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Killing methicillin-resistant *Staphylococcus aureus* (MRSA US300) by myxoamoeba

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Physicians and the general public often associate microorganisms solely with disease and antibiotic treatment. But contrary to that notion, most microbes are benign or beneficial to humans. Only recently have scientists begun to recognize the value of exploiting microbes, and their millions of years of evolution, to control bacteria. Against a background of failing antibiotics and the emergence of new pathogens, certain microorganisms have the potential to be developed into biocontrol agents. In this presentation, we will discuss a new biologically based treatment for wound infections. These wounds present a substantial burden both in terms of individual and societal costs. For the patient, this type of wound too often does not heal, requires ongoing medical interventions, delays recovery, or can even cause death. Faced with treatment failures and incurred complications, clinicians are desperate for better methods to reduce the "infective bacterial load," which is known to be a principal determining factor in wound healing. One potentially promising treatment involves the use of nonpathogenic myxoamoebae. As single-celled organisms, they hunt and efficiently devour a wide variety of bacteria, including *S. aureus* (MRSA US300). Notably, amoebae exhibit characteristics similar to macrophages and neutrophils; they all indiscriminately chase, engulf and digest their microbial prey. Furthermore, because amoebae thrive within biologically complex and environmentally harsh soil bio-webs, it is likely they can access bacteria within biofilms. Thus, myxoamoebae may succeed where chemical antibiotics are failing in the control of drug resistant pathogens including those that form biofilms.

Biography

Marcin Filutowicz has completed his Ph.D. at the Institute of Biochemistry and Biophysics, Polish Academy of Sciences in Warsaw, Poland, and postdoctoral studies from University of California San Diego. He is a Professor of Bacteriology at UW Madison. Throughout his career MF translated a basic research carried out in his academic laboratory into the technology platforms exploring a novel means to control the rising tide of infections by antibiotic-resistant bacteria. In 2001, he founded ConjuGon Inc., a corporation developing novel technologies for using benign bacteria as drugs. In 2010 MF founded AmebaGone, LLC. The company uses myxoamoebae, as antimicrobials in agriculture, medicine and industry.

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