



## X-Biotix Licenses Harvard Technology, Establishes Research Collaboration To Combat Antibiotic Resistance

*Launches out of X-Chem and Leverages DNA-Encoding Library Technology*

**WALTHAM, Mass. May 30, 2017** – X-Biotix Therapeutics, Inc. (X-Biotix), a biotechnology company focused on the discovery and development of novel small molecule antibiotic scaffolds targeting multi-drug-resistant (MDR) Gram-negative pathogens, announced today that it has initiated a joint research effort with key collaborators at Harvard Medical School (HMS) to address the urgent and growing threat of antibiotic resistance.

Through a collaboration and license agreement with Harvard's Office of Technology Development, X-Biotix will access the expertise of Thomas Bernhardt, Ph.D., Stephen Lory, Ph.D., and John Mekalanos, Ph.D., senior investigators in the Department of Microbiology and Immunobiology at HMS, whose research groups have extensive experience in understanding the biological mechanisms of cell envelope biosynthesis, antibiotic resistance and efflux. The multi-year collaboration aims to identify novel antibiotic scaffolds with inhibitory activity against a wide range of biological targets in essential pathways of Gram-negative bacterial cells and which are also predicted to defeat known antibiotic resistance mechanisms.

X-Biotix was recently launched out of X-Chem, a privately held biotechnology company focused on applying its unique DNA encoding technology (DEX™) platform to the generation of novel small molecule therapeutics. The company will leverage the DEX™ platform, which is comprised of >120 billion unique compounds representing a broad range of chemistries and encompassing the physicochemical space occupied by previously discovered Gram-negative antibiotics, to support the discovery and development of novel chemical scaffolds targeting Gram-negative pathogens. Under the license agreement from Harvard, X-Biotix also gains access to targets and assays to evaluate promising compounds from the X-Chem libraries.

"I am excited about the application of X-Chem's innovative and proprietary platform, which includes 'antibiotic-like' chemistry and 'natural product-like' chemical space to support our efforts in establishing a pipeline and advancing the development of novel antibiotic therapies," said Ramani Varanasi, CEO of X-Biotix. "The multi-target discovery strategy enabled by our foundational collaboration with researchers at HMS, combined with the screening of the ultra-large and diverse chemical space, uniquely positions X-Biotix to address the critical global challenge of resistance to antibiotics."

"Recent advances in understanding the pathways that bacteria use to build critical components of their cells have revealed novel vulnerabilities ready to exploit for antibiotic discovery," said Dr. Mekalanos, Professor of Microbiology and Immunobiology at HMS, and co-founder and Chair of the Scientific Advisory Board at X-Biotix. "It is exciting to embark on this new collaborative investigation that seeks novel solutions to the serious problem of antibiotic drug resistance."

In addition to Dr. Mekalanos, Harvard Professors Dr. Bernhardt and Dr. Lory are also cofounders of X-Biotix.

Gram-negative multi-drug-resistant infections represent a critical unmet medical need globally, with over 2 million drug resistant infections in the US each year, including 23,000 reported deaths. This need is expected to increase within the next several years, with predicted deaths due to MDR pathogens totaling 10 million worldwide, exceeding those due to cancer. The landscape for commercialization of novel antibacterial therapies is rapidly evolving, and for new agents without cross-resistance to existing therapeutics for Gram-negative pathogens, there remains a large market opportunity for multiple Gram-negative indications, including bacteremia, hospital and ventilator acquired pneumonia (HAP and VAP), and other complicated nosocomial infections.

“The formation of X-Biotix comes at a critical time in the industry, where the general void in antibiotic discovery efforts combined with the lack of specific efforts to discover and develop truly novel chemical scaffolds represents a challenge waiting to be addressed using a unique discovery approach,” said Rick Wagner, CEO of X-Chem.

X-Chem has been successful in applying its unique and proprietary DEX platform to targets in multiple therapeutic areas, including highly intractable ones such as protein:protein interaction targets, ubiquitin ligases, epigenetic targets, GPCR’s and more recently to antibacterial targets, where compounds targeting the enzyme, InhA (the target of the anti-tuberculosis drug isoniazid) from Mycobacterium tuberculosis, were identified and found to demonstrate activity in macrophage infection assays (<http://www.pnas.org/content/113/49/E7880.abstract>).

### **About X-Biotix Therapeutics, Inc.**

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X-Biotix is a discovery, early preclinical-stage company that was spun out of X-Chem and incorporated in 2016, with a focus on delivering the next generation of antibiotics to combat multi-drug resistant Gram-negative pathogens. The company, located in Waltham, MA, is undertaking a multi-target discovery strategy to rapidly identify and validate novel small molecule scaffolds and advance them into development. For further information on X-Biotix, please visit: <http://www.x-biotixrx.com/>

### **About X-Chem, Inc.**

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X-Chem, Inc. is a privately-owned biotechnology company based in Waltham, Mass. The company’s mission is to apply its powerful product engine to the discovery of small molecule compounds against high-value therapeutic targets. X-Chem has established partnerships with Roche, AstraZeneca, Bayer, Pfizer, Alexion, MD Anderson Cancer Center, Sanofi, Janssen, AbbVie and several other leading pharmaceutical companies, biotechnology organizations, and academic centers. For further information on X-Chem, please visit: <http://www.x-chemrx.com/>

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