Double success for drug resistance research

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An image of Aspergillus fumigatus colonies on an agar plate. Invasive aspergillosis is a devastating disease cause by breathing in its airborne spores and is a condition where drug resistance has been encountered. Credit: Swansea University

Swansea University research into the threat posed by antifungal drug resistance has been highlighted in two prestigious international journals.

Fungal disease now kills more people than malaria or TB and the Centre

for Disease Control in the USA recognises emergence of multi-drug resistance in fungi as a high level threat.

Dr. Josie Parker and Prof Steve Kelly, from Swansea University Medical School's Centre for Cytochrome P450 Diversity have been involved in the studies which investigated different aspects of resistance

The first publication in the American Microbiology Society journal *mBio* saw them working with fellow academics from the University of Lausanne led by Professor Dominque Sanglard to compare whole genomes to identify key mutations involved in resistance to the drugs available that include azoles, amphotericin B and echinocandins.

A second publication in *Nature Communications* involved an international collaboration led by Manchester University's Professor Paul Bowyer and Dr. Mike Bromley.

It examined drug resistance in the filamentous fungal pathogen Aspergillus fumigatus. Breathing in the airborne spores of this fungus can cause the devastating disease invasive aspergillosis which causes more than 200,000 life-threatening infections every year.

Professor Kelly, who has been researching the field of antifungal resistance for more than 30 years, said: "We are very pleased to be involved in both these research projects and that they have been published in such well-regarded journals.

"Improving our understanding of antifungal drug resistance will help in the development of effective and potentially life-saving therapies for the future."

More information: Abhilash Kannan et al, Comparative Genomics for the Elucidation of Multidrug Resistance in Candida lusitaniae, *mBio*

(2020). DOI: 10.1128/mBio.02512-19

Takanori Furukawa et al. The negative cofactor 2 complex is a key regulator of drug resistance in Aspergillus fumigatus, *Nature Communications* (2020). DOI: 10.1038/s41467-019-14191-1