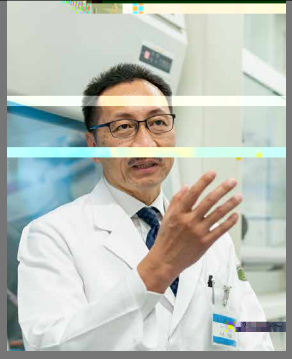

Professor
School of Medicine
Department of Infectious Diseases,
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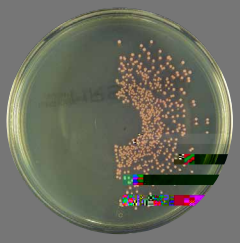
Research interests
Infectious diseases, digestive surgery

In September 2020, Prof. Ohge's research team was the first in the world to announce they had confirmed the deactivation effect on the COVID-19 virus of ultraviolet C light with a central wavelength of 222 nanometers (nm), which poses minimal risk to human health. The team's experiment using Care222®, a filtered 222 nm far-UVC excimer lamp manufactured by Ushio, Inc., achieved 99.7% deactivation of the virus after 30 seconds of irradiation.

Demonstrating that UVC light effectively kills bacteria and the COVID-19 virus Hiroshima University is a "dream laboratory" that turns ideas into concrete results



Colony formation compared the effects of irradiation with and without UV light on the growth medium of MRSA (methicillin-resistant *Staphylococcus aureus*); the right side was not irradiated.

Areas around hospital beds and hospital door handles are sometimes covered with pathogenic microorganisms. Invisible and transmissible via tools and human hands to other patients, they can cause nosocomial infections.

So, how do we keep hospital rooms clean? By manually cleaning and wiping the surfaces. Come to think of it, it is strange that no progress has been made in this area for over a century and that hospital rooms are still cleaned solely by hand.

It has been known since olden times that ultraviolet light is effective in eradicating microorganisms. Ultraviolet light was used for disinfection in hospitals for a while, but the practice eventually died out since the efficacy was never clearly established. With recent advances in UV-light-related technologies, I decided to try using it.

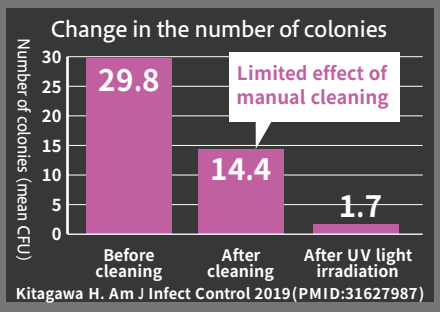
In our experiment in the hospital room from which a patient infected with MRSA (methicillin-resistant *Staphylococcus aureus*, a bacterium that causes nosocomial infections) was recently discharged, we conducted a cultivation test before the room was cleaned, after the room was cleaned manually as usual, and after irradiation by UV light. The test results showed that the MRSA, which had been present in the room in large numbers before cleaning, were reduced by half after manual wiping, and were almost entirely eliminated by UV irradiation. The test not only demonstrated the efficacy of UV irradiation but also indicated that the hospital's usual manual wiping was not as effective a disinfecting method as we had assumed.

We went on to test with the novel coronavirus, which causes COVID-19, and discovered that the virus was deactivated by 90% after only 10 seconds of UV irradiation and was almost undetectable after 30 seconds of irradiation.

We were able to obtain such intriguing research results thanks to the unique environment of Hiroshima University. Hiroshima University has a hospital with real patients and places where pathogens can be found. Indispensable research partners, such as experts in bacteriology and virology, have their laboratories on the same campus. Moreover, since we carry out research jointly with various companies, we can use the most advanced technologies to assess our research findings.

There are many things in society that pose problems, but no countermeasures have been taken for years, such as manual cleaning of hospital rooms. Clues to finding solutions are often in conversation. Casually talking with researchers and corporate representatives is extremely stimulating and has helped me generate many ideas. Being able to test your ideas as soon as you come up with them is a significant advantage of working at this university. Experiments do not always go well, but with many other specialists on the campus I can turn to for advice, I know I will find something eventually.

Turning your ideas into concrete results and developing them into something that can serve society is a hugely satisfying process. The research on UV light irradiation started from the hospital, and I expect it to be applicable in a wide range of areas, including public services and home life. Hiroshima University is a laboratory where you can make your dreams come true. Why not consider studying and doing research here together with us to find solutions to everyday problems and inconveniences?



The graph shows how the number of MRSA colonies changes before and after cleaning and after UV light irradiation. It clearly shows that the disinfectant effect of manual cleaning is limited.

Background photo: Electron microscope photo of SARS-CoV-2 (the virus causing COVID-19) taken by HIGASHIURA Akifumi (Assistant Professor, Department of Virology, Graduate School of Biomedical and Health Sciences)

Creating World Top-level

Network-type Research Center

Network for Education and Research on Peace and Sustainability (NERPS)

The Network for Education and Research on Peace and Sustainability (NERPS) is a network hub widely open to the world and not exclusively linked to Hiroshima University. NERPS aspires to be an education and research center characterized as follows:

1. A research hub focusing on peace, the global environment, and the Sustainable Development Goals (SDGs) backed by research capabilities of international standards
2. A problem-solving-oriented education and research hub in which researchers in the humanities and social sciences can also participate
3. An education and research hub enabling collaboration by diverse actors, including individuals, NGOs, private businesses, governmental entities, and international organizations

NERPS

The logo symbolizes NERPS's priority focus on SDG 4 "Quality education" and SDG 16 "Peace, justice and strong institutions," while contributing to all of the 17 SDGs.