

# The protein GRP78 opens the door to life-threatening fungal infection

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Mucormycosis is a life-threatening infection most commonly caused by a species of fungus known as *Rhizopus oryzae*. It occurs predominantly in individuals with diabetes, in particular those with the potentially life-threatening complication known as diabetic ketoacidosis.

A team of researchers, led by Ashraf Ibrahim, at the University of California Los Angeles, has now generated data in mice that provide an explanation as to why patients with DKA are highly susceptible to mucormycosis. The data also suggest a new avenue of research for those developing therapeutics for this life-threatening infection.

Mucormycosis is characterized by fungal invasion of the [blood vessels](#), which results in [blood clots](#) forming in the blood vessels and local tissue destruction. In a series of in vitro experiments, the team identified the protein GRP78 as the protein to which *Rhizopus oryzae* binds on human blood vessel-lining cells. Interestingly, increased expression of GRP78 was observed on human blood vessel-lining cells cultured in levels of [glucose](#) and iron consistent with those seen during DKA and in the tissues that are affected during mucormycosis in mice with DKA, which are susceptible to the infection.

Furthermore, mice with DKA were protected from mucormycosis by treatment with GRP78-specific immune serum. These data provide an explanation as to why patients with DKA are highly susceptible to mucormycosis and have uncovered a potential new approach to treating this life-threatening infection.

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