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Summary:
Stem cell and tissue engineering researcher at the Department of Biomedical Engineering at Texas A&M University with experience in sterile and non-sterile wet labs along with experimental design and project management. Consistent expertise in staining, cell culture, imaging, sample preparation, and data analysis. Competent in a variety of software technologies including coding and frameworks.

Experience:

Stem Cell & Tissue Engineering Researcher | Department of BME & TAMU
May, 2024 - Present (PAID)

- Leading project on expandable skin graft grown from hDFs, achieved 67% greater area increase from control.
- Leading project on highly aligned (anisotropic) interwoven skin graft grown from hDFs.
- Mentoring, managing, and training two undergraduates and a high school student to assist with work.
- Major contributor to:
  - Bioreactor for mass cell culture of multiple extracellular matrix (ECM) samples.
  - Characterization of different cardiac fibroblasts (Pri-CF, hiPSC-CF) on anisotropic scaffolds.
  - Studying cell migration depending on porosity of the scaffold.

August 2023 - May 2024 (CREDITS)

- Designed and fabricated Silicon wafers for scaffold polymerization in KLayout (GDSII editor) and Solidworks.
- Learned Cell Cultures, IF staining, PDMS/Si wafer protocol, and developing protocol for testing “stretch” in ECM samples.

Skills: Solidworks, KLayout, Cell Cultures (hDF, hiPSC, hMSC, CF), DNA assay, IF staining, Zeiss AxOb5 scope, R figures/stats, Mentorship, Experimental Design

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Grant Funded Research Intern | UPMC Children’s Hospital of Pittsburgh
May, 2023 - August, 2023 (PAID)
Performed Kidney/Bladder/UTI research in the department of pediatrics and the department of nephrology through the SRIP (Student Research Internship Program) provided by UPMC Children’s Hospital of Pittsburgh, University of Pittsburgh, and a PHS Grant. Poster is on LinkedIn.

- Did small animal (rat) work including maintenance, gowning, sample collection, and asphyxiation.
- Paraffinized samples, microtomes, and performed IHC stains co-stains along with morphological stains (H&E).
- Developed a rudimentary cell counting neural network for IHC stains in my free time.

Award: Awarded a travel grant to ASN Kidney Week that totaled $3000 as a result of my research in addition to membership in the American Society of Nephrology.
Skills: Laboratory Safety, IACUC Clearance, Immunohistochemistry, Microtomy, Hematoxylin & Eosin stains, Leica DMi8 scope, Small animal work (rat).

Store Associate | CVS Pharmacy
October, 2021 - February, 2022 (PAID)
Worked as a cashier and general store associate at my local CVS.

Skills: Customer service, Communication, Conflict Management

Emergency Room Clinical Volunteer | CHI St. Joseph Health
January - May, 2023
I volunteered at the St. Joseph Health E.R. in College Station. My tasks mainly consisted of turning over used rooms quickly, responding to patient needs (within my scope), and taking vitals when necessary.

Skills: Patient Care, Vital Signs, Communication

Education:
Bachelors of Science in BME | Texas A&M University College of Engineering (TAMU)
August 2022 - Present
Biomedical Engineering student within the Craig and Galen Brown Engineering Honors program through the President's Endowed and National Merit Recognition Scholarships.

- Medical Journaling at A&M (MJAM) - Vice President
- Korean-American Science and Engineering Association (KSEA), Biomedical Engineering Society (BMES), American Medical Student Association (AMSA)

GPA: 3.4 (unweighted) - 112 Credit Hours (Fall 2022 - Summer 2024 semesters)

High School Diploma | Pine-Richland High School (PRHS)
August 2018 - June 2022

- Varsity tennis team & Track and Field Starter
- Pittsburgh Youth Symphony Orchestra (Cello), High School Orchestra (Cello 1st chair), PMEA All State (Cello)
- Ski & Board Club (Officer), National Honors Society, Anatomy Club

GPA: 3.9 (unweighted) - 12 AP courses (AP Scholar with Distinction)

Awards:
Kidney STARS Travel Award | American Society of Nephrology (ASN) & NIDDK
November 2023
A travel stipend and complimentary attendance to 2023 ASN Kidney Week, the world's premier nephrology meeting.

President Endowed Scholarship | TAMU
August 2022
Merit based scholarship that offers a stipend for 4 years to high school seniors attending TAMU.

National Merit Recognition Scholarship | TAMU
July 2022
Scholarship recognizing national merit status that provides a stipend for four years

Non-resident Competitive Scholarship Tuition Waiver | TAMU
July 2022
A tuition waiver that allows competitive out-of-state students to pay in-state tuition.

Technology & Student Association Teams State Champions | PRHS
September 2021
Placed 1st in Pennsylvania and 3rd Nationally in a competitive engineering competition.

Projects:

Knockout muscarinic acetylcholine receptor subtype M3 in mice as a model for urothelial injury due to neurogenic bladder

May, 2023 - July, 2023 (PAID)

Objective: Characterize urothelial injury in Chrm3-/- mice

- H&E and IHC stains were used for morphological and protein expression characterization, respectively.
- IHC utilized KRT5/14/20, UPK, and Ki67.

Crowd counting CNN model for counting cytoplasmic fluorescent stains

July, 2023 (personal)

Objective: Utilize CNN (Convolutional Neural Network) to count cytoplasmic IHC stains that current neural network cell counters struggle to process.

- For the general (cytoplasmic & nucleic) model MAE = 79.8 (n = 58) for cell counts of ~400 per image.
- Lower cell count images fared better: ie. an image with 62 cells had a prediction of 60 cells.

Nourish App (Buildspace)

June, 2024 - Present (personal)

Objective: Provide a restaurant finding service with modern features and custom LLMs (Large Language Model) for those with dietary restrictions/preferences.

- Frontend: React Native, Typescript, Javascript, Kotlin, Swift
- Backend: Supabase, PostgreSQL, MongoDB

Relevant Coursework:

1st year:
August 2022 - May 2023
General Chemistry I/II (CHEM 119/120), General Biology I/II (BIOL 111/112), Calculus I-III (MATH 151/152/251), Computation (Python) (ENGR 102). *Transfer Credit*: Programming I (CSCE 110), Newtonian Mechanics (PHYS 206), Intro to Psychology (PSYC 107)

2nd year:
August 2023 - May 2024
Human Physiology I/II (VTPP 434/435), E&M Physics (PHYS 207), Differential Equations (MATH 308), Organic Chemistry I/II (CHEM 227/237), Biostatistics (BMEN 250), Computing for BME (Solidworks/Python/Labview) (BMEN 207).

3rd year:
August 2024 - December 2024
Biochemistry I (BICH 410), Circuits, Signals, and Systems (BMEN 321), Biomedical & Health Data Science (BMEN 351), Biomechanics (BMEN 361).

4th year:
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Note: the above list is non-exhaustive and only includes some courses

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Miscellaneous:

Languages

Native/Bilingual proficiency in English and Korean.

Technical Skills

Microsoft Office, Solidworks, KLayout, Labview, Python, Git, Vim, Java, R, Rust, Typescript, Javascript, HTML5, CSS, React, Kotlin, Swift, C#, C/C++, Lua, Pytorch (CUDA), MatLab