

## CURRICULUM VITAE

### Haiwei Gu, Ph.D.

#### **Education:**

- 1999-2003 University of Science and Technology of China, Hefei, Anhui Province, P. R. China  
B.S., Applied Physics
- 2003-2008 Purdue University, West Lafayette, IN, US  
Ph.D., Chemical Physics/Bioanalytical Chemistry; Advisor: Dr. Daniel Raftery  
Research Interests: NMR- and MS-based Metabolomics and Its Applications in Disease Diagnosis and Biological Sciences

#### **Postgraduate Training:**

- 2009-2011 University of Minnesota, Minneapolis, MN, US  
Postdoctoral Research Associate, Analytical Chemistry; Advisor: Dr. Peter W. Carr  
Research Interests: Two Dimensional Liquid Chromatography and Its Applications in Metabolomics

#### **Faculty Position Held:**

- 2012-2015 Acting Assistant Professor, Northwest Metabolomics Research Center, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA, US
- 2015-2017 Research Assistant Professor, Northwest Metabolomics Research Center, Department of Anesthesiology and Pain Medicine, University of Washington, Seattle, WA, US
- 2017- Assistant Professor, College of Health Solutions, Arizona State University, Phoenix, AZ, US  
Research Interests: My research interests focus on MS-based metabolomics and its applications in early disease diagnosis, drug metabolism, and biological sciences. I am working closely with a number of clinical researchers and practitioners in various studies for identifying metabolic markers, investigating metabolic mechanisms, etc.

#### **Honors:**

- 2000-2002 Excellent Student Scholarship, University of Science and Technology of China
- 2003 Excellent Undergraduate Student with First Honor, University of Science and Technology of China
- 2007 ENC Student Stipend Award, Experimental Nuclear Magnetic Resonance Conference
- 2008 ASMS Student Assistantship, American Society for Mass Spectrometry
- 2013 ITHS Award, Institute of Translational Health Sciences
- 2015 Rising Stars, Institute of Translational Health Sciences
- 2016 Investigator Award, Agilent
- 2018 Rookie of the Year (2017), College of Health Solutions, Arizona State University
- 2019-2020 Young Investigator Educational Award, Mass Spectrometry Applications to the Clinical Lab

#### **Professional Organizations:**

- 2006-2007 Member, Experimental Nuclear Magnetic Resonance Conference
- 2007- Member, American Chemical Society
- 2007- Member, American Society for Mass Spectrometry
- 2008- Member, Metabolomics Society
- 2010 Member, Minnesota Chromatography Forum
- 2015-2018 Committee Member, Cascadia Proteomics Symposium
- 2016-2018 Organizing Committee Member, International Conference of the Metabolomics Society

**Research Funding:****Active at ASU:**

1. Source: NIH R01  
Title: Developmental PBDE exposure, gut microbiome, and diabetes  
Major goal: We hypothesize that early life PBDE exposure causes acute and persistent dysbiosis, which upsets the balance between endogenous PXR activation (by indoles) vs. xenobiotic PXR activation (by PBDEs), leading to the delayed onset of diabetes. We seek to establish a causal relationship between developmental PBDE exposure, a change in gut microbiome, selective PXR modulation (sPXRm), and diabetes later in life using humanized PXR-transgenic (hPXR-TG) mice.  
Period: 1/1/2019-12/31/2023  
Total Amount: \$3,110,318  
Role: Multi-PI (Gu/Cui/Mani)
2. Source: Brander Beacons Cancer Research  
Title: Early Diagnosis of Stage I and II Triple Negative Breast Cancer  
Major goal: The overall objective of this collaborative study is to use state-of-the-art metabolomics profiling methods and a well-characterized biorepository to identify and validate plasma metabolite markers associated with early occurrence of TNBC.  
Period: 12/2/2019-12/1/2020  
Total Amount: \$25,000  
Role: PI
3. Source: Autism Research Institute  
Title: Identifying Metabolic Differences During Pregnancies in Mothers of Children Later Diagnosed with ASD  
Major goal: Measure the levels of key metabolites in maternal blood during pregnancies where the children developed ASD or were typically-developing (TD).  
Period: 10/1/2019-9/30/2020  
Total Amount: \$50,000  
Role: co-I (PI: Adams)
4. Source: ASU-Mayo Seed  
Title: Characterizing Leading Risk Factors Contributing to the Racial Disparity of Gallbladder Cancer Incidence Rate in Maricopa County, Arizona  
Major goal: Our primary objective is to identify the actionable targets in reducing GbCa burden among high-risk individuals.  
Period: 1/1/2020-12/31/2020  
Total Amount: \$50,000  
Role: co-I (PI: Yang/Dinu)

**Completed at ASU:**

1. Source: ASU-Mayo Seed  
Title: Quantifying mitochondrial metabolites to define the role of mitochondria in stem cell function and fate  
Major goal: Using nuclear reprogramming of differentiated cells back to an induced pluripotent stem cell state as a model system, we propose to quantify the metabolites found specifically within the mitochondria matrix ("MITObolome") during this process.  
Period: 1/1/2019-12/31/2019  
Total Amount: \$50,000  
Role: Multi-PI (Gu/Folmes)
2. Source: Jumpstart, College of Health Solutions, Arizona State University  
Title: Metabolic Reprogramming Regulated by Epigenetic Mutations in Cancer  
Major goal: In this proposal, we aim to use the metabolomics approach to study how SETD2 dysregulation alters cancer metabolism, which provides numerous opportunities to identify therapeutic targets from a metabolic point of view.  
Period: 12/1/2018-11/30/2019

Total Amount: \$10,950

Role: PI

3. Source: Friends for an Earlier Breast Cancer Test  
Title: Metabolic Biomarkers for Breast Cancer: Discovery and Initial Cross-Validation  
Major goal: In this proposal, we will use state-of-the-art metabolomics profiling methods and well-characterized biorepositories; also this collaborative study seeks to identify and initially validate plasma metabolite markers associated with BC.  
Period: 7/1/2018-6/30/2019  
Total Amount: \$40,000  
Role: PI
4. Source: Minnesota Ovarian Cancer Alliance (MOCA)  
Title: Metabolomics Diagnosis of Ovarian Cancer  
Major goal: Our goal is to develop clinical-grade biomarker assays with significant impact on reducing morbidity and mortality associated with serous ovarian cancer (SOC).  
Period: 6/1/2018-5/31/2019  
Total Amount: \$50,000  
Role: PI
5. Source: Autism Research Institute  
Title: Metabolomics Analysis of Autism-Related Alterations and Connections in Children  
Major goal: The overall objective in this proposal is to achieve a better understanding of metabolic reprogramming associated with ASD in children and their mothers.  
Period: 6/1/2018-5/31/2019  
Total Amount: \$25,000  
Role: PI

#### **Previously Completed:**

6. Source: Royalty Research Foundation, University of Washington  
Title: Novel Multi-Platform to Enable Quantitative Metabolomics  
Period: 06/15/2017-06/14/2018  
Total Amount: \$40,000  
Role: PI
7. Source: Agilent  
Title: Globally Optimized Targeted Mass Spectrometry (GOT-MS): Reliable Metabolomics Analysis with Broad Coverage  
Period: 01/2016-01/2017  
Total Amount: \$100,000  
Role: co-PI (PI: Dr. Daniel Raftery)
8. Source: Institute of Translational Health Sciences  
Title: Breast Cancer Metabolite Biomarker Discovery Using Global Profiling Multiple Reaction Monitoring Transitions  
Period: 06/2015-05/2017  
Total Amount: \$15,000  
Role: PI
9. Source: NIH  
Title: Glucose and BCAA Metabolism in the Heart  
Period: 04/2014-03/2019  
Total Amount: \$84,177 (sub-award)  
Role: Co-Investigator (PI: Dr. Tian)
10. Source: NIH  
Title: Unraveling the Link of Sleep to IBS: A Metabolomics Approach  
Period: 08/2014-05/2017

Total Amount: \$60,495 (sub-award)  
Role: Co-Investigator (PI: Dr. Heitkemper)

11. Source: NIH  
Title: Advanced Methods in NMR-Based Metabolomics  
Period: 06/2012-04/2016  
Total Amount: \$200,000  
Role: Key Personnel (PI: Dr. Daniel Raftery)
12. Source: NIH  
Title: Insulin Resistance in Chronic Kidney Disease  
Period: 09/2013-07/2014  
Total Amount: \$100,000 (sub-award)  
Role: Key Personnel (PI: Dr. de Boer)
13. Source: NIH  
Title: Metabolite Biomarkers in the Development of Esophageal Adenocarcinoma  
Period: 09/2013-08/2015  
Total Amount: \$93,525 (sub-award)  
Role: Key Personnel (PI: Dr. Vaughan)
14. Source: NIH  
Title: Breast and Ovary Cancer Clinical Validation Center  
Period: 07/1/2013-06/30/2014  
Total Amount: \$85,933 (sub-award)  
Role: Key Personnel (PI: Dr. Li)
15. Source: Institute of Translational Health Sciences  
Title: Metabolomics Analysis of Isolated Mitochondria for Breast Cancer Diagnosis  
Period: 01/2013-12/2013  
Total Amount: \$10,000  
Role: PI
16. Source: Purdue Research Foundation, Graduate Research Assistantship  
Title: Metabolomics-Based Screening for Colorectal Cancer  
Period: 08/2007-12/2008  
Total Amount: \$50,000  
Role: co-PI (PI: Dr. Daniel Raftery)

## BIBLIOGRAPHY

### Manuscripts in Refereed Journals:

**Overall Statistics:** Dr. Gu has published 91 papers by January 2020, with an *h*-index of 26. The papers have been cited 2,356 times (2,140 times without self-citations) by January 2020. Since joining ASU in 2017, Dr. Gu published 22 papers, in 10 of which Dr. Gu served as the (co-)Corresponding/First Author.

**Note:** In the fields of metabolomics and analytical chemistry, it is customary that the first author should be the student/postdoc who performs lab work and provides significant intellectual input. In addition, co-corresponding authorship is often required, especially when the contribution from both the PIs/groups is of similar importance to make the publication possible.

**At ASU:** (\* denotes corresponding author; ‡ denotes student/postdoctoral fellow/visiting scholar mentored by Dr. Gu; + denotes co-first author).

1. X. Shi‡, S. Wang‡, P. Jasbi‡, C. Turner‡, J. Hrovat‡, Y. Wei‡, J. Liu‡, and H. Gu\*, "Database Assisted Globally Optimized Targeted Mass Spectrometry (dGOT-MS): Broad and Reliable Metabolomics Analysis with Enhanced Identification", *Anal. Chem.*, 21, 13737-13745, 2019, PMID: 31556994  
*5-year Impact Factor: 6.337; Dr. Gu is the Corresponding Author and responsible for all experimental design, data collection, data analysis, and manuscript preparation. In this study, they developed and optimized an innovative targeted MS approach, database-assisted globally optimized targeted (dGOT)-MS, which utilizes the HMDB and METLIN databases to significantly improve both identification and metabolite coverage.*
2. P. Jasbi‡, O. Baker, X. Shi‡, L. Gonzalez, S. Wang‡, S. Anderson, B. Xi, H. Gu\*, C. Johnston\*, "Daily red wine vinegar ingestion for eight weeks improves glucose homeostasis and affects the metabolome but does not reduce adiposity in adults", *Food Funct.*, 10, 7343, 2019. PMID: 31647087  
*5-year Impact Factor: 3.241; Dr. Gu is the co-Corresponding Author and responsible for all experimental design, data collection, data analysis, and manuscript preparation. In this study, they studied metabolism related to vinegar intake using human plasma samples.*
3. X. Wang+‡, H. Gu+, S. Palma-Duran, A. Fierro, P. Jasbi‡, X. Shi‡, W. Bresette‡, N. Tasevska\*, "Influence of Storage Conditions and Preservatives on Metabolite Fingerprints in Urine", *Metabolites*, 9, 203, 2019. PMCID: PMC6836253  
*5-year Impact Factor: 3.303; Dr. Gu is the co-First Author and responsible for all experimental design, data collection, data analysis, and manuscript preparation. In this study, they studied the effect of storage conditions on metabolic profiles in urine.*
4. D. Scoville, C. Y. Li, D. Wang‡, J. L. Dempsey, D. Raftery, S. Mani, H. Gu\*, J. Y. Cui\*, "Polybrominated Diphenyl Ethers and Gut Microbiome Modulate Metabolic Syndrome-Related Aqueous Metabolites in Mice", *Drug Metab Dispos*, 47, 928-940, 2019. PMID: 31123037  
*5-year Impact Factor: 3.633; Dr. Gu is the co-corresponding author and is responsible for all metabolomics activities in this project. The goal of this project is to use the metabolomics approach to test the hypothesis that PBDEs reduce host-beneficial intermediary metabolites in an intestinal microbiome-dependent manner.*
5. P. Jasbi‡, N. M. Mitchell, X. Shi‡, T. E. Gryns, Y. Wei‡, L. Liu‡, D. F. Lake, H. Gu\*, "Coccidioidomycosis Detection Using Targeted Plasma and Urine Metabolic Profiling", *J. Proteome Res.*, 18, 2791-2802, 2019. PMID: 31244214  
*5-year Impact Factor: 3.917; Dr. Gu is the corresponding author and is responsible for all metabolomics activities in this project. The goal of this project is to use the metabolomics approach for the accurate diagnosis of valley fever.*
6. J. Liu‡, P. D. Hanavan, K. Kras, Y. W. Ruiz, E. P. Castle, D. F. Lake, X. Chen, D. O'Brien, H. Luo, K. D. Robertson, H. Gu\*, T. H. Ho\*, "Loss of SETD2 Induces a Metabolic Switch in Renal Cell Carcinoma Cell Lines toward Enhanced Oxidative Phosphorylation", *J. Proteome Res.*, 18, 331-340, 2019. PMID: 30406665  
*5-year Impact Factor: 3.917; Dr. Gu is the co-Corresponding Author and responsible for all metabolomics studies, including experimental design, data collection, data analysis, and manuscript preparation. They studied the alterations in central carbon metabolism due to SETD2 mutation.*
7. P. Jasbi‡, D. Wang‡, L. Cheng, Q. Fei‡, Y. Cui, L. Liu, Y. Wei‡, D. Raftery, H. Gu\*, "Breast cancer detection using targeted plasma metabolomics", *J. Chromatogr. B*, 1105, 26-37, 2019. PMID: 30562627  
*5-year Impact Factor: 2.751; Dr. Gu is the Corresponding Author and responsible for all activities in this project. The goal of this project is to use the metabolomics approach for the accurate diagnosis of breast cancer.*
8. Q. Fei‡, D. Wang‡, P. Jasbi‡, P. Zhang‡, G. A. Nagana Gowda, D. Raftery\*, H. Gu\*, "Combining NMR and MS with Chemical Derivatization for Absolute Quantification with Reduced Matrix Effects", *Anal. Chem.*, 91, 4055-4062, 2019. PMID: 30801179  
*5-year Impact Factor: 6.337; Dr. Gu is the co-Corresponding Author and responsible for all experimental design, data collection, data analysis, and manuscript preparation. In this study, they developed a novel method combining NMR and MS for quantitative metabolomics.*
9. D. Bearden, D. Sheen\*, Y. Simon-Manso, B. Benner, W. Rocha, N. Blonder, K. Lippa, R. Beger, L. Schnackenberg, J. Sun, K. Mehta, A. Cheema, H. Gu, R. Marupaka, G. Gowda, D. Raftery, "Metabolomics Test Materials for Quality Control: A Study of a Urine Materials Suite", *Metabolites*, 9, 270, 2019. PMCID: PMC6918257

*5-year Impact Factor: 3.303; Dr. Gu worked within a multidisciplinary team and conducted an interlaboratory study (ILS) in which seven National Institute of Standards and Technology (NIST) urine Standard Reference Material®s (SRM®s) were analyzed using GC-MS. The results show that a urine suite such as that used in this ILS could be employed for testing and harmonization among different metabolomics platforms.*

10. G. Kurgan, L. Kurgan, A. Schneider, M. Onyeabor, Y. Rodriguez-Sanchez, E. Taylor, R. Martinez, P. Carbonell, X. Shi, H. Gu, X. Wang\*, "Identification of major malate export systems in an engineered malate-producing Escherichia coli aided by substrate similarity search", Appl Microbiol Biotechnol., 103, 9001, 2019. PMID: 31641813

*5-year Impact Factor: 3.670; Dr. Gu is responsible for detecting TCA cycle substrates in engineered malate-producing E. Coli using GC-MS.*

11. D. Gutierrez, A. Weinstock, V. Antharam, H. Gu, P. Jasbi, X. Shi, B. Dirks, R. Krajmalnik-Brown, J. Maldonado, J. Guinan, S. Thangamani\*, "Antibiotic-induced gut metabolome and microbiome alterations increase the susceptibility to Candida albicans colonization in the gastrointestinal tract," FEMS Microbiol. Ecol., 96, pii: fiz187, 2019, PMCID: PMC6934136

*5-year Impact Factor: 4.098; Dr. Gu is responsible for measuring metabolite changes due to antibiotics using advanced mass spectrometry methods.*

12. S. Navarro, A. Tarkhan, A. Shojaie, T. Randolph, H. Gu, D. Djukovic, K. Osterbauer, M. Hullar, M. Kratz, M. Neuhauser, P. Lampe, D. Raftery, J. Lampe\*, "Plasma metabolomics profiles suggest beneficial effects of a low-glycemic load dietary pattern on inflammation and energy metabolism", Am J Clin Nutr., 110, 984, 2019. PMCID: PMC6766441

*5-year Impact Factor: 6.77; Dr. Gu is responsible for measuring metabolic profiles in plasma that are related to a low-glycemic load dietary pattern.*

13. J. Dempsey, D. Wang, G. Siginir, Q. Fei, D. Raftery, H. Gu, J. Y. Cui\*, "Pharmacological Activation of PXR and CAR Downregulates Distinct Bile Acid-Metabolizing Intestinal Bacteria and Alters Bile Acid Homeostasis", Toxicol Sci., 168, 40-60, 2019. PMID: 30407581

*5-year Impact Factor: 4.132; Dr. Gu is responsible for developing mass spectrometry methods for measuring bile acids in this project.*

14. D. Wang, S. Cheng, Q. Fei, H. Gu, D. Raftery, B. Cao, X. Sun, J. Yan, C. Zhang, J. Wang\*, "Metabolic profiling identifies phospholipids as potential serum biomarkers for schizophrenia", Psychiatry Res., 272, 18-29, 2019. PMID: 30579177

*5-year Impact Factor: 2.67; Dr. Gu is responsible for metabolomics data analysis using advanced multivariate statistical analysis methods in this project.*

15. X. Zhang, X. Xie, B. Heckmann, A. Saarinen, H. Gu, R. Zechner, J. Liu\*, "Identification of an intrinsic lysophosphatidic acid acyltransferase activity in the lipolytic inhibitor G0/G1 switch gene 2 (G0S2)", FASEB J., 33, 6655-6666, 2019. PMID: 30802154

*5-year Impact Factor: 5.421; Dr. Gu is responsible for measuring lipid data using advanced mass spectrometry methods.*

16. B. Zhu, H. Cao, G. Li, W. Du, G. Xu, J. Santo Domingo, H. Gu, N. Xu, S. Duan, J. Lu\*, "Biodiversity and dynamics of cyanobacterial communities during blooms in temperate lake (Harsha Lake, Ohio, USA)", J. Harmful Algae, 82, 9-18, 2019. PMID 30928013

*5-year Impact Factor: 4.27; Dr. Gu is responsible for all metabolomics studies using optimized mass spectrometry methods in this project.*

17. C. Li, J. L. Dempsey, D. Wang, S. Lee, K. M. Weigel, Q. Fei, D. K. Bhatt, B. Prasad, D. Raftery, H. Gu\*, J. Y. Cui\*, "PBDEs Altered Gut Microbiome and Bile Acid Homeostasis in Male C57BL/6 Mice", Drug Metab. Dispos., 46, 1226-1240, 2018. PMCID: PMC6053593

*5-year Impact Factor: 3.633; Dr. Gu is the co-Corresponding Author and responsible for bile acid detection, metabolism analysis, and manuscript preparation. In this study, they showed that PBDEs, environmental contaminants, induced wide metabolism changes in gut microbiome in mice.*

18. D. Wang‡, X. Sun, J. Yan, B. Ren, B. Cao, Q. Lu, Y. Liu, J. Zeng, N. Huang, Q. Xie, H. Gu\*, J. Wang\*, “Alterations of eicosanoids and related mediators in patients with schizophrenia”, *J Psychiatr. Res.*, 102:168-178, 2018. PMID: 29674269  
*5-year Impact Factor: 4.475; Dr. Gu is the co-Corresponding Author and responsible for data analysis and manuscript preparation. The goal of this project is to use the metabolomics approach for the accurate diagnosis of schizophrenia.*
19. P. Lohavanichbutr, Y. Zhang, P. Wang, H. Gu, G. A. N. Gowda, D. Djukovic, M. Buas, D. Raftery, C. Chen\*, “Salivary metabolite profiling distinguishes patients with oral cavity squamous cell carcinoma from normal controls”, *PLoS One*, e0204249, 2018. PMID: PMC6147497  
*5-year Impact Factor: 3.337; Dr. Gu is responsible for collecting metabolomics data from saliva samples for oral cancer diagnosis.*
20. B. Roshanravan, L. Zelnick, D. Djukovic, H. Gu, J. Alvarez, T. Ziegler, J. Gamboa, K. Utzschneider, B. Kestenbaum, J. Himmelfarb, S. Kahn, D. Raftery, I. de Boer\*, “Chronic kidney disease attenuates the plasma metabolome response to insulin”, *JCI Insight*, 3, e122219, 2018. PMID: PMC6141172  
*5-year Impact Factor: 6.014; Dr. Gu is responsible for metabolomics data collection and data analysis using blood samples.*
21. R. Centini, M. Tsang, T. Iwata, H. Park, J. Delrow, D. Margineantu, B. Iritani, H. Gu, H. Liggitt, J. Kang, L. Kang, D. Hockenbery, D. Raftery, B. Iritani\*, “Loss of Fnip1 alters kidney developmental transcriptional program and synergizes with TSC1 loss to promote mTORC1 activation and renal cyst formation”, *PLoS One*, e0197973, 2018. PMID: PMC5999084  
*5-year Impact Factor: 3.337; Dr. Gu is responsible for metabolomics data collection from tissue samples.*
22. D. Du‡, H. Gu, D. Djukovic, L. Bettcher, M. Gong‡, W. Zheng, L. Hu, X. Zhang, R. Zhang, D. Wang‡, D. Raftery\*, “Multiplatform Metabolomics Investigation of Antiadipogenic Effects on 3T3-L1 Adipocytes by a Potent Diarylheptanoid”, *J. Proteome Res.*, 17, 2092-2101, 2018. PMID: 29688022  
*5-year Impact Factor: 3.917; Dr. Gu is responsible for measuring metabolite levels and fluxes using the 3T3-L1 cell model.*

#### Prior to ASU:

23. E. Quarles, N. Basisty, Y. Chiao, G. Merrihew, H. Gu, M. Sweetwyne, J. Fredrickson, N. Nguyen, M. Razumova, K. Kooiker, F. Moussavi-Harami, M. Regnier, C. Quarles, M. MacCoss, P. Rabinovitch\*, “Rapamycin persistently improves cardiac function in aged, male and female mice, even following cessation of treatment”, *Aging Cell*, e13086, 2019. PMID: 31823466
24. A. Pilon, H. Gu, D. Raftery, V. Bolzani, N. Lopes, I. Castro-Gamboa, F. Neto\*, “Mass Spectral Similarity Networking and Gas-Phase Fragmentation Reactions in the Structural Analysis of Flavonoid Glycoconjugates”, *Anal. Chem.*, 91, 10413, 2019. PMID: 31313915
25. R. Burr, H. Gu, K. Cain, D. Djukovic, X. Zhang, C. Han, N. Callan, D. Raftery, M. Heitkemper\*, “Tryptophan Metabolites in Irritable Bowel Syndrome: An Overnight Time-course Study”, *J Neurogastroenterol Motil.*, 25, 551, 2019. PMID: PMC6786437
26. D. Shao, O. Villet, Z. Zhang, S. Choi, J. Yan, J. Ritterhoff, H. Gu, D. Djukovic, D. Christodoulou, S. Kolwicz, D. Raftery, R. Tian\*, “Glucose promotes cell growth by suppressing branched-chain amino acid degradation”, *Nat. Commun.*, 9, 2935, 2018. PMID: PMC6062555
27. B. N. R. Ginos, S. L. Navarro, Y. Schwarz, H. Gu, D. Wang, T. W. Randolph, A. Shojaie, M. A. J. Hullar, P. D. Lampe, M. Kratz, M. L. Neuhauser, D. Raftery, J. W. Lampe, “Circulating bile acids in healthy adults respond differently to a dietary pattern characterized by whole grains, legumes and fruits and vegetables compared to a diet high in refined grains and added sugars: A randomized, controlled, crossover feeding study”, *Metabolism*, 83, 197-204, 2018. PMID: PMC5960615
28. R. J. Davis, M. Gönen, D. H. Margineantu, S. Handeli, J. Swanger, P. Hoellerbauer, P. J. Paddison, H. Gu, D. Raftery, J. E. Grim, D. M. Hockenbery, A. A. Margolin, B. E. Clurman, “Pan-cancer transcriptional signatures

- predictive of oncogenic mutations reveal that Fbw7 regulates cancer cell oxidative metabolism”, *PNAS*, 115, 5462-5467, 2018. PMID: 29735700
29. G. A. N. Gowda, D. Djukovic, L. Bettcher, H. Gu, D. Raftery\*, “NMR-Guided Mass Spectrometry for Absolute Quantitation of Human Blood Metabolites”, *Anal. Chem.*, 90, 2001-2009, 2018. PMID: 29293320
  30. R. Li, S. Grimm, D. Mav, H. Gu, D. Djukovic, R. Shah, B. Merrick, D. Raftery, P. Wade\*, “Transcriptome and DNA Methylome Analysis in a Mouse Model of Diet-Induced Obesity Predicts Increased Risk of Colorectal Cancer”, *Cell Rep.*, 624-637, 2018. PMID: PMC5793878
  31. C. Chen, G. A. N. Nagana, J. Zhu, L. Deng, H. Gu, E. G. Chiorean, M. Abu Zaid, M. Harrison, D. Zhang, M. Zhang\*, D. Raftery\*, “Altered metabolite levels and correlations in patients with colorectal cancer and polyps detected using seemingly unrelated regression analysis”, *Metabolomics*, 12, 125, 2017.
  32. J. R. Chao\*, K. Knight, A. L. Engel, C. Jankowski, Y. Wang, M. A. Manson, H. Gu, D. Djukovic, D. Raftery, J. B. Hurley, J. Du\*, “Human retinal pigment epithelial cells prefer proline as a nutrient and transport metabolic intermediates to the retinal side”, *J. Bio. Chem.*, 292, 12895-12905, 2017. PMID: PMC5546030
  33. F. Miles, S. Navarro, Y. Schwarz, H. Gu, D. Djukovic, T. Randolph, A. Shojaie, M. Kratz, M. Hullar, P. Lampe, M. Neuhauser, D. Raftery, J. Lampe\*, “Plasma metabolite abundances are associated with urinary enterolactone excretion in healthy participants on controlled diets”, *Food Funct.*, 8, 3209-3218, 2017. PMID: 28808723
  34. M. Buas, H. Gu, D. Djukovic, J. Zhu, L. Onstad, B. Reid, D. Raftery\*, T. Vaughan\*, “Candidate serum metabolite biomarkers for differentiating gastroesophageal reflux disease, Barrett's esophagus, and high-grade dysplasia/esophageal adenocarcinoma”, *Metabolomics*, 13, 23, 2017. PMID: PMC5295138
  35. H. Lu, H. Zhu\*, T. Zhu, Y. Xiao, S. Xie, H. Gu, M. Cui, L. Luo, “Metabolic Effects of Clenbuterol and Salbutamol on Pork Meat Studied Using Internal Extractive Electrospray Ionization Mass Spectrometry”, *Sci. Reports*, 7, 5136, 2017. PMID: PMC5506000.
  36. T. Li, Z. Zhang, S. Kolwicz, L. Abell, N. Roe, M. Kim, B. Zhou, Y. Cao, J. Ritterhoff, H. Gu, D. Raftery, H. Sun, R. Tian\*, “Defective Branched-Chain Amino Acid Catabolism Disrupts Glucose Metabolism and Sensitizes the Heart to Ischemia-Reperfusion Injury”, *Cell Metab.*, 25, 374-385, 2017. PMID: PMC5301464.
  37. J. Rabinowitz, A. Robitaille, Y. Wang, C. Ray, R. Thummel, H. Gu, D. Djukovic, D. Raftery, J. Berndt, R. Moon\*, “Transcriptomic, proteomic, and metabolomic landscape of positional memory in the caudal fin of zebrafish”, *PNAS*, 114, E717-E726, 2017. PMID: PMC5293114.
  38. F. Carnevale Neto, A. C. Pilon, D. M. Selegato, R. T. Freire, H. Gu, D. Raftery, N. P. Lopes\*, I. Castro-Gamboa\*, “Dereplication of Natural Products Using GC-TOF Mass Spectrometry: Improved Metabolite Identification by Spectral Deconvolution Ratio Analysis”, *Front. Mol. Biosci.*, 3, 59, 2016. PMID: PMC5044510
  39. H. Zhao, J. Shen, D. Djukovic, C. Daniel-MacDougall, H. Gu, X. Wu, W. H. Chow, “Metabolomics-identified metabolites associated with body mass index and prospective weight gain among Mexican American women”, *Obes. Sci. & Pract.*, 2, 309-317, 2016. PMID: PMC5043515
  40. H. Gu, J. Du, P. A. Carroll, J. Zhu, F. Carnevale Neto, R. N. Eisenman, D. Raftery\*, “Quantitative Method to Investigate the Balance between Metabolism and Proteome Biomass: Starting from Glycine”, *Angew. Chem. Int. Ed.*, 55, 15656-15650, 2016. PMID: 27860107
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40. Z. Pan, H. Gu, H. Chen, A. Jackson, N. Talaty, B. Xi, C. Kissinger, C. Duda, D. Mann, D. Raftery, R. G. Cooks: Monitoring Diet Effects from Biofluids and Their Implications for Metabolomics Studies, Pittsburgh Conference on Analytical Chemistry, 2007.
41. R. G. Cooks, N. Talaty, H. Chen, A. Jackson, Y. Song, Z. Pan, H. Gu, D. Raftery: Rapid and Quantitative Metabolomics Using New Techniques in Ambient Mass Spectrometry and Nuclear Magnetic Resonance Spectrometry, Pittsburgh Conference on Analytical Chemistry, 2007.
42. C. J. Murphy, H. Gu, D. Raftery: Hyperpolarized <sup>129</sup>Xe NMR Studies of Low Surface Area Solids, Pittsburgh Conference on Analytical Chemistry, 2007.
43. A. Jackson, N. Talaty, H. Gu, S. Werner, H. Chen, J. Morgan, D. Raftery, R. G. Cooks: Ambient Mass Spectrometry Applications to Targeted Metabolic Pathway Analysis, Pittsburgh Conference on Analytical Chemistry, 2007.
44. Z. Pan, H. Gu, X. Huang, G. H. J. Park, F. E. Regnier, D. Raftery: Combining GC×GC-MS and NMR in Metabolomics: Towards the Early Detection of Colon Cancer, American Society for Mass Spectrometry, 2007.
45. Z. Pan, H. Chen, H. Gu, N. Shanaiah, R. G. Cooks: Diagnosis of Inborn Errors of Metabolism Using NMR Spectroscopy, Experimental Nuclear Magnetic Resonance Conference, 2006.

### **Talks:**

1. *Daily red wine vinegar ingestion for eight weeks improves glucose homeostasis and affects the metabolome but does not reduce adiposity in adults*, Metabolomics Association of North America, Atlanta, 2019.
2. *Development and Applications of Advanced Mass Spectrometry in Metabolomics*, Department of Medicine, University of Arizona, Tucson, 2019.

3. *Development and Applications of Advanced Mass Spectrometry in Metabolomics*, Department of Molecular Pharmacology and Experimental Therapeutics, Mayo, Rochester, 2019.
4. *Mass Spectrometry-Based Metabolomics in Autism*, ASD Translational Team Mini-Conference, Phoenix, 2019.
5. *Development and Applications of Advanced Mass Spectrometry in Metabolomics*, Arizona Alzheimer's Retreat, Tucson, 2019.
6. *CAREER: System Development and Data Analysis in Mass Spectrometry to Enable Reliable and Broad Metabolic Flux Analysis*, NSF Career Workshop, Alexandria, 2019.
7. *Loss of SETD2 Induces a Metabolic Switch in Renal Cell Carcinoma Cell Lines Toward Enhanced Oxidative Phosphorylation*, Mass Spectrometry Applications to the Clinical Lab, Palm Springs, 2019.
8. *Recent Development and Applications in Mass Spectrometry-based Metabolomics*, AML Metabolomics Symposium, Scottsdale, 2019.
9. *Recent advances of targeted mass spectrometry in metabolomics*, Targeted Mass Spectrometry and Skyline Workshop, Metabolomics Society Conference, Seattle, 2018.
10. *Metabolomics Analysis of Hypoxic Preconditioning in C. elegans*, Metabolomics Society Conference, Seattle, 2018.
11. *Development and Application Studies in Arizona Metabolomics Laboratory*, AML Metabolomics Symposium, Scottsdale, 2018.
12. *Development and Applications of Advanced Mass Spectrometry in Metabolomics*, Immunotherapy, Vaccines and Virotherapy, Biodesign, Arizona State University, Tempe, AZ, 2018.
13. *Advanced Mass Spectrometry in Metabolomics*, Mitochondria and Metabolism Interest Group Meeting, Seattle, WA, 2017.
14. *Metabolism is Widely Altered in C. elegans Under Hypoxic Preconditioning*, Cascadia Proteomics Symposium, Seattle, WA, 2017.
15. *Variable Selection for Combining NMR and MS in Metabolomics*, Cascadia Proteomics Symposium, Seattle, WA, 2016.
16. *Identification of Plasma Metabolite Biomarkers for Serous Ovarian Carcinoma*, Mass Spectrometry Seminar on Lipidomics (AB-Sciex), Seattle, WA, 2015.
17. *Cellular Metabolism Studies of the Extended Myc Network*, Mitochondria and Metabolism Interest Group Meeting, Seattle, WA, 2015.
18. *Methods Development for Unknown Identification and Colon Cancer Detection*, NWMRC Metabolomics Symposium, Seattle, WA, 2013.
19. *Method Development and Application Studies in the NW-MRC*, Cascadia Proteomics Symposium, Seattle, WA, 2013.
20. *Development and Initial Validation of a Metabolite Profile for the Early Detection of Breast Cancer Recurrence*, American Society for Mass Spectrometry, Vancouver, CAN, 2012.
21. *Differentiation of Maturity and Quality of Fruit Using Noninvasive Extractive Electrospray Ionization Quadrupole Time-of-Flight Mass Spectrometry*, American Society for Mass Spectrometry, Denver, CO, 2011.
22. *Considerations Involved in Choosing the 1st Dimension Column for Comprehensive 2DLC*, Minnesota Chromatography Forum, Minneapolis, MN, 2010.

### **Teaching Responsibilities:**

**At ASU:**

Course	Semester	Enrollment
NTR 598-Nutrition and Food Metabolomics	Spring 2018	8
NTR 499-Individualized Instruction	Summer 2018	3
NTR 499-Individualized Instruction	Fall 2018	1
NTR 492-Honors Directed Study	Fall 2018	1
NTR 493-Honors Thesis	Spring 2019	1
NTR 499-Individualized Instruction	Spring 2019	1
NTR 599-Exercise and Nutritional Science	Spring 2019	1
EXW 501-Research Statistics	Spring 2019	17
NTR 499-Individualized Instruction	Fall 2019	3
MBB 495-Undergraduate Research	Fall 2019	1
NTR 599-Thesis	Fall 2019	3
NTR 692-Research	Fall 2019	1
EXW 501-Research Statistics	Fall 2019	20
HCD 300-Biostatistics	Fall 2019	59

**Prior to ASU:**

2003-2006	Teaching Assistant, Department of Physics, Purdue University
Fall 2010	Separation Sciences, Department of Chemistry, University of Minnesota

**Mentorship:****At ASU:**

Student/Postdoc	Degree	From Date	To Date
Xiaojian Shi	Postdoc	Spring 2018	On-going
Paniz Jasbi	PhD	Fall 2018	On-going
Jeffrey Patterson	MS	Fall 2018	On-going
William Bresette	BS	Spring 2018	Spring 2019
Brandon Chow	BS	Spring 2018	On-going
Jonathan Hrovat	BS	Spring 2018	Spring 2019
Cassidy Turner	BS	Spring 2018	On-going
Sarah Atlas	BS	Fall 2018	Fall 2019
Keelin Murphy Riepe	BS	Fall 2018	Spring 2019
Keelin Murphy Riepe	MS	Fall 2019	On-going
Ryan Eghlimi	BS	Fall 2018	On-going
Alex Lawrence	BS	Spring 2019	On-going

**William Bresette** graduated from ASU with the **Moer Award** and the **Outstanding Dietetic Student Award** from ASU College of Health Solutions and the Arizona Academy of Nutrition and Dietetics, respectively, for his excellent achievements with the highest academic standing. He is currently a PhD student in the University of Arizona.

**Keelin Riepe** graduated from ASU with a BS degree, and she was admitted to the MS program at ASU College of Health Solutions, with the **Susan Coleman Scholarship in Nutrition**.

**Paniz Jasbi** won the **Outstanding Research Award** from the Graduate & Professional Student Association (GPSA) at ASU, for his excellent achievements in metabolomics research.

**Student Committee Member:**

Student	Degree	Mentor	From Date	To Date
Carmen Ortega	PhD	Dr. Corrie Whisner	Spring 2018	On-going
Natalie Kopplin	MS	Dr. Carol Johnston	Fall 2019	On-going
John Son	BS	Dr. Christos Katsanos	Fall 2018	Spring, 2019
Hamza Ghannam	BS	Dr. Christos Katsanos	Spring 2019	On-going

**Prior to ASU:**

2012-2013	Fausto Carnevale Neto, Visiting Student from Sao Paulo State University, Araraquara, Brazil
2013-2014	Lingli Deng, Visiting Student from Xiamen University, Xiamen, Fujian Province, P. R. China
2014-2015	Ping Zhang, Visiting Student from China Agricultural University, Beijing, P. R. China
2015-2017	Renke Zhang, Visiting Student from China Agricultural University, Beijing, P. R. China
2016-2017	Dongfang Wang, Visiting Student from Peking University, Beijing, P. R. China

**SERVICE TO ASU****University Level:**

2018-present	OKED Mass Spectrometry Facility
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**School/College Level:**

March 2018	Arizona Metabolomics Laboratory Metabolomics Symposium, College of Health Solutions, Arizona State University
October 2018	Student Research Fair, College of Health Solutions, Arizona State University
Fall 2018-present	Graduate Student Recruitment Committee, College of Health Solutions, Arizona State University
Fall 2018-present	Undergraduate Student Recruitment Committee, College of Health Solutions, Arizona State University
Fall 2018-present	CHS Research Council
Fall 2018-present	Faculty Recruitment Committee, College of Health Solutions, Arizona State University
Fall 2019-present	ENS Executive Committee, College of Health Solutions, Arizona State University
Fall 2019-present	CHS Tenure Track ad hoc Review Committee

**SERVICE TO THE COMMUNITY:**

2018	Connect2STEM program
2016-2018	Organizing Committee Member, International Conference of the Metabolomics Society
Spring 2018-	Scholarly Project Mentor, University of Arizona College of Medicine
Spring 2018	Scientific Peer Advisory and Review Services Division, the American Institute of Biological Sciences (AIBS)
April 2019	Judge for the American Society for Biochemistry and Molecular Biology (ASBMB) Undergraduate Poster Competition
Fall 2019	Florida Department of Health Biomedical Research Program Review

**Editorial Responsibility:**

2013-	Current Metabolomics
2018-	Metabolites

**Ad-hoc Journal Reviewer:**

Analytical Chemistry  
 Analyst  
 Metabolites  
 Scientific Reports  
 Molecular Carcinogenesis  
 Metabolomics  
 Journal of the American Society for Mass Spectrometry  
 The Anatomical Record  
 Journal of Proteome Research  
 Analytica Chimica Acta  
 Journal of Pharmaceutical and Biomedical Analysis

Journal of Chromatography B  
RSC Advances  
Frontiers Pharmacology  
Cancer Medicine  
Oncotarget  
Analytical Methods