

## CURRICULUM VITAE

August 31, 2022

**Arvind Sahu, Ph.D.**

### PERSONAL

Designation: Dean, Scientist G and J C Bose Fellow

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Birth date / Place: June 19,1963; Wardha, Maharashtra

Citizenship: Indian

Marital status: Married

### EDUCATION AND POSTGRADUATE TRAINING

- B.Sc., Microbiology, J. B. Science College, University of Nagpur, Nagpur, 1983.
- M.Sc., Microbiology, Dept. of Microbiology and Biochemistry, University of Nagpur, Nagpur, 1985.
- Ph.D., Microbiology (Immunology), Vallabhbhai Patel Chest Institute, University of Delhi, Delhi, 1991 (Supervisor: Prof. Kunal Saha, VPCI, Delhi; Co-supervisor: Prof. Virendra N. Sehgal, MAMC, Delhi).
- Post-doctoral Research Associate, Department of Biochemistry, University of Texas Health Science Center, Tyler, Texas, USA, Dec., 1991-Sept., 1994. (Mentor: Prof. Michael K. Pangburn).
- Visiting Fellow, Department of Pediatrics, Division of Allergy and Pulmonary Medicine, Washington University School of Medicine, St. Louis, Missouri, USA, Jan., 1994 - Feb., 1994. (Mentor: Prof. Rick Wetsel).
- Post-doctoral Research Associate, Laboratory of Protein Chemistry, Department of Pathology & Lab. Med., University of Pennsylvania, Philadelphia, Pennsylvania, USA, Oct., 1994-June, 1998. (Mentor: Prof. John D. Lambris).

## FACULTY APPOINTMENTS

- Research Assistant Professor of Pathology and Laboratory Medicine, Department of Pathology & Lab. Med., University of Pennsylvania, Philadelphia, Pennsylvania, U.S.A., July, 1998- April 2000.
- Scientist D, National Centre for Cell Science, Ganeshkhind, Pune, 2 May 2000 – 1 May 2004.
- Scientist E, National Centre for Cell Science, Ganeshkhind, Pune, 2 May 2004 – 1 Nov 2007.
- Scientist F, National Centre for Cell Science, Ganeshkhind, Pune, 2 Nov 2007 – 1 Nov 2012
- Scientist G, National Centre for Cell Science, Ganeshkhind, Pune, 2 Nov 2012 – present
- Dean and Scientist G, National Centre for Cell Science, Ganeshkhind, Pune, 2 Nov 2012 – present
- Director-in-Charge and Scientist G, National Centre for Cell Science, Ganeshkhind, Pune, Feb 1, 2022 – Jun 14, 2022.

## TEACHING AND TRAINING

Recognized as a Ph.D. guide in Biotechnology in S. P. Pune University, Pune, and as a co-guide in D. Y. Patil Vidyapeeth, Pune.

Number of students received Ph.D. - 15; Number of students submitted Ph.D. - 0; Number of students registered for Ph.D. – 6.

#	Student	Level	Period	Thesis title	Present position
1.	Johnson John Bernet	Ph.D.	2000-05	Vaccinia virus complement control protein (VCP): Role in complement inactivation and structure function analysis	Scientist E-1, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram.
2.	Akhilesh Singh	Ph.D.	2001-07	Molecular cloning, expression, characterization and structure function analysis of Herpesvirus saimiri complement control protein	Principal scientist, GentiBio, Boston, USA
3.	Archana P. Kadam	Ph.D.	2003-10	Development and characterization of inhibitors of the alternative complement pathway	She took a career break to raise her children
4.	Muzammil Ahmad	Ph.D.	2004-10	Vaccinia virus complement control protein (VCP): structure-function analysis and role in vaccinia virus	Senior Scientist, Elixigen, LLC, USA

5.	Kalyani Pyaram	Ph.D.	2005-11	pathogenesis Functional characterization and structure-function analysis of Kaposica, the complement regulator of Kaposi's sarcoma-associated herpesvirus (KSHV)	Assistant Professor, Kansas State University, KS, USA
6.	Vivekanand Yadav	Ph.D.	2006-11	Molecular characterization of smallpox inhibitor of complement enzymes, a functional homolog of human complement regulators	Assistant Professor, School Medicine, University of Missouri, Kansas City, KS, USA
7.	Malik Johid Reza	Ph.D.	2007-12	Studies on molecular basis of complement regulation in Herpesvirus saimiri complement control protein homolog (HVS-CCPH)	Post-doc at Children's Hospital Oakland Research Institute, Oakland, CA, USA
8.	Ajitanuj Rattan	Ph.D.	2010-16	Studies on the role of complement in influenza infection	Post-doc at Boston Children's Hospital, Harvard Medical School, Boston, MA, USA
9.	Avneesh Kumar Gautam	Ph.D.	2010-16	Structural-Functional analysis of Kaposica, the complement regulator of Kaposi's sarcoma-associated herpesvirus (KSHV/HHV-8)	Post-doc at Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA
10.	Ashish Kamble	Ph.D.	2011-17	Studies on mechanism of complement-mediated neutralization of vaccinia virus and its rescue by the virus-encoded complement regulator VCP	Intox Private Limited, Pune
11.	Jitendra Kumar	Ph.D.	2011-17	Molecular characterization of vaccinia virus complement control protein, an immune evasion protein of vaccinia virus	Post-doc at Baylor Institute for Immunology Research, Dallas Texas, USA
12.	Hemendra Singh Panwar	Ph.D.	2012-19	Development and characterization of C3-convertase inhibitors	Post-doc at UT Southwestern Medical Center, Dallas, Texas, USA.
13.	Hina Ojha	Ph.D.	2013-19	In silico annotation of complement regulatory RCA	Post Doctoral Fellow at University of Dundee,

14.	Rajashri Shende	PhD	2018-2021	proteins and their experimental validation Role of complement in <i>Aspergillus fumigatus</i> infection	Scotland, UK. Associate Research Analyst, Intox Private Limited, Pune.
15.	Arya Ghate	PhD	2014-2021	Role of complement activation products C3a and C5a in macrophage differentiation and polarization	Post Doctoral Fellow at University of Oxford, Oxford, UK

#### MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

- Member, American Association of Immunologists (1997 till 2001).
- Member, International Complement Society (since 1993).
- Member, American Society for Microbiology (since 2005)
- Member, Molecular Immunology Forum (since 2005)
- Member, Guha Research Conference (since 2014).

#### AWARDS AND HONOURS

- Wellcome Trust Overseas Senior Fellow in Biomedical Science in India (2001-2006).
- Fellow, National Academy of Sciences, Allahabad, India (2009).
- Fellow, Indian National Science Academy, New Delhi, India (2016).
- Fellow, Indian Academy of Sciences, Bengaluru, India (2019).
- Invited to give Henry Stewart Talk on "Subversion of the complement system by viruses" for a lecture series titled "The Complement System" edited by Professor Sir Peter Lachmann of Cambridge University, UK.
- J C Bose National Fellow (2020).

#### GRANTS

- Co-Principal Investigator, Studies on complement diversity and evolution, 1998-2003 (PI J.D. Lambris, NIH GM56698).
- Co-Principal Investigator, Structural-functional analysis of compstatin, 2000-2005 (PI, J.D. Lambris, NIH GM-62134).
- Co-Principal Investigator, Structural and functional analysis of C3, 2000-2005, (PI, J.D. Lambris, NIH AI 30040).
- Principal Investigator, Structure-function analysis of viral homologs of complement control proteins, 2001-2006, Wellcome Trust, UK (Total Support, Rs. 2.33 Cr).

- Principal Investigator, Development of alternative pathway-specific complement inhibitors to block host cell damage, 2006-2009, Department of Biotechnology, India (Total Support, Rs. 43.1 lakhs).
- Principal Investigator, Role of vaccinia virus complement control protein in the viral pathogenesis, 2007-2010, Department of Biotechnology, India (Total Support, Rs. 80.34 lakhs).
- Principal Investigator, Studies of species specificity in poxviral complement regulators 2011-2014, Department of Biotechnology, India (Total Support, Rs. 40.35 lakhs).
- Principal Collaborator, Soluble mediators of the immune system against *Aspergillus fumigatus*, 2014-2016, DST-ANR Project (Indo-French Project) (Total support, Rs. 33.05 lakhs).
- Principal Investigator, Fine mapping of functional sites in Kaposica, the complement regulator of Kaposi's sarcoma-associated herpesvirus (HHV-8), 2015-2018, Department of Biotechnology, India (Total Support, Rs. 72.14 lakhs).
- Principal Investigator, Role of complement anaphylatoxins C3a, C4a and C5a generated intracellularly in the infection locale in providing protection against viral infection, 2018-2021 Department of Biotechnology, India (Total Support Rs. 69.65 lakhs)
- Principal Investigator, NCCS (Co-PI: Akanksha Chaturvedi and Radha Chauhan). Other partners: IIT Indore (Debasis Nayak); PredOmix Technologies Pvt. Ltd. ( Kanury Rao); Bharat Biotech International Ltd. (Krishna Ella). A multi-institutional CSIR-NMITLI project on the Generation of neutralizing human monoclonal antibodies against the SARS-CoV2 virus as a therapeutic strategy to contain the COVID-19 pandemic, 2020-2021 (Total NCCS support Rs. 102.20 lakhs).

## MANUSCRIPT AND GRANT REVIEW

- Associate Editor, *Frontiers in Immunology*, for Molecular Innate Immunity, a specialty section of *Frontiers in Immunology* (Since March 2021)
- Review Editor, *Frontiers in Immunology*, for Molecular Innate Immunity, a specialty section of *Frontiers in Immunology* (since 2011).
- Served as a manuscript reviewer for: *Science*, *Science Immunology*, *Journal of Immunology*, *Journal of Virology*, *Journal of Biochemistry*, *Biochemistry*, *Trends in Microbiology*, *Trends in Pharmacological Sciences*, *Seminars in Immunology*, *Lupus*, *Molecular Immunology*, *Immunobiology*, *Frontiers in Immunology*, *Chemical Biology & Drug Design*, *PLoS ONE*, *Journal of Biosciences*, *Current Science*, *Current Medicinal Chemistry*, *Biogerontology*, *Experimental Biology and Medicine*, *Indian Journal of Biochemistry and Biophysics*, *Journal of Indian Institute of Science*, and *Indian Journal of Virology*.

- Served as a grant reviewer for the Wellcome Trust, UK, Hungarian Scientific Research Fund (OTKA), Department of Biotechnology, Department of Science and Technology and Indian Council of Medical Research, Indo-Swiss “Blue sky research/ basic research”.
- Member, Indo-Swiss “Blue sky research/ basic research” committee, Department of Biotechnology (2018)

### **ACADEMIC COMMITTEE**

- Member, Indian National Science Academy (INSA) Sectional Committee –10 (2019).
- Member, IYBA Expert Committee, Department of Biotechnology (2014-2016).
- Member, Scientific Advisory Sub-Committee in Infectious Disease Group, Institute of Life Sciences, Bhubaneswar (2019).
- Member, Programme Advisory Committee (PAC) on Health Sciences, Science & Engineering Research Board (SERB), Department of Science and Technology, India (2019).
- Member, Governing Body of Bajaj College of Science, Wardha (2020-2023).
- Member, CSIR-Centre for Cellular and Molecular Biology Research Council (Since 2020)
- Member, Ramalingaswami Re-entry Fellowship Selection Committee (Since 2021).

### **INVITED LECTURES AND SEMINARS**

- July 7, 1993, Univ. of Texas Health Center Seminar Series, Tyler, Texas, USA, “Specificity of the thioester-containing reactive site of human C3 and its significance to complement activation”.
- Oct. 4, 1993, V. P. Chest Institute, University of Delhi, Delhi, “Specificity of the thioester-containing reactive site of human C3 and its significance to complement activation”.
- July 8, 1994, DuPont Merck Pharmaceutical Company, Wilmington, Delaware, U.S.A. “The thioester of human C3: Specificity and role in complement activation”.
- Sept. 22, 1994, Department of Microbiology and Immunology, Temple University School of Medicine, Philadelphia, Pennsylvania, USA, “The thioester of human C3: Specificity and role in complement activation”.
- April 9, 1996, Complement Seminar Series, University of Pennsylvania, Philadelphia, Pennsylvania, USA, “Modulation of complement by recombinant vaccinia virus complement control protein”.

- Oct. 25, 1996, Philadelphia Area Herpesvirus Seminar Series, University of Pennsylvania, Philadelphia, Pennsylvania, USA, “Protein-protein interactions in the complement system and molecular mimicry by glycoprotein C of HSV”.
- Dec. 2, 1996, Complement Seminar Series, University of Pennsylvania, Philadelphia, Pennsylvania, USA, “Inhibition of human complement by C3-binding peptides”.
- Nov. 13, 1998, National Institute of Immunology, New Delhi, "Viral strategies for complement evasion: molecular mechanisms".
- Oct. 28, 1999, Biosensor Users Group Seminar, The Cancer Center Biosensor/Interaction Analysis Core Facility, University of Pennsylvania, Philadelphia, Pennsylvania, USA, “Binding kinetics of Compstatin, a novel peptide inhibitor of complement C3”.
- May 1, 2002, First International Wellcome Trust Senior Fellow Meeting, London, “Structure-function analysis of viral homologs of complement control proteins”.
- May 9, 2002, Department of Infectious Diseases, University of Pennsylvania, Philadelphia, Pennsylvania, USA, “Structure-function studies on viral homologues of complement control proteins”.
- April 3, 2003, First Indian Senior Fellow Meeting, ICGEB, Delhi, “Viral complement control proteins: ‘the mask of self’ for viruses”.
- Feb. 3, 2005, 13<sup>th</sup> Molecular Immunology Forum, The International Centre, Dona Paula, Goa, “Herpes and pox viral proteins targeting the complement system”.
- March 31, 2005, Department of Biotechnology, University of Pune, Pune, “Viral evasion of the host complement system”.
- Nov 9, 2006, Department of Bioengineering, University of California at Riverside, CA, USA, “Viral evasion of the host complement system”.
- January 30, 2007, 33<sup>rd</sup> Indian Immunology Society Conference, All India Institute of Medical Sciences, “Viral mimicry of human complement regulators”.
- March 1, 2007, 15<sup>th</sup> Molecular Immunology Forum, Indian Institute of Science, Bangalore “Viruses avoid complement”.
- November 29, 2007, UGC Sponsored National Seminar on Microbiological Developments and Biochemical Research, LAD College for Women of Arts, Commerce and Science, Nagpur, “Complement: a viral target for immune evasion”

- March 16, 2008, 16<sup>th</sup> Molecular Immunology Forum, Institute of Microbial Technology, Chandigarh, “Structural basis for potent complement regulatory activity of SPICE, the variola virus complement regulator”.
- December 9, 2008, Silver Jubilee Year Lecture Series, Central India Institute of Medical Sciences, Nagpur, “Complement: a viral target for immune evasion”.
- March 7, 2009, 17<sup>th</sup> Molecular Immunology Forum, Tata Institute of Fundamental Research, Mumbai “Influence of electrostatic potential on the complement regulatory functions of Kaposica, the complement inhibitor of Kaposi’s sarcoma-associated herpesvirus”.
- March 14, 2009, National Seminar on Recent Advances and Future Trends in Immunologicals, Sinhgad College of Engineering, Pune, “Viral complement evasion: the stealth attack strategies developed by viruses”.
- October 12, 2010, Indo-French Seminar on Host-Pathogen Interactions in Respiratory Infectious Disease (HOPE IN RED) organized by Indo-French Centre for the Promotion of Advanced Research at Bengaluru, “Viral complement regulators: from structure to function”.
- December 14, 2010, 79<sup>th</sup> meeting of Society of Biological Chemists (India) at the Indian Institute of Science (IISc), Bengaluru, “Viral complement regulators: from structure to function”.
- February 19, 2011, 19<sup>th</sup> Molecular Immunology Forum, National Institute of Immunology, New Delhi, “Domain swapping reveals complement control protein modules critical for imparting cofactor and decay acceleration activities in vaccinia virus complement control protein”.
- March 25, 2011, Symposium on Recent Trends in Biology, Department of Zoology, University of Pune, Pune “The complement system as a viral target for immune evasion”.
- May 8, 2012, International Workshop on Platforms for Molecular cross-talk in Modern Biology at the Regional Centre for Biotechnology (RCB), Gurgaon. “Studies on complement evasion in poxviruses provide insight into their host tropism”.
- January 10, 2013, 3<sup>rd</sup> Molecular Virology Meeting at National Institute of Virology, Pune, “Molecular determinants of species selectivity in poxviral complement regulators”.
- January 19, 2013, 21<sup>st</sup> Molecular Immunology Forum, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, “Species selectivity in poxviral complement regulators”.
- January 11, 2014, 22<sup>nd</sup> Molecular Immunology Forum, Bose Institute, Kolkata, “Rational designing of C3-convertase inhibitors”.
- April 7, 2014, Department of Microbiology and Cell Biology, Indian Institute of Science, Bangalore, “Complement's plea for entry into the antiviral defense club”.



- April 16, 2014, Regional Centre for Biotechnology (RCB), Gurgaon. “Virally encoded complement regulators as tools to understand human complement regulation”.
- April 21, 2014, B.V. Patel PERD Centre, Ahmedabad. “Complement inhibitors: a resurgent concept in anti-inflammatory therapeutics”.
- April 28, 2014, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi. “Complement's plea for entry into the antiviral defense club”.
- December 7, 2014, Guha Research Conference, Khajuraho, M.P. “Viral teachings on human complement regulation”.
- January 16, 2015, 23<sup>rd</sup> Molecular Immunology Forum, Bhubaneswar, Orissa “Structural basis of cofactor activity of Kaposica, the complement regulator of Kaposi’s sarcoma-associated herpesvirus”.
- September 9, 2015, J. B. College of Science, Wardha “An introduction to the innate immune system”.
- February 20, 2016, 23<sup>rd</sup> Molecular Immunology Forum, Lonavala “Role of locally produced C3a and C5a in viral infection”.
- March 17, 2016, 13<sup>th</sup> FIMSA Advanced Immunology Course-2016, Department of Immunopathology, PGIMER, Chandigarh, “Complement – A true multitasking system”.
- April 29, 2016, Invited talk on the occasion of the World Immunology Day, Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune, “Complement – Role in innate immunity and beyond”.
- June 20, 2016, Symposium on Biology and Molecular Pathogenesis of Viruses, Indian Institute of Science, Bangalore, “Structural basis of complement regulation by Kaposica, the complement regulator of Kaposi’s sarcoma-associated herpesvirus”
- August 9<sup>th</sup>, 2016, 12th Indo-Australian Biotechnology Conference at Bhubaneswar, “Structural basis of complement regulation by Kaposica, the complement regulator of Kaposi’s sarcoma-associated herpesvirus”.
- October 22, 2016, Institute of Bioinformatics and Biotechnology (IBB), S. P. Pune University, Pune, “Complement: a viral target for immune evasion”.
- March 16, 2017, National Symposium on “Recent Advances in Modern Biology & Biotechnology 2017 (RAMBB 2017)”, Dr. D. Y. Patil Biotechnology & Bioinformatics Institute, Pune, “Synergy between the classical and alternative pathways of complement is essential for conferring effective protection against the pandemic influenza A(H1N1) 2009 virus infection”.

- October 4, 2017, Institute of Bioinformatics and Biotechnology (IBB), S. P. Pune University, Pune, “Biosafety practices for laboratory”.
- November 2, 2017, Unité des *Aspergillus*, Institut Pasteur, Paris, “Complement: role in immune protection against viral infections”.
- December 4, 2017, Guha Research Conference, Kumarakom, Kerala”, “Complement; complementing immune protection against viral infection”.
- December 16, 2017, PRESIDE-Annual Meeting-2018, Department of Pediatrics, Armed Forces Medical College, Pune, “Role of complement in viral illness: does it help fight flu”.
- January 15, 2018, Molecular Immunology Forum, Diveagar, Maharashtra, “In silico identification of CCP sequence motifs allow identification of novel complement regulators”.
- January 31, 2018, . Henry Stewart Talks, a special series on the Complement System edited by Prof. Sir Peter Lachmann, University of Cambridge, UK. ‘Subversion of the complement system by viruses’ [Video file]. (<https://hstalks.com/expert/3249/dr-arvind-sahu/>)
- March 28, 2018, India EMBO Symposium on RNA viruses: Immunology, pathogenesis and translational opportunities, Faridabad, “Role of complement during pandemic influenza A(H1N1)2009 virus infection”.
- September 28, 2018, EU-India Call on Next Generation Influenza Vaccine to protect citizens worldwide, NCCS Pune, “Role of complement during pandemic influenza A(H1N1)2009 virus infection”.
- November 12, 2018, International Symposium on Infectious Diseases, Regional Centre for Biotechnology, New Delhi and Jamia Hamdard, New Delhi, “Species specificity of vaccinia virus complement control protein towards bovine classical pathway”.
- November 30, 2018, Indo-US Workshop on Understanding Cell Biology through Proteomics & Metabolomics, NCCS, Pune, “Understanding complement-mediated modulation of macrophage polarization”.
- March 29, 2019, DAE-BRNS Life Science Symposium – 2019 (LSS-2019), Bhabha Atomic Research Centre, Mumbai, “Role of complement during the pandemic influenza A(H1N1) 2009 virus infection”.
- May 16, 2019, Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, “Self-nonsel self discrimination by the complement system - mechanistic insights”.
- Nov 7, 2019, 5th International Conference on Translational Research: Recent Trends in Pre-translational to Translational, National Centre for Cell Science, Pune, “Molecular engineering of an

efficient four domain DAF-MCP chimera reveals the presence of functional modularity in RCA proteins”.

- Nov 15, 2019, Plenary Lecture, IMMUNOCON 2019, 46th Annual Conference of Indian Immunology Society, Anushakti Nagar, Mumbai, “Complement regulation: lessons from viruses”.
- July 22, 2020, Key Note Speaker, Science & Technology for Mankind: Series of Webinar by Indrashil University, “COVID-19: Current Understanding”.
- Sept 24, 2020, Guest Speaker, Webinar on Dimensions of Biological Research during Post-COVID time by School of Life Sciences, Central University of Gujarat, “COVID-19: Current Understanding”.
- Oct 8, 2020, FIMSA Immunology Course-2020, A Virtual School - From Basic to Advanced Immunology, Organized by Indian Immunology Society, “Complement – A true multitasking system”.
- March 6, 2021, Virtual Bi-Monthly Lecture Series on Immunology and Inflammation, organized by Society of Inflammation Research, “Complement system in Physiology and Pathology”.
- April 23, 2021, International Conference on Infectious Diseases and Immunopathology (IDIP-2021), Organized by Department of Biotechnology, Savitribai Phule Pune University, “Molecular mimicry: a viral strategy to evade the complement system”.
- September 7, 2021, Jagrukta Abhiyan for COVID-19 Pandemic, Jointly organized by NASI HQs and Pune Chapter, “COVID-19: the way ahead?”.
- September 13, 2021, Online Guest lecture, Department of Microbiology, M. S. University of Baroda, Vadodara, “Molecular mimicry: a viral strategy to evade the complement system”.
- October 7 and 8, 2021, Online Guest lecture, Institute of Science, Nirma University, Ahmedabad, “The Complement System”.
- November 12, 2021, Online talk, 87th Annual Meeting of Indian Academy of Sciences, Bengaluru, “Viruses strike back against the complement system”.
- March 8, 2022, Online Guest lecture, National Institute of Virology, Pune, “Virus-complement interactions: a tale of virus-encoded complement regulators”.

#### **ORGANIZING ROLES IN SCIENTIFIC MEETINGS**

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|------------------|---|
| Oct. 29-31, 1998 | International Symposium on Complement in Human Diseases, All India Institute of Medical Sciences, New Delhi, Member Organizing Committee. |
| Feb. 10-21, 2012 | Molecular Immunology Forum - 2012 at the Brightlands Resorts, Matheran.   |

Jan 14-16, 2018 Organized along with Drs. Debashis Mitra and Mohan Wani.  
Molecular Immunology Forum - 2018 at the Exotica Resort, Diveagar. Organized along with Drs. Mohan Wani and Debashis Mitra.

### Ph.D. THESIS

**Sahu, A.**, Interaction of anti-leprosy drugs with the rat immune system, Ph.D. Thesis, University of Delhi, 1991.

### PATENTS

1. Lambris, J.D. and **Sahu, A.** (2001) Peptides which inhibit complement activation. USA patent #6,319,897
2. Sahu, A. and Kadam, A.P. Peptides that inhibit factor B, C2 and complement activation, and their uses. (Application #889/DEL/2010 dated 13.4.2010). Indian Patent #288480
3. Sahu, A., Ojha, H., Ghosh, P., Barage and Panwar, H.S. (2019) DAF-MCP chimeric protein, process to manufacture the same and use of the chimeric protein for treating pathological conditions involving the complement system. US Application #: PCT/IN2020/050337 filed on April 9, 2020.

### TECHNOLOGY

Apellis Pharmaceutical, Inc, USA, licensed Compstatin, a peptide inhibitor of C3 (patent #6,319,897), to develop it further for multiple diseases. The company entered Phase III clinical trials for Paroxysmal Nocturnal Hemoglobinuria (PNH) and Geographic Atrophy (GA), and Phase III clinical trials for Amyotrophic Lateral Sclerosis (ALS), Nephropathies – C3G / IC-MPGN, Autoimmune Hemolytic Anemia (AIHA) and COVID-19. (<https://apellis.com/our-science/clinical-trials/>). Approved by US FDA for the treatment of Paroxysmal Nocturnal Hemoglobinuria (PNH) (May 14, 2021) (<https://www.fda.gov/drugs/drug-safety-and-availability/fda-approves-new-treatment-adults-serious-rare-blood-disease>).

### PUBLICATIONS

#### Research Publications, peer-reviewed

1. **Sahu, A.**, Saha, K., Kashyap, A. and Chakrabarty, A.K. (1988). Interaction of anti-leprosy drugs with the rat serum complement system. *Immunopharmacology* 5(3): 143-150.
2. Rambukkana, A., Saha, K., **Sahu, A.** and Chopra, K. (1988). Undernutrition and altered T-cell homeostasis in children with severe chest diseases. *J. Trop. Pediat.* 34: 282-288.

3. **Sahu, A.**, Saha, K., Banerjee, N., Sehgal, V.N. and Jagga, C.R. (1991). Effect of anti-leprosy drugs on superoxide anion production by rat peritoneal macrophages with special reference to light exposed clofazimine. *Int. J. Immunopharmac.* 13(4): 419-428.
4. Kashyap, A., Sehgal, V.N., **Sahu, A.** and Saha, K. (1992). Anti-leprosy drugs inhibit the complement-mediated solubilization of pre-formed immune complexes *in-vitro*. *Int. J. Immunopharmac.* 14(2): 269-273.
5. **Sahu, A.**, Saha, K., Mukherjee, A. and Sehgal, V.N. (1992). *In vivo* effects of anti-leprosy drugs on the rat peritoneal macrophages and lymphocyte subpopulations. *Int. J. Immunopharmac.* 14(4): 721-730.
6. Kashyap, A., Saha, K. **Sahu, A.**, Chakrabarty, A.K. and Chattopadhyay, D. (1992). Delayed clearance of circulating immune complexes in mice following administration of anti-leprosy drugs. *Int. J. Leprosy* 60(3): 404-409.
7. Dash, K., Saha, K., **Sahu, A.** and Gangal, S.V. (1993). Natural serum haemagglutinins (lectins) in fish: Physicochemical characterization. *Fish & Shellfish Immunol.* 3: 345-360.
8. Saha, K., Dash, K. and **Sahu, A.** (1993). Antibody dependent haemolysin, complement and opsonin in sera of a major carp, *Cirrhina mrigala* and catfish, *Clarius batrachus* and *Heteropneustes fossilis*. *Comp. Immunol. Microbiol. & Infec. Dis.* 16(4): 323-330.
9. **Sahu, A.** and Pangburn, M.K. (1993). Identification of multiple sites of interaction between heparin and the complement system. *Mol. Immunol.* 30(7): 679-684.
10. **Sahu, A.**, Kozel, T.R. and Pangburn, M.K. (1994). Specificity of the thioester-containing reactive site of human C3 and its significance to complement activation. *Biochem. J.* 302(2): 429-436.
11. **Sahu, A.** and Pangburn, M.K. (1994). Covalent attachment of human complement C3 to IgG: Identification of the amino acid residue involved in ester linkage formation. *J. Biol. Chem.* 269(46): 28997-29002.
12. **Sahu, A.** and Pangburn, M.K. (1995). Tyrosine is a potential site for covalent attachment of activated complement component C3. *Mol. Immunol.* 32(10): 711-716.
13. **Sahu, A.** and Pangburn, M.K. (1996). Investigation of mechanism-based inhibitors of complement activation targeting the thioester site of C3. *Biochem. Pharmacol.* 51: 797-804.
14. Sunyer, J.O., Zarkadis, I.K., **Sahu, A.** and Lambris, J.D. (1996). Multiple forms of complement C3 in trout that differ in binding to complement activators. *Proc. Natl. Acad. Sci. USA.* 93: 8546-8551.
15. **Sahu, A.**, Kay, B.K. and Lambris, J.D. (1996). Inhibition of human complement by a C3-binding

- peptide isolated from a phage-displayed random peptide library. *J. Immunol.* 157: 884-891.
16. Kostavasili, I\*, **Sahu, A\***, Friedman, H.M., Eisenberg, R.J., Cohen, G.H. and Lambris, J.D. (1997). Mechanism of complement inactivation by glycoprotein C of herpes simplex virus. *J. Immunol.* 158:1763-1771.
  17. Morikis, D., Assa-Munt, N. and **Sahu, A.**, Lambris, J.D. (1998). Solution structure of Compstatin, a potent complement inhibitor. *Protein Science* 7(3): 619-627.
  18. **Sahu, A.**, Isaacs, S.N., Soulika, A.M. and Lambris, J.D. (1998). Interaction of vaccinia virus complement control protein with human complement proteins: Factor I-mediated degradation of C3b to iC3b<sub>1</sub> inactivates the alternative complement pathway. *J. Immunol.* 160: 5596-5604.
  19. Nilsson, B., Hong, J., Larsson, R., Elgue, G., Nilsson-Ekdahl, K., **Sahu, A.**, Lambris, J. D. (1998). Compstatin inhibits complement and cellular activation in whole blood in two models of extracorporeal circulation. *Blood* 92(5): 1661-1667.
  20. Sun, X., Funk, C.D., Deng, C., **Sahu, A.**, Lambris, J.D., and Song, W. C (1999). Role of decay-accelerating factor in regulating complement activation on the erythrocyte surface as revealed by gene targeting. *Proc. Natl. Acad. Sci. USA.* 96: 628-633.
  21. **Sahu, A.**, Rawal, N. and Pangburn, M.K. (1999). Inhibition of complement by covalent attachment of rosmarinic acid to activated C3b. *Biochem. Pharmacol.* 57: 1439-1446.
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### Reviews, Book Chapters, Commentaries and Online resources

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#### **Outreach activities: Online and Radio talks/discussions**

1. 13 June 2018, All India Radio discussion to spread awareness about the Nipah virus (8.15 pm). Participants: In English - Drs. Kavita Lole & Atanu Basu from NIV and Drs. Shekhar Mande & Arvind Sahu from NCCS; In Marathi - Drs. Kavita Lole from NIV and Drs. Shekhar Mande, Arvind Sahu & Yogesh Shouche from NCCS.
2. Nov 27, 2020, Public talk in Marathi, arranged by ‘Bhavatal’, “COVID-19 second wave”.
3. Jan 24, 2021, Public talk in Marathi, arranged by ‘Bhavatal’, “Bird flu in India”.
4. April 10, 2021, Webinar in Marathi, arranged by Council of Scientific and Industrial Research, “The Need & the Science Behind Covid Appropriate Behaviour and Vaccination”. Panel: Dr Shekhar C Mande, DG-CSIR, Lt Gen Madhuri Kanitkar, AVSM VSM (DCIDS Medical), Dr Shashank Joshi, Member, Maharashtra Covid Task Force, Dr Arvind Sahu, NCCS and Dr Prashant Joshi, AIIMS-Nagpur.
5. April 24, 2021, Public question-answer session in Marathi, arranged by ‘Bhavatal’, “COVID-19

second wave (कोरोनाची दुसरी लाट : घाबरण्यापेक्षा तज्ज्ञांना प्रश्न विचारा !):

### Outreach activities: Popular articles

1. Sahu, A. 'दुसरी लाट टाळण्यासाठी' in Marathi, Bhavtal magazine (Issue Nov 2020).
2. Sahu, A. Shouche, Y. 'महाराष्ट्रात एप्रिल संपेपर्यंत धीर धरा!' in Marathi, Bhavtal magazine (Issue April 2021).

### Abstracts

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