

SHELBY HENSON, SARAH FISCHER, & LAURA S. ROBERTSON, Dept of Natural and Physical Sciences, Shepherd University, Shepherdstown, WV, 25443. Fungi captured from indoor air exhibit poor growth at human body temperature.

Fungal pathogens kill approximately 3.8 million people per year worldwide and infect countless more. However, all these illnesses and deaths are caused by only a few species out of the estimated five million fungal species. There are four main barriers that protect humans from fungal pathogens: our immune system, our almost impenetrable skin, our high internal body temperature, and the inability of many fungi to use the human body as food. Most fungi grow best at temperatures close to room temperature ($\sim 25^{\circ}\text{C}/77^{\circ}\text{F}$) and are unable to grow at human body temperature of 37°C (98.6°F). It is thought that humans evolved a higher body temperature in part to protect against fungal pathogens. A significant public health concern is that with gradually increasing environmental temperatures, fungi currently unable to grow at human body temperature could adapt to higher growth temperatures and thus overcome one of the four barriers to infection. We investigated the ability of four non-pathogenic fungal strains captured from indoor air to grow at human body temperature. Growth temperatures were increased gradually two degrees per week from 28°C to 38°C , increased suddenly from 28°C to 36°C , or increased suddenly from 28°C to 38°C . Our results showed no significant acquisition of thermal tolerance. All four strains exhibited poor growth at temperatures close to human body temperature in both gradual and sudden temperature changes. Shelby and Sarah were supported by NASA-WVSGC Undergraduate Research Scholarships.