



PRESS RELEASE

**X-CHEM AND ALEXION COLLABORATE TO DISCOVER NOVEL THERAPEUTIC CANDIDATES TO TREAT PATIENTS WITH SEVERE AND ULTRA-RARE DISORDERS**

*X-Chem to Discover Small Molecule Drug Candidates for Global Development by Alexion*

WALTHAM, MA – December 11<sup>th</sup>, 2014 – X-Chem, Inc., a biotechnology company focused on the generation of novel small molecule therapeutics using its proprietary DNA-encoded library platform, today announced the initiation of a drug discovery collaboration with Alexion (Nasdaq: ALXN), a global leader in the development and commercialization of life-transforming therapies for patients with severe and ultra-rare disorders.

X-Chem will deploy its proprietary drug discovery engine, which is based on an ultra-large, high-diversity library in excess of 100 billion molecules, to identify novel drug candidates against targets chosen by Alexion. Under the terms of the agreement Alexion will have the exclusive worldwide rights to develop and commercialize novel compounds arising from the collaboration. X-Chem will receive an upfront payment and would receive additional payments upon the achievement of specified research, development and regulatory milestones. In addition, X-Chem would receive royalty payments on the sale of products resulting from the collaboration.

“This agreement with X-Chem is an important element of Alexion’s strategy for addressing targets and developing first-in-class therapeutics for patients with life-threatening and ultra-rare disorders,” said Martin Mackay, PhD, Executive Vice President and Head of Global R&D at Alexion. “We are very pleased to collaborate with X-Chem and gain access to their innovative platform.”

“X-Chem is excited to collaborate with Alexion, a leader in the treatment of patients with severe, rare diseases,” said Richard W. Wagner, PhD, CEO of X-Chem.” This collaboration will enable Alexion to leverage the power of X-Chem’s discovery engine for pursuing challenging targets of clinical importance.”

**About the X-Chem Drug Discovery Platform**



Due to the size and diversity of the 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 platform. In particular, X-Chem's approach to library construction allows for additional chemical reactions to become useable 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 fragment molecules, small molecular weight heterocyclic compounds, and macrocyclic structures. This diverse library, combined with a heightened ability to detect active molecules, has yielded a robust 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 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 to it. 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 wash away. DNA sequencing methods are then used to detect molecules that are enriched when bound to the target. 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, molecules are then made without the DNA tag attached, and tested for activity in conventional assays.

**About X-Chem.** X-Chem, Inc. is a biotechnology company based in Waltham, MA. 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 and several other leading pharmaceutical companies, biotechnology organizations, and academic centers.

In September 2014, Pharmaceutical Product Development, LLC (PPD) acquired all interests in X-Chem, Inc., while retaining the company's management team and biotechnology business model. For further information on X-Chem, please visit: <http://www.x-chemrx.com>.

#### **About PPD**



PPD is a leading global contract research organization providing drug discovery, development, lifecycle management and laboratory services. Our clients and partners include pharmaceutical, biotechnology, medical device, academic and government organizations. With offices in 46 countries and more than 13,000 professionals worldwide, PPD applies innovative technologies, therapeutic expertise and a commitment to quality to help clients and partners accelerate the delivery of safe and effective therapeutics and maximize the returns on their R&D investments. For more information, visit [www.ppd.com](http://www.ppd.com).

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*Forward-looking Disclaimer*

*Except for historical information, all of the statements, expectations and assumptions, including statements, expectations and assumptions about X-Chem's small molecule drug discovery technology and its collaboration with Alexion, contained in this news release are forward-looking statements that involve a number of risks and uncertainties.*

*Although PPD and X-Chem attempt to be accurate in making these forward-looking statements, it is possible that future circumstances might differ from the assumptions on which such statements are based and could cause actual results to differ materially from the forward-looking statements. Other important factors that could cause future results to differ materially include the following: rapid technological advances that make our services less competitive; risks associated with and dependence on strategic relationships; the ability to attract, integrate and retain key personnel; competition in the outsourcing industry; X-Chem's ability to win new business; the rate of conversion of backlog and future milestones and other payments under the collaboration into revenue and earnings; actual operating performance; overall global economic conditions; economic conditions, research and development spending, and outsourcing trends in the pharmaceutical, biotechnology and government-sponsored research sectors; consolidation in the pharmaceutical and biotechnology industries; loss, delay or modification of large contracts; compliance with drug development regulations; changes in the regulation of the drug development process; risks associated with acquisitions and investments; and the ability to control SG&A spending. PPD and X-Chem assume no obligation and expressly disclaims any duty to update these forward-looking statements in the future, except as required by applicable law. These forward-looking statements*



*should not be relied upon as representing PPD or X-Chem's estimates or views as of any date subsequent to the date hereof.*

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