Zhao Danyue (Daisy)

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EDUCATION

- **Doctor of Philosophy, The University of Hong Kong**, Hong Kong 09/2012 – 10/2016

Major: Food & Nutritional Sciences (Areas of study: Food Chemistry, Molecular Nutrition, Microbiology)

- **Bachelor of Science (1st Hons), Hong Kong Baptist University**, Hong Kong 09/2008 – 06/2012

Major: Chemistry (Environmental Studies), Cumulative GPA: 3.67/4.00 (No. 1 in the Dept. of Chemistry)

- **Exchange Study, Simon Fraser University**, Canada 01/2011 – 06/2011

Major: Chemistry

PROFESSIONAL POSITIONS & EXPERIENCE

- **Postdoctoral associate at Rutgers University**, School of Environmental and Biological Sciences, New Use Agriculture and Natural Plant Products (NUANPP) Program

Advisors: Prof. James E. Simon & Prof. Qingli Wu 12/2016 – Present

Project 1 - Dietary botanicals in the preservation of cognitive and psychological resilience. (Funding from NIH ODS and NCCIH, IP50AT008661-01, 2016-2020)

Project 2 - Effects of raspberry ketone on body weight and metabolic outcomes in obesity. (Funding from NIH ODS and NCCIH, PAR-15-024 to Institute of Food, Nutrition and Health at Rutgers, 2017-2021)

- **PhD Student at The University of Hong Kong,** School of Biological Sciences, Food and Nutritional Science Program

Supervisor: Prof. Nagendra P. Shah 09/2012 – 10/2016

Dissertation title: Application of lactic acid fermentation for enhancement of flavonoid bioavailability and functional properties of tea and soy phenolic extract

- **Research Assistant at Hong Kong Baptist University,** Department of Chemistry

Supervisor: Prof. Zongwei Cai 06/2011 – 06/2012

Dissertation title (final year project): Comparative study of B vitamins and essential amino acids in dietary supplements by capillary electrophoresis-laser induced fluorescence (CE-LIF) and hydrophilic interaction liquid chromatography mass spectroscopy (HILIC-MS/MS) techniques

- **Research Assistant at Hong Kong Baptist University,** Department of Chemistry

Supervisor: Dr. Daniel W.J. Kwong 06/2010 – 08/2010

Study of vanadium(V)-peroxo complexes with insulin-mimetic properties; Synthesis and characterization of five vanadium(V)-peroxo complexes.

TEACHING & MENTORING EXPERIENCE

- **Adjunct Instructor at Rutgers** –

1) **Medicinal Plants** (11:776:312)**,** Fall Semester 2017-2018, Dept. of Plant Biology, Rutgers University

– Two lectures on phytochemistry and pharmacological application of medicinal plants.

2) **Plants and Human Health** (11:776:438), Spring Semester 2017-2018, Dept. of Plant Biology, Rutgers University – Course material preparation; Coordinators for students' oral presentations on selected topics and group projects.

- **Advisor to Graduate Students[(G)] and Undergraduates[(U)] at Rutgers** – Yuan Bo[(G)] (Dept. of Food Science); Eileen Carry[(G)] (Dept. of Medicinal Chemistry); Andrew Polyak[(U)] (Dept. of Cell Biology and Neuroscience); Jenna Thaochuetoua[(U)] (Dept. of Food Science)
- **Advisor to Research Master Students at HKU** (Food & Nutritional Sciences MSc. Program)

Supervised 8 master students working in our lab for completion of their degree dissertations.

- **Teaching Assistant at HKU** (Demonstrator of laboratory practicals for 7 undergraduate courses) –

Food Chemistry; Biochemistry; Diet and Disease; Nutrition and Public health; Clinical Nutrition; Food Processing and Engineering; Meat and Dairy Science.

PEER-REVIEWED PUBLICATIONS Google Scholar – https://tinyurl.com/daisyzhao

1. **Zhao, D.**; Yuan, B.; Kshatriya, D.; Polyak, A.; Simon, J.E., Wu, Q.L. & Bello, N.T. (2019). Bioavailability and metabolism of raspberry ketone in diet-induced obese mice: implications for obesity-prevention and gender-related factors. **Molecular Nutrition and Food Research,** *Under review.*
2. **Zhao, D.**; J.; Simon, J.E. & Wu, Q.L. (2019). A Critical Review on Grape Polyphenols for Neuroprotection: Strategies to Enhance Bioefficacy. **Critical Reviews in Food Science and Nutrition**, *In press.* DOI: 10.1080/10408398.2018.1546668
3. Yuan, B.[(#1)] ; **Zhao, D.[(#1)]**; Kshatriya, D.; Bello, N.T.; Simon, J.E. & Wu, Q.L. (2019). UHPLC-MS/MS method development and validation with design of experiment (DoE) methodology, random effects ANOVA and multivariate analysis. **Analytical Chemistry,** *Under review*.
4. Kshatriya, D.; Li, X.; Giunta, G.M.; **Zhao, D.**; Yuan, B.; Simon, J.E.; Wu, Q.L. & Bello, N.T. (2019). Phenolic-enriched raspberry extracts (*Rubus idaeus*) reduces body weight gain, adiposity, and decreases ghrelin in male mice fed a high-fat diet. **Nutrition Research,** *accepted for publication*.
5. Ho, L.[(#1)]; **Zhao, D.[(#1)]**; Ono, K.; Ruan, K.; Mogno, I.; Tsuji, M.; Carry, E.; Brathwaite, J.; Sims, S.; Frolinger, T.; Westfall, S.; Mazzola, P.; Simon, J.E.; Wu, Q.L.; Faith, J. & Pasinetti, G.M. (2018). Heterogeneity in gut microbiota drive polyphenol metabolism that influences α-synuclein misfolding and toxicity. **The Journal of Nutritional Biochemistry,** *In press.* DOI.org/10.1016/j.jnutbio.2018.10.019
6. Wang, J.; **Zhao, D.**; Tiano, S.; Esteban-Fernández, A.; Yuan, B.; Smith, C.; Brathwaite, J.; Wu, Q.L.; Simon, J.E. & Pasinetti, G.M. (2019). Flavanol-rich cocoa preparation promotes psychological resilience in a mouse model of depression. **The Journal of Nutritional Biochemistry,** *Just accepted.*
7. Carry, E.[(#1)]; **Zhao, D.[(#1)];** Faith, J.; Ho, L.; Villani, T.; Patel, H.; Pasinetti, G.M.; Simon, J.E. & Wu, Q.L. (2018). Development and validation of a gas chromatography-triple quadruple mass spectrometry method for quantification of microbial phenolic acid metabolites derived from grape flavanols. **Journal of Pharmaceutical and Biomedical Analysis,** *159, 374-383*.
8. **Zhao, D.**; Yuan, B.; Carry, E.; Pasinetti, G.M.; Ho, L.; Faith, J.; Mogno, I.; Simon, J.E. & Wu, Q.L. (2018). Development and validation of an ultra-high performance liquid chromatography/triple quadrupole

mass spectrometry method for analyzing microbial-derived grape polyphenol metabolites. **Journal of Chromatography B,** *1099,* 34-45.

9. Ou, J.; Huang, J.; **Zhao, D.**; Du, B.; Wang, M. (2018). Protective effect of rosmarinic acid and carnosic acid against streptozotocin-induced oxidation, glycation, inflammation and microbiota imbalance in diabetic rats. **Food & Function,** *9,* 851-860.
10. Yuan, B.; **Zhao, D.**; Du, R.; Kshatriya, D.; Bello, N.T.; Simon, J.E. & Wu, Q.L. A highly-sensitive ultra-high performance liquid chromatography/tandem mass spectrometry method with in-source fragmentation for rapid quantification of raspberry ketone. **Journal Food and Drug Analysis,** *in press*.
11. Pasinetti, G.M.; Ho, L.; Cheng, H.; Wang, J.; **Zhao, D.**; Carry, E.; Simon, J.E.; Wu, Q.L.; Ferruzzi, M.G.; Faith, J.; Valcarcel, B. & Hao, K. (2017). A comprehensive database and analysis framework to incorporate multiscale data types and enable integrated analysis of bioactive polyphenols. **Molecular Pharmaceutics,** *15,* 840–850**.**
12. **Zhao, D.** & Shah, N.P. (2016). Synergistic administration of lactic acid bacteria and black tea enhances polyphenols bioavailability and relieves D-galactose induced oxidative stress in mice via modulating glutathione-related enzymes. **The Journal of Nutritional Biochemistry,** *38,* 116 – 124.
13. **Zhao, D.** & Shah, N.P. (2016). Synergistic application of black tea extracts and lactic acid bacteria in protecting human colonocytes against oxidative damage. **Journal of Agricultural and Food Chemistry,** *64,* 2238–2246.
14. **Zhao, D.** & Shah, N.P. (2016). Lactic acid bacterial fermentation modified phenolic composition in tea extracts and enhanced their antioxidant activity and cellular uptake of phenolic compounds following in vitro digestion. **Journal of Functional Foods,** *20,* 182 – 194.
15. **Zhao, D.** & Shah, N.P. (2016). *(Invited Review)* Application of dietary phenolic extracts and fermentation biotechnology in combating oxidative stress. **Journal of Hong Kong Food Science and Technology Association,** *5,* 24 – 28.
16. **Zhao, D.** & Shah, N.P. (2015). Tea and soybean extracts in combination with milk fermentation inhibit growth and enterocyte adherence of selected foodborne pathogens. **Food Chemistry,** *180,* 306-316.
17. **Zhao, D.** & Shah, N.P. (2014). Antiradical and tea polyphenol-stabilizing ability of functional fermented soymilk–tea beverage. **Food Chemistry,** *158,* 262 – 269.
18. **Zhao, D.** & Shah, N.P. (2014). Influence of tea extract supplementation on bifidobacteria during soymilk fermentation. **International Journal of Food Microbiology,** *188,* 36 – 44.
19. **Zhao, D.** & Shah, N.P. (2014). Effect of tea extract on lactic acid bacterial growth, their cell surface characteristics and isoflavone bioconversion during soymilk fermentation. **Food Research International,** *62,* 877 -885.
20. **Zhao, D.** & Shah, N.P. (2014). Changes in antioxidant capacity, isoflavone profile, phenolic and vitamin contents in soymilk during extended fermentation. **LWT-Food Science and Technology,** *58,* 454 – 462.
21. **Zhao, D.;** Lu, M. & Cai, Z. (2012). Separation and determination of B vitamins and essential amino acids in health drinks by CE-LIF with simultaneous derivatization. **Electrophoresis,** *33,* 2424 – 2432. ***(Published during my undergraduate study)***

WORKING PAPER

22. **Zhao, D.**; Carry, E.; Ho, L.; Faith, J.; Wang, J.; Pasinetti, G.M.; Simon, J.E. & Wu, Q.L. (2019). Metabolomics survey of microbial-derived flavan-3-ol metabolites in mice for identification of brain-targeting phenolic biomarkers with neuro-protective efficacy. *Under preparation.*

CONFERENCE PRESENTATIONS

1. (Invited Seminar) **Danyue Zhao**. Insights into Metabolism and Bioavailability of Dietary Polyphenols: Implications for Disease Prevention. January 7 2019, The Hong Kong Polytechnic University
2. (Oral Presentation) **Danyue Zhao**, Lap Ho, Ilaria Mongo, Eileen Carry, Justin Brathwaite, Steven Sims, Tal Frolinger, James E. Simon, Jeremiah Faith, Qingli Wu & Giulio M. Pasinetti. Metabolomic insights into microbial metabolism of flavan-3-ols and generation of brain-targeting bioactive metabolites in humanized gnotobiotic mouse models. *Metabolomics 2018*, Jun 24-28, Seattle, WA.
3. (Poster Presentation) **Danyue Zhao**, Dushyant Kshatriya, Bo Yuan, Nicholas T. Bello, James E. Simon & Qingli Wu. Metabolomic investigations into bioavailability and metabolism of raspberry ketone in diet-induced obese mice and potential implications for obesity prevention. *Metabolomics 2018*, Jun 24-28, Seattle, WA.
4. (Poster Presentation) Lap Ho, **Danyue Zhao,** Ilaria Mogno, Kenjiro Ono, Mayumi Tsuji, Elieen Carry, Justin Brathwaite, *et al.* Interpersonal Heterogeneity in Gut Microbiota May Contribute to Variable Susceptibility to alpha-Synucleinopathies." *143rd Annual Meeting American Neurological Association* 2018, Oct 21-23, Atlanta, GA.
5. (Poster Presentation) **Danyue Zhao**, Lap Ho, Ilaria Mongo, Eileen Carry, Justin Brathwaite, Steven Sims, Tal Frolinger, James E. Simon, Jeremiah Faith, Qingli Wu & Giulio M. Pasinetti. Metabolomic insights into microbial metabolism of flavan-3-ols and generation of brain-targeting bioactive metabolites in humanized gnotobiotic mouse models. *NIH Centers for Advancing Research on Botanicals and Other Natural Products (CARBON) Program Annual Meeting 2018*, May 21-22, Washington DC.
6. (Poster Presentation) Eileen Carry, **Danyue Zhao**, Jeremiah Faith, Lap Ho, Tom Villani, Harna Patel, Giulio M. Pasinetti, James E. Simon & Qingli Wu. Development and validation of a gas chromatography-triple quadruple mass spectrometry method for quantification of microbial phenolic acid metabolites derived from grape flavanols. *NIH Centers for Advancing Research on Botanicals and Other Natural Products (CARBON) Program Annual Meeting 2018*, May 21-22, Washington DC.
7. (Invited Seminar) **Danyue Zhao**. Metabolomic Insights into Metabolism and Bioavailability of Dietary Flavonoids. *Plant Biology Seminar Series-Spring' 2018,* Mar 30, Rutgers University.
8. (Oral Presentation) **Danyue Zhao**, Eileen Carry, Giulio Pasinetti, Jun Wang, Lap Ho, Jim Simon and Qingli Wu. Insights into bioavailability and microbial catabolism of grape polyphenols in mice using an efficient UPLC-triple quadrupole-MS/MS method. *22nd International Conference of Functional Food Center-Functional Foods and Chronic Diseases 2017,* Sept 22-23, Harvard Medical School, Boston, MA.
9. (Poster Presentation) **Danyue Zhao**, Nagendra P. Shah, Qingli Wu and James E. Simon. Synergistic application of tea extract and lactic acid bacterial fermentation in enhancing bioavailability and anti-

oxidative effectiveness of tea flavonoids. *22nd International Conference of Functional Food Center-Functional Foods and Chronic Diseases 2017,* Sept 22-23, Harvard Medical School, Boston, MA.

10. (Oral Presentation) **Danyue Zhao**, Eileen Carry, Wang Jun, Lap Ho, Giulio M. Pasinetti, James E. Simon & Qingli Wu. Bioanalytical and biosynthetic approaches to the generation of bioactive grape polyphenol metabolites for promoting cognitive and psychological resilience. *NIH Botanical Center for Molecular Integrative Neuroresilience Annual Symposium 2017*, Jun 6, New York Academy of Medicine, New York, NY.
11. (Poster Presentation) **Danyue Zhao**, *et al*. Development and validation of a UPLC-QQQ-MS/MS method for the determination of phenolic acid metabolites in biological samples. *NIH Centers for Advancing Research on Botanicals and Other Natural Products (CARBON) Program Annual Meeting 2017*, May 18-19, Chicago, IL.
12. (Oral Presentation) Synergistic application of tea extract and probiotics in enhancing bioavailability and antioxidant properties of tea flavonoids. *17th International Conference on Oxidative Stress Reduction, Redox Homeostasis and Antioxidants 2016,* June 13-15, Institut Pasteur, Paris, France.
13. (Oral Presentation) Application of tea extracts and lactic acid bacteria in combating oxidative stress. *Symposium on Environmental Health and Food Safety 2016,* Jan 14, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong, China.
14. (Graduate Student Oral Presentation Competition, 1st place) Enhancing antioxidant properties of tea extract and cellular uptake of tea flavonoids via lactic acid bacterial fermentation. *The 8th International Conference and Exhibition of the ISNFF 2015,* Sept 20-23, Wuxi, China.
15. (Poster Presentation) Influence of fermentation with selected LAB and bifidobacteria on bacterial growth, isoflavone bioconversion, tea polyphenol-stability and antiradical activity in fermented soymilk-tea. *The IFT14 Annual Meeting 2014*, Jun 21-24, New Orleans, LA.

HONORS AND AWARDS

- Metabolomics Society Early Career Travel Award for *Metabolomics* 2018, the 14th Annual International Conference of the Metabolomics Society, June 2018
- Li Po Chun Charitable Trust Fund Postgraduate Scholarship, Hong Kong Li Po Chun Charitable Trust Fund, Jun 2016
- Finalist, 3 Minute Thesis Competition, The University of Hong Kong, Mar 2016
- Fereidoon Shahidi Fellowship Award, The International Society for Nutraceuticals and Functional Foods, Sept 2015
- Research Postgraduate Conference Travel Grant, The University of Hong Kong, Apr 2016 & May 2014
- Certificate in Teaching and Learning in Higher Education, Centre for the Enhancement of Teaching and Learning, The University of Hong Kong, May 2013
- Scholastic Award of The Year 2012, Hong Kong Baptist University, Nov 2012
- Best Honors Project Award 2012-2013, Department of Chemistry, Hong Kong Baptist University, Sept 2012
- First runner-up, 23rd Hong Kong Chemistry Olympiad, The Royal Society of Chemistry & Hong Kong

Chemical Society, Feb 2012

- Core member of Science Elite Program, Science Faculty, Hong Kong Baptist University, Sept 2010 – Jun 2012
- Dr. M.H. Scholarship, Dr. M.H. Foundation Hong Kong, Feb 2012
- Padma & Hari Harilela Scholarship for Outstanding Student 2011-2012, Padma & Hari Harilela Foundation, Jan 2012
- Summer Research Fellowship, Faculty of Science, Hong Kong Baptist University, Jun 2010 & 2011
- Lee Koon Shin Scholarship, Lee Koon Shin Foundation Hong Kong, Feb 2011
- Ace Style Int Ltd Scholarship, Ace Style International Limited Hong Kong, Feb 2011
- Hall Residence Scholarship (University Admission Scholarship), Hong Kong Baptist University, Sept 2008-Jun 2012

REVIEWER OF PEER-REVIEWED JOURNALS

Reviewers: Journal of Functional Foods, PLoS One, Journal of Food Science, Journal of Separation Science

EXTERNAL GRANT SUPPORT

Grant Proposals in Preparation

- **NIH Botanical Dietary Supplements Research Center 2018-2019 Pilot Project Program.** ***Submitted on Aug. 16, 2018.*** **Direct Cost Request: US$35,000.**

Title: ***Obesity-preventing effects and bioavailability of a hydrolyzed phenolic-enriched raspberry extract***
Multi-PIs: Drs. Qingli Wu and **Danyue Zhao** *(We received an average score of 2.9, the second highly rated among >150 applications, but was declined by NIH due to administrative issues)*

- **NIH Exploratory/Developmental Research Grant Program (R21).** ***To be submitted in early 2019.*** **Direct Cost Request: US$275,000**

Title: ***Mechanistic investigation into bioavailable raspberry phenolic-enriched extracts for potential promotion of metabolic resilience***
Multi-PIs: Drs. Qingli Wu and Nicholas T. Bello
Co-investigators: Drs. Danyue Zhao, Sara Campbell, and James Simon

- **NIH Opportunities for Collaborative Research at the NIH Clinical Center (U01).** ***To be submitted in early 2019.*** **Direct Cost Request: TBD**

Title: ***Dihydromyricetin analogues for the novel treatment of alcohol use disorder***
Multi-PIs: Drs. David J. Augeri and James E. Simon
Dr. Danyue Zhao will serve as the key investigator responsible for pharmacokinetic studies of select neural receptor-active dihydromyricetin analogues to determine their overall bioavailability in plasma and brain.

Ongoing Research Support

- **NIH/NCCIH/ODS NCCAM P50 Grant-AT008661-04 (Lead PI: Dr. G.M. Pasinetti; Co-PI at Rutgers: Dr. J.E. Simon). Period: 2015-2020. Total: US$1,967,970**

Title: ***Dietary Botanicals in the Preservation of Cognitive and Psychological Resilience***

Goals of the project: In this P50 project, the NUANPP group at Rutgers leads in 1) understanding the bio-availability and metabolism of grape polyphenols in rodents and *in vitro* anaerobic fermentation models; 2) elucidating roles of gut microbiota and "next-generation" probiotics in metabolizing polyphenols and in enhancing the benefits of grape polyphenol-rich preparations on cognitive and psychological health; and 3) providing quality assurance/quality control oversights for all botanical materials used. Rutgers University is the Bioanalytical and Bioavailability Center (NIH Botanical Center Core B) collaborating with Mount Sinai School of Medical in NYC. Dr. D. Zhao serves as a key investigator of Core B at Rutgers.

- **NIH R01 AT008933-01A1 (PI: Dr. N.T. Bello). Period: 2017-2021. Total: US$1,850,000.**

Title: ***Effects of raspberry ketone on body weight and metabolic outcomes in obesity***

This project investigates food-specific molecular profiles and biomarkers of dietary exposure in the context of diet-induced obesity. The effects of raspberry ketone (RK) administration on the central and peripheral factors involved in body weight homeostasis as challenged by high-fat diet are under examination. This preclinical research is instrumental in understanding how RK prevents weight gain and retains metabolic resilience in face of an obesogenic environment. Dr. D. Zhao serves as a key investigator.

Completed Research Support

- **NIH Administrative Supplemental Grant PA-16-048. Period: 2/1/2017-6/30/2018. Total: US$100,000.**

Title: ***Method optimization and validation to access the metabolism and uptake of grape-derived products using ultra-high performance liquid chromatography/triple quadrupole mass spectrometry***

This study validated a new high throughput analytical method for the measurement of key microbial-generated polyphenol metabolites together with their precursors for investigating their roles in modulating cognitive and psychological resilience. Dr. D. Zhao serves as the key investigator at Rutgers for this supplemental grant in support of the parent project "Dietary Botanicals in the Preservation of Cognitive and Psychological Resilience" (P50 AT008661-01).

COMMUNITY SERVICES

Co-founder, Chi Sun Elder Academy, The University of Hong Kong 2013–2016

Chief course coordinator, Chi Sun Elder Academy – Elder Art Class 2014–2016

Organized art classes for elderly people residing in the neighborhood of Chi Sun Residential College to enrich their life through art appreciation and creation, and to provide them life-long learning experience.

Voluntary instructor and course coordinator, "VolunOnline 2.0 Project" – A distant teaching project in Guangxi and Gansu Province, China. 2015–2016

Recruited voluntary teachers from HKU and helped in setting up the network, raising funds, preparing teaching materials for real-time online teaching though Skype.

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Mingfu Wang, PhD
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