

# Tufts receives patent for antibody treatment against hemolytic uremic syndrome

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Researchers at the Cummings School of Veterinary Medicine have received U.S. patent approval for an antibody-based treatment for Hemolytic Uremic Syndrome (HUS), a potentially fatal outcome of *E. coli* poisoning and the leading cause of kidney failure in children.

HUS is caused by the forms of *E. coli* that produce Shiga toxins and are responsible for about 100,000 annual cases of illness in the United States alone. Typically, individuals will develop bloody diarrhea and recover—however, 5-15 percent of children, the elderly and individuals whose immune systems are compromised may develop HUS in addition after several days.

The condition causes kidney damage and can lead to chronic, irreversible kidney dysfunction, which can be fatal. HUS can also cause damage to the central nervous system. There is currently no cure for the condition.

The condition is believed to be caused by one of the two types of Shiga [toxin](#) excreted by *E. coli*, known as Stx2 and Stx1. The Tufts approach to treating HUS, led by Dr. Saul Tzipori, director of the Cummings School's Division of Infectious Diseases, utilizes human monoclonal antibodies that seek out and bind to the Stx and, ultimately, neutralize it. In a 2004 study, Dr. Tzipori was able to show its efficacy both in vitro and in vivo using mice and pig models.

Other attempts to neutralize Stx have been attempted using other types

of antibodies—chimeric and humanized—where mouse antibodies are fused with parts of human antibodies. However, Tzipori and his colleagues utilized antibodies from transgenic mice specially bred to express human antibodies—creating a safer, longer-lasting, and more effective treatment, Tzipori says.

"In addition to the other benefits, utilizing this approach of generating human [antibodies](#) enabled us to create a large number of them from which to select," said Distinguished Professor of Microbiology and Infectious Diseases Dr. Saul Tzipori.

The patent is currently licensed to Sarasota, Fla.-based Lakewood-Amedex Inc.

Provided by Tufts University, Health Sciences

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