



ANTIBIOTICS PRIMER

Despite the need for new antibiotics, there has been a large reduction in discovery and development efforts in recent years. As a result, only nine new antibiotics have won approval from the U.S. Food and Drug Administration since 2000, compared with 30 in the decade that ended in 1992—even as the emergence of drug-resistant bacteria, and in particular of aggressive methicillin-resistant *Staphylococcus aureus* (MRSA) and multidrug-resistant (MDR) gram-negative strains, has limited the effectiveness of many of the commonly used classes of antibiotics.

This rise in resistance, while alarming, offers opportunities for new approaches to antibiotic development. Tetracyclines are proven antibacterial agents and represent one of the most trusted classes of antibiotics. However, only one new compound in this class, Tygacil® (tigecycline, Pfizer), has been approved in more than 30 years, largely as a result of the constraints on chemical diversity inherent in semi-synthetic production methods.

In contrast, Tetraphase's synthetic chemistry is proving to be a powerful product engine for generating a diverse portfolio of next-generation tetracycline antibiotics. The company's proprietary approach has enabled it to discover and develop a wide range of potent novel antibiotics including both broad spectrum (gram-positive and gram-negative) antibiotics and selective-spectrum antibiotics for specific difficult-to-treat infections.

Tetraphase's current product pipeline represents IV antibiotics with potential for oral stepdown that can address a wide range of MDR infections, including those requiring empiric broad spectrum coverage as well as more selective infections such as urinary tract infections (UTIs) and community-acquired bacterial pneumonia (CABP). Tetraphase's antibiotic drug candidates are designed to offer significant improvement in the treatment of serious and life-threatening infections that are not being adequately managed with current antibiotics.