

CURRICULUM VITAE

Dr. Ruchi Singh

Designation: Scientist D

Organization: National Institute of Pathology, Indian Council of Medical Research (India)

Area of Research: Molecular Biology

CONTACT

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EDUCATION

- M.Sc. (Microbiology)
- PhD. National Institute of Pathology-ICMR- Jiwaji University, Gwalior
- PDF Centre for Biologics Evaluation and Research, FDA, USA

RESEARCH INTEREST

Molecular basis of pathogenesis of parasitic disease and drug resistance *Leishmania* and malaria parasite *Plasmodium*. Currently working on various aspects for development of diagnostics and drug resistance markers

AWARDS AND HONOURS

- i) Women Scientist award for best paper in National symposium on "Microbes in Health and Agriculture" organized by School of Life sciences, JNU, New delhi in 2012.
- ii) **Shakuntala Amirchand award** in biomedical sciences -2006 conferred by **ICMR** in Sep 2009.
- iii) **UNESCO L'oreal International fellowship for young women in life sciences-** 2006. **First Indian Recipient** of the award, selected by a special Selection Committee made up of representatives of UNESCO, the L'ORÉAL Foundation, and

Life Sciences research community consisting of member of the International Basic Science Programme (IBSP).

- iv) Awarded JRF and SRF (NET) from Council of Scientific and Industrial Research, Govt. of India (April 1999 - April 2004).
- v) Director's medal for securing Highest marks in B.Sc in University.
- vi) Director's Medal for securing highest marks in B.Sc. Hons (Chemistry)

MEMBERSHIPS & AFFILIATIONS

- Life member, National Academy of Vectors and Vector-borne Diseases, Bhubaneswar, Orissa, India
- American Society of Microbiology

PUBLICATIONS (Selected)

1. Kulshrestha A, Sharma V, **Singh R**, Salotra P. (2014). Comparative transcript expression analysis of miltefosine-sensitive and miltefosine-resistant *Leishmania donovani*. Parasitol Res. 113:1171–1184.
2. **Singh R***, Savargaonkar D, Bhatt R, Valecha N. (2013). Rapid detection of *Plasmodium vivax* in saliva and blood using loop mediated isothermal amplification (LAMP) assay. J Infect. 67(3):245-247. *Corresponding Author
3. Mallick PK, **Singh R***, Singh OP, Singh AK, Bhasin VK, Valecha N. (2013). Reduced heterozygosity at intragenic and flanking microsatellites of pfcr1 gene establishes natural selection based molecular evolution of chloroquine-resistant *Plasmodium falciparum* in India. Infect Genet Evol. 20: 407-412. *Corresponding Author
4. Bhandari V, Kumar D, Verma S, Srividya G, Negi NS, **Singh R**, Salotra P. (2013). Increased parasite surface antigen-2 expression in clinical isolates of *Leishmania donovani* augments antimony resistance. Biochem Biophys Res Commun. 440:646-651.
5. Mallick PK, Sutton PL, **Singh R**, Singh OP, Dash AP, Singh AK, Carlton JM, Bhasin VK.(2013). Microsatellite analysis of chloroquine resistance associated alleles and neutral loci reveal genetic structure of Indian *Plasmodium falciparum*. Infect Genet Evol.19:164-175.
6. Kumar D*, **Singh R***, Bhandari V, Kulshrestha A, Negi NS, Salotra P (2012). Biomarkers of antimony resistance: need for expression analysis of multiple genes to distinguish resistance phenotype in clinical isolates of *Leishmania donovani*. Parasitol Res. 111(1):223-230.*Equal Contribution
7. Srividya G, Kulshrestha A, **Singh R**, Salotra P. (2012) Diagnosis of visceral leishmaniasis: developments over the last decade. Parasitol Res. 110(3):1065-78.
8. Kulshrestha A, **Singh R**, Kumar D, Negi NS, Salotra P. (2011) Antimony-resistant clinical isolates of *Leishmania donovani* are susceptible to paromomycin and sitamaquine. Antimicrob Agents Chemother. 55(6):2916-21.

9. **Singh R**, Kumar D, Duncan RC, Nakhasi HL, Salotra P. (2010). Over-expression of Histone H2A modulates drug susceptibility in *Leishmania* parasites. *Int J Antimicrob Agents* 36(1):50-7.
10. Anvikar AR, Singh DK, **Singh R**, Dash AP, Valecha N. (2010). Vivax malaria presenting with cerebral malaria and convulsions. *Acta Parasitolo.* 55(1):96-8.
11. Valecha N, Pinto RGW, Turner GDH, Kumar A, Rodrigues S, Dubhashi NG, Rodrigues E, Banaulikar SS, **Singh R**, Dash AP, Baird JK. (2009). Case report: Histopathology of fatal respiratory distress caused by *Plasmodium vivax* malaria. *Am J Trop Med Hyg* 81(5): 758-62.
12. Valecha N, Srivastava P, Mohanty SS, Mitra P, Sharma SK, Tyagi PK, Pradhan K, Dev V, **Singh R**, Dash AP, Sharma YD. (2009). Therapeutic efficacy of artemether-lumefantrine in uncomplicated falciparum malaria in India. *Malar J.* 8:107.
13. Kumar D, Kulshrestha A, **Singh R**, Salotra P. *In vitro* susceptibility of field isolates of *Leishmania donovani* to Miltefosine and amphotericin B: correlation with sodium antimony gluconate susceptibility and implications for treatment in areas of endemicity. (2009). *Antimicrob Agents Chemother.* 53(2):835-8.
14. Kumar D, Srividya G, Verma S, **Singh R**, Negi NS, Fragaki K, Kubar J, Salotra P. (2008) Presence of anti Lepp12 antibody : a marker for diagnostic and prognostic evaluation of visceral leishmaniasis. *Trans Roy Soc trop Med and Hyg* 102(2):167-71.
15. Subba Raju BV, **Singh R**, Sreenivas G, Singh S, Salotra P. (2008) Genetic Fingerprinting and identification of differentially expressed genes in isolates of *Leishmania donovani* from Indian patients of Post Kala-azar Dermal Leishmaniasis. *Parasitology.* 135(1): 23-32.
16. Ramesh V, **Singh R**, Salotra P. (2007) Post kala azar dermal leishmaniasis- a critical appraisal. *Trop Med Int Health.* 12(7):848-851.
17. **Singh R**, Kumar D, Ramesh V. Negi NS, Singh S, Salotra P. (2006) High incidence of antimony refractoriness in Indian Kala azar is contributed by anthroponotic transmission via Post kala azar dermal leishmaniasis. *J Infect Dis.* 194: 302-306.
18. Salotra P, **Singh R**. (2006). Challenges in the diagnosis of Post Kala Azar Dermal Leishmaniasis (PKDL). *Ind J. Med Res.*123: 295-310.
19. Salotra P, Duncan R C, **Singh R**, Subba Raju BV, Sreenivas G, Nakhasi HL. (2006). Up regulation of surface proteins in *Leishmania donovani* isolated from patients of post kala-azar dermal leishmaniasis (PKDL). *Microbes and Infection.* 8:637-644.
20. Salotra P, **Singh R**, Duncan R, Nakhasi H. (2005). Microarray based analysis of gene expression in drug resistant *Leishmania donovani* isolated from Kala azar. *Clin. Microbiol. Infect.*11:S2-47-48.
21. Salotra P, **Singh R**. (2005). Rapid and reliable diagnostic test for visceral leishmaniasis. *Ind J Med Res.* 122: 464-467.
22. **Singh R**, Subba Raju BV, Jain RK and Salotra P. (2005). Potential of Direct Agglutination Test (DAT) based on promastigote and amastigote antigens for sero diagnosis of Post Kala Azar Dermal Leishmaniasis. *Clin. Diag. Lab Immunol.* 12:1191-1194.
23. Sreenivas G, Subba Raju BV, **Singh R**, Selvapandiyam A, Duncan RC, Sarkar D, Nakhasi HL, Salotra P. (2004). DNA polymorphism in *Leishmania donovani* that distinguishes patient isolates of Kala-azar and Post kala-azar dermal leishmaniasis. *J. Clin. Microbiol.*9:844-848.

24. Sreenivas G, **Singh R**, A. Selvapandiyan, Negi NS, Nakhasi HL, Salotra P. (2004). Arbitrary –primed PCR for genomic fingerprinting and identification of differentially regulated genes in Indian isolates of *Leishmania donovani*. *Experimental Parasitology*.116:110-118.
25. Sreenivas G, Nasim AA, **Singh R**, Subba Raju BV, Bhatheja R, Negi NS, Salotra P. (2002). Evaluation of potential of amastigote derived antigen in diagnosis of Visceral Leishmaniasis. *Br. J. Biomed. Sci.* 59: 218-222.

Book Chapters

1. **Singh R**, Kulshrestha A, Salotra P .Research in Diagnostic Tools: The Past, Present & Future. In “Kala Azar – Emerging Perspectives and Prospects in South Asia”.Ed. H.P Thakur. Mittal Publications (2011).
2. Poonam Salotra, **Ruchi Singh**, and Karin Seifert \ddot{A} . Visceral Leishmaniasis – Current Treatments and Needs. In *Trypanosomatid Diseases: Molecular Routes to Drug Discovery*, First edition. Edited by T. Jäger, O. Koch, and L. Flohé. Published 2013 by Wiley-VCH Verlag GmbH & Co. KGaA.

EXTRAMURAL PROJECTS:

Ongoing

1. "Evaluation of diagnostic potential of Loop-mediated isothermal amplification for rapid diagnosis of malaria" funded by ICMR (July 2012-2014). **Principal Investigator Sanctioned**
2. "Identification and characterization of artemisinin resistance associated gene(s) in *Leishmania*" funded by ICMR (2014-2017). **Principal Investigator**
3. "Investigations on paromomycin resistance in *Leishmania donovani* using molecular and biochemical tools" funded by ICMR (2014-2017). **Co- Investigator**.

Completed

4. "Gene expression profiling in Miltefosine susceptible and resistant *L. donovani* using genomic microarray" funded by ICMR (2009-2012). **Co- Investigator**.
5. Parasite surface antigen-2(PSA-2) of *Leishmania donovani*: studies on its role in parasite virulence, drug resistance and immunomodulation of host macrophage function. (2009-2012) funded by DST **Role: Co- Investigator**
6. "Basic research study for defining the antimony resistance in *Leishmania* isolated from patients" funded by UNESCO Loreal FWIS. US \$ 40,000. Duration 2 years (2006-2008). **Role: Principal Investigator**.