Overview
Lattice Biotech is a preclinical stage biopharmaceutical company committed to the discovery and commercialization of first-in-class therapeutics and vaccines for biofilm associated chronic and recurrent bacterial infections. Biofilms are bacterial colonies encased by an extracellular structure that provides a community defense mechanism. Biofilms protect bacteria from host immune system and antibiotic attack, creating a source of chronic infection and inflammation. Lattice is developing novel biofilm disruption and prevention solutions, targeting DNABII binding proteins that are critical to maintaining biofilm structural integrity. Lattice’s lead program, a broad spectrum therapeutic antibody, binds to the DNABII binding proteins, disrupting the biofilm structure and enabling host immune systems and existing antibiotics to kill the exposed bacteria. Lattice’s first-in-class approach has the potential to transform the prevention and treatment of chronic and recurrent bacterial infections.

Market
According to the National Institutes of Health (NIH), approximately 80% of human infections involve bacterial biofilms. Conventional antibiotics were not developed to target bacteria growing as biofilms and, therefore, are mostly ineffective against biofilm infections. Novel therapeutics designed specifically for bacterial biofilms are required. Biofilm related conditions include Cystic Fibrosis and COPD respiratory infections, chronic sinusitis, chronic otitis media, chronic wounds, osteomyelitis, and device-related nosocomial infections. Collectively, biofilm associated infections cost the global healthcare system >>$1 billion annually, significantly increase hospitalization rates, and increase mortality rates.

Problem
Biofilms are comprised of an extracellular polymeric substance containing extracellular DNA (eDNA) strands joined together in a lattice-like network, a critical scaffold structure required for biofilm structural integrity. Bacterial DNA-binding proteins, specifically members of the DNABII family, are positioned at each eDNA junction and hold the eDNA scaffold together. Research demonstrates that DNABII proteins are highly conserved across relevant bacterial species and removal of these “linchpin” DNABII binding proteins results in rapid and significant biofilm disruption. No therapeutics or vaccines currently target the novel and potentially universal DNABII binding protein mechanism.

Solution
Lattice is developing first-in-class monoclonal antibodies (mAbs) that bind to bacterial DNABII binding proteins with high specificity, leading to rapid biofilm disruption. In vitro, ex vivo and in vivo studies demonstrate the effectiveness and superiority of our therapeutic approach. Further, the resulting biofilm disruption enabled killing of resident bacteria by previously ineffective antibiotics and host immune systems. The antibodies can be applied alone or in combination with antibiotic strategies. The target is druggable through a wide variety of modalities including therapeutic antibodies, oligonucleotides and vaccines.

Strategy
Lattice is systematically developing an internal pipeline of therapeutics and vaccines leveraging our novel, broadly patented DNABII binding protein mechanism of action. We are engaged in discovery and preclinical stage research for 1) chronic secretory otitis media, 2) chronic and cystic fibrosis-related sinusitis, and 3) chronic lung infections associated with cystic fibrosis and COPD. We continue to evaluate chronic wound, orthopedic and device related chronic and recurrent infection opportunities. We seek a combination of strategic partnerships, non-dilutive financing, and investment capital to accelerate the development of our novel and potentially transformational infectious disease pipeline.