

Issue 20

Nagasaki University's response to the novel coronavirus

Tuesday, March 17

Hello.

This is Kohno Shigeru from Nagasaki University.

Today I will continue with the notes from my discussion with the Dean of the Institute for Tropical Medicine, Prof. Morita Kouichi.

The Planetary Health slogan of the Institute of Tropical Medicine (NEKKEN) is, "Solving the world's health issues through scientific discovery and its application!" It's time to put that phrase into practice in response to the novel coronavirus. The university-wide actions for emergency research have begun at the following departments: the Department of Infection Research of the Graduate School of Biomedical Sciences and the Nagasaki University Hospital Infection Control and Education Center, which will be equipped with the BSL-4 facility in days to come, together with the National Research Center for the Control and Prevention of Infectious Diseases.

In January, when a rapid increase of patients was reported in Wuhan, China, NEKKEN quickly prepared a PCR (Polymerase Chain Reaction) method to detect the novel coronavirus to use in case of a domestic outbreak. This was made possible by China's prompt release of the whole genome of the virus. This aggressive release of scientific information by China is a positive response to the criticism that the disclosure of information was delayed during the SARS epidemic in 2003.

Later when the spread of the infection outside China began and the entry of the virus into Japan was confirmed, the government announced emergency measures in February that include funding for urgent novel coronavirus research. Nagasaki University is playing a major role in this research.

So far, six universities, Nagasaki University, Kobe University, Osaka University, Niigata University, The University of Tokyo, and Tohoku University have established infectious disease research stations in the following countries respectively: Vietnam, Indonesia, Thailand, Myanmar, China, and the Philippines. The universities will conduct research on diagnosis, treatment, prevention, and a survey of wildlife that are potential sources of future

diseases. This study is led by Nagasaki University in collaboration with the National Institute of Infectious Diseases.

For example, NEKKEN will develop a diagnostic agent using a technique called LAMP (Loop-Mediated Isothermal Amplification), a gene amplification method like PCR to make virus detection easier and faster. LAMP requires simpler equipment than PCR, thus it is ideal for small hospitals and disease control at epidemic sites.

I think it could be very useful also in Nagasaki. Furthermore, immunochromatographic diagnostics would be valuable in even smaller clinics, where a one drop sample can diagnose influenza. This is a well-known method where anyone can see the result of the test in 15 to 20 minutes. This method can be used at the bedside.

In addition, this diagnostic tool is simple and affordable, so it could be applied in developing countries. Another planned activity is to produce a pseudovirus, a recombinant virus for diagnosis that can safely measure virus neutralizing antibodies.

We have already obtained the coronavirus and we have started the development of therapeutic drugs and vaccines. Normal drug development takes about 5 to 10 years. To find drug candidates that can be used as soon as possible, we are screening existing drugs and pre-launch drugs from Japanese pharmaceutical companies.

Moreover, in vaccine development we have just started developing a new vaccine for the coronavirus with the Tokyo Metropolitan Institute of Medical Science that was previously our partner in developing the SARS vaccine.

PS

Issues 6 to 10 were translated into English.

Please share with international faculty and staff members as well as our colleagues at overseas stations.

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