Katherine M. Kennedy

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Education

2015 – 2021 — **PhD, McMaster University** in Biochemistry
Laboratory of Dr. Deborah Sloboda
Maternal-microbiome relationships in pregnancy and impact on offspring intestinal development

2011 – 2014 — **MSc, University of Waterloo** in Biology
Laboratory of Dr. Josh Neufeld
Evaluating molecular methods for human microbiome analysis

2007 – 2011 — **BSc, University of Waterloo** in Honours Biomedical Sciences

Employment

2023 – present — **Postdoctoral Fellow, McMaster University** in Biochemistry and Biomedical Sciences
Mentors: Dr. Michael Surette, Dr. Jon Barrett, Dr. Deborah Sloboda

2021 – 2023 — **Postdoctoral Fellow, McMaster University** in Obstetrics and Gynecology
Mentors: Dr. Jon Barrett, Dr. Dawn Bowdish, Dr. Deborah Sloboda, Dr. Michael Surette

Funding

Grants

2023 – 2026 — **Farncombe Innovation Grant (PI)**, *The Good Bugs Study: Beneficial microbes to prevent neonatal Group B Streptococcus disease*. Farncombe Family Digestive Health Research Institute, McMaster University ($50,000).

Fellowships & Scholarships

2026 – 2027 — **GROWW scholarship**, Guiding interdisciplinary Research On Women's and girls' health and Wellbeing (GROWW) cohort program ($20,000).

2023 – 2026 — **CIHR Postdoctoral Fellowship**, Canadian Institutes of Health Research ($185,000).

2022 – 2023 — **Molly Towell Fellowship**, Molly Towell Perinatal Research Foundation ($60,000).

2016 – 2020 — **Farncombe PhD Student Scholarship**, Farncombe Family Digestive Health Research Institute, McMaster University ($91,890).

2016 – 2018 — **Fred and Helen Knight Enrichment Award**, McMaster University ($6,000).

Awards

2025 — **Leadership Award** for outstanding leadership, service, and dedication to trainee development, Farncombe Family Digestive Health Research Institute, McMaster University

2022 — **Mohide Lectureship Award** for outstanding publication, Department of Obstetrics and Gynecology, McMaster University

2022 — **Postdoctoral Fellow Impact Award** for scientific achievement of outstanding merit published in the peer-reviewed literature, Department of Biochemistry and Biomedical Sciences, McMaster University

2020 — **Graduate Student Leadership Award** for excellence in leadership and generosity in initiatives to improve the community for other trainees, Faculty of Health Sciences, McMaster University

2019 — **Teaching Assistant Excellence Award**, Faculty of Health Sciences, McMaster University

2018, 2019 — **Faculty of Health Sciences Graduate Programs Excellence Award**, McMaster University

Publications and Presentations

Journal Articles

*co-corresponding author †shared first authorship

1. Ribeiro, T., Warmington, A., Yeo, E., Bellissimo, C., Kennelly, B., Cowbrough, B., Jazwiec, P., Breznik, J., DeJong, E., **Kennedy, K. M.**, Strehmel, J., McKellar, M., Lewis, A., Bowdish, D. and Sloboda, D. **2026**. 'Maternal diet-induced excess adiposity programs multisystem vulnerability that is unmasked by postnatal infection challenge'. *Scientific Reports*. DOI: 10.1038/s41598-026-71711-y.

2. Braun, T., Hofmann, M., Rancourt, R., Sommer, J., Kühn, A., Ehrlich, L., Ziska, T., Melchior, K., Schellong, K., Henrich, W., Entringer, S., **Kennedy, K. M.**, Plagemann, A. and Sloboda, D. M. **2026**. 'Maternal overweight and obesity during pregnancy and sex-dependent dysregulation of the materno-fetal stress axis'. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*. DOI: 10.1002/ijgo.71165.

3. **Kennedy, K. M.***, Fernando, S., Atkinson, S. A., Surette, M. G., Jeganathan, P. and Sloboda, D.*. **2026**. 'Longitudinal modelling of microbiome subcommunities reveals parity-dependent dynamics during pregnancy and postpartum'. *Gut Microbes*. DOI: 10.1080/19490976.2026.2690907.

4. **Kennedy, K. M.**, Wallace, J. G., Koller, K., Patten, C. A., Thomas, T. K., Murphy, N. J., Flanagan, C. A., Hughes, C. A., Holloway, A. C. and Sloboda, D. **2026**. 'Placental hypoxia and oxidative stress responses to smokeless tobacco use in Alaska Native participants in the MAW study'. *Canadian Journal of Physiology and Pharmacology*. DOI: 10.1139/cjpp-2025-0271.

5. **Kennedy, K. M.**, Plagemann, A., Sommer, J., Hofmann, M., Henrich, W., Surette, M. G., Braun, T. and Sloboda, D. M. **2025**. 'Delivery mode, birth order, and sex impact neonatal microbial colonization'. *Gut Microbes*. DOI: 10.1080/19490976.2025.2491667.

6. Bellissimo, C. J., Yeo, E., Ribeiro, T. A., Jazwiec, P. A., Ellewela, C., Bains, J., Lewis, A. E., **Kennedy, K. M.**, Ashkar, A. A., Beristain, A. G., Bowdish, D. M. E. and Sloboda, D. M. **2025**. 'Maternal diet-induced excess adiposity in mice disrupts mid-gestation decidual immune and vascular homeostasis without impairing spiral artery remodeling'. *Acta Physiol. (Oxf.)* DOI: 10.1111/apha.70130.

7. Bellissimo, C. J., Ribeiro, T. A., Yeo, E., Jazwiec, P. A., Luo, H., Bains, J., **Kennedy, K. M.**, Bowdish, D. M. E. and Sloboda, D. M. **2025**. 'Maternal high-fat, high-sucrose diet-induced excess adiposity is linked to placental hypoxia and disruption of fetoplacental immune homeostasis in late gestation'. *Biol. Reprod.* DOI: 10.1093/biolre/ioaf143.

8. **Kennedy, K. M.**, DeJong, E. N., Chan, A. W. Y., Kennedy, A. E., Jamal, A., Surette, M. G., Larché, M. J., Larché, M., Hambly, N., Ask, K., Atkinson, S. A., McNicholas, P. D., McGeer, A., Coleman, B. L. and Bowdish, D. M. E. **2025**. 'Mapping the intersection of demographics, behaviour, and government response to the COVID-19 pandemic: an observational cohort study'. *BMC Glob. Public Health*. DOI: 10.1186/s44263-025-00162-w.

9. McKerracher, L. J., **Kennedy, K. M.**, Chin, J., Di Maio, J., Weeraratne, T., Bouchard, M., Malhotra, D., Bhopa, S., Oliver, K., Dickinson, S., Barker, M. E., Hardy-Johnson, P. and Sloboda, D. M. **2024**. 'Playing it safe? An evolutionary life history theory perspective on Canadian adolescent play during the COVID-19 pandemic'. *International journal of play*. DOI: 10.1080/21594937.2024.2388955.

10. **Kennedy, K. M.**, Plagemann, A., Sommer, J., Hofmann, M., Henrich, W., Barrett, J. F. R., Surette, M. G., Atkinson, S., Braun, T. and Sloboda, D. M. **2023**. 'Parity modulates impact of BMI and Gestational Weight Gain on gut microbiota in human pregnancy'. *Gut Microbes*. DOI: 10.1080/19490976.2023.2259316.

11. **Kennedy, K. M.** et al. **2023**. 'Questioning the fetal microbiome illustrates pitfalls of low-biomass microbial studies'. *Nature*. DOI: 10.1038/s41586-022-05546-8.

12. Ribeiro, T. A., Breznik, J. A., **Kennedy, K. M.**, Yeo, E., Kennelly, B. K. E., Jazwiec, P. A., Patterson, V. S., Bellissimo, C. J., Anhê, F. F., Schertzer, J. D., Bowdish, D. M. E. and Sloboda, D. M. **2023**. 'Intestinal permeability and peripheral immune cell composition are altered by pregnancy and adiposity at mid- and late-gestation in the mouse'. *PLoS One*. DOI: 10.1371/journal.pone.0284972.

13. McKerracher, L., Moffat, T., Barker, M. E., Murray-Davis, B., **Kennedy, K. M.**, Bellissimo, C. J., Yeo, E., Høtoft, D., Zalot, L., Parlette, V., Atkinson, S. A. and Sloboda, D. M. **2023**. 'Probiotics in pregnancy: Inequities in knowledge exchange, attitudes, and use of probiotics in a socio-demographically diverse, cross-sectional survey sample of pregnant Canadians'. *PharmaNutrition*. DOI: 10.1016/j.phanu.2023.100344.

14. Chin, J., Di Maio, J., Weeraratne, T., **Kennedy, K. M.**, Oliver, L. K., Bouchard, M., Malhotra, D., Habashy, J., Ding, J., Bhopa, S., Strommer, S., Hardy-Johnson, P., Barker, M., Sloboda, D. M. and McKerracher, L. **2023**. 'Resilience in adolescence during the COVID-19 crisis in Canada'. *BMC Public Health*. DOI: 10.1186/s12889-023-15813-6.

15. Jazwiec, P. A., Patterson, V. S., Ribeiro, T. A., Yeo, E., **Kennedy, K. M.**, Mathias, P. C., Petrik, J. J. and Sloboda, D. M. **2022**. 'Paternal obesity induces placental hypoxia and sex-specific impairments in placental vascularization and offspring metabolism'. *Biology of Reproduction*. DOI: 10.1093/biolre/ioac066.

16. **Kennedy, K. M.**, Bellissimo, C. J., Breznik, J. A., Barrett, J., Braun, T., Bushman, F. D., De Goffau, M., Elovitz, M. A., Heimesaat, M. M., Konnikova, L., Koren, O., Parry, S., Rossi, L., Segata, N., Simmons, R. A., Surette, M. G., Walter, J. and Sloboda, D. M. **2021**. 'Over-celling fetal microbial exposure'. *Cell*. **Peer-reviewed letter to the editor**. DOI: 10.1016/j.cell.2021.10.026.

17. **Kennedy, K. M.**, Gerlach, M. J., Adam, T., Heimesaat, M. M., Rossi, L., Surette, M. G., Sloboda, D. M. and Braun, T. **2021**. 'Fetal meconium does not have a detectable microbiota before birth'. *Nature Microbiology*. DOI: 10.1038/s41564-021-00904-0.

18. Bhat, S. F., Pinney, S. E., **Kennedy, K. M.**, McCourt, C. R., Mundy, M. A., Surette, M. G., Sloboda, D. M. and Simmons, R. A. **2021**. 'Exposure to high fructose corn syrup during adolescence in the mouse alters hepatic metabolism and the microbiome in a sex-specific manner'. *The Journal of Physiology*. DOI: 10.1113/jp280034.

19. Saoi, M., **Kennedy, K. M.**, Gohir, W., Sloboda, D. M. and Britz-McKibbin, P. **2020**. 'Placental Metabolomics for Assessment of Sex-specific Differences in Fetal Development During Normal Gestation'. *Scientific Reports*. DOI: 10.1038/s41598-020-66222-3.

20. **Kennedy, K. M.**[†], Gohir, W.[†], Wallace, J. G., Saoi, M., Bellissimo, C. J., Britz-McKibbin, P., Petrik, J. J., Surette, M. G. and Sloboda, D. M. **2019**. 'High-fat diet intake modulates maternal intestinal adaptations to pregnancy and results in placental hypoxia, as well as altered fetal gut barrier proteins and immune markers'. *The Journal of Physiology*. DOI: 10.1113/jp277353.

21. **Kennedy, K. M.**, Selvaratnam, J. and Sloboda, D. **2017**. 'Perinatal Programming of Disease Risk: Maternal, Microbial, and Metabolic Influences'. *The 116th Abbott Nutrition Research Conference Proceedings*.

22. **Kennedy, K. M.**, Hall, M. W., Lynch, M. D. J., Moreno-Hagelsieb, G. and Neufeld, J. D. **2014**. 'Evaluating bias of illumina-based bacterial 16S rRNA gene profiles'. *Applied and Environmental Microbiology*. DOI: 10.1128/AEM.01451-14.

Submitted Manuscripts

1. **Kennedy, K. M.**, Simioni, J. C., Carballo, J. A., Hutton, E. K., Morrison, K. M., Surette, M. G. and the Baby & Mi Research Team. **2026**. 'Birth order modulates effect of intrapartum antibiotic prophylaxis on infant microbiome development and growth trajectories'. *Nature Communications*. *(submitted)*.

2. **Kennedy, K. M.**[†], Andary, C. M.[†], DeJong, E. N., Boron, D., Rossi, L., Szamosi, J. C., Surette, M. G. and Bowdish, D. M. **2026**. 'Seasonality, age, and health conditions influence the composition of the adult upper respiratory tract microbiota'. *Respiratory Research*. *(submitted)*.

Invited Talks

1. *Birth order, intrapartum antibiotic prophylaxis, and infant health outcomes in the Baby & Mi cohort study*. McMaster Midwifery Research Conference, Hamilton, Canada. 2026.

2. *Healthy Bugs: investigating the gut microbiome during pregnancy*. Department of Obstetrics, Charité – Universitätsmedizin Berlin, Berlin, Germany. 2024.

3. *Host-microbiome interactions in pregnancy and early-life*. CellPress LabLinks: Analyzing the microbiome across systems, Toronto, Canada. 2024.

4. *Parity Modulates Impact of BMI and Gestational Weight Gain on Gut Microbiota in Human Pregnancy*. International DOHaD Society Worldwide Webinar Series (online). 2023.

5. *Questioning the fetal microbiome illustrates pitfalls of low-biomass microbial studies*. Microbiome Virtual International Forum (online)
   ☆**Best Selected Talk Award**. 2023.

6. *Maternal-microbiome relationships in pregnancy and impact on offspring*. International Webinar on Women and Neonatal Health at Maharishi Markandeshwar University, Mullana-Ambala, India. 2022.

7. *Maternal-microbiome relationships in pregnancy and impact on offspring intestinal development*. Farncombe Family Digestive Health Research Institute Noon Rounds at McMaster University in Hamilton, ON. 2022.
8. *Exploring the gut microbiota over the course of pregnancy*. Metabolism, Obesity and Diabetes Research seminar series at McMaster University in Hamilton, ON. 2019.
9. *Prenatal programming of disease risk: the maternal microbiota in placental function and fetal intestine development*. Nutrigen Alliance seminar series at McMaster University in Hamilton, ON. 2018.

Presentation Awards

1. *First-Born Infants are More Vulnerable to Intrapartum Antibiotic Disruption of Gut Microbiome Development*. Oral presentation at the 9th Annual Scientific Meeting of the Canadian DOHaD Society, London, ON.
   ☆**Prix d'excellence ODISÉ – Présentation orale**. 2026.
2. *Parity modulates impact of BMI and Gestational Weight Gain on gut microbiota in human pregnancy*. Oral presentation at the Biochemistry and Biomedical Sciences Research Symposium at McMaster University, Canada.
   ☆**1st place Postdoctoral Fellow Presentation**. 2023.
3. *Parity modulates impact of BMI and Gestational Weight Gain on gut microbiota in human pregnancy*. Plenary oral presentation at the World Congress on the Developmental Origins of Health and Disease in Vancouver, Canada.
   ☆**President's Plenary Presenter Award**. 2022.
4. *Excess adiposity during pregnancy impacts maternal and infant gut microbiota*. Poster presentation at the Biochemistry and Biomedical Sciences Research Symposium in Hamilton, ON.
   ☆**1st place Postdoctoral Fellow Poster Award**. 2022.
5. *Parity modulates impact of BMI and Gestational Weight Gain on gut microbiota in human pregnancy*. Plenary oral presentation at the Canadian National Perinatal Research Meeting (virtual).
   ☆**1st place Oral Presentation**. 2022.
6. *Meconium does not have a detectable microbiome prior to birth*. Oral presentation at the 46th Annual RT Weaver Scientific Day, Department of Obstetrics and Gynecology, McMaster University.
   ☆**Best Science Student Presentation**. 2021.
7. *Meconium does not have a detectable microbiome prior to birth*. Poster presentation at the Biochemistry and Biomedical Sciences Research Symposium in Hamilton, ON.
   ☆**Top Poster Presentation**. 2021.
8. *Impact of pre-pregnancy BMI on maternal gut microbiota over the course of pregnancy*. Poster presentation at the Southern Ontario Reproductive Biology Conference in Toronto, ON.
   ☆**Runner-up Best Poster Presentation**. 2019.
9. *Impact of pre-pregnancy BMI on maternal gut microbiota over the course of pregnancy*. Plenary Oral presentation at the Canadian National Perinatal Research Meeting in Mont. Tremblant, QC.
   ☆**Award of Excellence, Oral Presentation**. 2019.
10. *Maternal diet-induced obesity is associated with altered fetal gut development*. Oral presentation at the Canadian National Perinatal Research Meeting in Montebello, QC.
    ☆**Best Oral Presentation Award**. 2017.
11. *Maternal diet-induced obesity is associated with altered fetal gut development*. Oral presentation at the Southern Ontario Reproductive Biology meeting in London, ON.
    ☆**Oral Presentation Award**. 2017.
12. *Maternal diet-induced obesity is associated with altered fetal gut development*. Poster presentation at the Faculty of Health Science Research Plenary at McMaster University in Hamilton, ON.
    ☆**Excellence in Poster Presentation Award**. 2017.

Professional Activities

Public Engagement

2018 – 2026 — **Dissection Day** Dundas Central Elementary School, Dundas, ON.

2023 — **The Science, Microbes & Health Podcast**, Episode 19: Questioning the existence of a fetal microbiome, with Dr. Kate Kennedy (`https://isappscience.org/episode-19-fetal-microbiome/`)

2021 — **Nature Research Communities blog post**, A Microbiome is born (https://communities.springernature.com/posts/a-microbiome-is-born)

2021 — **Innovating Canada (Mediaplanet/Toronto Star)**,
The Maternal Microbiome Explained (https://www.innovatingcanada.ca/environment/the-maternal-microbiome-explained/)

2020 — **Classroom Guest** Skype a Scientist, Philadelphia, PA (virtual).

2012 – 2019 — **Let's Talk Science** University of Waterloo and McMaster University.

Professional Development

2025 — **Strategies and Techniques for Analyzing Microbial Population Structures (STAMPS)**, Marine Biological Laboratory, University of Chicago

2025 — **Creative Data Analysis Workshop**, Institute for Life Sciences and Southampton Institute for Arts and Humanities, University of Southampton.

2024 — **Epic Electronic Health Records**, certificate of completion for research coordinator access, Hamilton Health Sciences.

2022 — **The Carpentries Instructor Training**

2021 — **Mini-MBA**, McMaster Chapter of the Graduate Management Consulting Association.

2019 — **Exploratory Analysis of Biological Data using R**, certificate of completion from Canadian Bioinformatics Workshops.

2017 — **Data Carpentry**, McMaster University.

2017 — **Software Carpentry: Shell, Git, R**, McMaster University.

Professional Service

2023 – 2025 — **Farncombe Research Day Organizer** Farncombe Family Digestive Health Research Institute, McMaster University.

2019 – 2025 — **Founding Co-Chair of the Farncombe Institute Trainee Association,** Farncombe Family Digestive Health Research Institute, McMaster University.

2024 — **CIHR Doctoral Competition Peer Reviewer**, Canadian Institutes for Health Research.

2023 – 2024 — **Trainee Representative,** Research Advisory Council, Department of Biochemistry and Biomedical Sciences, McMaster University.

2022 – 2024 — **Trainee and ECR Representative,** International DOHaD Society Council.

2022 – 2024 — **Seminar Committee,** Department of Biochemistry and Biomedical Sciences, McMaster University.

2022 – 2023 — **Trainee Representative,** Research Advisory Council, Department of Obstetrics and Gynecology, McMaster University.

2022 – 2023 — **Data Management Officer,** Faculty of Health Sciences Postdoctoral Association, McMaster University.

2019 – 2020 — **Logistics Director,** Biochemistry and Biomedical Sciences Research Symposium, McMaster University.

2018 – 2019 — **Department Website Committee,** Biochemistry and Biomedical Sciences, McMaster University.

2016 – 2019 — **Co-Chair of "Research in Progress" seminar series,** Farncombe Family Digestive Health Research Institute, McMaster University.

2017 – 2018 — **Graduate Student Seminar Peer Evaluator,** Biochemistry and Biomedical Sciences, McMaster University.

Journal Reviewer

ad hoc — Inflammatory Bowel Diseases, Nature Aging, Cell Reports Medicine, Gut Microbes, Microbial Genomics, American Journal of Reproductive Immunology, the Journal of Developmental Origins of Health and Disease, BMC Microbiology, NPJ Biofilms, Reproduction

Teaching

2017 – 2022, 2025 — **BIOM 6130: Early Vertebrate Development (guest lecture)** Department of Biomedical Sciences, University of Guelph.

2022, 2025 — **Introductory Programming: R** Software Carpentry Workshop offered by the Atlantic Computational Excellence Network (ACENET).

2024 — **Introduction to R** hosted by the Farncombe Institute Trainee Association, McMaster University.

2016 – 2023 — **BIOCHEM 4M03: Cellular and Integrated Metabolism (guest lecture)** Department of Biochemistry and Biomedical Sciences, McMaster University.

2023 — **PHYSIOL 4740A: Life Course and Reproductive Health (guest lecture)** Department of Physiology and Pharmacology, Schulich School of Medicine & Dentistry, Western University.

2022, 2025, 2026 — **MS 713: Integrated Systems in Gastrointestinal Health and Disease (guest lecture)** Medical Sciences Graduate Program, McMaster University.

2021 — **BIOMEDDC 2W03: Scientific writing (guest lecture)** Dept. of Biochemistry and Biomedical Sciences, McMaster University.

2016 – 2019 — **Teaching Assistant** BIOCHEM 4M03: Cellular and Integrated Metabolism, Dept. of Biochemistry and Biomedical Sciences, McMaster University.

2013 – 2019 — **Instructor and Course Developer** Prep101.
Developed curriculum for the Psychological, Social, and Biological Foundations of Behavior section of the MCAT prep program. Taught multiple courses at locations across Canada including Hamilton, Waterloo, Guelph, Toronto, London, Victoria, Calgary, and Montreal.

Teaching Certifications

2024 — **Instructor**, The Carpentries (carpentries.org).

2017 — **Teaching and Learning Foundations**, MacPherson Institute.

Mentorship and Supervision

2026 – 2027 — **Dhwani Bhavsar** Biology 4th year thesis

2025 – 2026 — **FITA Trainee Mentorship Program**
Farncombe Institute Trainee Association, McMaster University.

2024 — **Kristen Lombardo** Research Assistant, Good Bugs Study.

2023 – 2024 — **Ishika Vaid** Biomedical Discovery and Commercialization 4th year thesis
now a Medical student at McMaster University.

2023 — **Emily Xiao** Health Sciences 1st and 2nd year project courses.

2023 — **Ryan Phan** Health Sciences 3rd year thesis
now a Medical student at the University of Toronto.

2022 — **Kristine Braun** Biochemistry 3rd year thesis
now a Program Manager for the McMaster Industry Liaison Office.

2021 – 2022 — **William Hum** Biomedical Discovery and Commercialization 4th year thesis

2019 – 2020 — **Jade Schneider** Biochemistry 4th year thesis

2019 – 2020 — **Megane Bouchard** Health Sciences 3rd year thesis
went on to MSc at McGill University, now a Senior Clinical Research Coordinator.

2019 — **Alexandria Amadasun** Molecular Biology and Genetics co-op

2018 – 2019 — **Harshini Ramesh** Health Sciences 3rd year thesis
now a Policy Advisor for Environment and Climate Change Canada.

2017 – 2018 — **Emily Moon** Biochemistry 4th year thesis
went on to MSc at the University of Toronto.

2016 – 2017 — **Christian Bellissimo** Life Sciences 4th year thesis
now a Postdoctoral Fellow at the University of Alberta.