

Joseph H. Skarlupka V

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RESEARCH EXPERIENCE

Postdoctoral Researcher **2025-Present**

Aarhus University; Department of Animal and Veterinary Science

- Assessing the impacts of algae extracts on the growth of rumen methanogens.

Ph.D. Research, Lab of Dr. Garret Suen **2018-2025**

University of Wisconsin-Madison; Department of Bacteriology

- Investigated the usage of oral swabs to act as a proxy for direct rumen sampling in dairy cows.
- Led the collection and processing of 2,100 samples from three dairy farms.
- Developed methods to objectively quantify oral swab proxy effectiveness.
- Employed next generation sequencing techniques (amplicon, metagenomic) to characterize the microbial communities of oral swabs and rumen samples.
- Used bioinformatic packages to identify associations between the microbial community and dairy cow production metrics.
- Employed machine learning methods to classify bacterial environments and predict microbial community structure.
- Utilized predictive modelling and genome-wide association analyses to correlate cow genetics, production metrics, and microbial community samples.
- First- and co-author of multiple publications in peer-reviewed journals.
- Attended domestic and international conferences to present and promote the research.

Lab Manager, Lab of Dr. Garret Suen **2016-2018**

University of Wisconsin-Madison; Department of Bacteriology

- Gained experience in next-generation sequencing techniques and data analysis.
- Worked with collaborators to utilize next-generation sequencing to explore how microbes interact within a variety of environments.
- Assisted in the analysis of microbial community data to support the preparation of manuscripts for publication.
- Assisted graduate students and collaborators in field work and sample preparation.
- Built and maintained the lab's server infrastructure to allow for large-scale data analysis.

AWARDS & GRANTS

- 2024 CGIF 2024 Russell Award for Outstanding Oral Presentation
- 2023 BARD Graduate Student Fellowship - *Selective fellowship fostering international collaboration in innovative agricultural science. Awarded but not completed due to travel restrictions.*
- 2022 UW Madison Student Research Grant Competition Research Travel Award
- 2022 Bacteriology Graduate Student Travel Award
- 2020-2025 NSF Graduate Research Fellowship Program Awardee - *Prestigious, nationally competitive fellowship awarded to top early-career scientists in the U.S.*
- 2019-2021 Molecular Biosciences Training Grant
- 2018 NSF Graduate Research Fellowship Program Honorable Mention
- 2015 Wisconsin Cheese Makers Association Supplier Member Scholarship

EDUCATION

Ph.D. Microbiology Doctoral Training Program, University of Wisconsin-Madison
College of Agriculture and Life Sciences; Madison, WI – January 2025
Dissertation Title: Using oral swabs in dairy cows to correlate the rumen microbiome with production metrics and aid in herd management.

B.S. Microbiology, University of Wisconsin-Madison; Madison, WI – May 2016

TEACHING & MENTORSHIP EXPERIENCE

Teaching Assistant, Microbiology 304: Introduction to Microbiology, UW-Madison 2019

- Delivered three-times weekly lectures demonstrating introductory concepts to working in a microbiological lab and common bench skills and techniques to a class of 32 students.
- Responsible for development of presentations and evaluating and providing feedback on coursework.

Mentor, UW-Madison

2018-2025

- Trained undergraduate and Master's students in common lab techniques and analyses.
- Supported students in their funding applications, 3 of which successfully secured financial support.

Biotechnology Youth Mentor, UW-Madison

2018

- Mentored a high school student pursuing a career in biotechnology through the Youth Apprenticeship Program.
- Provided hands-on training in fundamental lab techniques and guided the student in completing an independent project, which they presented at the program's annual meeting.

- Mentee leveraged the experience gained through the program to gain admission to a university science program.

SERVICE EXPERIENCE

2023-2024	Industry Strategies for Microbiome-based Therapeutics
2023-2024	Microbiology Doctoral Training Program (MDTP) Steering Committee
2021	MDTP Admissions Committee
2019-2021	MDTP Student Recruitment Team
2019-2022	Perpetual Notion Machine at WORT 89.9 FM
2019-2022	Madison Living History Project
2017	Badger Dairy Camp
2015-2017	Saturday Science at the Wisconsin Institute for Discovery

PUBLICATIONS

- Skarlupka, J.H.**, Cox, M.S., Steinberger, A.J., Sbardellati, D., Scheftgen, A.J., Zuniga-Chaves, I., Paget, E., Skadron, C., Attipetty, N., McClure, J.C., Bickhart, D.M. & Suen, G.. *Correlating the oral swab microbial community with milkproduction metrics in Holstein dairy cows*. mSphere. 2025. doi: 10.1128/msphere.00167-25
- Skarlupka, J.H.**, Cox, M.S., Steinberger, A.J., Sbardellati, D., McClure, J.C., Bickhart, D.M., Scheftgen, A.J., Zuniga-Chaves, I., Wolfe, L.A., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. *Oral swabs as a proxy for direct ruminal microbiome sampling in Holstein dairy cows is correlated with sample color*. *Frontiers in Microbiology*. 2024. doi: 10.3389/fmicb.2024.1466375
- Skarlupka, J.H.**, Kamenetsky, M.A., Jewell, K.A. & G. Suen. *The ruminal bacterial community in lactating dairy cows do not vary on a day-to-day basis*. *Journal of Animal Science and Biotechnology*. 2019. doi: 10.1186/s40104-019-0375-0.
- Eggers, S., Safdar, N., Sethi, A.K., Suen, G., Peppard, P.E., Kates, A.E., **Skarlupka, J.H.**, Kanarek, M., & Malecki, K.M.C. *Urinary Lead Concentration and Composition of the Adult Gut Microbiota in a Cross-Sectional Population-Based Sample*. *Environment International*. 2019. doi: 10.1016/j.envint.2019.105122
- Hammond, E.N., Kates, A.E., Putman-Buehler, N., Watson, L., Godfrey, J.J., Brys, N., Deblois, C., Steinberger, A.J., Cox, M.S., **Skarlupka, J.H.**, Haleem, A., Bentz, M.L., Suen G., & Safdar, N.. *A quality improvement study on the relationship between intranasal povidone-iodine and anesthesia and the nasal microbiota of surgery patients*. *PLOS One*. 2022. doi: doi.org/10.1371/journal.pone.0278699
- Hillel, A., Tang, S., Carlos, C., **Skarlupka, J.**, Gowda, M., Motz, K., Yin, L., Currie, C., Suen, G., & S. Thibeault. *Laryngotracheal microbiota in adult laryngotracheal stenosis*. mSphere. 2019. doi: 10.1128/mSphereDirect.00211-19
- Kates, A.E., Jarrett, O., **Skarlupka, J.H.**, Sethi, A.K., Duster, M.N., Watson, L., Suen, G., Poulsen, K., Safdar, N. *Household Pet Ownership and the Microbial Diversity of the Human Gut Microbiota*. *Frontiers Cellular and Infection Microbiology*. 2020. doi: 10.3389/fcimb.2020.00073

- Kates, A.E., Zimbric, M.L., Mitchell, K., **Skarlupka, J.H.**, & N. Safdar. *The Impact of Chlorhexidine Gluconate on the Skin Microbiota of Children and Adults: A Pilot Study*. American Journal of Infection Control. 2019. doi: 10.1016/j.ajic.2019.01.024.
- Li, W., Edwards, A., Cox, M., Raabis, S., **Skarlupka, J.H.**, Steinberger, A.J., Murphy, B., Larsen, A., & G. Suen. *Changes in the host transcriptome and microbial meta-transcriptome of the ileum of dairy calves subjected to artificial rumen contents dosing*. Physiological Genomics. 2020. doi: 10.1152/physiolgenomics.00005.2020.
- Li, W., Edwards, A., Riehle, C., Cox, M., Raabis, S., **Skarlupka, J.**, Steinberger, A., Walling, J., Bickhart, D., & G. Suen. *Transcriptomics analysis of host liver and meta-transcriptome analysis of rumen epimural microbial community in young calves treated with artificial dosing of rumen content from adult donor cow*. Scientific Reports. 2019. doi: 10.1038/s41598-018-37033-4.
- Metzger, S.A., Hernandez, L.L., **Skarlupka, J.H.**, Suen, G., Walker, T.M. & P.L. Ruegg. *Influence of Sampling Technique and Bedding Type on the Milk Microbiota: Results of a Pilot Study*. Journal of Dairy Science. 2018. doi: 10.3168/jds.2017-14212
- Metzger, S.A., Hernandez, L.L., **Skarlupka, J.H.**, Walker, T.M., Suen, G., & P.L. Ruegg. *A Cohort Study of the Milk Microbiota of Healthy and Inflamed Bovine Mammary Glands From Dryoff Through 150 Days in Milk*. Frontiers in Veterinary Science. 2018. doi: 10.3389/fvets.2018.00247.
- Mote, R.S., Hill, N., **Skarlupka, J.H.**, Carpenter, J.M., Lourenco, J.M., Callaway, T.R., Tran, V.T., Liu, K., Smith, M.R., Jones, D.P., Suen, G., & Filipov, N.M. *Integrative interactomics applied to bovine fescue toxicosis*. Scientific Reports. 2022. doi: 10.1038/s41598-022-08540-2.
- Mote, R.S., Hill, N., **Skarlupka, J.**, Tran, V., Walker, D., Turner, Z., Sanders, Z., Jones, D., Suen, G., & Filipov, N. *Toxic tall fescue grazing increases susceptibility of the Angus steer fecal microbiota and plasma/urine metabolome to environmental effects*. Scientific Reports. 2020. doi: 10.1038/s41598-020-59104-1.
- Mote, R.S., Turner, Z.B., Sanders, Z.P., Hill, N.S., Jones, D.P., **Skarlupka, J.**, Suen, G. & N.M. Filipov. *Response of Beef Cattle Fecal Microbiota to Grazing on Toxic Tall Fescue*. Applied and Environmental Microbiology. 2019. doi: 10.1128/AEM.00032-19.
- Pinto, A.C.J., Bertoldi, G.P., Felizari, L.D., Dias, E.F.F., Demartini, B.L., Nunes, A.B.C.P., Squizatti, M.M., Silvestre, A.M., Oliveira, L.F.R., **Skarlupka, J.H.**, Rodrigue, P.H.M., Cruz, G.D., Suen, G., & Millen, D.D. *Ruminal fermentation pattern, bacterial community composition, and nutrient digestibility of Nellore cattle submitted to either nutritional restriction or intake of concentrate feedstuffs prior to adaptation period*. Frontiers in Microbiology. 2020. doi: 10.3389/fmicb.2020.01865 .
- Raabis, S.M., Holschbach, C.L., **Skarlupka, J.H.**, Suen, G., & Ollivett, T.L. *Assessing the effects of experimental bacterial challenge with Pasteurella multocida and ampicillin on the respiratory microbiota of pre-weaned Holstein calves*. Veterinary Microbiology. 2022. doi: 10.1016/j.vetmic.2022.109428 .

- Raabis, S., Quick, A., **Skarlupka V, J.H.**, Suen, G., & Ollivett, T. *The nasopharyngeal microbiota of pre-weaned dairy calves with and without ultrasonographic lung lesions.* Journal of Dairy Science. 2021. doi: 10.3168/jds.2020-19096.
- Scheftgen, A., **Skarlupka, J.H.**, Jewell, K.A., & Suen, G.. *Correlating feed efficiency with ruminal bacterial, fungal and archaeal community composition in dairy cows over two lactations.* Dairy. 2025. doi: 10.3390/dairy6010008
- Sommer, A.J., **Skarlupka, J.H.**, Teseo, S., Otani, S., Suen, G., Coon, K.L., & Sapountzis, P.. *Genomic evidence for flies as carriers of zoonotic pathogens on dairy farms.* npj Biofilms and Microbiomes. 2025. doi: 10.1038/s41522-025-00685-y.
- Young, J., **Skarlupka, J.H.**, Cox, M.S., Tassinari Resende, R., Fischer, A., Kalscheur, K., McClure, J.C., Cole, J.B., Suen, G., Bickhart, D.M.. *Validating the use of bovine buccal sampling as a proxy for the rumen microbiota using a time course and random forest classification approach.* Applied Environmental Microbiology. 2020. doi: 10.1128/AEM.00861-20.

PRESENTATIONS & POSTERS

Skarlupka, J.H., Cox, M.S., Steinberger, A.J., Sbardellati, D., McClure, J.C., Bickhart, D.M., Scheftgen, A.J., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. Identifying Host Genetic Markers Associated with Rumen Microbiome Composition and Efficiency in Holstein Dairy Cows. Poster presentation at the 19th International Symposium on Microbial Ecology, Cape Town, South Africa, 2024.

Skarlupka, J.H., Cox, M.S., Steinberger, A.J., Sbardellati, D., McClure, J.C., Bickhart, D.M., Scheftgen, A.J., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. Color as an indicator of the effectiveness of buccal swabs as a proxy for direct ruminal sampling. Oral presentation at the Congress on Gastrointestinal Function, Champaign, IL, USA, 2024.

Skarlupka, J.H., Young, J., Cox, M.S., Steinberger, A.J., McClure, J.C., Sbardellati, D., Bickhart, D.M., Scheftgen, A.J., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. Identifying a Core Oral Taxa in Dairy Cows. Poster presentation at the 18th International Symposium on Microbial Ecology, Lausanne, Switzerland, 2022.

Skarlupka, J.H., Young, J., Cox, M.S., Steinberger, A.J., McClure, J.C., Sbardellati, D., Bickhart, D.M., Scheftgen, A.J., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. Searching for Host Genetic Markers Associated with Rumen Microbiome Composition and Efficiency in Holstein Dairy Cows. Oral presentation for *Microbiology Doctoral Training Program Student Seminar Series, Madison, WI, USA, 2022.*

Skarlupka, J.H., Young, J., Cox, M.S., Steinberger, A.J., McClure, J.C., Sbardellati, D., Bickhart, D.M., Scheftgen, A.J., Paget, E., Skadron, C., Attipetty, N., & Suen, G.. Searching for Host Genetic Markers Associated with Rumen Microbiome Composition and Efficiency in Holstein Dairy Cows. Oral presentation for *Microbiology Doctoral Training Program Student Seminar Series, Madison, WI, USA, 2020.*

Metzger, S., Hernandez, L., **Skarlupka, J.H.**, Suen, G., Walker, T., & Ruegg, P.. A Longitudinal Study of the Healthy Milk Microbiota in Dairy Cows. Poster Presentation at the 17th *International Symposium on Microbial Ecology, Leipzig, Germany, 2018.*

Skarlupka, J.H., Lange, A.R., Young, B., & Ziegler, L.E.. A Study of the Effects of Caffeine Consumption on the Human Oral Microbiome. *University of Wisconsin-Madison Microbiology Capstone Research Symposium, Madison, WI, USA, 2016.*