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“A ‘no-strings-attached’ funding model from industry may go a long way in strengthening India’s innovation landscape”

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The Infosys Prize 2024 in Life Sciences has been awarded to Siddhesh Kamat, Associate Professor in the Department of Biology at the Indian Institute of Science Education and Research (IISER), Pune, for his discoveries concerning bioactive lipids and their receptors, and their metabolic and signalling pathways. His research, using advanced methods to understand the function of lipids, a key component of cells, has important implications for understanding the role of these molecules in a range of cellular functions and human diseases. BioSpectrum had a conversation with A/Prof. Kamat about his work, and the translation of his research.

Congratulations on winning the Infosys Prize in 2024. Could you please share your plans post this achievement?

My research group is interested in studying the signalling mechanisms regulated by bioactive lipids in mammalian physiology, and how their dysregulation results in different human diseases. Our long-term goal is to identify and characterise as-of-yet uncharacterised lipid signalling pathways *in vivo*, annotate enzymes and/or cognate receptors that regulate their biology, and provide new insights and therapeutic paradigms for orphan and/or emerging human diseases. Specifically, we have been studying a class of bioactive lipids called lysophosphatidylserines (lyso-PSs), and understanding its physiological roles in the central nervous and immune systems. Over the past few years, we have also figured out how dysregulation in the metabolism of lyso-PS causes diverse human neurodegenerative and autoimmune diseases. Given this knowledge and our experience in this field, over the next few years, we are hoping to take these biological findings to the clinic to treat different diseases associated with dysregulation lyso-PS metabolism.

What is the current scenario of neurodegenerative disorders and metabolic diseases in our country? What are the challenges in finding cures, and how can those be addressed?

The incidence of both neurodegenerative and metabolic diseases is on the rise in the Indian population. While there are enough clinical intervention and therapy options available for different metabolic diseases (e.g. diabetes, dyslipidaemia, cardiovascular diseases), in comparison, a lot fewer are prevalent for neurodegenerative diseases in India (and even worldwide). This stems from an overall poorer mechanistic understanding of how neurodegenerative diseases set in and what

can be done to reverse their onset. The brain cells (neurons) unlike other cells in the body have poor regenerative capacity and once damaged, remain perpetually damaged. Also, there are very few clinical diagnostic tests only available for specific neurodegenerative diseases, and most times, expensive and time-consuming genetic analyses are needed to diagnose emerging neurodegenerative diseases. Given all this, finding cures for various neurodegenerative diseases remains a challenge not only in India but also globally.

How can we bridge the gap between industry and academia to strengthen innovations in India?

We are actively seeking collaborations with the pharma and biotech industry, and have been successful (albeit only a little). During my limited interactions with industry, I have found that there remains both a communication and knowledge gap, on how scientists from both sides approach a problem. Most academicians are very focused on basic science (which is very important for any field to emerge and develop), while most industrial scientists have application and/or product-orientated outlooks. Hence, sometimes finding a middle ground for fruitful discussion and figuring out how basic science can be translated into an application and/or product can be challenging. Over the past few years, industrial conclaves and industry-funded PhD positions at academic institutes are somewhat bridging this gap, but I feel that more sustained efforts and perhaps a ‘no-strings-attached funding model from industry will go a long way in strengthening the innovation landscape in India. The Infosys Science Foundation, via the Infosys Prize, provides significant recognition to cutting-edge areas of research across various disciplines in an Indian context, and most recipients of this prize have the chance to bring forth their research to the general public.

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