Koushik Roy, Ph.D.

Title: Assistant Professor, Tenure Track
Department: Pathology (Division Microbiology and Immunology)
Affiliation: University of Utah, School of Medicine

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Studying B cell immunology in physiology and pathology

Education

Postdoct. in Immunology, University of California, Los Angeles (United States) 08/2014 - 03/2021
Ph.D in Infection and Immunity, CSIR-Indian Institute of Chemical Biology (Kolkata, India) 04/2007 - 06/2014
Masters in Organic Chemistry, Jadavpur University (Kolkata, India) 07/2004 - 06/2006

Research Experience

- **Assistant Professor, Tenure Track** April, 2021-
  University of Utah

  The proper regulation of B cell response is critical in generating physiological B cell response without creating autoimmunity or immune deficiency. My laboratory focuses on understanding regulatory mechanism controlling B cell response to vaccination and infection. Following vaccination or infection, humoral immunity protects in two phases: Phase I protection depends on the antibodies produced by plasma cells, and Phase II protection depends on the memory B cells. However, the role of the regulatory network that control the generation of memory B cells and plasma cells is unknown. We are interested in understanding the regulatory network of generating plasma cells, memory B cells, antibody diversity, and affinity. We have developed new genetically modified mouse models to study how NFkB signaling controls the above processes. These studies will reveal potential strategies to improve immunity to infection without causing the generation of B cell pathology, like cancer and autoimmunity.
  Corresponding publications: *Proceedings of the National Academy of Sciences, USA* (2024)

- **Postdoctoral Research:** 08/2014- 03/2021
  Advisor: Prof. Alexander Hoffmann, University of California, Los Angeles

  Understanding the mechanism of B cell response at single cell level
  Key Achievements:
  1. Developed a novel live cell imaging pipeline to solve long term puzzle of stochastic versus deterministic B cell fate.
  2. Discovered NFκB, cRel, negatively regulate plasma cell differentiation and established the regulatory circuit.
  Corresponding publications: *Immunity* (2019), *Proceedings of the National Academy of Sciences, USA* (2018), *Methods in Molecular Biology* (2018)

- **Doctoral Thesis Research:** 04/2007-06/2014
  Advisor: Prof. Syamal Roy and Prof. Siddhartha Roy, CSIR-Indian Institute of Chemical Biology, Kolkata

  Pathogenesis of *Leishmania donovani* sustain by reducing hosts cholesterol
  Key Achievement:
  Established a new function of membrane cholesterol in immune response to leishmaniasis.
  Corresponding publications: *PLOS Neglected Tropical Diseases* (2016), *Journal of Immunology* (2014), *PLOS Neglected Tropical Diseases* (2014), *Journal of Lipid Research* (2013), *Journal of Antimicrobial Chemotherapy* (2013), *PLOS Pathogen* (2011)

  Protein engineering and its implication as therapy in pathogenesis such as malaria
  Key Achievements:
  1. Designed and synthesized a peptide based functionally active artificial transcription factor.
  2. Constrained peptide vaccination increases anti-malarial immune response.

Corresponding publications: *RSC Medicinal Chemistry* (2021), *Chemical Communications* (2018), *Biopolymers-Peptide Science* (2014), *Vaccine* (2013), *ACS Chemical Biology* (2012), *Biochemistry* (2010)

- **Industrial Research:** Research Scientist, Advinus Therapeutics Pvt Ltd, Bangalore, India 07/2006-03/2007
  Synthesized and characterized therapeutically important lactum molecules.

Awards

2025 American Association of Immunology, Early Career Faculty Travel Award

2023 American Society of Hematology Scholar Award

2019 Boyer/Parvin Postdoctoral Award; Recognizing Excellence in Postdoctoral Research, UCLA, US

2014 Best presentation award in Preventive Medicine: Current Perspective, India

2013 Best poster award in International Symposium on Molecular Signaling, India

2012 Best poster award in Society of Biological Chemist Symposium, India

2006 Awarded fellowship for PhD CSIR India