Virpax Reports Favorable Preclinical Safety Data for Envelta™ for the Treatment of Acute and Chronic Pain

– Preclinical study data indicate that intranasal administration of enkephalin (Envelta) is well-tolerated and safe –

BERWYN, PA, February 10, 2022 — Virpax® Pharmaceuticals, Inc. ("Virpax" or the "Company") (NASDAQ: VRPX), a company specializing in developing non-addictive product candidates for pain management, as well as PTSD, CNS disorders and anti-viral indications, reported promising results from preclinical dose range finding studies for Envelta (NES100), Virpax's endogenous enkephalin intranasal spray for acute and chronic pain, including pain associated with cancer. These findings complement previous positive preclinical toxicology results and support the Company's continuing development of this potential non-addictive treatment for acute and chronic pain.

Investigational New Drug (IND) enabling studies for Envelta are being performed under a Cooperative Research and Development Agreement (CRADA) with the National Institutes of Health's (NIH) National Center for Advancing Translational Sciences (NCATS) entered into by Virpax and the NIH in August of 2020. Under the cooperation agreement, the studies are performed and funded by the NIH.

Pursuant to the CRADA, NCATS conducted a 14-day intranasal dose range finding toxicity study of Envelta in rats with a 14-day recovery period. This study showed no adverse related findings in hematology, coagulation and serum chemistry data, with no treatment related toxicology findings or mortality noted. A 14-day intranasal dose range finding toxicity study of Envelta in dogs with a 14-day recovery period was also conducted and showed no adverse toxicologic findings. "These early data appear promising and support our continued quest for safe and effective pain and CNS therapies. We look forward to completing our final IND enabling studies," noted Dr. Jeff Gudin, Virpax EVP and Chief Medical Officer.

To further evaluate the potential of Envelta as an intranasal treatment for acute and chronic pain, NCATS will complete the remaining preclinical studies to support submission of an IND to the Food and Drug Administration (FDA).

"These preclinical data support and further strengthen the development of Envelta as a potential intranasal enkephalin for the management of cancer and non-cancer pain. We remain focused on the next steps so that we may submit an IND and then initiate a Phase 1 study in humans upon any potential FDA acceptance," commented Anthony P Mack, Chairman and CEO of Virpax.

About Envelta™

Envelta is an investigational intranasal formulation intended to improve enkephalin transport to the brain. Enkephalin is a naturally occurring (endogenous) peptide that is not easily administered

in its original form. Envelta uses a preassembled device and cartridge to propel the enkephalin formulation through the nose to the brain by flowing along the olfactory nerve pathway. The Molecular Envelope Technology is designed to protect the drug and help carry it to the brain, enabling it to cross the blood-brain barrier to suppress pain by binding to the delta-opioid receptors. Envelta™ has demonstrated analgesic potential in animal models without developing opioid tolerance, withdrawal, respiratory depression, euphoria, or addiction associated with the use of morphine. Once the Envelta IND-enabling studies are submitted to the FDA, the data could potentially be cross-referenced to our cancer pain and PTSD INDs.

About Virpax Pharmaceuticals

Virpax is developing branded product candidates for non-addictive pain management and neurological disorders using its proprietary technologies to optimize and target drug delivery. Virpax is initially seeking FDA approval of its three patented drug delivery platforms. Epoladerm™ is a topical diclofenac spray film formulation being developed to manage osteoarthritis pain. Probudur™ is a single injection long-acting liposomal bupivacaine formulation being developed to manage post-operative pain. Envelta™ is an intranasal Molecular-Envelope Technology (MET) enkephalin formulation being developed for the management cancer and non-cancer pain, as well as post-traumatic stress disorder (PTSD) under the name PES200. MET technology is also used in AnQlar™, a candidate to inhibit viral replication caused by influenza or SARS-CoV-2. Virpax recently acquired global rights to VRP324, a product candidate for the nasal delivery of a pharmaceutical-grade cannabidiol (CBD) for the management of epilepsy in children (a rare pediatric disease) and adults. 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 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 recent 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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