

## Statement of research achievements and awards

### As independent faculty in CSIR-IICB, India:

🌀 Discovery of a novel mechanosensory module in human T cells, driven by the professional mechanosensor Piezo1, which is critical for T cell activation (first report of Piezo1 function in the immune system) and chemotactic migration of T cells. [*eLife*, 2023; *J Immunol (Cutting Edge)*, 2018; *Crit Rev Immunol*, 2019].

**Being nominated for Sun Pharma Research Award in Medical Sciences (Basic Research), 2023**

🌀 First evidence for involvement of plasmacytoid dendritic cells and type I interferons in obesity associated metabolic syndrome in humans. [*Diabetes*, 2016; *Trends Immunol*, 2018, *Obesity*, 2023]

🌀 Development of novel small molecule antagonists for toll-like receptor 9 and 7, promising therapeutic targets in systemic autoimmune diseases as they inhibit activation of plasmacytoid dendritic cell activation and type I IFN induction. [*J Med Chem*, 2022; *Eur J Med Chem*, 2017; *Eur J Med Chem*, 2018; *J Med Chem*, 2020; *Eur J Med Chem*, 2020; *J Med Chem*, 2021; *J Med Chem*, 2021; two USA Patents]

**Awarded NASI-Scopus Young Scientist Award in Medicine (2017),**

**Awarded Swarnajayanti Fellowship in Life Sciences (2017),**

**Awarded National Bioscience Award (2017), Awarded**

**CDRI Award for Excellence in Drug Research, Life Sciences (2019),**

**Awarded Merck Young Scientist Award (2019)**

🌀 Discovery of novel regulatory pathways in human plasmacytoid dendritic cells, for example driven by a lipid metabolite (2-arachidonyl glycerol) and an oncometabolite (lactate) [*J Immunol (Cutting Edge)*, 2019; *Front Immunol*, 2019].

🌀 Identification of an endophenotype in SLE involving dysregulation of the endocannabinoid-mediated regulatory pathway [*J Immunol (Cutting Edge)*, 2019].

🌀 Exploration of host immune response in COVID-19 and clinical trial on convalescent plasma therapy in severe COVID-19. [*Gut Pathog*, 2023; *mBio*, 2023; *Mayo Clin Proc IQ&O*, 2022; *Nat Commun*, 2022; *JAMA Netw Open*, 2022; *Front Immunol*, 2021; *J Infect Dis*, 2020].

### As Postdoctoral Fellow in Columbia University, New York City, USA:

🌀 First genetic evidence for the key role of pDC-derived type I interferons in pathogenesis of systemic lupus erythematosus. Using mice genetically deficient in pDCs we established the role of these cells in the pathogenesis of SLE. [*J Exp Med*, 2014 (*Commentary in Nat Rev Rheumatol*, 2014)]

**Awarded SLE Foundation Postdoctoral Fellowship, 2011**

### As PhD student in UT MD Anderson Cancer Center, Houston, USA:

🌀 Identification of dying neutrophils as the major source of nuclear antigens in lupus pathogenesis and activation of plasmacytoid dendritic cells (pDCs) as the key initiator event in systemic lupus erythematosus (SLE). [*Sci Transl Med*, 2011 (*Commentary in N Engl J Med*, 2011, 365(8):758-60; featured in *Nat Rev Key Advances in Medicine*, 2012)]

🌀 Discovery of the innate initiation events in pathogenesis of Psoriasis and identification of an important danger signal for innate immune activation relevant in autoimmunity. [*J Exp Med*, 2009; *Nat Rev Immunol*, 2013; *Eur J Immunol*, 2014]

**Awarded Vivian L. Smith Outstanding Young Scientist Award from UT MD Anderson Cancer Center, Houston, USA.**

**Award citations:****NASI-Scopus Young Scientist Award (2017)**

'For his meritorious contributions in the field of Medicine'

**Swarnajayanti Fellowship (2017)**

No citation

Funded project title: 'Mechanistic exploration of pathogenetic role of type I interferons in metabolic syndrome and preclinical validation of therapeutic targeting'

**National Bioscience Award (2017)**

'In recognition of his outstanding research contribution towards delineating the role of innate immune axis in the crossroads of infection, autoimmunity and cancer. Dr. Ganguly identified role of plasmacytoid dendritic cells and type I interferons in metabolic syndrome in obese individuals, besides identifying TLR9 as important therapeutic target in type 2 diabetes and systemic autoimmunities, and also helped develop novel small molecule antagonists for TLR9.'

**CDRI Award for Excellence in Drug Research (2019)**

'For his work on - Autoimmunities and metabolic disorders in a pathogenic continuum: revealing shared therapeutic targets'

**Merck Young Scientist Award (2019)**

No citation

Research presentation title: 'How an autoimmune event is shared by metabolic disorders and how it can be targeted for therapy?'