Realization of a safe, secured, and comfortable town by removing a slight amount of hazardous substances hiding in living environments

Platform Formation to Prevent Influenza Pandemic with Graphene

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Summary : So far, in order to confirm the infectivity of humans with highly pathogenic avian influenza, the number of viruses should be amplified to about 10^6 and measured by chromatography, but this requires 10 days or more, and it was too late to prevent the pandemic.

In this study, we will construct a system to judge the human infectivity by modifying the sugar chain to which the virus selectively binds, and judge the subtype by modifying the antibody on the graphene field effect transistor with ultrasensitive characteristics. A system will be able to judge within a few tens of minutes after collection of a virus sample.

To achieve this, a graphene field-effect transistor array is formed and a matrix modification method using an ink jet printer is developed to modify multiple types of sugar chains and antigens on the graphene transistor. In this way, human infectivity and subtypes of bird flu are simultaneously measured, and the risk is judged promptly to prevent the spread of infection.