Quancai Sun

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Department of Food and Nutritional Sciences, Faculty of Medicine
Macau University of Science and Technology

Education:

2012-2017	Ph.D.	Food Science	University of Massachusetts Amherst (Advisor: Yeonhwa Park)
2008-2012	B.S.	Food Science	Northwest Agriculture and Forestry University, China

Professional Experience:

2025-	Associate Professor, Macau University of Science and Technology, Macau
2023-2025	Assistant Professor, PhD Supervisor, Florida State University (FSU), USA
2022-2023	Research Fellow, National University of Singapore, Singapore
2022-2023	Teaching assistant, National University of Singapore, Singapore
2018-2022	Professor, Jiangsu University, China
2012-2017	Research Assistant, University of Massachusetts, Amherst

Research Interests:

- Value-added food byproducts processing and their beneficial influence on colon/liver diseases
- The prevention of obesity and type 2 diabetes with dietary based strategies
- Dietary lipids and their bioactive metabolites on gut microbiota and gut health
- Food contaminants, toxicology, and mechanisms with molecular biology and omics

Honors and Professional Service

Honors

- 2017 Herbert O. Hultin Oral Competition Scholarship (Second place), UMass Amherst
- 2016 The 56th SOT Annual Meeting Graduate student travel award
- 2016 Finalist for 2016 Francis Scholarship Competition, Department of Food Science, UMass Amherst
- 2015 Finalist for ASN's Emerging Leaders in Nutrition Science, EB meeting, USA
- 2009-2012 The First Prize Scholarship, Northwest A & F University

Professional Service

- Associate editor, Current Research in Food Science (Elsevier, IF:7.0, Q1)
- Section editor, Current Opinion in Food Science (Elsevier, IF:9.9, Q1)
- Associate editor, Food Science and Human Wellness (IF: 7.4, Q1)
- Editorial board member, Critical Reviews in Food Science and Nutrition
- Editorial board member, Food and Chemical Toxicology
- 2024 Grant reviewer, National Natural Science Foundation of China (NSFC), Food Nutrition Research General Program
- 2023 Grant reviewer, National Natural Science Foundation of China (NSFC), Food Nutrition Research General Program
- 2022 Grant reviewer, National Natural Science Foundation of China (NSFC), Food Nutrition Research General Program

- 2021 External reviewer, New Frontiers in Research Fund-Exploration 2021 (Canada)
- 2020 Grant reviewer, National Natural Science Foundation of China (NSFC), Food Nutrition Research Youth Program
- 2019 Grant reviewer, National Natural Science Foundation of China (NSFC), Food Safety and Risk Assessment Research Youth Program

Mentoring activities

In progress

- Jie Lin, PhD student in Florida State University (2023-present)
- Nethraja Kandula, PhD student in Florida State University (2024-present)

Completed

- Ge Wang, MS student (2020-2023, receives full PhD scholarship to study in FSU, USA), "Lactobacillus plantarum Y1 alleviated permethrin induced obesity via regulating the gut microbiota"
- Ge Chen, MS student (2020-2023, receives full PhD scholarship to work with Prof. Battino Maurizio in Italy), "Mechanism of Sturgeon Peptide LLLE in alleviating obesity in mice"
- Zexiu Qi, MS student (2019-2022, received full PhD scholarship to work with Prof. Battino Maurizio in Italy), "Anti-obesity activity of chondroitin sulfate from sturgeon Skull"
- Jie Lin, MS student (2018-2021, receives full PhD scholarship to study in my lab of FSU, USA), "Permethrin promotes adipogenesis via disrupting intestinal microbiota"
- Yang Shen, MS student (2017-2020), "Effects of sturgeon protein hydrolysates on colon colitis"

Representative Publications (first and corresponding author papers)

Summary: > 70 publications in *Trends in Food Science & Technology*, *Critical Reviews in Food Science and Nutrition*, *Food Chemistry*, *Food and Chemical Toxicology*, *Food & Function*, etc. 10 first author papers in *Journal of Agricultural and Food Chemistry, Food and Chemical Toxicology*, *etc.*

Independent research at Florida State University (2023-present, *represents corresponding author*)*

1. Yao, M., Yang, Y., Fan, J., Ma, C., Liu, X., Wang, Y., ... & **Sun, Q.*** (2024). Production, purification, and functional properties of microbial fibrinolytic enzymes produced by microorganism obtained from soy-based fermented foods: developments and challenges. Critical Reviews in Food Science and Nutrition, 64(12), 3725-3750. (SCI, IF 10.0, Q1)

2. Peng, Y., Qi, Z., Xu, Y., Yang, X., Cui, Y., & **Sun, Q.*** (2024). AMPK and metabolic disorders: the opposite roles of dietary bioactive components and food contaminants. Food Chemistry, 437, 137784. (SCI, IF 8.5, Q1)

3. Chang, H., Tong, X., Yang, H., Peng, Y., & **Sun, Q.*** (2024). Chinese yam (Dioscorea opposita) and its bioactive compounds: the beneficial effects on gut microbiota and gut health. Current Opinion in Food Science, 55, 101121. (SCI, IF 9.9, Q1)

4. Lin, J., Yang, J., Cui, L., Nagpal, R., Singh, P., Salazar, G., ... & **Sun, Q.*** (2024). Sturgeon-derived peptide LLLE alleviated colitis via regulating gut microbiota and its metabolites. Current Research in Food Science, 100898. (SCI, IF 6.3, Q1)

5. Xu, Y., Tong, X., Lu, Y., Lu, Y., Wang, X., Han, J., ... & **Sun, Q.*** (2024). Microalgal proteins: Unveiling sustainable alternatives to address the protein challenge. International Journal of Biological Macromolecules, 133747. (SCI, IF 7.7, Q1)

6. Wang, Y., Wang, Z., Lin, Y., Qin, Y., He, R., Wang, M., **Sun, Q.*** & Peng, Y. (2024). Nanocellulose from agro-industrial wastes: A review on sources, production, applications, and current challenges. Food Research International, 114741. (SCI, IF 7.0, Q1)

7. Xu, W., Li, Y., Zhang, Z., Tian, S., Xiao, M., & **Sun, Q.*** (2024). The inhibitory effect and mechanisms of Diwu Yanggan on hepatic precancerous lesions in a 2-AAF/PH rat model. Journal of Functional Foods, 116, 106184. (SCI, IF 3.8, Q2)

8. Gu, T., Lin, J., Yang, J., Mumby, W., **Sun, Q**.* & Peng, Y. (2024). Chlorantraniliprole exposure aggravates high-fat diet-induced metabolic disorders in mice by regulating gut microbiota and its metabolites. Food Science and Human Wellness. (SCI, IF 5.6, Q1)

9. **Sun, Q.**, Edin, M., Zeldin, D., Yang, H., Zhang, G.* Gut microbiota protects the liver from chemical- or surgery-induced injuries via activating eicosanoid signaling pathways (Microbiome, Under review)

Independent research at Jiangsu University (2017-2022, *represents corresponding author***)**
10. Gao, R., Qi, Z., Lin, J., Wang, G., Chen, G., Yuan, L., & **Sun, Q.*** (2023). Chondroitin Sulfate Alleviated Obesity by Modulating Gut Microbiota and Liver Metabolome in High-Fat-Diet-Induced Obese Mice. Journal of Agricultural and Food Chemistry. 71(24), 9419-9428. (SCI, IF 5.7, Q1)

11. Peng, Y., Gu, T., Zhong, T., Xiao, Y., & Sun, Q. (2023). Endoplasmic reticulum stress in metabolic disorders: opposite roles of phytochemicals and food contaminants. Current Opinion in Food Science, 48, 100913. (SCI, IF 9.9, Q1)

12. Qi, Z., Lin, J., Gao, R., Wu, W., Zhang, Y., Wei, X., & **Sun, Q.*** (2022). Transcriptome analysis provides insight into deltamethrin-induced fat accumulation in 3T3-L1 adipocytes. Pesticide Biochemistry and Physiology, 184, 105114. (SCI, IF 4.2, Q1)

13. Xu, W., Du, X., Li, J., Zhang, Z., Ma, X., Luo, D., ... & **Sun, Q.*** (2022). SiNiSan, a medicinal food, alleviates liver injury by promoting hepatic stem cell differentiation via Wnt/β-catenin signaling pathway. Phytomedicine, 99, 153969. (SCI, IF 6.7, Q1)

14. Chu, Q., **Sun, Q.***, Gao, R.* (2022). Purification and identification of anti-inflammatory peptides from sturgeon (Acipenser schrenckii) cartilage. Food Science and Human Wellness, 12(6), 2175-2183. (SCI, IF 5.6, Q1)

15. Yang, B., Yuan, L., Zhang, W., **Sun, Q.***, & Gao, R.* (2022). Sturgeon protein-derived peptide KIWHHTF prevents insulin resistance via modulation of IRS-1/PI3K/AKT signaling pathways in HepG2 cells. Journal of Functional Foods, 94, 105126. (SCI, IF 3.8, Q2)

16. Zhang, J., Deng, H., Bai, J., Zhou, X., Zhao, Y., Zhu, Y., McClements, D., Xiao, X., **Sun, Q.*** (2021). Health-promoting properties of barley: A review of nutrient and nutraceutical composition, functionality,

bioprocessing, and health benefits. Critical Reviews in Food Science and Nutrition, 63(9), 1155-1169. (SCI, IF 10.0, Q1)

17. Gao, R., Yu, Q., Shen, Y., Chu, Q., Ge, C., Fen, S., & **Sun, Q.*** (2021). Production, bioactive properties, and potential applications of fish protein hydrolysates: developments and challenges. Trends in Food Science & Technology, 110, 687-699. (SCI, IF 15.1, Q1)

18. Huang, J., Song, W., Huang, H., & **Sun, Q.*** (2020). Pharmacological therapeutics targeting RNA-dependent RNA polymerase, proteinase and spike protein: from mechanistic studies to clinical trials for COVID-19. Journal of Clinical Medicine, 9(4), 1131. (SCI, IF 3.0, Q3)

19. Peng Y., Gan R., Li H., Gao R. **Sun, Q.*** (2020). Absorption, metabolism, and bioactivity of vitexin: recent advances in understanding the efficacy of an important nutraceutical. Critical Reviews in Food Science and Nutrition, 61(6), 1049-1064. (SCI, IF 10.0, Q1)

20. Xu, W., Xiao, M., Li, J., Chen, Y., **Sun, Q.***, Li, H.*, & Sun, W. (2020). Hepatoprotective effects of Di Wu Yang Gan: a medicinal food against CCl4-induced hepatotoxicity in vivo and in vitro. Food Chemistry, 327, 127093. (SCI, IF 8.5, Q1)

21. Gao, R., Shen, Y., Shu, W., Jin, W., Bai, F., Wang, J., Zhang, Y., El-Seedi, H., **Sun, Q.*** and Yuan, L.*, (2020). Sturgeon hydrolysates alleviate DSS-induced colon colitis in mice via modulation of NF-κB, MAPK, and microbiota composition. Food & Function, 11(8), 6987-6999. (SCI, IF 5.1, Q1)

22. Yuan, L, Lin, J., Peng, Y., Gao, R., and **Sun, Q.*** (2019). Chlorantraniliprole induces adipogenesis in 3T3-L1 adipocytes via the AMPKα pathway but not the ER stress pathway. Food Chemistry, 311, 125953. (SCI, IF 8.5, Q1)

23. Yuan, L., Lin, J., Xu, Y., Peng, Y., Clark, J.M., Gao, R., Park, Y.* and **Sun, Q.*** (2019). Deltamethrin promotes adipogenesis via AMPKα and ER stress-mediated pathway in 3T3-L1 adipocytes and *Caenorhabditis elegans*. Food and Chemical Toxicology, 134, 110791. (SCI, IF 3.9, Q1)

24. Peng, Y., **Sun, Q.***, Park, Y.* (2019). The bioactive effects of chicoric acid as a functional food ingredient. Journal of Medicinal Food, 22(7), 645-652. (co-corresponding author). (SCI, IF 1.7, Q3)

25. Peng, Y., **Sun, Q.***, Park, Y.* (2019). Chicoric acid promotes glucose uptake and Akt phosphorylation via AMP-activated protein kinase α-dependent pathway. Journal of Functional Foods. 59, 8–15. (co-corresponding author). (SCI, IF 3.8, Q2)

PhD research at Umass Amherst (2012-17)

26. **Sun, Q.**, Zhang, Z., Zhang, R., Gao, R. and McClements, D.J. (2018). Development of functional or medical foods for oral administration of insulin for diabetes treatment: Gastroprotective edible microgels. Journal of Agricultural and Food Chemistry, 66(19), 4820-4826. (SCI, IF 5.7, Q1)

27. **Sun, Q.**, Lin, J., Peng, Y., Gao, R., & Peng, Y. (2018). Flubendiamide Enhances Adipogenesis and Inhibits AMPKα in 3T3-L1 Adipocytes. **Molecules**, 23(11), 2950. (SCI, IF 4.2, Q2)

28. **Sun, Q.**, Peng, Y., Qi, W., Kim, Y., Clark, J. M., Kim, D., &f Park, Y. (2017). Permethrin decreased insulin-stimulated AKT phosphorylation dependent on extracellular signal-regulated kinase-1 (ERK), but not AMP-activated protein kinase α (AMPKα), in C2C12 myotubes. Food and Chemical Toxicology, 109, 95-101. (SCI, IF 3.9, Q1)

29. **Sun, Q.**, Xiao, X., Kim, Y., Kim, D., Yoon, K. S., Clark, J. M., & Park, Y. (2016). Imidacloprid promotes high fat diet-induced adiposity and insulin resistance in male C57BL/6J mice. Journal of Agricultural and Food Chemistry, 64(49), 9293-9306. (SCI, IF 5.7, Q1)

30. **Sun, Q.**, Clark, J. M., & Park, Y. Environmental pollutants and type 2 diabetes: a systematic review of human studies. Toxicological & Environmental Chemistry, 99(9-10), 1283-1303. (SCI, IF 1.7, Q4)

31. **Sun, Q.**, Xiao, X., Kim, D., Yoon, K. S., Clark, J. M., & Park, Y. Imidacloprid promotes high fat diet-induced adiposity in female C57BL/6J mice and enhance adipogenesis in 3T3-L1 adipocytes via AMPKα-mediated pathway. Journal of Agricultural and Food Chemistry, 65(31), 6572-6581. (SCI, IF 5.7, Q1)

32. **Sun, Q.**, Qi, W., Yang, J. J., Yoon, K. S., Clark, J. M., & Park, Y. (2016). Fipronil promotes adipogenesis via AMPKα-mediated pathway in 3T3-L1 adipocytes. Food and Chemical Toxicology, 92, 217-223. (SCI, IF 3.9, Q1)

33. Kim, J., **Sun, Q.**, Yue, Y., Yoon, K. S., Whang, K. Y., Clark, J. M., & Park, Y. (2016). 4′-Dichlorodiphenyltrichloroethane (DDT) and 4, 4′ dichlorodiphenyldichloroethylene (DDE) promote adipogenesis in 3T3-L1 adipocyte cell culture. Pesticide Biochemistry and Physiology, 131, 40-45. (co-first author). (SCI, IF 4.2, Q1)

34. **Sun, Q.**, Yue, Y., Shen, P., Yang, J. J., & Park, Y. (2016). Cranberry product decreases fat accumulation in *Caenorhabditis elegans.* Journal of Medicinal Food, 19(4), 427-433. (SCI, IF 1.7, Q3)

35. Salvia-Trujillo, L., **Sun, Q.**, Um, B. H., Park, Y., & McClements, D. J. (2015). *In vitro* and *in vivo* study of fucoxanthin bioavailability from nanoemulsion-based delivery systems: Impact of lipid carrier type. Journal of Functional Foods, 17, 293-304. (co-first author). (SCI, IF 3.8, Q2)

Patents

1. **Quancai Sun**, Ge Wang, Ge Chen, Ye Peng, Xiaoshuang Dai, Ruichang Gao. A Polypeptide LLLE Derived from Sturgeon Cartilage and Its Application, Patent Application Number: 202310180142.X

2. Xiaoshuang Dai, **Quancai Sun**, Ge Wang, Shu Cheng, Ye Peng, Junli Ren, Mingming Wang, Fei Deng. Lactiplantibacillus plantarum Y-1 and Its Application, Patent Application Number: 202310678758.X

3. Lin Wang, Ruichang Gao, Li Yuan, Yue Zhou, **Quancai Sun**. A Preparation Method of Fish-Derived Collagen Peptides for Delaying Aging, Patent Application Number: 201811518157.8

Grants (*As Principal Investigator*)

1. United States Department of Agriculture-National Institute of Food and Agriculture (USDA-NIFA), Title: Strategies to elucidate and prevent food contaminant fluorotelomer alcohol-induced colonic inflammation via gut microbiota, PI: Q. Sun, USD 300,000, Aug.2025-Aug.2027. (Pending)

2. Florida State University Council on Research & Creativity grant (startup), Title: The influence of food contaminants /food components on gut microbiota and human health, PI: Q. Sun, USD 400,000, Aug.2023-Aug.2026.

3. Florida State University office of Vice President's research award, Title: Transform fish head byproducts into functional food ingredients with gut microbiota modulation potential, PI: Q. Sun, USD 93,000, Nov.2024-Nov.2026.

4. Florida State University Council on Research & Creativity FYAP grant, Title: Fish protein hydrolysates and gut microbiota regulation, PI: Q. Sun, USD20,000, May.2024-Dec.2024.

5. National Natural Science Foundation of China Youth Program, Title: Investigating the mechanism of deltamethrin induced triglyceride synthesis in adipocytes, PI: Q. Sun, CNY300,000, Jan.2019-Dec.2021.

6. National Natural Science Foundation of China Emergency Management Program, Title: Mechanism of permethrin in promoting fat accumulation through endoplasmic reticulum stress, PI: Q. Sun, CNY200,000, Jan.2018-Dec.2018.

7. Jiangsu Province Innovation and Entrepreneurship Program, Title: Anti-obesity functional food development, PI: Q. Sun, CNY200,000, August.2019-August.2021.

8. Jiangsu University Youth Talent award, Title: Pesticides and development of obesity, PI: Q. Sun, CNY500,000, August.2018-August.2022.

9. China Agriculture Research System, Title: Processing and comprehensive utilization of byproducts of characteristic freshwater fish, Co-I: Q. Sun, CNY300,000, August.2018-August.2022.

Teaching activities

Instructor

- Science of Nutrition HUN1201: 2023 & 2024 Fall, 45 undergraduate students, Florida State University, FL, USA
- Fat, Carbohydrate, and Protein HUN5242: 2023 Fall, 19 Graduate students, Florida State University, FL, USA
- FST5198 – Advanced Food Science and Nutrition Seminar: 2022 Fall, 39 graduate students, National University of Singapore, Singapore
- Introduction to Food Science (in English): 2020 & 2021 Spring, ~5 international students, Jiangsu University (New course created for international students)
- Food & Nutrition (in English): 2021 Spring, ~10 international students, Jiangsu University (New course created for international students)
- Food Chemistry (in English): 2019 Fall, ~10 international students, Jiangsu University

Meeting Presentations and Abstracts

1. **Sun, Q.**, Zhang, G.* Gut microbiota protects the liver from chemical- or surgery-induced injuries via activating eicosanoid signaling pathways. The Department of Food Sciences, University of Massachusetts Amherst, USA, 12 April 2024 (invited talk).

2. **Sun, Q.** Lin, J. Permethrin aggravated HFD-induced obesity and colon inflammation via disrupting intestinal microbiota in C57BL6J mice. The 4th North America Chinese Association for Nutrition joint Symposium International Symposium, online meeting, July 2022 (invited oral presentation).

3. **Sun, Q.** Obesity and its associated diseases prevention: the opposite influence of food contaminants and food bioactives. The Department of Nutritional Sciences Seminar, University of Connecticut, USA, 24 September 2021 (invited talk).

4. **Sun, Q.** pesticides and impaired lipid/glucose metabolism: developments and challenges. The Food Revolution workshop between Chinese Universities and the University of Sydney. 22-27 November 2019 (oral presentation).

5. **Sun, Q.** Lin, J., Gao, R. Deltamethrin promotes adipogenesis via AMPKα and ER stress-mediated pathway in 3T3-L1 adipocytes and Caenorhabditis elegans. The 4th International Symposium on food science and human health, Hangzhou, China, 2-4 August 2019 (oral presentation).

6. **Sun, Q.**, Qi, W, Xiao, X., Yang, S., Clark, J., and Park, Y. Imidacloprid exposure promotes high fat-induced obesity and type 2 diabetes in female C57BL/6J mice. The 56th Society of Toxicology Annual Meeting, Baltimore, Maryland, 12-16 March 2017 (oral presentation) (The 56th SOT Annual Meeting Graduate Student Travel Award).

7. **Sun, Q.**, Xiao, X., Yang, S., Clark, J., and Park, Y. Exposure to imidacloprid promotes obesity and type 2 diabetes in C57BL/6J mice. The 55th Society of Toxicology Annual Meeting, New Orleans, Louisiana, 13-17 March 2016 (oral presentation).

8. **Sun, Q.**, Xiao, X., Yang, S., Clark, J., and Park, Y. Imidacloprid exposure promotes high fat-induced obesity and type 2 diabetes in male C57BL/6Jmice, the Strategic Research Alliance Meeting at the Department of Food Science, University of Massachusetts, April 2016 (oral presentation) (Herbert O. Hultin Oral Competition Scholarship (Second place), UMass Amherst) .

9. **Sun, Q.**, Shen, P., Yang, J. J., Park, Y. Cranberry Phenolic Compounds Decrease Fat Accumulation in Caenorhabditis elegans. EB meeting, Boston, MA, 28 March-1 April 2015 (poster presentation) (Finalist for ASN's Emerging Leaders in Nutrition Science, EB meeting)

10. **Sun, Q.**, Shen, P., Yang, J. J., Park, Y. Cranberry Phenolic Compounds Reduce Fat Accumulation in Caenorhabditis elegans, the Strategic Research Alliance Meeting at the Department of Food Science, University of Massachusetts, April 2015 (oral presentation).

11. **Sun, Q.**, Shen, P., Park, Y. Application of Caenorhabditis elegans for Obesity Research Using Food Bioactive, the Strategic Research Alliance Meeting at the Department of Food Science, University of Massachusetts, April 2014 (oral presentation).

Professional Membership:

- Member of the 7th Committee of analytical toxicology Professional Committee, Chinese Toxicology Society
- Member of American Society for Nutrition
- Member of American Chemical Society
- Member of Society of Toxicology

Department services

- Graduate students recruitment committee (2018-2021 fall), Jiangsu University
- Head teacher for Undergraduate food quality and safety class 1801 & 1802 (2018-2022)
- Undergraduate and graduate Dissertation defense committee member (2018-2022)
- Graduate students recruitment committee (2023-present), Florida State University