ALEXANDER DORNBACK

(412) 925-1074 | acd2240@columbia.edu | https://www.linkedin.com/in/alexanderdornback/ |
https://github.com/alexanderdornback

WORK EXPERIENCE

Weill Cornell Medicine Dalio Institute — New York, NY
Research Engineer — Jul 2022 - Sep 2025

- Led new product development of a mechanical IR intubation robot
- Prototyped iterations in SolidWorks, 3D-printing, laser cutting, and casting for assembly
- Developed and maintained Python code for data acquisition and live performance assessment
- Designed and fabricated 3 mechanical test environments for a single-modal, multifunctional biosensor
- Built fluid dynamic tests for 60 segmented coronary arteries and ran CFD in tandem
- Automated data collection using LabVIEW and JavaScript to reduce runtime by 75%
- Collaborated with team of 5 to manage project finances, timelines, IRB protocols, and Design History File entries

Haima Therapeutics — Cleveland, OH
Formulation Scientist — Oct 2020 - Jun 2022

- Formulated 30 unique lipid nanoparticles and buffers in a cleanroom environment
- Authored over 200 batch records reporting outcomes from 4 separate functional assays
- Raised $3m in DARPA grant funding and developed SOPs for CMs in preparation
- Articulated and defended engineering decisions to 6-person scientist team and C-suite executives

PUBLICATIONS/PROJECTS

Jalal, S. et al. 3D-printed coronary arteries with realistic tissue-mimicking biomechanics
Submitted/In Review (2025)
Dornback, A. et al. Development of a semi-automatic intubation guide for difficult airway management. In Preparation (2025)
Jalal, S. et al. Development and use of a machine learning algorithm for prediction of tissue-mimicking biomechanics. In Preparation (2025)
Jalal, S. et al. Fluid dynamic assessment of 3D-printed coronary models with tissue-mimicking biomechanics to predict patient heart health. In Preparation (2025)
Annabestani, M. et al. Development of a single-modality, multifunctional biosensor. In Preparation (2025)

EDUCATION

Columbia University — New York, NY
MS, Mechanical Engineering, 3.9 — Expected Aug 2026
Robotics, Automation, and Controls Concentration

Case Western Reserve University — Cleveland, OH
Bachelor of Science, Biomedical Engineering — May 2022
Biomechanics Concentration; Minor, Music
Awards: Dean's High Honor List
Activities: Undergraduate Student Government Director of Information Technology (2019-2022), Biomedical Engineering Society (2019-2022)

LANGUAGE AND IT SKILLS

- Technical Skills: CAD (Solidworks, Autodesk), MATLAB, Python, LabVIEW
- Practices: Project Management, Scrum, Risk Management, Quality Control
- Certifications: Certified Solidworks Associate, CITI Training (Group 1)