Virpax's MMS019 Reduced Nasal and Brain Viral Load in Animal Study

--Marked Inhibition of Viral Replication Demonstrated—

BERWYN, PA, April 19, 2021 — Virpax® Pharmaceuticals, Inc. ("Virpax" or the "Company") (NASDAQ:VRPX), a company specializing in developing pharmaceutical product candidates for pain management, today announced the results of an animal study model for MMS019, its anti-viral product candidate for respiratory viruses. MMS019 is high-density molecular masking spray the Company is developing as an anti-viral barrier. The Company intends for this formulation to be delivered using a preassembled device and cartridge to propel the High-Density Molecular Spray formulation into the nose.

Professor Krzysztof Pyrc, a virology specialist [and head of the Virology Laboratory at the Małopolska Biotechnology Center of the Jagiellonian] at the University in Krakow, Poland, who led the study, stated, "While the initial viral load given to the animals was much higher than what is encountered by humans, we demonstrated an inhibition of viral replication in the nasal passages. This is very exciting as it supports further research on our hypothesis that MMS019 may not only protect users that apply the mask, but also may limit transmission of the virus to others."

Dr. Jeff Gudin, Chief Medical Officer and co-founder of Virpax added, "In addition to inhibition of viral replication, the study also demonstrated decreased levels of the virus in animal brain tissue, an important observation as recent studies have shown neurological conditions with survivors of severe Covid. We are encouraged by these results and have engaged Syneos Health to assist with our regulatory pathway and drug development trials required to file an NDA for FDA approval."

The animal study model included transgenic mice expressing the human ACE2 protein under the human cytokeratin 18 promoter (a type of protein found on epithelial cells, inside and outside of the body). Each experimental group consisted of 10 animals with 14 animals in the control group. MMS019 was administered once daily intranasally in the treatment group, and the control group received remdesivir intramuscularly.

Initially, the animals were infected intranasally with the SARS-CoV-2 virus. The virus was amplified and titrated in commonly used cell cultures [Vero cells]. Mice received MMS019 or remdesivir every 24 hours from Day 1 until Day 6 post-infection.

On day 6 post-infection, the animals were euthanized, and selected tissues were collected for analysis; viral RNA was isolated, and the viral infection was quantified by means of the RT-qPCR system that detects genetic material of the virus using a lab technique called polymerase chain reaction (PCR). The initial viral titer was comparatively higher than would be contained in an infected human droplet. However, after treatment with MMS019, there was a marked inhibition of viral replication in the mouse nasal passages, and decreased levels of the virus were also recorded for the brain tissue, indicating the limited systemic infection. No adverse effects were observed during the experiment.

About Malopolska Centre of Biotechnology
MCB is an International research institute within the Jagiellonian University in Krakow. MCB's research focuses on major disciplines, including virology, structural biology, and genomics. The virology research is centred on basic research in the field of coronaviruses and flaviviruses. MCB also aims at translating key findings into real world solutions (http://virogenetics.info/). The Jagiellonian University is one of the oldest universities in Europe, founded in 1364 and also one of the most prestigious universities in Poland. It is the only East-Central European academic institution in Reuter's *Top 100: Europe's Most Innovative Universities* ranking and a leading Polish applicant to the European Patent Office.

About Virpax Pharmaceuticals

Virpax is developing branded, non-addictive pain management product candidates using its proprietary technologies to optimize and target drug delivery. Virpax is initially seeking FDA approval using its three patented drug delivery platforms. Epoladerm™ is a topical diclofenac metered-dose spray film formulation being developed to manage acute musculoskeletal pain and osteoarthritis. Probudur™ is a single injection liposomal bupivacaine formulation being developed to manage postoperative pain. Envelta™ is an intranasal molecular-envelope enkephalin formulation being developed to manage acute and chronic pain, including pain associated with cancer. Virpax is also using its intranasal Molecular Envelope Technology (MET) to develop its PES200 product candidate to manage post-traumatic stress disorder (PTSD) and its MMS019 product candidate to inhibit viral replication caused by influenza or SARS-CoV-2. For more information, please visit www.virpaxpharma.com.

Forward-Looking Statement

This press release contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 and Private Securities Litigation Reform Act, as amended, including those relating to the Company's planned preclinical and clinical trials, product development, clinical and regulatory timelines, market opportunity, competitive position, possible or assumed future results of operations, business strategies, potential growth opportunities and other statements that are predictive in nature. These forward-looking statements are based on current expectations, estimates, forecasts and projections about the industry and markets in which we operate and management's current beliefs and assumptions.

These statements may be identified by the use of forward-looking expressions, including, but not limited to, "expect," "anticipate," "intend," "plan," "believe," "estimate," "potential," "predict," "project," "should," "would" and similar expressions and the negatives of those terms. These statements relate to future events or our financial performance and involve known and unknown risks, uncertainties, and other factors, including the potential impact of the COVID-19 pandemic and the potential impact of sustained social distancing efforts, on the Company's operations, clinical development plans and timelines, which may cause actual results, performance or achievements to be materially different from any future results, performance or achievements

expressed or implied by the forward-looking statements. Such factors include those set forth in the Company's filings with the Securities and Exchange Commission. Prospective investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date of this press release. The Company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise.

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