Sina Abedini

Biochemistry Master's Student at McGill University

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Research Interests

- Pharmaceutical Oncology
- Controlled Release
- Genetic Engineering
- RNA Vaccines
- Protein Biochemistry
- Combination Therapy
- Nanomedicine
- Cancer Immunotherapy
- Drug and Gene Delivery

Research Projects

Structural study of the bacterial magnesium transporter TtCorB by Fiducial-Assisted Cryo-EM Single Particle Analysis(SPA)

Fusion of an engineered thermostable variant of apocytochrome b562(BRIL) into target membrane protein

Nanodisc Technology

Expression and Purification of Prokaryotic CNNMs for Nanodisc Reconstitution

Education

Master of Science (M.Sc.) in Biochemistry

School of Biomedical Sciences - Department of Biochemistry - McGill University

September 2023 – Present Montreal, Canada

McGill University

- cGPA: **3.65/4**

Bachelors of Science (B.S.) Degree in Biotechnology

School of Biology - University of Tehran

September 2019 – August 2023 Tehran, Iran

University of Tehran Ranking

- Overall GPA: 18.69/20 (3.9/4)

High School Diploma in Natural Sciences

Mofid 2 High School

September 2016 – August 2019 Tehran, Iran

- Overall GPA: 19.65/20 (4/4)

Honors and Awards

- Grad Excellence Award in Biochemistry (2023)
- Awarded McGill University Full scholarship for graduate program in Biochemistry: tuition fully covered (2023)
- Ranked 3rd in Biotechnology class of 2023, qualified for direct entry to fully funded masters program at the University of Tehran (2022)
- Awarded University of Tehran Full scholarship for undergraduate program: tuition fully covered by the government (2019)
- Ranked top 0.5 percent of 700000 attendees of the nationwide natural sciences matriculation exam (2019)
- Ranked 7th out of 139000 participants in the nationwide English language matriculation exam (2019)

Teaching Experience

Teaching Assistantship

University of Tehran

September 2022 - Dec 2022 School of Biology

- **Biochemistry:** Dr.S.Safarian
  - Teaching the class topics from general and organic chemistry complementary to the biochemistry course
  - Reinforcing class lessons
  - Familiarizing the students with the course at hand
  - Answering student's questions
- **Specilized English texts:** Dr.V.Hassanzadeh
  - Familiarizing students with the overall structure and writing style of textbooks and papers written in English
  - Practicing reading, speaking and writing in academic and scientific settings
  - Reinforcing class lessons
  - Answering student's questions
- **General Biology:** School of Mathematics and Computer Science
  Dr.R.Naderloo
  - Teaching the students basic concepts of biology and genetics with emphasis on the central dogma of molecular biology
  - Relating biological concepts to data structure and paving the way into the field of Bioinformatics
  - Answering student's questions

Highschool Tutoring

Mofid 2 High school

Sep 2022

- **Biology and Chemistry:**
  - Reviewing topics from first, second and final year of high school biology
  - Guidance counselling for preparation for the matriculation exam
  - Answering student's questions

Industry Experience

Internship at Quality Control Laboratory

Zist Darman Mahan Pharmaceutical Company

August 2022 Pardis Technology park, Tehran, Iran

biodep.ir

Zist Darman Mahan Company in partnership with industry leaders of the production of probiotic supplements (Zist Takhmir Co.) and with the aim of achieving technical knowledge of probiotic supplement production for livestock, poultry and aquatic animals, began its research and development activities in 2010.
After achieving the technical knowledge to produce these products and isolating and registering probiotic microorganisms from native resources; the company was established with the objective of industrial production in 2014.
The internship provided the following experiences:

- Familiarization with different lab equipment, lab procedures, SOP structures and Good Laboratory Practice
- Familiarization with microbial culture mediums, cell counting and differential Quality control tests
- Familiarization with the overall process of production, purification and packaging of probiotic pharmaceutical products

Laboratory Skills

- Bacterial & Animal Cell Culture
- Protein Expression & Purification
- Gel Electrophoresis/SDS-PAGE
- Bacterial Transformation
- PCR
- SEC/FSEC
- Nanodisc preparation
- Molecular Cloning
- Gibson Assembly
- Primer Design
- Plasmid Preparation
- ELISA

Related Coursework

Graduate Coursework

Structural Pharmacology: (PHAR505) 3/4	**Protein Biology and Proteomics:** (BIOC605) 4/4

Undergraduate Coursework

Nanobiotechnology: 18.5/20 (4/4 GPA)	**Organic Chemistry:** 18.75/20 (4/4 GPA)	**Structural Biochemistry:** 18.75/20 (4/4 GPA)
Metabolism Biochemistry: 19.5/20 (4/4 GPA)	**Calculus 1:** 19.9/20 (4/4 GPA)	**Calculus 2:** 17/20 (4/4 GPA)
Biostatistics: 16/20 (4/4 GPA)	**Biochemical Engineering:** 19.3/20 (4/4 GPA)	**General Chemistry 2:** 17.4/20 (4/4 GPA)
Molecular Genetics: 18.12/20 (4/4 GPA)	**Principles of Genetic Engineering:** 19.2/20 (4/4 GPA)	**Cell and Molecular Biology:** 15.75/20 (3/4 GPA)
Microbial Physiology: 20/20 (4/4 GPA)	**Large Scale Production:** 19.5/20 (4/4 GPA)	**Immunology:** 18.5/20 (4/4 GPA)
Virology: 20/20 (4/4 GPA)	**Cell and Tissue Culture:** 17.5/20 (4/4 GPA)	**Medical Biotechnology:** 19.5/20 (4/4 GPA)
Animal Biology and Physiology: 19.9/20 (4/4 GPA)	**Computer Programming and Data Structure:** 17.5/20 (4/4 GPA)	**Basic Genetics:** 18.8/20 (4/4 GPA)
Stem Cell Biotechnology: 20/20 (4/4 GPA)	**Biomaterials and Tissue Engineering:**20/20 (4/4 GPA)	**Bioinformatics:** 18.5/20 (4/4 GPA)

Selected presentations

Zolgensma®

Presentation on the structure and mechanism of action of the gene therapy drug Zolgensma used in the treatment of SMA patients

May 2023 — Human Genetics and Genetic Engineering Courses

view

CRISPR-Cas

Presentation on the discovery and utilization of CRISPR-Cas technology

May 2022 — Virology Course

view

Mechanical Forces in Tissue Engineering

Presentation on Mechanical Modulation of Cell Function in Tissue Engineering

Jan 2023 — Biomaterials and Tissue Engineering Course

view

Homologous Recombination

Team presentation on DNA damage repair by mechanism of Homologous Recombination

Nov 2021 — Molecular Genetics Course

view

Vascular Endothelial Growth Factor

Presentation on the biological role of Vascular Endothelial Growth factor (VEGF)

Jan 2021 — Molecular Genetics Course

view

Microbiologically Influenced Corrosion

Presentation on the economic damage of corrosion and the role of microorganisms in induction or acceleration of corrosion

Jul 2022 — Microbial Biotechnology Course

Language Skills

- **English:**
  - TOEFL: **113**
  (Reading: 30, Listening: 29, Speaking: 30, Writing: 24)
  - GRE: 312
  (Verbal: 155, 66th percentile,Quantitative: 157, 57th percentile)

Computer skills

- **Microsoft Suit:**
  Powerpoint, Word, Excel
- **Programming:**
  Python
- **Analysis Tools:**
  SPSS, PyMOL, SnapGene, AlphaFold

Supervisor

- **Dr. Kalle Gehring,**
  kalle.gehring@mcgill.ca
  Lab Website
  Professor, Department of Biochemistry,
  Canada Research Chair (Tier 1) in Structural Studies of Neurodegenerative Diseases,
  Associate member, Department of Physics,
  McGill University