

Scientists at the Institute of Genomics and Integrative Biology, in collaboration with IIIT-Delhi, have been able to develop a rapid and sensitive method to detect Coronavirus infection within 30 minutes using a mass spectrometer.

The samples for the study were provided by National Centre for Disease Control, while Indraprastha Institute of Information Technology (IIIT-Delhi) took care of the computational work. The computational work that has been instrumental in bringing about this research has shown great potential and could turn out to be an invaluable in the fight against future diseases as well that haven't been discovered yet.

The samples used in this research from the standard nasal and throat swab. The major challenge that was faced was to uniquely identify viral protein peptides that have no match to any human proteins and can be detected in the mass spectrometer. Parth Garg, a CS+CB third year BTech student worked towards developing an algorithm for this purpose. They had to first encode the whole mass-spectrometry principles of peptide detection before they could embark on the specific viral detection. Their method helps to identify highly unique viral peptides that could always be detected in developed technology.

Many of the 21st century challenges are not only complex but as COVID times have shown, sometimes, urgent and time-bound. Another thing that has come into the forefront of scientific discovery is the importance of computational methods to minimize many exploratory aspects of research. Inter-disciplinary research is the way to go as it brings in experts of different disciplines to solve a grander problem.

Compared to other methods, the mass spectrometer based test doesn't require hybridisation and/or amplification, which can potentially result in a few false negative results. The test is also comparatively much faster as well – delivering the results within 30 minutes.

Please do let us know if you find these insights interesting and worth sharing. We shall be able to connect you with the concerned authorities at IIIT-Delhi for further details.