



***Brief Biography***

**of**

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**Research Interests:** Human Molecular Virology, Immunology and Inflammation Biology

### **Address of correspondence:**

Molecular Biology Unit, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, U.P, India

### **Professional Experience:**

1. Associate Professor (Molecular Immunology); Molecular Biology Unit, Faculty of Medicine, Institute of Medical Sciences (IMS), Banaras Hindu University (BHU), Varanasi, India
2. Scientist\*, Section of Infectious Diseases, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, India. (\*Currently on Lien)
3. Honorary Assistant Professor, Faculty of Biological Sciences, Academy of Scientific and Innovative Research (ACSIR), New Delhi, India
4. Visiting Scientist, Department of Pathology & Immunology, University Medical Centre, University of Geneva, Geneva, Switzerland.
5. Department of Microbiology, College of Veterinary Medicine, Chonbuk National University, Republic of Korea.
6. Visiting Scientist, Section of Arbovirology, Dept of Parasitology, Academy of Science Czech Republic, Czech Republic.
7. Visiting Scientist, Dept of Pediatric Infectious Diseases and Immunology, Uni-Kinderklinik, University of Wuerzburg, Wuerzburg, Germany.
8. Visiting Scientist, Dept of Pathology, Dept of Microbiology and Immunology, Albert Einstein College of Medicine, Bronx, New York (USA).
9. Postdoctoral Scholar, Department of Neurology, University of California Davis Medical Centre, Sacramento, California (USA).
10. Postdoctoral Associate, Section of Rheumatology, Dept of Internal medicine, Yale University, School of Medicine, New Haven, Connecticut, USA.

11. IZKF Research Fellow (Biologist), Department of Paediatric Rheumatology, Osteology, and Infectious Diseases, Children's Hospital, University of Wuerzburg, Germany.

### **Professional Affiliations:**

1. Member of "Inflammation Research Association (IRA)" USA.
2. Member of "Society for Neuroscience", Washington, DC, (U.S.A).
3. Member "International Brain Research Organization", Paris, France.
4. Member "New York Academy of Sciences," New York, USA.
5. Advisory Board Member on Infectious Diseases "European Medical Network (EuroMDnet)" Brussels, Belgium.
6. Member "Society for Cell Science", Northamptonshire, UK
7. Collaborative Member-Baylor College of Medicine, Texas Medical Centre, Texas (USA).
8. Life Member-National Academy of Vector Borne Diseases, Orissa, India
9. Life Membership of Indian Academy of Neurosciences
10. Life Membership of Indian Immunology Society

### **Awards and Honors:**

1. G B Pant University "**Merit Scholarship**" recipient.
2. "**Vice Chancellor Gold Medal**" in BS degree programme.
3. "**National Award "SCIENTILLA-96"** in National Biotechnomeet organised by Association of Biochemical engg and food technologists, India at Harcourt Buttler Technological Institute, Kanpur, (U.P).
4. "**Young Scientist Award**" in National Conference organised by international Society for Environmental protection, M.M Engineering College and U.P. Forest Corporation, Gorakhpur, (U.P).
5. "**Skinner Memorial Award**" by American Fisheries Society, Bethesda, USA.
6. "**Travel Grant Award**" by American Fisheries Society, Bethesda, USA.
7. "**Best Poster Award**" in 13<sup>th</sup> Annual conference of working groups on Juvenile and Adolescent arthritis, Halle, Germany.
8. "**Best Poster Award**" in Annual convention of the German Society for Paediatric infections, Mainz, Germany.
9. "**Travel Grant Award**" by Sandia National Laboratories, New Mexico, USA.
10. "**NIH-Fogarty Fellow**"- AIDS International Training Program, AECOM, New Work, USA.

11. **“European Cooperation in Science and Technology, Belgium-Grant Award”**- BSL-3 and BSL-4 pathogens-Action B28 Program, Institute of Virology, Bereich Humanmedizin, Georg August University, Gottingen, Germany.
12. **TWN, Travel Grant Award** to attend International Biosafety course at Tromso, Norway.
13. **Sabin Vaccine Institute Travel Grant Award**- To attend the Smallpox Eradication Commemoration 2010 symposium (SEC2010) symposium titled “Smallpox Eradication after 30 Years: Lessons, Legacies, and Innovations at Rio de Janeiro, Brazil.
14. **DAAD-Travel Grant Award**-To attend Euro-Indian Week, University of Wuerzburg, Wuerzburg, Germany.
15. **FEBS Journal Top Cited Paper Award.**

### **Presentations in Seminar and Symposia:**

1. **Singh S. K**, Wirsing A, Bar, V, Morbach, H, Frosch, M, Girschick, H. J, 2002. Regulation der Chemokin- Genexpression in humanen Synovialzellen durch verschiedene *Borrelia burgdorferi*- isolate. (Abstract in German). **Akt. Rheumatol (2002) 27, S8.**
2. Morbach. H, Samfass, U, **Singh, S. K.**, Lipsky, P. E, Girschick, H. J, 2003, Der Einfluss von cyclophosphamid auf die differenzielle Genexpression der Gene RAG-1 und RAG-2 in CD5+ und CD5- IgD+ peripheren B-Zellen bei kindlichem SLE (Abstract in German). 13th conference of the working group on Juvenile and adolescent arthritis. **Aktuelle Rheumatologie (2003), 28:285.**
3. Holl, A, Suerbaum, S, **Singh, S. K**, Wirsing, A, Girschick, H. J, 2002 Seronegative Lyme Borreliose als Differenzialdiagnose einer frühkindlichen Oligoarthritis. (Abstract in German) In Annual meeting of the German collaborative group on Juvenile Arthritis: Hospital for Pediatric Rheumatology Garmisch- Partenkirchn, Germany, **Akt. Rheumatol (2002) 27, S14.**
4. **S. K. Singh**, A. Wirsing, V. Baar, H. Morbach, M. Frosch and H. J. Girschick, 2003, Expression of chemokines, metalloproteinases and cyclooxygenases in human synoviocytes by different *Borrelia burgdorferi* isolates. (Abstract). **Clin Exp Rheumatology (2003) Vol 21/4, p546.**
5. H. Morbach, U. Samfass, **S. K. Singh**, P. E. Lipsky, H. J. Girschick, 2003, Expression of RAG1, RAG 2 and VpreB genes in IgD+CD5+/- Peripheral B cells during Cyclophosphamide treatment in Pediatric SLE (Abstract). **Clin Exp Rheumatology (2003) Vol 21/4, p546.**
6. **S. K. Singh**, A. Wirsing, V. Baar, H. Morbach, M. Frosch and H. J. Girschick, 2003, Expression of Chemokines, Metalloproteinases and Cyclooxygenases in Human Synoviocytes by different *Borrelia burgdorferi* Isolates (Abstract). **Arthritis and Rheumatism (2003) 48 Vol 9, S519.**
7. **S. K. Singh**, A. Wirsing, V. Baar, H. Morbach, M. Frosch and H. J. Girschick, 2003, Expression of Chemokines, Metalloproteinases and Cyclooxygenases in Human Synoviocytes by

- different *Borrelia burgdorferi* Isolates (Abstract). 13th conference of the working group on juvenile and adolescent arthritis. **Aktuelle Rheumatologie (2003), 28:286.**
8. H. Morbach, U. Samfass, **S. K. Singh**, P. E. Lipsky, H. J. Girschick, 2003, Expression of RAG1, RAG 2 and VpreB genes in IgD+CD5+/- Peripheral B cells during Cyclophosphamide treatment in Paediatric SLE (Abstract). **Arthritis and Rheumatism (2003) 48 Vol 9, S192.**
  9. H. J. Girschick, H. Morbach, U. Samfass, **S. K. Singh**, P. E. Lipsky, H. J. Girschick, 2003 Expression of RAG-1 and RAG-2 genes in peripheral B cells of children and adults with SLE, 39th annual convention for paediatric research. **Eur J Pediatrics (2003) 162: R6.**
  10. H. J. Girschick, H. Morbach, **S. K. Singh**, Chemokine expression von synovialzellen nach infektion mit *Borrelia burgdorferi*. **Monatsschrift f. Kinderheilkunde (2003) 151/ Suppl.1.**
  11. H. Morbach, **S.K. Singh**, C. Faber, A. Grammer, P.E. Lipsky, H.J. Girschick, RAG1 expression by peripheral blood B cells of pediatric patients with SLE, 14<sup>th</sup> Annual conference of working groups on Juvenile and Adolescent arthritis, Germany, **Aktuelle Rheumatologie (2004), 63:264.**
  12. **S.K Singh**, H. Morbach, T. Nanki, C. Faber, V. Bar, H.J.Girschick, Differential expression of matrix metalloproteinases and cyclooxygenase in synovial cells infected by *Borrelia burgdorferi*. **5th EULAR Congress, Berlin, 2004.**
  13. H. Morbach, **S.K. Singh**, C. Faber, A. Grammer, P.E. Lipsky, H.J. Girschick, RAG1 expression by peripheral blood B cells of pediatric patients with SLE. **5th EULAR Congress, Berlin, 2004.**
  14. **S.K Singh**, H. Morbach, C. Faber, H.J.Girschick, Expression of Recombination activating genes in human B cells after exposure to *Borrelia burgdorferi*, **EULAR, Vienna, 07/05, 2005.**
  15. **S.K Singh**, H. Morbach, C. Faber, H.J.Girschick, Expression of Recombination activating genes in human B cells after exposure to *Borrelia burgdorferi* PRES annual Congress. Paris 09/05, **Clin Exp Rheumatol 2005, 23: S-8.**
  16. **S.K Singh**, H. Morbach, C. Faber, H.J.Girschick, Expression of Rekombination aktivating genes in human B cells after exposure to *Borrelia burgdorferi*, (Abstract in German) **DGPI, Düsseldorf 06/2005.**
  17. Sunit Kumar Singh, Maryam Urooj, Salini Krishnan, Ritu Mishra, Chintan Chhatbar, Makoto Horiuchi, David Pleasure, 2009, MicroRNA profiling of Rat brain Oligodendroglial lineage Cells, "BIOMICS Hands-on Workshop & Conference" organized by **Weizmann Institute of Science, Israel.**
  18. Manish K. Johri, Ritu Mishra, Chintan Chhatbar, Salini Krishnan, Sunit K. Singh, (Mar. 6-10, 2010), Role of HIV Tat Protein in HIV Pathogenesis, "Second Advanced Summer School in Africa on "Molecular mechanism of Viral infection and Propagation" organized by **IUBMB/ICGEB/FEBS/FASBMB/UNESCO, Hermanus, South Africa.**

19. Ritu Mishra, Chintan Chhatbar, Sunit K. Singh, (Oct. 17-19, 2012), HIV-1 Tat C mediated regulation of TRAF3 by microRNA 32 in human microglia” in XXXVI All India Cell Biology Conference and International Symposium organized by **Bhabha Atomic Research Centre, Mumbai, India**
20. Sunit K. Singh, (Aug. 30-31, 2013), Emerging and Re-emerging viral zoonoses: A challenge to science and society (*Plenary Lecture*), in a National Conference on “Dengue and Chikungunya Epidemiology and their Management in India” organized by **Scott Christian College, Nagercoil, T.N and Centre for Research in Medical Entomology (CRME), (ICMR) Madurai.**
21. Sunit K. Singh (Oct, 16-18, 2013), Spill Over Transmissions and Risk of Infectious Diseases” (*Invited Talk*), XII International Conference on Vector and Vector Borne Diseases organized by **University College of Science, ML Sukhadia University Udaipur, Rajasthan & National Academy of Vector Borne Diseases, Bhubaneswar.**
22. Ritu Mishra, **Sunit K. Singh** (June, 14-15, 2014) HIV-1 Tat protein exploits the microRNA mediated regulation of Blood Brain Barrier Permeability, **Gordon Research Seminar on Barriers of the CNS (GRS), Colby-Sawyer College in New London NH USA.**

### **Meeting Report:**

Sumit G. Gandhi, **Sunit K.Singh**, Bharat B. Chattoo, 2010, Integrating the Omics, **Current Science 98:6, 742-744.**

### **Book Chapters:**

1. Bhadra, U, **Singh, S.K.**, Hajeri, P.B., Bhadra, M. (2009) microRNA tales in fly development”, Regulation of gene expression by small RNAs. In: R.K.Gaur and J.J.Rossi (ed.) Regulation of Gene Expression by small RNAs (ISBN: 978-0-8493-9169-9. Taylor & Francis Group, CRC Press. Pp.123-147.
2. **Singh, S.K.**, Hajeri, P.B. (2012) RNAi: From Basics to Therapeutics. In: D. Whitehouse and R. Rapley (ed.) Molecular and Cellular Therapeutics (ISBN: 978-0-470-74814-5). John Willey & Sons Publication, Willey-Blackwell Press, USA. Pp.123-147.
3. Mishra, R, **Singh, S.K.** (2013) Human Immunodeficiency Virus (HIV) Neuropathogenesis, **Sunit K. Singh** & Daniel Ruzek (ed.), 2013, titled “Neuroviral Infections: RNA Viruses and Retroviruses”, ISBN 1466567201, 9781466567207, Publisher: Taylor & Francis/CRC Press, USA. Pp.457-483.
4. Lahoti, J.A, Mishra, R, **Singh, S.K** (2013) Vascular Endothelial Dysfunctions: Viral Attack and Immunological Defense, **Sunit K. Singh** & Daniel Ruzek (ed.), 2013, titled “**Viral**

**Hemorrhagic Fevers**", ISBN-10:1439884293| ISBN-13: 978-1439884294 Publisher: Taylor & Francis/CRC Press, USA, Pp.63-83.

5. **Singh, S.K** (2013), Spillover Transmission and Emergence of Viral Outbreaks in Humans, **Sunit K. Singh** (ed.), 2013, titled "**Viral Infections and Global Change**", ISBN-978-1-118-29787-2, Publisher: John Wiley & Sons/Wiley Blackwell, USA, Pp.343-351.
6. Sinha, A., **Singh, S.K** (2013) Overview on anatomy of human respiratory system, **Sunit K. Singh** (ed.), 2014, titled "**Human Respiratory Viral Infections**", ISBN-1466583207, 9781466583207, Publisher: Taylor & Francis/CRC Press, USA.

### **Published Books:**

1. Edited by **Sunit K. Singh** & Daniel Ruzek, **2013**, titled "**Neuroviral Infections: General Principles and DNA Viruses**", ISBN-10: 1466567198, ISBN-13: 978-1466567191 Publisher: Taylor & Francis/CRC Press, USA (<http://www.ncbi.nlm.nih.gov/nlmcatalog/101591963>).
2. Edited by **Sunit K. Singh** & Daniel Ruzek, **2013**, titled "**Neuroviral Infections: RNA Viruses and Retroviruses**", ISBN 1466567201, 9781466567207, Publisher: Taylor & Francis/CRC Press, USA (<http://www.ncbi.nlm.nih.gov/nlmcatalog/101592050>).
3. Edited by **Sunit K. Singh** & Daniel Ruzek, **2013**, titled "**Viral Hemorrhagic Fevers**", ISBN-10:1439884293| ISBN-13: 978-1439884294 Publisher: Taylor & Francis/CRC Press, USA, (<http://www.ncbi.nlm.nih.gov/nlmcatalog/101603935>)
4. Edited by **Sunit K. Singh**, **2014** titled "**Viral Infections and Global Change**", ISBN-978-1-118-29787-2, Publisher: John Wiley & Sons/Wiley Blackwell, USA, <http://as.wiley.com/WileyCDA/WileyTitle/productCd-1118297873.html>
5. Edited by **Sunit K. Singh**, **2014**, titled "**Human Respiratory Viral Infections**", ISBN-1466583207, 9781466583207, Publisher: Taylor & Francis/CRC Press, USA.

### **Selected Publications:**

1. **S. K. Singh** and H.J.Girschick, **2003**, Tick-host interaction and their immunological implications in Tick borne diseases, **Current Science 85:9, 1284-1298.**
2. **S. K. Singh** and H. J. Girschick, **2004**, Lyme borreliosis: from infection to autoimmunity, **Clinical Microbiology and Infection, 10(7): 598-614.**
3. **S. K. Singh** and H. J. Girschick, **2004**, Molecular survival strategies of the Lyme disease spirochete *Borrelia burgdorferi*; **Lancet Infectious diseases, 4(9): 575-583.**
4. **S. K. Singh**, H. Morbach, T. Nanki, C. Faber, V. Baar, and H. J. Girschick, **2004**, Differential expression of Matrix metalloproteinases and Cyclooxygenases in synovial cells exposed to

- different *Borrelia burgdorferi* isolates Geho and B31, *Inflammation Research*, 53(12) 689-696.
5. **S. K. Singh**, H. Morbach, T. Nanki, A. Wirsing and H. J. Girschick, **2005**, Differential expression of Chemokines in Synovial cells exposed to different *Borrelia burgdorferi* isolates, *Clinical and Experimental Rheumatology* ,23(3): 311-22.
  6. H. Morbach, **S. K. Singh**, C. Faber, A. Grammer, P. E. Lipsky, H. J. Girschick, **2005**, Analysis of RAG expression by peripheral blood CD5+ and CD5- B cells of patients with childhood Systemic Lupus Erythematosus. *Annals of Rheumatic Diseases*,65(4): 482-7.
  7. **S. K. Singh**, V. Baar and H. J. Girschick, **2005**, Expression of ICAM-1, ICAM-2, NCAM-1 and VCAM-1 by human synovial cells exposed to *Borrelia burgdorferi* *in vitro*. *Rheumatology International*, 26(9): 818-827.
  8. C. Faber, H. Morbach, **S.K. Singh** and H.J. Girschick, **2006**, Differential expression patterns of Recombination Activating Genes (RAG) in individual mature B cells in Juvenile Idiopathic Arthritis *Annals of Rheumatic Diseases* 65(10):1351-6.
  9. **S. K. Singh** and H. J. Girschick, **2006**, Toll like receptors in *Borrelia burgdorferi* induced inflammation, *Clinical Microbiology and Infection*, 12(8): 705-717.
  10. David Pleasure, Athena Soulika, **Sunit K Singh**, Vittorio Gallo, Peter Bannerman, **2006**, Inflammation in white matter: Clinical and pathophysiological aspects *Mental Retardation and Developmental Disabilities Research Reviews*, 12(2): 141-146.
  11. **S. K. Singh**, **2007**, MicroRNAs: From Neurogeneration to Neurodegeneration *Pharmacogenomics*:8(8):971-8.  
\*Considered in the list of Top 10 articles” in miRNAs and Neurodegeneration domain.
  12. **S. K. Singh**, **2007**, HIV spread among women (Editorial) *Expert Reviews of Antiinfective Therapy* 5(5):755-758.
  13. **S. K. Singh**, M Bhadra, H. J. Girschick, U Bhadra **2008**, MicroRNAs: Micro in size but macro in function, *The FEBS Journal* 275 (20), 4929-44.  
\*\* Figure selected as the cover page of the journal.
  14. Morbach H, Richl P, Faber C, **Singh SK**, Girschick HJ, **2008**, The kappa immunoglobulin light chain repertoire of peripheral blood B cells in patients with juvenile rheumatoid arthritis, *Molecular Immunology*, 45(14):3840-6.
  15. **S. K. Singh**, **2008**, RNA interference and its therapeutic potential against HIV infection. *Expert Opinion on Biological Therapy* 8(4):449-461.
  16. PB Hajeri, **SK Singh**, **2009**, siRNAs: their potential as therapeutic agents - Part I. Designing of siRNAs, *Drug Discovery Today*, Sep; 14(17-18):851-8.
  17. **SK Singh**, PB Hajeri, **2009**, siRNAs: their potential as therapeutic agents - Part II. Methods of delivery, *Drug Discovery Today*, Sep; 14(17-18):859-65.



18. **SK Singh**, RK Gaur, 2009, Progress towards therapeutic application of RNA interference for HIV infection, *BioDrugs*, 23 (5): 269–276.
19. MK. Johri, R. Mishra, C. Chhatbar, SK. Unni, **SK. Singh**, 2011, Tits and bits of HIV Tat Protein. *Expert Opin Biol Ther.* 11 (3) 269-83.
20. SK. Unni, D. Růžek, C. Chhatbar, R. Mishra, MK. Johri, **SK. Singh**, 2011, Japanese encephalitis virus: From Genome to Infectome. *Microbes and Infection.* 13(4) 312-21.
21. C. Chhatbar, R. Mishra, **SK. Singh**, 2011, HIV Vaccine: Hopes and Hurdles. *Drug Discov Today.* Nov;16(21-22):948-56.
22. **SK. Singh**, SK. Unni, 2011, Chikungunya Virus: Host Pathogen Interaction. *Reviews in Medical Virology*, 21(2)78-88.
23. D. Růžek, J. Salát, **SK. Singh**, and J. Kopecký, 2011 Breakdown of the Blood-Brain Barrier During Tick-Borne Encephalitis in Mice Is Not Dependent on CD8+ T-cells *PLoS One.* 2011;6(5):e20472.
24. Y. W. Han, S. K. Singh, S. K. Eo, 2012, The Roles and Perspectives of Toll-Like Receptors and CD4+ Helper T Cell Subsets in Acute Viral Encephalitis. *Immune Network.* 12(2):48-57.
25. R Mishra, C Chhatbar and **SK Singh**, 2012, HIV-1 Tat C-mediated regulation of tumor necrosis factor receptor-associated factor-3 by microRNA 32 in human microglia, *Journal of Neuroinflammation*, 18;9:131 (PMID: 22709905)
26. Peter Hotez, Sunit K. Singh and Xiao-Nong Zhou, 2013, Advancing Sino-Indian Cooperation to combat tropical diseases (Editorial), *PLoS Neglected Tropical Diseases* 7(9), 1-4.
27. R Mishra, and **SK Singh**, 2013, HIV-1 Tat C modulates expression of miRNA-101 to suppress VE-Cadherin in Human Brain Microvascular Endothelial Cells, *The Journal of Neuroscience* 33(14):5992-6000; doi:10.1523/JNEUROSCI.4796-12.2013. (Included in F1000)
28. Gunjan Dhawan Manocha, Ritu Mishra, Nikhil Sharma, Kanhaiya Lal Kumawat, Anirban Basu, **Sunit K. Singh**, 2014, Regulatory role of TRIM21 in type-I interferon pathway in Japanese encephalitis virus infected human microglial cells *Journal of Neuroinflammation* doi: 10.1186/1742-2094-11-24.
29. Ritu Mishra, **Sunit K. Singh**, 2014, HIV-1 Tat C phosphorylates VE-cadherin complex and increases human brain microvascular endothelial cell permeability, *BMC Neuroscience (In Press).*