

JNCASR Researcher awarded India Alliance fellowship to explore regulators of DNA metabolism

Dr. Kushagra Bansal, a faculty member at Molecular Biology and Genetics Unit (MBGU) of Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore an autonomous institute of Department of Science & Technology (DST), has recently been awarded the Wellcome Trust/DBT India Alliance Intermediate Fellowship under basic biomedical research category.

This competitive research grant of India Alliance is jointly funded by the Department of Biotechnology, Government of India and the Wellcome Trust, UK, and supports young researchers in establishing an independent laboratory with a high-quality research program.

He will explore relationship between regulatory factors that control superstructure of genetic material and the behavior of immune cells through this fellowship support. Molecular regulators have been implicated in various immunological disorders such as autoimmune polyglandular syndrome, autoimmune pancreatitis, systemic sclerosis and sepsis. However, much remains unknown regarding the tissue-specific function of these ubiquitous regulators of DNA metabolism and their association with immunological disease etiology.



Employing multidisciplinary approaches including proteomics, genomics and biochemistry, Dr. Bansal seeks to provide a comprehensive understanding of how molecular machines regulating DNA superstructure dynamics integrate with gene regulatory machinery in immune cells, how these cell-intrinsic mechanisms exert exquisite control over immune responses and why these regulators become dysfunctional during immunological disorders.

The principles elucidated will reveal novel regulatory mechanisms of immune cell function and will also serve as a paradigm for the development of innovative diagnostic and therapeutic approaches for immunological disorders.

Dr. Bansal's research program at JNCASR focuses on building detailed mechanistic understanding of molecular determinants that govern differentiation and function of immune cells in mammals.

The mammalian immune system is a highly complex network of a multitude of cellular players, each responding to a plethora of molecular signals from diverse sources. A breakdown in this

complex network can lead to not only weak defense of our bodies against invading microbes but also inflammatory disorders such as autoimmunity and allergies.

Using cellular systems, animal models and interdisciplinary approaches, Dr. Bansal's laboratory is actively involved in investigating molecular basis of immune cell dysfunction - the root cause of various immunological disorders.