Nicholas Scaperdas

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Objective

Bioengineer with 1.5 years of research experience looking to bring skills in engineering design, cell therapy, and experimental validation to develop novel technologies in a lab environment

Education

Northeastern University   Boston, MA

Bachelor of Science in Bioengineering, Minor in Computer Science   *Sept. 2020 – May 2024*

Concentration in Biomedical Devices and Bioimaging   *GPA: 3.9*

Experience

Temporary Research Assistant   Feb. 2025- Present

Mass Spectrometry Facility at Rutgers University   *Piscataway, NJ*

- Utilized Thermo Orbitrap and Bruker timsTOF LCMS to analyze samples for labs and companies across the US
- Executed experiments such as hydrogen deuterium exchange, protein structure identification, drug retention
- Prepared and analyzed up to 100 samples per day using techniques such as BCA protein assays for UV-vis spectroscopy, in-gel and on-bead protein digestion, peptide desalting on StageTip, HILIC, HPLC
- Presented and quantified mass spectrometry mass spectrometry data using Xcalibur, DIA-NN, Skyline

Research Assistant   May 2025 – Present

Niu Lab at Rutgers Biomedical Engineering Dept.   *Piscataway, NJ*

- Developed and tested over 30 formulations to create a hydrogel which balances conductivity, adhesiveness, toughness, and biocompatibility for use in electrochemical sensing technologies
- Assembled PCBs for electrochemical sensors and for testing gel impedance and frequency response
- Assisted with characterizing gel for manuscript publication, including SEM, mechanical testing, etc.

Bio-inspired Materials Researcher   Jan. 2023 – June 2023

George J. Kostas Research Institute for Homeland Security   *Burlington, MA*

- Formulated biocompatible hydrogels with pH-driven swelling and contraction while characterizing gel size and color change for up to 14-day periods using customized scripts in ImageJ software
- Designed and programmed a device which uses gravity-based flow to automate buffer exchange and modify the pH of the hydrogels' environment using an Arduino microcontroller and 3D-printed molds
- Prepared figures of size and color change and the buffer-exchange system for a publication in *Matter*

Upstream Process Development Co-op   Jan. 2022 – June 2022

Solid Biosciences   *Boston, MA*

- Maintained HEK293 and Vero cell lines while optimizing virus production and microcarrier attachment
- Prepared, managed, and gathered data on bioreactor environments for production of HSV and AAV for development of a viral-vector-based gene therapy targeted to treat Duchenne Muscular Dystrophy

Projects

Indoor Air Quality Monitor Capstone | *SOLIDWORKS, KiCad, Arduino, C++*   July 2023 - Dec. 2023

- Followed design process from ideation to assembly/testing of an indoor quality monitor for Maine residents
- Determined 10 sensors to use after multiple trade studies and then developed and implemented and electrical schematic in KiCad to construct a sensor which could upload data to a server over Wi-Fi for a 6-month period

Tatum Robotics Bracelet/Doorbell | *EasyEDA, C++, Github*   Jan. 2023 – May 2023

- Designed a bracelet and doorbell combination for the Deaf-Blind with an interdisciplinary engineering team
- Developed a PCB for both components, including part specification, Bluetooth communication programming, schematic design, PCB routing, assembly via hand-soldering and solder paste, and circuit/device testing

Technical Skills

Skills: Mammalian Cell Culture, Mass Spectrometry, HPLC, 3D Printing, PCB Design, CAD, Soldering

Applications: ImageJ, Xcalibur, Skyline, SOLIDWORKS, Abaqus FEA, KiCad, Arduino, VSCode, Excel

Programming Languages: MATLAB, C/C++, Java, HTML, CSS, Python