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Shanti Swarup Bhatnagar award for IISER scientist

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Kayarat Saikrishnan's findings were published by OUP

Kayarat Saikrishnan feels his work in structural biology gets recognition, motivating him further 'to work more'

Kayarat Saikrishnan, a scientist from the Indian Institute of Science Education and Research (IISER), Pune, has been awarded the Shanti Swarup Bhatnagar Prize for Science and Technology. He is one of the 12 scientists across the country to have been conferred with the prestigious award for 2019. The annual award is given to scientists for their outstanding contributions to science and technology.

Saikrishnan, a scientist and associate professor with IISER, will receive the award for his work in structural biology of biological sciences. The list of the awardees was declared on September 26 by the Council of Scientific and Industrial Research (CSIR).

Overwhelmed by the announcement, Saikrishnan said receiving the award is the feeling of a great honour. "It is the highest award given to Indian scientists by the community. It means the work is recognised and the award will serve as a great motivator to reach even greater heights," he said.

Explaining his work in structural biology, Saikrishnan said, "My work involved research to understand the restriction-modification enzymes, which

are bacterial defence systems. Bacteria are also pathogens and like humans, they also get attacked by viruses.”

The scientist said, these bacteria secrete enzymes to degrade the viral DNA to prevent themselves. “The study was to know how these enzyme molecular machines work and their structure. The structure was studied through biology tool known as X-ray crystallography and electron cryomicroscopy,” he said.

The research outcomes were recently published in *Nature Communications and Nucleic Acids Research* by Oxford University Press (OUP). Speaking about its use for humans, Saikrishnan said in basic terms it is the fight between the host pathogens and outside attacker. “This is similar to the host bacteria in humans and how they are attacked from outer viruses or pathogens. The interaction happens at the level of bacteria and viruses. The attacking viruses inject their DNA into the bacteria cell to multiply and eventually burst out of the cell to damage other cells,” he said.

The associate professor said the bacteria fight these viruses by special molecular scissors which cut the DNA structure and prevent their multiplication. “Such methods could eventually be used to fight drug-resistant infections in future,” Saikrishnan said.

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