

# Researchers discover critical molecule in fight against lung infection

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A Montana State University graduate student who wants to reduce the number of people dying from lung infections has discovered a molecule that's critical for immunity.

Alayna Caffrey, a doctoral student in MSU's Department of Microbiology and Immunology, published her findings Jan. 28 in the online issue of *PLoS Pathogens*, one of the top scientific journals in microbiology. On Jan. 17, she presented her research at the Gordon Research Seminar on Immunology of Fungal Infections in Galveston, Texas, and won first place for her presentation.

"This is a tremendous honor for her work, especially this early in her Ph.D. studies," MSU immunologist Josh Obar said of both forums.

Caffrey researches the early immune response against *Aspergillus fumigatus*, a common mold that can be found in soil or compost piles. The mold causes severe [lung infections](#) in people with weakened immune systems, perhaps compromised by leukemia, chemotherapy or organ transplants.

The death rate from *Aspergillus fumigatus* ranges from 30 to 90 percent, depending on the population, Caffrey said.

To help lower that percentage and understand what goes wrong in [weakened immune systems](#), Caffrey looked at healthy immune systems to see how they respond to *Aspergillus fumigatus*. She discovered that a

molecule called IL-1a is critical for recruiting white blood cells to an infection site.

"If you don't have proper cell recruitment, mold is able to invade lung tissue and grow," Caffrey said.

MSU co-authors on the paper in *PLoS Pathogens* were Margaret Lehmann, Julianne Zickovich, Christopher Watschke, Kimberly Hilmer and Obar. Co-authors from elsewhere were Vanessa Espinosa and Amariliz Rivera from the Center for Immunity and Inflammation at Rutgers University; Kelly Shepardson, Arsa Thammahong and former MSU researcher Robert Cramer from the Geisel School of Medicine at Dartmouth College; and Bridget Barker from TGen North in Flagstaff, Ariz.

Caffrey continues to investigate the molecule IL-1a. She is also co-author on another paper recently published in *PLoS Pathogens* where the investigators focused on other molecules involved in the immune process to *Aspergillus fumigatus*.

Provided by Montana State University

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