

## JNCASR spinoff launched molecular probes used in COVID-19 test kits

VNIR Biotechnologies Private Limited, a spinoff by Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) an autonomous institute of the Department of Science & Technology, Government of India launched indigenous fluorescence probes and Polymerase chain reaction (PCR) mix for Reverse transcription polymerase chain reaction (RT-PCR) detection which are molecular probes used in COVID-19 test kits. VNIR Biotechnologies Private Limited is incubated at Bangalore Bio-innovation Centre (BBC) of Government of Karnataka.

“This initiative of developing products locally is in line with our Prime Minister's 'Aatmanirbhar Bharat' mission. We must take pride of the fact that we have reached this level of innovating and producing locally,” said Dr. C. N. Ashwath Narayan, Deputy Chief Minister of Karnataka, who attended the product launch on July 7, 2020, at Bangalore Bio-innovation Centre (BBC). The programme was also attended by Deputy Chief Minister of Karnataka, Dr. C. N. Ashwath Narayan, Additional Chief Secretary IT/BT, Dr. E. V. Ramana Reddy, and Managing Director of Bangalore Bioinnovation Center, Dr. Jitendra Kumar.



Prof. T. Govindaraju and Dr. Meher Prakash co-founders of VNIR have developed the Florescence probes and PCR mix for RTPCR detection. These molecular probes are used in COVID-19 test kits. A typical, PCR based test kit has three critical components (oligos, enzymes, molecular probes). The first two are partly available in India and partly imported while molecular probes used in COVID 19 tests, however are only imported. The molecular probes are used to track the amplification in PCR. Their immediate application is for COVID-19 testing, but they are general-purpose molecular tools for molecular diagnostic tests of several diseases.

VNIR has innovated synthesis protocols for a suite of molecular probes, which will be useful for PCR based COVID-19 testing. VNIR will be filing for the protection of its process innovation.

Molecular diagnostic tests used to be limited to research laboratories or for limited applications. COVID-19 has presented a unique problem that the finest level of molecular diagnostic test has to be performed almost at a complete population level if needed. Given the scale of tests required for COVID-19, it is very important to become self-reliant with the critical test kit components. Enzyme and oligo needs are partly met from Indian manufacturers, and VNIR envisions to address the third critical component, which is the molecular probes.

Molecular probe development is a consequence of synthetic organic chemistry, by understanding several aspects of it – the molecule, its target, the availability of chemicals, and optimizing the yields at each step of the synthesis by a judicious choice of protocols. VNIR used its core strengths in molecular probe development to develop the molecular probes using novel synthetic routes.

In March 2020, with the rest of the world, VNIR also came to a halt briefly. VNIR team used the opportunity of staying at home to contribute to address the problem of COVID-19.

“Investing on newer R&D, in addition to those ongoing, was overwhelming for us as a startup. However, we took up the risk and the challenge. Our team went back to the drawing board and planned the synthesis of these much-required probes for the COVID-19 tests. VNIR’s R&D effort in line with the Make-In-India and Aatmanirbhar Bharat missions of the Government of India are meant to contribute to self-reliance in COVID-19 testing. To the best of our knowledge, there is no Indian company making these molecular probes.” said Prof. T. Govindaraju.

“The probes for RT-PCR based COVID--19 tests is an excellent example of leveraging our basic science knowledge for development of critical new products that are until now being imported. Nor is this knowledge limited to one particular virus, but would help us rapidly develop molecular diagnosis in the future for other viruses as well,” said Prof Ashutosh Sharma, Secretary, DST.