Tran, Dinh Quang Loc (Loci)

Email: locitran0521@gmail.com
Current position: Research Assistant,
Computational Biology Lab, National Tsing Hua University, Taiwan

RESEARCH INTEREST

Computational biology with a focus on protein dynamics, protein function, and machine learning (ML/AI). Experienced in developing deep learning models for pathogenicity prediction. Strong interest in combining ML with molecular dynamics (MD) simulations, protein design, and drug discovery.

EDUCATION

MS in Life Sciences and Medicine | National Tsing Hua University, Taiwan 2024

GPA: 4.16/4.3

Relevant courses: Computational Biology; Molecular Simulation and Modelling I&II; Statistics and ML I&II

Dissertation: TANDEM-DIMPLE: Transfer-leArNing-ready and Dynamics-Empowered Model for DIsease-specific Missense Pathogenicity Level Estimation.

BS in Biotechnology | HCM University of Science, Vietnam 2020

GPA: 3.05/4.0

Relevant courses: Calculus; Probability&Statistics; Biochemistry; Genetics Engineering; Chemistry I&II&III

Dissertation: Improved fermentation efficiency for rhPDGF-BB production by methanol pulse method.

RESEARCH EXPERIENCE

Research Assistant | Dr. Lee-Wei Yang's lab 2024 - Present

Institute of Bioinformatics and Structural Biology, National Tsing Hua University, Taiwan.

Project: "AI-Aided Variant Interpretation for Precision Medicine in Hereditary Hearing Impairment".

- Developed a modular, automated *Python* package for **pathogenicity prediction of missense variants.**
- Developed a **web server** using *Gradio* and *MongoDB* to enable users access to TANDEM-DIMPLE.

https://dyn.life.nthu.edu.tw/TANDEM/ https://github.com/locitran/tandem-dimple

MS Student | Dr. Lee-Wei Yang's lab 2022 - 2024

Institute of Bioinformatics and Structural Biology, National Tsing Hua University, Taiwan.

Project: "Developing a pathogenicity prediction platform for *GJB2* variants using molecular dynamics-based analysis".

- Developed a **deep neural network** model using diverse features (sequence, structure, and dynamics).
- Applied **transfer learning** to fine-tune the general model for **disease-specific prediction**.

BS student | Dr. Tri-Nhan Nguyen's lab 2019 - 2020

Department of Biology and Biotechnology, HCM University of Science, Vietnam

Project: "Research and Development of a Dosage Form for Chronic Wound Treatment Based on Recombinant PDGF-BB Protein"

- Optimized large-scale fermentation of recombinant PDGF-BB in *Pichia pastoris*.
- Developed a methanol pulse induction strategy based on dissolved oxygen (DO) monitoring.

PUBLICATIONS

1. **Loci Tran**, Pei-Lung Chen, Cheng-Yu Tsai, Chen-Chi Wu, Lee-Wei Yang. “Predicting the pathogenicity of SAVs Transfer-leArNing-ready and Dynamics-Empowered Model for DIsease-specific Missense Pathogenicity Level Estimation” (in preparation).
2. **Loc TDQ,** Nghia LT, Lac TH, Xuan TMH, Nhan NT (2020): "Production of rhPDGF-BB from *Pichia pastoris* in 7.5-L and 25-L fermentation scales", Vietnam Journal of Biotechnology, (12) 457-462.

PRESENTATIONS

1. **Loci Tran**, Lee-Wei Yang. “Predicting the pathogenicity of SAVs Transfer-leArNing-ready and Dynamics-Empowered Model for DIsease-specific Missense Pathogenicity Level Estimation”. TSC2025 AI Application Competition, Taiwan (2025).
2. **Loci Tran**, Lee-Wei Yang. “Predicting the pathogenicity of SAVs Transfer-leArNing-ready and Dynamics-Empowered Model for DIsease-specific Missense Pathogenicity Level Estimation”. Smart Computing Forum. Taipei, Taiwan (2025).
3. **Loci Tran**, Cheng-Yu Tsai, Chen-Chi Wu, Lee-Wei Yang. “Establishing a prediction platform for the pathogenicity of GJB2 variants using molecular dynamic simulation and machine learning”, 113th Annual Joint Research Project Results Presentation and Cooperation Matching Meeting Agenda with National Tsing Hua University. Hsinchu, Taiwan (2025).
4. **Loci Tran**, Lee-Wei Yang. “Pathogenicity Prediction of Missense Variants by AI”. OU-NTHU symposium. Hsinchu, Taiwan (2024).
5. **Loc TDQ,** Nghia LT, Lac TH, Xuan TMH, Nhan NT. “Production Of rhPDGF-BB from *Pichia Pastoris* in 7.5-L and 25-L fermentation scales”. Vietnam Journal of Biotechnology. Hue, Vietnam (2020).

TEACHING ASSISTANT

Introduction of Machine Learning I, National Tsing Hua University, Taiwan.	2023
Computational Biology, National Tsing Hua University, Taiwan.	2024
Series of 4 workshops about Transformer and its relation	2024-2025