# The Last Of Us sparks debate on the real threat of fungal pandemics



The post-apocalyptic television drama series The Last Of Us, which recently returned for its second season on Sky Atlantic, draws on a provocative premise: a global pandemic triggered by a fungal outbreak that transforms humans into violent creatures. The show stars Pedro Pascal and Bella Ramsey and unfolds in a world devastated by a mass cordyceps infection.

The series introduced the concept in its 2023 debut episode through the character of an epidemiologist, played by John Hannah, who warns about the dangers of fungi evolving under climate change conditions. Speaking in the show, the character says: "Candida, ergot, cordyceps, aspergillus: any one of them could be capable of burrowing into our brains and taking control of not millions of us, but billions." This fictional scenario raises questions about the scientific plausibility of fungal infections causing widespread human health crises.

Addressing this, Professor Elaine Bignell, a leading authority on human fungal pathogens, highlights that numerous fungi infect human brains worldwide, often with severe consequences. She explains that several fungal species cause significant mortality annually, although public awareness is limited. The World Health Organisation (WHO) has classified several fungi as high-risk pathogens, including Aspergillus fumigatus, a common environmental mould which can cause serious lung diseases, and various Candida species responsible for infections such as thrush and bloodstream infections in intensive care patients. Another major concern is Cryptococcus neoformans, which causes pneumonia and meningitis in immunosuppressed individuals, particularly in sub-Saharan Africa, leading to over 100,000 deaths each year.

Professor Bignell notes a common characteristic shared by dangerous fungi: their ability to grow at human body temperature, which is atypical for most fungal species. "It places quite a strain on any microorganism to counteract an immune response in a human body and cope with the high temperature," she said in an interview with Sky News.

Regarding the cordyceps fungus featured in the series, Dr Mark Ramsdale, professor of molecular microbiology at the MRC Centre for Medical Mycology, confirms its real-world existence. Cordyceps is a parasitic fungus primarily infecting insects, manipulating their behaviour to enhance the fungus’s reproduction. Found mainly in tropical forests, cordyceps spores invade insect hosts, directing them to humid locations that favour fungal growth and spore dispersal. While cordyceps plays a role in traditional Chinese herbal medicine and has a longstanding relationship with humans, there is no evidence that it causes disease in people.

The potential influence of climate change on fungal behaviour and pathogenicity is another aspect the series touches upon and which has been acknowledged by the WHO. Professor Bignell describes the impact of global warming as "profound for all microbes". With 150,000 fungi identified to date but estimates suggesting millions exist, the challenge remains to understand which species might adapt to survive higher temperatures and possibly become pathogenic. Dr Ramsdale commented: "Perhaps some could potentially make that transition from one lifestyle to another and become pathogenic in a context we haven't thought of before."

However, Professor Bignell underscores that while fungi are ubiquitous and opportunistic, the rapid and large-scale infections depicted in The Last Of Us are beyond the current biological capabilities of known fungi. "It would take a very significant variant to be able to cause the sorts of species extinction event they're dramatising," she stated.

Despite the dramatic portrayal in the series, current scientific understanding does not support an imminent threat of a fungal pandemic comparable to that depicted on screen. Nevertheless, the medical community recognises the importance of vigilance. Professor Bignell urged preparedness for fungal diseases, noting their increasing incidence since the 1980s and the lack of vaccines or extensive antifungal research programmes. She stressed the need for "a very good understanding of how different fungi can cause human diseases, how our immune systems cope with those microbes, and a good medicine cabinet with antifungal agents we know are effective."

The Last Of Us is broadcast every Monday at 2am on Sky Atlantic, prompting renewed public interest in the science of fungi and the complexities of emerging infectious diseases. The Central FM is reporting on the intersection of science and fiction as encapsulated by this popular series.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://wwwnc.cdc.gov/eid/article/30/3/23-0684_article> - This article evaluates the possibility of a fungal pandemic like the one depicted in The Last of Us, highlighting the series' impact on public perception of fungi and discussing its premise in real-world terms.
* <https://www.news-medical.net/news/20240215/HBOs-The-Last-of-Us-fungal-apocalypse-science-fiction-not-future-reality.aspx> - This piece discusses how The Last of Us portrays a fictional global fungal pandemic and why it remains in the realm of science fiction rather than a future reality.
* <https://netec.org/2023/05/02/distinguishing-between-fungal-fact-and-fiction-in-the-last-of-us/> - The article differentiates between factual and fictional elements in The Last of Us, specifically concerning the role of cordyceps fungus in causing a pandemic.
* <https://www.who.int/news-room/q-and-a/detail/q-and-a-on-cryptococcal-disease> - This WHO webpage highlights the dangers of Cryptococcus neoformans and other fungal pathogens, echoing concerns raised by Professor Elaine Bignell about significant fungal infections.
* <https://www.sky.com/watch/news/video/the-last-of-us-experts-speak-out-on-fungal-fears-1250335> - This Sky News piece features experts discussing dangers associated with certain fungi and the context of fungal infections in human health, similar to discussions in The Last of Us.