

Researchers identify a means of controlling a parasite that kills and eats human cells

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Researchers from the University of Virginia and the University of Vermont have discovered a means of inhibiting one of the world's most voracious parasites. The study, published Friday, January 18 in *PLoS Pathogens*, targets a protein which aids the parasite in ingestion of immune cell corpses.

Entamoeba histolytica, which causes inflammation of the colon (colitis), plays dirty. It attacks and kills human immune cells in seconds. Then the parasite hides the evidence by eating the cells' corpses. While doing so, it kills nearly 100,000 people each year.

The research team, led by Dr. William Petri, hypothesized that identifying molecules involved in the corpse ingestion might provide insight into how the amoebae cause colitis in children.

The team identified a particular protein on the surface of the amoeba called a kinase, PATMK. Using a special technique called RNA interference to inhibit the actions of this kinase, they prevented the amoeba from eating dead cells.

“By blocking this kinase, we have for the first time prevented the amoeba from colonizing and invading the gut,” said Dr. Petri. “This means that we are a step closer to preventing this disease, which wreaks havoc among children worldwide.”

“Infection and further invasion into the gut require the clearance of dead

cells in order to prevent immune recognition of the damaged tissue,” says fellow researcher Douglas Boettner. “PATMK is the first individual member of a large family of proteins to be assigned a function related to the clearance of dying tissue during pathogenesis.”

This protein may be a pivotal vaccination target because these preliminary studies show that alterations in PATMK function reduces progression of amoebiasis in mice, Boettner added. “A vaccine that ultimately would prevent this amoeba from clearing the damaged host may attract helpful immune cells which may recognize and eliminate this infection.”

On a global basis, amebiasis affects approximately 50 million people each year, causing diarrhea, malnutrition and nearly 100,000 deaths.

This work shows how infection is dependent upon the ameba’s consumption of dead cells. By identifying the molecule that controls eating, scientists are one step closer to the ultimate goal of preventing disease caused by this parasite.

Source: Public Library of Science

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