ASX & Media Release

PAT-DX1 Targets and Kills Brain Cancer Stem Cells

Melbourne, Australia; May 31, 2018: Patrys Limited **(ASX: PAB)**, a therapeutic antibody development company, is pleased to announce further pre-clinical data for its drug candidates PAT-DX1 and PAT-DX1-NP. PAT-DX1 is Patrys' humanized version of the 3E10 anti-DNA antibody, while PAT-DX1-NP links PAT-DX1 to nanoparticles (NPs) that can be loaded with chemotherapeutic (or other) drugs.

Drs. James Hansen and Jiangbing Zhou of the Yale School of Medicine have confirmed that PAT-DX1 and PAT-DX1-NP target tumor spheres derived from human glioblastoma cancer stem cells (CSCs). Primary glioblastoma stem cells from human tumor explants were grown in culture as tumor spheres. Tumor spheres are recognised as a useful tool for pre-clinical studies as they retain tumor heterogeneity and more closely represent the original patient tumor. Treatment with PAT-DX1-NP showed significantly increased localization to the CSC tumor spheres compared to unconjugated NPs. Importantly, PAT-DX1-NP penetrated into the centre of the tumor spheres and targeted cells inside the spheres as well as cells on the sphere surface. Follow-on experiments showed that unconjugated PAT-DX1 significantly reduced the growth and viability of the CSC tumor spheres.

CSCs are tumorigenic (tumor-forming) cancer cells found within tumours that have the potential to give rise to all cell types found in a particular cancer sample. Typically, CSCs are; isolated from primary human tumors; able to be grown in culture; and able to differentiate into complete tumors when implanted into model systems.

"Patrys has previously shown that both PAT-DX1 and PAT-DX1-NPs can cross the blood brain barrier in a mouse model of glioblastoma, and confirmation that PAT-DX1 targets and kills primary human glioblastoma stem cell tumor spheres *in vitro* is another exciting development," said Dr. James Campbell, Chief Executive Officer and Managing Director of Patrys. "This data strengthens the case for glioblastoma as a development path for the DX1 technology."

Dr. Campbell continued "This new observation sets the scene for Patrys' research plan with the Yale School of Medicine to test PAT-DX1 in a proxy for the current human therapy regime for glioblastoma. This study will involve combinations of PAT-DX1, temozolomide and radiation therapy, and evaluation of the single and combined effects on tumour size and survival. Data from this study is due in Q4, 2018, and will inform possible clinical studies in glioblastoma."

"With a balance sheet strengthened by the recent $4.6 million placement to strategic, institutional and sophisticated investors, and an expanding network of collaborators investigating PAT-DX1 and PAT-DX1-NP in a range of different tumours, we believe that Patrys is well positioned to explore the broad potential of the Deoxymab technology" added Dr. Campbell.

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 Glioblastoma

Glioblastoma is a particularly aggressive, highly malignant form of brain cancer characterized by very fast cellular reproduction. Glioblastomas constitute approximately 17% of all primary brain cancers, with almost 12,000 new cases diagnosed in the U.S. each year[1]. The current standard of care for glioblastoma is surgical resection followed by radiation and chemotherapy (temozolomide, trade name TEMODAR®[2]), with a median survival period of 15 months, depending on disease severity. One of the key prognostic markers in glioblastoma is the methylation status of the promoter for DNA repair gene MGMT. Methylated MGMT is predictive of better response to temozolomide and improved survival, while MGMT-unmethylated glioblastoma has a worse prognosis and is more difficult to treat.

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[1] http://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Glioblastoma-Multiforme.
[2] TEMODAR is a registered trademark of Merck Sharpe & Dohme Corp.

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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.