

KRISTOPHER D. PARKER, PhD

Curriculum Vitae

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EDUCATION / EXPERIENCE

August 2009 - May 2013.

* Bachelor of Science in Biology. Pittsburg State University.

August 2013 - September 2018.

* Doctor of Philosophy in Molecular & Cellular Life Science. University of Wyoming.

September 2018 - December 2019.

* Postdoctoral Scholar. Toxicology & Nutrition Laboratory. Colorado State University.

January 2020 – current.

* Instructor, Microbiology. Front Range Community College - Larimer Campus.

TEACHING

Pittsburg State University:

- BIOL371/BIOL372: General Microbiology. Undergraduate Teaching Assistant. Fall 2012 / Spring 2013.
- BIOL571: Pathogenic Bacteriology. Undergraduate Teaching Assistant. Spring 2013.

University of Wyoming:

- MOLB1101: The Neanderthal & the Nucleus. Graduate Teaching Assistant. Fall 2015.
- MICR2021: General Microbiology. Distinguished Guest Lecturer on human and Earth microbiomes. Fall 2015 - Winter 2018. [6 semesters]
- MICR2021: General Microbiology. Graduate Teaching Assistant. Fall 2016 / Spring 2017.
- Summer Institute on Active Learning Fellow. Science Initiative's Learning Actively Mentoring Program (LAMP). Summer 2016 - Summer 2017.
- Instructor Certification. Data and Software Carpentries. Winter 2017.

Colorado State University:

- ERHS569: Immunotoxicology. Guest Lecturer on the human microbiome. Spring 2019.
- CVMBS Best Practices in Teaching Workshop. Participant. Summer 2019.
- CVMBS Inclusive Pedagogy Training Institute. Trainee. Fall 2019.
- Instructor. woRkshop: data visualization using the R programming language. Nov 2019.

Front Range Community College ~ Larimer Campus:

- BIO204 Microbiology with Lab ~ 4 credits. Instructor of Record:
 - Spring 2020: Two sections (601 and 602)
 - Fall 2020: Three sections (601, 602, 603)

MENTORSHIP

Undergraduate students:

- * Kyle Bochanski. Microbiology / Natural Resources. Dec 2014 - Jul 2015. [7 months]
- * Reid Olson. Zoology. Aug 2015 - May 2016. [1 year]
- * Bailey Hamann. Molecular Biology / Microbiology. Dec 2015 - Dec 2018. [3 years]
- * Martha Wenger (MJ). Microbiology / Spanish. Feb 2017 - May 2018. [1 year]
- * Marcus Manzanares. Biology / Molecular Biology. Sep 2017 - Sep 2018. [1 year]

Graduate student:

- * Melanie Beale (Mel). Health and Exercise Science. Jun 2019 - Oct 2019. [5 months]

Other:

- * Malachi Bustos. Big Brothers Big Sisters of Laramie. Jul 2014 - Mar 2018. [3.75 years]
- * Guest mentor for 2017 / 2018 Summer Institute Fellows. Jul 2017. [1 day]
- * Mentor for MICR2021 General Microbiology Undergraduate Teaching Assistants. Aug 2017 - May 2018. [2 semesters]

SCIENCE COMMUNICATION AND OUTREACH

- **Presenter.** The human body as an ecosystem: expanding the definition of human health. Shepard Symposium on Social Justice. Rebel Health: Wellness Without Borders. University of Wyoming, Laramie, WY. April 6, 2017.
- **Presenter.** The Human Superorganism: A brief tour of our microbial world. Pre-Health Orientation. Pittsburg State University. Pittsburg, KS. October 10, 2017.
- **Presenter.** 2017: A Microbiome Odyssey - a tale of replication and reproducibility. National Science Olympiad National Tournament. Fort Collins, CO. May 18, 2018.
- **2019 / 2020 Sustainability Leadership Fellow.** School of Global Environmental Sustainability (SoGES). Colorado State University.
- **Panel Member.** The Experts Are In: CSU Sustainability Scientists; Ask Me Anything: about the human microbiome. School of Global Environmental Sustainability. Colorado State University. City of Fort Collins 20th Anniversary of Climate Action Celebration. November 14, 2019.

SERVICE

University:

- **Panel Member.** Graduate Teaching Assistant Workshop. Ellbogen Center for Teaching and Learning. University of Wyoming. Sep 2016.
- **Graduate Student Reviewer.** Wyoming INBRE Undergraduate Fellowship Proposals. University of Wyoming. Jan 2018 - Feb 2018.
- **Poster Judge.** 21st Annual College of Veterinary Medicine and Biomedical Sciences Research Day. Colorado State University. January 26, 2018.

- **Panel Member.** The Experts Are In: CSU Sustainability Scientists; Ask Me Anything: about the human microbiome. School of Global Environmental Sustainability. Colorado State University. City of Fort Collins 20th Anniversary of Climate Action Celebration. November 14, 2019.

Community:

- **Big Brother.** Big Brothers Big Sisters. Laramie, WY. Jul 2014 - Mar 2018.
- **Registration Coordinator.** 2016, 2017, and 2018 Gowdy Grinder Mountain Bike Race. Laramie Racing in conjunction with Pedal House Bicycle Shop. Laramie, WY.
- **Registration Coordinator.** 2016 and 2017 Laramie Mountain Bike Series. Laramie Racing.
- **Volunteer Coordinator.** 2017 Laramie Range Epic. Laramie Racing. May 2017 - Aug 2017.
- **State Competition Judge.** 2017 and 2018 Wyoming History Day. American Heritage Center. Laramie, WY.
- **Grand Awards Judge.** 64th Annual Colorado Science and Engineering Fair. Fort Collins, Colorado. Apr 2019.

RESEARCH

Undergraduate:

Viral mechanisms for hijacking plant cytoskeletal machinery to facilitate cell-to-cell spread.
Principal Investigator / Mentor: Dr. Phillip A. Harries.

Graduate:

Of mice and humans: Investigating intestinal microbiomes in the context of Hirschsprung-associated enterocolitis. Principal Investigator / Advisor / Mentor: Dr. Naomi L Ward.

Postdoc:

Exploring the intricate interplay between food components, metabolism, and gut microbes to promote gut health, prevent chronic disease, and reduce existing agricultural waste.
Principal Investigator: Dr. Elizabeth P Ryan.

Grants and funding:

1. "Mining the mouse microbiome." Undergraduate: *Bailey Hamann*. Advisor: Naomi Ward. Mentor: **Kristopher Parker**. Wyoming EPSCoR Undergraduate Fellowship. First award: Jan. 2016-Jul. 2016. Amount: \$5,300. Second award: Aug 2016 - May 2017. Amount: \$5,000.
2. "Rebuilding the barrier to inflammation." Undergraduate: *Bailey Hamann*. Principal investigator: Naomi Ward. Mentor: **Kristopher Parker**. Wyoming NASA Space Grant Consortium, Undergraduate Fellowship. Jun 2017 - May 2018. Amount: \$2,500.
3. "Rice bran microbial metabolism for colon chemoprevention." Co-principal investigators: Elizabeth P Ryan and Komal Raina. Postdoc: **Kristopher Parker**. NIH Administrative Supplement (PA-18-817). Project number: 3R01CA201112-04SI. Amount: \$146,264.

HONORS / AWARDS

- * Dean's Scholastic Honors, Spring 2010; Spring 2011; Fall 2012. Pittsburg State University.
- * Lowell Depp and Dorothy Crews-Eubank Scholarship. Fall 2012. Pittsburg State University.

- * 2016 Big of the Year. Big Brothers Big Sisters of Laramie, Wyoming.
- * 2016 / 2017 Summer Institute Teaching Fellow. LAMP. University of Wyoming.
- * Peggy Cotter Travel Award. Summer 2019. American Society of Microbiology (ASM).
- * 2019 / 2020 Sustainability Leadership Fellow. SoGES. Colorado State University.

PUBLICATIONS

Published:

1. **Parker, KD**, JP Gigley, NL Ward. 2016. Paths to GI research in the wild west: tales from Wyoming. *Cell Mol Gastroenterol Hepatol*. doi: 10.1016/j.jcmgh.2016.06.001. PMID: 28174736.
2. **Parker, KD**, SE Albeke, JP Gigley, AM Goldstein, NL Ward. 2018. Microbiome composition in both wild-type and disease model mice is heavily influenced by mouse facility. *Front Microbiol*. doi: 10.3389/fmicb.2018.01598.
3. Nealon NJ*, **KD Parker***, P Lahaie, H Ibrahim, AK Maurya, K Raina, EP Ryan. 2019. *Bifidobacterium longum*-fermented rice bran and rice bran supplementation affects the gut microbiome and metabolome. *Benef Microbes*. doi: 10.3920/BM2019.0017. PMID: 31965839.
*co-first authors
4. Baxter, BA, **KD Parker**, MJ Nosler, S Rao, R Craig, C Seiler, EP Ryan. 2020. Metabolite profile comparisons between ascending and descending colon tissue in healthy adults. *World J Gastroenterol*. doi: 10.3748/wjg.v26.i3.335. PMID: 31988593.

In review:

1. **Parker, KD**, AK Maurya, H Ibrahim, S Rao, PR Hove, D Kumar, R Kant, B Raina, R Agarwal, KA Kuhn, K Raina, EP Ryan. 2020. Fecal transfaunation with dietary rice bran-modified human gut microbial consortia confer protection against colon carcinogenesis. 2020. *Carcinogenesis*.

In preparation:

1. **Parker, KD**, M Westfal, NL Ward, AM Goldstein. 2020. Longitudinal characterization of fecal microbiota changes in patients with Hirschsprung-associated enterocolitis. *Neurogastroenterol Motil*.
2. K Raina, **Parker, KD**, AK Maurya, H Ramseier, R Kant, H Ibrahim, B Raina, R Agarwal, EP Ryan. 2020. Microbe-dependent metabolism of rice bran elicits protection from colon carcinogenesis in conventional and germ-free murine models. Target: *Cancer Cell*.
3. P Hove, **Parker, KD**, AK Maurya, H Ramseier, NJ Nealon, H Ibrahim, S Rao, R Kant, R Agarwal, K Raina, EP Ryan. 2020. Murine fecal microbiota colonization dynamics following dietary rice bran intake. Target: *mSystems*.
4. Beale, MN, HJ Leach, **Parker, KD**, BA Baxter, HV Smith, EP Ryan. 2020. Relationships between objectively measured physical activity and stool metabolome and microbiome composition in individuals at high risk for colorectal cancer. Target: *J Phys Act Health*.

PRESENTATIONS

*Invited seminars (*presenter):*

1. **Parker, KD**, SE Albeke, AM Goldstein, NL Ward*. The role of gastrointestinal microbiota in Hirschsprung-associated enterocolitis and the challenges of replication. National Science Foundation Symposium on Sensing and Computational Biology. Colorado State University, Fort Collins, CO, USA. June 12-13, 2017.

2. *Parker, KD, Diet, cancer, and the microbiome. 70th American Association for Laboratory Animal Science (AALAS) National Meeting. Denver, CO, USA. October 13-17, 2019.

*Oral presentations (*presenter):*

1. *Hamann, B.J., **KD Parker**, NL Ward. Mining the mouse microbiome. 1st Annual Wyoming INBRE Conference: Wyoming Undergraduate Research Day. University of Wyoming, Laramie, WY, USA. April 29-30, 2016.
2. *Hamann, B.J., **KD Parker**, NL Ward. Mining the mouse microbiome. 2nd Annual Wyoming INBRE Conference: Wyoming Undergraduate Research Day. University of Wyoming, Laramie, WY, USA. April 28-29, 2017.
3. *Parker, KD, SE Albeke, JP Gigley, AM Goldstein, NL Ward. Microbiome composition in both wild-type and disease model mice is heavily influenced by mouse facility. American Society for Microbiology Tri-Branch Conference. Durango, CO, USA. April 6-7, 2018.
4. *Parker, KD, H Ramseier, AK Maurya, NJ Nealon, R Kant, H Ibrahim, B Raina, R Agarwal, K Raina, EP Ryan. Fermenting agricultural waste with a probiotic: a mouse gut-centered journey. CSU Microbiome Seminar Series. Fort Collins, CO, USA. February 20, 2019.

*Poster presentations – undergraduate (*presenter):*

1. *Woodruff, R., K Nickell*, **KD Parker***, P Conley, PA Harries. The effect of calreticulin knockout on plasmodesmatal gating in *Physcomitrella patens*. 11th Annual K-INBRE Symposium. Kansas State University, Manhattan, KS, USA. January 2013.

*Poster presentations – graduate (*presenter):*

1. *Parker, KD, P LaBreck, AM Goldstein, AR Horwille, NL Ward. Unusually abundant coagulase-negative staphylococci in the GI tract of endothelin receptor B-null mice. 16th International Symposium on Staphylococci and Staphylococcal Infections (ISSSI). Chicago, IL, USA. August 2014.
2. *Parker, KD, K Bochanski, JP Gigley, AM Goldstein, NL Ward. The role of GI microbiota in Hirschsprung-associated enterocolitis. American Society for Microbiology Tri-Branch Conference. Fort Lewis College, Durango, CO, USA. April 24-25, 2015.
3. *Parker, KD, K Bochanski, JP Gigley, AM Goldstein, NL Ward. The challenges of reproducibility in mouse microbiomes. American Society for Microbiology Rocky Mountain Regional Branch Meeting. Denver, CO, USA. November 2016.
4. *Parker, KD, SE Albeke, AM Goldstein, NL Ward. The role of GI microbiota in Hirschsprung-associated enterocolitis and the challenges of replication. Keystone Symposium: Microbiome in Health and Disease. Keystone, CO, USA. February 5-9, 2017.
5. *Parker, KD, SE Albeke, AM Goldstein, NL Ward. The role of GI microbiota in Hirschsprung-associated enterocolitis and the challenges of replication. Microbiomics Symposium. Santa Fe, NM, USA. March 16-17, 2017.
6. *Hamann, B.J., **KD Parker**, NL Ward. Mining the mouse microbiome. 2nd Annual Wyoming INBRE Conference. University of Wyoming, Laramie, WY, USA. April 28-29, 2017.
7. *Hamann, B.J., **KD Parker**, NL Ward. Rebuilding the barrier to inflammation. NIH IDeA Western Regional Conference. Jackson, WY, USA. October 18-20, 2017.
8. *Parker, KD, SE Albeke, JP Gigley, AM Goldstein, NL Ward. Assessing multi-facility reproducibility in mouse microbiomes. NIH IDeA Western Regional Conference. Jackson, WY, USA. October 18-20, 2017.
9. *Parker, KD, SE Albeke, JP Gigley, AM Goldstein, NL Ward. Microbiome composition in both wild-type and disease model mice is heavily influenced by mouse facility. Keystone Symposium: Microbiome Host Resistance and Disease. Banff, AB, Canada. March 4-8, 2018.

Poster presentations – postdoc (*presenter):

1. ***Parker, KD**, H Ramseier, AK Maurya, NJ Nealon, R Kant, H Ibrahim, B Raina, P Lahaie, R Agarwal, K Raina, EP Ryan. Fermentation of rice bran with the probiotic *Bifidobacterium longum* modifies gut microbiota composition and metabolite profile for protection against colon carcinogenesis. University of Colorado Cancer Center - Molecular and Cellular Oncology Retreat. Boulder, CO, USA. March 4, 2019.
2. ***Parker, KD**, H Ramseier, AK Maurya, NJ Nealon, R Kant, H Ibrahim, B Raina, P Lahaie, R Agarwal, K Raina, EP Ryan. Fermentation of rice bran with the probiotic *Bifidobacterium longum* modifies gut microbiota composition and metabolite profile for protection against colon carcinogenesis. University of Colorado Anschutz – Cancer Control and Prevention Retreat. Denver, CO, USA. March 26, 2019.
3. ***Parker, KD**, H Ramseier, AK Maurya, NJ Nealon, R Kant, H Ibrahim, B Raina, P Lahaie, R Agarwal, K Raina, EP Ryan. Fermentation of rice bran with the probiotic *Bifidobacterium longum* modifies gut microbiota composition and metabolite profile for protection against colon carcinogenesis. 1st Annual Front Range Microbiome Symposium. Colorado State University. Fort Collins, CO, USA. April 18-19, 2019.
4. *Nealon, NJ, **Parker, KD**, P Lahaie, H Ibrahim, AK Maurya, K Raina, EP Ryan. Host and gut microbial metabolism of *Bifidobacterium longum*-fermented rice bran in healthy mice and bioavailability of colorectal cancer-protective compounds. 1st Annual Front Range Microbiome Symposium. Colorado State University. Fort Collins, CO, USA. April 18-19, 2019.
5. ***Parker, KD**, H Ramseier, AK Maurya, NJ Nealon, R Kant, H Ibrahim, B Raina, P Lahaie, R Agarwal, K Raina, EP Ryan. Rice Bran and *Bifidobacterium longum*-fermented Rice Bran Modulate Gut Microbial Metabolism to Increase Bioavailability of Health Promoting Metabolites. American Society for Microbiology: Microbe 2019 Conference. San Francisco, CA, USA. April 18-19, 2019. June 20-24, 2019.
6. ***Parker, KD**, NJ Nealon, AK Maurya, H Ramseier, H Ibrahim, R Kant, B Raina, P Lahaie, R Agarwal, K Raina, EP Ryan. Rice bran and *Bifidobacterium longum*-fermented rice bran modulate gut microbial metabolism to increase bioavailability of health promoting metabolites. 7th Annual CCTSI Summit on AI and Machine Learning in Biomedical Research. Denver, CO, USA. August 14, 2019.
7. *Baxter, BA, **KD Parker**, MJ Nosler, S Rao, R Craig, C Seiler, EP Ryan. Ascending and descending colon tissue metabolite analysis reveals differences between normal, overweight, and obese adults with relevance to colon cancer risk. 7th Annual CCTSI Summit on AI and Machine Learning in Biomedical Research. Denver, CO, USA. August 14, 2019.
8. ***Parker, KD**, AK Maurya, MN Beale, H Ibrahim, S Rao, R Kant, R Agarwal, K Raina, EP Ryan. Rice bran modified microbial consortia from a colorectal cancer survivor confers protection from inflammation-associated colon carcinogenesis in a murine model. 4th Annual Cancer Center Retreat. University of Colorado Anschutz. Denver, CO, USA. November 5, 2019.
9. ***Parker, KD**, AK Maurya, MN Beale, H Ibrahim, S Rao, R Kant, R Agarwal, K Raina, EP Ryan. Rice bran modified microbial consortia from a colorectal cancer survivor confers protection from inflammation-associated colon carcinogenesis in a murine model. iBRIGHT 2019 Conference. Houston, TX, USA, November 11-13, 2019.

PROFESSIONAL REFERENCES

Heidi Smith

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(970) 204-8611
Relationship: Supervisor/Program Lead

Rachel Watson

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Relationship: Teaching mentor/advisor

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Naomi L Ward

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