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ASIA EDITION

World's first atlas of airborne microbes for public health research

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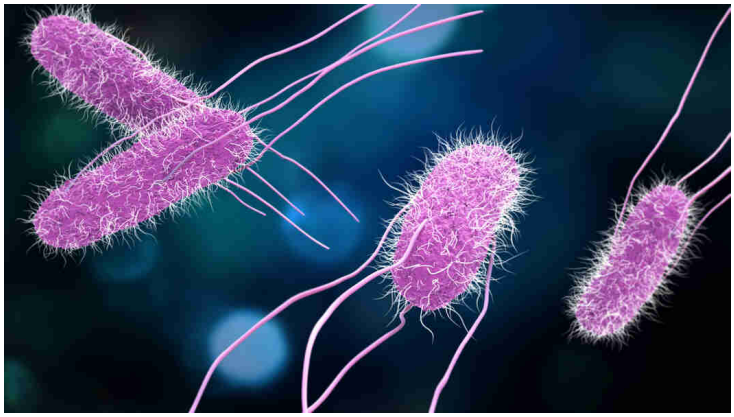
To serve as a critical reference for predicting planetary microbiome responses and the health impacts of inhalable microbiomes with future environmental changes



The microbial population of the air that surrounds us is comparatively unknown, but a research expedition led by Hong Kong Polytechnic University (PolyU) scientists is about to change that. After nearly a decade of effort, they have compiled a comprehensive map of the world's airborne microbes, providing fresh insights into how these species interact with the surface environment – as well as their likely future changes.

A cubic metre of "empty" air contains 10,000 bacteria or more, and interest in the role of air as a habitat – not merely a conduit – for microbes has grown enormously since the start of the COVID-19 pandemic.

In collaboration with researchers on the mainland and the US, the PolyU-led team spent around a year sampling airborne microbes across the world, from ground level to mountaintops. Combining their own results with the most accurate global data collected in past studies, they and their research partners compiled the first ever atlas of the global airborne microbiome.

Overall, the researchers estimate that half of airborne bacteria originate from ground sources. Urban air has especially high rates of human-associated bacteria – some harmless, others pathogenic. Direct transfer of germs from people to air is not our only effect on the airborne microbial world. Broad-scale activities such as industrialisation disrupt natural environments and impact air quality. This weakens the environment's "filter" effect on microbial structure, making the composition of airborne bacteria more affected by random processes – although weather still plays an important role too.