

## PERSONAL INFORMATION

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## 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 ranking within the top third of 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](https://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.)