Zhang Ziyang (Dr./Mr.)
AI-Guided Computational Biomedicine & Decision Intelligence

张与阳

| **Email** z_zz@u.nus.edu | **Mobile** +86-19894359122, +65-89428966 | Changsha, Hunan, China |

Education

- **Doctor of Philosophy,** National University of Singapore. *Biomedical Engineering* (under Assoc. Prof. Raye Yeow), *Pharmacy and Pharmaceutical Sciences* (under Prof. Pastorin Giorgia). Aug **2020** – Dec **2024**
- **Bachelor of Science,** Huazhong University of Science and Technology. *Chemistry*. Supervisors: Prof. Zhao Qiang, Prof. Liao Rong-zhen, Prof. Gong Yuefa, Prof. Zhu Lihua, Prof. Chen Yu. Aug **2016** – Jun **2020**

Professional Experience

- **Founder & CTO,** Changsha Jue-Ming Technology Co., Ltd. *Elephenotype* (App & Web), March **2025** – Present
    - o Compliance: Internet Compliance Program; Value-Added Telecom; Product Safety Boards.
- **Peer Reviwer**, *Journal of Chemical Theory and Computation (ACS)*, IF=5.5. July **2021** – Present
- **Joint Ph.D.,** Pathnova Laboratories, Temasek Life Sciences Laboratory (under Dr. Ian Cheong); National Cancer Centre Singapore, Duke-NUS Medical School (under Assoc. Prof. Melvin Chua). Aug **2020** – Nov **2022**

Internship Experience

- Biomap; Taikang Insurance Group Inc; Beijing JuCreate Network Technology Co.,Ltd. during Ph.D.
- Uni. of Science and Technology of China, Technical Institute of Physics and Chemistry (C.A.S.). during B.Sc.

Publications

- 3D Bio-Printing and AI-assisted Biomaterial Discovery for Diabetic Wound Care. *NUS PhD Dissertation.* **2024**
- Qualitative Artificial Intelligence and Quantitative Computational Chemistry for Personalized Diabetic Wound Healing. *Cell Reports Medicine.* 1st author, submitted **2025** *BES 17th*. 1st author, **2024**
- 3D Bio-Printed Light-curable XXX-Hydrogel for Diabetic Foot Wound Management. 1st author, in preparation
    - o Multi-center biomedical knowledge interfaces, encompassing PubMed Central, Web of Science; miRTarBase; UniProt; DrugBank; ChEMBL, PubChem. Formed disease-field search engine.
    - o LLM (GPT) for NER & RE to form miRNA–protein–drug knowledge graphs and candidate lists.
    - o HPC workflows (PBS/Slurm) linking docking, molecule dynamics (GROMACS), Quantum Chemistry (ORCA, Gaussian 16), and wavefunction analysis (PSI4/Multiwfn) to evaluate protein–small-molecule binding/stability in diabetic-wound microenvironments.
    - o Wet-lab validation on Fibroblasts and Keratinocytes for wound cell proliferation and migration.
    - o Clinically translatable light-curable hydrogel formulations and printable parameter windows.
    - o Dynamic Mechanical Analysis tests, HPLC conditions optimization, and drug-loading stability/release profiling to map 3D bio-printing parameters to performance.
- Diary to Dashboard: Supporting Self-Reflection in Long-Term Chinese Social Media Writing, *CHI* **2026** 1st author, submitted
- WePubBench: Personal Informatics for Rapid AI-Agent Training and Deployment, *The Web Conference* **2026** 1st author, in preparation
    - o WeChat official account scrape and indexing for eight-year 800K Chinese characters database.
    - o Copilot-GitHub-assisted extraction and compliance checks in analytics CI/CD workflow.
    - o PEFT/QLoRA @Hugging Face personalized-tone mini-models for lightweight local deployment.
- Deep spatial representation learning of polyamide nanofiltration membranes. *Journal of Membrane Science.* 1st author, **2021**
    - o Database for interfacial polymerization of PA NF membranes.
    - o Gaussian-derived monomer features; vibration-matrix enhanced sampling under perturbations.
    - o End-to-end machine learning for flux/rejection multi-objective prediction and SAR analysis.
- Enhancing X-ray Radiotherapy Sensitization with Multifunctional Nanoparticles. *Small.* co-corresponding author, **2024**
    - o Systematic review of X-ray-responsive nanomaterials for combined modalities; mapped cross-scale characterization & simulation from material parameters to therapeutic effects.
- Scalable 2D Membranes for Near-perfect Separation of Hydrogenation/Dehydrogenation. *Nature Materials.* 2nd author, submitted **2025**
    - o Characterized membranes with Gaussian to support mechanistic analysis and screening strategies.

- IKBKE is a β-Catenin Kinase that Regulates Mesenchymal Stem Cell Differentiation. *Nature Communications*. 2nd author, submitted **2025**
- IKKε Inhibitor Amlexanox-induced Nephrogenic Diabetes Insipidus is Independent of IKKε Inhibition. 2nd author, in preparation
  - Integrated simulation: docking**,** MD **(**GROMACS**),** QC **(**Gaussian**),** wavefunction analysis **(**Multiwfn**)** to relate PPI/small-molecule interactions in MSCs to endocrine-related phenotypes.
- Clearance of senescent cells alleviates metabolic dysfunction-associated steatohepatitis. *EASL 2024*. 4th author
  - Used AlphaFold, MD (GROMACS), and selection tools (PyMOL, VMD) for structure–dynamics characterization of PPI; supported mechanism hypotheses and epitope/site selection.
- Hydrogel Culture Techniques for Cancer Cells: Navigating from Monotypic Cultures to Complex Cultivation Strategies. *Biotechnology Advances*. 2nd Author, submitted **2024**, under review
  - Surveyed hydrogel material lineages, model-complexity gradients, and proposed experiment guides.
- Rapid SERS inspection of carcinogenic aromatic amines in textiles by using liquid interfacial assembled Author array. *Talanta*. 2nd author, **2021**
  - Combined machine learning with patent CN109596558B correction to enable rapid quality control and visualization for dye Raman spectra differentiation.
- UV-induced room temperature synthesis of microporous ladder polymers with efficient photosensitization. *Reactive & Functional Polymers*. 2nd author, **2019**
  - Achieved synthesis, verified high photosensitization and potential application scenarios.

Patents (translated from Chinese)

- An Innovative Method for Energy Storage Traction Launches Of Aircraft. *CN202211082861X*. 2nd author, filed **2023**, currently under substantive examination
  - Per XXX commission, conducted modeling and feasibility closure for an energy-storage traction launch process under XXX conditions for XXX energy-storage method and launch process.
- A Spectral Graph Fundamental Dimension Correction and Differential Analysis Method based on Moving Least Squares. *CN109596558B*. 1st author, granted **2020**
  - Per Hubei China Tobacco's quality control commission, deployed IR spectral cross-device dimension-drift correction, novel clustering, and differential analysis.
- A Device for Generating a Mixture of NaClO and NaOH Solution. *CN201520491798.4*. 1st author, granted **2016**
  - Designed a safe preparation/output device, improving suitability for small-scale, low-cost scenarios.

Software Copyrights (translated from Chinese)

- AI I-Ching Risk-Decision APP Design Software. *Registration No. 16146302*. original acquisition, full rights **2025**
- Ziwei Doushu Charting & Risk Decision System. *Registration No. 16412604*. original acquisition, full rights **2025**
- Xiaoliuren Charting & Risk Decision System. *Registration No. 16412742*. original acquisition, full rights **2025**
- BaZi Charting & Risk Decision System. *Registration No. 16412797*. original acquisition, full rights **2025**
- Hexagram (Liuyao) Charting & Risk Decision System. under review **2025**
  - Copyrights to start-up, *Elephenotype*.
  - Responsible for Python backend, UI/UX, LLM integration, and full compliance submissions.
- Hospital Outpatient Real-time EMR Voice Transcription; Hospital Meeting Real-time Minutes Transcription. submission in preparation
  - On-/Off-line ASR, LLM cleaning/structuring, compliant with in-hospital data security & traceability.

Other Select

- **Language:** Chinese (Mandarin) and English. *Native or bilingual proficiency*.
- **Collaborating**: School of Computing, Centre for Additive Manufacturing, Yong Loo Lin School of Medicine, Institute for Functional Intelligent Materials, *NUS*; Electrical and Electronics Engineering, *HUST*; Xiangya Medical School, *CSU*; National Supercomputing Center Changsha, *HNU*.
- **Membership:** Hunan Direct-Affiliated Calligrapher-Artists Association; Hunan Couplet Association; Changsha Literary Critics Association; Furong District Artists Association; Furong District Calligraphers Association.
  - *"Abstract"*, *"Newton"* series, in total of **33** works registered (*e.g.*, 湘作登字-2025-F-00098719).

LinkedIn	WeChat	ORCID	WhatsApp	GitHub

last updated
Sept 2025