Pune: UG team from IISER to make 'bio-sensor' that can detect lead in river water

The team bagged the grant from the Indian Biological Engineering Competition (iBEC) under the DBT, and was competing against students from world-class universities as part of the International Genetically Engineered Machines (iGEM) umbrella. More than 300 universities took part in this contest.

Written by **Anjali Marar** | Pune | Published: June 22, 2019 4:58:53 am

The IISER team bagged a grant of Rs 10 lakh from the Indian Biological Engineering Competition under the DBT. (Express photo)

A group of undergraduate students from Indian Institute of Science, Education and Research (IISER), Pune, bagged a grant worth Rs 10 lakh from the Department of Biotechnology (DBT) to design and develop a tool with bio-sensors that are capable of detecting lead in river water.

The team bagged the grant from the Indian Biological Engineering Competition (iBEC) under the DBT, and was competing against students from world-class universities as part of the International Genetically Engineered Machines (iGEM) umbrella. More than 300 universities took part in this contest.

Water pollution has long remained a global concern, with all efforts to filter out harmful chemicals, metals and other pollutants, not working as effectively. The IISER team will use synthetic biology and develop a tool that can detect this heavy metal.

sequences of bacteria, otherwise known to live and thrive in the presence of metal pollutants in water such as lead, chromium, nickel, mercury, copper, among others.

"Every cellular structure in bacteria has some natural sensory abilities. Under this project, the aim is to identify and make use of the natural abilities, in this case, E. coli, to detect the presence of lead," Athale told The Indian Express.

Initially, the team is planning to draw water samples from Mula and Mutha rivers in Pune. The UG students include Yamini Mathur, Aarti Kejriwal, Sushmitha Hegde, Shubhankar Londhe, Sayantan Datta, Vinayak Tumuluri, Pranav S R, Nishant Baruah and Rupali Sathe, mentored by four PhD scholars along with Aurnab Ghose and Athale.

Lead is neurotoxic and even minute concentrations mixed with drinking water can lead to serious neurological problems, impact learning abilities, among other risks.

According to prescribed standards set by the Central Pollution Control Board, only 0.1mg/litre is the maximum permissible concentration of lead in water meant for agriculture, industry and unfiltered public water supply after approved disinfection.

Alongside detecting the presence of lead, the tool will offer the concentration of the heavy metal and this will be completed using mathematical modelling, researchers said.

Before this, two IISER teams have bagged iGEM medals and have worked on projects. Once they complete this project, the team will get a chance to showcase their work at a global platform in November.