Cross-disciplinary team develops new sewage surveillance method targeting COVID-19 virus variants

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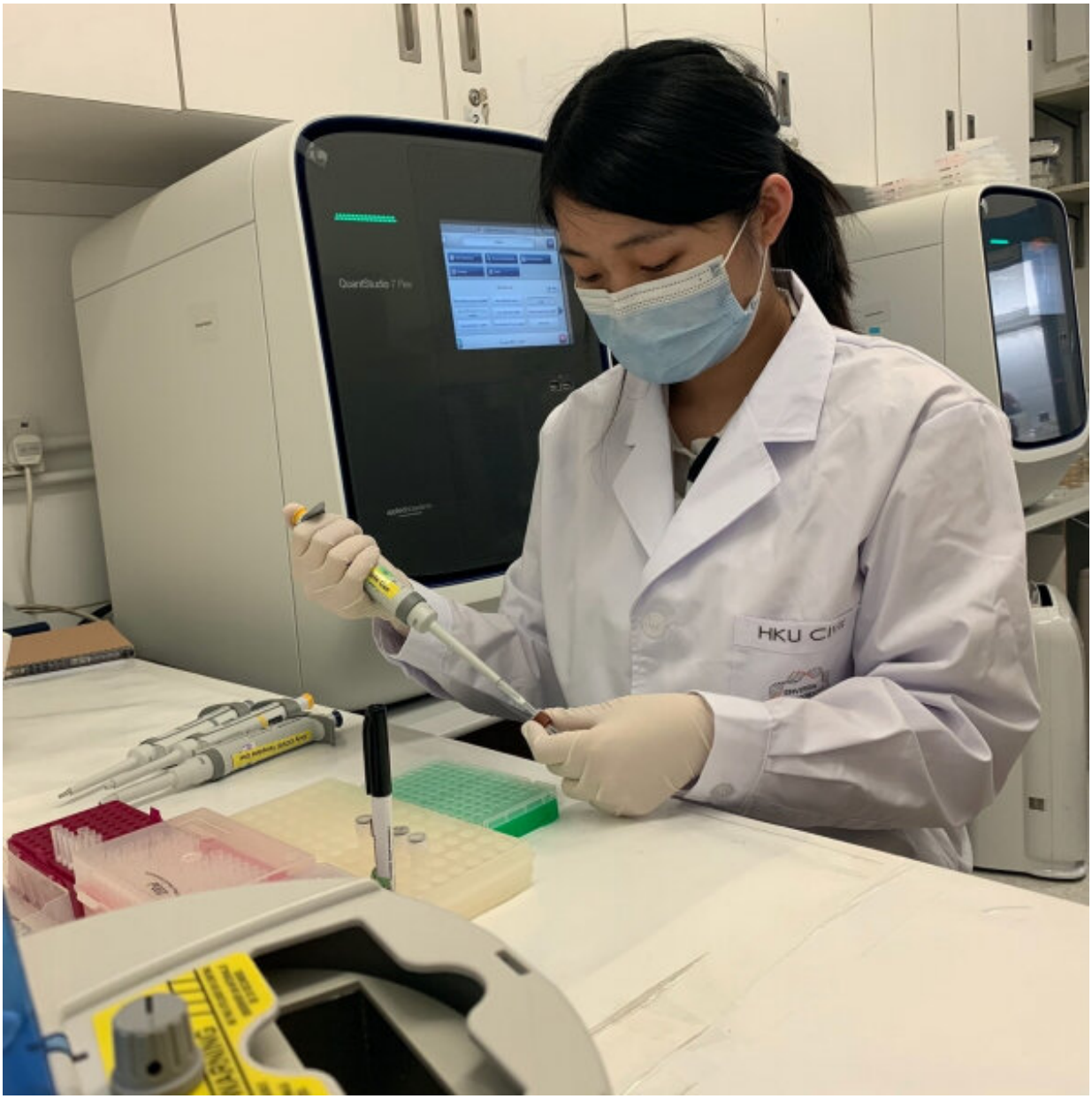

Detection of variants of SARS-CoV-2 virus. Credit: The University of Hong Kong

Testing of COVID-19 virus in the sewage is one of the key techniques to detect and fight the virus. The sewage monitoring system developed by a cross-disciplinary research team led by Professor Tong Zhang at the Department of Civil Engineering of the University of Hong Kong (HKU) has identified more than 50 confirmed COVID-19 cases in the city so far.

The method developed by the team earlier contains a two-step separation and seeks to detect the two gene segments of the SARS-CoV-2 virus for determining the presence of SARS-CoV-2 in sewage. As this approach targets only the conserved region of the viral genome, it cannot distinguish different types of SARS-CoV-2 variants.

In this regard, Professor Zhang's team has recently developed a new testing method which can identify COVID-19 variants in sewage. The new testing method was earlier applied in testing a sewage sample collected on May 2, 2021 from Fung Hing House, Hing Wah (II) Estate (Chai Wan), and identified successfully positive signals of N501Y and other mutations of the Beta variant (known as B.1.351, first identified in South Africa). A positive case involving the COVID-19 mutant was later confirmed on May 7, 2021.

Professor Zhang said: "There is an urgent need for developing a new testing methodology for monitoring the transfer of SARS-CoV-2 variants in Hong Kong. With the team's experiences in method development, this new testing method invented by us targets different

mutations of the spike protein of SARS-CoV-2 and can rapidly (within a few hours) detect and quantify SARS-CoV-2 variants with high specificity in the sewage sample."

The research on sewage testing of SARS-CoV-2 virus received funding by the Hong Kong SAR Government and has started since July 2020 in HKU. Chief Executive Carrie LAM said, "The anti-epidemic work of the Government has all along been based on science. The sewage surveillance project is an extremely good example of our joint efforts with local scientific teams to fight the virus with technology. The HKU team has continued to improve and optimize the testing method of SARS-CoV-2 and its variants. I thank the cross-disciplinary team of HKU and colleagues of government departments, including the Drainage Services Department and the Environmental Protection Department, for their hard work, who continue to leverage innovative technology to fight the virus through sewage surveillance."

Provided by The University of Hong Kong

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