**ASX & Media Release**

# PAT-DX1 Suppresses Breast Cancer Brain Metastases and Increases Survival

**Melbourne, Australia; 20 December, 2018:** Patrys Limited **(ASX: PAB)**, a therapeutic antibody development company, is pleased to announce further pre-clinical data for its drug candidate PAT-DX1, Patrys' humanized version of the 3E10 anti-DNA antibody.

Brain metastases develop in up to 50% of patients with metastatic triple-negative breast cancer (TNBC), and they have devastating effects on neurologic function and survival. New therapeutic approaches that target and treat TNBC brain metastases are needed[1]. Drs. James Hansen and Jiangbing Zhou of the Yale School of Medicine have now shown that PAT-DX1 administered by tail vein injection significantly improved survival in a mouse model of TNBC brain metastases.

Brain metastases were generated by injection of luciferase-labelled, brain-seeking TNBC cells directly into circulation via intracardiac injection. One week later, the presence of brain metastases was confirmed and intravenous treatment with PAT-DX1 was initiated.

The ability of PAT-DX1 to reduce TNBC brain metastases was seen after just one week of treatment. After 4 weeks of treatment with PAT-DX1, treated mice showed 93% less brain metastasis than untreated mice, quantified by luminescence intensity.

PAT-DX1 also significantly improved survival, with 86% of the mice treated with PAT-DX1 still alive after all control mice had died. No toxicity associated with PAT-DX1 treatment was observed.

"Patrys' prior work has shown promising activity of PAT-DX1 against TNBC, the most therapeutically challenging form of breast cancer," said Dr. James Campbell, Chief Executive Officer and Managing Director of Patrys. "Drs. Hansen and Zhou at Yale are leading the efforts to use PAT-DX1 against malignancies of the brain, and they previously showed that PAT-DX1 crosses the blood-brain barrier to suppress GBM tumors. Their new demonstration of PAT-DX1 single agent activity against TNBC brain metastases has important implications for the potential applications of PAT-DX1 in the treatment of a wide range of brain tumors."

Dr. Campbell continued "As whole brain radiotherapy is the current standard of care for breast cancer patients who develop brain metastases, Patrys and the Yale School of Medicine will undertake a follow-up experiment in the same metastatic mouse model of TNBC to determine whether PAT-DX1 in combination with radiation therapy might be even more effective than either treatment used alone."

1 Anders, C. K. (2016) Management of Brain Metastases in Breast Cancer. Clinical Advances in Hematology & Oncology, August 2016 - Volume 14, Issue 9.

*About Deoxymab 3E10, PAT-DX1 and PAT-DX1-NP*

Deoxymab 3E10 is a DNA damage-repair (DDR) antibody that was first identified in lupus as an autoantibody that bound to normal cells. Of particular interest is that whilst most antibodies bind to cell surface markers, Deoxymab 3E10 penetrates into the cell nuclei and binds directly to DNA where it inhibits DNA repair processes and kills cells that have mutations or deficiencies in DNA repair mechanisms as found in various cancer cells. Deoxymab 3E10 has single agent therapeutic potential and has been shown to significantly enhance the efficacy of both chemo- and radiotherapies. Further, Deoxymab 3E10 can be conjugated to nanoparticles to target delivery of chemotherapeutics and imaging agents to tumors.

Patrys has developed a humanized form of Deoxymab 3E10, PAT-DX1 with improved activity over the original version of 3E10, and is progressing this, and a nanoparticle-conjugated form (PAT-DX1-NP) towards the clinic. In a range of pre-clinical cancer models PAT-DX1 has shown significant ability to kill cancer cells in cell models, human tumor explants, xenograft and orthotopic models. Treatment with PAT-DX1 has been shown to significantly improve survival in an orthotopic model of glioblastoma. PAT-DX1 has also been shown to work synergistically with the approved PARP inhibitor, olaparib. Patrys believes that PAT-DX1 may have application across a wide range of malignancies such as gliomas, melanomas, prostate, breast, pancreatic and ovarian cancers.

Patrys' rights to Deoxymab 3E10 are part of a worldwide license to develop and commercialize as anti-cancer and diagnostic agents a portfolio of novel anti-DNA antibodies and antibody fragments, variants and conjugates discovered at Yale University.

*About Triple Negative Breast Cancer*

Breast cancer is a leading cause of cancer death in women, and approximately 1.67 million[2] new cases are diagnosed worldwide each year. Subtypes of breast cancer are stratified in accordance with their expression of estrogen, progesterone, and HER2 receptors. Tumors that lack all three receptors are referred to as "triple negative breast cancer (TNBC)", and this subtype makes up 15-20% of all breast cancer cases and is the most aggressive and difficult to treat. TNBC is associated with BRCA mutations or a "BRCAness" phenotype of impaired homologous recombination that makes these cancer cells vulnerable to inhibition of DNA damage repair such as that mediated by PAT-DX1. The global market for TNBC was $296M in 2015, and is expected to increase to $1.59B by 2025[3].

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[2] https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/global-cancer-facts-and-figures/global-cancer-facts-and-figures-3rd-edition.pdf

[3] GlobalData Her2-/Her2+ and Triple Negative Breast Cancer- GlobalDrug Forecast and Market Analysis to 2025

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**About Patrys Limited:**
Based in Melbourne, Australia, Patrys (ASX: PAB) is focused on the development of antibodies as therapies for a range of different cancers. Patrys has a pipeline of anti-cancer antibodies for both internal development and as partnering opportunities. More information can be found at www.patrys.com.