Fungal biodiversity in buildings and how to detect it

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Abstract Submission

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			5. Climate change and interactions with fungi

Fungal biodiversity in buildings and how to detect it

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The fungal species that can be found in a building depend on both the building materials used for the construction and the level of moisture in the materials. In a water damaged building, the fungal growth is often visible and can be detected and identified using culture based methods, such as V8 contact plates. In modern building containing gypsum wallboard and OSB board, water damage often result in growth of *Chaetomium globosum* and *Stachybotrys chartarum.* In older buildings of brick and mortar, *Penicillium chrysogenum* and *Aspergillus versicolor* are normally found after water damage. In buildings with prolonged high humidity, fungal growth is not always obvious, and settled dust and aggressive air sampling have to be used. Two different media (e.g. V8 and DG18) are recommended if culture based methods are used, but DNA sequencing and Mycometer analyses of dust and air samples are increasingly used by professional building surveyors. *Aspergillus domesticus*, *Debaryomyces hansenii*, *P. brevicompactum* and *Wallemia muriae* are common in dust and air samples and seem to be good indicators for elevated humidity levels and potential indoor problems. Opening the building constructions, i.e. drilling holes in walls, ceilings or floors, is often done, when surveyors are looking for hidden fungal growth. A new study showed that DNA sequencing of dust from vacuum-cleaners can be used as a non-destruction screening tool. In other cases traditional methods are not enough to expose the extent of the problem. In a Danish museum repository where the staff had severe health problems, the fungus, *A. halophilicus*, was first detected when aggressive air sampling was combined with the use of malt-yeast-50%-glucose agar (MY50G) [Bastholm et al. (2022). Journal of Cultural Heritage. https://doi.org/10.1016/j.culher.2022.02.009].