality in healthcare. Event commences with keynote speaker and is followed by workshops demonstrating AR/VR tech.

PENN ADAPT *Philadelphia, PA*
Project Lead, Market Research (2 hours per week) September 2017 – September 2019

- Led "Heart Disease Sensor Project," with objective to design a low-cost wearable device that doctors can use to reliably monitor patients' heart rate and detect abnormal changes that indicate a risk for heart attacks or symptoms of heart disease. It reached the semifinal round of the 2018 Bay Area Global Health Innovation Challenge
- Conducted research on market need for projects and coordinate with physicians to determine new devices needed and improvements that can be made to help commercialize devices currently in progress

HOSPITAL OF UNIVERSITY OF PENNSYLVANIA *Philadelphia, PA*
Clinical Volunteer (~250 hours total, 4 hours per week) September 2017 – Present

- Volunteered in Cardiac Care unit and the Emergency Department
- Duties: make patient rounds to ensure patient satisfaction; set up patient monitors; interacting with physicians and

PHYSICIAN SHADOWING *Philadelphia, PA*
Clinical Observer (70 hours total) September 2017 – Present

- Have shadowed a variety of specialties, including cardiac surgery, orthopedic surgery, ophthalmology, interventional cardiology, and radiology.

PUBLICATIONS AND POSTERS

1. "An interdomain helix in IRE1α mediates the conformational change required for the sensor's activation." Ricci, D., et al. Journal of Biological Chemistry (2021). https://doi.org/10.1016/j.jbc.2021.100781 (11th author)
2. "Computational Studies of Anaplastic Lymphoma Kinase Mutations Reveal Common Mechanisms of Oncogenic Activation" Patil, K., et al. PNAS (2021). https://doi.org/10.1073/pnas.2019132118 (4th author)
3. "Structural Insights into Pseudokinase Domains of Receptor Tyrosine Kinases" Sheetz, J.B., et al. Molecular Cell (2020). https://doi.org/10.1016/j.molcel.2020.06.018 (9th author)
4. "In-silico Profiling of Kinases in Cancer" Suresh, K. et al. Presented at Biomedical Engineering Society Annual Conference
5. (BMES), 2020
6. "Computational algorithms for in silico profiling of activating mutations in cancer" Jordan, E.J., Patil, K., Suresh, K. et al. Cell. Mol. Life Sci. (2019). https://doi.org/10.1007/s00018-019-03097-2
7. "In-silico Profiling of Kinase Domain Mutations" Suresh, K. et al., presented at BMES, 2019

ADDITIONAL

- **Languages:** English (Native language), Tamil (Native language), and Spanish (Working knowledge)
- **Programming, Science, and Technology:** Skilled in Java, Python, ML algorithms, MATLAB, LabVIEW, Solidworks, Excel, PowerPoint, Arduino, molecular simulation, and wet-lab procedures
- **Interests:** Camping, Tennis, Badminton, Swimming and Piano