X-Chem and Vertex Expand Existing Partnership

- *Expanded collaboration doubles scope of the original collaboration*
- *Focus on discovery and development of small-molecule leads against key targets for severe, genetic diseases*

WALTHAM, Mass. – January 4, 2019 – X-Chem, Inc., a privately held biotechnology company focused on applying its industry-leading DNA-encoded (DEX™) drug discovery engine to the generation of novel small molecule therapeutics, today announced the expansion of its collaboration with Vertex Pharmaceuticals Incorporated (NASDAQ: VRTX).

Under the terms of the expanded agreement, X-Chem will apply its growing collection of next-generation DEX libraries toward the discovery of novel lead compounds against multiple targets across Vertex's drug development portfolio. Vertex will be responsible for further development and commercialization of licensed programs. X-Chem will receive an upfront payment, and stands to receive additional payments linked to the achievement of R&D and regulatory milestones. X-Chem is also eligible for royalties on revenues from medicines originating from the collaboration. The expanded partnership now comprises 14 targets, increasing the scope of the original agreement two-fold.

"Vertex research strategy focuses on addressing the underlying cause of disease through therapeutic innovation," said Mark Bunnage, Senior Vice President and Boston Research Site Head at Vertex. "As we tackle new targets, we have been very impressed with X-Chem's technology platform and what it has delivered in the first 18 months of our partnership. Based on that success we are eager to extend our work with X-Chem to additional targets for serious diseases."

The collaboration between X-Chem and Vertex has enabled the discovery and licensing to Vertex of novel lead compounds from X-Chem's industry-leading DNA-encoded DEX libraries. Richard Wagner, CEO of X-Chem said, "We're delighted to broaden our alliance with Vertex and continue to collaborate with a company that brings a very strong biological understanding of difficult to drug targets.   X-Chem will bring expanded capabilities to this relationship. Since 2015, X-Chem has continually invested in and focused on developing

innovative novel DEX library chemistries to expand the breadth and scope of drug-like chemical space covered by our proprietary libraries. X-Chem also continues to advance data analytics methodologies to more quickly and efficiently identify hits that can advance rapidly into clinical trials with minimal optimization."

About X-Chem's DNA-Encoded (DEX™) Libraries and Platform
X-Chem's DEX drug discovery engine is based on a collection of DNA-encoded libraries comprising over 120 billion unique drug-like small molecules derived from iterative combinatorial chemistry processes, where the identity of each compound is recorded in a linked DNA barcode. The pooled libraries are used in low volume, affinity-based screening against biological targets, whereby ligands are 'fished out' and identified via DNA sequencing. Innovations in library design, screening methodologies, and bioinformatics underlie the exceptional performance of the DEX platform. The use of previously inaccessible chemical reactions and atom-efficient synthesis schemes generate maximal diversity and rule-of-five compliance. Parallel screens, either varying target concentration or including off-targets, mutants or known ligand competitors, allow for insight into the potency, mechanism of action, and specificity of putative hits. Proprietary statistical and bioinformatics tools identify multiple clusters of related molecules with emergent structure-activity relationships. These innovations underpin X-Chem's success against difficult and intractable targets that have failed in conventional screening, and have generated over 100 lead series licensed by X-Chem's partners including fragments, low molecular weight heterocycles, macrocycles, and irreversible covalent electrophiles.

About X-Chem
X-Chem, Inc. is a privately-owned biotechnology company based in Waltham, Massachusetts. The company's mission is to apply its powerful product engine to the discovery of small molecule leads against high-value therapeutic targets. X-Chem has established partnerships with AbbVie, Alexion, Almirall, Bristol-Myers Squibb, AstraZeneca, Bayer, Department of Defense/Harvard, Gilead, Janssen, MD Anderson Cancer Center, Ono, Otsuka, Pfizer, Roche, Sanofi, Taiho Pharma, Vertex, 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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