Name: Dr. Pramod Kumar Kushawaha
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Education

Degree	Institution	Year	Subject/Work
DST-INSPIRE Faculty	Babasaheb Bhimrao Ambedkar University, Lucknow, India	2014-2015	Role of IFN-γ signaling in autonomous immunity
DST-INSPIRE Faculty	Motilal Nehru Institute of Technology Allahabad, India	2014-00	Role of IFN-γ signaling in autonomous immunity
Postdoctoral Fellow	National Institute of Immunology, New Delhi, India	2012-2014	Host Signaling Network Underlying Negative Sense RNA virus Infection
PhD	Jawaharlal Nehru University (JNU) New Delhi, India-CSIR-Central Drug Research Institute (CDRI), Lucknow, India	2007-2012	Development of vaccine to Visceral Leishmaniasis
ICMR -JRF	CSIR-Central Drug Research Institute (CDRI), Lucknow, India	2006-2007	Proteomic analysis of *Candida albicans* cell wall proteins, development of monoclonal antibodies.
MSc.	Dr Ram Manohar Lohia Avadh University Faizabad, India	2003-2005	Microbiology
BSc.	Deen Dayal Upadhyay Gorakhpur University Gorakhpur, India	2002	Zoology, Botany and Chemistry

Experience

Position Held	Place of Work	Start Date	End Date	Total Experience
Assistant Professor	Department of Biochemistry and Microbial Sciences, Central University of Punjab, Bathinda	28-12-2015	Till date	
Assistant Professor (DST-INSPIRE Faculty)	Department of Biotechnology, Babasaheb Bhimrao Ambedkar University, Lucknow	Dec. 2014	Dec. 2015	1 Yrs.
Assistant Professor (DST-INSPIRE Faculty)	Department of Biotechnology Motilal Nehru Institute of Technology Allahabad, India	May 2014	Sep.2014	4 Months
Postdoctoral Fellow	National Institute of Immunology, New Delhi, India	May 2012	May 2014	2 Yrs.

Teaching Assignments

Position Held	Place of Teaching	Subjects/Paper
Assistant Professor (DST-INSPIRE Faculty)	Babasaheb Bhimrao Ambedkar University, Lucknow	Immunology and Molecular biology
Assistant Professor	Central University of Punjab, Bathinda	Immunology, Basic & Clinical Microbiology, Industrial Microbiology, Food Microbiology, and Microbial Technology,

Research Project

Ongoing:

1. Functional characterization of the guanylate binding proteins- interferon- γ- inducible 65- KD GTPases in host immune response to Leishmania pathogenesis. (Rs. 35 Lakh – DST INSPIRE Award)
2. Extensive analysis of Interferons (IFNs) Induced GTPases p-65 guanylate binding proteins Involved in host cell autonomous immunity (19Lakhs)

Professional Recognition /Awards/Scholarship

Scholarships

2005	Junior Research Fellow -Indian Council of Medical Research (ICMR-JRF)
2006	CSIR-UGC NET- JRF

Awards

2010 & 2012	Appreciation Award from CSIR-Central Drug Research institute, Lucknow for publishing research papers in Journal of Immunology
2014	**DST-INSPIRE Faculty Award**

Peer Recognition

Life member	Indian Science Congress Association
Life member	National Society for Parasitology
Life member	Indian Immunology Society

Area specializations/Research Interest: Host-pathogen interactions, Cell autonomous immunity, Intestinal Inflammation, Drug and Vaccine development.

1. Cell autonomous immunity.

Interferon- γ (IFN-γ) has central role in cell-autonomous immunity that confer sterilizing immunity-how do actually kill the pathogens or at least restrict their growth. It is an important T helper 1 (Th1) cell cytokine that strongly suppresses the growth and survival of intracellular pathogens and play crucial roles in induction and regulation of innate and adaptive immune responses. Stimulation of innate immune cells such as macrophages and dendritic cells by IFN- γ results in robust gene expression of a number of effector molecules. Prominent among these are immunity-related GTPases such as the Mx proteins, the small GTPases or immunity-related p47 GTPases (IRGs), and large GTPases or p65 guanylate- binding proteins (GBPs). Furthermore, GBPs have recently been shown to induce antibacterial responses involving phagocytic oxidases, autophagic effectors, and inflammasome. GBPs are also reported to restrict the growth of intracellular as well as cytosolic microorganism. The main questions to be remaining answered about GBPs are:

- What are the surface structures recognized by GTPases on membrane compartments harboring different bacteria, protozoa and viruses?

- How do IFN-inducible GTPases detect cytosolic pathogens?
- Does detection uniformly lead to inflammasome activation or autophagic engulfment?
- What are the host effector pathways solicited by different GTPases to restrict microbial replication?
- What are the pathogen-encoded tactics used to evade them?

This type of studies could reveal novel drug/vaccine target against intracellular pathogens.

2. Gut Microbiota and Inflammation:

Intestine of the healthy human intestine is colonized by as many as 10^{14} bacteria belonging to more than 500 different species forming a microbial ecosystem of diversity, termed the microbiota. Various bacterial members of the microbiota engage in a physiological network of cooperation and competition within several layers of complexity. Wide variety of physiological and pathological processes that are influenced by the commensal microbiota. Altered microbiota composition is linked with an increasing number of human disease conditions, such as inflammatory bowel diseases (IBD), type 2 diabetes, obesity, allergies and colorectal cancer due to excessive inflammation. Guanylate-binding proteins (GBPs) are induced by IFN induced effector molecules play crucial role in a variety of cell processes. GBPs have recently emerged as central orchestrators of immunity to infection, inflammation, and neoplastic diseases. Clinical approaches to a wide spectrum of important human diseases may be advanced by a better understanding of the basic biology of these IFN-induced GTPases.

Publications:

Research Papers

1. Bais SS, Ratra Y, Khan NA, Pandey R, **Kushawaha PK**, Tomar S, Medigeshi G, Singh A, Basak S (2019): Chandipura Virus Utilizes the Prosurvival Function of RelA NF-κB for Its Propagation. J Virol. 2019 Jun 28;93(14).
2. Tripathi CP, **Kushawaha PK**, Sangwan RS, Mandal C, Misra Bhattacharya S, Dube A (2017): Withania somnifera chemotype NMITLI 101R significantly increases the efficacy of antileishmanial drugs by generating strong IFN-γ and IL-12 mediated immune responses in Leishmania donovani infected hamsters. Phytomedicine. Nov. S0944-7113(16)30216-1. Impact Factor -2.93.
3. Joshi M, Yadav NK, Rawat K, Tripathi CP, Jaiswal AK, Khare P,Tandon P, Baharia RK , Das S, Gupta R, **Kushawaha PK** , Sundar S , Sahasrabuddhe AA, Dube A (2016): Comparative analysis of cellular immune responses in treated Leishmania patients and hamsters against recombinant Th1 stimulatory proteins of Leishmania donovani. Front. Microbiol. March 2016 | Volume 7 | Article 312| Impact Factor- 3.989.
4. Jaiswal, Khare P, Joshi S, **Kushawaha PK**, Sundar S, Dube A (2014): Th1 stimulatory proteins of Leishmania donovani: Comparative cellular and protective responses of rTriose phosphate isomerase, rProtein disulfide isomerase and rElongation factor-2 in combination with rHSP70 against visceral leishmaniasis. PLoS One. Sep 30;9(9): e108556. Impact Factor-3.23
5. Tripathi CD, Gupta R, **Kushawaha PK,** Mandal C, Misra Bhattacharya S, Dube A (2014). Efficacy of Withania somnifera chemotypes NMITLI - 101R, 118R and Withaferin A against experimental visceral leishmaniasis. Parasite Immunology, 36, 253–265. Impact Factor-2.2
6. Gupta R, Kumar V, **Kushawaha PK,** Tripathi CP, Joshi S, Sahasrabuddhe AA, Mitra K, Sundar S,

Siddiqui I, Dube A (2014): Characterization of Glycolytic Enzymes - rAldolase and rEnolase of Leishmania donovani, Identified as Th1 Stimulatory Proteins, for Their Immunogenicity and Immunoprophylactic Efficacies against Experimental Visceral Leishmaniasis. PLoS One, 9(1): e86073. Impact Factor-3.23

7. Gupta R, **Kushawaha PK**, Tripathi CD, Sundar S, Dube A (2012): A novel recombinant Leishmania donovani p45-a partial coding region of methionine aminopeptidase protein generates protective immunity by inducing Th1 stimulatory response against experimental visceral Leishmaniasis. International Journal of Parasitology, May 1;42(5):429-35. Impact Factor-3.83
8. Gupta R *, **Kushawaha PK** *, Samant M, Jaiswal AK, Baharia AK, Dube A (2012). Treatment of Leishmania donovani- infected hamsters with miltefosine: analysis of cytokine mRNA expression by real- time PCR, lymphoproliferation, nitrite production and antibody response. J Antimicrob Chemother. 2012 Feb;67(2):440-3.* Equally contributed. Impact Factor-5.33
9. **Kushawaha PK,** Gupta R, Tripathi CD ,Khare P, Jaiswal AK,Sundar S, Dube A (2012): Leishmania donovani Triose Phosphate Isomerase: a potential vaccine target against Visceral Leishmaniasis. PLoS One, Volume 7 | Issue 9 | e45766. Impact Factor-3.23
10. **Kushawaha PK**, Gupta R, Tripathi CD , Sundar S, Dube A (2012): Evaluation of Leishmania donovani Protein disulfide isomerase as a potential immunogenic protein / vaccine candidate against visceral leishmaniasis. PLoS One, Volume 7/Issue 4/ e356770. Impact Factor-3.23
11. **Kushawaha PK**, Gupta R, Sundar S, Sahasrabuddhe AA and Dube A (2011). Elongation Factor-2- a Th1 stimulatory protein of Leishmania donovani generates strong IFN-γ and IL-12 response in cured Leishmania-infected patients/hamsters and protects hamsters against Leishmania challenge. J Immunol, 187: 6417–6427. Impact Factor-4.92
12. Samant M, Gupta R, Kumari S, Misra P, Khare P, **Kushawaha PK**, Sahashrabuddhe AA, Dube A (2009).Immunization with the DNA Encoding N-terminal domain of Proteophosphoglycan (PPG) of *Leishmania donovani* generates Th-1 type immuno-protective response against Experimental Visceral Leishmaniasis. J Immunol Jul 1; 183(1):470-9. Impact Factor-4.92
13. Misra P, Khaliq T, Dixit A, SenGupta S, Samant M, Kumari S, Kumar A, **Kushawaha PK,** Majumder HK, Saxena AK, Narender T, Dube A (2008). Antileishmanial activity mediated by apoptosis and structure – based target study of Peganine hydrochloride, an approach for rational drug design. J Antimicrob chemother. Nov, 62 (5):998-1002. Impact Factor-5.33

Workshop/Conferences

Attended /Participated

1. Reema Gupta, **Pramod Kumar Kushawaha**, Mukesh Samant and Anuradha Dube. Cloning, overexpression and Purification of *Leishmania donovani* Enolase in HUGO'S 13th Human genome meeting, Hyderabad, [India], September 27th-30th, 2008.
2. Reema Gupta, **Pramod Kumar Kushawaha**, Mukesh Samant and Anuradha Dube. Expression and purification of Calreticulin from *Leishmania donovani* clinical isolates in 20th National Congress of Parasitology at Shillong, [India], November 3rd-5th, 2008.
3. **Pramod Kumar Kushawaha**, Reema Gupta, Mukesh Samant and Anuradha Dube. Cloning, expression and purification of *Leishmania donovani* nucleoside diphosphate kinase b in 20th National Congress on Parasitology at Shillong, [India], November 3rd-5th 2008.

4. **Pramod K Kushawaha**, Reema Gupta, Mukesh Samant, Rati Tandon, Rajendra K Baharia and Anurad Dube. Triose Phosphate Isomerase (TPI) - a potential Th1 stimulatory protein: Cloning, expressio purification and assessment of its cellular response in Leishmania-infected cured hamsters in Fourth Wo Congress on Leishmaniasis at CDRI, Lucknow [India], February 3rd-7th, 2009.
5. Mukesh Samant, Reema Gupta, Pragya Misra, Prashant Khare, **Pramod Kumar Kushwaha** and Anurad Dube. Cloning and expression of Proteophosphoglycan3 (ppg3) of *Leishmania donovani* and its evaluation DNA vaccine candidate in Fourth World Congress on Leishmaniasis at CDRI, Lucknow [India], February 3 7th, 2009.
6. Reema Gupta, **Pramod K. Kushawaha**, Mukesh Samant, Anil K. Jaiswal, Rajendra Baharia and Anuradha Dube. Miltefosine treatment of *Leishmania donovani* infected hamsters generates Th1 type of response as evidenced by Real-Time PCR in Xth International Symposium on vectors and vector borne diseases at Goa,[India], November 4th-6th, 2009.
7. **Pramod K. Kushawaha,** Reema Gupta, Prashant Khare, Pragya Misra and Anuradha Dube. Induction of Th1 type response by recombinant Protein Disulfide Isomerase (PDI), a potential vaccine candidate against Visceral Leishmaniasis in Xth International Symposium on vectors and vector borne diseases at Goa, [India], November 4th-6th, 2009.
8. Reema Gupta, **Pramod K. Kushawaha,** Mukesh Samant and Anuradha Dube. Localisation of aldolase, a potential drug target, in glycosomes and flagella of *Leishmania donovani* in IVrth International Symposium on Current Trends in Drug Discovery and Research, CDRI, Lucknow [India], February 17th-21st, 2010.
9. Reema Gupta, **Pramod K. Kushawaha,** Mukesh Samant and Anuradha Dube. Enolase (2-phospho-D-glyceratehydrolase): a potential antileishmanial drug target in IVrth International Symposium on Current Trends in Drug Discovery and Research, CDRI, Lucknow [India], February 17th-21st, 2010.
10. **Pramod K. Kushawaha,** Reema Gupta, Rajendra Baharia and Anuradha Dube. Cloning and overexpression of elongation factor 2 – a possible drug target from *Leishmania donovani* in IVrth International Symposium on Current Trends in Drug Discovery and Research, CDRI, Lucknow [India], February 17th-21st, 2010.
11. R. Gupta, **P. K. Kushawaha**, M. Samant, P. Khare, A. K. Jaiswal, R. Baharia, R. Tandon and A. Dube. Induction of Th1-type cellular responses in curing/exposed Leishmania-infected patients and hamsters against recombinant immunostimulatory proteins of *Leishmania donovani* identified through proteomics in XXII International Congress of Parasitology, Melbourne, [Australia], August 15th-20th, 2010.
12. Reema Gupta, **Pramod K Kushawaha,** Chandra Dev Pati Tripathi, Shyam Sundar and Anuradha Dube. A novel recombinant *Leishmania donovani* p45-a partial coding region of methionine aminopeptidase generates protective immunity by inducing Th1 stimulatory response against experimental visceral Leishmaniasis in ICABS, at Kannur University, Kannur [India], 15th -17th March, 2012.
13. Mukesh Samant, Reema Gupta, Shraddha Kumari, Pragya Misra, Prashant Khare, **Pramod Kumar Kushawaha**, Amogh Anant Sahasrabuddhe, and Anuradha Dube: Immunization with the DNA-encoding N-terminal domain of Proteophosphoglycan of Leishmania donovani generates Th1-Type immunoprotective response against experimental visceral leishmaniasis. Ninth Annual Quebec Molecular Parasitology Symposium Leacock Building, McGill University, Department of Microbiology and Immunology Montréal, Québec [Canada] June 18th and 19th, 2009.
14. Reema Gupta, **Pramod K Kushawaha,** Chandra Dev Pati Tripathi and Anuradha Dube. Evaluation of

recombinant Leishmania donovani Enolase as a suitable vaccine candidate against experimental visceral leishmaniasis in SBC, at CIMAP, Lucknow, [India], 12th -15th November, 2011.

15. Rajendra K Baharia, Rati Tandon, **Pramod. K Kushawaha**, Reema Gupta, Sanchita Das, and Anuradha.Dube. Molecular Characterization of a novel hypothetical protein of Leishmania donovani as a potential vaccine /drug in the SBC, at CIMAP, Lucknow, [India], 12th -15th November, 2011.
16. Rajendra K Baharia, Rati Tandon, **Pramod K Kushawaha**, Reema Gupta, Amogh A Sahasrabuddhe and Anuradha Dube. Molecular and immunological characterization of Nucleosomal Histone Proteins of Leishmania donovani in 23rd National Congress of Parasitology at Chennai, [India], 18th-20th November, 2011.
17. Anuradha Dube, Chandra dev Pati Tripathi, Sumit Joshi, Reema Gupta, **Pramod K Kushawaha**, Anil K Jaiswal, Prashant Khare, Rati Tondon, Rajendra Baharia, Sanchita Das, Shyam Sundar. Feasibility of ThI stimulatory polyproteins identified through proteomics as potent vaccine candidates for development of synthetic/ DNA vaccine against visceral leishmaniasis, in Fifth World Congress on Leishmaniasis at at Porto de Galinhas, PE, [Brazil], 13th to 18th May, 2013.
18. Chandra Dev Pati Tripathi, Prashant Khare, **Pramod K. Kushawaha**, Reema Gupta, Shailja Misra Bhattacharya and Anuradha Dube. Immunoprophylactic efficacy of Withania somnifera chemotype 101R against *Leishmania donovani* infection in golden hamster, in International Symposium on Current Trends in Drug Discovery and Research, CDRI, Lucknow [India], 26th to 28th February, 2013.
19. Chandra Dev Pati Tripathi,, **Pramod K. Kushawaha,** Reema Gupta, Prashant Khare, Shailja Misra Bhattacharya and Anuradha Dube. Withania somnifera chemotype 101R augment the anti leishmanial efficacy of miltefosine, paromomycine and amphotericin B in *Leishmania donovani* infected hamster, Fifth World Congress on Leishmaniasis at at Porto de Galinhas, PE, [Brazil], 13th to 18th May, 2013.
20. **Pramod K Kushawaha,** Chandra Dev Pati Tripathi, Poornima Singh and Anuradha Dube**.** Leishmania donovani Triose phosphate isomerase and Protein disulfide isomerase elicits Th1 immune response in hamsters. 3rd Lucknow Science Congress and National Conference on "Science for Society: An Interdiscplinary Approach", at Lucknow, 31st October – 2nd November, 2015.

Workshops:

- Successfully completed Wet-Laboratory Basic Flowcytometry Course from 10th to 12th March 2008, on a BD FACS Calibur at the BD Biosciences Training Centre, Gurgaon, India.
- Participated the qPCR (Quantitative PCR) Workshop (Experimental Design to Data Analysis) conducted on 17th to 18th May 2010 at BioRad Laboratories, India.
- Participated in a workshop on Molecular Simulation, and Chemotherapeutic approaches Towards New Drug Development, from 24/ 02/ 2011 to 26/ 02/ 2011, Organized by Karunya University, Coimbatore, India.

Research Grants

Title of the project	Funding agency	Value of the project (Lakhs)	Project Duration (in months)	Status
1. Functional characterization of the guanylate binding	Department of Science	35.0	60	On going

	proteins- interferon-γ- inducible 65- KD GTPases in host immune response to Leishmania pathogenesis. 2. Extensive analysis of Interferons (IFNs) Induced GTPases p-65 guanylate binding proteins Involved in host cell autonomous immunity.	and Technology (DST) DST	Rs.19 lakh	24	On going

Collaborations:

1. National Institute of Immunology, New Delhi, India.
2. Punjab University, Chandigarh, India.