

Curriculum Vitae**Rakesh K. Singh, Ph.D**

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Academic, Research, and Administrative Credentials in brief

≠	Research Specialization	Immunology and Parasitic Vaccines
≠	Teaching Experience	20 ⁺ years (Since November, 2005)
≠	Research Experience (post PhD)	23 ⁺ years (December, 2002)
≠	Research Projects	Completed: 11 Ongoing: 02
≠	Ph.D. Supervision	19; PDF: 04
≠	Research Publications	110 ⁺
≠	Citations	5735 ⁺ [Total Impact Factor: 450 ⁺ ; h-index: 38; i10-index: 77]
≠	Patents	01 (granted, Indian); 01 (In-process)
≠	Technology Commercialized	01 (Curcumin Quantum Dots; CurQDs)
≠	Administrative Experience	
	Warden:	09 years
	Head of Department:	01 ⁺ year (continuing)

Academic/Research Experiences

- ≠ **Professor of Biochemistry** (Nov.2020-present), Department of Biochemistry, Institute of Science (I.Sc.), Banaras Hindu University, Varanasi (VNS), India.
- ≠ **Associate Professor** (Nov.2017-Oct.2020), Department of Biochemistry, I.Sc., BHU, VNS, India.
- ≠ **Professor** (Jan.2016-Jan.2017, on lien), Department of Biotechnology, Central University of South Bihar, Gaya, India.
- ≠ **Visiting Researcher** (Apr.2014-Mar.2015), Division of Emerging Transfusion, Transmitted Diseases, Centre for Biological Research, Food and Drug Administration, Silver Spring, USA.
- ≠ **Assistant Professor** (Nov.2005-Oct.2017), Department of Biochemistry, I.Sc., BHU, VNS, India.
- ≠ **Laboratory Director** (Jan. 2005-Oct. 2005), Kala-azar Medical Research Centre, Muzzafarpur, Bihar
- ≠ **Reserch Associate** (Jan. 2004 – Dec. 2004), Kala-azar Medical Research Centre, Muzzafarpur, Bihar
- ≠ **Immunoparasitologist/Postdoctoral Researcher** (Dec.2002-Dec. 2003), Department of Medicine, Institute of Medical Science, BHU & Unit of Research 165, Genetics and Evolution of Infectious Diseases" GEMI, UMR CNRS/IRD 2724, IRD center, Montpellier, France (Nov.-Dec. 2003).

Administrative Appointments

- ≠ **Head of the Department:** Feb. 01, 2025 onwards, Department of Biochemistry, Institute of Science, BHU, Varanasi 221005
- ≠ **Administrative Warden** (August 01, 2021-July 31, 2024), Postdoctoral and Ph.D. Scholars Hostel, I.Sc., BHU, VNS, India
- ≠ **Head of the Centre** (March 2016 -January 2017, Centre for Biological Sciences, Central University of South Bihar, Gaya, India.
- ≠ **Associate Warden** (July 2008 –March 2014), PG/Ph.D. hostels, I.Sc., BHU, VNS, India

Awards and Fellowships

- ≠ Dr. Rajendra Prasad Oration Award (2022) by ICMR-Rajendra Memorial Research Institute of Medical Sciences, Patna, Bihar, India
- ≠ IUSSTF Fellow (2013), Indo-US Science and Technology Forum IUSSTF Fellow, New Delhi
- ≠ EGIDE Fellow (2004), Campus France, France

Teaching Experience

- ≠ During the past 20⁺ years, I have been teaching various courses in Biochemistry/Biology to graduate, postgraduate, and Ph.D. students. The areas of my teaching expertise are Immunology (clinical/research/general/vaccine), Research Methodologies, Analytical Tools and Techniques, Clinical Biochemistry, Bioenergetics and Metabolism. As a teacher, I believe in offering interactive sessions to the students using both, conventional and modern teaching tools.

Research Interests

- ≠ **Parasitic vaccines (design and development), APC-T cells cross-talk, T cells functionality, Quantum Dots and Nano-based drugs preparation**
Primarily my research work is focused to identify host-parasite mechanisms and develop tools for vaccines against *Leishmania* parasites, in particular and parasitic diseases, in general. We have identified host specific immune mechanisms that could be manipulated to enhance the immunogenicity and further usability of *Leishmania* antigens as vaccine candidates. We have also developed a low carbon fatty acid based vaccine-delivery-adjuvantation platform for parasitic vaccines.

Research Contributions

1. A novel vaccine against *Leishmania* parasites

The poor immunogenicity of parasitic antigens limits their usability as vaccine candidate that is why vaccines against parasites are not available except malaria. The major outcome, of my two decades spanning extensive research work on leishmaniasis, is the identification of protective immune correlates that could be employed to increase immunogenicity of parasitic antigens, and thus the protective efficacy of vaccines against *Leishmania*, in particular and other parasites, in general. We unveiled, for the first time, that *Leishmania* antigens undermine immune response through activation of immune inhibitory mechanisms, which is their evolutionary acquired ability.

Application:

At present, we are validating the protective efficacy of our newly developed vaccine formulations in long-term protective immunity.

2. Development of vaccine-delivery-adjuvantation platform for parasitic vaccines

Application: The delivery vehicle is highly effective in delivering vaccines antigens along with enhancing the protective efficacy of parasitic immunogens. At present this product is undergoing preclinical evaluation.

Translational Contributions

- ≠ **Product: Curcumin quantum dots** (Singh AK, Prakash P, Bansal M, **Singh RK** (2018). Method for the Preparation of Curcumin Quantum Dots (CurQDs), IPR, Patent No.: 416463 (Application No.: 201811029417)
Application: The product (**CurQDs**) is based on curcumin molecules, a primary constituent of Turmeric. The quantum dots possess excellent antibacterial properties more specifically against those who form biofilm, which is difficult to target. In addition, CurQDs also exhibits other biological/pharmacological properties, which is being harnessed to develop other products.
Technology Transfer:
The technology has been transferred to a Pvt. company for its commercialization through Banara Hindu University, Varanasi, India. We are looking forward launch of first product in July 2026.

Research (Laboratory) Expertise

- ≠ My research understandings of various tools and techniques are not only limited to their applications but I am also well proficient with their theory and instrumentation. During my research journey I have been working with various immunological and molecular techniques like flow cytometry (Extensively worked on Attune NXT, ThermoFisher, BD LSR Fortessa, Calibur, Aria, etc), IHC, blotting techniques, Co-IP, microarray, miRNAs studies (dry and wet), PCR techniques, cloning and subcloning, RNA/DNA/Antibodies purification, etc. Primary and secondary cell lines culture and maintenance. I have expertise in handling fibroblasts, macrophages, lymphocytes, and cell lines like 3T3, HaCat, RAW 264.5, and *Leishmania* parasite culture. I am also trained at Food and Drug

Administration and National Institute of Health (US-FDA/NIH, USA) in animal handling/experimentation. I am also exposed and have working experiences in GLP/GMP grade labs. I have also established an Immunological Research Laboratory here at BHU with all required facilities required for vaccine research.

Research Collaborations

- ≠ Division of Emerging Transfusion Transmitted Diseases, Food and Drug Administration, USA, Silver Spring, MD
- ≠ Department of Biochemical Engineering, Indian Institute of Technology, BHU, Varanasi, India
- ≠ Department of Chemistry, Institute of Science, BHU, Varanasi, India
- ≠ Centre for Experimental Medicine and Surgery, Institute of Medical Sciences, BHU, Varanasi, India
- ≠ Rajendra Memorial Research Institute of Medical Sciences, Indian Council of Medical Research, Ministry of Health and Family Welfare, Patna, Bihar, India

Extramural Funding

≠ On-going

1. Development of Implantable Engineered-Cells-Nano-Polymer-hydrogel based immune therapeutic tool for pancreatic cancer. [Co-PI; In collaboration with IIT, BHU, Varanasi, India]
Funder: STARS, Indian Institute of Science, Bangalore, Ministry of Science and Technology, India [2023-2026] USD 55K (approx.)
2. Development of Implantable hydrogel based immunotherapeutic patch for Treatment of Oral cancer and associated microbial infections through Cell therapy approach [Co-PI; In collaboration with IIT, BHU, Varanasi, India]
Funder: Science and Engineering Board, Ministry of Science and Technology, India [2024-2027] USD 80K (approx.)

≠ Completed

1. Field evaluation of novel diagnostic tests for visceral leishmaniasis: Freeze dried DAT, rK39 and rK26 dipstick and KATEX (latex agglutination urine test).
Funder: Tropical Diseases Research, World Health Organization, Geneva [2004 – 2005] USD 40K (approx.)
2. Identification of toll-like receptor related antigens in Leishmania donovani.
Funder: Department of Science and Technology, Govt. of India [2007-2010] USD 30K (approx.)
3. A study on the diagnostic and prophylactic potentials of urinary leishmanial proteins (ULPs).
Funder: Council of Science Education and Research, Govt. of India [2009-2012] USD 35K (approx.)
4. Discovery of leishmanial excretory-secretory antigens (LESAs) linked to macrophage dysfunction.
Funder: Council of Science and Technology, Govt. of Uttar Pradesh, India [2009-2012] USD 10K (approx.)
5. Identification of Leishmanial antigens modulating NRAMPT1 iron efflux pump function.
Funder: Department of Biotechnology, Govt. of India [2009-2013] USD 60K (approx.)
6. Delineation of miRNAs role in macrophage dysfunction during L. donovani infection.
Funder: Science and Engineering Research Board, MST, Govt. of India [2013-2016] USD 95K (approx.)
7. Identifying the role of two immune inhibitory receptors, CD200R and CD300a, on CD4+ T cells function in parasitic infection and vaccine induced immunity
Funder: Department of Biotechnology, Govt. of India [2019-2022] USD 125K (approx.)
8. Delineating the role of CD200 signaling on CD4+ T cells effectors properties and memory conversion in vaccine induced immunity during parasitic infection.
Funder: Council of Science and Technology, Govt. of Uttar Pradesh, India [2021-2024] USD 15K (approx.)
9. Delineating the potential of svarna bhasma (svarna prashana therapy) to induce long term immunological memory.
Funder: Institution of Eminence, BHU, India [2021-2024] USD 12K (approx.)
10. A preclinical study to evaluate Swarna Bhasma (SB) adjuvanted oil-in-water based novel vaccine-delivery-adjuvination system for its efficacy against Leishmania parasites
Funder: Institution of Eminence, BHU, India [2021-2024] USD 12K (approx.)
11. Evaluation of the immunogenicity and CD4+ T cell memory response of whole-killed Leishmania vaccine adjuvanted with anti-CD200 and anti-CD300a antibodies
Funder: Indian Council of Medical Research, Govt. of India [2022-2025] USD 62K (approx.)

Publications

Authored and co-authored (with collaborative groups) more than 100 peer-reviewed publications.

1. Mahapatra B, Singh A, Dubey VK, Bajpai S, **Singh RK***. CD47-SIRP α axis blockade enables CD4⁺ T cells to acquire Th1 phenotypes against *Leishmania donovani* antigens. **The Journal of Immunology**. 2026 (submitted)
2. ***Singh RK (GBD 2023 TB HIV Collaborators)**. Global, regional, and national burden of tuberculosis and multidrug-resistant tuberculosis by HIV status, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023. **Lancet Infect Dis**. Published online July 1, 2026. doi:10.1016/S1473-3099(26)00295-1
3. ***Singh RK (GBD 2023 TB Collaborators)**. Global, regional, and national burden of tuberculosis and multidrug-resistant tuberculosis by HIV status, 1990–2023: a systematic analysis for the Global Burden of Disease Study 2023. **The Lancet**, 2026 (revised ms submitted).
4. Keshari M, Jaiswal S, Singh AK, Agrahari K, **Singh RK**, Kumar R. Amphotericin B encapsulation and controlled release from PSSA-b-PMVA micelles for anti-leishmanial treatment. **New J. Chem.**, 2026, 50, 2662-2681
5. ***Singh RK (GBD 2023 Disease and Injury and Risk Factor Collaborators*)**. Burden of 375 diseases and injuries, risk-attributable burden of 88 risk factors, and healthy life expectancy in 204 countries and territories, including 660 subnational locations, 1990–2023: a systematic analysis for the Global Burden of Disease Study 2023. **The Lancet**, 2025, 406 (10513), 1873-1922.
6. ***Singh RK (GBD 2023 Disease and Injury and Risk Factor Collaborators*)**. Global burden of 292 causes of death in 204 countries and territories and 660 subnational locations, 1990–2023: a systematic analysis for the Global Burden of Disease Study 2023. **The Lancet**, 2025, 406 (10513), 1811-1872.
7. Singh A, Mahapatra B, Srivastava A., Singh S, Das P, **Singh RK***. Antigens activated CD200R⁺SOCS3⁺CD4⁺T cells are critical to *Leishmania* pathogenesis and a distinctive target for vaccine development. **Vaccine**, 2025; 62, 127501
8. S Singh, **RK Singh**. Mycobacterium spp. exposure, childhood vaccinations, and early childhood brain and CNS cancers. **Frontiers in Immunology** 2025, 16, 1497436.
9. Yadav CI, Anamika, Singh R, Kumar A, **Singh RK**, Drew GB, Manar KK, Singh N. Anti-leishmanial Study of Discrete Tetrahedral Zinc(II) β -oxodithioester Complexes. **New Journal of Chemistry** 2025, 49, 484-496.
10. Keshari M, Jaiswal S, Mahapatra B, Singh RK, Kumar R. RAFT Synthesis of Self-Assembled Poly(Acrylic Acid)-b-poly(N-Acryloyl-L-Tryptophan) Polymer: Investigating Micelle Formation and Biocompatibility. **Macromolecular Chemistry and Physics**, 2025, <https://doi.org/10.1002/macp.202500108>.
11. Mahapatra B, Singh A, Banerjee A, Sirohi S, Singh S, Dubey VK, **Singh RK***. A squalene oil emulsified MPL-A and anti-CD200/CD300a antibodies adjuvanted whole-killed *Leishmania* vaccine provides durable immunity against *L.donovani* parasites. **Vaccine**, 2024, <https://doi.org/10.1016/j.vaccine.2024.126373>.
12. Singh A, Mahapatra B, Banerjee A, Singh S, Singh Sangram, Dubey VK, **Singh RK***. CD200R⁺ antigen activated CD4⁺ T cells are main IL-10 producing phenotype and an important determinant of visceral leishmaniasis pathogenesis. **Cytokine**, 2024, 173:156435. doi: 10.1016/j.cyto.2023.156435.
13. Kumari K, Singh A, Chaudhary A, **Singh RK**, Shanker A, Kumar V, Haque R*. Neoantigen identification and Dendritic Cell-Based vaccine for Lung Cancer Immunotherapy. **Vaccines**, 2024, 12, 498. <https://doi.org/10.3390/vaccines12050498>.
14. Sharma S, Anand A, Singh R, **Singh RK***, Verma S*. Peptide-triggered IL-12 and IFN- γ mediated immune response in CD4⁺ T-cells against *Leishmania donovani* infection. **ChemComm.**, 2024: 60, 4092-4095.
15. Dixit J, Kumar P, Singh R Verma P, **Singh RK**, Mihsra SK, Singh J, Tiwari KN*. Bio-based synthesis of silver nanoparticles using leaf extract of *Uraria picta* (Jacq.) Desv. ex DC.: Characterization and evaluation of its activity against *Leishmania donovani* **Biomass Conversion and Biorefinery**, 2024 <https://doi.org/10.1007/s13399-024-05736-6>.
16. Singh R, Anand A, Mahapatra B, Saini S, Singh A, Singh S, Kumar V, Das P, **Singh RK***. Adjuvantation of whole-killed *Leishmania* vaccine with anti-CD200 and anti-CD300a antibodies potentiates its efficacy and provides strong protection against virulent parasites. **Molecular Immunology**, 2023, 163; 136–146.

17. Singh S, Diwakar A, **Singh RK**. BCG Vaccination Policy and Pediatric Brain and CNS Tumor Incidences. *Frontiers in Immunology*, **2023**, 14, doi: 10.3389/fimmu.2023.1174006.
18. Bose P, Agrahari AK, Singh R, Singh M, Kumar S, **Singh RK**, Tiwari VK. Click Inspired Synthesis of Piperazine-triazolyl Sugar-conjugates as potent anti-Hela Activity. *Carbohydrate Research*, **2023**, 529, 108846, doi.org/10.1016/j.carres.2023.108846.
19. Saini S, Anand A, Mahapatra B, Singh A, Sirohi S, Singh S, **Singh RK***. Swarna bhasma induces antigen presenting abilities of macrophages and helps antigen experienced CD4+ T cells to acquire Th1 phenotypes against Leishmania donovani antigens. *Biol. Trace Ele. Res.* **2023** 1-11. doi: 10.1007/s12011-023-03659-3.
20. Singh S, Kishore D, **Singh RK***. Trained Immunity" from Mycobacterium spp. exposure (BCG vaccination and environmental) may have an impact on the incidence of early childhood leukemia. *Frontiers in Immunology*, **2023**, 14:2624. doi: 10.3389/fimmu.2023.1193859.
21. Bose P, Jaiswal M, Singh S, **Singh RK**, Tiwari VK. Growing Impact of Sialic Acid-containing Glycans in Future Drug Discovery. *Carbohydrate Research* **2023**; <https://doi.org/10.1016/j.carres.2023.108804>.
22. Anand A, Singh R, Saini S, Mahapatra B, Singh A, Singh S, **Singh RK***. Leishmania donovani induces CD300a expression to dampen effector properties of dendritic cells and antigen activated CD8+ T cells. *Acta Tropica*, **2023**, <https://doi.org/10.1016/j.actatropica.2023.106826>.
23. Afgan S, Pal K, Nandy K, Yadav P, Jaiswal S, Kuma R and **Singh RK***. Synthesis & characterization of amino acid-based acrylamide derived amphiphilic block copolymer using a new xanthate and its influence on cell cytotoxicity & cell viability. *Eu. Polymer Journal*, **2023**, DOI:10.1016/j.eurpolymj.2023.111853.
24. Mishra SK*, Sinha S, Singh AK, Upadhyay P. Kalra D, Kumar P, Tiwari KN, Singh R, **Singh RK**, Kumar A, Triapthi AK, Chauhan BS, Srikrishna S. Green Synthesis, Characterization, and Application of Ascophyllum Nodosum Silver Nanoparticles, *Regenerative Engineering and Translational Medicine*, **2023**, 9: 518-532.
25. Singh S, **Singh, RK**. Nutritional interventions to augment immunity for COVID-19. *Nutr. Diabetes* **2022**, 12, 13. <https://doi.org/10.1038/s41387-022-00194-3>.
26. Singh S, Kishore D, **Singh RK**. Potential for Further Mismanagement of Fever During COVID-19 Pandemic: Possible Causes and Impacts. *Frontiers in Medicine*, **2022**, 9 (721929), doi: 10.3389/fmed.2022.751929.
27. Gaur, S., Gaur, S., Mishra, R. **Singh RK**, Bajpai S. Astaxanthin reduces oxidative stress and alleviates diabetic neuropathy in STZ-induced diabetic mice. *Int J Diabetes Dev Ctries* **2022**. <https://doi.org/10.1007/s13410-021-01035-2>.
28. Singh R, Anand A, Rawat AK, Saini S, Mahapatra B, Singh NK, Mishra AK, Singh S, Singh N, Kishore D, Kumar V, Das P, **Singh RK***. CD300a receptor blocking enhances early clearance of Leishmania donovani from its mammalian host through modulation of effector functions of phagocytic and antigen experienced T cells. *Frontiers in Immunology*, **2022**; DOI: 10.3389/fimmu.2021.793611.
29. Singh S, Kishore D, **Singh RK**, Pathak C, Ranjan K. Higher BCG-induced trained immunity prevalence predicts protection from COVID-19: implications for ongoing BCG trials. *Clinical and Translational Discovery*, **2022**, 2(2): e60. <https://doi.org/10.1002/ctd2.60>.
30. Khan A, Singh P, Kumar R, **Singh RK**, Mina U, Agrawal GK, Rakwal R, Sarkar A, Srivastava A. Antifungal Activity of Siderophore Isolated from Escherichia coli Against Aspergillus nidulans via Iron-Mediated Oxidative Stress. *Frontiers in Microbiology*, **2021**, 12 (729032), <https://doi.org/10.3389/fmicb.2021.729032>.
31. Singh S, Diwaker A, Singh BP, **Singh RK**. Nutritional immunity, zinc sufficiency, and COVID-19 mortality in socially similar European populations. *Frontiers in immunology*, **2021**, 12, 699389. <https://doi.org/10.3389/fimmu.2021.699389>.
32. Singh S, Kishore D, Singh RK. 'Trained immunity' from Mycobacterium spp.(environmental or BCG) exposure predicts protection from Coronavirus disease 2019 (COVID-19). *medRxiv*, **2021**, 19: 2021-02. <https://doi.org/10.1101/2021.02.11.20233593>.
33. Singh S, Maurya RP, **Singh RK***. Trained immunity from Mycobacterium spp. exposure or BCG vaccination and COVID-19 outcomes. *PLoS Pathogens*. **2020**; 16(10): e1008969; <https://doi.org/10.1371/journal.ppat.1008969>.
34. Zahra W, Rai SN, Birla H, Singh SS, Rathore AS, Dilnashin H, Singh R, Keswani C, **Singh RK**, and Singh SP. Neuroprotection of rotenone-induced Parkinsonism by ursolic acid in PD mouse

- model. *CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders)* **2020**; 19(7): 527-540.
35. Singh S, Kaur R, **Singh RK**. Revisiting the role of vitamin D levels in the prevention of COVID-19 infection and mortality in European countries post infections peak. *Aging Clin Exp Res.* **2020**; 32(8): 1609-1612. DOI: <https://doi.org/10.21203/rs.3.rs-32484/v1>.
36. Kaushik T, Mishra R, **Singh RK**, and Bajpai S. "Role of connexins in female reproductive system and endometriosis." *Journal of Gynecology Obstetrics and Human Reproduction* (2020); 49(6): 101705.
37. Rawat AK, Pal K, Singh R, Anand A, Gupta S, Kishore D, Singh S, **Singh RK***. The CD200-CD200R cross-talk helps *Leishmania donovani* to down regulate macrophage and CD4⁺ CD44⁺ T cells effector functions in an NFκB independent manner. *International Journal of Biological Macromolecules*, **2020**; 151: 394-401. <https://doi.org/10.1016/j.ijbiomac.2020.02.189>.
38. Gupta S, Shukla H, Kumar A, Shukla R, Kumari R, Tripathi T, **Singh RK**, and Anupurba S. "Mycobacterium tuberculosis nucleoside diphosphate kinase shows interaction with putative ATP binding cassette (ABC) transporter, Rv1273c." *Journal of Biomolecular Structure and Dynamics* (2020); 38(4): 1083-1093.
39. Kumar V, Das S, Kumar A, Tiwari N, Kumar A, Mandal A, Kumar M, Shafi T, Bamra, B, **Singh RK***, Vijaykumar S, Sen A, Das P. Leishmania donovani infection induce differential miRNA expression in CD4⁺ T cells. *Scientific Reports*; **2020**; 10(1): 1-3. 10:3523, <https://doi.org/10.1038/s41598-020-60435-2>.
40. Nandy K, Srivastava A, Afgan S, Deepak, Kumar R, Rawat AK, Singh R, **Singh RK***. The benzyl ethyl trithiocarbonate mediated control synthesis of a block copolymer containing N-vinyl Pyrrolidone by RAFT methodology: Influence of polymer composition on cell cytotoxicity and cell viability. *Eu. Poly. Journal*; **2020**; 122: 109387. <https://doi.org/10.1016/j.eurpolymj.2019.109387>.
41. Gupta S, Rawat AK, Singh K, Kumari, R, Sharma A, **Singh RK**, Pandey S, Anupirba S. Rv1273c, an ABC transporter of Mycobacterium tuberculosis promotes mycobacterial intracellular survival within macrophages via modulating the host cell immune response. *International Journal of Biological Macromolecules*; **2020**; 142: 320-331. <https://doi.org/10.1016/j.ijbiomac.2019.09.103>.
42. Rai, SN, Zahra W, Singh SS, Birla H, Keswani C, Dilnashin H, Rathore AS, Singh R, **Singh RK**, and Singh SP. "Anti-inflammatory activity of ursolic acid in MPTP-induced parkinsonian mouse model." *Neurotoxicity research* (2019); 36(3): 452-462. <https://doi.org/10.1007/s12640-019-00038-6>.
43. Kushwaha A, Singh R, Manar K, Yadav C, **Singh RK**, Drew M, and Singh N. Impact of substituents on the crystal structure and antileishmanial activity of new homoleptic Bi(III) dithiocarbamates. *New Journal of Chemistry* **2019**; 43: 16921-6931.
44. Singh AK, Yadav S, Chauhan BS, Nandy N, Singh R, Neogi K, Roy JK,, Srikrishna S, **Singh RK***, Prakash P. Classification of clinical isolates of *Klebsiella pneumoniae* based on their in vitro Biofilm forming capabilities and elucidation of the Biofilm Matrix Chemistry with special reference to the protein content. *Frontier in Microbiology*; **2019**; 10: 669. doi: 10.3389/fmicb.2019.
45. Mishra KB, Tiwari N, Bose P, Singh R, Rawat AK, Singh SK, Mishra RC, **Singh RK**, Tiwari VK. Design, Synthesis and Pharmacological Evaluation of Noscapine Glycoconjugates. *ChemistrySelect* **2019**; 4(9): 2644-2648 DOI: 10.1002/chemistryselect.2018.
46. Birla H, Rai SN, Singh S, Zahra W, Rawat A, Tiwari N, **Singh RK**, Pathak A, Singh SP. Tinospora cardifolia suppresses neuro-inflammation Parkinsonian mouse model. *Neuromolecular Medicine* **2019**; 21(1): 42-53. doi.org/10.1007/s12017-018-08521-7.
47. Singh AK, Yadav S, Sharma K, Firdaus Z, Prerana A, Neogi K, Bansal M, Gupta M, Shanker A, **Singh RK**, Prakash P. Quantum Curcumin mediated inhibition of gingipains and mixed-biofilm of Porphyromonas gingivalis causing chronic Periodontitis. *RSC Advances* **2018**; 8(70): 40426-40445. <https://doi.org/10.1039/C8RA08435A>.
48. Mishra DP, Khan MA, Yadav DK, Rawat AK, Singh **RK**, Ahamad T, Hussain MK, Saquib M, and Khan MF. Monoterpene Indole Alkaloids from Anthocephalus cadamba Fruits Exhibiting Anticancer Activity in Human Lung Cancer Cell Line H1299. *ChemistrySelect* **2018**; 3(29): 8468-8472. <https://doi.org/10.1002/slct.201801475>.
49. Kumar V., Kumar A, Das S., Kumar A, Kumar, A, Versma S. Mandal, A, Singh RK, Das P. Leishmania donovani Activates Hypoxia Inducible Factor-1α and miR-210 for Survival in Macrophages by Downregulation of NF-κB Mediated Pro-inflammatory Immune Response. *Front. Microbiol.* **2018** doi: 10.3389/fimmu.2018.

50. Singh SS, Rai, S, Birla, HR, Walia Z, Kumar G, Patnayak R, Tiwari N, **Singh RK**, Singh SP. Effect of chlorogenic acid supplementation in MPTP induced PD mouse model. **Frontier in Pharmacology**; **2018**; 9: 757. doi: 10.3389/fphar.2018.00757.
51. Kumar V, Kumar A, Das S, Kumar A, Kumar A, Verma S, Mandal A, **Singh RK**, Das P. Leishmania donovani induced hypoxia inducible factor- α regulates miR-210 and NF- κ B for survival in macrophages. **Frontier in Microbiology**. **2018**; 9: 385.9:385. doi: 10.3389/fmicb.2018.00385.
52. Yadav CL, Manar KK, Yadav MK, Tiwari N, **Singh RK**, Drew MGB, Singh N. Synthesis, crystal structure and properties of new homoleptic Ni (II)Pd(II) oxodithioester chelates. **Journal of Molecular Structure**. **2018**; 1160: 488-496. <https://doi.org/10.1016/j.molstruc.2018.02.024>.
53. Koley S, Tiwari N, Srivastava N, **Singh RK**, Singh MS. 2-Mercaptoquinoline Analogues: A Potent Antileishmanial Agent. **ChemistrySelect**. **2018**; 3(6): 1688-1692. <https://doi.org/10.1002/slct.201703095>.
54. Tiwari N, Kishore D, Bajpai S, and **Singh RK**. Visceral leishmaniasis: An immunological viewpoint on asymptomatic infections and post kala azar dermal leishmaniasis. **Asian Pacific Journal of Tropical Medicine** (2018); 11(2): 98-108.
55. Singh A, Prakash P, Singh R, Nady N, Firdaus Z, Pandey A, Bansal M, Singh RK, Srivastava A, Roy JK, Mishra M, and **Singh RK**. Curcumin Quantum dots mediated degradation of bacterial biofilms. **Frontier in Microbiology**, **2017**; 8: 1517. <https://doi.org/10.3389/fmicb.2017.01517>.
56. Singh AK, Prakash P, Achra A, Singh GP, Das A, Singh RK. Standardization and classification of in vitro biofilm formation by clinical isolates of staphylococcus aureus. **J. Global Infectious Diseases** **2017**; 9(3): 93-101. https://dx.doi.org/10.4103%2Fjgid.jgid_91_16.
57. Mishra SK, Tripathi G, Kishore N, **Singh RK**, Tripathi VK. Drug development against tuberculosis: impact of alkaloids. **European Journal of Medicinal Chemistry** **2017**; 137: 504-544. DOI: 10.1016/j.ejmech.2017.06.005.
58. Kumar V, Tiwari N, Gedda M, **Singh RK**. Leishmania donovani infection activates TLR 2, 4 expressions and TGF- β mediated apoptosis in renal tissues. **Braz. J. Infect. Dis.** **2017**; 21(5): 545-549. DOI: 10.1016/j.bjid.2017.04.007.
59. Tiwari N, Gedda MR, Tiwari VK, Singh SP, **Singh RK**. Limitations of current therapeutic options, possible drug targets and scope of natural products in control of leishmaniasis. **Mini Review in Medicinal Chemistry** **2017**; 18(1): 26-41. DOI: 10.2174/1389557517666170425105129.
60. Manar K, Yadav C, Tiwari N, **Singh RK**, Mishra R, Yadav A, Drew M, and Singh N*. Effect of functionalities on the crystal structures of new zinc (II) dithiocarbamates: A combined anti-leishmanial and thermal decomposition study. **CrystEngComm**.**2017**; 19: 2660-2672. DOI: 10.1039/C7CE00211D.
61. Tiwari N, Kumar V, Gedda MR, Singh A, Singh SP, **Singh RK**. Identification and characterization of miRNAs in response to Leishmania donovani infection: delineation of their roles in macrophage dysfunction. **Frontier in Microbiology**, **2017**; 8: 314. DOI.org/10.3389/fmicb.2017.00314.
62. Singh N, Gedda MR, Tiwari N, Bajpai S, Singh SP, **Singh RK**. Slc11a1 activation efficiently inhibits Leishmania donovani survival in host macrophages. **J. Parasitic Diseases**, **2016**; 41: 671-677. DOI: 10.1007/s12639-016-0864-4.
63. Sreenivas G, Ismail N, **Singh RK**, Nakhasi HL. Modulation of innate immune mechanisms to enhance vaccine induced immunity: Role of co-inhibitory molecules. **Frontiers in Immunology**, **2016**; 7: 187. doi: 10.3389/fimmu.2016.00187.
64. Yadav MK, Rajput G, Srivastava K, **Singh RK**, Mishra R, Drew M, and Singh N*. Anti-leishmanial activity of Ni(II), Pd(II) and Pt(II) β -oxodithioester complexes. **New Journal of Chemistry** **2015**; 39(8): 6358-6366. doi:10.1039/C5NJ00765H.
65. Dwivedi P, Mishra KB, Mishra BB, Singh N, **Singh RK**, and Tiwari VK*. Click Inspired Synthesis of Antileishmanial Triazolyl O-Benzylquercetin Glycoconjugates. **Glycoconjugate Journal** **2015**; 32(3): 127-140. DOI: <https://doi.org/10.1007/s10719-015-9582-x>.
66. Singh N, Mishra BB, Bajpai S, Tiwari VK, **Singh RK**. Natural Product based Leads to Fight against Leishmaniasis. **Bioorganic Medicinal Chemistry**, **2014**; 22(1): 18-45. DOI: <https://doi.org/10.1016/j.bmc.2013.11.048>.
67. Singh A, Bajpai S, Singh N, Kumar V, Gour JK. Singh PK and **Singh RK**. Wound healing activity of standardized extract of Curculigo orchoides in streptozotocin-induced diabetic mice. **Asian Pac J Trop Biomed** **2014**; 4: S48-S53. DOI: [https://doi.org/10.1016/S2222-1808\(14\)60414-X](https://doi.org/10.1016/S2222-1808(14)60414-X).

68. Singh N, Bajpai S, Kumar V, Gour JK and **Singh RK**. Identification and functional characterization of Leishmania donovani secretory peroxidase: Delineating its role in NRAM1 expression and function. **PLoS One** **2013**; 8(1): e53442. DOI: <https://doi.org/10.1371/journal.pone.0053442>.
69. Kumar V, Gour VK, Srivastava A, Singh N, Bajpai S and **Singh RK**. Leishmania donovani specific 25 and 28 kDa urinary proteins activate macrophage effector functions, lymphocyte proliferation and Th1 cytokines production. **Parasitology Research** **2013**; 112(4): 1427-1435. DOI: <https://doi.org/10.1007/s00436-013-3272-z>.
70. Singh S, Rajput SK, Singh M, Mishra PK, Mohan G, Kumar M, **Singh RK** and Gambhir IS*. P53 gene: mutation and immunohistochemical analysis in patients with invasive ductal carcinoma of breast among middle north eastern Indian population. **American Journal of Biochemistry and Biotechnology**, **2013**; 9(4): 395.
71. Dwivedi N, Kumar R, Paliwal R, Kumar U, Kumar S, Singh M, and **Singh RK**. QTL mapping for important horticultural traits in pepper (Capsicum annum L.). **Journal of Plant Biochemistry and Biotechnology**, **2013**; 24(2): 154-160. DOI 10.1007/s13562-013-0247-1.
72. Kumar M, Tripathi MK, Srivastava A, Gour JK, **Singh RK**, Tilak R and Asthana RK. Cyanobacteria, Lyngbya aestuarii and Aphanothece bullosa as antifungal and antileishmanial drug resources. **Asian Pac J Trop Biomed**, **2013**; 3(6): 458-463. DOI: [https://doi.org/10.1016/S2221-1691\(13\)60096-9](https://doi.org/10.1016/S2221-1691(13)60096-9).
73. Mishra BB, Kishore N, Singh RK, and Tiwari VK. Scope of alkaloids in antileishmanial drug discovery and development. **Natural Products (2013)**; 1263-1299.
74. Gour JK, Kumar V, Singh N, Bajpai S, Pandey HP, **Singh RK**. Identification of Th1-responsive leishmanial excretory-secretory antigens (LESAs). **Experimental Parasitology**, **2012**; 132: 355-361. DOI: <https://doi.org/10.1016/j.exppara.2012.04.022>. [
75. Singh S*, Agrawal R, Mehrotra S, and **Singh RK**. Effect of tert-butyl hydroperoxid (t-BHP) on Ca⁺⁺ ATPase activity in rat hepatocytes and its reversal by antioxidants. **Journal of Environmental Biology**, **2012**; 33(5): 867-870.
76. Mishra BB, Gour JK, Kishore N, Tripathi VJ, Tiwari VK, Kumar V, **Singh RK**. An anti-Leishmanial Prenyloxy-naphthoquinone from Roots of Plumbago zeylanica. **Natural Product Research**, **2012**; 27(4): 480-485. <http://dx.doi.org/10.1080/14786419.2012.696254>.
77. Singh N, Kumar M, and **Singh RK**. Leishmaniasis: Current status of available drugs and new potential drug targets. **Asian Pacific Journal of Tropical Medicine**, **2012**; 5(6): 485-497. DOI: [https://doi.org/10.1016/S1995-7645\(12\)60084-4](https://doi.org/10.1016/S1995-7645(12)60084-4).
78. Pokharia D, Kumar H, Mishra M, Arya AK, Tripathi R, **Singh RK**, Kumar M, and Tripathi, K. "Study of Heat Shock Protein Hsp47 Expression in Chronic Wound of Controlled and Uncontrolled Type 2 Diabetes Mellitus." In **Diabetes**, 1701 N BEAUREGARD ST, ALEXANDRIA, VA 22311-1717 USA: AMER DIABETES ASSOC, **2012**. 61:A165.
79. Rajput SK, Dave VP, Rajput A, Pandey HP, Dutta TK and **Singh RK**. A Column based rapid method for the simultaneous isolation of DNA, RNA, miRNA and proteins. **Cell Biology International**, **2012**; 36(9): 779-783. DOI: <https://doi.org/10.1042/CBI20110342>.
80. Kumar V, Mishra M, Rajput S, Bajpai S and **Singh RK**. Detection of human kininogen in the urine of visceral leishmaniasis patients. **Parasitological Research**, **2012**; 111: 1851-1855.
81. **Singh RK**, Srivastava A, Singh N. Toll-like receptor signaling: A perspective to develop vaccine against leishmaniasis. **Microbiological Research** **2012**; 167: 445-451. DOI: <https://doi.org/10.1016/j.micres.2012.01.002>.
82. **Singh RK**, Srivastava A, Gour J and Tiwari V. Targeting Leishmania species: nanotechnological prospects. **Advanced Science Letters**, **2012**; 5: 11-20. DOI: <https://doi.org/10.1166/asl.2012.1970>.
83. Kumar H, Mishra M, Bajpai S, Pokharia D, Arya A K, **Singh RK**, Tripathi K. Correlation of insulin resistance, beta cell function and insulin sensitivity with serum sFas and sFasL in newly diagnosed type 2 diabetes. **Acta Diabetologica**, **2011**; 50: 511-518. DOI 10.1007/s00592-011-0307-8.
84. Srivastava A, Singh N, Mishra M, Kumar V, Gour JK, Bajpai S, Singh S, Pandey HP, and **Singh RK**. "Identification of TLR inducing Th1-responsive Leishmania donovani amastigote-specific antigens." **Molecular and cellular biochemistry** (2012); 359(1): 359-368. DOI: <https://doi.org/10.1007/s11010-011-1029-5>.
85. Hussain G, **Singh RK**, Kumar V. Anti-diabetic activity of standardized extract of Quassia amara in nicotinamide-streptozotocin-induced diabetic rats. **Phytotherapy Research**, **2011**; 25(12): 1806-1812. DOI: <https://doi.org/10.1002/ptr.3491>.

86. Bajpai S, Mishra M, Kumar H, Tripathi K, Singh S K, Pandey H P, **Singh RK**. Effect of selenium on connexins expression, angiogenesis and antioxidant status in diabetic wound healing. **Biological Trace Element Research**, 2011; 144: 327-338. DOI: <https://doi.org/10.1007/s12011-011-9097-7>.
87. Mishra M, Kumar H, Bajpai S, **Singh RK**, Tripathi K. Level of serum IL-12 and its correlation with endothelial dysfunction, insulin resistance, proinflammatory cytokines and lipid profile in newly diagnosed T2DM. **Diabetes Research and Clinical Practice**, 2011; 94: 255-261. DOI: <https://doi.org/10.1016/j.diabres.2011.07.037>.
88. Kumar V, Gour J K, Bajpai S, Mishra M, **Singh RK**. Detection of urinary antigens and their seroreactivity with serum of patients in Leishmania donovani infection. **Asian Pacific Journal of Tropical Medicine**, 2011; 4(5): 367-370. DOI: [https://doi.org/10.1016/S1995-7645\(11\)60105-3](https://doi.org/10.1016/S1995-7645(11)60105-3).
89. Kumar R*, Dwivedi N, **Singh RK**, Kumar S, Rai VP, Singh M. A review on molecular characterization of pepper for capsaicin and oleoresin. **International Journal of Plant Breeding and Genetics**, 2011; 5(2): 99-110. DOI: 10.3923/ijpb.2011.99.110.
90. Bajpai S, Mishra M, Kumar H, Tripathi K, **Singh RK**. Effect of different antidiabetic drugs on diabetic wound healing via regulation of connexins and oxidative stress markers. **Diabetes** 2011; A289.
91. Mishra BB, Kale RR, Prasad V, Tiwari VK, and **Singh RK**. "Scope of natural products in fighting against leishmaniasis." **Bioactive natural products: Opportunities and Challenges in Medicinal Chemistry, 1st ed. World Scientific Publishing Company (2011)**: 121-154.
92. Bajpai S, Mishra M, Kumar H, Tripathi K, Singh SK, Pandey HP, and **Singh RK**. Comparative Evaluation of Connexins Expression in Diabetic and Nondiabetic wounds. **Digest Journal of Nanomaterials and Biostructures**, 2010; 5(3): 757-762.
93. Mishra M, Kumar H, Pokharia D, Arya A K, Bajpai B, **Singh RK**, and Tripathi K. Comparative study of IL-12p70 in controlled and uncontrolled type 2 diabetes. **Diabetes**, 2010; 59: A581-582.
94. Kumar H, Mishra M, Pokharia D, Arya AK, Bajpai S, Singh SK, **Singh RK** and Tripathi K. sFas-L correlates negatively with insulin resistance in T2D M. **Diabetes**, 2010; 59: A651.
95. Mishra M, Kumar H, Pokharia D, Kumar A, Bajpai S, **Singh RK**, and Tripathi K. PAR- γ agonists Vs glipizide: A comparative evaluation on markers of endothelial dysfunction and angiogenesis in north Indian type 2 diabetes mellitus with cardiovascular complications. **World Heart Journal**, 2010; 2(2): 111-118. [IF-3.218]
96. Gour JK, Srivastava A, Kumar V, Bajpai S, Kumar H, Mishra M, and **Singh RK**. Nanomedicine and leishmaniasis: future prospects. **Digest Journal of Nanomaterials and Biostructures**, 2009; 4(3): 495-499. [IF-0.899]
97. Bajpai S, Shukla VK, Tripathi K, Srikrishna S and **Singh RK**. Targeting connexin 43 in diabetic wounds: future perspectives. **Journal of Post Graduate Medicine**, 2009; 55: 143-149. [IF-4.379]
98. Mishra B, Kale R, **Singh RK** and Tiwari VK. Alkaloids: Future prospective to combat leishmaniasis. **Fitoterapia**, 2009; 80(2): 81-90. [IF-3.204]
99. Mishra M, Kumar H, Pokharia D, Kumar A, Bajpai S, **Singh RK**, Rai M and Tripathi K. Effect of pioglitazone, rosiglitazone and glipizide on Nox, TNF- α , VEGF, angiogenin in Type 2 diabetes with cardiovascular complications. **Diabetes**, 2009; 58(1): A131.
100. Mishra BB, **Singh RK**, Srivastava A, Tripathi VJ and Tiwari VK. Fighting against Leishmaniasis: Search for alkaloids as true potential anti-leishmanial agents. **Mini-Reviews in Medicinal Chemistry**, 2009; 9: 107-123.
101. Mishra M, Kumar H, **Singh RK** and Tripathi K. Diabetes and nano-materials. **Digest Journal of Nanomaterials and Biostructures**, 2008; 3(3): 109 -113.
102. Hide M, **Singh RK**, Kumar B, Bannules AL, and Sundar S. A micro culture technique for isolating live Leishmania parasites from peripheral blood of visceral leishmaniasis patients **Acta Tropica**, 2007; 102(3): 197-200.
103. Mishra BB, Yadav SB, **Singh RK**, Tripathi V. A Novel Flavonoid C-glycoside from Sphaeranthus indicus L. (Family Compositae), **Molecules**, 2007; 12: 2288-2291.
104. Sundar S, **Singh RK**, Bimal S. K, Gidwani K, Mishra A, Maurya R, Manandhar KD, Singh SK, Boelart M, and Rai M. Comparative evaluation of parasitology and serological tests in the diagnosis of visceral leishmaniasis in India. A phase III diagnostic accuracy study. **Tropical Medicine and International Health** 2007; 12(2): 284-289.
105. Sundar S, **Singh RK**, Maurya R, Kumar B, Chhabra A, Singh V, Rai M. Serological diagnosis of Indian visceral leishmaniasis: direct agglutination test versus rK39 strip test. **Transactions of Royal Society of Tropical Medicine and Hygiene**, 2006; 100(6): 533-537.

106. **Singh RK**, Pandey HP, and Sundar S. Visceral Leishmaniasis (Kala-azar): Challenges ahead. *Indian Journal of Medical Research*, **2006**; 123: 331 -344.
107. Sundar S, Maurya R, **Singh RK**, Bharti K, Chakravarty J, Parekh A, Rai M, Kumar K, Murray HW. Rapid, noninvasive diagnosis of visceral leishmaniasis in India: comparison of two immunochromatographic strip tests for detection of anti-k39 antibody. *Journal of Clinical Microbiology*, **2006**; 44(1): 251 - 253.
108. Maurya R, **Singh RK**, Kumar B, Salotra P, Rai M, Sundar S. Evaluation of PCR for diagnosis of Indian kala-azar and assessment of cure. *Journal of Clinical Microbiology*, **2005**; 43(7): 3038 - 3041.
109. **Singh RK**, Pandey HP, and Singh RH. Irritable Bowel Syndrome: challenges ahead. *Current Science*, **2003**; 84(12): 1525-1533.
110. **Singh RK**, Pandey HP, Singh RH. Correlation of serotonin and monoamine oxidase levels with anxiety level in diarrhea-predominant irritable bowel syndrome. *Indian Journal of Gastroenterology*, **2003**; 22(3): 88-90.
111. Yadav SB, Tripathi VJ, **Singh RK**, and Pandey HP. Flavanoids glycosides from *Cuscuta reflexa* stems and their antioxidant activity. *Indian Drugs*, **2001**; 38(2): 95-96.
112. Yadav SB, Tripathi VJ, **Singh RK**, and Pandey HP. Antioxidant activity of *Cuscuta reflexa* stems. *Indian Journal of Pharmaceutical Sciences*, **2000**; 477-478.

Book Chapters

- ≠ Gaur S, Tiwari VK, Singh RK, Bajpai S, Brahmchari G (2025). Phytochemicals: Targeting therapeutics in managing prostate cancer. In *Natural Product Drug Discovery, Discovery and Development of Anti-Prostate Cancerous Agents from Natural Products*, Elsevier, 2025, Pages 291-305, Elsevier Book Series Edited by Dr. G. Brahmachari.
- ≠ Singhal S, Singh M, Singh RK, Tiwari VK, Bajpai S (2021). Molecular mechanisms underlying breast cancer and role of plant products in targeted therapy. In *Natural Product and Drug Discovery (NPDD)*, Volume 5, Elsevier Book Series, Edited by Dr. G. Brahmachari, <https://doi.org/10.1016/B978-0-12-821277-6.00011-8>
- ≠ Tiwari N, Kumar A, Bajpai S, Tiwari VK, Singh RK* (2019). Leishmaniasis control: limitations of current therapeutic options and prospects of natural products. In *Discovery and Development of Therapeutics from Natural Products* (Elsevier Book Series 1st Edition. Edited by G. Brahmchari ISBN:9780128157237 published on 1st April, 2019).
- ≠ Mishra BB, Kishore N, Singh RK and Tiwari VK (2013) Scope of alkaloids in anti-leishmanial drug discovery and development. In *Handbook of Natural Product* (Ed. K.G. Ramawat, J.M. Merillon), ISBN: 978-3-642-22143-9, DOI 10.1007/978-3-642-22144-6_91, pp 1263-1299.
- ≠ Mishra BB, Kale RR, Prasad V, Tiwari VK and Singh RK* (2010) Scope of Natural Products in Fighting Against Leishmaniasis. In *Opportunity, Challenge and Scope of Natural Products in Medicinal Chemistry*, ISBN: 978-81-308-0448-4 (Ed. VK Tiwari & BB Mishra), Research Signpost Publication, India, pp 119-151.
- ≠ Sundar S, Chakravarty J, Agrawal S, Singh RK, Rai M. (2005) Visceral Leishmaniasis: Diagnostic Overview. In *Multidisciplinary for Parasites, Vectors and Parasitic Diseases* (Ed. Mas-Coma S). Vol 1 pp 37-50. ISBN: 978-88-7587-143-7, Medimond International Proceeding Division, Pianoro (Bologna), Italy.

Invited Lectures

1. **Singh RK (2026)**. Enhancing the Efficacy of a Whole-Killed *Leishmania* Vaccine Using Novel Adjuvantation Approach. International Conference on Interdisciplinary Frontiers in Life Science. Organized by Holy Cross Women's College, Ambikapur, CG. April, 7,8, 2025.
2. **Singh RK (2025)**. Enhancing the efficacy of *Leishmania* vaccines. International Conference on Advances in Endocrinology, Metabolism, and Reproductive Health: New insights and Innovations. Organized by Department of Zoology, I.Sc., BHU. 14-16 November, 2025.
3. **Singh RK (2025)**. A novel adjuvantation approach to enhance the efficacy of a whole killed *Leishmania* vaccine. International Conference on Bridging Innovative Research in Translational and Interventional Health (BIRTH-2025), Organized by the Department of Biochemistry, University of Lucknow, 13–15 November 2025.
4. **Singh RK (2025)**. Biochemistry: The Chemical Logic of Biological Research and Inventions. National Conference on Molecular and Geological Prospective on Biodiversity (MGPB 2025), to be held on 17th & 18th October 2025 at Government Women's College, Keonjhar, Odisha (Keynote speaker).

5. **Singh RK (2025).** Parasitic Vaccines: challenges ahead. Faculty Development Program on Emerging trends and pedagogical innovations in Biotechnology Organized by Faculty of Biotechnology and Faculty of Biosciences, Institute of Biosciences & Technology (IBST) 14th-18th JULY, 2025 (Keynote speaker).
6. **Singh RK (2025).** Why don't we have vaccines against parasites? Lessons from Leishmania, March 28, 2025, Bioinformatics and Biological Research organized by UGC-Malaviya Mission Teacher Training Centre (MMTTC), Central University of South Bihar (CUSB), Gaya, India.
7. **Singh RK (2024).** Functional and Phenotypic Characterization of T cells by Flow Cytometry (and my vaccine research), Nov., 29, 2024, Flow Cytometry Applications in Drug Discovery organized by Department of Pharmaceutical Engineering and Technology, IIT BHU, Varanasi.
8. **Singh RK (2024)** Development of vaccines against kala-azar: Challenges and Possibilities. National Conference on Bioinformatics and Biological Research (NCBBR). Nov., 21-23 organized by Department of Bioinformatics, Central University of South Bihar, Gaya, Bihar.
9. **Singh RK (2024).** Prospects of CD200 and CD300a receptors in developing T-cell-inducing vaccines against visceral leishmaniasis. Nov 12 &13, 2024. Shaping the future of drug discovery: From genetic insights to breakthrough therapies, Sponsored by ThermoFisher Scientific, USA, Hyderabad, India.
10. **Singh RK (2024).** Challenging in Developing Vaccines for Parasitic Infections: Lessons Learned from Visceral Leishmaniasis. Sep 18, 2024. Frontiers in Flow Cytometry: Online Global Conference, Sponsored by ThermoFisher Scientific, USA and Wiley.
11. **Singh RK (2024).** Biochemistry in Biological Research. July 15, 2024. Faculty Development Program on Informative Teaching and Research Prospects in Biotechnology and Biosciences" Organized by Faculty of Biotechnology and Faculty of Biosciences, Institute of Biosciences & Technology (IBST), SRSU, Lucknow, India.
12. **Singh RK (2024).** Vaccines against leishmaniasis: Challenges and future directives. June 15, 2024. Precision Medicine in Clinical Biochemistry: Applications, Challenges, and Future Decisions organized by Government Doon Medical College, Dehradun, India.
13. **Singh RK (2024).** Challenges in the pursuit of vaccines against parasitic infections: Insights from leishmaniasis. March, 16, 2024. Recent Advances in Biochemistry and Biotechnology, RABB, 2024 organized by University of Lucknow, Lucknow, India.
14. **Singh RK (2023).** A novel adjuvantation approach in the pursuit of a vaccine for visceral leishmaniasis. May 10, 2023 (Advance Technology in Immuno-Biology, Lucknow, India) organized by ThermoFisher Scientific, India.
15. **Singh RK (2022).** A hand on training on flow cytometry. Nov., 29-Dec.02, 2022 organized by Department of Pharmaceutical Engineering and Technology, IIT BHU, Varanasi.
16. **Singh RK (2022).** Prospects of immune tolerance mechanisms in vaccine designing and development against parasitic infections. Hands-on Training program on advanced immunological tools and techniques. Sep., 19-25 organized by Department of Biotechnology, Central University of South Bihar, Gaya, Bihar.
17. **Singh RK (2022).** Swarna Bhasma adjuvantation enhances the protective efficacy of Cow Ghee emulsified preparation of a Leishmania vaccine. National Seminar on Indigenous cow, agriculture and holistic health, organized by Department of Kayachikitsa, Faculty of Indian Medicine, IMS, BHU, Varanasi.
18. **Singh RK (2022).** Flow Cytometry in Immunological Research. STUTI 2022, organized by Department of Biotechnology, Central University of South Bihar, Gaya, Bihar.
19. **Singh RK (2021).** Immune checkpoints and T cells function in protection and memory against parasitic vaccines. SERB High-End Workshop 'KARYASHALA' on 'Flow Cytometry: Cell death and drug discovery". Oct. 20 -25, 2021; Organized by National Institute of Pharmaceutical Education and Research, S.A.S. Nagar, Mohali, Chandigarh, India
20. **Singh RK (2020).** Role of Immune Tolerance mechanisms in vaccine induced immunity in parasitic infections. International Conference on Current Perspectives of Biochemistry in Health and Disease. Jan.11-12, 2020, Organized by Department of Zoology, BHU, Varanasi
21. **Singh RK (2019).** HPLC: Principle, detection and quantification of anti-neuroinflammatory analyses. IBRO-APRC Neuroscience School on Molecular Basis of Neuroinflammation Mediated Neurodegeneration. Department of Biochemistry, BHU, Varanasi, Sep. 01-14, 2019.
22. **Singh RK (2019).** Role of biochemistry in Ayurvedic Research. National Seminar in Ayurvedic Research. Organized by Department of Kayachikitsa, IMS, BHU.
23. **Singh RK (2019).** Visceral leishmaniasis: current status of vaccine research and the role of immune checkpoints in vaccine development. National Conference on interdisciplinary advancements in Biochemistry. Organized by Dr. R.MLA University, Faizabad, India

24. **Singh RK** (2018). Understanding the role of immune checkpoints in vaccine induced immunity to control visceral leishmaniasis. TROPACON, 12th Annual Conference of IATP, Organized by Department of Microbiology, Institute of Medical Sciences, BHU, Varanasi, India
25. **Singh RK**. (2017) Delineating the role of an immune inhibitory axis on T cells multi-functionality: its implication in vaccine induced immunity to control leishmaniasis. Int. Conference on Functional Biology and Molecular Interactions: Applications in health and agriculture. Dec. 20-22, 2017, Organized by University of Lucknow, UP, India
26. **Singh RK**. (2017) Visceral leishmaniasis: limitations of current therapeutic regimens and scope of natural products. Int. Conference on Role of Basic Sciences in Translational Research in Ayurvedic Medicine. Oct. 28-29; 2017: Organized by Department of Biochemistry, BHU.
27. **Singh RK**. (2017) The science of nanotechnology and its applicability in human welfare. DST Inspire Programme, Nov.29 to Dec. 01, 2017: Organized by Dr. APS University, Rewa, MP.
28. **Singh RK** (2017). CD200 and CD200R interaction: Its role in leishmanial pathogenesis and vaccine induced immunity. In 2nd National Seminar on Current Trends in Life Science. Feb.20-21, 2017, Life Science Programme, Central University of South Bihar, Patna, India.
29. **Singh RK** (2016). Host immune inhibitory mechanisms and their perspective in the vaccine induced immunity in Leishmania donovani infection. International Symposium of Genetics and Human Phenomics, May 11-13 2016, Fudan University, Shanghai, China
30. Singh RK* (2013). Diagnostic, prognostic and immunoprophylactic capabilities of 25 and 28kDa urinary leishmanial proteins. Oct. 29-31, 2013: Recent Advancement in Biochemistry and Biotechnology: Application in Health, Environment and Agriculture. Department of Biochemistry, University of Lucknow, UP, India.
31. Singh RK* (2013). Recent advancement in diagnosis of visceral leishmaniasis. National Symposium on Biomarkers in Health and Diseases: Bench to Bed Side. July 3-4, 2013: Department of Biochemistry, SGRRIHMS, Dehradun, UP, India.
32. Singh RK* (2012). Evaluation of leishmanial excretory secretory proteins for their immunological properties. 2nd International Science Congress, Dec. 8-9, 2012, Vrindavan, India.
33. Singh RK* (2012). Effects of leishmanial amastigotes specific proteins on NRAMP1 expression via modulation of macrophage effector functions. 39th Annual Conference of Indian Immunological Society, Nov. 9-11, 2012, BHU, Varanasi, India.
34. Singh RK* (2012). Evaluation of leishmanial excretory secretory proteins for their immunological properties. 2nd International Science Congress, Dec. 8-9, 2012, Vrindavan, India. (Best oral presentation Award)
35. Singh RK*, Mishra BB and Tiwari VK (2011). An anti-leishmanial naphthoquinone isolated from Plumbago zeylanica roots. National Seminar on "Expanding Horizons in Chemical Sciences, October 22-23: Department of Chemistry, Dr. APS University, Rewa, MP.
36. Singh RK*. (2010). Detection and applicability of urinary leishmanial antigens (ULAs) in the diagnosis and prognosis of visceral leishmaniasis. "International Symposium on Recent Advances in Ecology and Management of Vectors and Vector Borne Diseases". Dec.1-3: Organized by Defence Research and Development Establishment, DRDO, Gwalior.
37. Singh RK*. (2010) Selenium accelerates the rate of diabetic wound healing by regulating connexins gene expression. National Seminar on "Recent Trends in Chemical Sciences, May 12-13: Department of Chemistry, Dr. APS University, Rewa, MP.
38. Singh RK* (2011). Effect of different antidiabetic drugs on diabetic wound healing via regulation of connexins and oxidative stress markers. 71st ADA, San Diego, June 24-28, USA.
39. Singh RK*. (2011) Effect of glibenclamide and pioglitazone on connexin regulation and diabetic wound healing. 4th International Conference of Diabetes India, April 15-17, 2011, New Delhi.
40. Singh RK*. (2011). Down regulation of connexins expression accelerates the rate of diabetic wound healing after selenium administration. 98th Indian Science Congress, Jan. 3-7, SRM University, Chennai, India.
41. Singh RK*. (2010) Identification of urinary leishmanial antigens for their diagnostic and prognostic potentials. (ICRBFISHI), Feb.17-19: Organized by the Department of Biochemistry, Faculty of Science, Banaras Hindu University, Varanasi.
42. Singh RK*. (2007). Diagnosis of Indian Visceral Leishmaniasis: a Comparison between Immunological and Molecular Methods. III Symposium on Current Advances in Molecular Biochemistry: Applications in Health, Environment & Agriculture Organized by Department of Biochemistry, Lucknow University, Lucknow.

Mentoring (PG/Ph.D./PDF)

≠ Ph. D. Supervision: 19; PG dissertation: >70; PDF guidance: 04

List of Ph.D. students supervised

1. Dr. Surabhi Bajpai, 2012 An in vivo and in vitro study on connexins, the gap junction protein in diabetic wound healing.
2. Dr. Ankita Srivastava, 2012 A study on leishmanial antigens linked to the protective immune response against visceral Leishmaniasis.
3. Dr. Neeraj Dwivedi, 2012 QTL mapping of morphological and biological traits in Capsicum annum
4. Dr. Jalaj Kumar Gour, 2012 Studies on Leishmania excretory-secretory antigens.
5. Dr. Vinod Kumar, 2013 A study on leishmanial urinary proteins and their immunogenic properties.
6. Dr. (Ms) Nisha Singh, 2014 Studies on the role of natural resistance associated macrophage protein 1 (NRAMP1) in visceral leishmaniasis.
7. Dr. M. R. Gedda, 2017 A study on fibroblasts dysfunction in diabetic wounds.
8. Dr. Neeraj Tiwari, 2020 A study on immune modulatory mechanisms in L. donovani infection.
9. Dr. Ashish K. Singh, 2020 A study on bacterial biofilms.
10. Dr. Kavita Paul, 2021 Study on the role of immune inhibitory mechanisms in L. donovani infection.
11. Dr. Rajan Singh, 2022 A study on an immune inhibitory receptor, CD300a and its impact on CD4+ T cells functions in L. donovani Infection
12. Dr. Anshul Anand, 2023 Study on the Role of Immune Checkpoints in Regulation of the Effector Properties of Macrophage, Dendritic Cells and CD8+ T cells in L. donovani Infection.
13. Dr. Shashi Saini, 2023 Studies on the immunomodulatory roles of Swarna Bhasma and Yastimadhu on macrophages and CD4+ T cells effector functions in experimental visceral leishmaniasis.
14. Dr. Baishakhi Mahapatra, 2026 Immunoregulatory role of an immune checkpoint molecule, CD47, in CD4⁺ T cells mediated immune response during Leishmania donovani infection.
15. Dr. Akanksha Rai, 2026 Deciphering the mechanism of action of phytochemical-functionalized gold nanoparticles for the management of obesity.
16. Mr. Abhishek Singh A study on T cells functional determinants in Leishmania donovani infection.
17. Ms. Shruti Sirohi Studies on the role of adjuvants in increasing the efficacy of Leishmania vaccines.
18. Ms. Arpita Banerjee A study on the role of immune inhibitory mechanism in vaccine-induced in long term protective immunity against L. donovani.
19. Ms. Km Kumari Rashmi Role of adjuvants in enhancing the efficacy of parasitic vaccines

Workshop/Conference Organized

- ≠ **Workshop** on Hands-on Training on Flow Cytometry for a Comprehensive Understanding on its Usefulness in Basic, Applied and Clinical Research. Funded by Science and Engineering Research Board, Ministry of Science and Technology, Govt. of India, Dec. 21-27, 2022, Department of Biochemistry, BHU, Varanasi. [Convener]
- ≠ **International Conference** on Role of Inflammation and Immune System for Cancer Prevention and Treatment, Feb 13-16, 2020, Department of Biochemistry, Institute of Science, BHU, Varanasi [Co-convener].
- ≠ **Training Cum Workshop** on Basic Tools and Techniques in Biotechnology (TWBTTB-2016) organized by Biotechnology Program Center for Biological Sciences, Central University of South Bihar, Patna (24-30th November 2016). [Convener]
- ≠ **Workshop** on Protocol for Trials on Immunological Tests for Kala-Azar in India & Nepal. Sponsored by World Health Organization, Geneva. May 16th to 20th, 2005, Kala-Azar Medical Research Center, Muzaffarpur, India [Co-convener].

Academic/Institutional Memberships (member of..)

- ≠ New Education Policy (NEP) Implementation Committee, Institute of Science, BHU, Varanasi
- ≠ Curriculum development committee for doctoral and postgraduate courses (Biochem/Life Sci).
- ≠ Executive Council (2016-2017), Central University of South Bihar, Patna
- ≠ Academic Council (2016-2017), Central University of South Bihar, Patna
- ≠ Board of Studies, Central University of Sikkim, Gangtok, Sikkim
- ≠ Board of Studies, Dr. H.N.B. University, Srinagar, UK, India
- ≠ Undergraduate Admission Committee, Institute of Science, Banaras Hindu University, Varanasi

- ≠ Postgraduate Admission Committee, Department of Biochemistry, Institute of Science, BHU
- ≠ Core Committee of Science Museum, Banaras Hindu University, Varanasi
- ≠ Central Purchase Committee for Chemicals/Biochemicals, Banaras Hindu University, Varanasi
- ≠ Secretary, Disease Biology Group, Interdisciplinary School of Life Sciences, FOS, BHU.
- ≠ Department Research Committee, Department of Biochemistry, BHU

Ad-hoc Reviewer of Journals

- ≠ Lancet, eClinical Medicine, Nature group journals, Frontiers journals, LSA, Env Sci: Nano, Biomedicine and Pharmacotherapy, PloS Neglected Tropical Diseases, PloS One, Natural Product Report, BMC Infectious Diseases, Bioorganic Medicinal Chemistry, Pharmacognosy Research, Fitoterapia, Parasitology Report, Sci Technol, Journal of Parasitic Diseases, Bioorganic and Medicinal Chemistry Letters, Spectro Letters, Mini Reviews in Medicinal Chemistry, Biomed Res International, Brazilian Archives of Biology and Technology, Phytomedicine, CDTH, Journals from Bentham publishing house, and many more.

Personal

- ≠ **Nationality:** Indian
- ≠ **Father's Name:** Mr. Narendra Bahadur Singh
- ≠ **Permanent Address:** B 707, Rudra Towers, Sunderpur, Varanasi, 221 005, India

Education

- ≠ **Ph.D. in Biochemistry** : Banaras Hindu University, Varanasi, India, 2002.
- ≠ **MS in Biochemistry** : Dr. RML Avadh University, Faizabad, India, 1997.
- ≠ **BS in Biology** : St. Andrews College, University of Gorakhpur, Gorakhpur, India, 1994.

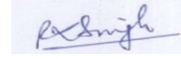
Personal Statement

- ≠ In my academic and research journey, I have learned to efficiently/effectively deliver the acquired knowledge for a productive outcome. I can responsibly and successfully manage given tasks. I am amicable in nature and believe in collaboration and cooperation in order to get quality results. My professional journey has also helped me to acquire independent working ethics, and managing a team of both, professional or amateurs. I am also equally good in managing quite a good number of students.

References

- ≠ **Dr. Pradeep Das, FNA, FASc, FNASc, JC Bose Fellow**
Former Director, Rajendra Memorial Research Institute of Medical Sciences (ICMR), Dept. of Health Research, Ministry of Health & Family Welfare (Govt. of India), Agam Kuan, Patna-800007, Bihar.
Current: ICMR Emeritus Scientist, ICMR-National Institute of Cholera and Enteric Diseases, Kolkata, WB
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- ≠ **Dr. Udai Pandey, PhD**
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April, 2026

A handwritten signature in blue ink, appearing to read 'R. Singh', is enclosed within a light blue rectangular box.

(Rakesh K. Singh)