2022

Vol 5. No. 2

## Use of Lipo-Oligopeptides Nano-emulsions for use on Drug-Resistant Strains

## Donald R. Owen, Ph.D.

Chemistry University of Houston, United States.

## Abstract

The lethal game between microbes and vertebrates has been ongoing for hundreds of millions of years. Both have the ability to mutate their offensive and defensive weapons. We certainly see the microbes doing this on a much shorter time scale. Thus, antibiotic resistance has become an issue in less than 150 years.

Animals, including vertebrates developed a class of defensive weapons such as the cationic membrane disruptive polypeptides, including the human beta-defensins (hBDs) and the cathelicidin, LL-37. These antimicrobial peptides (AMPs) have become part of our innate immune system and are produced by activating toll-like receptors (TLRs) on keratinocytes, epithelial cells, and immune cells. In other words, all our tubes and surfaces are capable of defending themselves.

These AMPs attack a fundamental part of bacteria and enveloped viruses, the cell or plasma membrane, a structure mammalian cells possess abilities to repair. In contrast, this repair ability is not shared or is far less developed by our less complicated adversaries. Indeed, the structure cannot be altered; however, enzymes developed to attack AMPs are certainly one strategy being utilized.

Synthetic versions of these bioactive membrane molecules (cationic lipo-oligopeptides or CLOPs) have been known and well studied for the last 45 years. What has not been well studied and we are reporting on in this forum is the use of CLOPs in nano-emulsion formulation to directly stimulate TLRs, thus up-regulating AMPs. These up-regulated AMPs now can directly kill microbials and enveloped viruses independent of the antibiotics present. The ability of TLR agonists to aid in the fight against resistant strains is a promising approach for pre-clinical research.

Received: March 10, 2022

Accepted: March 15, 2022

Published: March 30, 2022

## Biography

Donald R. Owen, Ph.D. is CEO at Owen Biosciences Inc. Chemistry University of Houston, United States.