Amit Kumar Singh, PhD

Postdoctoral Research Associate

East Lansing, MI, USA | +1 (617) 906-3612 | singh140@msu.edu
https://www.linkedin.com/in/amit-kumar-singh-phd-4a0555220/

Education

Ph.D. – Biochemistry — 2016 – 2023
National Institute for Research in Reproductive and Child Health (NIRRCH), Indian Council of Medical Research (ICMR) — **Maharashtra, India**
Project: Delineation of immune signatures influencing HIV disease progression
Department: Viral Immunopathogenesis
Supervisor: Dr. Vainav Patel

M.Sc. – Biotechnology — 2010 – 2012
Kumaun University — **Nainital, India**
Dissertation: Phylogeny of different Quercus species of Nainital region, based on chloroplast non-coding trnL-trnF intergenic spacer sequences
Supervisor: Dr. Sushma Tamta

B.Sc. – Biotechnology — 2006 – 2009
University of Mumbai — **Maharashtra, India**

Professional Experience

Viral Immunopathogenesis Laboratory, National Institute for Research in Reproductive and Child Health (NIRRCH) — **Maharashtra, India**

Position: Research Fellow [Department of Biotechnology (DBT)] — Feb 2014 – Jan 2015
Project: To study the role of CD4+ regulatory T cells (Treg) in HIV-infected immunologically discordant individuals undergoing anti-retroviral therapy (ART)
Supervisor: Dr. Vainav Patel

Position: DBT- Research Fellow,
- DBT- Junior Research Fellow — Feb 2015 – Jan 2017
- DBT- Senior Research Fellow — Feb 2017 – Jan 2020

Project 1: Delineation of immune signatures influencing HIV disease progression
Supervisor: Dr. Vainav Patel
Project 2: Analysis of gut microbiome and immune signatures of Cytomegalovirus (CMV) infection in Pregnancy and infancy.
Supervisors: Dr. Vainav Patel, Dr. Vikrant Bhor

Position: ICMR- Senior Research Fellow, — Aug 2020 – Jan 2023
Project 1: Immune and microbiome correlates of TB reactivation in PLHIV and an NHP model.
Supervisors: Dr. Nupur Mukherjee, Dr. Vainav Patel, Dr. Taruna Madan
Project 2: An integrated approach towards delineating determinants of viral pathology and disease progression of SARS-CoV-2 infection.
Supervisors: Dr. Vainav Patel, Dr. Vikrant Bhor, Dr. Dhanashree Jagtap
Project 3: Immune response to precautionary third dose of COVISHIELD/ COVAXIN among healthy adult population: an ICMR cohort study, India.
Supervisors: Dr. Vainav Patel, Dr. Vikrant Bhor

Massachusetts General Hospital | Harvard Medical School **Massachusetts, USA**
Primary site: Ragon Institute of Mass General, MIT and Harvard

Position: Postdoctoral Research Fellow Sep 2023 – Jan 2025
Project: Developing novel approaches to improve the potency of HIV-specific chimeric antigen receptor T (CAR T) cells to target and eradicate HIV reservoirs.
Supervisor: Dr. Todd Allen

Michigan State University **Massachusetts, USA**
Primary site: Institute for Quantitative Health Science & Engineering
Position: Postdoctoral Research Associate Feb 2025 – Present
Supervisor: Dr. Bryan Smith

Publications

- **Singh AK**, Padwal V, Palav H, Velhal S, Nagar V, Patil P, Patel V. Highly dampened HIV-specific cytolytic effector T cell responses define viremic non-progression. Immunobiology. 2022 Jul;227(4):152234. doi: 10.1016/j.imbio.2022.152234. PMID: 35671626.
- **Singh AK**, Kasarpalkar N, Bhowmick S, Paradkar G, Talreja M, Shah K, Tiwari A, Palav H, Kaginkar S, Kulkarni R, Patil A, Kalsurkar V, Agrawal S, Shastri J, Dere R, Bharmal R, Mahale SD, Bhor VM, Patel V. Opposing roles for sMAdCAM and IL-15 in COVID-19 associated cellular immune pathology. J Leukoc Biol. 2022 Jun;111(6):1287-1295. doi: 10.1002/JLB.3COVBCR0621-300R. PMID: 35075682.
- Bhadricha H, Patel V, **Singh AK**, Savardekar L, Patil A, Surve S, Desai M. Increased frequency of Th17 cells and IL-17 levels are associated with low bone mineral density in postmenopausal women. Sci Rep. 2021 Aug 9;11(1):16155. doi: 10.1038/s41598-021-95640-0. PMID: 34373550.
- **Singh AK**, Salwe S, Padwal V, Velhal S, Sutar J, Bhowmick S, Mukherjee S, Nagar V, Patil P, Patel V. Delineation of Homeostatic Immune Signatures Defining Viremic Non-progression in HIV-1 Infection. Front Immunol. 2020 Mar 5; 11:182. doi: 10.3389/fimmu.2020.00182. PMID: 32194543.
- Prabhu VM, **Singh AK**, Padwal V, Nagar V, Patil P, Patel V. Monocyte Based Correlates of Immune Activation and Viremia in HIV-Infected Long-Term Non-Progressors. Front Immunol. 2019 Dec 6; 10:2849. doi: 10.3389/fimmu.2019.02849. PMID: 31867010.
- Salwe S, **Singh A**, Padwal V, Velhal S, Nagar V, Patil P, Deshpande A, Patel V. Immune signatures for HIV-1 and HIV-2 induced CD4+T cell dysregulation in an Indian cohort. BMC Infect Dis. 2019 Feb 11;19(1):135. doi: 10.1186/s12879-019-3743-7. PMID: 30744575.
- Palav HC, Bhonde G, Padwal V, Velhal S, Pereira J, **Singh AK**, Ghosh S, Karandikar K, Satoskar P, Bhor V, Patel V. Integrated immune monitoring of HCMV infection in pregnant women with complications and its association with adverse pregnancy outcomes. Microb Pathog. 2023 Apr 9;179:106109. doi: 10.1016/j.micpath.2023.106109. PMID: 37040845.
- Kumar P, Ranmale S, Mehta S, Tongaonkar H, Patel V, **Singh AK,** Mania-Pramanik J. Immune profile of primary and recurrent epithelial ovarian cancer cases indicates immune suppression, a major cause of progression and relapse of ovarian cancer. J Ovarian Res 16, 114 (2023). https://doi.org/10.1186/s13048-023-01192-4. PMID: 37322531
- (*Under review*) Jhondale M, Salunke R, Saldhana E, Singh AK, Patel V, Joshi S, Sahay A, Chaudhary U, Sachdeva G, Chandrani P, Mukherjee N. Immunomodulatory potential of Toll Like Receptor 4 in Triple Negative Breast Cancer.
- (*Under review*) Kaginkar S, Remling-Mulder L, Sahoo A, Pandey T, Gurav P,Sutar J, Singh AK, Barnett E, Panickan S, Akkina R, Patel V. Assessing HIV-1 subtype C infection dynamics, therapeutic responses and reservoir distribution using a humanized mouse model.

Skills

- **Laboratory Techniques:** Cell and tissue culture techniques, Flow-based functional assays, High-dimensional multi-color flow cytometry and data analysis, Intracellular cytokine staining assay, Proliferation assay, Apoptosis assay, Cell cycle analysis, ELISPOT, Phospho-flow cytometry, Handling and Culturing infectious samples, Molecular cloning techniques, Viral vector design and production, Transformation, Transfection, Transduction, Expansion and maintenance of viral stocks, CRISPR/Cas-9 Genome editing, PCR/Real-time PCR, ELISA, Library preparation for high-throughput sequencing
- **Software:** Flow cytometry data analysis software (FlowJo, BD FACSDiva, BD accuri C6 software), GraphPad Prism statistical software, Geneious Prime bioinformatics software
- **Soft Skills:** Teamwork, Adaptability, Effective communication skills, Problem-solving skills, Leadership skills, Ability to work independently and/or in a team, Self-motivated

Academic Achievements and Awards

2022	**Best paper award** for a first-author article entitled "Opposing roles for sMAdCAM and IL15 in COVID-19 associated cellular immune pathology", at TCS-2022, Hyderabad, India.
2022	**International Investigator Scholarship Award** by organisers to attend and present a poster at virtual Conference on Retroviruses and Opportunistic Infections (CROI-2022).
2021	**International travel award** from organizers of Keystone Symposia to deliver a short talk at virtual Keystone Symposia in a combined session of meetings "HIV Vaccine (EK42)" and "HIV Pathogenesis and Cure (EK43)".
2019	**Best poster award** at 46th annual conference of Indian immunology society, "Advances in immunology research: Impact on Healthcare", Immunocon-2019, Mumbai, India.
2019	**Best poster award** at 12th annual meeting of The Cytometry Society, Lucknow, India.
2018	**Travel award & Second prize for poster presentation** at 11th TCS annual conference & workshop, New Delhi, India.
2014	**Junior Research Fellowship award** (DBT-JRF), Department of Biotechnology, Government of India to pursue doctoral research.
2013	Qualified **CSIR-UGC eligibility for Lectureship**, University Grants Commission (UGC), Government of India.
2012	Qualified **GATE -2012** examination in Biotechnology to pursue doctoral research.
2010	Qualified national level **Combined Biotechnology Entrance Exam (CBEE)**, conducted by JNU, New Delhi, India to pursue a Master's degree in Biotechnology.

Training and Workshops Attended

2022	One-month internship in the area of "Bioinformatics, Genomics, Machine learning, and Big Data Analysis" organized by Nextgenhelper, New Delhi, India.
2019	Workshop on "High-Dimensional Cell and Data Analysis" organized by ICMR-NIRRH & Becton Dickinson India Pvt. Ltd.
2018	Hands-on "Imaging Flow Cytometry Workshop" organized by Imperial Life Sciences (P) Ltd. (2018).

Resource Person in Trainings and Workshops

2021	Member of organizing committee and Instructor for an online workshop on "Application of Flow Cytometry in Health Sciences" jointly organized by ICMR-NIRRCH, India in collaboration with Sun Pharma Science Foundation (SPSF), India.
2021	Instructor for a workshop on "Flowcytometric analysis of Cell cycle, Cell signaling and Intracellular cytokines" during 13th annual conference-cum-workshop of The Cytometry Society (TCS-2021), Chandigarh, India.
2015	16th Indo-US Cytometry workshop on "Flow cytometry in HIV and Infectious Diseases" organized by The Cytometry Society, India in collaboration with International Society for Advancement of Cytometry (ISAC), USA.

Scientific Society Memberships and Other Experiences

- Member of The Cytometry Society (India)
- Member of the Indian Immunology Society (India)
- Instructor at ICMR-NIRRCH Course-work for the incoming batch of Ph.D. students

  Topic: Vaccines
- Experience managing multiple research projects and mentoring trainees and junior members of the lab