

X-Chem and Abilita Bio Announce a Joint Research Collaboration

- *The research collaboration will combine the X-Chem DEX™ and Abilita Bio EMP™ platforms to identify novel modulators of high-value GPCR and ion channel Targets*

WALTHAM, MA and SAN DIEGO, CA – December 13, 2017 – X-Chem, Inc. (X-Chem), and Abilita Bio, Inc. (Abilita), both privately held biotechnology companies, announce today a joint research collaboration that will leverage the synergy between each company's platform technology to enable the discovery of novel modulators of high-value G-protein coupled receptors (GPCR) and ion channel targets.

X-Chem's DEX™ DNA-encoded library collection allows for the simultaneous screening of over 120 billion discrete compounds in a single test tube, each attached to its own unique DNA tag that identifies the synthetic history and structure of the compound. Since its founding in 2010, X-Chem has successfully identified and out-licensed hits and leads against some of the most intractable therapeutic targets for its pharma and biotech partners, including GPCR and ion channel targets.

Abilita operates a membrane target stabilization platform, which allows for fast and efficient identification of mutation sets that impart substantial structural stabilization over wild type membrane proteins. This permits the over-expression, purification, and screening of challenging GPCR, ion channel, and transporter targets using DNA-encoded small molecule libraries.

Under the terms of the agreement, Abilita will generate EMPs™ for several high-value GPCR and ion-channel targets, which will be screened by X-Chem using its proprietary DEX™ libraries to identify agonists and/or antagonists, as dictated by the target biology and desired mechanism of action. The most promising drug leads resulting from these activities will be selected for further development and commercialization by the parties.

"We are excited to launch this joint drug discovery effort with the leader in DNA-encoded small molecule library technology," said Abilita CEO, Mauro Mileni. "X-Chem's DEX™ technology provides unparalleled access to chemical diversity, while our EMP™ platform provides access to the most challenging membrane protein drug targets. The combination of our two platforms makes perfect sense, and presents a tremendous opportunity to drive the discovery of novel chemical matter where traditional discovery efforts have failed. Together with X-Chem, we look forward to leverage our capabilities to drive clinical efforts in therapeutic areas with pressing unmet need."

"GPCRs and ion-channels have always been very challenging targets for target-based screening technologies," said X-Chem President and CEO, Rick Wagner. "Abilita's EMP™ platform, coupled with X-Chem's small molecule discovery engine opens the

gate to the identification of drug leads against hundreds of previously inaccessible targets.”

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 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 fragment, low molecular weight heterocycle, macrocycle, and irreversible covalent electrophilic lead series that have been licensed by X-Chem’s partners.

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, Astellas, AstraZeneca, Bayer, Gilead, Janssen, MD Anderson Cancer Center, Ono, 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/>.

About Abilita Bio’s EMP™ Platform

Abilita Bio’s goal is to enable the development of transformative therapeutics by unlocking the potential of challenging membrane protein drug targets. Human membrane proteins often exhibit poor expression, folding, and conformational stability, which makes their production and use in protein-based methods for drug discovery difficult to impossible. The EMP™ platform uses a cell-based directed evolution system to optimize key membrane protein properties, while preserving native structure and pharmacology. The unparalleled efficiency and diversity achievable with the EMP™ technology has enabled Abilita Bio to move beyond the G protein-coupled receptor (GPCR) family to address even more challenging targets with high medical impact such as ion channels and transporters. EMP™ technology has the potential to enable discovery in virtually any membrane protein target class, and can be used to power small molecule screening, therapeutic antibody generation, and structure-based discovery.

About Abilita Bio

Founded in 2014 and headquartered in San Diego, California, Abilita Bio, Inc. is a privately held, innovation-driven biotechnology company focused on enabling the discovery and development of drugs targeting challenging human membrane proteins with high medical impact.

Abilita Bio has established research collaborations with global pharmaceutical companies to utilize the company's EMP™ platform and enable the discovery of drugs targeting certain GPCRs, ion channels, and transporters. Abilita Bio's EMP™ platform also fuels the company's internal drug discovery pipeline focused on treating cancer and chronic pain. For further information on Abilita Bio, please visit:

<http://www.abilitabio.com/>.

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