

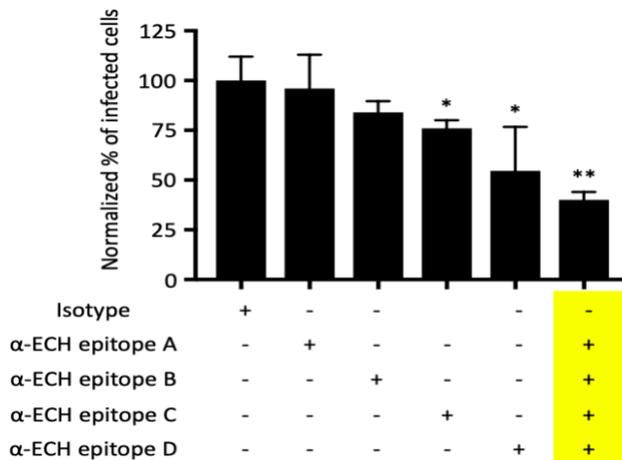
## Novel Chiimeritope Vaccine for Ehrlichiosis

Chimeric Protein for Diagnostic and Therapeutic use in Monocytic Ehrlichiosis

Human monocytic ehrlichiosis (HME) is a potentially fatal tick-borne disease of humans prevalent in the southern regions of North America. Caused by *Ehrlichia* bacteria, if left untreated HME can cause meningoencephalitis, respiratory distress syndrome, acute renal failure, hypotensive shock, and death. Researchers at Virginia Commonwealth University (VCU) have developed a novel chiimeritope that mimics various surface proteins essential for *Ehrlichia* infection that can be utilized to vaccinate humans against infection.

### The technology

The novel chimeric protein developed at VCU utilizes segments of 3 separate proteins that play central roles in the processes of ehrlichial adherence and invasion of mammalian cells. The combination of 3 protein segments significantly reduces the production cost of this vaccine while also providing broad protective efficacy. Further, the selected chiimeritope invokes an immune response capable of preventing host cell invasion and replication of *Ehrlichia*. The unique chimeric protein has already been shown to elicit an immune response that results in antibody production in animal hosts. The resulting antibody has also been demonstrated to be effective in blocking the ability of *Ehrlichia* to enter mammalian cells, strongly reducing *Ehrlichia* infection, which can be seen in the figure below.



**Figure 1.** Evaluation of various antibody cocktails that target various *Ehrlichia* protein segments. Combinations of antibodies significantly reduced the number of infected cells compared to the number of cells infected when only treated with a singular antibody.

### Benefits

- » Broad protective efficacy
- » Reduced production cost
- » Prevents host cell invasion
- » For use in humans and animals

### Applications

- » Ehrlichiosis vaccine and diagnostic

#### Patent status:

Patent pending: U.S. and foreign rights are available.

#### License status:

This technology is available for licensing to industry for further development and commercialization.

#### Category:

Biomedical

#### VCU Tech #:

20-086

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