**CURRICULUM VITAE**

**Masmudur M. Rahman, PhD**

Assistant Professor

Biodesign Institute, Center for Personalized Diagnostics (CPD)

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**Education**

PhD Molecular virology; 2004 Dept. of Microbiology and Cell Biology

Indian Institute of Science, Bangalore, India

MSc Microbiology (Thesis); 1995 Dept. of Microbiology, University of Dhaka, Bangladesh

BSc (Hons.) Microbiology; 1993 Dept. of Microbiology, University of Dhaka, Bangladesh

**Academic appointments**

2023-Present Assistant Professor School of Life Sciences, Arizona State University,

Tempe, Arizona

2016-2023 Associate Research Professor Biodesign Institute, Arizona State University, Tempe,

Arizona.

2008-2016 Assistant Research Professor Dept. of Molecular Genetics and Microbiology,

University of Florida, Gainesville, FL.

2007-2008 Senior Biological Scientist Dept. of Molecular Genetics and Microbiology,

University of Florida, Gainesville, FL.

2006-2007 Postdoctoral Associate Dept. of Molecular Genetics and Microbiology,

University of Florida, Gainesville, FL.

2004-2006 Postdoctoral Fellow Robarts Research Institute, London, Ontario, Canada.

**Other appointments**

2019-2022 Consultant OncoMyx Therapeutics, Phoenix, Arizona.

1997 Microbiologist ACI Pharmaceuticals Ltd, Bangladesh.

1996-1997 Microbiologist M R Enterprise, Dhaka, Bangladesh.

**Research Interests**

**Overview of research:**

The overall goal of my research is to understand the dynamics of virus-host interactions, how viruses modulate host responses, how host regulates virus infections, and how host and cellular tropism of viruses are altered. My ultimate goal is to translate this knowledge in areas like oncolytic virotherapy for cancer treatment, development of vaccines and therapeutics against viruses and inflammatory diseases. My research uses a combination of traditional virology, genetic engineering, microscopy (including confocal and transmission electron microscopy), molecular and cellular biology techniques, proteomics, transcriptomics, gene silencing, bioinformatics, and animal (mouse and rabbits) models.

**Research areas:**

Virus-host interactions, molecular virology, poxviruses, myxoma virus, innate immune signaling pathways, intrinsic immunity, molecular biology, microbiology, cell biology, immunology, oncolytic virotherapy and immunotherapy, cancer biology, development of therapeutic proteins, SARS-CoV-2 biology and vaccine development.

**Research Support**

**Current Research Support**

Arizona Department of Health Services (ADHS) (2023-2026) Rahman (PI)

*A novel combination therapy with nuclear export inhibitor selinexor and oncolytic virus*

The goal of this proposal is to study a combination therapy against lung metastatic cancers. (Role: PI)

NIH R01 AI080607 (2021-2026) Rahman (PI)

*Studies in poxvirus host range genes and tropism*

The goal of this proposal is to study selected host range genes of myxoma virus and the role of cellular

RNA helicases in MYXV replication in human cancer cells. (Role: PI)

NIH R21 AI163910 (2021-2024) Rahman/Versani (MPI)

*Unravelling the mechanisms of virus host species jump.*

The goal of this proposal is to study the functions of myxoma virus-toledo host range protein(s) that allow

myxoma virus pathogenesis in hare. (Role: PI)

NIH R21 CA249517 (2020-2023) Kong/Rahman (MPI)

*Cancer therapy with a combination of oncolytic bacteria and virus to enhance targeted cell killing and*

*anti-tumor immune responses.*

The goal of this proposal is to test a combination therapy of oncolytic Salmonella and myxoma virus in

preclinical cancer models. (Role: PI)

NIH R01 AI148302 (2020-2025) Miao (PI), Duke University

*Viral inhibition of cell death in host immune responses.*

The goal of this proposal is to study a cowpox virus encoded protein called vIRD that inhibit the necroptosis

pathway activation in response to virus infections. (Role: ASU Subcontract PI)

NIH R01 CA278911 (2023-2028) Lu (PI), Methodist Hospital Research Institute

*Induction of autosis to overcome resistance in adoptive cell therapy for solid tumors.*

The goal of this proposal is to develop a combination therapy using oncolytic myxoma virus and adoptive

cell therapy against solid tumors. (Role: ASU Subcontract PI)

**Submitted/Pending:**

NIH R01 AI177862-01 (2023-2028) Rahman (PI)

*Role of intrinsic host restriction factors in regulating emerging and zoonotic viruses*

The goal of this proposal is to study the role of human RNA helicases and nuclear export and import proteins

in replication of SARS-CoV-2 and monkeypox virus. (Role: PI)

NIH R01 AI177771-01 (2023-2028) Jacobs/Lim/Rahman (MPI)

*Monkeypox virus treatments and vaccines*

The goal of this proposal is to develop therapeutics and vaccines against monkeypox virus. (Role: PI)

**Completed Research Support**

OncoMyx Therapeutics (2019-2022) McFadden (PI)

*Arming of Myxoma Virus with Multiple Therapeutic Transgenes (Sponsored Research Agreement).*

This funding is to construct myxoma viruses that express multiple therapeutic transgenes, some of which will be tested against solid or heme cancers. (Role: co-I).

Fast Grants GR38069 (2020-2021) McFadden/Rahman/Hogue (MPI)

*Development of an intranasal COVID-19 vaccine that exploits SARS-CoV-2 virus like particles (VLPs).*

The goal of this proposal is to construct myxoma virus constructs that will make SARS-CoV-2 VLPs and

test immunogenicity in animal model. (Role: co-PI)

Mayo Clinic SPORE in multiple myeloma (DRA) (2017-2019) McFadden (PI)

*Oncolytic virotherapy for drug-resistant multiple myeloma*.

The goal of this study was to develop myxoma virus as an oncolytic virotherapy for drug-resistant multiple myeloma in preclinical animal models. (Role: co-I).

James and Esther King Biomedical Research Program (2015-2018) Frederic Kaye (PI)

*First-of-its-Kind Intralesional Delivery of Oncolytic therapy for Limited Stage Small Cell Lung Cancer*

The goal of this study was to develop Myxoma virus as an oncolytic virotherapy for small cell lung cancer in preclinical animal models. (Role: co-I)

NIH R01 AI100987 (2013-2017) McFadden (PI)

*Manipulation of inflammasomes and NF-kB signaling in human myeloid cells by Myxoma virus.*

The goal of this proposal was to study the mechanisms of regulation of inflammasome and NF-κB pathway by Myxoma virus protein M013 and identification of poxvirus encoded novel immune regulators. (Role: co-I)

Bankhead-Coley Cancer Research Program (2011-2013) McFadden (PI)

*Exploiting oncolytic virotherapy to selectively target human hematopoietic cancer stem cells.*

The goal of this proposal was to test myxoma virus elimination of leukemic hematopoietic stem and progenitor cells by ex vivo treatment and understand the mechanisms. (Role: co-I)

NIH R01 CA138541 (2010-2015) McFadden (PI)

*Myxoma virus oncolysis for treating human cancer*

The goal of this study was to develop myxoma virus as an oncolytic virotherapy for leukemia. (Role: co-I)

Research support for doctoral thesis (1998-2003)

As a research scholar at Indian Institute of Science, research support (Rs, 10,000.00 per annum) from Indian Council for Cultural Relations (ICCR), The Ministry of External Affairs, Government of India.

**Publications**

Google Scholar Profile:

My bibliography: <https://www.ncbi.nlm.nih.gov/myncbi/109TuJBVp5JAd/bibliography/public/>

1. **Rahman MM**, Estifanos B, Glenn HL, Kibler K, Li Y, Jacobs B, McFadden G, Hogue BG. Nuclear export inhibitor Selinexor targeting XPO1 enhances coronavirus replication. bioRxiv 2023 Feb 13:2023.02.09.527884.
2. **Rahman MM**, van Oosterom F, Enow JA, Hossain M, Gutierrez-Jensen AD, Cashen M, Everts A, Lowe K, Kilbourne J, Daggett-Vondras J, Karr TL, McFadden G. A novel anti-cancer therapy with nuclear export inhibitor Selinexor in combination with oncolytic myxoma virus. Cancer Res Commun. 2023 Jun 1; 3(6):952-968.
3. **Rahman MM** and McFadden G. Role of cytokines in poxvirus host tropism and adaptation. *Current Opinion in Virology*. 2022 Dec; 57:101286.
4. Zheng N, Fang J, Xue G, Wang Z, Li X, Zhou M, Jin G, **Rahman MM**, McFadden G, Lu Y. Induction of tumor cell autosis by myxoma virus-infected CAR-T and TCR-T cells to overcome primary and acquired resistance. *Cancer Cell*. 2022 Sep 12; 40(9):973-985.e7.
5. **Rahman MM**, McFadden G, Ruthel G., Herbert DR, Freedman BD, Greenberg RM, Bais S. Oncolytic myxoma virus infects and damages the tegument of the human parasitic flatworm Schistosoma mansoni. *Exp Parasitol*. 2022 Aug; 239:108263.
6. Jazowiecka-Rakus J, Sochanik A, Hadrys A, Fidyk W, Chmielik E, **Rahman MM**, McFadden G. Combination of LIGHT (TNFSF14)-armed myxoma virus pre-loaded into ADSCs and gemcitabine in the treatment of experimental orthotopic murine pancreatic adenocarcinoma. *Cancers*, 2022, Apr 16; 14(8):2022.
7. Agueda-Pinto A, Kraberger S, Everts A, Gutierrez-Jensen A, Glenn HL, Dalton, KP, Podadera A, Parra F, Martinez-Haro M, Vinuelas JA, Varsani A, McFadden G, **Rahman MM**, Esteves J. Identification of a novel myxoma virus C7-like host range factor that enabled a species leap from rabbits to hares. *mBio*, 2022 Apr 26; 13(2):e0346121.
8. Villa NY, **Rahman MM**, Mamola J, Sharik ME, Lemos de Matos A, Kilbourne J, Lowe K, Daggett-Vondras J, D’Isabella J, Goras E, Chesi M, Bergsagel PL, McFadden G. Transplantation of autologous bone marrow pre-loaded ex vivo with oncolytic myxoma virus is efficacious against drug-resistant Vk\*MYC mouse myeloma. *Oncotarget*, 2022 Mar 3; 13:490-504.
9. Christie JD, Apple N, Zhang L, Kilbourne J, Lowe, K, Daggett-Vondras J, Elliott N, Lucas AR, Blattman JN, **Rahman MM**, McFadden G. Systemic delivery of mLIGHT-armed myxoma virus is therapeutic for later-stage syngeneic murine lung metastatic osteosarcoma. *Cancers*, 2022 Jan 11; 14(2):337.
10. **Rahman MM** and McFadden G. Oncolytic viruses: Newest frontier for cancer immunotherapy. *Cancers*, 2021 Oct 29; 13(21):5452.
11. Christie JD, Apple N, Canter H, Achi JG, Elliott NM, Lemos de Matos A, Franco L, Kilbourne J, Lowe, K, **Rahman MM**, Villa NY, Carman J, Luna E, Blattman J, McFadden G. Systemic delivery of TNF-armed myxoma virus plus immune checkpoint inhibitor eliminates lung metastatic mouse osteosarcoma. *Mol Ther Oncolytics*, 2021 Aug 6; 22:539-554.
12. Agueda-Pinto A, Alves LQ, Neves F, McFadden G, Jacobs BL, Castro LFC, **Rahman MM**, Esteves J. Convergent loss of the Necroptosis pathway in disparate mammalian lineages shapes viruses countermeasures. *Front Immunol*, 2021 Sep1; 12:747737.
13. **Rahman, M.M**. Gutierrez-Jensen AD, Glenn HL, Abrantes M, Moussatche N, McFadden G. RNA helicase A/DHX9 form unique cytoplasmic anti-viral granules that restrict oncolytic myxoma virus replication in human cancer cells. *J Virol.* 2021, Jun 24; 95(14): e001512.
14. Jazowiecka-Rakus J, Hadrys A, **Rahman, MM**, McFadden G, Fidyk W, Chmielik E, Pazdzior M, Grajek M, Kozik V and Sochanik A. Myxoma virus expressing LIGHT (TNFSF14) pre-loaded into adipose-derived mesenchymal stem cells is effective treatment for murine pancreatic adenocarcinoma. *Cancers*, 2021, Mar 19; 13(6): 1394.
15. Woo Y, Warner SG, Geha R, Stanford MM, Decarolis P, Singer S, **Rahman MM**, McFadden G, Fong Y. The oncolytic activity of myxoma virus against soft tissue sarcoma is mediated by the overexpression of ribonucleotide reductase. *Clin Med Insights Oncol*. 2021, Feb 11; 15:1179554921993069.
16. Liu Z, Nailwal H, Rector J, **Rahman MM**, Sam R, Kang K, McFadden G and Chan FK. A class of viral inducer of RIPK3 degradation regulates virus-induced inflammation. *Immunity,* 2021, Jan 7; S1074-7613(20)30507-0.
17. Cornejo Y, Li M, Dellinger TH, Mooney R, **Rahman MM**, McFadden G, Aboody KS and Hammad M. NSCs are permissive to oncolytic myxoma virus and provide a delivery method for targeted ovarian cancer therapy. *Oncotarget,* 2020 Dec 22; 11(51): 4693-4698.
18. Torres-Dominguez LE, de Matos AL, **Rahman MM** and McFadden G, Methods for the construction of recombinant oncolytic myxoma viruses. Viruses as Therapeutics: Methods and Protocols, *Methods in Molecular Biology*, 2021; 2225:63-75.
19. Jazowiecka-Rakus J, Sochanik A, Rusin A, Hadrys A, Fidyk W, Villa N, **Rahman MM**, Chmielik E, Franco LS and McFadden G. Myxoma virus-loaded mesenchymal stem cells in experimental oncolytic therapy of murine pulmonary melanoma. *Mol Ther Oncolytics,* 2020 September 25, 18 (335-350).
20. Villa N, **Rahman MM**, Mamola J, D’Isabella J, Goras E, Kilbourne J, Lowe K, Daggett-Vondras J, Torres L, Christie J, Appel N, Cox AL, Kim JB and McFadden G. Autologous transplantation using donor leukocytes loaded ex vivo with oncolytic myxoma virus can eliminate residual multiple myeloma. *Mol Ther Oncolytics*. 2020 September 25; 18 (171-188).
21. **Rahman MM**, McFadden G. [Myxoma Virus-Encoded Host Range Protein M029: A Multifunctional Antagonist Targeting Multiple Host Antiviral and Innate Immune Pathways.](https://www.ncbi.nlm.nih.gov/pubmed/32456120/) *Vaccines* (Basel). 2020 May 23;8(2). doi: 10.3390/vaccines8020244.
22. Yaron JR, Zhang L, Guo Q, Burgin M, Schutz LN, Awo E, Wise L, Krause KL, Ildefonso CJ, Kwiecien JM, Juby M, **Rahman MM**, Chen H, Moyer RW, Alcami A, McFadden G, Lucas AR. [Deriving Immune Modulating Drugs from Viruses-A New Class of Biologics.](https://www.ncbi.nlm.nih.gov/pubmed/32244484/)*J Clin Med.* 2020 Mar 31;9(4). doi: 10.3390/jcm9040972.
23. **Rahman MM**, McFadden G. [Oncolytic Virotherapy with Myxoma Virus.](https://www.ncbi.nlm.nih.gov/pubmed/31936317/)*J Clin Med.* 2020 Jan 8;9(1). doi: 10.3390/jcm9010171.
24. Garg RR, Jackson CB, **Rahman MM**, Khan AR, Lewin AS, McFadden G. [Myxoma virus M013 protein antagonizes NF-κB and inflammasome pathways via distinct structural motifs.](https://www.ncbi.nlm.nih.gov/pubmed/30940649/)*J Biol Chem.* 2019 Apr 2;. doi: 10.1074/jbc.RA118.006040. [Epub ahead of print] PubMed PMID: 30940649.
25. Kellish P, Shabashvili D, **Rahman MM**, Nawab A, Guijarro MV, Zhang M, Cao C, Moussatche N, Boyle T, Antonia S, Reinhard M, Hartzell C, Jantz M, Mehta HJ, McFadden G, Kaye FJ, Zajac-Kaye M. [Oncolytic virotherapy for small-cell lung cancer induces immune infiltration and prolongs survival.](https://www.ncbi.nlm.nih.gov/pubmed/31033480/)*J Clin Invest.* 2019 Apr 29;130. PMID: 31033480.
26. Alves JM, Carneiro M, Cheng JY, Lemos de Matos A, **Rahman MM**, Loog L, Campos PF, Wales N, Eriksson A, Manica A, Strive T, Graham SC, Afonso S, Bell DJ, Belmont L, Day JP, Fuller SJ, Marchandeau S, Palmer WJ, Queney G, Surridge AK, Vieira FG, McFadden G, Nielsen R, Gilbert MTP, Esteves PJ, Ferrand N, Jiggins FM. [Parallel adaptation of rabbit populations to myxoma virus.](https://www.ncbi.nlm.nih.gov/pubmed/30765607/)*Science.* 2019 Mar 22;363(6433):1319-1326. PMCID: PMC6433279.
27. Phelps MP, Yang H, Patel S, **Rahman MM**, McFadden G, Chen E. [Oncolytic Virus-Mediated RAS Targeting in Rhabdomyosarcoma.](https://www.ncbi.nlm.nih.gov/pubmed/30364635/)*Mol Ther Oncolytics*. 2018 Dec 21;11:52-61.
28. Wolfe AM, **Rahman M**, McFadden DG, Bartee EC. [Refinement and Successful Implementation of a Scoring System for Myxomatosis in a Susceptible Rabbit (*Oryctolagus cuniculus*) Model.](https://www.ncbi.nlm.nih.gov/pubmed/30017020/) *Comp Med.* 2018 Aug 1;68(4):280-285.
29. **Rahman M.M**. Methods for identifying virus-derived serpins. Serpins: Methods and Protocols, *Methods in Molecular Biology*, 2018, Vol 1826.
30. Esteves, P.J et al., The wide utility of rabbits as models of human diseases. *Exp Mol Med* 2018, 50(5): 66.
31. **Rahman, M.M.**, Bagdassarian E., Ali M.A.M and McFadden G. Identification of host DEAD-box RNA helicases that regulate cellular tropism of oncolytic Myxoma virus in human cells. *Sci Rep* 2017, 7(1): 15710.
32. **Rahman, M.M.** and McFadden, G. Myxoma virus dsRNA binding protein M029 inhibits the type I IFN-induced antiviral state in a highly species-specific fashion. *Viruses* 2017, 9(2): 27.
33. Lilly, C.L., Villa, N., Lemos de Matos, A., Ali, H.A., Dhillon, J.S., Hofland, T., **Rahman, M.M.**, Chan, W., Bogen, B., Cogle, C. and McFadden, G. *Ex vivo* oncolytic virotherapy with Myxoma virus arms multiple allogeneic bone marrow transplant leukocytes to enhance graft-vs-tumor. *Molecular Therapy: Oncolytics* 2016, 4: 31-40.
34. Villa, N.Y., Bais, S., Meacham, A.M., Wise, E., **Rahman, M.M.**, Moreb, J., Rosenau, E.H., Wingard, J.R., McFadden, G and Cogle, C.R. Ex vivo virotherapy with Myxoma virus does not impair Hematopoietic Stem and Progenitor cells. *Cytotherapy* 2016, 18(3): 465-80.
35. Peng, C., Haller, S.L, **Rahman, M.M.**, McFadden, G and Rothenburg, S. Myxoma virus M156 is a specific inhibitor of rabbit PKR and contains a loss-of function mutation in Australian virus isolates. *PNAS* 2016, 113(14): 3855-60.
36. Villa, N.Y., **Rahman, M.M.**, McFadden, G and Cogle, C.R. Therapeutics for Graft-versus-Host disease: from conventional therapies to novel virotherapeutic strategies. *Viruses* 2016, 8(3): 85.
37. Pi, L., Chung, P.Y., Sriram, S., **Rahman, M.M.**, Song, W.Y., Scott, E.W., Petersen, B.E. and Schultz, G.S. Connective tissue growth factor differentially binds to members of the cysteine knot superfamily and potentiates platelet-derived growth factor-B signaling in rabbit corneal fibroblast cells. *World J Biol Chem* 2015, 6(4): 379-88.
38. Pisklakova, A., McKenzie, B., Zemp, F., Lun, X., Kenchappa, R.S., Etame, A.**.**, **Rahman, M.M**, Reilly, K., Pilon-Thomas, S., McFadden, G., Kurz, E., and Forsyth, P. M011L-deficient oncolytic myxoma virus induces apoptosis in brain tumor-initiating cells and enhances survival in a novel immunocompetent mouse model of glioblastoma. *Neuro Oncol* 2016 Mar 8. Pii: now006.
39. Kim, M., **Rahman, M.M.**, Cogle, C.R. and McFadden, G. Prevention of EBV lymphoma development by oncolyticmyxoma virus in a murine xenograft model of post-transplant lymphoproliferative disease. *Biochem Biophys Res Commun* 2015, 462(4): 283-7.
40. Ildefonso, C.J., Jaime, H., **Rahman, M.M.**, Li, Q., Boye, S.E., Hauswirth, W.W., Lucas, A.R., McFadden, G. and Lewin, A.S. Gene delivery of a viral anti-inflammatory protein to combat ocular inflammation. *Hum Gene Ther*. 2015; 26(1): 59-68.
41. Lamb, S.A., **Rahman, M.M.** and McFadden, G. Recombinant myxoma virus lacking all poxvirus ankyrin-repeat proteins stimulates multiple cellular anti-viral pathways and exhibits a severe decrease in virulence. *Virology* 2014; 464-465C:134-145.
42. **Rahman, M.M.**, Liu, J., Chan, W.M., Rothenburg, S. and McFadden, G. Myxoma virus protein M029 is a dual function immunomodulator that inhibits PKR and also conscripts RHA/DHX9 to promote expanded host tropism and viral replication. *PLoS Pathog* 2013; 9(7):e1003465.
43. Chan, W.M., **Rahman, M.M.** and McFadden, G. (2013). Oncolytic Myxoma virus: The path to clinic. *Vaccine.* 2013; 31 (39): 4252-8.
44. Ogbomo, H., Zemp, F.J., Lun, X., Zhang, J., Stack, D., **Rahman, M.M.**, McFadden, G., Mody, C.H. and Forsyth, P.A. Myxoma virus infection promotes NK lysis of malignant gliomas in vitro and in vivo. *PLoS One*. 2013 8(6):e66825.
45. Zemp, F. J., Lun, X., McKenzie, B.A., Zhou, H., Maxwell, L., Sun, B., Kelly, J. J., Stechishin, O., Luchman, A., Weiss, S., Cairncross, J.G., Hamilton, M. G., Rabinovich, B. A., **Rahman, M. M.**, Mohamed, M. R., Smallwood, S., Senger, D. L., Bell, J., McFadden, G. and Forsyth, P. A. Treating brain tumor-initiating cells using a combination of Myxoma virus and rapamycin. *Neuro Oncol*. 2013 15 (7): 904-2.
46. Jenne, CN, Wong, CH, Zemp, FJ, McDonald B, **Rahman, MM**, Forsyth, PA, McFadden, G, and Kubes, P. Neutrophils recruited to sites of infection protect from virus challenge by releasing neutrophil extracellular traps. *Cell Host Microbe* 2013 (13): 169180.
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48. Urbasic, A.S., Hynes, S., Somrak, A., Contakos, S., **Rahman, M.M.**, Liu, J., MacNeill, A.L. (2012). Myxoma virus-mediated oncolysis of canine tumor cells is enhanced in the absence of the viral Serp2 gene. *Am J Vet Res* 73: 1252-1261.
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51. Wennier, S., Liu, J., Li, S., **Rahman, M.M.,** Mona, M. and McFadden, G. (2012) Myxoma virus sensitizes cancer cells to gemcitabine and is an effective oncolytic virotherapeutic in models of disseminated pancreatic cancer. *Mol Ther* 20: 759-68.
52. Bais, S., Bartee, E., **Rahman, M.M.**, McFadden. G. and Cogle, C.R. (2012). Oncolytic virotherapy for hematological malignancies. *Adv Virol*. 2012:186512.
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56. **Rahman, M.M.** and McFadden, G. (2011). Myxoma virus lacking the pyrin-like protein M013 is sensed in human myeloid cells by both NLRP3 and multiple Toll-like receptors, which independently activate the inflammasome and NF-kB innate response pathways. *J Virol* 85 (23): 12505-17.
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59. Kim, M., Williamson, C.T., Prudhomme, J., Bebb, D.G., Riabowol, K., Lee, P.W.K., Lees-Miller, S.P., Mori, Y., **Rahman, M.M.**, McFadden, G. and Johnston, R.N. (2010). The viral tropism of two distinct oncolytic viruses, reovirus and myxoma virus, is modulated by cellular tumor suppressor gene status. *Oncogene* 29: 3990-3996.
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62. McFadden G., Mohamed, MR\*., **Rahman, M.M.**\*, Bartee, E\* (2009). Cytokine determinants of viral tropism. *Nature Review Immunology* 9: 645-55. \* Authors contributed equally to the work.
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65. Zhang, L., Villa, N., **Rahman, M.M.**, Smallwood, S., Shattuck, D., Neff, C., Dufford, M., Lanchbury, J., LaBaer, J., McFadden, G. (2009) Analysis of vaccinia virus-host protein-protein interactions: validation of yeast two hybrid screenings. *J proteomic research* 8: 4311-8.
66. **Rahman, M.M.**, Mohamed, M.R., Kim, M., Smallwood, S. and McFadden, G. (2009). Coregulation of NF-kB and inflammasome-mediated inflammatory responses by Myxoma virus pyrin domain-containing protein M013. *PLoS Pathogens* 5 (10):e1000635.
67. Mohamed, M.R., **Rahman, M.M.**, Rice, A., Moyer, R.W., Werden, S.J., McFadden, G (2009). Cowpox virus expresses a novel ankyrin-repeat NF-kB inhibitor that is critical for virus pathogenesis by controlling inflammatory influx into virus-infected tissues. *J.Virol* 83: 9223-36.
68. Mohamed, M.R., **Rahman, M.M.**, Lanchbury, J.S., Shattuck, D., Neff, C., Dufford, M., Buuren, N.V., Fagan, K., Barry, M., Smith, S., Damon, I. and McFadden, G. (2009). Proteomic screening of variola virus reveals a unique NF-kB inhibitor that is highly conserved among pathogenic orthopoxviruses. *Proc. Nat. Acad. Sci.USA* 106, 9045-50.
69. **Rahman, M.M.**, Jeng, D., Singh, R., Coughlin, J., Essani, K. and McFadden, G. (2009). Interaction of human TNF and beta2-microglobulin with Tanapox virus-encoded TNF inhibitor TPV-2L. *Virology* 386 (2): 462-468.
70. Wang, F., Gao, X., Barrett, J.W., Shao, Q., Bartee, E., Mohamed, M.R., **Rahman, M.**, Werden, S., Irvine, T., Cao, J., Dekaban, G.A. and McFadden, G. (2008). RIG-I mediates the coinduction of tumor necrosis factor and interferon elicited by myxoma virus in primary human macrophages. *PLoS Pathogens* 4(7): e1000099.
71. Werden, S.J., **Rahman, M.M.** and McFadden, G. (2008). Poxvirus host range genes. *Advances in virus research* 71, 135-171.
72. **Rahman, M.M.**, Lucas, A.R. and McFadden, G. (2009). Viral TNF inhibitors as potential therapeutics. *Adv Exp Med Biol*. 666, 64-77.
73. Nazarian, S.H., **Rahman, M.M**., Werden, S.J., Villeneuve, D., Meng, X., Brunetti, C., Valeriano, C., Wong, C., Singh, R., Barrett, J.W., Xiang, Y. and McFadden, G. (2008). Yaba monkey tumor virus encodes a functional inhibitor of IL-18. *J Virol* 82, 522-528.
74. Johnston, J.B., **Rahman, M.M**. and McFadden, G. (2007). Strategies that modulate inflammasomes-insight from host-pathogen interactions. *Semin Immunopathol* 29, 261-274.
75. **Rahman, M. M.** and McFadden, G. (2007). BAFfled by poxviruses? *Cell Host & Microbe* 1, 159-160.
76. **Rahman, M. M**., Barrett, J. W., Brouckaert, P and McFadden, G. (2006). Variation in ligand binding specificities of a novel class of poxvirus-encoded tumor necrosis factor-binding protein. *J Biol Chem* 281, 22517-22526.
77. **Rahman, M. M**. and McFadden, G. (2006). Modulation of tumor necrosis factor by microbial pathogens. *PLoS pathogens* 2 (2), e4.
78. **Rahman, M. M**. and Gopinathan, K. P. (2004). Analysis of systemic and in vitro infection process of Bombyx mori nucleopolyhedrovirus. *Virus Research* 101, 109-118.
79. **Rahman, M. M**., Shaila, M. S and Gopinathan K. P. (2003). Baculovirus display of fusion protein of Peste des petits ruminants virus and hemagglutinin protein of Rinderpest virus and immunogenecity of the displayed proteins in mouse model. *Virology* 317, 36-49.
80. **Rahman, M. M**. and Gopinathan, K. P. (2003). Characterization of the gene encoding the envelope fusion glycoprotein GP64 from Bombyx mori nucleopolyhedrovirus. *Virus Research* 94, 45-57.
81. **Rahman, M. M**. and Gopinathan, K. P. (2003). Bombyx mori nucleopolyhedrovirus- based surface display system for recombinant proteins. *J Gen Virol* 84, 2023-2031.
82. **Rahman, M. M**. and Gopinathan, K. P. (2003). Analysis of host specificity of two closely related baculoviruses in permissive and nonpermissive cell lines. *Virus Research* 93, 13-23.
83. **Rahman, M. M**. and Gopinathan, K. P. (2003). Bombyx mori nucleopolyhedrovirus (BmNPV) based eukaryotic surface display system for recombinant proteins. *J Insect Sci* 3, 36.
84. Acharya, A., Sriram, S., Sehrawat, S., **Rahman, M**., Sehgal, D. and Gopinathan, K. P. (2002). Bombyx mori nucleopolyhedrovirus: molecular biology and biotechnological applications for large-scale synthesis of recombinant proteins. *Current Science*. 83, 455-465.
85. Alekov, A. A., **Rahman, M. M**., Mitrovic, N., Lehmann-Horn, F. and Lerche, H. (2001). Enhanced inactivation and acceleration of activation of the sodium channel associated with epilepsy in man. *European Journal of Neuroscience.* 13, 2171-2176.
86. Alekov, A. A., **Rahman, M. M**., Mitrovic, N., Lehmann-Horn, F. and Lerche, H. (2000). A sodium channel mutation causing epilepsy in man exhibits subtle defects in fast inactivation and activation in vitro. *Journal of Physiology*. 529.3, 533-539.

**Manuscripts submitted or in preparation**

1. **Rahman, MM** et al. Myxoma virus M029 and Vaccinia E3 are orthologous ds-RNA-binding proteins that possess similar host-range functions but differ in their ability to block type I IFN. (in preparation).
2. Guijarro MV, Francois RA, **Rahman MM,** Kellish PC, Nawab A, Trevino JG, Li S, Reinhard MK, Liu C, Kaye FJ, McFadden G, and Zajac-Kaye M. Myxoma virus sensitizes pancreatic ductal adenocarcinoma to gemcitabine in a KrasG12D mouse model. (in preparation).

**Patents and Inventions**

1. Use of AAV-expressed M013 protein as an anti-inflammatory therapeutic. U.S. patent

application: US20160376325A1. Inventors: Ildefonso CJ, Lewin AS, Lucas AR, McFadden G, **Rahman MM**.

2. Method for improved poxvirus yields. Publication number: W02020033510A1. Inventors: McFadden G and **Rahman MM**.

3. Oncolytic virus platform to treat hematologic cancer. Publication number: W02020051248A1. Inventors: McFadden G, Torres-Dominguez L, Villa N, **Rahman MM**.

4. Methods of treating cancer with TNF expressing myxoma virus. Publication number: W02020014670A1. Inventors: McFadden G, Christie J, Blattman J, **Rahman MM**, Villa N.

5. Methods and compositions for improving oncolytic virus infection for nonpermissive cancers: provisional application. US patent application: US20220296660A1. Inventors: McFadden G and **Rahman MM**.

6. Oncolytic viruses that express multi-specific immune cell engagers: provisional application. Inventors: McFadden G, Torres-Dominguez L, Villa N, **Rahman MM**.

7. Oncolytic virus comprising immunomodulatory transgenes and use thereof: provisional application. Inventors: McFadden G, Torres-Dominguez L, Villa N, **Rahman MM**.

8. Oncolytic virus platform to treat metastatic cancers with triple transgene-armed myxoma virus: provisional application. Inventors: McFadden G, Torres-Dominguez L, Villa N, Achury FL, **Rahman MM**.

9. Oncolytic Myxoma virus expressing FAST P14 to treat hematological cancer: US patent application: US20220088096A1. Inventors: McFadden G, **Rahman MM**, Villa N, Lemos De Matos A, Belmont L.

10. Cancer therapies comprising a nuclear export inhibitor and an oncolytic virus: provisional application. Inventors: **Rahman MM** and McFadden G.

**Professional Memberships**

2022-present Member, American Association for Cancer Research (AACR)

2020-present Member, American Society for Microbiology (ASM)

2014-present Member, American Society for Virology (ASV)

2010-present Associate Faculty Member in Virology F1000

2005-2013 Associate Member, American Society for Virology (ASV)

**Grant Review**

2022 – Present Grant Reviewer, UK Research and Innovation (UKRI)

2020 - Present Grant Reviewer, Arizona Biomedical Research Center

2020-present Grant reviewer, Qatar National Research Fund, Qatar

2013 Grant reviewer, Marsden Fund, New Zealand

**Editorial Services**

2022-present Guest Editor, PLoS Pathogens

2022-present Associate Editor, Frontiers in Cellular and Infection Microbiology

2020-2022 Review and Topic Editor, Frontiers in Cellular and Infection Microbiology

2019-present Academic and special issue Editor, Vaccines (MDPI)

2018-present Editorial Board Member, PLOS ONE

**Peer reviewer for journals**

2007–present Virology, Journal of Virology, PLoS Pathogens, Nature Microbiology, Nature Immunology, PNAS, Cell Host Microbe, Virus Research, PLoS One, BioDrugs, Oncotarget, Cells, Vaccines, Viruses, Diagnostics, Molecules, Microorganisms, Molecular therapy, Toxins, Pathogens, Journal of Medical Virology, Veterinary Sciences, IJMS, Clinical and Experimental Immunology, Antiviral Research, Frontiers Journals.

**Honors and Awards**

2018 Invited speaker, Joint meeting of the Society for Leukocyte Biology & the

International endotoxin and Innate Immunity Society, Chandler, AZ.

2011 Medical virology club travel grant, 30thASV meeting 2011 at the University of

Minnesota, Minneapolis.

2003-2004 Amulya and Vimala Reddy medal for the best PhD thesis, Indian Institute of

Science, Bangalore, India.

1998-2003 SAARC (South Asian Association for Regional Cooperation) Scholarship from the

Government of India for pursuing PhD degree at the Department of Microbiology and Cell Biology, Indian Institute of Science, Bangalore, India.

1989-1994 Merit Scholarship from University of Dhaka, Dhaka, Bangladesh.

1984-1988 Merit Scholarship from Secondary and Higher Secondary Educational Board,

Rajshahi, Bangladesh.

**Conference Abstracts (posters) and oral presentations: more than 50 (2004-2022)**

**Selected oral Presentations (2008-2022)**

**Rahman MM**, Oosterom F, Enow JA, Hossain M, Gutirrez-Jensen AD, Cashen M, Everts A, Lowe K, Kilbourne J, Daggert-Vondras J, Karr TL, McFadden G. A novel anti-cancer co-therapy using nuclear export inhibitor Selinexor plus oncolytic myxoma virus. 14th International Oncolytic Virotherapy Conference, Karuizawa, Nagano, Japan, October 23-26, 2022.

**Rahman, MM**, Gutierrez-Jensen A and McFadden G. The role of the DEAD box helicase superfamily on the host and cellular tropism of myxoma virus. American Society for Virology. 37th Annual Meeting, University of Maryland, College Park, Maryland, July 14-18, 2018.

**Rahman, MM**. Biodesign Town Hall meeting, Arizona State, University, Tempe, AZ, January 10, 2018. Cellular and host tropism of oncolytic myxoma virus.

Serfecz, J, McFadden G, **Rahman MM** and Renne R. The impact of eukaryotic DExD/H box helicases on lytic replication of Kaposis sarcoma associated herpesvirus. 2016 Southeastern regional virology conference (SERVC), Atlanta, GA

**Rahman, M.M.**, Lemos de matos, A., Dhillon, J.D. and McFadden, G. Species specific inhibition of type I IFN responses by the dsRNA-binding protein M029 can alter Myxoma virus (MYXV) tropism even in the absence of PKR. American Society for Virology. 34th Annual Meeting, Western University London ON, Canada, July 11-15, 2015.

**Rahman, M.M.**, Bagdassarian, E., Ali, M.A.M. and McFadden, G. Myxoma virus M029 and Vaccinia E3 are orthologous ds-RNA-binding proteins that possess similar host-range functions but differ in their ability to block type I IFN. 2014 International poxvirus, Asfarvirus, and Iridovirus conference, Victoria, BC, Canada, September 26-30, 2014.

**Rahman, M.M.**, Manipulation of host signaling pathways by Myxoma virus-encoded immunomodulatory proteins regulate viral replication and tropism in human cancer cells, Dept of Molecular Genetics and Microbiology, UF, Seminar series, April 22, 2014.

**Rahman, M.M.,** Liu, J., Chan, W.M., Rothenburg, S. and McFadden. G., Myxoma virus protein M029 modulates the functions of both PKR and RHA/DHX9 to promote expanded host tropism and viral replication. American Society for Virology. 32nd Annual Meeting, Penn State’s University Park Campus, State College, Pennsylvania, July 20-24, 2013.

**Rahman, M.M**., Myxoma virus manipulation of the cellular signaling pathways by immunomodulatory proteins, Dept of Molecular Genetics and Microbiology, UF, Seminar series, May 14, 2013.

**Rahman, M.M.,** Liu, J., Rothenburg, S. and McFadden. G., Myxoma virus protein M029 is a truncated ortholog of the vaccinia E3L encoded double stranded-RNA binding protein with extreme cell host range functionality. The XIX international poxvirus, Asfarvirus, and Iridovirus conference, Salamanca, Spain, June 24-28, 2012

**Rahman, M.M**., Role of M029, a dsRNA binding protein in determining Myxoma virus pathogenicity and host tropism, Dept of Molecular Genetics and Microbiology, UF, Seminar series, June 2012.

**Rahman, M.M.** and McFadden. G., Myxoma virus lacking the pyrin-like protein M013 is sensed in human cells by NLRP3 and TLRs, which activate both the inflammasome and NF-kappaB innate

response pathways. American Society for Virology. 30thAnnual Meeting. University of Minnesota, Twin Cities, Minneapolis, July 16-20, 2011.

**Rahman, M.M**. Mohamed, M.R. and McFadden G. Regulation of innate immune responses by Myxoma virus-encoded protein M013. The XVIII international poxvirus, Asfivirus, and Iridovirus symposium, Sedona, Arizona, June 5-9, 2010

**Rahman, M.M**., Mohamed, M.R., Smallwood, S., McFadden, G. Regulation of inflammatory responses by Myxoma virus-encoded PYRIN domain containing protein M013L. American Society for Virology, 28th Annual meeting, University of British Columbia, Vancouver, BC, Canada, July 11-15, 2009.

**Rahman, M. M.** and McFadden, G. Inhibition of inflammatory responses by myxoma virus-encoded PYRIN domain containing protein. Tenth Southeastern regional virology conference, Georgia State University Atlanta, Georgia, April 4-6, 2008.

**Teaching**

MCB 3020L Basic Biology of Dept. of Microbiology & Cell Science,

Microorganisms University of Florida.

GMS 7191 MGM Research Conference Dept. of Molecular Genetics &

Microbiology, University of Florida.

GMS 6196 Virology Journal Club Dept. of Molecular Genetics &

Microbiology, University of Florida.

Viroholics Weekly virology seminar Dept. of Molecular Genetics &

Microbiology, University of Florida.

BIO 495 Undergraduate research School of life sciences, ASU

Viroholics Weekly virology seminar B-CIVV, Arizona State University

CIVV-oholics Weekly CIVV seminar B-CIVV, Arizona State University

GMS 7191 MGM Research Conference Dept. of Molecular Genetics &

Microbiology, University of Florida.

MCB 3020L Basic Biology of Dept. of Microbiology & Cell Science,

Microorganisms University of Florida.

**Mentoring students**

**Current Graduate Students at ASU**

2023 Sabeeha R. Mushtaq Molecular/Cellular Biology PhD Program, ASU

2022 Saige Munig 4+1 MS Program, ASU

2022 Junior Enow Molecular/Cellular Biology PhD Program, ASU

**Current Undergraduate Students at ASU**

2022 Saige Munig Undergraduate student

2022 Akarshi Brar Undergraduate student

2022 Kameron Cochrane Undergraduate student

2022 Ruhie Bakshi Undergraduate student

**Past graduate and undergraduate students:**

**At Biodesign Institute, Arizona State University**

2022 Fleur van Oosterom visiting graduate student (master’s thesis)

 Universiteit Utrecht, Utrecht, The Netherlands

2021-2022 Hrithik Patel Undergraduate student, Barrett The Honors College at ASU

2021-2022 Steffen Fallini Undergraduate student, Barrett The Honors College at ASU

2021-2022 Karthika Krishna Undergraduate student

2021-2022 Kaitlyn Cribbs Undergraduate student

2021-2022 Mackenzie Cashen Undergraduate student

2021 Hammad Sheikh Undergraduate student, University of Texas, Dallas

2021 Jamie Sprout Undergraduate student, Barrett The Honors College at ASU

2021 Sahar Davoudi Undergraduate student, Barrett The Honors College at ASU

2020-2021 Arshia Diyya Undergraduate student

2020-2021 Anne Everts visiting graduate student (master’s thesis)

 Universiteit Utrecht, Utrecht, The Netherlands

2019 Zachary Tacner Undergraduate student

2019-2020 Saiashish Singh Undergraduate student

2019-2020 Sai Kottapalli Undergraduate student

2019-2020 Ana Pinto visiting graduate student (PhD) Universidade do Porto, Portugal

2018-2020 Matthew Mcarthur Undergraduate student

2017 Justin Blankenbaker Undergraduate student

**At University of Florida**

2007 Levi Watson Rotating Graduate student

2007 Robby Newman Rotating Graduate student

2008 Cameron Lilly Rotating Graduate student

2009-2011 Stephen Mayper Undergraduate student research volunteer

2009 Edith Gerlich, visiting Undergraduate Student (Diploma Thesis), University of

Giessen, Giessen, Germany

2009-2010 Florine Scholte, visiting Graduate Student (master’s Thesis), Utrecht University,

Utrecht, The Netherlands

2010 Stephanie Lamb Rotating Graduate student and master’s thesis

 **(lead-author Lamb et al., Virology 2014)**

2011 Lauren Gay Rotating Graduate student

2012-2013 Cody Jackson Undergraduate student and master’s thesis

 **(co-author: Garg et al., JBC 2019)**

2013 Nakul Bhatt Graduate student (Summer)

2013 Eugenie Bagdassarian visiting Graduate Student (Master’s thesis), National veterinary

school, France **(co-author: Rahman et al., Sci Rep 2017)**.

2013-2014 Mohamed A.M. Ali Visiting scholar, Ain Shams University, Egypt

**(co-author: Rahman et al., Sci Rep 2017)**.

2014-2015 Jieun Lee Undergraduate student

2015 Farheen Chowdhury Undergraduate student

**At Robarts Research Institute, London, Ontario, Canada**

2005 Aarica Arora Co-op Student A.B. Lucas High School, London, Ontario, Canada

**At Indian Institute of Science, Bangalore, India**

2002-2003 Indranil Banerjee Graduate Student (Master’s Thesis), Banaras Hindu

University, India

**Other Training and Courses**

* Biacore Basics: a concentrated program of study covering the basics of Biacore 2000 instrument operation, experimental design and data analysis, San Diego, CA, December 5-6, 2006.
* Radiation Safety Short Course: EHS830 at University of Florida, 2014; Arizona State University, 2017.
* IACUC trainings for mice and rabbits: University of Florida, Arizona State University
* Animal BSL3 (ABSL3) and BSL3 training at University of Florida.
* Biosafety and Biosecurity training at Arizona State University.
* BSL3 training at Arizona State University (December, 2020).