Jingkai LAN

PERSONAL INFORMATION

Name: Jingkai LAN **Email:** jingkai.lan@students.unibe.ch **Personal website:** lanrem-ljk.github.io

EDUCATION BACKGROUND

University of Bern (Master) —— **SWITZERLAND** September 2023 - February 2026

Major: Bioinformatics and Computational Biology Overall Grade: 5.0 / 6.0

Shihezi University (Bachelor) —— **CHINA** September 2019 - June 2023

Degree: Bachelor of Science in Biological Science GPA: 3.64 / 4.0

SKILL

Language Proficiency: English; Chinese

Computer skills: Python, R, Bash, HPC, Deep learning, Machine Learning, NGS analysis, Data analysis.

Experiment skills: Nucleic Acid Extraction, Gel electrophoresis, PCR, Spectrophotometer, Clean bench.

RESEARCH PROJECTS

Advancing metal-binding protein predictions with deep learning February 2025 - September 2025

Thomas Lemmin Lab, IBMM, University of Bern —— ***Master's thesis***

- Metalloprotein annotations remain incomplete in major biological databases (e.g., PDB, UniProt).
- Developed and trained multiple deep learning and machine learning models using sequence-only inputs to predict metal-binding proteins and infer enzyme-related functional properties, aiming to reduce the cost of experimental and manual annotation.
- Integrated existing metalloprotein resources and introduced an innovative strategy combining curated data with in silico mutagenesis (ProteinMPNN) to construct a specialized metalloprotein database.
- Performed stringent database cleaning and quality control by leveraging metal-binding site information together with structure prediction tools (e.g., ESM, CHAI1).
- Using sequence-only inputs, the trained models achieved performance comparable to leading approaches on this task (including methods that leverage structural information or engineered features), without requiring extensive feature engineering.

NeurIPS – Open Polymer Prediction 2025 June 2025 - September 2025

University of Notre Dame —— ***NeurIPS 2025 competition track***

- Addressed data limitations in polymer discovery by developing models to predict key polymer properties directly from chemical structures.
- Trained machine learning models using SMILES-only inputs to predict target polymer properties.

- Extracted molecular graph features and fingerprints with RDKit; applied multiple approaches including XGBoost, LightGBM, and ChemBERT, with systematic hyperparameter optimization.
- Achieved a top 30% ranking on the final leaderboard.

Diversity of Peach Tree Viruses in Xinjiang, China November 2021 - August 2022

Baiming Cui Lab, Shihezi University —— Bachelor's Thesis

- Conducted bioinformatics analysis of metatranscriptomic data from *Prunus persica var. compressa* leaf samples collected in the Shihezi region to identify viral species.
- Profiled viral abundance and distribution patterns across samples.
- Performed phylogenetic analyses to characterize genetic relationships among detected viral strains.
- Identified multiple peach-associated viruses and investigated their genetic diversity and evolutionary status in Xinjiang, providing evidence to support local peach disease management.

Morphological and Molecular Survey of Bat Species in Shihezi, Xinjiang November 2020 - August 2021

Abduriyim Shamshidin Lab*, *Shihezi University —— Mini project

- Collected naturally deceased bats in the Shihezi region (Xinjiang) and conducted morphological identification.
- Extracted genomic DNA from muscle tissue samples.
- Amplified mitochondrial ND1 and Cyt b genes via PCR and performed sequence alignment against the NCBI database.
- Confirmed species identity as Pipistrellus pipistrellus and provided the first combined morphological and molecular evidence for its presence in the region.

Publication : Morphological and molecular confirmation of the common pipistrelle bat, *Pipistrellus pipistrellus* Schreber, 1774 (Vespertilionidae: Chiroptera), in Xinjiang, China.
Abduriyim, S.*, Kasimu, T., **Lan, J.**, Pu, Z., Bai, J. & Wang, Y. (2022).
Mammalia, vol. 86, no. 3, pp. 298–302. DOI: doi.org/10.1515/mammalia-2021-0045

PRIZES AND AWARDS

Excellent Graduate (one of the seventeen award-winners among 180 students) December 2022

*** Summer Camp Excellent Participant Award, ShanghaiTech University** July 2022

First-class scholarship in the university (one of the five receivers among 104 students) December 2021

** ('Summer Camp' means admission program of China university, offering excellent students exemption from postgraduate entrance exams.)*