

Tetra Discovery Partners and Shionogi & Co., Ltd. Collaborate on BPN14770 Development and Commercialization

- **Deal Valued at Potential \$160 Million plus Royalties, including \$5 Million in Upfront Payments and \$35 Million in Equity Investment**
- **Shionogi Gains Regional License to Alzheimer’s Drug Candidate for Japan, Korea and Taiwan**
- **Collaboration to Accelerate BPN14770 Clinical Development in Fragile X Syndrome and Early Alzheimer’s Disease**

Grand Rapids, MI (December 18, 2018): Tetra Discovery Partners and Shionogi & Co., Ltd. today announced they have entered into a strategic collaboration for the clinical development and commercialization of BPN14770, Tetra’s selective phosphodiesterase-4D (PDE4D) allosteric inhibitor, for the treatment of Fragile X Syndrome, Alzheimer’s disease and other indications marked by cognitive and memory deficits. The goal of the collaboration is to accelerate the development of an innovative therapeutic for patients in key Asian markets.

In exchange for granting Shionogi development rights to BPN14770 in Japan, Taiwan and Korea, Tetra Discovery Partners has received \$40 million in combined upfront funding, including an equity investment and licensing payment. Tetra will also be eligible to receive up to an additional \$120 million in development and commercialization milestones, as well as royalties on sales if BPN14770 is successfully commercialized. Further financial details of the agreement were not disclosed.

Tetra is developing BPN14770 for the treatment of brain disorders marked by cognitive and memory deficits, including Fragile X Syndrome, Alzheimer’s disease and other dementias, learning/developmental disabilities, major depression, and schizophrenia. The company currently is conducting an investigational Phase 2 study of BPN14770 in adults with Fragile X Syndrome, an indication for which BPN14770 has received Orphan Drug Designation from the U.S. Food and Drug Administration. Preparations are also under way to initiate a Phase 2 trial of BPN14770 in patients with early Alzheimer’s disease.

“We are very pleased to join forces with Shionogi, a company that shares our interests in developing innovative medicines for patients with debilitating central nervous system (CNS) conditions,” said Mark Gurney, Ph.D., Chairman and Chief Executive Officer of Tetra Discovery Partners. “Shionogi scientists contributed greatly to fundamental discoveries concerning the biochemical pathway modulated by BPN14770. The company’s in-depth knowledge of this brain pathway and focus on CNS drug development makes Shionogi a very compelling partner for Tetra. We greatly look forward to collaborating with them to accelerate the development of BPN14770 and to broaden geographic access to a potentially important new therapeutic.”

Dr. Gurney noted that the new funding will enable Tetra to complete its ongoing Phase 2 trial in Fragile X Syndrome and to initiate a Phase 2 trial of BPN14770 in patients with early Alzheimer’s disease in early 2019.

“This collaboration, if successful, will enable us to move one step closer in realizing a more vigorous society in which patients can be relieved from debilitating central nervous system (CNS) conditions.” said Dr. Isao Teshirogi, President and Chief Executive Officer, Shionogi & Co., Ltd. “In addition, the compound will allow us to further strengthen the presence in CNS area that we have built up with Cymbalta and Intuniv.”

About BPN14770

BPN14770 is a novel therapeutic agent that selectively inhibits phosphodiesterase-4D (PDE4D) to enhance early and late stages of memory formation. This unique mechanism of action has the potential to improve cognitive and memory function in devastating CNS disorders including Fragile X Syndrome, Alzheimer’s disease and other dementias, learning/developmental disabilities and schizophrenia. Preclinical animal models show that BPN14770 has the potential to promote the maturation of connections between neurons, which is impaired in patients with Fragile X Syndrome, and to protect connections between neurons which otherwise are lost in patients with Alzheimer’s disease. Tetra has completed two Phase 1 double blind, placebo-controlled, dose-ranging studies of the safety and pharmacokinetics of single ascending doses and multiple ascending doses of BPN14770 in healthy volunteers. Evidence for cognitive benefit was found in elderly subjects. Tetra currently is conducting an investigational Phase 2 study of BPN14770 in adults with Fragile X Syndrome, an indication for which BPN14770 has received Orphan Drug Designation from the U.S. Food and Drug Administration (FDA). BPN14770 is currently approved for investigational use only by the U.S. FDA and is not currently approved for marketing in any territory.

About Shionogi

Shionogi & Co., Ltd. is a Japanese major research-driven pharmaceutical company dedicated to bringing benefits to patients based on its corporate philosophy of “supplying the best possible medicine to protect the health and wellbeing of the patients we serve.” Shionogi Inc., the U.S. based subsidiary of Shionogi & Co., Ltd., continues this focus on the development and commercialization of high-quality medicines that protect the health and well-being of the patients we serve. The company currently markets products in several therapeutic areas including anti-infectives, pain, cardiovascular diseases and gastroenterology. Our pipeline is focused on infectious disease, pain, CNS and oncology. For more information on Shionogi & Co., Ltd., please visit <http://www.shionogi.co.jp/en>. For more information on Shionogi Inc., please visit <http://www.shionogi.com>.

About Tetra Discovery Partners

Tetra Discovery Partners is a clinical stage biotechnology company developing a portfolio of therapeutic products that will bring clarity of thought to people suffering from Fragile X Syndrome, Alzheimer’s disease, traumatic brain injury, and other brain disorders. Tetra uses structure-guided drug design to discover mechanistically novel, allosteric inhibitors of phosphodiesterase 4 (PDE4), an enzyme family that plays key roles in memory formation, learning, neuroinflammation, and traumatic brain injury. Tetra Discovery Partners is headquartered in Grand Rapids, Michigan. For more information, please visit the company’s website at <http://www.tetradiscovery.com>.

Forward looking Statements

Certain other statements made throughout this press release that are not historical facts contain forward-looking statements regarding the Company's future plans, objectives and expected performance. Any such forward-looking statements are based on assumptions that the Company believes are reasonable, but are subject to a wide range of risks and uncertainties and, therefore, there can be no assurance that actual results may not differ materially from those expressed or implied by such forward-looking statements.

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