

Innovative Anti-Microbial and Anti-Biofilm Therapeutics Against Multidrug Pseudomonas Aeruginosa



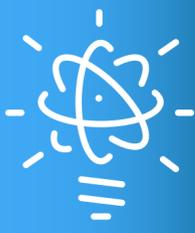
The Problem

Antibiotics are arguably the most successful form of chemotherapy developed in the twentieth century and perhaps over the entire history of medicine. However, antibiotic resistant bacteria are emerging and spreading world-wide and too often antibiotics are taken for granted. The U.S. Centers for Disease Control and Prevention and World Health Organization defines antibiotic resistance as one of the world's most pressing public health problems, and estimates that millions of people die each year from infections due to bacteria that are resistant to treatment by one or more drugs. In the last two decades, due to the continuous consumption of antibiotics, injudicious use of existing drugs, and the on-going evolution and spread of resistance genetic elements, multidrug resistant (MDR) and even extremely drug resistant (XDR) bacteria have emerged. These bacteria exhibit resistance to multiple antibiotics and sometimes to nearly all commercially-available antibiotics, and cause increased patient morbidity, mortality and costs. In this group is MDR Pseudomonas aeruginosa, a notorious pathogen that causes a wide range of hard to treat nosocomial infections.



The Solution

Our notable innovation presents novel treatments against multi-drug resistant Pseudomonas aeruginosa infection and disease.



The Commercial Benefit

These compounds can be used in the hospital setting for severe cases of biofilm associated infections such as chronic lung infection in CF patients, burn victims, or infections associated with medical implants.

Ex vivo uses such as contact lenses solutions and catheter lock solutions are other markets for this outstanding innovation.

The unique unexpected mechanism of action of our safe and easy to formulate lead candidate small molecule- is a close to market approach help to patients with COPD, Cystic fibrosis, ophthalmic and hospital Pseudomonas- associated infections and prevention of biofilm formation on medical devices and in surgery / intensive care units surfaces of risk to transmit infection-biofilm forming to patients blood.



Market Potential

The antibiotics market is expected to reach USD 57 billion by 2024. WHO published on February 2017 its first ever list of antibiotic-resistant "priority pathogens" – a catalogue of 12 families of bacteria that pose the greatest threat to human health. The most critical group of all includes multidrug resistant bacteria that pose a particular threat in hospitals, nursing homes, and among patients whose care requires devices such as ventilators and blood catheters. They include Acinetobacter, Pseudomonas and various Enterobacteriaceae (including Klebsiella, E. coli, Serratia, and Proteus). They can cause severe and often deadly infections such as bloodstream infections and pneumonia.



Target Markets/Industries

- pharmaceutical industry
- Antibiotics Market
- Pseudomonas aeruginosa infections treatment market
- Health care sector



Intellectual Property

Patent pending



Team: Primary Inventor

Prof. Yarden Opatowsky

- Prof. Yarden Opatowsky, is a structural biologist and senior lecturer in the Mina and Everard Goodman Faculty of Life Sciences.
- Professor Opatowsky received his PhD from Yale University.
- Professor Opatowsky's interests include structural aspects in neurobiology, cancer research and microorganisms pathogenesis.
- Professor Opatowsky is author of few commercial patents and dozens of peer reviewed publications



Prof. Ehud Banin

- Ehud Banin, a returning scientist from the University of Washington, Seattle, is a Member of the Nano Cleantech Center at the Institute of Nanotechnology and Advanced Materials (BINA) in Bar-Ilan University.
- Professor Banin is a lecturer at the Mina and Everard Goodman Faculty of Life Sciences
- Professor Banin is an author of a few commercial patents and dozens of peer reviewed publications



Future Research

Next steps includes expanding of our IP portfolio based on recent data that enables innovative use of known safe small molecule as an essential inhibitor of Pseudomonas adhesion. The proposed mechanism based on an essential mechanism of bacterial survival, therefore no resistance expected to be developed.

We strongly believe that our novel composition of matter anti-bacterial formulation is the shortcut to develop novel bacteriostatic prevention and bacteriocidal /treatments against bacterial Pseudomonas involved biofilms.



The Opportunity

Pharmaceutical companies are invited to license our patent through a licensing agreement with sponsored research.



Keywords

- Pseudomonas aeruginosa,
- Anti-microbial resistance,
- Biofilm,
- Antibiotics