

Kaushik Sen

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 - Institute of Life Sciences, Bhubaneswar, India-751023
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Research Interest:

Mtb Pathogenesis, Immunometabolism

Research Experience:

Ph.D. (2017 - ongoing)

Supervisor: Dr. Sunil Kumar Raghav

Institute of Life Sciences, Bhubaneswar, India

Thesis title “**NCoR1 and SMRT mediated metabolic control of dendritic cell immune responses**”

Technical Proficiency:

- **Cell-based assays:** Murine cell line and primary cell handling: dendritic cells, T-cells, PBMCs from HC and Covid-19 samples.
 - **Functional assays:** Co-culture assay- DC: T-cell co-culture, T-cell culturing, murine BMDCs culture. Biochemical estimations - NAD/NADH, Glucose, Lactate, Acetyl CoA, etc., Mitochondrial bioenergetics parameters-SOX, ROS, Potential, Mt DNA content, nitrite.
 - **Molecular techniques:** Quantitative PCR, Western blotting, Multicolor Flow cytometry, Seahorse XFP, Metabolite sample preparation, Histology, IHC, Genomic assay: RNA-seq library preparation, single-cell RNA-seq library preparation.
 - **Data analysis:** Flow Jo for flow cytometry data analysis and visualization, Prism for data representation, Illustrator, Wave software for Seahorse.
 - **Animal handling:** C57BL6, NCoR1 CD11c Cre, OT-I, OT-II, FLT3 transgenic mice, NCoR1 LysM Cre etc.
 - **Disease models:** *Mtb* (H37Rv) - ABSL3, *Salmonella typhimurium*, DSS induced colitis
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Selected Publications:

- Biswas VK[#], **Sen K[#]**, Ahad A[#], Ghosh A, Verma S, Pati R, Prusty S, Nayak SP, Podder S, Kumar D, Gupta B, Raghav SK. NCoR1 controls Mycobacterium tuberculosis growth in myeloid cells by regulating the AMPK-mTOR-TFEB axis. *PLoS Biol.* 2023 Aug 17;21(8):e3002231. doi: 10.1371/journal.pbio.3002231. Epub ahead of print. PMID: 37590294. (#equal contribution).
- **Sen K**, Pati R, Jha A, Mishra GP, Prusty S, Chaudhary S, Swetalika S, Podder S, Sen A, Swain M, Nanda RK, Raghav SK. NCoR1 controls immune tolerance in conventional dendritic cells by fine-tuning glycolysis and fatty acid oxidation. *Redox Biol.* 2023 Feb; 59:102575
- **Sen K**, Datta S, Ghosh A, Jha A, Ahad A, Chatterjee S, Suranjika S, Sengupta S, Bhattacharya G, Shriwas O, Avula K, Kshatri J, Prasad P, Swain R, Parida AK, Raghav SK. Single-Cell Immunogenomic Approach Identified SARS-CoV-2 Protective Immune Signatures in Asymptomatic Direct Contacts of COVID-19 Cases. *Front Immunol.* 2021 Nov 25;12:733539
- Mishra GP, Jha A, Ahad A, **Sen K**, Sen A, Podder S, Prusty S, Biswas VK, Gupta B, Raghav SK. Epigenomics of conventional type-I dendritic cells depicted preferential control of TLR9 versus TLR3 response by NCoR1 through differential IRF3 activation. *Cell Mol Life Sci.* 2022 Jul 18; 79(8):429
- Jha A, Ahad A, Mishra GP, **Sen K**, Smita S, Minz AP, Biswas VK, Tripathy A, Senapati S, Gupta B, Acha-Orbea H, Raghav SK. SMRT and NCoR1 fine-tune inflammatory versus tolerogenic balance in dendritic cells by differentially regulating STAT3 signalling. *Front Immunol.* 2022 Sep 27;13:910705.
- Smita S, Ghosh A, Biswas VK, Ahad A, Podder S, Jha A, **Sen K**, Acha-Orbea H, Raghav SK. Zbtb10 transcription factor is crucial for murine cDC1 activation and cytokine secretion. *Eur J Immunol.* 2021 May;51(5):1126-1142.
- Ahad A, Smita S, Mishra GP, Biswas VK, **Sen K**, Gupta B, Garcin D, Acha-Orbea H, Raghav SK. NCoR1 fine-tunes type-I IFN response in cDC1 dendritic cells by directly regulating Myd88-IRF7 axis under TLR9. *Eur J Immunol.* 2020 Dec;50(12):1959-1975.
- Göczi L, Csumita M, Horváth A, Nagy G, Pólska S, Pigni M, Thelemann C, Dániel B, Mianesaz H, Varga T, **Sen K**, Raghav SK, Schoggins JW, Nagy L, Acha-Orbea H, Meissner F, Reith W, Széles L. A Multi-Omics Approach Reveals Features That Permit Robust and Widespread Regulation of IFN-Inducible Antiviral Effectors. *J Immunol.* 2022 Nov 15;209(10):1930-1941.

Fellowship and awards:

- Best poster presentation award during **SIRCON – 2022**
- Oral Presentation during **SIRCON - 2022**
- Poster presentation during **IMMUNOCON – 2022**
- Qualified **Council of Scientific & Industrial Research (CSIR-UGC JRF) – Dec 2016 and Dec 2018**
- Qualified **GATE (Ecology and Evolution) – 2017**

Workshops Conducted:

- Hands-on Workshop on Immunophenotyping of Human PBMCs using Full Spectra Multicolour Flow Cytometry **26th -28th April - 2023**

Education:

Degree	Year of Passing	University/Board	Specialization
Ph.D.	2017 - ongoing	Regional Centre for Biotechnology, Faridabad, India	Biotechnology
M.Sc.	2017	Banaras Hindu University, Varanasi, India	Zoology
B.Sc.	2015	Sidho Kanho Birsha University, Purulia, India	Zoology

References:

Dr. Sunil K. Raghav, Ph.D.

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