BIOGRAPHICAL SKETCH

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NAME: Guo, Grace L.

eRA COMMONS USER NAME (credential, e.g., agency login): gracelguo

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
West China University of Medical Sciences (now West China Medical Center of Sichuan University), Chengdu, China	Bachelor of Medicine	07/1993	Preventive Medicine
West China University of Medical Sciences (now West China Medical Center of Sichuan University), Chengdu, China	MPH	07/1995	Occupational Medicine
University of Arkansas Medical Science, Little Rock, AR	M.S.	07/1997	Immunology
University of Kansas Medical Center, Kansas City, KS	Ph.D.	10/2001	Pharmacology & Toxicology
NCI, NIH, Bethesda, MD	Post-doc	10/2004	Nuclear Receptors and Drug Metabolism

A. Personal Statement

My research has focused on elucidating the underlying molecular mechanisms by which intestine liver crosstalk via bile acids-mediated signaling. We have devoted our efforts in the bile acids-farnesoid X receptor (FXR)-fibroblast growth factor 15/19 (FGF15/19) axis in regulating liver functions and diseases.

Specifically, our research findings have provided understanding of the cellular and molecular mechanisms by which tissue-specific FXR functions to regulate bile acid homeostasis (gut-liver cross talk), drug metabolism and transport, non-alcoholic steatohepatitis (NASH), liver and colon carcinogenesis, and liver regeneration. I have a broad background in the functional characterization of liver diseases in animal models, lipid homeostasis, drug metabolism and transport, as well as their regulation by nuclear hormone receptors and cell signaling pathways. As the PI, I have the expertise, leadership and motivation to carry out the proposed works by state-of-the-art and compensatory approaches. I have published about 140 peer-reviewed research and review papers/books on nuclear receptors and their regulation of liver and intestine functions. I have collaborated and helped scientists across the world to determine FXR and FGF15/19 function in regulating bile acid and lipid homeostasis. As the PI or Co-I of several NIH funded projects, I laid the groundwork by determining the tissue specific roles of FXR in regulating liver functions as well as the role of FXR in NASH development. In addition, I have successfully administered projects, collaborated with other scientists, and remained productive. I have the needed experience in constructing research plans, following timelines, and managing budgets. I have devoted a great deal of effort in serving the scientific community, including reviewing manuscripts and federal grants. By directly and indirectly supervising more than 80 undergraduate and graduate students and research and clinical fellows, I have established myself as a dedicated teacher in the higher education. I have been the main sponsor or co-sponsor for five F31/F32 grants over the last few years. In summary, I have a demonstrated record of successful and productive research and mentorship in determining bile acids, nuclear receptors in gut-liver cross talk and liver disease development.

Selected Publications:

1. Rizollo D, Kong B, Piekos S, Chen LM, Zhong XB, Lu J, Shi J, Zhu HJ, Yang Q, Li A, Li LH, Wang HB, Siemiatkowsk A, Park C, Kagan L, **Guo GL**. Effects of Overexpression of Fibroblast Growth Factor 15/19 on Hepatic Drug Metabolizing Enzymes. 2022, Drug Metabolism and Disposition, 50(4):468-477, PMID: 34965924
2. Schumacher JD, Kong B, Wu J, Rizzolo D, Armstrong LE, Chow MD, Goedken M, Lee YH, **Guo GL**. Direct and Indirect Effects of FGF15 and FGF19 on Liver Fibrosis Development. 2020, Hepatology, 71(2): 670-685, PMCID: PMC6976970
3. Rizzolo D, Zhan L, and Buckley K, Kong B, Buckley B, Sheng J, **Guo GL.** Bile acid homeostasis in a Cyp7a1 & Cyp27a1 double knockout mouse model. 2019, Hepatology, Jul;70(1):389-402. PMID: 30864232
4. Kong B, Sun X, Huang M, Chow MD, Zhong XB, Xie W, Lee YH, **Guo GL**, A novel fibroblast growth factor 15 dependent- and bile acid-independent promotion of liver regeneration in mice. 2018, Hepatology, 68(5):1961-1976. PMCID: PMC6195490

Ongoing Research Support

R01GM135258 (Guo, GL; PL) 10/01/2020 to 09/30/2024
Title: Gut-liver crosstalk by FGF15/19 in regulating xenobiotic nuclear receptor activation

Diversity supplement to R01 GM135258 03/01/2021 to 02/28/2023
Title: Diversity training supplement in training Zakiyah Henry

I01 BX002741, Guo, Grace (PI) 10/01/2017 to 09/30/2025
Title: Role of FGF15 in liver regeneration-Role of FGF15 in liver diseases

R01DK126963 (Sampath H, PI; Guo GL, CoI) 15-06-2021 to 14/06/2026
Title: The role of intestinal SCD1 in regulating metabolic health

Completed Research Support (last three years)

R21ES029258 (Guo, Grace; PI) 04/01/2018 to 03/31/2022 (NCE)
Title: Differential roles of FXR and FGF15 in liver fibrosis development

F31 DK122725 (PI: Danial Rizzolo; Sponsor: Guo GL;) 09/01/2019 to 08/31/2021
Title: The impact of bile acid homeostasis on hepatic xenobiotic nuclear receptors

CEED Pilot Award (MPI with Helmut Zarbl) 01/06/2020 to 05/31/2021
Title: Impact of circadian rhythm on bile acid composition change in shift workers

F32DK116495, (Armstrong LE, PI ; Guo GL, Sponsor) 06/01/2018 to 05/31/2019
Title: Protection from NASH development by hepatic FXR-dependent regulation of acute phase response

Rutgers Busch Grants, Guo, Grace (co-PI with Yi-Horng Lee) 09/01/2017 to 08/31/2019
Title: Role of FXR and FGF15 in metabolic regulation following gastric bypass surgery T32ES007148-31,

Guo, Grace (co-I, Aleksunes AM-PI) 07/01/2017 to 06/30/2022
Title: Training in environmental toxicology

F31AT010981-01, (Kevin, Tvetor, Co-sponsor with Diana Roopchand) 05/01/2020 to 04/30/2022
Title: Grape seeds are gut FXR activators

F31AT010981-01, (Guzman S: PI; Guo, GL: Co-sponsor with Bhattacharya M) 05/01/2020 to 04/30/2022
Title: Kiss pepsin NASH development

B. Positions, Scientific Achievements, and Honors

Positions

2021-present	Full Professor, Department of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ
2013-present	Research Scientist, GI Laboratory, VA Medical Center, East Orange, NJ
2016-present	Deputy Director, Joint Graduate Program in Toxicology (JGPT), Rutgers University
2012-2021	Associate Professor, Department of Pharmacology and Toxicology, Rutgers University, Piscataway, NJ Full member for Environmental and Occupational Health Science Institute, New Jersey Cancer Center and Rutgers University Lipid Center
2010-2012	Associate Professor, Department of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS
2004-2009	Assistant Professor, Department of Pharmacology and Toxicology, University of Kansas Medical Center, Kansas City, KS
1993-1995	Resident, Hospital of Occupational Medicine, West China University of Medical Sciences (now the West China Medical Center of Sichuan University), Chengdu, China

Honors

2023	James R. Gillette *Drug Metabolism and Disposition* Best Paper of 2022 in the Drug Metabolism category, ASPET
2021	Inaugural Presidential Outstanding Faculty Scholar Award, Rutgers University
2021	Expertscape World Expert in Hepatocytes—July 28, World Hepatitis Day
2021	Inaugural Presidential Outstanding Faculty Scholar Award, Rutgers University
2020	Fellow of AASLD
2019	Poster of Distinction, AASLD
2009-17	Presidential poster award, annual AASLD meeting
2009	Best poster, junior faculty, annual KUMC liver Center Symposium
2008	All-around winner, annual KUMC Cancer Center Symposium
2005	BIRCWH scholarship
2001	Graduated with honor, PhD degree
2001	First place in Oral Presentation, Student Annual Research Forum, University of Kansas Medical Center
1993	Graduated with the highest honor, West China University of Medical Sciences (now the West China Medical Center of Sichuan University), China

Professional Memberships

2012-present	American Society of Physiology
2000-present	American Association of the Study of Liver Diseases, Member
1999-present	American Society of Pharmacology and Experimental Therapeutics, Member
1999-present	Society of Toxicology, Member

Editorial board member and Ad hoc journal reviewers

Editor---Special Issue of Acta Pharmaceutica Sinica B (2016), Liver Research (2018)

Associate Editor—Pharmacological Research (2023-present)

Editorial board member---Livers (2022-present), Acta Pharmaceutica Sinica B (2020-present), BBA-Molecular Basis of Disease (2018-present), Hepatology Communications (217-present), Molecular Pharmacology (2013-present), Liver Research (2016-present), Hepatology (2017-2021), F1000PRIME (2010 to 2018)

Ad hoc reviewer---Nature Medicine, Nature Communication, JCI, Hepatology, JBC, Advanced drug delivery, American Journal of Pathology, Arteriosclerosis, Thrombosis and Vascular Biology, British Journal of Pharmacology, Carcinogenesis, Drug Metabolism and Disposition, Tox Sci, Cancer Res, Scientific Report

Grant review (Federal and international)

HBPP (regular member, 2020-2024)
VA GAST (2013-present)
NIH Special panels (2019)
NIDDK SBIR (2014, 2019)

NIDDK fellowship (2013-2018)
HBPP (2015, 2018 ad hoc)
AACP (2014)
NCI R03/R21 (2013 to 2014)
NCI PO1 (2013)

C. Contributions to Science (selected from >120 publications)

My graduate work showed, for the first time, the uptake transporters in the livers are transcriptional targets of nuclear receptor, PXR.

5. **Guo GL** and Klaassen CD: Protein kinase C suppresses rat organic anion transporting polypeptide 1- and 2-mediated uptake. J Pharmacol Exp Ther, 299: 551-557, 2001. PMID; 11602666
6. **Guo GL**, Staudinger J, Ogura K and Klaassen CD: Induction of the rat organic anion transporting polypeptide 2 by pregnenolone-16α-carbonitrile is via interaction with the pregnane-x-receptor. Mol Pharmacol, 61:832-839, 2002. PMID: 11901222
7. **Guo GL**, Choudhuri S, and Klaassen CD: induction profile of rat organic anion transporting polypeptide 2 (oatp2) by prototypical microsomal enzyme inducers that act through ligands-activated transcription factor pathways. J Pharmacol Exp Ther, 300:206-212, 2002. PMID: 11752118
8. **Guo GL**, Johnson DR and Klaassen CD: Expression and induction by pregnenolone-16α-carbonitrile (PCN) of rat organic anion transporting polypeptide 2 (oatp2) in the liver during postnatal development, Drug Metab Dispos, 30:283-288, 2002. PMID: 11854146

My post-doctorate work was the first in establishing the nuclear receptor cross-talk in regulation of bile acid homeostasis and to treat. To understand the molecular mechanisms in reducing liver injury under cholestasis will help to discover novel therapeutic agents in reducing cholestasis.

9. **Guo GL**, Lambert G, Negishi M, Ward J, Brewer HB Jr, Kliewer SA, Gonzalez FJ, Sinal CJ: Complementary roles of farnesoid x receptor, pregnane x receptor, and constitutive androstane receptor in protection against bile acid toxicity. J Biol Chem. 278:45062-45071, 2003. PMID: 12923173
10. Lambert G, Amar MJ, **Guo GL**, Brewer HB Jr, Gonzalez FJ, Sinal CJ: The farnesoid X receptor is an essential regulator of cholesterol homeostasis. J Biol Chem 278:2563-70, 2003 PMID: 12923173
11. Jia Y, **Guo GL**, Surapureddi S, Sarkar J, Qi C, Guo D, Xia J, Kashireddi P, Yu A, Cho YW, Rao S, Kemper B, Ge K, Gonzalez FJ, Reddy JK: Transcription coactivator peroxisome proliferators-activated receptor-binding protein/mediator 1 deficiency abrogates acetaminophen hepatotoxicity. Proc Natl Acad Sci USA. 2005, 102:12531-6. PMCID: PMC1187948

First in publishing the critical roles of FXR in pathogenesis of metabolic syndrome-related diseases in animal models (atherosclerosis, NASH, liver cancer and colon cancer). Our works provide the first evidence in establishing FXR as a target to treat NASH.

12. Kong B, Luyendyk JP, Tawfik O, **Guo GL**. FXR-deficiency induces non-alhocolic steatohepatitis in LDLr-knockout mie fed a high-fat diet. J Pharmacol Exp Ther. 2009, 328:116-22. PMC2685903
13. Maran RR, Thomas A, Roth M, Sheng Z, Esterly N, Pinson D, Gao X, Zhang Y, Ganapathy V, Gonzalez FJ, **Guo GL**. FXR-deficiency in mice leads to increased intestinal epithelial cell proliferation and tumor development. J Pharmacol Exp Ther. 2009, 328:469-77. PMC2682273
14. Li G, Kong B, Zhu Y, Zhan L, Williams J, Tawfik O, Luyandyk JP, Wang L, **Guo GL**. Mechanisms of STAT3 activation in the liver of FXR knockout mice. Am J Physiol Gastrointest Liver Physiol. 2013, 305(11);G829-37. PMC3882431
15. Schumacher JD, Kong B, Wu J, Rizzolo D, Armstrong LE, Chow MD, Goedken M, Lee YH, **Guo GL**. Direct and Indirect Effects of FGF15 and FGF19 on Liver Fibrosis Development. 2019, Hepatology, Epub ahead of print. PMID: 31206730

Our group provides the first evidence of genome-wide biding of FXR in the liver and intestine, which not only provides novel insights into the pathways by which FXR regulates liver and energy homeostasis, but also expending the molecular mechanism by which FXR regulates genes expression at the transcription level. In addition, we are the first in providing species difference of FXR in genome-wide binding between mice and humans.

16. Thomas A, Hart S, Kong B, Fang J, Zhong X, and **Guo GL**. Genome-wide tissue specific FXR binding in mouse liver and intestine. Hepatology 2010. 51(4):1410-9. PMC4855519
17. Williams JA, Thomas AM, Li G, Kong B, Zhan L, Inaba Y, Xie W, Ding WX, **Guo GL**. Tissue-specific induction of p62/Sqstm1 by farnesoid X receptor. PLoS One. 2012;7(8):e43961. doi: 10.1371/journal.pone.0043961. PMC3428273
18. Li G, Lin W, Araya JJ, Chen TT, Timmermann BN, **Guo GL.** A tea cathechin, epigallocatechin-3-gallate, is a unique modulator of the farnesoid X receptor. Toxicol Appl Pharmacol.2012. 258(1):268-74. PMC3259191
19. Zhan L, **Guo GL**. Genome-wide binding and transcriptome analysis of human farnesoid X receptor in primary human hepatocytes, PLoS One, 9(9):e105930,2014. PMC4157742

Pioneered in providing a paradigm shift in understanding the importance of intestinal factors in regulating hepatic bile acid homeostasis and liver functions. The discovery in identifying a novel pathway that is critical in feedback inhibiting bile acid synthesis provide novel insight into physiology, as well as new pathways to treat cholestasis and hypercholesterolemia.

20. Kong B, Wang L, Chiang JY, Zhang Y, Klaassen CD, **Guo GL**. Mechanism of tissue-specific farnesoid x receptor in suppressing the expression of genes in bile-acid synthesis in mice. Hepatology 2012. 56:1034. PMC3390456
21. Kong B, Huang J, Zhu Y, Li G, Williams J, Shen S, Aleksunes A, Richardson J, Apte U, Rudnick DA, **Guo GL**. FGF15 deficiency in mice impairs liver regeneration. Am J Physiol Gastrointest Liver 2014 May 15;306(10):G893-902. PMC4024724
22. Kong B, Sun X, Huang M, Chow MD, Zhong XB, Xie W, Lee YH, **Guo GL**, A novel fibroblast growth factor 15 dependent- and bile acid-independent promotion of liver regeneration in mice. Hepatology 2018, 65, 1961-1976. PMC6195490
23. Rizzolo D, Zhan L, and Buckley K, Kong B, Buckley B, Sheng J, **Guo GL.** Bile acid homeostasis in a Cyp7a1 & Cyp27a1 double knockout mouse model. 2019 Hepatology, Jul;70(1):389-402. PMID: 30864232

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https://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/40679131/?reload=publicURL