Researchers at the University of South Florida have developed a group of anti-resistance agents capable of re-sensitize cells to a broad spectrum of antibacterial agents.

The vast majority of hospital-acquired infections are caused by a group of bacteria known as the ESKAPE pathogens. Unfortunately, ESKAPE pathogens are resistant to the majority of antibiotics available today. A prime example is *Pseudomonas aeruginosa*, which develops its resistance largely from the over-expression of efflux pumps. These pumps have the ability to export toxic substances such as antibiotics from the intracellular environment before damage to the cell occurs. Thus, these bacteria become resistant to many classes of antibiotics. There is an urgent need for therapeutics targeting these ESKAPE pathogens; especially the Gram negative species that have impermeable outer membranes and commonly overexpress efflux systems.

USF scientists have identified a set of lead polyamines agents that demonstrate broad and specific efflux pump inhibiting activity. Additionally, co-administration of such anti-resistance agents alongside existing antibiotics may also lead to decreased resistance. Furthermore, these anti-resistance agents lack the problematic off-target effects that have been a major hallmark of other such molecules developed in the past. By targeting bacterial resistance mechanisms with these agents, it is possible to restore the effectiveness of numerous obsolete clinical antibiotics, reclaiming many important therapeutics.

**ADVANTAGES:**
- Anti-resistant, anti-microbial agents
- Excellent efflux pump inhibition
- Works with wide array of anti-bacterial agents

**Anti-Resistance Agents to Improve the Treatment of ESKAPE Pathogens**

**Polyamine EPIs Strongly Enhance the Bactericidal Activity of Multiple Existing Antibiotics**

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