

# Zongxiang (Gary) Gui

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Ph.D. in Biochemistry, with 5 years of research experience in pre-clinical MRI studies, multimodal imaging techniques, protein-based contrast agents' expression and purification, and drug development. I have specific expertise in biochemistry and analytical chemistry, and familiarity with GMP standards and FDA regulations. I am actively seeking opportunities in industry as a research scientist.

## TECHNICAL PROFICIENCIES

- **Process Development:**  
Generating mouse models, mouse handling and surgical technique, cell culture techniques, 3D print, protein expression and purification, immunohistochemistry (IHC), tangential flow filtration (TFF).
- **Imaging Techniques:**  
MRI operations, small animal imaging, CT operation.
- **Analytical Development:**  
Chromatography (FPLC, HPLC), spectroscopy (NMR, circular dichroism, FTIR, UV-Vis, fluorescence), gel systems (SDS-PAGE, native gel, DNA gel), mass spectrometry, ELISA, ICP-OES, western blot, flow cytometry, dynamic light scattering, SEM, microplate reader.
- **Molecular Biology:**  
Cloning, sequencing, PCR/RT-PCR, primer design.
- **Data Analysis & Programming:**  
Imaging and instrument data analysis, SQL, Java, Python, MATLAB.

## EDUCATION

**Ph.D. in Biochemistry, Georgia State University** **Sep 2018 – Dec 2023**

**Dissertation:** Preclinical Applications of Targeted Protein-Based Contrast Agents for Molecular MRI Imaging

**M.S. in Chemical Biology, University of Science and Technology of China** **Sep 2015 – June 2018**

**Thesis:** Construction of a Rapid Coagulation Factor X Detection System via Energy Transfer Between Terbium Ions and Anticoagulant Protein from *Agkistrodon Halys* Pallas.

**B.E. in Materials Engineering, Tianjin University** **Sep 2011 – June 2015**

**Thesis:** PP/PE on Surface *In-Situ* Alloying Initiated by Low-Temperature Plasma Treatment

## SELECTED HONOR & AWARDS

- 1<sup>st</sup> Prize of oral presentation, Atlanta Magnetic Resonance Symposium, 2023
- Student Travel Stipend, The Future of Molecular MRI, 2022
- 2<sup>nd</sup> Prize of Poster, 41<sup>st</sup> Annual Biological Stain Commission Conference, 2022
- Young Investigator Award, Chinese American Society of Nuclear Medicine and Molecular Imaging (CASNMMI), 2022
- Student Travel Stipend, World Molecular Imaging Congress (WMIC), 2021

## PROFESSIONAL EXPERIENCE

**Postdoctoral Fellow, Georgia State University, Atlanta, GA** **Dec 2023 – Present**

- Developed applications of MRI contrast agents for early detection of advanced liver diseases.
- Designed protein-based MRI contrast agents, developed large-scale expression and purification.
- Supervised graduate students; assisted with laboratory administration.

### Graduate Research Assistant, Georgia State University, Atlanta, GA

Sep 2018 – Dec 2023

- Pioneered the early detection of nonalcoholic steatohepatitis through biomarker-targeted MRI contrast agents, specifically ProCA32.Collagen.
- Engineered manganese-based MRI/PET agents designed for the early diagnosis of liver metastasis.
- Designed in vivo imaging studies on mice using the Bruker BioSpec 70/30 system, focusing on mice models with liver/lung/heart/pancreas diseases.
- Established formulation, expression, purification, and characterization methods for high-quality protein-based MRI contrast agents and quality control.

### Research Assistant, University of Science and Technology of China, China

Sep 2015 – June 2018

- Designed a Förster resonance energy transfer (FRET)-based detection system for coagulation factor X (FX) utilizing the interaction between Tb<sup>3+</sup> and AHP IX/X-bp.
- Innovated isolating coagulation factor X from blood and extracting binding protein from snake venom.
- Simplified single-step detection of coagulation factor X in blood sample proteins by immobilizing Antibody on solid surfaces.
- Collaborated toxicity studies of Halloysite nanoparticles following ingestion by mice.

### Undergraduate Research Assistant, Tianjin University, China

May 2012 – May 2015

- Developed PP/PE alloys via low-temperature plasma treatment.
- Designed sustainable methods to recycle and reuse rigid polyurethane composite waste.

### SELECTED PUBLICATION (CITATION 173)

1. **Zongxiang Gui** et al. "Noninvasive Imaging of Liver Fibrosis Progression through Collagen-targeted MRI Contrast Agent." In Preparation (2024).
2. **Zongxiang Gui** et al. "Precision Noninvasive Imaging of Liver Cancer and Premalignant Nodules by Protein based Collagen-Targeted MRI Contrast Agent." In Preparation (2024).
3. Ibhagui, Oluwatosin Y, **Zongxiang Gui** et al. "Early Detection and Staging of Lung Fibrosis Enabled by Collagen-Targeted MRI Protein Contrast Agent." *Chemical & Biomedical Imaging* (2023).
4. Yang, Hua, **Zongxiang Gui** et al. "Non-invasive Detection and Complementary Diagnostic of Liver Metastases via Chemokine Receptor 4 Imaging." *Cancer Gene Therapy* (2022).
5. Rui Rong, **Zongxiang Gui** et al. "Evidence of Translocation of Oral Zn<sup>2+</sup> Doped Magnetite Nanoparticles Across the Small Intestinal Wall of Mice and Deposition in Spleen: Unique Advantage in Biomedical Applications." *ACS Applied Bio Materials* (2020).

### SELECTED PRESENTATION/POSTER

#### Presentation

1. "Non-Invasive Mapping of Molecular Determinants for Liver Cancer and Metastatic Aggressiveness by Precision MRI (pMRI)." The Future of Molecular MR, 2022
2. "Molecular Imaging and Mechanism of CXCL12/CXCR4 Axis in Liver Metastasis by Precision MRI (pMRI)." World Molecular Imaging Congress, 2021

#### Poster

1. **Zongxiang Gui** et al, "Detection of Hepatocellular Carcinoma Nodules with a Collagen-Targeted MRI Contrast Agent in Different Mice Models" Preclinical Imaging Consortium, 2023
2. **Zongxiang Gui** et al, " Noninvasive Precision Imaging of Microenvironment of Cancer and Metastasis by pMRI." World Molecular Imaging Congress, 2023