“New antibiotics from microbial dark matter"

Abstract:

Antimicrobial resistance is a major health concern, but the rate of antibiotic discovery has been in steady decline. The probability of discovering a novel antibiotic from traditionally cultivable microorganisms is 10⁻⁷ per colony, making such discovery seemingly impractical. The pool of cultivable species appears to be overmined. The uncultivated microorganisms represent >99% of microbial biodiversity. This unexplored pool is arguably the single most promising resource for novel antibiotics. To explore this resource, we advanced a simple idea that since nature contains all the growth factors necessary for microbial growth, we should do cultivation there and not in the lab. We reduced this idea to practice, achieved microbial recovery orders of magnitude above convention, and find novel antimicrobials hundreds times faster than the industry. I will describe some of the new antibiotics, and present a new cultivation concept promising to be an even better tool for microbial discovery.