RiboNovix secures license to novel anti-infective discovery technology from Wayne State University

New biotechnology company, RiboNovix, Inc., is addressing the worsening problem of antibiotic-resistant bacteria by developing new anti-infectives that are less susceptible to drug resistance.

Over the last few months, RiboNovix has completed an exclusive license agreement with Wayne State University for the rights to a novel functional genomics platform technology developed in the laboratories of Dr. Philip Cunningham, associate professor of Biology, assembled a team of leading researchers in the field of antibiotic resistance, and been awarded a $346,066 Phase I SBIR grant by the National Institutes of Health.

RiboNovix has secured an exclusive license from Wayne State University for intellectual property based on Dr. Philip Cunningham's development of a novel genetic system that allows mutational analysis of ribosomal RNA (rRNA) in living cells. Because mutations in rRNA affect the production of all cellular proteins and are typically lethal, previous attempts to study rRNA mutations in living cells have had limited success. However, the new genetic technology being exploited by RiboNovix allows mutational analysis of bacterial rRNA in vivo without affecting cell viability.

The system can be used to identify the specific nucleotide sites in rRNA that are required for functionality, and those that can be mutated without loss of function. Antibiotic resistance is more likely to develop for antibiotics that bind to nucleotide sites that are non-essential for function. By identifying the rRNA nucleotides required for functionality and targeting new antibiotics to these sites, it is expected that these new anti-infectives will be less susceptible to the development of drug resistance.

"Because of their remarkable powers of genetic adaptation, bacteria have been able to mutate and become resistant to every antibiotic currently in use," stated Dr. Philip Cunningham, a co-Founder of RiboNovix. "Our technology takes advantage of bacteria's natural adaptability to identify new drug targets and to isolate all of the target mutations that might lead to drug resistance. RiboNovix' anti-infectives will therefore be pre-selected to remain active in the presence of any mutation that the
microbe might develop."

About Antibiotics and Drug Resistance Antibiotics represent the third largest pharmaceutical market at $25 billion in sales per year. Most marketed antibiotics are natural products or derivatives thereof, which are biosynthesized by one microbial species as a defense against another species. New antibiotics have been developed through chemical modifications to these existing drug classes. But bacteria have evolved protective resistance mechanisms against each and every generation of compounds in each and every antibiotic class, so that bacteria not only survive, but thrive.

In general, antibiotics work by binding to a specific target in a bacteria and inhibiting a cellular function essential for the microbe's survival. The four main bacterial cell functions inhibited are bacterial protein synthesis, cell wall biosynthesis, DNA replication and cell metabolism. About 50% of antibiotics bind to the bacterial ribosome, the site of protein synthesis. As a result, the ribosome is a proven drug target, but drug resistance develops through the occurrence of mutations in the ribosomal RNA. RiboNovix’ proprietary genetic technology allows the anticipation of the resistance mutations in these targets, and also the identification of new ribosomal drug targets.

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