# Kimberly A. Dill-McFarland, PhD

## **EDUCATION**

2011-2016 **Ph.D. Microbiology**, University of Wisconsin-Madison, Madison, WI

Delta Certificate in Research, Teaching, and Learning

2007-2011 B.S. Molecular and cellular biology, University of Puget Sound,

Tacoma, WA, Minor mathematics, Magna cum laude

## **POSITIONS**

08/2017 - present Post-doctoral teaching and learning fellow, U. of British Columbia, Dr.

Steven Hallam (Microbiology & Immunology)

Experiential Data Science for Undergraduate Cross-disciplinary Education (EDUCE) seeks to improve undergraduate competency in data science through progressive, hands-on modules in undergraduate courses, open-access workshops, and online content.

2018: Ecosystem Services, Commercialization Platforms, and

Entrepreneurship (ECOSCOPE) Post-doctoral Fellow

07/2016 - 06/2017 Post-doctoral research associate, U. of Wisconsin-Madison, Drs.

Federico Rey (Bacteriology) and Pamela Herd (Sociology)

Long-term behavioral and social impacts on human health, aging, and the

gut microbiota

08/2011 - 06/2016 Graduate research assistant, U. of Wisconsin-Madison, Dr. Garret Suen

(Bacteriology)

Assessing the impact of diet on microbial succession, growth, and milk

production in dairy cows

08/2008 - 05/2011 Undergraduate researcher, U. of Puget Sound, Dr. Mark Martin (Biology)

Investigating maltose metabolism in *Bdellovibrio bacteriovorus* 

2009, 2010: American Society for Microbiology Undergraduate Fellow

## **TEACHING** (semester system)

Spring 2019 Instructor Microbial Ecological Genomics (MICB425) at U. of British Columbia.

Flipped classroom course on the forces driving microbial genome evolution using primary literature and interpretation of next-generation sequencing data

Spring 2019 Instructor Microbes and Society (BIOL346) at U. of British Columbia. Elementary

course in biology for non-majors

Spring 2019 Guest lecturer Experimental Microbiology (MICB421) at U. of British Columbia.

Capstone laboratory of independent research projects in microbiology for the

Undergraduate Journal of Experimental Microbiology and Immunology (JEMI)

- Spring 2019 Guest lecturer Molecular Immunology and Virology Laboratory (MICB323) at U. of British Columbia. Laboratory course in basic immunology and virology including genetic manipulation and tissue culture.
- Fall 2018 Instructor Bioinformatics (MICB405) at U. of British Columbia. Upper-level course utilizing coding and computational tools to answer questions in microbiology and public health
- Fall 2018 Instructor Microbial Ecophysiology (MICB301) at U. of British Columbia. Undergraduate course on how the physical and biological environment interact with the physiology of microorganisms especially metabolism
- Guest lecturer Experimental Molecular Biology (MICB447) at U. of British Columbia. Capstone laboratory of independent research projects in molecular biology for the Undergraduate Journal of Experimental Microbiology and Immunology (JEMI)
- Fall 2018 Guest lecturer Molecular Microbiology Laboratory (MICB322) at U. of British Columbia. Laboratory course in basic microbiology for majors including aseptic technique, plasmid isolation, and enzyme assays.
- Spring 2018 Instructor Microbial Ecological Genomics (MICB425) at U. of British Columbia.
- Spring 2018 Instructor Microbes and Society (BIOL346) at U. of British Columbia.
- Spring 2018 Guest lecturer Experimental Microbiology (MICB421) at U. of British Columbia.
- Fall 2017 Instructor Bioinformatics (MICB405) at U. of British Columbia.
- Fall 2017 Instructor Microbial Ecophysiology (MICB301) at U. of British Columbia.
- Sum 2017 Facilitator Research Mentor Training at U. of Wisconsin-Madison. Discussion-based graduate course on effective research mentoring based on <a href="Entering Entering">Entering Mentoring by Hanselsman J et al</a>
- Spring 2017 Instructor Inclusive Teaching for TAs (EPD690) at U. of Wisconsin-Madison. Graduate course on the impacts of inequity and identity on student learning as well as how to implement inclusive teaching practices

# Workshops and short courses

- 2018 Instructor ECOSCOPE 2-hour workshop "Introduction to R" and 6-hour workshops "The R tidyverse", "Reproducible research in Git and R", and "Intermediate R programming" github.com/EDUCE-UBC/workshops R
- Sum 2018 Instructor Compute Canada Research Computing Summer School 3-hour workshop "Microbiome data manipulation and visualization in R"
- Sum 2018 Instructor Centre for Teaching, Learning, and Technology (CTLT) Spring Institute 2-hour workshop "Integrating data science across undergraduate STEM curriculum"
- Spring 2017 Instructor Bioinformatics Resource Center (BRC) 8-hour workshops "Microbiota Fall 2016 Processing in mothur" and "Microbiota Analysis in R" rpubs.com/dillmcfarlan
- Oct 2015 Instructor Universidade Federal de Viçosa, Brazil, 4-day short course "Investigating the microbiota using the Illumina MiSeq: from design to analysis"

## Teaching assistantships

Spring 2016 Guest lecturer & teaching assistant Physiological Diversity of Prokaryotes lab (MICRO551) at U. of Wisconsin-Madison

Spring 2015	<b>Teaching assistant</b> Biology of Microorganisms (MICRO303) at U. of Wisconsin-Madison	
Fall 2012	<b>Guest lecturer &amp; teaching assistant</b> Physiology of Microorganisms (MICRO526) at U. of Wisconsin-Madison	
Spring 2011	<b>Course assistant</b> Genetics lab (BIOL311) and Organic Chemistry II lab (CHEM251) at U. of Puget Sound	
Fall 2010	Course assistant Organic Chemistry I lab (CHEM250) at U. of Puget Sound	
Spring 2010	Course assistant Organic Chemistry II lab (CHEM251) at U. of Puget Sound	
Fall 2009	Course assistant General Chemistry I lab (CHEM110) and Unity of Life: cells, molecules, and systems lab (BIOL111) at U. of Puget Sound	
Spring 2009	<b>Course assistant</b> Integrated Chemical Principles and Analytical Chemistry lab (CHEM230) at U. of Puget Sound	
MENTORING		
U. of British (	Columbia	
2018-present	Nolan Shelley (graduate TA). Botany PhD student, U. of British Columbia	
2018-present	Yue Liu (graduate TA). Applied Mathematics MS student, U. of British Columba	
2018-present	Mohammad Najjarzadegan (graduate <u>CIRTL Teaching-as-Research</u> ). Electronics, Circuits and Systems PhD student, U. of British Columbia	
2018	David Yin (undergraduate TA). Computer Science and Statistics undergraduate, U. of British Columbia	
2018	Jonah Lin (undergraduate CPSC448 Directed studies). BS Computer Science and Microbiology & Immunology, U. of British Columbia. Now pursuing MS programs in microbiology	
2017-2018	Lisa McEwen (graduate TA). PhD Medical Genetics, U. of British Columbia. Now Data Consultant in Clinical Analytics, Vancouver Island Health Authority	
2017-2018	Kris Hong (undergraduate TA). BS Statistics, U. of British Columbia. Now PhD student.	
2017-2018	Julia Beni (visiting graduate TA). Environmental Engineering PhD candidate, U. of Minnesota-Twin Cities	
U. of Wiscon	sin-Madison	
2012-2017	Mentored students and collaborators in sequencing setup and analysis.	
	Animal/Dairy science: Elif Günal, Megan Kulow, Stephanie Metzger, Xiaoxia Dai Entomology: Rachel Arango Population Health: Shannah Eggers Surgery: Sharon Tang Veterinary Medicine: Austin Zeng, Katie Neil, Kelly Anklam	
2015-2017	Madison Cox (graduate). Microbiology PhD candidate, U. of Wisconsin-Madison	
2015-2017	Andrew Steinberger (undergraduate/graduate). BS Microbiology, U. of Wisconsin-Madison. Now Microbiology PhD candidate, U. of Wisconsin-Madison	
2015-2016	Camila Cunha (visiting graduate). PhD Animal Science, Universidade Federal de Viçosa, Viçosa, Brazil.	

- 2015-2016 Juliana Dias (visiting graduate). PhD Animal Science, Universidade Federal de Viçosa, Viçosa, Brazil. Now postdoctoral researcher, Embrapa, Brasil
- Zoe Papalia-Beatty (high school) Youth Apprenticeship Program in Biotechnology,
   U. of Wisconsin-Madison. Now undergraduate in Environmental Public Health, U. of Wisconsin-Eau Claire
- 2012-2013 Amy Speich (undergraduate). BS Food Science, U. of Wisconsin-Madison. Now Quality Control Laboratory Technician at Agropur Ingredients
- Sonia Chris-Ukah (REU undergraduate). BS Biology, U. of Wisconsin-Oshkosh.
   MS Biomedical Sciences, U. of Toledo Medical Center. Now Physician Assistant at Center for Pain Management

## **PUBLICATIONS**

\*first authors †corresponding author(s)

- 19. Kehoe SI<sup>†</sup>, **Dill-McFarland KA**, Breaker JD, Suen G. 2019. Effects of corn silage inclusion in pre-weaned calf diets. <u>J Dairy Sci</u> *In press*
- Carroll C, Olsen KD, Ricks NJ, Dill-McFarland KA, Suen G, Robinson TF, Chaston JM. 2018. Bacterial communities in the alpaca gastrointestinal tract vary with diet and body site. Front Microbiol. 9: 3334. doi: 10.3389/fmicb.2018.03334
- 17. **Dill-McFarland KA**\*, Tang Z\*, Kemis JH, Kerby RL, Chen G, Palloni A, Sorenson T, Rey FE<sup>†</sup>, Herd P<sup>†</sup>. Close social relationships correlate with human gut microbiota composition. Sci Rep In press. Preprint doi: <a href="https://doi.org/10.1101/428938">https://doi.org/10.1101/428938</a>
- Dill-McFarland KA, Weimer PJ, Breaker JD, Suen G. 2018. Diet influences early microbiota development in dairy calves without long-term impacts on milk production. <u>Appl Environ</u> Microbiol Epub ahead of print. doi: 10.1128/AEM.02141-18
- 15. De Wolfe TJ, Eggers S, Barker AK, Kates A, **Dill-McFarland KA**, Suen G, Safdar N. 2018. Oral probiotic combination of *Lactobacillus* and *Bifidobacterium* alters the gastrointestinal microbiota during antibiotic treatment for *Clostridium difficile infection*. <u>PLoS One</u> 13(9): e0204253. doi: 10.1371/journal.pone.0204253
- 14. Cunha CS, Marcondes MI, Veloso CM, Mantovani HC, Pereira LGR, Tomich TR, **Dill-McFarland KA**<sup>†</sup>, Suen G<sup>†</sup>. 2018. Compositional and structural dynamics of the ruminal microbiota in dairy heifers and its relationship to methane production. <u>J Sci Food Agric</u> 99(1): 210-18. doi: 10.1002/jsfa.9162
- 13 Romano KA, **Dill-McFarland KA**, Kasahara K, Kerby RL, Vivas EI, Amador-Noguez D, Herd P, Rey FE. 2018. Fecal Aliquot Straw Technique (FAST) allows for easy and reproducible subsampling: Assessing interpersonal variation in trimethylamine-*N*-oxide (TMAO) accumulation. Microbiome 6(1): 91. doi: 10.1186/s40168-018-0458-8
- 12. Dias J, Marcondes MI, de Souza SM, da Mata BC, Noronha MF, Resende RT, Machado FS, Mantovani HC, **Dill-McFarland KA**†, Suen G†. 2018. Bacterial community dynamics across the gastrointestinal tracts of dairy calves during preweaning development. <u>Appl Environ Microbiol</u> 84(9): e02675-17. doi: 10.1128/AEM.02675-17
- 11. Williams CL, **Dill-McFarland KA**, Sparks DL, Kouba AJ, Willard ST, Suen G, Brown AE. 2018. Dietary changes during weaning shape the gut microbiota of red pandas (*Ailurus fulgens*). Conserv Physiol 6(1): cox075. doi: 10.1093/conphys/cox075
- 10. Cunha CS, Veloso CM, Marcondes MI, Mantovani HC, Tomich TR, Periera LGR, Ferreira MF, **Dill-McFarland KA**†, Suen G†. 2017. Assessing the impact of rumen microbial communities on methane emissions and production traits in Holstein cows in a tropical climate. Syst Appl Microbiol 40(8): 492-99. doi: 10.1016/j.syapm.2017.07.008

- Dai X, Weimer PJ, Dill-McFarland KA, Brandao VL, Suen G, Faciola AP. 2017. Camelina seed supplementation at two dietary fat levels changes ruminal bacterial community composition in a dual-flow continuous culture system. <u>Front Microbiol</u> 8: 2147. doi: <u>10.3389/fmicb.2017.02147</u>
- 8. Vogt NM, Kerby RL, **Dill-McFarland KA**, Harding SJ, Merluzzi AP, Johnson SC, Carlsson CM, Asthana S, Zetterberg H, Blennow K, Bendlina BB†, Rey FE†. 2017. Gut microbiome alterations in Alzheimer's disease. Sci Rep 7(1): 13537. doi: 10.1038/s41598-017-13601-y
- Dias J, Marcondes MI, Noronha MF, Resende RT, Machado FS, Mantovani HC, Dill-McFarland KA<sup>†</sup>, Suen G<sup>†</sup>. 2017. Effect of pre-weaning diet on the ruminal archaeal, bacterial, and fungal diversity of dairy calves. <u>Front Microbiol</u> 8: 1553. doi: <u>10.3389/fmicb.</u> 2017.01553
- 6. **Dill-McFarland KA**, Breaker JD, Suen G. 2017. Microbial succession in the gastrointestinal tract of dairy cows from 2 weeks to first lactation. <u>Sci Rep</u> 7: 40864. doi: <u>10.1038/srep40864</u>
- Jetté ME, Dill-McFarland KA, Hanshew AS, Suen G, Thibeault SL. 2016. The human laryngeal microbiome: effects of cigarette smoke and reflux. <u>Sci Rep</u> 6: 35882. doi: <u>10.1038/srep35882</u>
- 4. Williams CL\*, **Dill-McFarland KA**\*, Vandewege MW, Sparks DL, Willard ST, Kouba AJ, Suen G†, Brown AE†. 2016. Dietary shifts may trigger dysbiosis and mucous stools in giant pandas (*Ailuropoda melanoleuca*). Front Microbiol 7: 661. doi: 10.3389/fmicb.2016.00661
  - \*\*Microbiome Digest's Best Microbiome Paper 2016
- 3. **Dill-McFarland KA**, Weimer PJ, Pauli JN, Peery MZ, and Suen G. 2016. Diet specialization selects for an unusual and simplified gut microbiota in two- and three-toed sloths. <u>Environ Microbiol</u> 18(5): 1391-402. doi: 10.1111/1462-2920.13022
- 2. **Dill-McFarland KA**, Suen G, Carey HV. 2016. Spotlight: Bears arouse interest in microbiota's role in health. Trends Microbiol 24(4): 245-6. doi: 10.1016/j.tim.2016.01.011
- Dill-McFarland KA, Neil KL, Zeng A, Sprenger RJ, Kurtz CC, Suen G<sup>†</sup>, Carey HV<sup>†</sup>. 2014. Hibernation alters diversity & composition of mucosa-associated bacteria while enhancing antimicrobial defence in the gut of 13-lined ground squirrels. Mol Ecol 23(18): 4658-69. doi: 10.1111/mec.12884

## **SERVICE**

2015-present	Reviewer Appl Environ Microbiol, Environ Microbiol, FEMS Microbiol Lett, Integr Comp Bio, ISME J, Microb Ecol, PLoS One, Sci Data, and others
2019	Moderator "Incorporating data science into undergraduate microbiology education" at ASM Microbe 2019
2018-present	Faculty of Science data science curriculum committee at U. of British Columbia
2018	Moderator "Integrating microbial ecology into the management of threatened wildlife" at ASM Microbe 2018
2018	Undergraduate Research Symposium committee in Microbiology & Immunology at U. of British Columbia
2017	Convener "Conserving wild microbiomes: microbial contributions to the survival of endangered species" at ASM Microbe 2017
2013-2017	Graduate/postdoc representative for Delta Program at U. of Wisconsin-Madison
2017	Graduate school panel at U. of Wisconsin-Whitewater

2015	Online textbook reviewer for Macmillan New Ventures
2015	Microbiology Doctoral Training Program admissions committee at U. of Wisconsin-Madison
2014	Science Olympiad Badger Invitational Tournament workshop leader
2012-2014	Microbiology Doctoral Training Program recruitment committee at U. of Wisconsin-Madison
2012, 2013	Pre-college Enrichment Opportunity Program for Learning Excellence (PEOPLE) workshop leader
2011	Phi Sigma Biological Sciences Honor Society symposium chair
2010-2015	Online content reviewer for Cengage Learning: Aplia

## **FUNDING** (selected)

- 2019 U. of British Columbia Teaching and Learning Enhancement Fund (TLEF). Experiential Data science for Undergraduate Cross-Disciplinary Education (EDUCE). **Role: Primary writer.** PI: Steven Hallam. Budget: \$145,630, 1yr.
- 2018 U. of British Columbia Skylight Development Grant. Experiential Data science for Undergraduate Cross-Disciplinary Education (EDUCE). PI: Kim Dill-McFarland. Budget: \$6,000, 1yr
- 2013 Wisconsin Agricultural Experiment Station (WAES) Hatch Formula Grant. Correlating calf health and development to their associated microbial communities while on differing diet. Role: Writer and contributor. Pl: Garret Suen. Budget: \$105,426, 3yr
- 2012 NSF Graduate Research Fellowships Program (GRFP). Living proximity and its effects on the rumen microbial community. **Role: Primary writer.** PI: Garret Suen. Budget: \$86,000, 2yr. Honorable Mention
- 2010 American Society for Microbiology (ASM) Undergraduate Research Fellowship. Investigating the regulation of malA and related genes in the bacterial predator, *Bdellovibrio bacteriovorus*. **Role: Primary writer**. PI: Mark Martin. Budget: \$5,000, 10wk
- 2009 U. of Puget Sound University Enrichment Committee. Investigating the role of *mal*F and *mal*A in *Bdellovibrio bacteriovorus*' genome in maltose metabolism and the predatory lifestyle. **Role: Primary writer**. PI: Mark Martin. Budget: \$500
- 2009 American Society for Microbiology (ASM) Undergraduate Research Fellowship. Investigating the role of the malF and malA regions of *Bdellovibrio bacteriovorus*' genome in maltose metabolism and the predatory lifestyle. **Role: Primary writer.** PI: Mark Martin. Budget: \$4,500, 10wk

# Conference attendance and travel

2017	U. of Wisconsin System's Women and Science Program through NSF ADVANCE: \$188
2016	Center for Integration of Research, Teaching, and Learning (CIRTL): \$943
2016	International Society for Microbial Ecology (ISME): €300
2016	Federation of European Microbiological Societies (FEMS): €300
2014, 2016	Vilas Conference Presentation Funds: \$600, \$1,200
2014, 2015, 2016	Bacteriology Department at U. of Wisconsin-Madison: \$500, \$500, \$1,000
2013	American Dairy Science Association (ADSA): \$250

2009, 2010, American Society for Microbiology (ASM): \$500, \$1000, \$500, \$500 2013, 2018

## **INVITED TALKS** (selected)

## Teaching

**Dill-McFarland KA**. 2018. Experiential Data science for Undergraduate Cross-disciplinary Education (EDUCE). Jupyter Day at U. of British Columbia, Vancouver, BC, Canada

**Dill-McFarland KA**, Cary T, Jakuba C, Jenkins K. 2016. "Exploring Biology" freshmen interest group as a high-impact practice for retaining students in STEM. Center for the Integration of Research, Teaching, and Learning (CIRTL) at U. of California, San Diego. La Jolla, CA, USA

#### Research

**Dill-McFarland KA**, Herd P, Rey FE. 2017. Social interactions and the human gut microbiota. Population Health Sciences at U. of Wisconsin-Madison, Madison, WI, USA.

**Dill-McFarland KA**, Rey FE, Herd P. 2017. Early- vs. late-life determinants of the human gut microbiota. U. of Wisconsin System's postdoctoral seminar series through NSF ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers. Oshkosh, WI, USA.

**Dill-McFarland KA**, Herd P, Rey FE. 2016. Early- vs. late-life contributions to the human gut microbiota. Biological Sciences at U. of California, San Diego. La Jolla, CA, USA.

**Dill-McFarland KA**, Pauli JN, Peery MZ, Suen G. 2016. Microbe-cycling between tree sloths and their symbiotic moths. San Diego Zoo: Institute for Conservation Research Seminar Series. Escondido, CA, USA.

**Dill-McFarland KA**, Weimer PJ, Pauli JN, Peery MZ, Suen G. 2016. Gut microflora of twoand three-toed sloths. Participatory Learning and Teaching Organization (PLATO) Frontiers in Life Sciences. Madison, WI, USA

**Dill-McFarland KA**, Suen G. 2015. Impact of the ruminal microbiota on development of the pre-ruminant calf. V Simleite (milk) at Universidade Federal de Viçosa, Viçosa, Brazil

**Dill-McFarland KA**, Pauli JN, Peery MZ, Suen G. (2015) Using mixed amplicon sequencing to investigate tree sloths and their multi-kingdom symbionts. Illumina webinar. Online.

**Dill-McFarland KA**, Pauli JN, Peery MZ, Weimer PJ, Suen G. 2015. Microbe-cycling in tree sloths facilitated by pyralid moths. American Society for Microbiology (ASM) General Meeting. New Orleans, LA, USA.

## **POSTER PRESENTATIONS** (selected)

## Teaching

**Dill-McFarland KA**, Beni JW, Hallam SJ. 2018. Flexible and progressive undergraduate data science education. American Society for Microbiology (ASM) Microbe Meeting. Atlanta, GA, USA.

**Dill-McFarland KA**, Hallam SJ. 2018. EDUCE: Experiential Data science for Undergraduate Cross-disciplinary Education. U. of British Columbia Teaching Learning Enhancement Fund (TLEF) Showcase. Vancouver, BC, Canada.

**Dill-McFarland KA**, Beni JW, Hallam SJ. 2017. Experiential Data science for Undergraduate Cross-disciplinary Education (EDUCE). U. of British Columbia Teaching with Technology Showcase. Vancouver, BC, Canada.

**Dill-McFarland KA**, Cary T, Jakuba C, Jenkins K. 2015. "Exploring Biology" FIG: a high-impact practice for retaining students in STEM. Center for the Integration of Research, Teaching, and Learning (CIRTL) National Forum. College Station, TX, USA

#### Research

**Dill-McFarland KA**, Herd P, Rey FE. 2017. Relationships and social interactions shape the human gut microbiota. American Society for Microbiology (ASM) Microbe Meeting. New Orleans, LA, USA

**Dill-McFarland KA**, Kehoe SI, Weimer PJ, Suen G. 2016. Impact of diet on development of the gastrointestinal tract and its associated microbiota in dairy calves. International Society for Microbial Ecology (ISME). Montreal, QC, Canada.

**Dill-McFarland KA**, Kehoe SI, Weimer PJ, Suen G. 2016. Impact of diet on development of the gastrointestinal tract and its associated microbiota in dairy calves. INRA-Rowett Symposium on Gut Microbiology. Clermont-Ferrand, France

**Dill-McFarland KA**, Pauli JN, Peery MZ, Weimer PJ, Suen G. 2014. Wild two- and three-toed sloths possess unique gut microbiotas characterized by low diversity and a highly abundant *Neisseria*. International Society for Microbial Ecology (ISME). Seoul, South Korea.

**Dill-McFarland KA**, Kehoe SI, Suen G. 2014. Diet effects on the dairy cow gut bacterial community from birth to lactation. American Society for Microbiology (ASM) General Meeting. Boston, MA, USA

**Dill-McFarland KA**, Speich A, Suen G. 2013. Correlating dairy calf health and development to their gut microbial communities while on differing diets. American Society for Microbiology (ASM) General Meeting. Denver, CO, USA

## **PROFICIENCIES**

Unix R Python Git mothur QIIME

#### PROFESSIONAL MEMBERSHIPS

American Society for Microbiology (ASM)
International Society for Microbial Ecology (ISME)

# **MISCELLANEOUS**

Half-marathon runner PADI open water diver Beginning sailor, Madison Hoofers