PALLAVI JONNALAGADDA

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EDUCATION

Washington University in St. Louis, School of Medicine
Doctor of Medicine, expected May 2027

The University of Pennsylvania, School of Engineering and Applied Science
Bachelor of Science in Engineering, May 2023
Majors: Bioengineering; Classical Language and Literature

RESEARCH & DESIGN EXPERIENCE

BAMBI Engineer August 2022 – May 2023
Department of Bioengineering, University of Pennsylvania

- Designed a multi-award-winning Biointelligent Apnea Monitor for Bradycardia-Prone Infants (BAMBI). BAMBI is a tripartite system that leverages machine learning and automated mechanical stimulation to detect and treat apnea of prematurity in the NICU.
- Programmed a machine-learning algorithm to detect apnea in premature infants in the NICU, with F1 score of 97.4%, sensitivity of 96.27%, and specificity & accuracy of 99.9%.
- Laser cut and 3D-printed a functional mechanical chassis to stimulate infants and resolve apneic episodes manually.
- Programmed a user-interface to relay information about apneic episodes over time to attending physicians for use in making discharge decisions.

Research Assistant to David Cormode, DPhil
Department of Radiology, Hospital of the University of Pennsylvania September 2019-June 2023

- Studied controlled-shape synthesis and biological applications of metal nanoparticles at the Nanomedicine and Molecular Imaging Lab.
- Elucidated the cytotoxic properties of gold Wulff-in-a-Cage nanoparticles for translational use in disrupting subcutaneous bacterial biofilms in HeCaT skin cell cultures.
- Optimized gelation and contrast of gold-nanoparticle-laced chemotherapeutic hydrogel for use in trans-arterial chemoembolization of hepatocellular carcinoma.

Clinical ENT Preceptorship with Noam Cohen, MD, Ph.D.
Department of Otorhinolaryngology: Head and Neck Surgery, University of Pennsylvania January-May 2022

- Designed an artificial intelligence-integrated image analysis algorithm to quantify the number of nasal epithelial cells infected with SARS-CoV-2 based on immunofluorescence antibody staining.
- Optimized time expenditure for researchers attempting to discern the relationship between COVID-19 pathogenicity and the LZTFL1 gene.

Bioengineering Modeling and Design Lab I
Department of Bioengineering, University of Pennsylvania August-December 2021

- Mathematically modeled and experimentally verified dialysis and drug delivery systems.
- Constructed a Human-Cockroach Machine Interface, characterizing and controlling the movements of a severed cockroach leg in parallel with a motor arm to obtain two degrees of motion. Interfaced MATLAB program with niDAQ, Biopac, and Arduino to precisely control this prosthetic using real-time human physiological inputs.

PUBLICATIONS

M. Hajfathalian, K. Mossburg, A. Radaid, K. Woo, **P. Jonnalagadda**, Y. Kapila, P. Bollyky, D.P. Cormode, "A Review of Recent Advances in the Use of Complex Metal Nanostructures in Biomedical Applications from Diagnosis to Treatment." *WIREs Nanomedicine & Nanobiotechnology*. Publication pending **in April 2024**.

M. Hajfathalian, C. Vries, J. Hsu, A. Amirshaghaghi, Y. Dong, Z. Ren, Y. Liu, Y. Huang, S. Knight, **P. Jonnalagadda,** A. Zlitni, E. Grice, H. Koo, P. Bollyky, D.P. Cormode, "Theranostic gold-in-gold cage nanoparticles enable photothermal ablation and photoacoustic imaging in biofilm-associated infection models." *The Journal of Clinical Investigation.* **August 31, 2023**. doi:10.1172/JCI168485

M. Hajfathalian, Y. Huang, Z. Ren, Y. Dong, **P. Jonnalagadda,** J. C. Hsu, H. Koo, E. Grice, D. P. Cormode, "Wulff in a Cage Gold Nanoparticles as a Theranostic Anti-biofilm Agent", In Preparation.

PRESENTATIONS

P. Jonnalagadda, G. Qian, J. Ling, R. Dawar, "BAMBI: a Biointelligent Apnea Monitor for Bradycardia-Prone Infants." Oral Presentation (competition), *BMES Annual Conference*, Seattle, **October 2023.**

P. Jonnalagadda, G. Qian, J. Ling, R. Dawar, "BAMBI: a Biointelligent Apnea Monitor for Bradycardia-Prone Infants." Poster Presentation (competition), *Design of Medical Devices Conference*, University of Minnesota, Minneapolis, **April 2023.**

M. Hajfathalian**,** Y. Huang, Y. C. Dong, Z. Ren, S. Knight, J. Hsu, **P. Jonnalagadda**, H. Sussman, E. Grice, H. Koo, D. P. Cormode, "Wulff in a Cage Gold Nanoparticles in Therapy and Imaging of Bacterial Biofilms", Oral Presentation, *46th Annual Pendergrass Day Symposium*, University of Pennsylvania, Philadelphia, **June 2020.**
M. Hajfathalian, Z. Ren, Y. Liu, C. Dong, J. Hsu, **P. Jonnalagadda**, P.L. Bollyky, H. Koo, D.P. Cormode, "Wulff in a Cage Gold Nanoparticles in the Treatment of Bacterial Biofilm-Associated Infections", Oral Presentation, *23rd Annual Bay Area Microbial Pathogenesis Symposium*, San Francisco, CA, **March 2021**.

ABSTRACTS

M.F. Faisal, N. Cosgrove, V. Kushnir, T. Hollander, S.P. Vitta, R.S. Patel, D. Kodali, S. Mahmood, T.A. Syed, S.M. Farooqui, A. Salman, J.T. Maple, **P. Jonnalagadda**, M. Rogers, R.N. Keswani, K. Andresen, S.S. Jonnalagadda. Mo1285 Lumen Apposing Self-Expanding Metal Stents Have a Higher Rate of Long Term Complications Compared to Double Pig-Tail Stents in Management of Walled Off Pancreatic Necrosis: A Multicenter Experience. *Gastrointestinal Endoscopy, Monday Abstract Vol 87.6*. **June 2018**. https://doi.org/10.1016/j.gie.2018.04.1936

TECHNICAL SKILLS & CERTIFICATIONS

3D-printing, laser cut/etching, Machine Learning algorithms, MATLAB, Arduino, Python, SolidWorks, OnShape, Office Suite, Adobe Illustrator + Photoshop, CellProfiler, cell culture, ImageJ, MTS assay, TEM, galvanic synthesis, BLS certified

VOLUNTEER WORK

OneHealth Medical Liaison, St. Louis Zoo — St. Louis, MO
February 2024 – Present

- Contextualize global climate and deforestation crises in terms of their impact on population health and medicine.
- Collaborate with an interdisciplinary team of veterinary, environmental science, medical, and communications students to organize the annual OneHealth fair ("Party for the Planet: One Health. One Climate) at the STL Zoo to educate visitors on how they can help mitigate the effects of climate change on their health.

Pediatric Life Savers, St. Louis Children's Hospital — St. Louis, MO
September 2023 – Present

- Lead CPR classes and teach best practices to new parents of NICU infants prior to discharge from the hospital.

Rehabilitation Volunteer, Department of Veterans Affairs Medical Center — Philadelphia, PA
November 2021-August 2022

- Volunteer in the physical therapy department at the VA. Restock supplies, assemble, and assist in fitting patients with ambulatory equipment (wheelchairs, walkers, etc.).

Vaccine Clinic Volunteer, Sayre Health Center COVID-19 Site — Philadelphia, PA
February - August 2021

- Informed ~100 patients per shift at Sayre Health Center in West Philadelphia about the development, risks, side effects, and evolving guidelines of the COVID-19 vaccine and conducted mandatory post-injection observation.

Summer STEM Outreach Coordinator, Cobbs Creek Community Center — Philadelphia, PA
June-August 2021

- Designed hands-on STEM projects for high school students who lacked STEM resources. Noteworthy projects included DNA extraction and yoga ball momentum demonstrations.
- Created a curriculum to educate students on nutrition and health and related anatomical systems.

Seeing Volunteer, Be My Eyes — Online Platform
January 2021-Present

- Receive 5-10 calls per month from blind individuals around the country and assist with vision-dependent ADLs.

EXTRACURRICULAR ACTIVITIES

Co-Lead, Orthopedic Surgery Interest Group, Washington University School of Medicine — St. Louis, MO
January 2024-Present

- Organize and coordinate with faculty, residents, and device representatives to host hands-on events and panels for students interested in pursuing orthopedic surgery as a medical specialty.

Co-Lead, Pediatric Life Savers, Washington University School of Medicine — St. Louis, MO
January 2024-Present

- Collaborate with community partners at the St. Louis Children's Hospital Center for Families to ensure volunteer coverage for Pediatric Life Savers classes in order to educate new parents of NICU infants on CPR best practices.

Co-Lead, Medical Ethics Student Society, Washington University School of Medicine St. Louis, MO
January 2024-Present

- Plan and host events centered around medical ethics for the medical community, including journal article discussions about truth-telling in medicine, ethical intersectionality between objective medicine and patient narratives, and the role of the physician in medical decision making.

Co-Lead, Narrative Medicine Interest Group, Washington University School of Medicine St. Louis, MO
January 2024-Present

- Highlight the role of patient and provider narratives in the practice of medicine through narrative-sharing, journal clubs, and creating journaling opportunities for students seeking to reflect on their clinical experiences through narrative.

Peer Tutor (Paid), University of Pennsylvania Philadelphia, PA
Fall 2020-Present

- Tutor groups of 3-4 undergraduate peers in Molecular Biology and Scientific Computing.

President, Engineers in Medicine (eMED), University of Pennsylvania Philadelphia, PA
Fall 2019-Present

- Coordinate between eMED's three main committees to hold pre-professional events for engineering students interested in medical applications, including doctor dinners and biotech company talks.

Managing Editor, Penn Bioethics Journal (PBJ), University of Pennsylvania Philadelphia, PA
Fall 2019-Present

- Supervise a group of associate editors each semester and teach them the peer-review process for publication in PBJ.
- Lead discussions about paper submissions, communicating with paper authors about revisions, and compiling news briefs of major bioethical developments.

Finance/Communications Director, Society of Women Engineers, University of Pennsylvania
Fall 2019-Present Philadelphia, PA

- Budgeting and accounting for over $20,000 in corporate revenue.
- As Communications Director, oversaw all marketing for SWE, including communicating with corporate sponsors and expanding SWE's audience through social media platforms.

Board Member, Classics Board, University of Pennsylvania Philadelphia, PA
Fall 2021-Present

- Organize and plan events for the undergraduate Classical Studies community, specifically focusing on FaculTeas, seminars about Classical Studies and Archaeology research and ancient literature.

HONORS & AWARDS

- Medtronic/BMES Design Winner, 2023 Special Category: AI/ML related to treatment of Cardiac, Respiratory, or Stroke Diseases
- Penn Engineering Technology & Innovation Award 2023
- Penn Bioengineering Senior Design Award 2023
- JHU Annual Healthcare Design Competition Finalist 2023
- Design of Medical Devices Student Showcase Finalist, University of Minnesota 2023
- Coolidge Senator Class of 2019
- National Science Olympiad 1st Place in Ecology, 2018 & 2019
- Missouri State US Extemporaneous Speaking Champion (MSHSAA) 2019

HOBBIES

Baking, Ancient Roman & Greek poetry translation , piano, tennis & pickleball, graphic design

LANGUAGES

English, French, Latin, Ancient Greek