

Faculty CV

Name

Radheshyam Maurya

Designation

Associate Professor

Email

rmusl@uohyd.ac.in

Phone/mobile number

040-23134532

Lab/Office room number

F-44

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https://scholar.google.co.in/citations?user=5t_0XvwAAAAJ&hl=en&authuser=1

Broad areas of research (only keywords)

Drug resistance & discovery and Immunity

Professional Experience

1. Raman Post-Doctoral Fellowship under “Indo-US 21st Century Knowledge Initiative” program (2013-2014) as a Post-Doctoral Fellow to worked at Dr. Hira Nahasi lab, CBER/FDA, USA.
2. ICMR-DHR International Fellowship as a Biomedical Scientist (Long Term) 2019-2020 to Worked at Dr. David Sacks Lab, NIAID, NIH, USA.

Education/Training

PhD

Detailed research interests (Upto 2 paragraphs or 10 bullet points)

The primary focus of my research is to understand the mechanism of Infection and Immunity, drug resistant mechanism, Drug discovery & diagnostic markers visceral leishmaniasis (VL). VL is a life-threatening disease characterized by uncontrolled parasitization in the spleen, liver, and bone marrow. We first time demonstrated that there are six major proteins that were upregulated in Miltefosine-resistant parasites, among which we characterized iron superoxide dismutase, and when we used gene knockdown approaches and silenced the gene function, we observed that the parasite became sensitive towards Miltefosine. Further, we characterized carboxypeptidase (M32) which are also upregulated in miltefosine-resistant parasites. Malnutrition is another primary risk factor that contributes to the development of VL, and we have demonstrated that leptin deficiency during Leishmania infection could lead to the impairment of cell-mediated immunity. We have also reported that leptin enhances the classical phagocytic activities in macrophages, suggesting its immunomodulatory role and controlling visceral leishmaniasis in normal leptin-deficient mice, and induces a T-cell-mediated immune response in malnutrition-coupled *L. donovani* infection. We also identified and validated the antileishmanial compounds from natural products and demonstrated that Withaferin-A isolated from *Withania somnifera* potentially inhibits the enzyme of the folate biosynthesis pathway of parasites in vitro and in-vivo studies.

Selected publications (upto 5)

1. Characterization of differentially regulated carboxypeptidase (metallopeptidase M32) protein in Miltefosine resistant *Leishmania donovani* parasites. Krishan Kumar, Sneha Banerjee, Hemalatha Sanivarapu, Jalaja Veronica, Madhulika Namdeo, Anjali Anand, Shyam Sundar, Musti J Swamy, Radheshyam Maurya. International Journal of Biological Macromolecules. 9th December 2024, Volume 289, 138648. IF-8.5
2. Polyamine-Enriched Exosomes from *Leishmania donovani* Drive Host Macrophage Polarization via Immunometabolism Reprogramming. Prince Sebastian, Madhulika Namdeo, Moodu Devender, Anjali Anand, Krishan Kumar, Jalaja Veronica, Radheshyam Maurya. ACS Infect. Dis. November 8, 2024, 10 (12), 4384–4399. <https://doi.org/10.1021/acsinfecdis.4c00738>. IF-4.5
3. Immunogenicity and protective efficacy of tuzin protein as a vaccine candidate in *Leishmania donovani* infected BALB/c mice. Devender M, Sebastian P, Maurya VK, Kumar K, Anand A, Namdeo M and Maurya R. Front. Immunol. 2024;14: 1294397.doi: 10.3389/fimmu.2023.1294397. IF-7.3
4. Leptin regulates Granzyme-A, PD-1 and CTLA-4 expression in T cell to control visceral leishmaniasis in BALB/c Mice. Iron superoxide dismutase contributes to miltefosine resistance in *Leishmania donovani*.bJ. Veronica, S. Chandrasekaran¹, A. Dayakar, M. Devender, V. K. Prajapati, S. Sundar and R. Maurya*. The FEBS Journal 286 (2019) 3488–3503. IF-4.3.
5. Alti Dayakar, Sambamurthy Chandrasekaran, Jalaja Veronica, Vadloori Bharadwaja, Radheshyam Maurya*. Scientific Report, 2017,7(1): 14664. IF-4.2

Selected projects (upto 5)

1. To evaluate the immunomodulatory properties of *Withania somnifera* leaf extract in visceral leishmaniasis". Ref No. 59/22/2010/BMS/TRM for 3 yrs. ICMR, New Delhi.
2. Role of leptin as a cytokine inducer in case of visceral leishmaniasis caused by *L. donovani* parasite. Ref No. [F.No. 41-137/2012 (SR)] for 3 years. UGC, New Delhi.
3. Functional Characterization of Tuzin in *leishmania donovani* and evaluation of its diagnostics Potential for the detection of Active VL. 3 Years. Ref. No. (EMR/2015/002439) 01/09/2016. SERB, New Delhi.
4. Functional characterization of Iron superoxide dismutase- A (FesODA) in Miltefosine resistant *Leishmania donovani* and Identification of lead inhibitors to improve Miltefosine treatment. File no. 6/9-7(286)/KA/2022/ECD-II. 2 Year. ICMR New Delhi.
5. Functional Characterization of Differentially Regulated Carboxypeptidase (Metallopeptidase M32) Protein in Miltefosine Drug-resistant *Leishmania donovani*. File no. 6/9-7(311)/ 2023-ECD-II dt 23-05-2023. 3 years. ICMR New Delhi

Selected patents (a paragraph or upto 5 bullet points)

1. Patent filed: Withaferin-A inhibits the activity of *Leishmania* specific enzyme Pteridine Reductase1 to prevent the parasite growth. 4962/CHE/2015 dated September 17, 2015.
2. PCT file: A novel synergistic composition for the treatment of Visceral Leishmaniasis. International Application No: PCT/IB2016/055566 dated September 17, 2016.

Current PhD scholars and broad research topics

Discovery of antileishmanial molecules against *Leishmania* parasites - Madhulika Namdev
 Functional characterization Salway's pathways enzyme in *Leishmania donovani* - Anjali Anand
 Functional characterization Miltefosine drug resistant gene of *leishmania* parasites - Kishan Kumar
 Characterization of antigenic membrane protein of *L. donovani* as vaccine candidate -Bondada Manikanta

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