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ASX: NOX

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Noxopharm and UNSW combine on stroke project

- **Noxopharm drug identified as potential brain/spinal cord injury preventative**
- **First-in-class drug to hasten rehabilitation from brain and spinal cord injury**
- **Made possible because of NOX66 drug delivery platform**
- **UNSW assisting in pre-clinical studies.**

Sydney, 16 March 2017: Noxopharm Ltd (ASX: NOX) today unveils the first of its non-oncology drug pipeline, having entered into a research agreement with the University of New South Wales (UNSW) to develop a unique and highly sought preventative treatment for damage to the central nervous system. This includes stroke and spinal injury, and potentially a wide range of neurodegenerative diseases.

The collaboration brings together key Australian intellectual properties owned by Noxopharm and UNSW that together form the basis for a potential treatment to prevent the debilitating after-effects of brain and spinal cord injury. The ultimate objective is a drug that would be delivered following acute brain or spinal cord injury to prevent further spread of that injury.

The aim of the proposed drug is not to treat the original injury (eg. trauma, stroke etc), which often is limited enough to self-repair, but to stop the cascade of death of nerve cells (known as *excitotoxicity*) that occurs in the brain and spinal cord after the initial injury and which typically leads to an area of cell death that is too large to be repaired. This 'follow-on damage' typically accounts for most of the loss of function following such injuries. Limiting this 'follow-on damage' is expected to make a significant difference to the recovery prospects of people following brain and spinal cord injury. There currently is no effective treatment of excitotoxicity.

Graham Kelly PhD, Noxopharm CEO, said, "Noxopharm became involved in this project because of one of its key technology platforms..... the NOX66 drug delivery technology that has proved highly successful in delivering our anti-cancer drug candidate, idronoxil, across the blood-brain barrier in animals. While we developed this technology platform for the treatment of brain cancer, it soon became apparent that the same technology could be used to deliver drugs into the brain to treat diseases other than cancer."

“One obvious clinical target was the problem of excitotoxicity and its role in the recovery from brain and spinal injuries. Professor Gary Housley and his team at UNSW already had identified the mechanisms involved in excitotoxicity, so it then was a matter of identifying a number of compounds in our library that we believed would inhibit those mechanisms. I am pleased to say that the UNSW team has now confirmed that they worked, and that now opens the door to developing a drug. The drugs we have appear to be first-in-class drugs for this significant unmet clinical need.”

Professor Housley’s team was able to show in the laboratory that the Noxopharm compounds protected a human nerve cell model against the downstream excitotoxic effects that follow stroke.

With proof-of-concept compounds in hand, plus the means to deliver these compounds into the brain, the project now moves from pilot stage into a full R&D project, with the complementary nature of company and university resources expected to underwrite the rapid advancement of the project into the clinic.

Kelly added, “Noxopharm is an oncology-focused company and we plan to remain so, given the considerable commercial opportunities we believe we have. Bringing NOX66 and certain other proprietary other oncology opportunities through the clinic and onto the market remains the Company’s primary focus.”

“However, it would be remiss of us to ignore the substantial opportunities that our proprietary technology platforms offer beyond oncology as the Board takes seriously its responsibility to shareholders in maximising the commercial return on its technology platforms. And a drug that helps the recovery prospects of the millions of patients worldwide suffering acute brain and spinal injuries each year certainly is worthy of our attention. We currently have the financial resources to proceed with this project without affecting our current clinical program, with the current horizon being confirmation of the identity of a lead drug candidate and demonstration of efficacy in an animal model of stroke. Those two milestones will be key inflection points in determining the value of the opportunity. Until then, the Company will continue to develop and review its strategic options with the non-oncology pipeline.”

About Professor Housley

Gary Housley, PhD, holds the Chair of Physiology and is director of the Translational Neuroscience Facility, School of Medical Sciences, UNSW Australia. His research program is broadly within molecular, cellular and systems physiology in the nervous system, particularly around neuroprotection in the central nervous system and auditory system. He has contributed prominently to understanding how hearing adapts to noise and ageing. Study of neural development and synaptic plasticity in the auditory system informs on gene-targets for neural repair. This research has an applied arm with respect to bionics such as the cochlear implant which has led to development of an innovative gene therapy platform for auditory nerve regeneration.

Within the brain, Housley's research group is investigating neural plasticity associated with driven input (e.g. via the cochlear implant) and mechanisms for protection and repair of the nervous system (focusing on the role of calcium signalling in glutamate excitotoxicity, associated with ischaemic brain injury, stroke, epilepsy and trauma, alongside noise-induced hearing loss. Hearing loss is the most prominent sensory disability in our society. Stroke is the third highest killer and the most disabling for survivors. Professor Housley’s research is supported by national and international collaborations and funding.

About Excitotoxicity

Excitotoxicity refers to the process where healthy neurons (nerve cells) are killed as a result of an influx of calcium ions into the cell. The calcium influx is triggered by an outpouring of glutamic acid from damaged neurons, with the calcium activating a number of enzymes within the neuron leading to its death. Excitotoxicity is a cascading process of death of neurons following an original focus of damage and is a major contributor to limited recovery following initial brain injury.

Excitotoxicity features in stroke, traumatic brain injury, epileptic seizure, spinal cord injury and likely contributes to neurodegenerative diseases of the central nervous system such as multiple sclerosis, Alzheimer's Disease, Huntington's Disease, Parkinson's Disease and amyotrophic lateral sclerosis (ALS). While neurodegenerative diseases have many different causes, the nature of the damage in the brain can have a common basis in the excitotoxicity process.

About the Project

A hit-to-lead program is underway employing a high throughput in situ screening assay that measures glutamic acid-induced calcium influx into a human neuron model cell line. The objective is to have a lead compound identified by the end of 2017, along with proof-of-concept using an animal model of ischaemic stroke.

About Noxopharm

Noxopharm is an Australian drug development company with offices in Sydney and Melbourne. The Company has a primary focus on the development of drugs to address the problem of drug-resistance in cancer cells, the major hurdle facing improved survival prospects for cancer patients. NOX66 is the first pipeline product, with later generation drug candidates under development.

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Forward Looking Statements

This announcement may contain forward-looking statements. You can identify these statements by the fact they use words such as "aim", "anticipate", "assume", "believe", "continue", "could", "estimate", "expect", "intend", "may", "plan", "predict", "project", "plan", "should", "target", "will" or "would" or the negative of such terms or other similar expressions. Forward-looking statements are based on estimates, projections and assumptions made by Noxopharm about circumstances and events that have not yet taken place. Although Noxopharm believes the forward-looking statements to be reasonable, they are not certain. Forward-looking statements involve known and unknown risks, uncertainties and other factors that are in some cases beyond the Company's control that could cause the actual results, performance or achievements to differ materially from those expressed or implied by the forward-looking statement. No representation, warranty or assurance (express or implied) is given or made by Noxopharm that the forward-looking statements contained in this announcement are accurate and undue reliance should not be placed upon such statements.

About idronoxil

Idronoxil is an experimental anti-cancer drug currently undergoing clinical development. Idronoxil works by cancelling mechanisms (such as PARP1/Akt) in cancer cells that allow those cells to resist the killing effects of chemotherapies and radiotherapy. Idronoxil targets an external NADH oxidase, ENOX 2, responsible for maintaining the transmembrane electron potential (TMEP) in the plasma membrane. Inhibition of this enzyme causes loss of TMEP and disruption of key downstream pro-survival mechanisms including PARP1/Akt/PI3 kinase. ENOX2 is an oncogene whose expression is restricted to cancer cells.

Idronoxil is undergoing clinical studies in the NOX66 dosage form, with the objective of making existing chemotherapies and radiotherapies work far more effectively and safely than is the case currently.

About NOX66

NOX66 is an innovative dosage formulation of the experimental anti-cancer drug, idronoxil, developed specifically to protect idronoxil from being inactivated in the human body by Phase 2 metabolism. The purpose is to maximize the amount of idronoxil remaining in an active form rather than as inactive Phase 2 metabolites.

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