ONO PHARMACEUTICAL CO.,LTD.

March 21, 2017

Ono Enters into Collaboration Agreement with X-Chem, Inc.

Ono Pharmaceutical Co., Ltd. (Osaka, Japan; President, Representative Director, Gyo Sagara; "Ono") announced today that Ono and X-Chem, Inc. (Waltham, Massachusetts, U.S., Rick Wagner, Chief Executive Officer, "X-Chem") signed a collaboration agreement, focused on discovering novel small molecules targeting multiple promising, high-impact oncology targets.

Under the agreement, Ono will pay to X-Chem an upfront payment, research and license fees, success-based milestones on the research and development progress, as well as royalties on sales of the products.
X-Chem will apply their proprietary DEX™ libraries, which contain over 120 billion small molecules, toward the discovery of new drug leads against multiple oncology targets selected by Ono. Ono will have worldwide exclusive rights to develop and commercialize any pharmaceutical products arising out of the drug discovery collaboration.

"Ono identified X-Chem as the partner of choice for the generation of leads for several high priority targets in our portfolio," said Hiromu Habashita, Ph.D., Corporate Officer and Executive Director, Discovery and Research of Ono. "We are excited to work with X-Chem on identifying and developing the next generation of innovative oncology treatments."

"We are delighted to partner with Ono, one of the oldest pharmaceutical companies in the world and an important developer of innovative drugs," commented Rick Wagner, Ph.D., Chief Executive Officer of X-Chem. "This is our third partnership with a Japanese company in the last three months, signaling the broad global interest of the pharma industry in X-Chem's DEX™ platform for finding novel drug leads."

About X-Chem

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, and several other leading pharmaceutical companies, biotechnology organizations, and academic centers. For further information on X-Chem, please visit: http://www.x-chemrx.com/.

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 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, 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. 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. 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.

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