JOHN-PAUL PHAM,

jppham@umich.edu | 949-573-4126 | 127 Fieldcrest St. #304, Ann Arbor, MI 48105
www.linkedin.com/in/john-paul-pham-b133151b8/

Education

University of Michigan — **Ann Arbor, MI**
PhD in Biomedical Engineering, Candidate — **6/2024-Present**
Concentration: Biomaterials and Regenerative Medicine — **Expected: 5/2027**
Thesis: *Microfluidic Fabrication of Polymer Nanoparticles for Local Immunomodulation in Allogeneic Beta Cell Transplant*
Thesis Advisor: Dr. María Coronel

Master of Science in Engineering (Biomedical Engineering) — **8/2022-8/2024**
GPA: 4.0/4.0

University of California San Diego — **La Jolla, CA**
B.S. in Bioengineering (Biotechnology) — **9/2018-6/2022**
GPA: 3.976/4.0 ***(Summa Cum Laude)***

Academic Training and Research

University of Michigan Doctoral Research — **Ann Arbor, MI**
PI: Dr. María Coronel — **11/2022-Present**
Protein-Conjugated Nanoparticles for Induction of Local Immunosuppression

- Developed microfluidic devices using 3D printing for the generation of amphiphilic coblock polymer nanoparticles that can be surface-conjugated to proteins.
- Confirmed nanoparticle safety, retention, and immune-modulating properties in murine pancreatic transplant site via blood glucose monitoring, histology, flow cytometry, live imaging, and RT-PCR,
- Optimizing surface properties of nanoparticles for maximal pro-tolerogenic effects
- **Skills:** Primary cell isolation (islet, bone marrow, splenocyte), cell culture (primary immune cells, Jurkat cells, RAW 264.7, MIN6), diabetic mouse model care, ELISA, fluorescence microscopy, histology, immunohistochemistry, *in-vitro* immune cell assays (mixed-lymphocyte reactions, migration assays, proliferation assays), microfluidics, microscopy (fluorescence, TEM), nanoparticle characterization (DLS and NTA sizing, zeta potential), RT-PCR, spectral flow cytometry, statistical analysis, transcriptomics (FlowSOM, Seurat), western blots

University of Michigan First-Year Lab Rotation Program — **Ann Arbor, MI**
PI: Dr. Aaron Morris — **10/2022-11/2022**
Polymer Microspheres for Encapsulating Biosensing Cells

- Optimized a bulk emulsion method of fabricating degradable polymer microspheres using maleimide-thiol chemistry, and seeding HEK293T embryonic kidney cells within them.
- **Skills:** Benchling plasmid design, double-emulsion microparticle fabrication, HEK293T culture, polymer synthesis.

PI: Dr. Brendon Baker — **9/2022-10/2022**
Fibrous Hydrogels for Modeling Fibroblast Spreading & Angiogenesis in Disease

- Created dextran-vinyl sulfone hydrogel composites with variable fiber densites. Investigated how fiber density influenced the behavior of lung fibroblasts, and created microphysiologic chip models of blood vessels to interrogate the role of disease chemokines on cells.
- **Skills:** Hydrogel synthesis, microphysiological systems, NHLF fibroblast cell culture

PI: Dr. Claudia Loebel
Photostiffening Hydrogel Models of Fibrotic ECM in Pulmonary Fibrosis — **8/2022-9/2022**

- Used methacrylated hyaluronic acid (MeHA) to engineer hydrogels that responsively stiffened with UV exposure, and seeded airway epithelial cells to study effects on cell morphology and phenotype.
- **Skills:** Fluorescence microscopy, hydrogel synthesis, MLE-12 cell culture, rheology

Research Experience (continued)

University of California San Diego Undergraduate Research — **La Jolla, CA**
PI: Dr. Karen Christman — **3/2020-6/2022**
Cardiac Infarct Homing Nanoparticles for Targeted Drug Delivery

- Evaluated the in-vivo therapeutic potential of an enzyme-responsive protein-like polymer by assisting in animal surgeries and performing in-vitro cytotoxicity assays. Embedded, cryosectioned, stained, and imaged rat tissues in a large biodistribution study.
- **Skills:** Confocal microscopy, cardiac fibroblast cell culture, cryosectioning, IHC, RT-PCR, cryosectioning, confocal microscopy, *in vitro* cell viability and metabolic assays

Deep Transcriptomic Profiling of Infarcted and Hydrogel-Treated Cardiac Tissue — **3/2020-6/2022**

- Used Python and R to analyze scRNA-seq and spatial transcriptomics data of infarcted and infusible decellularized myocardial matrix hydrogel-treated infarcted rat cardiac tissues. Determined key differentially expressed genes unique to each condition.
- **Skills:** 10X Genomics Chromium and Visium cell processing, Python/R packages for scRNA-seq analysis (Seurat, Monocle)

PI: Dr. Shengqiang Cai
Implantable Mechanically Robust Scaffolds for Bone Regeneration — **3/2019-1/2020**

- Developed a facile protocol for fabricating a PLA-hydroxyapatite composite scaffold without use of extensive chemical processing, and mechanically characterized the resulting biomaterial.
- **Skills:** Polymer solvent casting, cleanroom training, hot embossing, Instron Universal Testing Systems, MATLAB

Work Experience

Rady Children's Hospital San Diego — **San Diego, CA**
PI: Dr. Joshua Stramiello — **7/2021-6/2022**
Senior Design Engineering Intern

- Worked in a team and consulted with pediatric surgeons to optimize the design of 3D printed bioresorbable PCL intraluminal airway stents for treating pediatric tracheomalacia.
- Mechanically characterized and found degradation profiles for stents.
- **Skills:** 3D Printing, UltiMaker Cura, SolidWorks, MATLAB, Instron Universal Testing Systems, GraphPad Prism

UC San Diego Department of Mathematics — **La Jolla, CA**
Undergraduate Teaching Assistant/Grader (MATH 20D: Intro. To Differential Eqns.) — **10/2020-12/2020**

- In a remote classroom environment, answered questions from students and graded homework assignments and tests.

Awards and Honors

University of Michigan Cellular Biotechnology Training Program Trainee — 9/2023-9/2025

- One of five recipients of a two-year NIH T32 training grant focused on providing in-depth academic and experiential exposure to the biotechnology industry, translational research, and regulatory affairs.

Phi Beta Kappa Graduate Scholarship — 5/2022

- Competitive scholarship exclusively given to senior-level Phi Beta Kappa members at UC San Diego who are pursuing graduate-level degree programs. Phi Beta Kappa membership is limited to the top 10% of juniors and seniors in GPA, among other criteria.

UC San Diego Bioengineering Day Anushka Michailova Memorial Award — 4/2022

- From over 120 Bioengineering seniors and 36 senior design teams, myself and three others received this award on the basis of our project's attention to detail and scientific merit.

Phi Beta Kappa Membership — 5/2021
Tau Beta Pi Membership — 1/2020
UC San Diego Roosevelt College Honors Program — 9/2018-6/2022
UC San Diego Provost Honors — 9/2018-6/2022

Publications

- **Pham JA.**, Coronel MM. Emerging Biomaterial-Mediated Strategies for Engineering Transplant Tolerance. In Preparation. Biotechnol. Bioeng.

Conference Proceedings

- Mesfin JM., **Pham JA.**, et al. "A Lysyl Oxidase Responsive Peptide Brush Polymer for Targeting Myocardial Infarction [abstract]". Submitted to 2022 Society for Biomaterials Annual Conference; 2022 Apr. 27-30; Baltimore, Maryland
- Stramiello J, **Pham JA.**, et al. "Mechanical Properties of 3D Printed Polycaprolactone Intraluminal Airway Stents [abstract]". Submitted to 2022 American Society of Pediatric Otolaryngology Annual Meeting; 2022 Apr. 27-May 1; Dallas, Texas
- Mesfin, JM., Taghdiri, N., **Pham, JA.**, et al. "Single Nucleus and Spatial Transcriptomic Analyses of the Mechanism behind a Decellularized Myocardial Matrix for Myocardial Infarction Treatment [abstract]". Submitted to Tissue Engineering and Regenerative Medicine International Society (TERMIS); 2022 July 10-13; Toronto, ON

Leadership and Service

UM BME Graduate Student Council Academic Affairs Committee Member **11/2022-Present**

- Helped to plan academic events for the graduate and undergraduate student community at the University of Michigan, and was one of key organizers for the department's flagship BME Symposium, featuring over 50 student poster presenters and several guest faculty speakers from across the United States.

UC San Diego Tau Beta Pi Campus Engagement Chair **10/2020-6/2022**

- Planned collaborative events between Tau Beta Pi, the oldest engineering academic honor society in the United States, and other engineering student organizations at UC San Diego. Events spanned professional development workshops to DEI seminars featuring faculty.

Triton Engineering Student Council Organization Representative **10/2020-6/2022**

- Represented Tau Beta Pi on the Triton Engineering Student Council, the official liaison between student engineering organizations and UC San Diego Jacobs School of Engineering administration. Voiced feedback and concerns to staff in meetings.

UC San Diego Biomedical Engineering Society Project Team Member **10/2018-1/2020**

- Helped connect other undergraduate Bioengineering students at UC San Diego to research opportunities by emailing staff and reviewing resumes.