

PILLOWS

Fungal Research Trust

Researchers at The University of Manchester, funded by the Fungal Research Trust, have discovered millions of fungal spores literally right under our noses – in our pillows. *Aspergillus fumigatus*, the species most commonly found in the pillows, is most likely to cause disease; and the resulting condition Aspergillosis has become the leading infectious cause of death in leukaemia and bone marrow transplant patients. Fungi also exacerbate asthma in adults.



The researchers found that by dissecting both feather and synthetic samples they identified several thousand spores of fungus per gram of used pillow - more than a million spores per pillow.

Fungal contamination of bedding was first studied in 1936, but there have been no reports in the last seventy years. For this new study, which was published online today in the scientific journal *Allergy*, the team studied samples from ten pillows with between 1.5 and 20 years of regular use.

Each pillow was found to contain a substantial fungal load, with four to 16 different species being identified per sample and even higher numbers found in synthetic pillows. The microscopic fungus *Aspergillus fumigatus* was particularly evident in synthetic pillows, and fungi as diverse as bread and vine moulds and those usually found on damp walls and in showers were also found.

Professor Ashley Woodcock who led the research said: "We know that pillows are inhabited by the house dust mite which eats fungi, and one theory is that the fungi are in turn using the house dust mites' faeces as a major source of nitrogen and nutrition (along with human skin scales). There could therefore be a 'miniature ecosystem' at work inside our pillows."

Aspergillus is a very common fungus, carried in the air as well as being found in cellars, household plant pots, compost, computers and ground pepper and spices.

a Hot Bed of Fungal Spores

Invasive Aspergillosis occurs mainly in the lungs and sinuses, although it can spread to other organs such as the brain, and is becoming increasingly common across other patient groups. It is very difficult to treat, and as many as 1 in 25 patients who die in modern European teaching hospitals have the disease.

Immuno-compromised patients such as transplantation, AIDS and steroid treatment patients are also frequently affected with life-threatening *Aspergillus* pneumonia and sinusitis. Hospital pillows have plastic covers and so are unlikely to cause problems, but patients being discharged home - where pillows may be old and fungus-infected - could be at risk of infection.

Aspergillus can also worsen asthma, particularly in adults who have had asthma for many years, and cause allergic sinusitis in patients with allergic tendencies. Constant exposure to fungus in bed could be problematic. It can also get into the lung cavities created by tuberculosis which affects a third of the world's population, causing general ill-health and bleeding in the lung, as well as causing a range of plant and animal diseases.

Dr Geoffrey Scott, Chairman of the Fungal Research Trust which funded the study, said: "These new findings are potentially of major significance to people with allergic diseases of the lungs and damaged immune systems - especially those being sent home from hospital."

Professor Ashley Woodcock added: "Since patients spend a third of their life sleeping and breathing close to a potentially large and varied source of fungi, these findings certainly have important implications for patients with respiratory disease - especially asthma and sinusitis."

The Fungal Research Trust (www.fungalresearchtrust.org) is a registered charity which funds research into and education about fungal infection. It was set up in 1991 and has distributed in excess of £1.6m in research grants resulting in more than 80 research publications in clinical and scientific aspects of fungal infection. It also supports the *Aspergillus* Website (www.aspergillus.man.ac.uk), a key resource for clinicians, with a section devoted to patients and relatives to help them understand more about the disease.

The University of Manchester (www.manchester.ac.uk) is the largest higher education institution in the country with almost 36 000 students. Its Faculty of Medical & Human Sciences (www.mhs.manchester.ac.uk) is one of the largest faculties of clinical and health sciences in Europe, with a research income of over £37 million.

The School of Medicine (www.medicine.manchester.ac.uk) is the largest of the Faculty's five Schools, with 1300 staff, almost 2000 undergraduates and a £32M research income. It hosts one of the world's strongest clinical and research groups in lung diseases, with a special focus on asthma and chronic lung disease and how the lungs interact with the environment (including fungi).

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