Every year in the United States there are about 700,000 cases of sepsis, a condition in which the body is fighting a severe infection that has spread through the bloodstream. It can lead to septic shock, which is associated with a life-threatening drop in blood pressure and circulatory collapse and results in more than 200,000 deaths annually.

But Dr. Paul Weers’ research on apolipoproteins could one day prevent septic shock. During the early stages of an infection lipopolysaccharides, which are extremely toxic membrane components from bacteria, are released into the bloodstream causing sepsis and shock. Dr. Weers believes that apolipoproteins, which are also found in the blood, neutralize the toxic lipopolysaccharides.

“How this exactly happens we do not know, but that is what we try to understand on a molecular level,” Dr. Weers said. “Once we understand this in good detail, scientists can then think about how to use this information to develop novel strategies to treat bacterial sepsis.”

Since 2004, Dr. Weers has received three NIH grants to support his research. In 2004, he was awarded his first NIH AREA grant to study the lipid binding properties of apolipoproteins, which was a great stimulus to establish his research lab, which has hosted nine graduate and 24 undergraduate students. The following year he received an NIH-SCORE grant and in 2010 he was awarded his third NIH grant to support his research into the role of apolipoproteins in innate immunity.

Throughout his tenure at CSULB, Dr. Weers has provided students with a place to excel and work toward their professional goals. Many of his students, including this year’s Outstanding Undergraduate Research Student Duc Le, have gone on to win research competitions, publish research, present at regional and national meetings and pursue doctoral degrees.

“Students or trainees who enter my program will be trained in the skills required for biochemistry and/or biotechnology laboratory settings,” Dr. Weers said. “But they also receive guidance in more general skills such as formal presentations, scientific writing and applying for scholarships.”