

## CURRICULUM VITAE

### Dr. Ruchi Singh

**Designation:** Scientist E

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

**Area of Research:** Molecular Biology

#### CONTACT

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#### EDUCATION

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

#### RESEARCH INTEREST

Antimicrobial resistance, Molecular basis of pathogenesis of parasitic disease and drug resistance *Leishmania* and malaria parasite *Plasmodium*.

#### AWARDS AND HONOURS

- **BILL & MELINDA GATES foundation award for Young Investigator** from India and Southeast Asia presented by the International Society for Infectious Diseases at 17th International Congress on Infectious Diseases, Hyderabad, India March 2-5 2016
- 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.
- **Shakuntala Amirchand award** in biomedical sciences -2006 conferred by **ICMR** in Sep 2009.
- **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).

- Awarded JRF and SRF (NET) from Council of Scientific and Industrial Research, Govt. of India (April 1999 - April 2004).
- Director's medal for securing Highest marks in B.Sc in University.
- 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
- International Society of Infectious diseases

## Patent filed:

- Indian patent (application no. 349/DEL/2014 dated 6 Feb, 2014) filed for " Loop mediated isothermal amplification (LAMP) assay for a reliable and rapid diagnosis of *Leishmania* infection".

## PUBLICATIONS (Selected)

1. **Singh R\***, Singh DP, Savargaonkar D, Singh OP, Bhatt RM, Valecha N.(2017). Evaluation of SYBR green I based visual loop mediated isothermal amplification (LAMP) assay for genus and species specific diagnosis of malaria in *P. vivax* and *P. falciparum* endemic regions. J Vector Borne diseases.
2. Mohapatra S, Ghosh A, **Singh R**, Singh DP, Sharma B, Samantaray JC, Deb M, Gaiind R. (2016). Hemozoin Pigment: An Important Tool for Low Parasitemic Malarial Diagnosis. Korean J Parasitol. 54(4):393-7. doi:10.3347/kjp.2016.54.4.393.
3. Gupta P, Sharma R, Chandra J, Kumar V, **Singh R**, Pande V, Singh V. (2016). Clinical manifestations and molecular mechanisms in the changing paradigm of vivax malaria in India. Infect Genet Evol. 39:317-324. doi: 10.1016/j.meegid.2016.02.014.
4. Ramesh V, **Singh R**, K Avishek, Verma A, Deep DK, Verma S, Salotra P. (2015). Decline in clinical efficacy of oral miltefosine in treatment of post kala-azar dermal leishmaniasis (PKDL) in India. PLoS Negl Trop Dis 9(10): e0004093. doi:10.1371/journal.pntd.0004093
5. Ramesh V, Kaushal H, Mishra AK, **Singh R**, Salotra P. (2015). Clinico-epidemiological analysis of post kala-azar dermal leishmaniasis (PKDL) cases in India over last two decades: a hospital based retrospective study. BMC Public Health (2015) 15:1092. DOI 10.1186/s12889-015-2424-8
6. **Singh R\***, Singh DP, Gupta R, Savargaonkar D, Singh OP, Nanda N, Bhatt RM, Valecha N. (2014). Comparison of three PCR based assays for noninvasive diagnosis of malaria: detection of *Plasmodium* parasites in blood and saliva. Eur J Clin Microb Inf Dis. 33(9):1631-9. doi: 10.1007/s10096-014-2121-z. \*Corresponding Author
7. 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.

8. **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
9. Mallick PK, **Singh R\***, Singh OP, Singh AK, Bhasin VK, Valecha N. (2013). Reduced heterozygosity at intragenic and flanking microsatellites of *pfcr* gene establishes natural selection based molecular evolution of chloroquine-resistant *Plasmodium falciparum* in India. *Infect Genet Evol.* 20: 407-412. \*Corresponding Author
10. 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.
11. 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
12. Srividya G, Kulshrestha A, **Singh R**, Salotra P. (2012) Diagnosis of visceral leishmaniasis: developments over the last decade. *Parasitol Res.* 110(3):1065-78.
13. 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.
14. **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.
15. 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.
16. Valecha N, Srivastava P, Mohanty SS, Mittra 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.
17. 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.
18. 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.
19. Ramesh V, **Singh R**, Salotra P. (2007) Post kala azar dermal leishmaniasis- a critical appraisal. *Trop Med Int Health.* 12(7):848-851.
20. **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.

21. Salotra P, **Singh R.** (2006). Challenges in the diagnosis of Post Kala Azar Dermal Leishmaniasis (PKDL). *Ind J. Med Res.*123: 295-310.
22. 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.
23. Salotra P, **Singh R.** (2005). Rapid and reliable diagnostic test for visceral leishmaniasis. *Ind J Med Res.* 122: 464-467.
24. **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.
25. Sreenivas G, Subba Raju BV, **Singh R**, Selvapandiyan 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.
26. 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.
27. 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 Å. 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. "Identification and charecterization of artemisinin resistance associated gene(s) in *Leishmania*" funded by ICMR (2015-2018). **Principal Investigator**
2. "Investigations on paromomycin resistance in *Leishmania donovani* using molecular and biochemical tools" funded by ICMR (2015-2018). **Co- Investigator.**

## Completed

1. "Evaluation of diagnostic potential of Loop-mediated isothermal amplification for rapid diagnosis of malaria" funded by ICMR (March 2012-2014). **Principal Investigator**
2. "Gene expression profiling in Miltefosine susceptible and resistant *L. donovani* using genomic microarray" funded by ICMR (2009-2012). **Co- Investigator**.
3. 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**
4. "Basic research study for defining the antimony resistance in *Leishmania* isolated from patients" funded by UNESCO Loreal FWIS. (2006-2008). **Role: Principal Investigator**.