

XIAOKUN DONG

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PROFESSIONAL SUMMARY

Innovative and committed chemical engineer with a Master's Degree, 3 years of industry experience, and 3+ years of academic research experience. I am a published author with pending a patent. I drive results by bridging technical capabilities and strong communication skills.

EDUCATION

Tufts University

09/2019 - 05/2023

• M.S. in Chemical Engineering: GPA: 3.87/4.00

• B.S. in Chemical Engineering: GPA: 3.84/4.00

SKILLS

Engineering	Process Design, Characterization, Optimization, and Validation, Drug Product Formulation, Experimental Design, Statistical Analysis, Reactor Design, Modeling, Machine Learning
Laboratory	Protein Purification, Protein Characterization, Viral Clearance, Bacteria Cultivation and Identification, BSL-2 Certified, Handling of Pressurized and Dangerous Gases
Equipment	AKTA (Column Chromatography), Filtration (UF/DF, Depth Filtration, Viral Filtration), Liquid Chromatography, Mass Spectroscopy (LC-MS), Anaerobic Chamber
Software	UNICORN, JMP, MS Excel, Word, PowerPoint, ASPEN, Arduino, Cytiva, Agilent
Languages	C++, Python, MATLAB, R, SQL, LaTeX
Spoken Languages	English, Chinese

TECHNICAL EXPERIENCE

Amgen

07/2024 - Present

Process Development Senior Associate in Biologics Drug Development

Cambridge, MA

- Optimize next-generation manufacturing processes of commercial biologic drug substances such as Repatha (>\$1B annual sales)
- Provide comprehensive operating conditions for 2 commercial biologic product purification processes to ensure safety, quality, and compliance with regulatory agencies, while maximizing productivity
- Design and conduct dozens of bench-scale protein purification experiments across multiple unit operations (ProA, CEX, AEX, MMA, VF, UFDF) to mimic the equivalent large scale conditions
- Perform statistical analysis on the results of the bench-scale experiment to elucidate the impact of different operating conditions on the quality and yield of the product
- Contribute to the company's pipeline development at various stages of development, such as pivotal commercial process development, process characterization, viral clearance study, process performance qualification support, and regulatory authoring
- Author both external regulatory submissions such as INDa filing and market application filing as well as internal report such as process characterization reports

Third Pole Therapeutics

09/2023 - 04/2024

R&D Chemical Engineer in Nitric Oxide Therapeutics (Bound by NDA)

Waltham, MA

- Engineered a proprietary nitric oxide delivery system to create a novel therapeutic with a potential global market of \$3.2B
- Built and optimized the generation system for the novel nitric oxide therapeutic and increased maximum potency by >100 times, surpassing all known and published metrics, distinguishing the therapeutic as a unique and competitive product
- Stabilized and extended the shelf-life of the therapeutic by a factor of >3000 times, which actualized the utility of the therapeutic, enabled further testing, and uncovered its clinical applications
- Discovered and brought on outside partners to complete 1 round of in-vitro and 2 rounds of in-vivo (n=20) experimentation of the therapeutic, which generated sufficient data to kick-start the fundraising phase
- Started fundraising effort from said in-vivo results and routinely presented to CEOs and board members of different companies
- Co-authored 3 provisional patent applications to protect the manufacturing design, process, and utility of the therapeutic

Lee Lab at Tufts University

05/2022 - 09/2023

Graduate Researcher in PTSD Therapeutics/Probiotic

Medford, MA

- Engineered a mucin-derived pre-biotic that alters the gut microbiome to mitigate PTSD symptoms
- Developed LC-MS/MS metabolomics analysis methods for neuroactive compounds, monosaccharides, and amino sugars, which provided critical insight to the output of the engineered microbiome
- Conducted computational metabolites flux balance analysis on *B. thetaiotaomicron* through genome scale modeling to discover potential metabolites and possibly reduce experimental burden
- Cultivated BSL-2 anaerobic bacteria cultures and performed targeted and untargeted metabolomic analysis with said methods to validate computational model and illuminate how mucin is metabolized

Lee Lab at Tufts University

10/2020 - 05/2022

Undergraduate Researcher in Microbiome Engineering

Medford, MA

- Aided in the discovery of flavanoids' microbial metabolic pathway through promiscuous enzyme activity to reduce inflammation
- Proved the lack of correlation between sequence and functional similarity through computational analysis on more than 10,000 enzymes in 5 organisms, thus giving a purpose to our published computational model

PUBLICATION

1. Gulsan, E., Nowshad, F., Yamaguchi, P., **Dong, X.**, Jayaraman, A., and Lee, K. (2023). A Chemical Reaction Similarity-Based Prediction Algorithm Identifies the Multiple Taxa Required to Catalyze an Entire Metabolic Pathway of Dietary Flavonoids. eLife.

PHARMACEUTICAL ENGINEERING PROJECTS

Pancreatic β -cell Encapsulation Alginate Scaffold

01/2022 - 05/2022

- Created a hydrogel that encapsulates photo-sensitive β -cell for Type II diabetes therapeutics to release insulin upon a light trigger
- Achieved material properties that mimics the human pancreas and excellent optical clarity to maximize trigger efficiency

Batch Synthesis for Bulk Aspirin Powder Production

01/2022 - 05/2022

- Designed a profitable batch process in ASPEN for USP grade aspirin powder production that amass over 500 tons annually
- Composed process flow diagram outlining the optimized specifications and operating conditions for process equipment
- Compiled a 40 pages design basis report that proposes the process with a comprehensive economical analysis which concludes a 15.3% annual discounted cash flow rate of return using an optimized Gantt Chart

VOLUNTEERING AND LEADERSHIP EXPERIENCE

Tufts Public Harmony

2019 - 2022

President

Greater Boston Area, MA

- Organized weekly service concerts at local care facilities to cheer up those in need, as well as concerts/workshops on Tufts campus
- Lead Weekly meeting that includes event planning, budgeting, facilitating communication between venues, university, and club members, and delegating and ensuring tasks are completed on time
- Won Tufts Community Connection Award 2021-2022