

Study maps vaccine for deadly pathogenic fungus

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University of Alberta researchers have made breakthrough use of 3-D magnetic resonance technology to map the structure of a common fungus that is potentially deadly for individuals with impaired immune function. The work could pave the way for development of an effective vaccine.

The researchers targeted *Candida*, a pathogen that in its most virulent form has led to more than 70,000 [bloodstream infections](#) in North American [hospital patients](#). Health officials estimate that death rate from this bloodstream infection is 40 per cent.

Lead U of A researchers Margaret Johnson and David Bundle as well as collaborators, at the Alberta Glycomics Centre, used [nuclear magnetic resonance](#) for a three-dimensional examination of the fungus at an [atomic scale](#) that measures less than 100 millionth of a centimetre.

The process, called molecular recognition allowed researchers to examine carbohydrate and antibody molecules related to the fungus to determine what sort of vaccine can best combat *Candida*.

Johnson described the three-dimensional approach to vaccinology as giving researchers a clear picture of how a vaccine must physically fit against the surface of the fungus.

The researchers used their findings to design test vaccines that produced positive results in containing the fungus. "Our multi-pronged strategy

allowed us to observe a new type of molecular recognition," she said.

Johnson added if the private sector chooses to complete the development of a vaccine it could be 10 years before the drug is available.

Johnson and Bundle were assisted by U of A researcher Jonathan Cartmell and colleagues at the National University of Ireland and University of Georgia. The research was published May 25 in the [Journal of Biological Chemistry](#).

Provided by University of Alberta

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