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## MOHAMMAD ARIFUZZAMAN

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### EDUCATION

2018 PhD in Molecular Genetics and Microbiology, Duke University  
2008 MS in Biochemistry and Molecular Biology, University of Dhaka, Bangladesh  
2006 BS in Biochemistry and Molecular Biology, University of Dhaka, Bangladesh

### RESEARCH EXPERIENCE

2019-Present Postdoctoral Associate, Weill Cornell Medicine, Cornell University  
Advisor: David Artis  
2011-2018 Doctoral Student, Duke University  
Advisor: Soman Abraham  
2009-2010 Visiting Research Fellow, Massachusetts General Hospital, Harvard Medical School  
Advisor: Edward T. Ryan  
2008-2011 Researcher, International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)  
Advisor: Firdausi Qadri  
2006-2008 MS Thesis Fellow, International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)  
Advisor: Firdausi Qadri

### FUNDING

2023-2027 K99 Pathway to Independence Award, NIAID  
2021-2024 Postdoctoral Research Fellowship Award, Crohn's and Colitis Foundation  
2011-2013 Chancellor's Scholarship for international students, Duke University Graduate School  
2009-2010 Fogarty Fellowship, D43 Global Infectious Disease Research Training Program, NIH

### HONORS AND AWARDS

2023 New York Academy of Science Frontiers in Immunology Symposium Poster Award  
2023 Kenneth Rainin Foundation Innovation Symposium Travel Award  
2022 4<sup>th</sup> International Conference on Innate Lymphoid Cells Travel Award  
2021 Crohn's & Colitis Foundation stipend for travel to scientific meetings  
2014 Best Talk Award, Molecular Genetics and Microbiology Annual Retreat, Wilmington, NC  
2011 Duke University School of Medicine Chancellor's Signing Bonus for top incoming students  
2008 Professor Kamaluddin Ahmad Gold Medal (MS), University of Dhaka  
2006 Deans Honor List (BS), University of Dhaka

### PUBLICATIONS

1. **Arifuzzaman M**, Won TH, Li TT, Yano H, Digumarthi S, Heras AF, Zhang W, Parkhurst CN, Kashyap S, Jin WB, Putzel GG, Tsou AM, Chu C, Wei Q, Grier A; JRI IBD Live Cell Bank Consortium; Worgall S, Guo CJ, Schroeder FC, Artis D. Inulin fibre promotes microbiota-derived bile acids and type 2 inflammation. *Nature*. 2022 Nov 02;611(7936):578-584. PMID: 36323778.
  - Highlighted in *Nature Metabolism*: Attwaters M. From inulin to inflammation. 2022 Nov 18; 4(11):1433.
  - Highlighted in *Cell Research*: Cohen Y, Elinav E. Dietary fibers & immunity-more than meets the eye. 2023 Jan 16.
2. Jarick KJ, Topczewska PM, Jakob MO, Yano H, **Arifuzzaman M**, Gao X, Boulekou S, Stokic-Trtica V, Leclère PS, Preußner A, Rompe ZA, Stamm A, Tsou AM, Chu C, Heinrich FR, Guerra GM, Durek P, Ivanov A, Beule D, Helfrich S, Duerr CU, Kühl AA, Stehle C, Romagnani C, Mashreghi MF, Diefenbach A, Artis D, Klose CSN. Non-redundant functions of group 2 innate lymphoid cells. *Nature*. 2022 Nov 02;611(7937):794-800. PMID: 36323785.

3. Zhang W, Lyu M, Bessman NJ, Xie Z, **Arifuzzaman M**, Yano H, Parkhurst CN, Chu C, Zhou L, Putzel GG, Li TT, Jin WB, Zhou J; JRI Live Cell Bank; Hu H, Tsou AM, Guo CJ, Artis D. Gut-innervating nociceptors regulate the intestinal microbiota to promote tissue protection. [Cell](#). 2022 Oct 27;185(22):4170-4189.e20. PMID: 36240781.
4. Jin WB, Li TT, Huo D, Qu S, Li XV, **Arifuzzaman M**, Lima S, Shi H, Wang A, Putzel GG, Longman RS, Artis D, Guo, CJ. Genetic manipulation of gut microbes enables single-gene interrogation in a complex microbiome. [Cell](#). 2022 Jan 13;S0092-8674(21)01541-5. PMID: 35051369.
5. Chu C, Parkhurst CN, Zhang W, Zhou L, Yano H, **Arifuzzaman M**, Artis D. The ChAT-acetylcholine pathway promotes group 2 innate lymphoid cell responses and anti-helminth immunity. [Science Immunology](#). 2021 Mar 5;6(57):eabe3218. PMID: 33674322.
6. Bhuiyan MS, Kalsy A, **Arifuzzaman M**, Charles RC, Harris JB, Calderwood SB, Qadri F, Ryan, ET. Transcutaneous Vaccination with Conjugate Typhoid Vaccine Vi-DT Induces Systemic, Mucosal, and Memory Anti-Polysaccharide Responses. [The American Journal of Tropical Medicine and Hygiene](#). 2020 Sep;103(3):1032-1038. PMID: 32720632.
7. **Arifuzzaman M**, Mobley YR, Choi HW, Bist P, Salinas CA, Brown ZD, Chen SL, Staats HF, Abraham SN. MRGPR-mediated activation of local mast cells clears cutaneous bacterial infection and protects against reinfection. [Science Advances](#). 2019 Jan 02;5(1), eaav0216. PMID: 30613778.
8. **Arifuzzaman M**, Ang WXG, Choi HW, Nilles ML, St. John AL, Abraham SN. Necroptosis of infiltrated macrophages drives *Yersinia pestis* dispersal within buboes. [JCI Insight](#). 2018 Sep 20;3(18). pii: 122188. PMID: 30232285.
  - Editor's Choice in [Science](#): Hurtley SM. Plague, one lymph node at a time. 2018 Oct 12;362(6411):195-6.
9. Alam MM\*, **Arifuzzaman M\***, Ahmad SM, Hosen MI, Rahman MA, Rashu R, Sheikh A, Ryan ET, Calderwood SB, Qadri F. Study of avidity of antigen-specific antibody as a means of understanding development of long-term immunological memory after *Vibrio cholerae* O1 infection. [Clinical and Vaccine Immunology](#). 2013 Jan;20(1):17-23. PMID: 23114701.
10. **Arifuzzaman M**, Rashu R, Leung DT, Hosen MI, Bhuiyan TR, Bhuiyan MS, Rahman MA, Khanam F, Saha A, Charles RC, LaRocque RC, Weil AA, Clements JD, Holmes RK, Calderwood SB, Harris JB, Ryan ET, Qadri F. Antigen-specific memory T cell responses after vaccination with an oral killed cholera vaccine in Bangladeshi children and comparison to responses in patients with naturally acquired cholera. [Clinical and Vaccine Immunology](#). 2012 Aug;19(8):1304-11. PMID: 22739692.
11. Tarique AA, Kalsy A, **Arifuzzaman M**, Rollins SM, Charles RC, Leung DT, Harris JB, Larocque RC, Sheikh A, Bhuiyan MS, Saksena R, Clements JD, Calderwood SB, Qadri F, Kovác P, Ryan ET. Transcutaneous immunization with a *Vibrio cholerae* O1 Ogawa synthetic hexasaccharide conjugate following oral whole-cell cholera vaccination boosts vibriocidal responses and induces protective immunity in mice. [Clinical and Vaccine Immunology](#). 2012 Apr;19(4):594-602. PMID: 22357651.
12. **Arifuzzaman M**, Ahmed T, Rahman MA, Chowdhury F, Rashu R, Khan AI, LaRocque RC, Harris JB, Bhuiyan TR, Ryan ET, Calderwood SB, Qadri F. Individuals with Le(a+b-) blood group have increased susceptibility to symptomatic *Vibrio cholerae* O1 infection. [PLOS Neglected Tropical Diseases](#). 2011 Dec;5(12):e1413. PMID: 22216364.
13. Sheikh A, Charles RC, Sharmeen N, Rollins SM, Harris JB, Bhuiyan MS, **Arifuzzaman M**, Khanam F, Bukka A, Kalsy A, Porwollik S, Leung DT, Brooks WA, LaRocque RC, Hohmann EL, Cravioto A, Logvinenko T, Calderwood SB, McClelland M, Graham JE, Qadri F, Ryan ET. *In vivo* expression of *Salmonella enterica* serotype Typhi genes in the blood of patients with typhoid fever in Bangladesh. [PLOS Neglected Tropical Diseases](#). 2011 Dec;5(12):e1419. PMID: 22180799.
14. Kuchta A, Rahman T, Sennott EL, Bhuyian TR, Uddin T, Rashu R, Chowdhury F, Kahn AI, **Arifuzzaman M**, Weil AA, Podolsky M, LaRocque RC, Ryan ET, Calderwood SB, Qadri F, Harris JB. *Vibrio cholerae* O1 infection induces proinflammatory CD4+ T-cell responses in blood and

intestinal mucosa of infected humans. [Clinical and Vaccine Immunology](#). 2011 Aug;18(8):1371-7. PMID: 21697339.

15. Sheikh A, Khanam F, Sayeed MA, Rahman T, Pacek M, Hu Y, Rollins A, Bhuiyan MS, Rollins S, Kalsy A, **Arifuzzaman M**, Leung DT, Sarracino DA, Krastins B, Charles RC, Larocque RC, Cravioto A, Calderwood SB, Brooks WA, Harris JB, Labaer J, Qadri F, Ryan ET. Interferon- $\gamma$  and proliferation responses to Salmonella enterica Serotype Typhi proteins in patients with S. Typhi Bacteremia in Dhaka, Bangladesh. [PLOS Neglected Tropical Diseases](#). 2011 Jun;5(6):e1193. PMID: 21666798.
16. Kendall EA, Tarique AA, Hossain A, Alam MM, **Arifuzzaman M**, Akhtar N, Chowdhury F, Khan AI, Larocque RC, Harris JB, Ryan ET, Qadri F, Calderwood SB. Development of immunoglobulin M memory to both a T-cell-independent and a T-cell-dependent antigen following infection with *Vibrio cholerae* O1 in Bangladesh. [Infection and Immunity](#). 2010 Jan;78(1):253-9. PMID: 19858296.
17. Ahmed T, **Arifuzzaman M**, Lebens M, Qadri F, Lundgren A. CD4+ T-cell responses to an oral inactivated cholera vaccine in young children in a cholera endemic country and the enhancing effect of zinc supplementation. [Vaccine](#). 2009 Dec 11;28(2):422-9. PMID: 19837094.
18. Weil AA\*, **Arifuzzaman M\***, Bhuiyan TR, LaRocque RC, Harris AM, Kendall EA, Hossain A, Tarique AA, Sheikh A, Chowdhury F, Khan AI, Murshed F, Parker KC, Banerjee KK, Ryan ET, Harris JB, Qadri F, Calderwood SB. Memory T-cell responses to *Vibrio cholerae* O1 infection. [Infection and Immunity](#). 2009 Nov;77(11):5090-6. PMID: 19703973.
19. Ahmed T, Lundgren A, **Arifuzzaman M**, Qadri F, Teneberg S, Svennerholm AM. Children with the Le(a+b-) blood group have increased susceptibility to diarrhea caused by enterotoxigenic *Escherichia coli* expressing colonization factor I group fimbriae. [Infection and Immunity](#). 2009 May;77(5):2059-64. PMID: 19273560.

#### MANUSCRIPTS IN REVIEW/REVISION

1. Won TH\*, **Arifuzzaman M\***, Parkhurst CN\*, Miranda IC, Kashyap S, Letourneau J, Jin WB, Guo CJ, David LA, Artis D, Schroeder FC. A host metabolic rheostat balances microbial regulation of bile acid signaling (in revision following favorable review at *Nature*).

#### MANUSCRIPTS IN PREPERATION

1. **Arifuzzaman M**<sup>✉</sup>, Won TH, Emanuel E, Yano H, Uddin J, Li TT, Jin WB, Kashyap S, Grier A; JRI Live Cell Bank; Guo CJ, Schroeder FC, Artis D<sup>✉</sup>. Dietary fiber is a critical determinant of protective versus pathologic ILC2 responses and barrier inflammation (in preparation).
2. **Arifuzzaman M**<sup>✉</sup> and Artis D<sup>✉</sup>. Nutritional regulation of microbial metabolites and host inflammation (invited review in preparation for *Immunity*).

\*Co-first authors; <sup>✉</sup>Co-corresponding authors

#### TEACHING AND MENTORING EXPERIENCE

2023	Facilitator at Advancing Cornell Career Experiences for Science Students Summer Internship Program.
2023	Mentoring one visiting summer undergraduate student.
2022-Present	Graduate Teaching Assistant, Fundamental Immunology & Microbiology, Immunology and Microbial Pathogenesis Graduate Program, Weill Cornell Medicine.
2021-Present	Mentoring one graduate student under Immunology and Microbial Pathogenesis Graduate Program, Weill Cornell Medicine.
2015-2017	Mentored one undergraduate student under Duke BioCoRE (Biosciences Collaborative for Research Engagement).
2015	Mentored two undergraduate students under Duke SROP (Summer Research Opportunity Program).
2014-2016	Mentored one undergraduate student under Duke Biomedical Engineering Independent Study
2010-2011	Mentored two MS thesis students at icddr,b.

- 2009 Mentored two undergraduate students under Harvard I-SURF (International Summer Undergrad Research) program.
- 2008-2009 Mentored two medical students under NIH FICRS-F program.
- 2008-2009 Mentored four MS thesis students at icddr,b.

### **ACADEMIC SERVICE AND AFFILIATION**

- 2023-Present Member and Contributor, Collaborative Microbial Metabolite Center Knowledgebase
- 2022-Present Member, International Cytokine and Interferon Society
- 2022-Present Member, International Eosinophil Society
- 2019-Present Member, Cornell Center for Immunology
- 2019-Present Member, New York Academy of Science
- 2016-Present Member, American Society for Microbiology
- 2015-2021 Reviewer, Journal *Biomaterials* (Impact factor 15.3)

### **PROFESSIONAL DEVELOPMENT**

- 2023 Workshops on discovering and analyzing microbial metabolites, UCSD
- 2022-2023 NIH Grants Conference and Preconference Events
- 2022 NIH Workshop on Precision Probiotic Therapies: Challenges and Opportunities, National Center for Complementary and Integrative Health
- 2022 International Course of Immunotherapy, Precision Immunology Institute, Icahn School of Medicine at Mount Sinai
- 2022 NIAID R25 Tri-Institutional Training Program in Metabolomics
- 2021 Introduction to Neuroimmunology Graduate Course (NEUR9003, non-credit), Weill Cornell Medicine
- 2011-2013 Certificate in Cell and Molecular Biology, Duke University

### **OUTREACH AND LEADERSHIP**

- 2023-Present Co-Chair, Anti-discrimination Committee, Postdoctoral Association, Weill Cornell Medicine
- 2021 Vaccine Education and Vaccine Equity Ambassador, Weill Cornell Medicine
- 2019-Present Volunteer Judge at the Annual Vincent du Vigneaud Memorial Research Symposium
- 2015-2016 Mentor under North Carolina School of Science and Mathematics' Mentorships Program
- 2008 Volunteer at icddr,b hospital admission booth during seasonal peaks of diarrheal diseases
- 2004-2006 Assistant General Secretary, Dhaka University Photographic Society

### **SELECT POSTERS AND INVITED TALKS**

- 2023 Dietary fiber and microbiota-derived bile acids elicit type 2 cytokine-driven intestinal inflammation (Poster), Kenneth Rainin Foundation Innovations Symposium, San Francisco, CA.
- 2023 A metabolomics-based approach to study immune regulation, Impacting Drug Discovery from Nature's Metabolites Symposium, Cornell University, Ithaca, NY.
- 2023 The role of diet and microbiota-derived bile acids in type 2 inflammation, Frontiers in Immunology Symposium, New York Academy of Science, New York, NY.
- 2023 Inulin fiber promotes microbiota-derived bile acids and type 2 inflammation (Poster), Frontiers in Immunology Symposium, New York Academy of Science, New York, NY.
- 2022 Cytokine and environmental triggers of inflammation (Keynote Lecture shared with David Artis), 10<sup>th</sup> Annual Meeting of International Cytokine and Interferon Society, Big Island, HI.
- 2022 Dietary fiber promotes microbiota-derived bile acids and type 2 inflammation (Poster), 4<sup>th</sup> International Conference on Innate Lymphoid Cells, Big Island, HI.
- 2022 Dietary regulation of type 2 immune responses and intestinal inflammation (Talk), Jill Roberts Institute Research Seminar, Weill Cornell Medicine, New York, NY.
- 2021 Influence of diet and microbiota on type 2 inflammation (Talk), Microbiology and Immunology Seminar, Weill Cornell Medicine, New York, NY.
- 2019 Diet-microbiota regulation of colonic ILC2s (Talk). Jill Roberts Institute Research Seminar, Weill Cornell Medicine, New York, NY.

- 2018 *Yersinia pestis* triggers host cell death as a tactic to spread in the body (Invited talk), Department of Immunobiology, Yale School of Medicine, Yale University, New Haven, CT.
- 2018 YopJ-RIPK1-mediated necroptosis is pivotal for *Yersinia pestis* spread within buboes (Talk), Center for Host Microbial Interactions Meeting, Duke University, Durham, NC.
- 2014 Tactics employed by *Yersinia pestis* to spread in the body (Talk). Molecular Genetics and Microbiology Annual Retreat, Wilmington, NC.
- 2012 Cholera antigen-specific memory T cells in children after vaccination (Talk). International Research in Infectious Diseases Annual Meeting, Bethesda, MD.
- 2011 *Vibrio cholerae* O1 infection induces robust proinflammatory CD4+ T cell responses in blood and intestinal mucosa of infected humans (Poster). 13<sup>th</sup> Annual Scientific Conference, icddr,b, Dhaka, Bangladesh.

## **REFERENCES**

David Artis, PhD  
 Director, Jill Roberts Institute for Research in Inflammatory Bowel Disease  
 Director, Friedman Center for Nutrition and Inflammation  
 Michael Kors Professor of Immunology, Department of Medicine  
 Professor of Microbiology and Immunology, Department of Microbiology and Immunology  
 Weill Cornell Medicine, Cornell University  
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Soman N. Abraham, PhD  
 Grace Kerby Distinguished Professor of Pathology  
 Professor in Immunology  
 Professor in Molecular Genetics and Microbiology  
 Professor of Cell Biology  
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 Jones Building, Room 257 (Box 3020),  
 207 Research Drive, Durham, NC 27710  
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 Chair, Department of Molecular Genetics and Microbiology  
 James B. Duke Professor of Molecular Genetics and Microbiology  
 Professor of Cell Biology  
 Professor in Medicine  
 Professor in Pharmacology & Cancer Biology  
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