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Inovio receives NIH funding to combat antimicrobial-resistant Infection

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Inovio Pharmaceuticals has announced that the company and its collaborator The Wistar Institute have received a $4.6 million National Institutes of Health (NIH) grant in support of innovative research to tackle antimicrobial resistance (AMR) employing Inovio's DNA-encoded monoclonal antibodies (dMAb®) platform. Inovio is advancing a ground-breaking approach to combat multidrug-resistant infections based on Inovio's dMAbs. In a recent study, Inovio developed a targeted dMAb approach for AMR and demonstrated that these dMAbs can effectively control multidrug-resistant infection in animal models.

The U.S. Centers for Disease Control and Prevention estimates that resistance to antibiotics causes 2 million illnesses and 23,000 deaths a year in the United States. Estimates of the impact of antimicrobial resistance on the U.S. economy include $20 billion in direct health-care costs, with additional indirect costs as high as $25 billion a year.

Earlier this year, Inovio initiated the first human study of its dMAb product (INO-A002) to treat and prevent Zika virus infection. In addition to demonstrating safety and tolerability, this Zika study marks a major step towards the development of a broad range of Inovio's dMAb platform targeting cancer, infectious diseases, and inflammatory diseases. When delivered directly into the body, the genetic instructions provided by the designed synthetic antibody gene sequence instruct the body's cells to become the factory which manufactures the therapeutic antibody (dMAb) products, enabling a major leap in antibody technology. This $4.6 million NIH grant will support additional pre-clinical studies with the ultimate goal of initiating clinical development for its dMAb technology against antimicrobial-resistant infections.

Inovio and its collaborators have developed dMAb technology by designing synthetic genetic sequences encoding functional monoclonal antibodies into an optimized DNA platform. These gene sequences are administered *in vivo* to be expressed locally at the site of injection. The recipient receives a gene-encoded blueprint instructing their cells to produce the encoded monoclonal antibody specifically targeting the bacteria. Inovio's dMAbs can be developed simply and quickly and are produced directly in the patient, dramatically lowering production timeline and costs associated with the manufacturing of conventional antibodies; furthermore, DNA plasmids encoding for antibodies do not require expensive cold chain storage and are suitable for delivery in combinations.

Traditional monoclonal antibodies represent the largest segment of pharmaceutical markets today, accounting for more than $100 billion in sales each year, with treatments spanning cancer, infectious diseases, inflammation, and cardiovascular diseases. With its synthetic design and in-patient production, dMAb products represent a disruptive entrant to this important class of pharmaceuticals. Inovio and its collaborators have already received over $60 million in non-dilutive grant funding to advance its dMAb platform in the last few years. There is a significant interest in dMAb as a disruptive entrant to a highly valuable overall monoclonal antibody market as well as its unique applicability for rapid responses against emerging global infectious disease threats.