

North Carolina State University, Department of Crop and Soil Sciences

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Education

- Ph. D** Dec 2022 Complex Biosystems, University of Nebraska-Lincoln, Lincoln, NE
Dissertation: Identification and Characterization of Human Gut Microbiome Active Traits in Cereal Grains
Co-Advisors: J.C. Schnable and A.K. Benson
- BS** May 2017 Food Science and Technology, University of Nebraska-Lincoln, Lincoln, NE

Research and Professional Experience

- 2024-Present **Postdoctoral Researcher**, Department of Crop and Soil Sciences, North Carolina State University, mentored by Joseph Gage
- 2022-2023 **Postdoctoral Researcher**, Department of Food Science and Technology, University of Nebraska-Lincoln, mentored by Andrew Benson
- 2017-2022 **Graduate Researcher**, Complex Biosystems, University of Nebraska-Lincoln, mentored by Andrew Benson and James Schnable
- 2014-2016 **Undergraduate Researcher**, Food Allergy Research and Resource Program, Department of Food Science and Technology, University of Nebraska-Lincoln, mentored by Melanie Downs

Honors and Awards

- Spring 2025 USDA-NIFA Postdoctoral Fellowship "*Characterizing untapped genetic diversity in maize and its relatives to regulate the rhizosphere microbiome and improve crop resilience*" Activity Award Number: 2025-67012-44807, \$225,000.00
- Spring 2023 Excellent Oral Presentation (First Place) at the Nebraska Plant Science Symposium
- Spring 2023 Outstanding Postdoc Presentation (First Place) at the Midwest Regional American Society of Microbiologists Meeting
- 2021-2023 Member, Nebraska Food for Health Center Graduate Student Council
- 2019-2022 [Foundation for Food and Agricultural Research Fellowship](#)
- 2018-2022 Nebraska Food for Health Center Fellowship
- 2016-2017 Milton E Mohr Biotechnology Undergraduate Research Scholarship, University of Nebraska-Lincoln

Teaching Experience

Fall 2025	Microbiome Analysis (BIT 588), NCSU – Guest lecture: “Multivariate Analysis in Microbiome Studies”
Fall 2024	NCSU Workshop – “Crafting Technical Talks for a Diverse Audience”
Spring 2023	UNL Department of Food Science Symposium, “Technical Talks for a Diverse Audience: Slide Design”
Spring 2023	Complex Biosystems 582, UNL - Bioinformatics guest lecture series: “A Crash Course on the Tools of Quantitative Genetics”
Fall 2021	Microbiology 101, UNL – guest lecture series: “Characterizing the effect of plant-derived molecules on the human gut microbiome”
Fall 2020	Life 891, UNL – Bioinformatics guest lecture series: “Microbiome Metagenomic Analysis”
Fall 2017	Life 120, UNL – Teaching Assistant, Cellular Biology Laboratory

Publications

Korth, N., Borrero, I., Rumley, K., Woody, A.L., Chaudoir, M.J., Gage, J.L., 2025. Investigating GERMs: Genotype, Environment, and Rhizosphere Microbiome interactions to identify microbe-mediated mechanisms of heat resilience in maize. *In prep*

Suhr Van Haute, M.J., Yang, Q., **Korth, N.**, Happ, M.M., Kok, C.R., Miao, C., Clarke, J.L., Karnik, K., Eskridge, K.M., Urrea, C.A. and Hyten, D.L., 2025. Genetic variation and historical breeding patterns in common bean (*Phaseolus vulgaris* L.) affect fermentation patterns by the human gut microbiome. *Communications Biology*, 8(1), p.1690.

de Oliveira, M.J.K., Yang, Q., Brandão Melo, A.D., Marçal, D.A., **Korth, N.**, Pavlovikj, N., Benson, A.K., Htoo, J.K.K., Brand, H.G., Hauschild, L. and Gomes-Neto, J.C., 2025. Fecal microbiome of pigs fed diets differing in protein and amino acid content raised in thermoneutral or cyclical heat stress conditions. *Frontiers in Microbiology*, 16, p.1585374.

Korth, N., Yang, Q., Van Haute, M.J., Tross, M.C., Peng, B., Shrestha, N., Zwiener-Malcom, M., Mural, R.V., Schnable, J.C. and Benson, A.K., 2024. Genomic co-localization of variation affecting agronomic and human gut microbiome traits in a meta-analysis of diverse sorghum. G3: Genes, Genomes, Genetics, p.jkae145. DOI: 10.1093/g3journal/jkae145

Marçal, D.A., Brandao Melo, A.D.B., Rosa Gonçalves, J.P., Yang, Q., de Oliveira, M.J.K., Arnaut, P.R., Ortiz, M.T., França, I., da Cunha Valini, G.A., **Korth, N.** and Pavlovikj, N., 2024. PSII-19 Fecal microbiota composition of weaned piglets under mixed management and poor housing conditions fed diets increased in threonine, methionine and tryptophan. *Journal of Animal Science*, 102(Supplement_2), pp.289-290. DOI: 10.1093/jas/skae102.329

Brandao Melo, A.D.B., da Valini, G.A.C., Gomes-Neto, J.C., de Oliveira, M.J.K., Marçal, D.A., Arnaut, P.R., França, I., **Korth, N.**, Pavlovikj, N., Htoo, J.K. and Brand, H.G., 2024. PSVI-7 A traceable signature for a recovery microbiome composition after a dysbiosis caused by a sanitary challenge in pigs. *Journal of Animal Science*, 102(Supplement_2), pp.317-318. DOI: 10.1093/jas/skae102.360

Yang, Q., Van Haute, M., **Korth, N.**, Sattler, S., Rose, D., Juritsch, A., Shao, J., Beede, K., Schmaltz, R., Price, J., Toy, J., Ramer-Tait, A.E., Benson, A.K., 2023. The waxy mutation in sorghum and other cereal grains reshapes the gut microbiome by reducing levels of multiple beneficial species. *Gut Microbes*, 15(1), p.2178799. DOI: 10.1080/19490976.2023.2178799

Gomes-Neto, J.C., Pavlovikj, N., **Korth, N.**, Naberhaus, S.A., Arruda, B., Benson, A.K. and Kreuder, A.J., 2023. Salmonella enterica induces biogeography-specific changes in the gut microbiome of pigs. *Frontiers in Veterinary Science*, 10, p.1186554. DOI: 10.3389/fvets.2023.1186554

Yang, Q., Van Haute, M., **Korth, N.**, Sattler, S.E., Toy, J., Rose, D.J., Schnable, J.C. and Benson, A.K., 2022. Genetic analysis of seed traits in Sorghum bicolor that affect the human gut microbiome. *Nature Communications*, 13(1), p.5641. DOI: 10.1038/s41467-022-33419-1

Korth, N., Parsons, L., Van Haute, M.J., Yang, Q., Hurst, P., Schnable, J.C., Holding, D.R. and Benson, A.K., 2022. The unique seed protein composition of quality protein popcorn promotes growth of beneficial bacteria from the human gut microbiome. *Frontiers in Microbiology*, 13, p.921456. DOI: 10.3389/fmicb.2022.921456

Presentations

- Spring 2025* Plant and Microbiology Departmental Seminar NCSU: "A case for GERM: Genotype x Environment x Rhizosphere Microbiome interactions – to uncover microbiome mediation of crop resilience".
- Spring 2025 Genetics of Maize Microbiome Seminar, "Understanding **G**ERM: Genotype x **E**nvironment x **R**hizobial **M**icrobiome interactions". Online
- Fall 2024 NCSU Plant Molecular Biology Retreat, "Characterizing Untapped Genetic Diversity in Maize and Its Relatives to Regulate the Rhizosphere Microbiome and Improve Crop Resilience".
- Spring 2024 NCSU Plant Breeding Consortium, "Using Teosinte to Improve the Maize Microbiome".
- Spring 2024 Maize Genetics Conference, "A case for GERM: Genotype x Environment x Rhizosphere Microbiome interactions, Incorporating the Maize Microbiome into G x E Calculations". St. Louis, MO. - Poster
- Spring 2023 Nebraska Plant Science Symposium, "The Gut Microbiome as a Human Health Phenotype of Sorghum Bicolor in a Genetic Mapping Study".
- Spring 2023 American Society of Microbiology (ASM) regional conference, "Identification and Characterization of Human Gut Microbiome Active Traits in *Sorghum bicolor*". Manhattan, KS
- Fall 2022 Nebraska Food for Health Center Seminar Series, "Breeding Food for Health: The Human Gut Microbiome as an Agronomic Trait".
- Spring 2022 UNL Food Science Symposium, "Identification of Substrates from Quality Protein Popcorn that Promote Growth of Specific Beneficial Bacteria in the Human Gut Microbiome".
- Spring 2022 Plant and Animal Genome Conference, "Breeding Food for Health: Identification of Substrates from Quality Protein Popcorn that Promotes Growth of Specific Beneficial Bacteria in the Human Gut Microbiome". San Diego, CA.
- Spring 2021 Maize Genetics Conference, "Do the major changes in seed proteins in quality protein popcorn influence the growth of beneficial, health-promoting bacteria in the human gut?". Online
- Spring 2020 Plant and Animal Genome Conference, "Genetic Analysis of Arabinoxylan Biosynthesis in Maize Seed and Impact on the Human Gut Microbiome". San Diego, CA. - Poster
- Fall 2018 Nebraska Food for Health Center Seminar Series, "Mapping the Effects of Plant Diversity with Disturbances in the Gut Microbiome". Lincoln, NE.

* Invited presentation

Synergistic Activities

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| 2025-Present | Organizer of INitiative for TRanslational, INtegrative and SYnthetic Plant Biology (INTRINSyC Plant Biology) Seminar series |
| 2024-Present | Mentor high school students participating in the Global Agriculture Research Externship (Part of the World Food Prize) |
| 2024-Present | Mentor graduate students in the FFAR Fellows program |
| 2020-2023 | Member of the Nebraska Food for Health Center Graduate Student Council |
| 2015-2017 | Voices of Hope annual fundraising events |
| 2017 | Lincoln, NE Public Schools Science Fair volunteer |
| 2016-2017 | Fundraising chair of Food Science Club |

Professional Affiliations

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| 2019-Present | Member of the Maize Genetics Cooperation |
| 2021-Present | Member of the American Society of Microbiologists (ASM) |