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EDUCATION

2010 – 2016 Ph.D. Immunology and Inflammation, Vilcek Institute, New York University, New York, NY
2004 – 2008 B. Sc. Cell and Molecular Biology, Winona State University, Winona, MN

RESEARCH

2023 – Assistant Professor
NOMIS Center for Immunobiology and Microbial Pathogenesis
Salk Institute for Biological Studies

2016 – 2022 Postdoctoral Fellow – Dr. Diane Mathis and Dr. Christophe Benoist
Department of Immunology, Harvard Medical School, Boston, MA
Regulatory T cells – Multigenerational Transfer of their Setpoints and Functions.

2010 – 2016 Graduate Student – Dr. Ken Cadwell
Department of Microbiology, New York University, New York, NY
Thesis title: Mechanisms of Nod2-Microbe Interactions in Intestinal Disease.

2008 – 2010 Research Associate – Dr. Edwin Chapman
HHMI, Department of Physiology, University of Wisconsin, Madison, WI
Antibody Generation and Localization of Synaptotagmin isoforms.

2007 – 2008 Undergraduate Research Assistant – Dr. Emmanuel Brako
Department of Biology, Winona State University, Winona, MN
Prevalence of Equine Herpes Virus I Antibodies in Horses in Winona County.

2007 Summer Undergraduate Research Fellow – Dr. Richard Bram
Department of Immunology, Mayo Clinic, Rochester, MN
Role of CAML in the Development of $\gamma\delta$ T cells.

2006 – 2007 Undergraduate Research Assistant – Dr. Michael Delong
Department of Biology, Winona State University, Winona, MN
Study of trophic dynamics in St. Croix River using C-14 and N-15 stable isotope ratios.

PUBLICATIONS

1. Jaquish A, Phung E, Gong X, Baldominos P, Galván-Peña S, Magill I, Bursulaya I, Marina E; ImmgenT consortium; Bertrand K, Chambers C, Muñoz-Rojas AR, Agudo J, Mathis D, Benoist C, **Ramanan D.** (2025) Mammary intraepithelial lymphocytes and intestinal inputs shape T cell dynamics in lactogenesis. *Nature Immunology*. Aug;26(8):1411-1422. doi: 10.1038/s41590-025-02218-3. (bioRxiv preprint June 2024)
2. Wong SY, Estevinho MM, Heaney T, Marshall AA, Giselbrecht E, Daniel SG, Zhou C, Rosas-Villegas A, Jang KK, Yang H, Ko HM, Paulson JD, Ding Y, Bittinger K, Cho JH, Lewis JD, **Ramanan D**, Cadwell K. (2025) Goblet Cell Loss Linked to NOD2 and Secondary Resection in Crohn's Disease is Induced by Dysbiosis and Epithelial MyD88. *Cell Mol Gastroenterol Hepatol*. doi: 10.1016/j.jcmgh.2025.101533.

3. Wu M, Zheng W, Song X, Bao B, Wang Y, **Ramanan D**, Yang D, Liu R, Macbeth JC, Do EA, Andrade WA, Yang T, Cho HS, Gazzaniga FS, Ilves M, Coronado D, Thompson C, Hang S, Chiu IM, Moffitt JR, Hsiao A, Mekalanos JJ, Benoist C, Kasper DL. (2024) Gut complement induced by the microbiota combats pathogens and spares commensals. *Cell*. S0092-8674(24)00001-1. doi: 10.1016/j.cell.2023.12.036.
4. **Ramanan D**, Pratama A, Zhu Y, Venezia O, Sassone-Corsi M, Chowdhary K, Galvan-Pena S, Sefik E, Brown C, Gelineau A, Mathis D, Benoist C. (2023) Regulatory T cells in the face of the microbiota. *Nature Reviews Immunology* <https://doi.org/10.1038/s41577-023-00890-w>.
5. **Ramanan D**, Chowdhary K, Candeias SM, Sassone-Corsi M, Mathis D, Benoist C. (2023) Homeostatic, repertoire and transcriptional relationships between colon T regulatory cell subsets. *PNAS* 120(50):e2311566120 (bioRxiv preprint May 2023)
6. Chowdhary K, Leon J, **Ramanan D**, Mathis D, Benoist C. (2023) An interwoven network of transcription factors, with divergent influences from Foxp3, underlies Treg diversity. *Preprint at bioRxiv* <https://doi.org/10.1101/2023.05.18.541358>
7. Sassone-Corsi M, Azriel S, Simon A, **Ramanan D**, Ortiz-Lopez A, Chen F, Yissachar N, Mathis D, Benoist C. (2022) Sequestration of gut pathobionts in intraluminal casts, a mechanism to avoid dysregulated T cell activation by pathobionts. *PNAS*. 119(41):e2209624119
8. Yan Y, **Ramanan D**, Rozenberg M, McGovern K, Rastelli D, Vijaykumar B, Yaghi O, Voisin T, Mosaheb M, Chiu I, Itzkovitz S, Rao M, Mathis D, Benoist C. (2021) Neuron-produced IL6 is at the center of a microbiota-neuron-Treg triangle in the gut. *Immunity*. 54(3):499-513.
9. **Ramanan D**, Sefik E, Galván-Peña S, Wu M, Yang L, Yang Z, Kostic A, Golovkina TV, Kasper DL, Mathis D, Benoist C. (2020) An Immunologic Mode of Multigenerational Transmission Governs a Gut Treg Setpoint. *Cell*. S0092-8674(20)30493-1.
10. DiSpirito JR*, Zemmour D*, **Ramanan D**, Cho J, Zilionis R, Klein AM, Benoist C, Mathis D. (2018) Molecular Diversification of Regulatory T cells in Nonlymphoid Tissues. *Science Immunology*. 3(27):eaat5861. *co-first authors.
11. Wong SY*, Coffre M*, **Ramanan D***, Hines MJ, Gomez LE, Peters LA, Schadt EE, Koralov SB, Cadwell K. (2018) B Cell Defects Observed in Nod2 Knockout Mice Are a Consequence of a Dock2 Mutation Frequently Found in Inbred Strains. *Journal of Immunology*. 201(5):1442-1451. *co-first authors.
12. **Ramanan D***, Bowcutt R*, Lee SC, Tang MS, Kurtz ZD, Ding Y, Honda K, Gause WC, Blaser MJ, Bonneau RA, Lim YA, Loke P, Cadwell K. (2016) Helminth infection promotes colonization resistance via type 2 immunity. *Science*. 352(6285):608-12. *co-first authors.
13. **Ramanan D**, Cadwell K. (2016) Intrinsic defense mechanisms of the intestinal epithelium. *Cell Host and Microbe*. 19(4):434-41.
14. **Ramanan D**, Tang MS, Bowcutt R, Loke P, Cadwell K. (2014) Bacterial sensor Nod2 prevents inflammation of the small intestine by restricting the expansion of the commensal *Bacteroides vulgatus*. *Immunity*. 41(2):311-324.
15. Marchiando AM, **Ramanan D**, Ding Y, Gomez LE, Hubbard-Lucey VM, Maurer K, Wang C, Ziel JW, Rooijen NV, Nunez G, Finlay BB, Mysorekar IU, Cadwell K. (2013) *Atg16L1* deficiency enhances resistance to an enteric bacterial infection. *Cell Host and Microbe*. 14(2):216-24.
16. Zhang Z, Wu Y, Wang Z, Dunning FM, Rehfuess J, **Ramanan D**, Chapman ER, Jackson MB. (2010) Release mode of large and small dense-core vesicles specified by different synaptotagmin isoforms in PC12 cells. *Mol Biol Cell*. 22(13):2324-36.

PRESENTATIONS

TALKS

1. Entero-Mammary Axis in Maternal and Offspring Immunity. September 2025, ImmunoX Seminar Series, UCSF, San Francisco, CA.
2. Got Milk? Role of T cells in promoting mammary immunity and lactation. May 2025, American Society for Reproductive Immunology 2025, St. Paul, MN.
3. Got Milk? Role of T cells in promoting mammary immunity and lactation. May 2025, American Association of Immunology 2025, Honolulu, HI.
4. Multigenerational transfer of immunity via the entero-mammary axis. April 2025, Immunology Seminar Series, MIT Ragon Institute, Boston, MA.
5. Multigenerational transfer of immunity via the entero-mammary axis. February 2025, Pharmacology Seminar Series, University of California, San Diego, CA.
6. Role of the entero-mammary axis in maternal and offspring immunity. January 2025, Midwinter Conference of Immunologists, Asilomar, CA.
7. Multigenerational transfer of immunity via the entero-mammary axis. April 2024, Immunology Seminar Series, La Jolla Institute of Immunology, San Diego, CA.
8. Multigenerational transfer of immunity via the entero-mammary axis. April 2024, Microbiology Seminar Series, Washington University in St. Louis, St. Louis, MO.
9. Entero-mammary axis – A mode of multigenerational transfer of immunity. October 2023, La Jolla Immunology Conference, San Diego, CA.
10. Maternal factors orchestrate non-genetic transmission of immunological traits across multiple generations. June 2020, Guts and Bugs Online Seminar Series, Rutgers University, New Brunswick, NJ.
11. Maternal factors orchestrate non-genetic transmission of immunological traits across multiple generations. September 2019, Damon Runyon Fellows' Retreat, Southbridge, MA.
12. Our microbiome in health and disease. December 2015, February 2016. Know Science Talk Series. Rockefeller University, New York, NY.
13. Helminth infection promotes defensive symbiosis via type-2 immunity. Poster Blitz Talk. Skirball Retreat 2015, Lenox, MA.
14. Trans-kingdom interactions between helminths and bacteria in intestinal disease. Microbiology Retreat 2015, New York, NY.
15. Type 2 immunity protects genetically susceptible hosts from microbiota induced intestinal inflammation. The Multifaceted Roles of Type 2 Immunity. December 2014, Bruges, Belgium.
16. The role of gut microbes in inflammatory bowel disease. December 2013, New York City College of Technology, New York, NY.

POSTERS

1. Ramanan D, Sefik E, Mathis D, Benoist C. The role of microbes in non-genetic transmission of immunological traits. July 2019, International Congress of Mucosal Immunology, Brisbane, Australia.
2. Ramanan D, Mathis D, Benoist C. Identifying functions of regulatory T cell subsets in intestinal inflammation and colorectal cancer. September 2017, Damon Runyon Fellows' Retreat, Beverly, MA.
3. Ramanan D, Sefik E, Mathis D, Benoist C. Colonic Ror γ ⁺ Treg phenotype is imprinted at birth. July 2017, UCB Super Meeting, London, United Kingdom.
4. Ramanan D, Cadwell K. Role of Nod2 in mucosal immunity of the small intestine. October 2011-2015, Annual Skirball Retreat, Lenox, MA.

5. Ramanan D, Cadwell K. Role of Nod2 in mucosal immunity of the small intestine. 2011-2016 Immunology and Inflammation Program, New York University, New York, NY.

HONORS

2025-2030	Rita Allen Foundation Scholar
2025-2030	NIAID New Innovator Award (DP2)
2025	American Association of Immunologists (AAI) Pfizer-Showell Award
2023-2026	V Foundation V Scholar Award
2021	Damon Runyon Dale F. Frey Breakthrough Scientist Award
2020	STAT Wunderkind Award
2017-2021	Damon Runyon Postdoctoral Fellowship – National Mah Jongg League Fellow
2016	Harold M. Weintraub Award – Fred Hutch Institute
2016	Vilcek Dissertation Prize – Vilcek Institute, NYU
2015	McCracken Award – Vilcek Institute, NYU
2016	Best Poster Award – Immunology and Inflammation Program Retreat, NYU
2015	Best Poster Award – Skirball retreat, NYU
2014	Bio-Techne Award – The Multifaceted Roles of Type 2 Immunity, Cell Symposia
2007	Best Student Poster Award – Mississippi River Research Consortium
2006-2008	Martin and Joyce Laakso Award – Winona State University
2005-2008	Cross Cultural Scholarship – Winona State University