

JIATONG LI

Tel: (470) 9628118 | Email: jl6647@cumc.columbia.edu

Education

Columbia University

Major: Biostatistics

New York, NY

2023.08-Present

Emory University

Bachelor of Science

Major: Biological Science

Atlanta, GA

2021.07-2023.06

Sichuan University

Bachelor of Science

Major: Bioengineering

Chengdu, Sichuan, China

2019.09-2021.06

Research Experience

Determining heme metabolism in *Streptococcus pyogenes* through import of various surface proteins

Research Assistant

2021.10-2022.10

- Determined the CFU/ml coefficient in regards to OD600 for *Streptococcus pyogene* to serve as a standard for calculating bacteria harvested for end-point assays
- Determined the effects of removing the SiaFGH genes on gene expression including Shr and SiaA by Western Blot and rtPCR

Co-culturing genetically modified *C. minutissima* and *E. coli* for efficient biofuel production

Research Assistant

2022.07-2022.10

- Developed a synthetic biological system to increase lipid production in genetically modified microalgae to serve as an intermediate for chemical reactions creating biofuels.
- Established a co-culturing system using genetically modified *C. minutissima* and *E. coli*.
- Genetically engineered *E. coli* producing indole-3-acetic acid (IAA) to increase microalgae growth and genetically modified *C. minutissima* to express lipid-producing genes such as *glycerol-3-phosphate acyltransferase (GPAT)*, *lysophosphatidic acid acyltransferase (LPAAT)*, and *diglyceride acyltransferase (DGAT)* to increase lipid production.

Technology on using Phenylalanine ammonia-lyase (PAL) for enzyme replacement treatment of phenylketonuria (PKU)

Team Leader

2022.02-2022.10

- Established a biosynthetic method to produce the highly active FuPAL *enzyme* derived from *Fritillaria unibracteata* for the treatment of PKU.
- Designed and implemented an experimental protocol to clone the *PAL* gene by performing bioinformatics analysis, codon bias analysis, and expressing it in genetically modified *E. coli*.
- Expressed FuPAL protein at optimal levels by determining ideal induction conditions and characterized mutant protein function.
- Determined the effects of sodium alginate mass fraction and CaCl₂ concentrations on immobilized FuPAL enzymatic activity
- Performed orthogonal experiments to improve the immobilization process.

Hnoss—An effective way to cure stress-related and androgenetic alopecia

- Developed a synthetic product to promote hair growth and relieve stress-induced hair loss.
- Performed a literature review on the role of GAS6 protein in hair follicle stem cells and its involvement in stress-induced hair loss.
- Constructed a plasmid for the heterologous expression of GAS6 and EGF in *Bacillus subtilis*, including the introduction of a toxin-antitoxin system to address safety concerns.
- Combined the genetically modified *Bacillus subtilis* with a hydrogel material to create a hair care product attenuating stress-induced hair loss.

Aqueous two-phase droplet-templated alginate/calcium carbonate colloidal capsules via biomineralization

Research Assistant

2019.04-2020.05

- Fabricated a two-phase aqueous microfluidic device capable of producing uniformly sized gel microspheres using a high throughput single-pass approach and desirable colloidal capsules with improved biocompatibility compared to conventional methods.
- Optimized experimental conditions to improve the stability of the two-phase aqueous system.
- Prepared porous alginate/calcium carbonate colloidal capsules using the instillation method.
- Investigated the effects of different proteins on calcium carbonate coverage on the surface of calcium alginate microspheres.

Awards, Honors, & Scholarships

First Prize Winner, 2019 FLTRP Cup National English Writing Competition	2019
Second Prize Winner, 2019 FLTRP Cup National English Reading Competition	2019
Best Debater on Freshmen Debate Competition, College Debate Society	2019
The Third Prize Scholarship	2020
The Third Prize Scholarship	2021
Outstanding Student Leader	2020
Outstanding Student Leader	2021

Skills

Technical Skills: DNA extractions, protein purification, PCR, and bacterial culture.

Computer Skills: SAS, R.

Research Interests: Cancer therapy, tissue engineering, and regenerative medicine.

Standard Tests: TOEFL: 108 (R 30, L 29, S 22, W 27) GRE: 328 (V 162, Q 166, AW 4.0)