Consortium of X-Chem, Harvard T.H. Chan School of Public Health and Other Leading Academic Institutions Wins Research Award from the Department of Defense

-- Funding of $9.9 million by Department of Defense, Congressionally Directed Medical Research Programs to discover new treatments for Tuberculosis
-- Collaboration leverages unique genetic expertise and X-Chem's proprietary DEX™ Platform to identify novel drugs against the deadly infectious disease

WALTHAM, Mass. – October 31, 2017 –X-Chem, Inc., a privately held biotechnology company with a proprietary and innovative platform to generate small molecule therapeutics, today announced the award of a DOD CDMRP research grant entitled "*Chemigenomic Drug Discovery for Tuberculosis*." The grant was awarded to a research consortium led by Eric Rubin, M.D., Ph.D., Irene Heinz professor of Immunology and Infectious Diseases at the Harvard T.H. Chan School of Public Health, and includes researchers from the University of Massachusetts, Worcester; the Joan & Sanford I. Weill Medical College of Cornell University; Rutgers, The State University of New Jersey; Texas A&M AgriLife Research; and X-Chem. The goal of the proposed research is the discovery and development of new drug leads for the treatment of tuberculosis, which kills over a million people worldwide each year.

Under the grant, the academic members of the consortium will leverage their unique genetic expertise and resources to identify novel targets with the best potential to improve tuberculosis therapy. X-Chem will deploy its proprietary DNA-encoded small molecule libraries, containing over 120 billion compounds, to identify new leads that functionally modulate such targets. Researchers in the consortium will collaborate to optimize and further develop the most promising compounds.

"Tuberculosis is a growing public health threat worldwide," stated Dr. Rubin. "The identification of novel targets and drug leads is extremely important in the fight against bacterial resistance and the comeback of this deadly disease. X-Chem's DNA-encoded screening platform is uniquely suited for this effort because of the size and chemical diversity of the library. It is a cutting-edge discovery technology that perfectly complements the capabilities of the academic researchers and laboratories in the consortium."

"The discovery and development of new antibiotics to combat bacterial resistance is a much needed effort that has been largely neglected by the pharmaceutical industry," said John Cuozzo, Ph.D., Vice President of Therapeutic Discovery Science at X-Chem. "We feel very honored to be part of this exceptional consortium and look forward to continuing to leverage our potent DEX™ discovery platform to make breakthrough contributions in this important field."

The grant is awarded and managed by the Peer Reviewed Medical Research Program of the CDMRP. For more information, please visit the website at: http://cdmrp.army.mil/prmrp/default

About the DNA-Encoded X-Chem (DEX™) Library and Platform
Due to the size and diversity of the DEX™ library, X-Chem can discover multiple series of novel, potent and selective lead compounds at an unprecedented rate of success against a wide range of targets, including some that previously failed using conventional screening methods. A number of proprietary innovations in library design, screening methodology and bioinformatics underlie the exceptional performance of the DEX™ platform. In particular, X-Chem's approach to library construction allows for the use of a wider range of chemical reactions in DNA-Encoded Library synthesis. Together, these developments result in a much greater repertoire of diversity for small molecules, which cover a range of categories including fragments, Lipinski-compliant heterocycles, and macrocycles. This diverse library collection, combined with a heightened ability to detect active molecules, has yielded a robust, industry-leading process that has been highly successful against targets categorized as difficult or intractable.

About DNA-Encoding
The X-Chem drug discovery engine is based on a library, currently in excess of 120 billion compounds and growing, generated by iterative combinatorial synthesis of small molecules tethered to DNA tags that record the synthetic history of the small molecule. Every small molecule in the library has a unique DNA barcode attached it, and the library is screened as a mixture using affinity-based binding to a target of interest. Certain rare molecules in the library that bind to the target can be "fished out," while the rest of the molecules are washed away. High-throughput DNA sequencing methods are then used to detect molecules that are enriched. The diverse nature of the library produces multiple families or clusters of related molecules that bind to the target, forming a basis for emergent structure-activity relationships. Structure-activity relationships are typically used by medicinal chemists to guide iterative chemical maturation of a molecule into a drug. Based on the synthetic history encoded in the DNA sequence information, representative molecules are then synthesized and tested for activity in conventional assays.

About X-Chem
X-Chem is a privately owned biotechnology company based in Waltham, Massachusetts, USA. The company's mission is to apply its powerful DEX™-driven product engine to the discovery of drug-like small molecule leads for high value therapeutic targets. X-Chem has established partnerships with AbbVie, Alexion, Astellas, AstraZeneca, Bayer, Janssen, Ono, Pfizer, Sanofi, Taiho, Vertex, and many other leading pharmaceutical and biotechnology companies. Recently, X-Biotix Therapeutics, Inc. announced its formation as a spin-out of X-Chem. X-Biotix, through its broad relationship with X-Chem, is focused on the discovery and development of novel antimicrobial therapeutics targeting multi-drug resistant infections, which represent a critical unmet medical need globally.

For further information on X-Chem, please visit: http://www.x-chemrx.com/.

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