

## RUOXUAN LI

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### EDUCATION

#### CASE WESTERN RESERVE UNIVERSITY

##### Ph.D. Biomedical Sciences Training Program

Cleveland, OH

Expected 2029

- Laboratory: Mark Jackson's Laboratory
- Tract: Cancer Biology Training Program (CBTP)

#### JOHNS HOPKINS UNIVERSITY

Baltimore, MD

##### M.S. in Biotechnology, concentration in Molecular Targets & Drug Discovery

May 2023

- GPA: 4.0/4.0.
- Relevant coursework: Biochemistry; Molecular Biology; Advanced Cell Biology; Cellular Signal Transduction; Biostatistics; High Throughput Screening & Automation Lab; Introduction to Bioinformatics; Bioassay Development; Molecular Targets and Cancer.

#### CHINA PHARMACEUTICAL UNIVERSITY

Nanjing, China

##### B.S. in Medicinal Chemistry

June 2021

- GPA: 91.40/100. Ranking: 3/118 in the School of Pharmacy

### RESEARCH EXPERIENCES & INTERNSHIPS

#### EARLY BIOMARKER DISCOVERY STUDY IN ALZHEIMER'S DISEASE MOUSE MODELS

Baltimore, MD

##### Division of Neurobiology, Johns Hopkins University School of Medicine

January 2022 - Present

##### Research Assistant, Supervisor: Prof. Wenzhen Duan

- Performed neuroimage study including functional magnetic resonance imaging (fMRI) and structural MRI in Alzheimer's disease models, and validated neuroimage findings at molecular and cellular levels by immunostaining, western blotting, and vasculature-enriched single-nucleus RNA sequencing to develop sensitive and human translatable biomarkers indicating early brain functional changes of AD.
- Treated P301S mouse model with dasatinib plus quercetin (D + Q) senolytic therapy, and evaluated treatment effect by MRI scanning, behavioral tests, immunohistochemistry, western blotting.
- Undertook general experimental responsibilities and administrative responsibilities, including managing and maintaining two mouse colonies independently for AD research purpose, accomplishing genotyping with thirty 5xFAD AD model mice per month on average, sectioning brain samples, coordinating weekly team meetings and other routine management.

#### EVOLUTION OF TYROSYL-TRNA SYNTHETASE IN EUKARYOTIC CELLS

Nanjing, China

##### School of Life Science and Technology, China Pharmaceutical University

December 2020 - June 2021

##### Undergraduate Dissertation, Supervisor: Dr. Xiaoda Song

- Constructed eukaryotic expression vectors of TyrRS gene from huge phage 3401 and Try-tRNA genes from 10 different bacterial strains, and transformed the plasmids into *Escherichia coli*.
- Extracted recombinant plasmid from DH10B using Mini Plasmid Purification Kit for subsequent identification of recombinant plasmid by DNA electrophoresis and DNA sequencing.
- Evaluated orthogonality and activity of huge phage 3401-TyrRS/Tyr-tRNA pairs by detecting expression level of green fluorescent protein using inverted fluorescence microscopy.
- Summarized literature reading and completed graduate thesis writing under graduation requirement.

#### CAR-T RELATED THERAPY ON BREAST CANCER (REMOTE)

Nanjing, China

##### The University of Texas Health Science Center

October 2020 - December 2020

##### Research Assistant, Supervisor: Dr. Qianjin Guo

- Explored knowledge of breast cancer (e.g., molecular types, clinical epidemiology, treatments, etc.) via NCBI database including PubMed and gene databases.
- Investigated roles of immunobiology, especially immunoediting, in developing advanced treatment of breast cancer including PD-1/PD-L1 blockers, CTLA-4 blockers, breast cancer vaccines, T cells-related treatments, and single-cell sequencing technology.
- Integrated literature reading and database searching, and presented research results.

## EFFECTS OF AMLODIPINE ON NON-ALCOHOLIC FATTY LIVER DISEASE

School of Basic Medicine and Clinical Pharmacy, China Pharmaceutical University

Nanjing, China

January 2020

Research Assistant, Supervisor: Prof. Lirui Wang

- Managed alcoholic liver disease mouse model by feeding with ethanol in liquid diet and non-alcoholic fatty liver disease (NAFLD) mouse model by feeding with high-fat diet.
- Conducted intragastric administration of *Akkermansia muciniphila* and PBS control in C57BL/6J mice once a day to investigate the impact of altered microbiota on NAFLD, and collected fresh fecal samples.
- Dissected mice to collect liver and caecum tissue for further biochemical and histological studies.
- Performed biochemical assays to measure alanine aminotransferase, aspartate aminotransferase, HDL-C, LDL-C, total cholesterol levels, and triglyceride levels using kits, and determined insulin level by ELISA.

## SYNTHESIS OF PROLYL HYDROXYLASE INHIBITOR AKB-6548

School of Science, China Pharmaceutical University

Nanjing, China

September 2019 - January 2020

Research Assistant, Supervisor: Prof. Xiaojing Zhang

- Retrieved relevant literature and helped with innovating synthetic route of compound AKB-6548.
- Performed synthesis, separation, and purification of AKB-6548 by organic lab techniques including chromatography, crystallization, extraction, distillation, rotary evaporation, etc.

## ADSORPTION BEHAVIOR OF D-101 MACROPOROUS RESIN FOR PHLORIDZIN

School of Science, China Pharmaceutical University

Nanjing, China

March 2019 - December 2019

Research Assistant, Supervisor: Prof. Kaijun Xu

- Established quantitative index for alcohol washing, alkaline washing, and other procedures of pretreatment method of D-101 macroporous adsorbent resin by UV-VIS spectrophotometer
- Analyzed adsorption kinetics and thermodynamics of D-101 macroporous resin for phloridzin from aqueous solution through immersion adsorption experiments by solid UV.
- Investigated quantitative relationship between apparent adsorption rate constant of pseudo-second-order kinetics and parameters, such as amount of phloridzin and resin, solution volume, shaking speed, and reaction temperature, by control variable experiment.
- Achieved conclusion that adsorption properties were in accordance with thermodynamic model of Dubinin - Radushkevich, and that adsorption kinetics was in accordance with pseudo-second-order kinetic model.

## PUBLICATIONS & PRESENTATIONS

Wei, Z., Liu, H., Lin, Z., Yao, M., Li, R., Liu, C., Li, Y., Xu, J., Duan, W., & Lu, H. (2023). Non-contrast assessment of blood-brain barrier permeability to water in mice: An arterial spin labeling study at cerebral veins. *NeuroImage*, 268, 119870. <https://doi.org/10.1016/j.neuroimage.2023.119870>

\*M. YAO, Z. WEI, Z. ZHANG, A. LI, R. LI, A. KAKAZU, H. LU, J. XU, W. DUAN. Cerebral Metabolic Changes and Impaired Blood-brain Barrier Precede Amyloid beta Deposition in the 5xFAD Mouse Model. *Society for Neuroscience* 2022; November 2022; San Diego, CA.

Si, C.-Y., Hu, H., Cheng, J., Tian, M., Dai, S., Li, R., Fan, R., Yang, C., Pi, Z., & Xu K. (2020). Adsorption Behavior of D-101 Macroporous Resin for Phloridzin. *Ion Exchange and Adsorption*, 36(06), 541–553. <https://doi.org/10.16026/j.cnki.iea.2020060541>.

## SKILLS

**Laboratory techniques:** Western blotting; immunohistochemistry; DNA extraction from tissue; PCR assays; DNA electrophoresis; BCA protein assay; cell line maintenance; SDS gel electrophoresis; column chromatography; plasmid DNA extraction; transformation; transfection; ELISA; organic lab techniques (chromatography, crystallization, extraction, distillation)

**Equipment:** UV-VIS spectrophotometer; HPLC; GC-MS; LC-MS; IR spectrophotometer; fluorescence microscope; 9.4 T vertical-bore Bruker MR scanner (Bruker 400)

**Animal experiment techniques:** Proficient in rodent handling and care: oral gavage; euthanasia; anesthesia; perfusion and fixation; brain collection; liver collection; brain sectioning; retro-orbital injection; intranasal administration

**Behavioral tests:** Novel object recognition (NOR); Y maze spontaneous alternation test; open field test

**Statistical software:** Excel; SPSS; OriginLab; GraphPad Prism; R studio

**Graphic software:** ChemDraw, Fiji, Zen

**Programming languages:** VB (Visual Basic), R

## **HONORS**

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Scholarship for outstanding students	2018, 2019, 2020
University Outstanding Student	2018, 2019, 2020
Provincial Second Prize of Chinese Chemistry Olympiad (CChO)	Aug. 2016

## **LEADERSHIP & VOLUNTEER**

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<b>LIGHT OF LOVE COMMUNITY SERVICE STUDENT ORGANIZATION</b>	Nanjing, China
<b>Director of Communication and Social Committee</b>	September 2017 - June 2019

- Fundraised for children from families in poverty through organizing activities and games on campus.
- Accompanied orphans and elderly individuals living alone by paying regular home visits to help with household tasks and hosting social events in community.
- Initiated programs to address certain social concerns, such as raising money for environmental charities, calling for attention to public overweight and obesity by organizing 16- kilometer hiking program, etc.
- Tutored elementary school students in traditional Chinese culture every Wednesday.

<b>SUMMER VOLUNTEER TEACHING TEAM FOR UNDERPRIVILEGED CHILDREN</b>	Henan, China
<b>Captain &amp; Tutor</b>	August 2018 - August 2018

- Tutored 2nd and 4th students in Mathematics and English.
- Organized physical assessment including vision, height, weight, temperature, etc.
- Hosted a field day with activities and games to promote and emphasize teamwork.