Shizhao Li

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EDUCATION:

2011-2017 Ph.D., College of Animal Science and Technology, Northwest A&F University, Yangling, China
Major: Nutri-epigenetics, Animal Nutrition
Advisor: Dr. Junhu Yao, Dr. Xiaojun Yang

2007-2011 B.S., College of Animal Science and Technology, Northwest A&F University, Yangling, China
Major: Animal Science
Advisor: Dr. Fuzhu Liu, Dr. Yuna Min

PROFESSIONAL EXPERIENCE:

2017-present Postdoctoral Fellow, Department of Biology, University of Alabama at Birmingham, Birmingham AL, USA
Major: Cancer Epigenetics
Advisor: Dr. Trygve Tollefsbol

PEER-REVIEWED PUBLICATIONS:

*denotes corresponding author
†denotes co-first author

Published (in press or accepted):

S Li, H Wu, TO Tollefsbol. Combined broccoli sprouts and green tea polyphenols contribute to the prevention of estrogen receptor-negative mammary cancer via cell cycle arrest and inducing apoptosis in HER2/neu mice. ***The Journal of Nutrition***, 2020, doi: nxaa315. (in press)

S Li*, TO Tollefsbol. DNA methylation methods: global DNA methylation and methylomic analyses. ***Methods***, 2020, doi: https://doi.org/10.1016/j.ymeth.2020.10.002. (in press)

S Li, M Chen, H Wu, Y Li, TO Tollefsbol. Maternal epigenetic regulation contributes to prevention of estrogen receptor-negative mammary cancer with broccoli sprout consumption. ***Cancer Prevention Research***, 2020, 13(5): 449-462. (**Featured on the journal's home webpage**)

Y Zhu, **S Li†**, Y Duan, Z Ren, X Yang, X Yang. Effects of in ovo feeding of vitamin C on post-hatch performance, immune status and DNA methylation-related genes expression in broiler chickens. ***British Journal of Nutrition***, 2020, 124(9): 903-911.

M Sharma, I Arora, ML Stoll, Y Li, CD Morrow, S Barnes, TF Berryhill, **S Li***, TO Tollefsbol. Nutritional combinatorial impact on the gut microbiota and plasma short-chain fatty acids levels in the prevention of mammary cancer in Her2/neu transgenic mice. ***PLoS One***, 2020, doi: 10.1101/2020.06.08.139865. (accepted)

S Li, M Chen, Y Li, TO Tollefsbol. Prenatal epigenetics diets play protective roles against environmental pollution. ***Clinical Epigenetics***, 2019, 11(1): 82. (**Featured on the journal's home webpage. Also, highlighted in "On Biology", a BMC's blog that reaches ~25,000 readers. The epigenetics diet: A barrier against environmental pollution.**)

Y Zhu, **S Li†**, Q Sun, X Yang. Effect of in ovo feeding of vitamin C on antioxidation and immune function of broiler chickens. ***Animal***, 2019, 13(9): 1927-1933.

S Li, Y Zhu, L Zhi, X Han, Y Liu, J Shen, J Yao, X Yang. DNA methylation variation trends during the embryonic development of chicken. ***PLoS One***, 2016, 11(7): e0159230.

S Li, L Zhi, Y Liu, J Shen, L Liu, J Yao, X Yang. Effect of *in ovo* feeding of folic acid on the folate metabolism, immune function and epigenetic modification of immune effector molecules of broilers. ***British Journal of Nutrition***, 2016, 115(3): 411-421.

S Li, W Guo, C Du, Y Jing, Y Liu, J Shen, J Yao, X Yang. Analysis of DNA methylation levels of chick embryo tissues with HPLC. ***Chinese Journal of Animal Nutrition***, 2015, 27(1): 171-177.

S Li, L Zhi, X Yang, J Yao. Vitamin C injection during incubation period: effects on performance, immune and antioxidant function of broilers. ***Chinese Journal of Animal Nutrition***, 2013, 25(12): 2998-3005.

S Li, L Zhi, X Yang, J Yao. Hatching egg injection: application in poultry nutri-epigenetics studies. ***Chinese Journal of Animal Nutrition***, 2013, 25(6): 1169-1173.

L Zhi, **S Li**, X Yang, J Yao. Folic acid and DNA methylation. ***Chinese Journal of Animal Nutrition***, 2013, 25(5): 951-958.

L Zhi, **S Li**, X Yang, J Yao. Injecting folic acid during incubation period: effects on performance and immune function of broilers. ***Chinese Journal of Animal Nutrition***, 2013, 25(11): 2567-2575.

Y Li, P Buckhaults, **S Li**, TO Tollefsbol. Temporal efficacy of a sulforaphane-based broccoli sprout diet in prevention of breast cancer through modulation of epigenetic mechanisms. ***Cancer Prevention Research***, 2018, 11(8): 451-464.

X Wang, J Shen, **S Li**, L Zhi, X Yang, J Yao. Sulfated astragalus polysaccharide regulates the inflammatory reaction in LPS-infected broiler chicks. ***International Journal of Biological Macromolecules***, 2014, 69: 146-150.

C Li, Y Cao, **S Li**, M Xu, C Liu, Z Yu, X Zhao, J Yao. Effects of exogenous fibrolytic enzyme on in vitro ruminal fermentation and microbial populations of substrates with different forage to concentrate ratios. ***Journal of Animal and Veterinary Advances***, 2013, 12(10): 1000-1006.

Y Liu, L Zhi, J Shen, **S Li**, J Yao, X Yang. Effect of *in ovo* folic acid injection on hepatic IGF2 expression and embryo growth of broilers. ***Journal of Animal Science and Biotechnology***, 2016, 7(1): 40.

J Shen, Y Liu, X Ren, K Gao, Y Li, **S Li**, J Yao, X Yang. Changes in DNA methylation and

chromatin structure of pro-inflammatory cytokines stimulated by LPS in broiler peripheral blood mononuclear cells. ***Poultry Science***, 2016, 95(7): 1636-1645.

Under review:

I Arora, Y Li, M Sharma, MR Crowley, DK Crossman, **S Li***, TO Tollefsbol. Systematic integrated analyses of methylomic and transcriptomic impacts of early combined botanicals on estrogen receptor-negative mammary cancer.

In preparation:

S Li, H Wu, TO Tollefsbol. Paternal epigenetic regulation contributes to the prevention of estrogen receptor-negative mammary cancer with combined broccoli sprouts and green tea polyphenols consumption in SV40 transgenic mice.

PUBLISHED ABSTRACTS:

Y Li, M Chen, **S Li**, TO Tollefsbol. Time-dependent maternal soybean genistein exposure leads to later-life breast cancer chemoprevention in mice [abstract]. In: Proceedings of the American Association for Cancer Research Annual Meeting 2019; 2019 Mar 29-Apr 3; Atlanta, GA. Philadelphia (PA): AACR; ***Cancer Research***, 2019; 79(13 Suppl): Abstract nr 1605.

RESEARCH INTERESTS:

Early life (maternal, paternal and *in ovo* feeding, etc.) nutritional intervention and transgenerational effects on offspring health (cancer prevention and immunity, etc.), and potential epigenetic mechanisms underlying such effects.

Epigenetic diets and cancer prevention/therapy.

Microbiome and metabolism in the proceeding of tumor.

The Developmental Origins of Health and Disease (DOHaD).

Early embryonic development and epigenome reprogramming.

CURRENT RESEARCH PROJECTS:

- Early life prevention of mammary tumor with combined epigenetic botanicals.

  Two transgenic mouse models, which can spontaneously develop ER-negative breast

cancer tumors, including FVB-Tg(C3-1-TAg)cJeg/JegJ (SV40) and FVB-Tg(MMTV-Erbb2)NK1Mul/J (HER2/neu) mice are employed to explore early life (maternal and paternal) epigenetic botanicals (broccoli sprouts or/and green tea polyphenols) consumption on transplacental and transgenerational effects on mammary tumor prevention of offspring. We will also use next-generation sequencing technologies, such as RNA-seq, RRBS and ChIP-seq, to reveal epigenetic effects of these bioactive botanicals at genome-wide levels.

- Combinatorial epigenetic-based prevention of breast cancer.

  Multiple cell lines (triple-negative, ER-positive, and noncancerous human breast cancer cells, etc.) are used to investigate combinatorial impact of epigenetic-modifying dietary compounds, such as sulforaphane and ascorbic acid, on breast cancer inhibition, apoptosis, and cell cycle arrest. We will primarily focus on underlying epigenetic mechanisms including cancer epigenome changes.

SCIENTIFIC RESEARCH SKILLS:

Have solid theoretical foundation in epigenetics and animal nutrition.

Be familiar with pivotal experimental skills (Cell culture, Western blotting, ChIP, BSP, ELISA and qPCR, etc), basic laboratory instruments (HPLC, etc) and essential data analysis software and methods.

Have certain experience in data analysis of 16S microbiome analysis, RNA-seq and ChIP-seq with R.

Have rich experience in animal experiments (mouse, broiler and laying hen, etc).

Good at optimizing experimental protocols.

Have a good command of research methods and experimental operations in traditional nutrition of poultry.

AWARDS AND HONORS:

- The Dory Award, an award for the postdoctoral fellow, who despite setbacks and obstacles in their project, has kept pushing and persevered until they successfully

finished the work. UAB. 2020

- Attendee of the John Milner nutrition and cancer prevention research practicum. NIH/NCI. 2018.
- The first place in the Academic Forum for PhD graduates. NWAFU. 2017.
- Evonik H&N Scholarship, EVONIK. 2015.
- A business trip to Evonik in Germany, EVONIK. 2015.
- Menon “Star of Outlook” Graduate Scholarship, MENON. 2015.
- Evonik H&N Scholarship, EVONIK. 2014.
- Jefo Nutrition Graduate Scholarship, JEFO. 2014.
- DBN (DaBeiNong Sci-tech Group) Encouragement Grant, DBN. 2014.
- Merit Student, NWAFU. 2014.
- Novus International Graduate Scholarship, NOVUS. 2013.
- National Encouragement Scholarship, NWAFU. 2009.
- First Prize Scholarship, NWAFU. 2009.
- National Scholarship, NWAFU. 2008.
- First Prize Scholarship, NWAFU. 2008.

SCIENTIFIC SOCIETY MEMBERSHIPS:

2020-present American Society for Nutrition (ASN)

2017-present American Association for Cancer Research (AACR)