2026 IDEC Special seminar

Applied Drone Technology and Aeromicrobiology

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Presenter

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Abstract

Airborne fungal spores connect terrestrial microbial communities with the atmosphere, but investigating their distribution requires sampling methods that capture variation across space, height, and environmental conditions. This talk will introduce the development of drone-based fungal-spore sampling, focusing on how sampling systems are designed, compared, and adapted for microscopy, culture-based and molecular analyses.
The first part will describe the practical development of drone-mounted sampling systems, including sampler placement, flight procedures, contamination prevention, and the challenges of collecting biological material from the air.

I will also examine how different sampling approaches provide complementary information. Passive sampling with agar plates allows airborne fungal propagules to settle onto a growth medium, where those capable of growing under the selected conditions can be cultured and examined. Comparisons with ground-based controls and other collection methods will be discussed, highlighting the distinction between recovering culturable fungi and characterising the wider airborne fungal community.

The central message is that drone sampling is not simply a new collection platform: its efficiency depends on validation, careful comparisons, and a clear understanding of what each method measures.

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