Timothy Liao

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Experience

Software Engineer II – Bioinformatics July 2022 - January 2024
BenchSci (Scinapsis Analytics Inc.) *Toronto, ON (remote)*

- Developed and maintained ETL/ELT data processing for ingestion and normalization of various diverse external biodata databases
- Evaluated external third party data sources in support of company objectives and assessed quality of data by employing data exploration and visualization tools
- Implemented robust data quality checks within ETL/ELT workflows to ensure accuracy, consistency, and completeness of processed data
- Engineered effective data models and schemas to support data integrity and facilitate seamless integration with downstream applications

Associate Scientist II *formerly Associate Scientist I* Nov 2020 - July 2022
Hyasynth Biologicals Inc. *Montréal, QC*

- Engineered several key enzymes for improved functions using high-throughput workflows culminating in inventorship on 2 patent applications
- Developed computational methods for high-volume protein engineering assay data analysis
- Established bioinformatic methods for analysis of next-generation sequencing data
- Strengthened company's IP portfolio by preparation of patent applications
- Led protein engineering initiatives requiring coordination across several junior researchers and weekly communications with stakeholders

Research Associate II *formerly Research Associate I* May 2018 - Nov 2020
Hyasynth Biologicals Inc. *Montréal, QC*

- Demonstrated cannabinoid drug production in a heterologous expression system
- Optimized protocols for high-throughput construction of mutant libraries
- Developed high-throughput enzyme assays that were used for protein engineering studies

Graduate Researcher Jan 2014 - May 2016
Molecular Genetics, University of Toronto *Toronto, ON*

- Produced photoreceptors and RPE cells from mammalian retinal stem cells using molecular signalling to direct differentiation in mammalian cell culture

Undergraduate Researcher May 2011 - Aug 2013
Biological Sciences, Genetics, University of Manitoba *Winnipeg, MB*

- Completed Honours thesis characterizing UV-damaged DNA repair in *Arabidopsis thaliana* by analyzing protein interactions using various molecular biology techniques

Skills

Bioinformatics: Biopython, Pymol, NCBI BLAST, Galaxy, Bioconductor
Languages: Python, SQL, R
Developer Tools: Git, VS Code, Visual Studio, PyCharm, Jupyter Notebooks, Google Colab
Cloud Technologies and Data Processing: Google Cloud Platform (GCP), Google BigQuery, Apache Beam, Snakemake
Data Science Libraries: pandas, NumPy, Matplotlib, scikit-learn, Plotly
Molecular Biology: CRISPR/Cas9 gene editing, recombinant DNA cloning, site-saturation mutagenesis, DNA sequencing analysis, high-throughput library construction, assay development, ELISA

Education

McGill University — Montreal, QC
Master of Science (Applied), Biotechnology — *2017 – 2019*

University of Manitoba — Winnipeg, MB
Bachelor of Science (Honours), Genetics — *2009 – 2013*

Patents

Liao, T. S., Song, L., Hom, L., Curtis, W., Furlong, D., Melgar, M., & Bhargava, D. (2022, May). *Olivetolic acid cyclase variants with improved activity for use in production of phytocannabinoids* (WO2022104460A1). https://patents.google.com/patent/WO2022104460A1

Song, L., Liao, T. S., Walton, C., Hom, L., Melgar, M., Furlong, D., Bhargava, D., Palys, S., & Bourgeois, L. (2022, May). *Cannabidiolic acid synthase variants with improved activity for use in production of phytocannabinoids* (WO 2022104460A1). https://patents.google.com/patent/WO2022104468A1

Publications

Ly, V., Collister, D. T., Fonseca, E., Liao, T. S., & Schroeder, D. F. (2015). Light and cop1 regulate level of overexpressed det1 protein. *Plant Science*, *231*, 114–123. https://doi.org/https://doi.org/10.1016/j.plantsci.2014.11.011

Honours and Awards

- CIHR Frederick Banting and Charles Best — 2015-2016
  Canada Graduate Scholarship – Master's level
- The Stella Zegas-Dunn Graduate Fellowship in Vision Science — 2014–2015, 2015 - 2016
  Vision Science Research Program
- NSERC CREATE in M3 Scholarship — 2014 - 2015
- Faculty of Science Undergraduate Research Award — Summer 2011, 2012, 2013
- University of Manitoba Merit Award — 2012 - 2013
- University of Manitoba Student Union Scholarship — 2012 - 2013
- First Class Dean's Honour List — 2009 - 2013