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Tonix Pharmaceuticals Announces Presentation of Licensed Antiviral Drug Technology at the 4th Symposium of the Canadian Society for Virology

Oral Presentation Describes Activity of Wnt/ β -Catenin Signaling Pathway Inhibitors Against SARS-CoV-2 in Cell Culture and in an Animal Model

CHATHAM, N.J., June 08, 2022 (GLOBE NEWSWIRE) -- Tonix Pharmaceuticals Holding Corp. (Nasdaq: TNXP) (Tonix or the Company), a clinical-stage biopharmaceutical company, today announced that Tom Hobman, Ph.D., Professor, Department of Cell Biology, University of Alberta, presented data from his laboratory at The University of Alberta as a keynote presentation at the 4th Symposium of the Canadian Society for Virology held in Edmonton, Alberta, Canada on June 5, 2022. The oral presentation titled, *"The virus-host Interface: A treasure trove of novel antiviral targets,"* includes research sponsored by Tonix Pharmaceuticals focused on the development and testing of Wnt/ β -Catenin signaling pathway inhibitors as broad-spectrum antivirals against SARS-CoV-2 and other emerging viruses. Tonix has previously announced that it exercised an option to license the antiviral technology platform. A copy of the presentation is available on the Tonix Pharmaceuticals corporate website at www.tonixpharma.com.

"We are excited by the progress of Professor Hobman and his colleagues at The University of Alberta on the further testing of Wnt/ β -Catenin signaling pathway inhibitors as broad-spectrum antivirals," said Seth Lederman, M.D., President and Chief Executive Officer of Tonix. "Professor Hobman presented data showing that three different Wnt/ β -Catenin inhibitor drug candidates decreased lung infection in an animal model of SARS-CoV-2 infection. The set of Wnt/ β -Catenin inhibitors tested by Professor Hobman include drugs that have been previously studied in humans for other indications including one drug that is FDA approved. Professor Hobman believes that reducing β -Catenin levels with Wnt-inhibitor drugs induces peroxisome proliferation and enhances the interferon response. Previously, SARS-CoV-2 was shown to be sensitive to inhibition by interferon². Professor Hobman reported that Wnt/ β -Catenin inhibitor and peroxisome inducing drugs also inhibit Zika virus (ZIKV) and Mayaro (MAYV) virus in cell culture. Tonix is excited to have sponsored Professor Hobman's research involving Wnt/ β -Catenin signaling pathway inhibitors as broad-spectrum antivirals and to have licensed the technology. We look forward to working with Professor Hobman to try to bring one or more of these candidate drugs to clinical testing."

About Tonix Pharmaceuticals Holding Corp.¹

Tonix is a clinical-stage biopharmaceutical company focused on discovering, licensing, acquiring and developing therapeutics to treat and prevent human disease and alleviate suffering. Tonix's portfolio is composed of central nervous system (CNS), rare disease, immunology and infectious disease product candidates. Tonix's CNS portfolio includes both small molecules and biologics to treat pain, neurologic, psychiatric and addiction conditions. Tonix's lead CNS candidate, TNX-102 SL (cyclobenzaprine HCl sublingual tablet), is in mid-Phase 3 development for the management of fibromyalgia with a new Phase 3 study launched in the second quarter of 2022 and interim data expected in the first quarter of 2023. TNX-102 SL is also being developed to treat Long COVID, a chronic post-acute COVID-19 condition. Tonix expects to initiate a Phase 2 study in Long COVID in the second quarter of 2022. TNX-1300 (cocaine esterase) is a biologic designed to treat cocaine intoxication that is expected to start a Phase 2 trial in the second quarter of 2022. TNX-1300 has been granted Breakthrough Therapy Designation by the FDA. Finally, TNX-1900 (intranasal potentiated oxytocin), a small molecule in development for chronic migraine, is expected to enter the clinic with a Phase 2 study in the second half of 2022. Tonix's rare disease portfolio includes TNX-2900 (intranasal potentiated oxytocin) for the treatment of Prader-Willi syndrome. TNX-2900 has been granted Orphan-Drug Designation by the FDA. Tonix's immunology portfolio includes biologics to address organ transplant rejection, autoimmunity and cancer, including TNX-1500 which is a humanized monoclonal antibody targeting CD40-ligand being developed for the prevention of allograft and xenograft rejection and for the treatment of autoimmune diseases. A Phase 1 study of TNX-1500 is expected to be initiated in the second half of 2022. Tonix's infectious disease pipeline consists of a vaccine in development to prevent smallpox and monkeypox called TNX-801, next-generation vaccines to prevent COVID-19, and a platform to make fully human monoclonal antibodies to treat COVID-19. Tonix's lead vaccine candidates for COVID-19 are TNX-1840 and TNX-1850, which are live virus vaccines based on Tonix's recombinant pox live virus vector vaccine platform.

¹*All of Tonix's product candidates are investigational new drugs or biologics and have not been approved for any indication.*

²*Lokugamage, K. G. et al., (2020). Journal of virology, 94 (23), [e01410].
<https://doi.org/10.1128/JVI.01410-20>*

This press release and further information about Tonix can be found at www.tonixpharma.com.

Forward Looking Statements

Certain statements in this press release are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may be identified by the use of forward-looking words such as "anticipate," "believe," "forecast," "estimate," "expect," and "intend," among others. These forward-looking statements are based on Tonix's current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. These factors include, but are not limited to, risks related to the failure to obtain FDA clearances or approvals and noncompliance with FDA regulations; delays and uncertainties caused by the global COVID-19 pandemic; risks related to the timing and

progress of clinical development of our product candidates; our need for additional financing; uncertainties of patent protection and litigation; uncertainties of government or third party payor reimbursement; limited research and development efforts and dependence upon third parties; and substantial competition. As with any pharmaceutical under development, there are significant risks in the development, regulatory approval and commercialization of new products. Tonix does not undertake an obligation to update or revise any forward-looking statement. Investors should read the risk factors set forth in the Annual Report on Form 10-K for the year ended December 31, 2021, as filed with the Securities and Exchange Commission (the “SEC”) on March 14, 2022, and periodic reports filed with the SEC on or after the date thereof. All of Tonix's forward-looking statements are expressly qualified by all such risk factors and other cautionary statements. The information set forth herein speaks only as of the date thereof.

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