

SHAOGANG LI

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EDUCATION

South China University of Technology, China	Pharmacy (Master)	2021 –2024
Guangdong Pharmaceutical University, China	Biopharmaceutics (Bachelor)	2016 –2020

PUBLICATIONS

- Li, S\*, Lin, Y\*, Su, F\*, et al. (2025). Comprehensive evaluation of the impact of whole-genome bisulfite sequencing (WGBS) on the fragmentomic characteristics of plasma cell-free DNA. *Clinica chimica acta; international journal of clinical chemistry*, 566, 120033. <https://doi.org/10.1016/j.cca.2024.120033> (\*Co-first Author, SCI Q2,)
- Wang, X\*, Li, S\*, Ou, R\*, et al. (2025). Wide-spectrum profiling of plasma cell-free RNA and the potential for health-monitoring. *RNA biology*, 22(1), 1–15. <https://doi.org/10.1080/15476286.2025.2481736> (\*Co-first Author, SCI Q2)
- Zhang, Y., Liu, J., Basang Z., Yang, Q., Chen, S., Li, S., Lei, C., Fang, M., Liu, H., Jin, X., & Wang, Y. (2025). Shared genetic features inference among hypoxia-ischemia diseases in the presence of heterogenous omics data based on a novel risk assessment method. *Frontiers in Genetics*, 16, 1587854. <https://doi.org/10.3389/fgene.2025.1587854> (CRedit: Formal Analysis, SCI Q2, in press).

RESEARCH EXPERIENCE

Development of cell-free RNA (cfRNA) Sequencing Bioinformatics Pipeline Dec 2022 – Jun 2023

- **Goal:** To establish an optimized bioinformatics workflow for analyzing cfRNA data while collaborating with the experimental team on the development of the novel in-house library preparation method.
- **Methods:** Evaluated and integrated bioinformatics tools (e.g., STAR, Samtools, DESeq2, FASTP, featureCounts, seqtk, bbduk); Defined QC metrics; Critically analyzed sequencing data from iterative technology optimization trials, providing timely feedback to guide protocol refinement;
- **Outcome:** Successfully developed and deployed a customized cfRNA analysis pipeline used in subsequent research.

cfRNA Transcriptome & Fragment Analysis in a Natural Population Cohort May 2023 – Oct 2023

- **Goal:** To characterize the plasma cfRNA landscape and identify potential health monitoring biomarkers.
- **Methods:** Applied a self-developed pipeline for end-to-end analysis including data processing, characterization of diverse cfRNA features (composition, size, origins via deconvolution), and assessment of individual variance for potential health monitoring signatures.
- **Outcome:** Contributed key bioinformatics analyses characterizing diverse cfRNA profiles and their health monitoring potential, resulting in a co-first author publication in RNA Biology.

cfDNA Fragmentomics in Pregnant Women's Plasma Jan 2024 –Oct 2024

- **Goal:** To systematically evaluate the impact of WGBS on cfDNA fragmentomic features compared to WGS.
- **Methods:** Utilized Linux tools, Shell scripting, and R for comparative analysis of fragment size distributions, end-motif patterns, coverage of Key sites (TSS/CTCF) of transcriptional regulation, GC bias, and fetal fraction estimation between paired WGS and WGBS datasets. Developed custom analysis scripts.
- **Outcome:** Led the bioinformatics analysis and contributed significantly to manuscript writing, resulting in a first-author publication in Clinica Chimica Acta.

WORK EXPERIENCE

Sanofi Pasteur, Shenzhen, China Vaccine Quality Analysis Technician Jul 2020 – Jul 2021

- Conducted a variety of immunoassays and virological tests for vaccine quality control and efficacy assessment within a BSL-2 level laboratory under GMP environment.
- Performed Single - Radial Immunodiffusion (SRD) for detection of hemagglutinin content in influenza vaccines and participated in SRD test method durability testing.
- Executed Enzyme - Linked Immunosorbent Assay (ELISA) for determination of antibiotic residues and ovalbumin content.
- Proficient in Chicken Embryo Passage Culture & Hemagglutination Inhibition Assay for verification of virus lysis and determination of virus infection titer.
- Contributed to drafting of quality standard documents for experimental reagents.
- Adhered strictly to SOPs and GMP guidelines, ensuring accurate experimental results and meticulous record-keeping (Awareness of Good Laboratory Record - writing Norms).

- Managed instrument and equipment, materials, and maintained document control according to industry standards.
- Received comprehensive on-the-job training in Health, Safety and Environment (HSE) Awareness, Experimental Skills Training, Document Control, Laboratory Record Management, and Regulatory & Legal Training.

## SKILLS

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- **Bioinformatics Analysis:** cfDNA/cfRNA Fragmentomics, RNA-Seq (Transcriptomics), WGS/WGBS Data Analysis, Pathway Enrichment, NGS Data QC & Processing, Bioinformatics Pipeline Development & Validation.
- **Programming & Software:** R (rbase, tidyverse, ggplot2, DESeq2, etc.); Python (Basic scripting, numpy, Pandas); Linux & Shell Scripting; Commonly used bioinformatics analysis software (Samtools, Bedtools, BWA, HISAT2, STAR, featureCounts, DESeq2, Fastp, Qualimap, etc.); MS-office (WORD, POWERPOINT, EXCEL); Adobe Illustrator.
- **Laboratory Techniques:**
  - **Cell Culture:** Aseptic operations (culturing, sub-culturing, medium changing of human squamous carcinoma cells), Microscopic cell counting.
  - **Genetic Engineering:** DNA extraction, plasmid extraction, PCR of target genes, Preparation and transformation of competent cells, Expression and screening of engineered bacteria.
  - **Biological Separation Engineering:** SDS - PAGE electrophoresis, Agarose gel electrophoresis, Western Blot, Protein purification by Ni - column affinity chromatography.
  - **Antigen Quantitative Analysis:** ELISA.
  - **Pharmaceutics:** Preparation of emulsions (two-phase alternate addition).
  - *(From Sanofi Experience):* Single - Radial Immunodiffusion (SRD), Chicken Embryo Passage Culture, Hemagglutination Inhibition Assay.
- **Languages:** Mandarin (Native), English (Proficient - CET-6: 500 of 710; Actively preparing for IELTS examination, targeting overall 6.5+ ).