

Gustavo Caballero-Flores, PhD

Assistant Professor
University of Wisconsin-Madison
Department of Medical Microbiology and Immunology
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EDUCATION

- 02/2012-03/2016 PhD in Biochemistry, National Autonomous University of Mexico, Cuernavaca, Morelos, Mexico. Advisor: Jose L. Puente
- 08/2009-09/2011 MS in Experimental Biology, “Universidad Michoacana de San Nicolás de Hidalgo”, Morelia, Michoacan, Mexico. Advisor: Carlos Cervantes
- 08/2004-07/2009 BS in Biological and Pharmaceutical Chemistry, “Universidad Michoacana de San Nicolás de Hidalgo”, Morelia, Michoacan, Mexico

POSITIONS

- 03/2024- Assistant Professor, Department of Medical Microbiology and Immunology, University of Wisconsin, Madison, WI, USA.
- 10/2021-02/2024 Research Investigator, Department of Pathology, University of Michigan, Ann Arbor, MI, USA. Advisor: Dr. Gabriel Núñez.
- 09/2016-09/2021 Postdoctoral Fellow, Department of Pathology, University of Michigan, Ann Arbor, MI, USA. Advisor: Dr. Gabriel Núñez.

PUBLICATIONS

- Caballero-Flores, G.**, Pickard, J. M., & Núñez G (2023). Microbiota-mediated colonization resistance: Mechanisms and regulation. *Nature reviews microbiology*, 21, 347–360.
- Caballero-Flores, G.**, Pickard, J. M., & Núñez, G. (2021). Regulation of *Citrobacter rodentium* colonization: virulence, immune response and microbiota interactions. *Current opinion in microbiology*, 63, 142–149.
- Matus-Acuña, V., **Caballero-Flores, G.**, & Martínez-Romero, E. (2021). The influence of maize genotype on the rhizosphere eukaryotic community. *FEMS microbiology ecology*, 97(6), fiab066.
- Dos Santos, L. I., Torres, T. A., Diniz, S. Q., Gonçalves, R., **Caballero-Flores, G.**, Núñez, G., Gazzinelli, R. T., Maloy, K. J., & Ribeiro do V Antonelli, L. (2021). Disrupted iron metabolism and mortality during co-infection with malaria and an intestinal Gram-negative extracellular pathogen. *Cell reports*, 34(2), 108613.
- Caballero-Flores, G.**, Pickard, J. M., Fukuda, S., Inohara, N., & Núñez, G. (2020). An enteric pathogen subverts colonization resistance by evading competition for amino acids in the gut. *Cell host & microbe*, 28(4), 526–533.e5.
- Ohno, M., Hasegawa, M., Hayashi, A., **Caballero-Flores, G.**, Alteri, C. J., Lawley, T. D., Kamada, N., Núñez, G., & Inohara, N. (2020). Lipopolysaccharide O structure of adherent and invasive

Escherichia coli regulates intestinal inflammation via complement C3. *PLoS pathogens*, 16(10), e1008928.

7. **Caballero-Flores, G.**, Sakamoto, K., Zeng, M. Y., Wang, Y., Hakim, J., Matus-Acuña, V., Inohara, N., & Núñez, G. (2019). Maternal immunization confers protection to the offspring against an attaching and effacing pathogen through delivery of IgG in breast milk. *Cell host & microbe*, 25(2), 313–323.e4.
8. Matus-Acuña, V., **Caballero-Flores, G.**, Reyes-Hernandez, B. J., & Martinez-Romero, E. (2019). Bacterial preys and commensals condition the effects of bacteriovirus nematodes on *Zea mays* and *Arabidopsis thaliana*. *Applied Soil Ecology*, 132, 99-106.
9. Sakamoto, K., Kim, Y. G., Hara, H., Kamada, N., **Caballero-Flores, G.**, Tolosano, E., Soares, M. P., Puente, J. L., Inohara, N., & Núñez, G. (2017). IL-22 controls iron-dependent nutritional immunity against systemic bacterial infections. *Science immunology*, 2(8), eaai8371.
10. **Caballero-Flores, G. G.**, Croxen, M. A., Martínez-Santos, V. I., Finlay, B. B., & Puente, J. L. (2015). Identification and regulation of a novel *Citrobacter rodentium* gut colonization fimbria (Gcf). *Journal of bacteriology*, 197(8), 1478–1491.
11. Jiménez, A. I., Reyes, E. Z., Cancino-Rodezno, A., Bedoya-Pérez, L. P., **Caballero-Flores, G. G.**, Muriel-Millan, L. F., Likitvivatanavong, S., Gill, S. S., Bravo, A., & Soberón, M. (2012). *Aedes aegypti* alkaline phosphatase ALP1 is a functional receptor of *Bacillus thuringiensis* Cry4Ba and Cry11Aa toxins. *Insect biochemistry and molecular biology*, 42(9), 683–689.
12. **Caballero-Flores, G. G.**, Acosta-Navarrete, Y. M., Ramírez-Díaz, M. I., Silva-Sánchez, J., & Cervantes, C. (2012). Chromate-resistance genes in plasmids from antibiotic-resistant nosocomial enterobacterial isolates. *FEMS microbiology letters*, 327(2), 148–154.

FUNDING

Current:

08/2022-07/2026 NIAID K99/R00 Pathway to Independence Award. *Deciphering the pathogenesis of an enteric pathogen in neonatal and immunodeficient mice*. Role: PI.

Completed:

10/2016-09/2018 “Consejo Nacional de Ciencia y Tecnología”, Mexico. *Colonization factors of Citrobacter rodentium: niche-specific regulation and interaction with the immune system during infection*. Type: Fellowship.

02/2012-01/2016 “Consejo Nacional de Ciencia y Tecnología”, Mexico. *Expression and function of the cfcABCD and cfbABCDE operons of Citrobacter rodentium*. Type: Fellowship.

HONORS & AWARDS

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| 2020 | Selected attendant and travel grant for the 9 th NIF-Winter School on Advanced Immunology. Osaka University, Japan. |
| 2016 | PhD degree awarded with honors, National Autonomous University of Mexico (UNAM), Mexico. |

- 2015 Langebio Award for best PhD thesis, National Laboratory of Genomics for Biodiversity (LANGEBIO), Mexico.
- 2015 Early Career Scientist Travel Grant, Federation of European Microbiological Societies (FEMS), The Netherlands.

MENTORING EXPERIENCE

- 2017-2019 Jill Hakim. Graduate student, University of Michigan (co-mentoring with Dr. Gabriel Nunez). Currently: PhD student, Johns Hopkins University, Molecular Microbiology, and Immunology. **Co-author in publication: Cell Host Microbe, 2019.*
- 2017 Candilianne Serrano-Zayas. Rotating graduate student (training), University of Michigan. Completed PhD degree, Cellular and Molecular Biology program.
- 2016-2017 Guadalupe Vazquez-Perez. Undergraduate student (training), Eastern Michigan University. Completed BS degree, Biology/Pre-Medicine.
- 2016 Stephanie Ortiz-Jimenez. Undergraduate student (training), National Autonomous University of Mexico (UNAM). Currently: Ph.D. student, UNAM, Biochemistry.
- 2014-2016 Maria I. Isidro-Coxca. Master's student, National Autonomous University of Mexico (training). Current position: Ph.D. candidate, UNAM, Biochemistry. **Co-author in manuscript in preparation.*

PER-REVIEW SERVICE

- 2023- Nature Microbiology, reviewer
- 2022- Gut Microbes, reviewer.
- 2021- Annals of Medicine, reviewer.

INSTITUTIONAL SERVICE & LEADERSHIP

- 2023 Molecular & Cellular Pathology Graduate Training Grant, review committee member
- 2021-2023 University of Michigan Latino and Hispanic Postdoc Circle, Chair.
- 2020-2022 University of Michigan Postdoctoral Association, Anti-racism subcommittee, collaborator.
- 2020-2022 University of Michigan Postdoctoral Association, Networking co-chair.

PROFESSIONAL MEMBERSHIPS

- 2019- American Society for Microbiology (ASM), member
- 2020- Microbiology Society (MS), member
- 2020- American Association for the Advancement of Science (AAAS), member

SELECTED CONFERENCES & PRESENTATIONS

1. Molecular Genetics of Bacteria and Phages Meeting, University of Wisconsin, Madison, 2022. Invited Speaker and session chair. Title: Unraveling pathogen adaptation mechanisms and host susceptibility factors in models of severe neonatal enteric infection
2. Work in progress seminar, Infectious Diseases Institute, Ohio State University, 2021. Invited speaker. Title: A genome-wide screen reveals mechanisms by which an enteric pathogen overcomes colonization resistance in the gut.
3. 9th NIF-Winter School on Advanced Immunology, Osaka University, Japan, 2020. Selected attendant and speaker. Title: Maternal IgG in breast milk protects the offspring against an attaching and effacing enteric pathogen.
4. University of Michigan Microbiome Seminar Series, Ann Arbor, MI, 2020. Speaker. Title: A genome-wide screening reveals mechanisms by which an enteric pathogen overcome colonization resistance in the gut.
5. National MicrobiomeMX Congress (virtual meeting), Mexico, 2020. Invited speaker. Title: Pathogen-microbiota interactions during early intestinal infection using genomic approaches.
6. University of Michigan Microbiome Seminar Series, Ann Arbor, MI, 2019. Speaker. Title: Exploring the mechanisms of bacterial virulence and host defense during enteric infection in adult and neonatal mice.
7. XII Congress of the Latin American Association of Immunology, Cancún, Mexico, 2018. Selected speaker. Title: Insights into the role of maternal IgG in protection against enteric infection.

REFERENCES

Gabriel Nunez, MD

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