# PharmaDrug Advances Psychedelics Program with Analogue DMT Formulations to Treat Eye Diseases

- *PharmaDrug narrows list of candidate tryptamine molecules for the treatment of primary open angle glaucoma (PAOG)*
- *Terasaki Institute receives PharmaDrug's two candidate DMT analogue molecules*
- *Terasaki Institute, initiates supportive IND-enabling mechanism of action studies to evaluate potency and kinetics of PharmaDrug's DMT analogues*

Toronto, Ontario--(Newsfile Corp. - November 5, 2021) - PharmaDrug Inc. (CSE: PHRX) (OTCQB: LMLLF) ("**PharmaDrug**" or the "**Company**"), a specialty pharmaceutical company focused on the research, development and commercialization of controlled-substances and natural medicines such as psychedelics, cannabis and naturally-derived approved drugs, is pleased to announce that the Terasaki Institute for Biomedical Innovation (TIBI) has received and will immediately commence *in vitro* characterization studies on PharmaDrug's short-list of DMT analogue molecules, which will support IND-enabling studies for FDA review. PharmaDrug has commissioned TIBI, under a research agreement, to develop a novel ocular drug delivery platform that aims to deliver psychedelic and tryptamine-based pharmaceuticals, related to N, N-dimethyltryptamine ("DMT"), for eye diseases.

Daniel Cohen, CEO of PharmaDrug commented, "We are extremely excited to finalize the first stage of the program in devising an initial list and selecting a final set of two candidate DMT analogue molecules. Initial *in vitro* efficacy studies will commence immediately. The next few months will be vital in characterizing relative drug potency and selecting a single lead candidate to take forward for further development. The following phase will focus on IND enabling efficacy studies using a well accepted animal model of POAG."

Based on considerations related to physiochemical properties, resistance to metabolic breakdown and anticipated downstream formulation requirements, the Company has elected to specifically focus its efforts on comparing the potency of two candidate tryptamines, which were narrowed from an initial list of six. Studies underway at TIBI will take place in three phases: 1) *in vitro*, head-to-head evaluation of potency in cell-based models of glaucoma, 2) evaluation of efficacy (ability to lower intraocular pressure "IOP") when applied as a topical eyedrop in animal models of glaucoma, and 3) development and testing of a medical device capable of delivering sustained, local, sub-psychotropic levels of the development candidate to patients afflicted with glaucoma. The Company expects to provide an update on initial research results late November.

Glaucoma is a disorder of the optic nerve that results in irreversible vision loss and is the second leading cause of blindness in the world, according to the World Health Organization. Glaucoma impacts more than 2.7 million people aged 40 or older in the United States and current treatments are known to have poor rates of compliance of up to 80% of patients. The global market for glaucoma was estimated by Market Scope at $4.8 billion in 2019 with the U.S. market representing $1.9 billion.

Although the exact etiology of primary open angle glaucoma remains poorly understood, and may be variable across patient subsets, it is generally accepted that the observed increase in intraocular pressure (IOP) correlates with progressive vision loss[1]. Current treatments for POAG primarily consist of eyedrops that can be grouped into three main categories: prostaglandin analogues, carbonic anhydrous inhibitors, and alpha-2 agonists. While these approaches usually provide partial improvement, they often result in side effects such as redness and stinging and require multiple daily applications; all of which diminish patient compliance. Tryptamines are thought to work in a completely distinct way to lower IOP and as such potentially embody a new class of glaucoma medications that may be used alone, or in combination with already approved medications. The Company's streamlined focus on two highly

promising, undisclosed tryptamines as a potential therapeutic solution in treating glaucoma represents a potential paradigm shift.

**Modulating the serotonin receptor pathway to improve glaucoma outcomes**

Key regions of the eye that regulate fluid dynamics, including maintenance of healthy IOP, are known to be richly decorated with various serotonin receptor family members. Previous research has highlighted the role of serotonin receptor signaling in the regulation of IOP[2-5]. Tryptamines, often hallucinogenic above certain threshold concentrations, constitute a large collection of molecules that selectively act on multiple different serotonin receptors including 5-HT1A and 5-HT2A. Topical application of several different tryptamines have shown early promise in preclinical models of elevated IOP, however formulation, delivery, the potential for undesirable hallucinogenic side effects, and the controlled substances act of 1970 have all contributed to a lack of development of tryptamines to treat this serious threat to vision.

The Terasaki Institute for Biomedical Innovation is a biotechnology institute which develops medical devices and cutting-edge protocols for a variety of diagnostic, monitoring and treatment applications. Their research platforms include work in biomaterials, cellular and tissue engineering, wearable biosensors and organs-on-a-chip, with specific expertise in novel polymer development.

**About PharmaDrug Inc.**

PharmaDrug is a specialty pharmaceutical company focused on the research, development and commercialization of controlled-substances and natural medicines such as psychedelics, cannabis and naturally-derived approved drugs. PharmaDrug owns 100% of Pharmadrug Production GmbH ("Pharmadrug Production"), a German medical cannabis distributor, with a Schedule I European Union narcotics license and German EuGMP certification allowing for the importation and distribution of medical cannabis to pharmacies in Germany and throughout the European Union. PharmaDrug recently acquired Sairiyo Therapeutics ("Sairiyo"), a biotech company that specializes in researching and reformulating established natural medicines with a goal of bringing them through clinical trials and the associated regulatory approval process in the US and Europe. Sairiyo is currently developing its patented reformulation of cepharanthine, a drug that has shown substantial third party validated potential for the treatment of Covid-19 and rare cancers. Sairiyo is also conducting R&D in the psychedelics space for the treatment of non-neuropsychiatric conditions. The Company also owns 100% of Super Smart, a company building a vertically integrated retail business with the goal to elevate the use of functional mushrooms, and psilocybin mushrooms where federally legal, as natural based medicines.

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*cepharanthine, the results of the Company's research and development in the psychedelics space and the development of the Supersmart business . This forward-looking information reflects the Company's current beliefs and is based on information currently available to the Company and on assumptions the Company believes are reasonable. These assumptions include, but are not limited to the ability of the Company to successfully execute on its plans for the Company and its affiliated entities; the ability to obtain required regulatory approvals and the Company's continued response and ability to navigate the COVID-19 pandemic being consistent with, or better than, its ability and response to date.*

*Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information. Such risks and other factors may include, but are not limited to: general business, economic, competitive, political and social uncertainties; general capital market conditions and market prices for securities; the actual results of the Company's future operations; competition; changes in legislation affecting the Company; the ability to obtain and maintain required permits and approvals, the timing and availability of external financing on acceptable terms; lack of qualified, skilled labour or loss of key individuals; risks related to the COVID-19 pandemic including various recommendations, orders and measures of governmental authorities to try to limit the pandemic, including travel restrictions, border closures, non-essential business closures, service disruptions, quarantines, self-isolations, shelters-in-place and social distancing, disruptions to markets, economic activity, financing, supply chains and sales channels, and a deterioration of general economic conditions; and a deterioration of financial markets that could limit the Company's ability to obtain external financing.*

*A description of additional risk factors that may cause actual results to differ materially from forward-looking information can be found in the Company's disclosure documents on the SEDAR website at www.sedar.com. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking information. Readers are cautioned that the foregoing list of factors is not exhaustive. Readers are further cautioned not to place undue reliance on forward-looking information as there can be no assurance that the plans, intentions or expectations upon which they are placed will occur. Such information, although considered reasonable by management at the time of preparation, may prove to be incorrect and actual results may differ materially from those anticipated.*

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**References:**

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