Overuse and improper use of antimicrobials, such as antibiotics, help accelerate the rate of development of drug-resistant germs and increase the need for new medicines.

The rise in antimicrobial resistance over the past 10 years has become one of the world’s most pressing public health problems. An estimated 2 million illnesses and 23,000 deaths are thought to be caused by antibiotic resistance in the U.S. each year. Our company’s long-standing commitment to the global fight against infectious disease goes hand-in-hand with a commitment to help slow the rate of emergence of potentially deadly resistant organisms.

Since 2002, we have sponsored the Study for Monitoring Antimicrobial Resistance Trends (SMART). The SMART program is one of the world’s largest programs for tracking trends in antimicrobial resistance. Clinical samples have been collected from patients with complicated intra-abdominal infections since 2002 and from patients with complicated urinary tract infections since 2010, and analyzed for their in vitro susceptibility to 12 commonly used antibiotics in different regions of the world to monitor changing trends in antibiotic susceptibility. The information collected and shared is designed to help local and global health agencies improve surveillance so they can better understand trends in antimicrobial resistance and select appropriate antibiotics for their patients.

A DEARTH OF ANTIBIOTIC RESEARCH AND DEVELOPMENT

An added complication to the ongoing battle against resistant infections is the fact that while resistance is increasing, the number of new antimicrobial medicines being developed has decreased over the past several years. Discovering novel medicines to combat resistant bacteria requires more effort, and the perceived commercial value of such medicines is low compared with other disease treatments. To address this issue in part, the U.S. Food and Drug Administration (FDA) and the European health authorities are actively working on updating regulatory guidance and reforming the regulatory environment to help provide incentives for innovation in key areas of unmet need, including antibiotics. We are one of only a handful of pharmaceutical companies that continue to have active antibacterial discovery and development programs.

- The FDA granted Fast Track status to MK-3415A, an investigational agent that works by neutralizing the key toxins associated with *Clostridium difficile* infections that can be directly related to antibiotic use and resistance. Fast Track is a process designed to facilitate the development and expedite the review of drugs that treat serious conditions and fill an unmet medical need.
- MK-7655, a beta lactamase inhibitor, is also being developed as a fixed-dose combination with imipenem. The antibiotic is designed to treat resistant gram-negative bacteria.
- MK-8228 is being developed to prevent human cytomegalovirus (CMV)–related infection in high-risk recipients of certain stem cell transplants. Currently, no therapy is approved to prevent CMV infections in these stem-cell-transplant
Hospital Acute Care is a priority therapeutic area for our company. Continued innovation toward developing new medicines is critical to address the growing resistance to current therapies. We are committed to working with partners to help address this growing area of unmet need and improve patient outcomes. In total, we have more than 16 ongoing clinical trials evaluating antimicrobial agents that are projected to enroll approximately 18,000 patients.

ACQUISITION OF CUBIST PHARMACEUTICALS

Our company’s commitment to expand its antibiotic capabilities was further reinforced in January 2015, when we finalized the acquisition of Cubist. Cubist’s portfolio complements our own broad portfolio of antibiotics, antifungals and anesthetics. The combination of the two companies will establish an even stronger presence in the Hospital Acute Care segment while advancing a pipeline of candidates that hold the potential for making a meaningful difference in the lives of patients around the world.

COLLABORATING TO DISCOVER NEW ANTI-INFECTIVE AGENTS

In addition to our own in-house anti-infective research efforts, we seek to augment our expertise and resources through collaboration with scientists around the world. We have multiple ongoing collaborations focused on the discovery of novel anti-infective agents:

- **Bristol-Myers Squibb and MassBiologics, U.S. —** Licensing agreement to develop actoxumab/bezlotoxumab (MK-3415A), an investigational combination of therapeutic antibodies targeting two *Clostridium difficile* pathogenic toxins (A and B)
- **Medina Discovery, Spain —** Collaboration in the areas of microbiology and natural product chemistry, with a focus on screening and validation of drug targets for infectious disease
- **Orchid Pharma, India —** A collaborative research agreement focused on the discovery, development and commercialization of novel agents for the treatment of bacterial and fungal infections
- **Center of Excellence for Translational Medicine, U.S. —** National Institutes of Health grant to Rutgers University supporting multiple academic and industry groups in collaboration to advance the discovery of novel antimicrobial agents.

In addition, our company actively collaborates with leading antimicrobial scientists to investigate and validate novel therapeutic targets, evaluate new pathways for drug targeting, and develop novel tools and technologies to aid research. We have a number of ongoing collaborations with scientists at universities including Harvard, Princeton and Yale. Learn more.

NEGLECTED DISEASE RESEARCH

- **Drugs for Neglected Diseases Initiative (DNDi) —** A collaboration to support discovery and development of improved treatments for neglected tropical diseases
- **WIPO Re:Search —** Our company is a founding member of WIPO Re:Search, a consortium of public and private organizations that facilitate research on neglected tropical diseases, malaria and tuberculosis
- **London Declaration —** Our company is an original signatory to the London Declaration, a collaborative effort launched in 2012 to accelerate progress toward eliminating or controlling 10 neglected tropical diseases by advancing drug treatment and R&D activities.

FACILITATING ANTIMICROBIAL RESEARCH

By providing the broad scientific community access to research tools and information, we recognize that we can fuel basic research and potentially expedite scientific progress toward the development of new anti-infective agents. In the last five years, our researchers have published over 30 peer-reviewed research articles. Our company also provides access for researchers to published small molecule chemical probes and genetic tools, as well as recent clinical isolates and genetically engineered libraries of disease-relevant bacterial and fungal strains developed in our laboratories.