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Environment

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Abstract: Exposure to environmental fungi, whether this occurs indoors or outdoors, in leisure activities, in the workplace or in the home, is an everyday occurrence. Different types of environment may contain variable levels of fungal particles and include viable and non-viable yeasts, conidia, hyphal fragments, as well as fragments derived from the fungal cell wall. Mycotoxins and other volatile organic compounds should also be considered as environmental potential hazards. Recognition of the importance of the environment as a source of human infection has come about, at least in part, as result of the emergence of an unprecedented number of ubiquitous environmental fungi as major causes of disease. Exposure to environmental fungi is associated with high number of hospital admissions, and asthma related ailments. Allergic bronchopulmonary mycosis, rhinosinosis, asthma with fungal sensitization and hypersensitivity pneumonitis are among the diseases more frequently associated with fungal exposure. In addition, immunocompromised patients are at higher risk for the development of invasive infections. Changes in environmental factors, including changing land-use patterns, use of antifungals in agriculture, and climate changes have led to epidemiological shifts. Therefore, special attention should be paid in regard to the isolated fungal species. Environmental fungal species such as *Aspergillus* spp., *Mucorales*, *Candida* spp., dermatophytes and dimorphic fungi will be discussed during this session; emphasizing their importance as etiological agents of fungal infections.

M13

Diagnostics/Imaging

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Abstract: Bench-to-Bedside Diagnosis of Invasive Pulmonary Aspergillosis. Invasive pulmonary aspergillosis (IPA) is a life-threatening lung disease of haematological malignancy and bone marrow transplant patients caused by the air-borne mould *Aspergillus*. Current diagnostic tests for the disease lack sensitivity or specificity, and culture of the fungus from invasive lung biopsy, considered the gold standard for IPA detection, is slow and often not possible in critically ill patients. While Computed Tomography (CT) is a non-invasive diagnostic procedure, it has limited clinical utility for IPA diagnosis, but is nevertheless used as a trigger for commencing antifungal treatment in a number of centres. Innovative approaches to the diagnosis of IPA are needed to enable diagnostic-driven treatment with mould active drugs. In this talk, I will discuss the development of diagnostic technologies for IPA detection based on the *Aspergillus*-specific mouse monoclonal antibody JF5, including the CE-marked *Aspergillus* lateral-flow device (OLM Diagnostics), and CE-marked *Aspergillus*-ELISA (Euroimmun AG). In addition, I will describe the humanisation of mAb JF5 for PET/MR imaging of *Aspergillus* lung infections *in vivo*, and translation of the imaging technology to the clinical setting. I will finish by describing the recent development of a mAb, PD7, specific to *A. fumigatus*, and its use to detect a novel protein biomarker of IPA in urine.

M14

Resistance—Utilizing molecular methods

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Abstract: Until recently the identification of antifungal resistance has been based on the availability of a cultured organism to perform susceptibility testing to determine a MIC against a particular antifungal agent. The development of molecular techniques has provided an alternative option, by identifying genetic markers potentially associated with resistance or identifying species that may be inherently resistant, or have an increased likelihood of resistance to particular drugs. Indeed,