

**ASX RELEASE**  
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## **NOVOGEN IDENTIFIES HIGHLY ACTIVE DRUG CANDIDATES AGAINST PROSTATE CANCER**

**SYDNEY (May 27, 2014)**—Novogen Limited [ASX: NRT; NASDAQ: NVGN], an oncology drug development company, today announced that it has achieved a key milestone with its super-benzopyran (SBP) drug program, having identified a number of SBP compounds with potent anti-cancer activity against human prostate cancer cells *in vitro*. As a result, Novogen has extended its preclinical SBP program to include prostate cancer as well as ovarian and brain cancers.

Prostate cancer cells are highly resistant to chemotherapy and the few drugs approved for late-stage, hormone-resistant prostate cancer offer only modest improvements in survival. There is thus an urgent need to develop drugs specifically against prostate cancer that will prolong life to a meaningful degree for these advanced patients.

In a study conducted by Australian oncologist, Paul de Souza, M.D., Foundation Professor in Medical Oncology at the University of Western Sydney's (UWS) and who is also affiliated with the Ingham Institute, a number of SBP compounds were tested *in vitro* against five different prostate cancer cell lines that most closely mimic common clinical situations.

“There is a significant need for more effective treatments for prostate cancer. It’s exciting at long last to be working with new compounds with such impressive activity against a panel of clinically-relevant prostate cancer cell lines,” Prof. de Souza said. “With anti-cancer activity down around 50 nanomolar levels, this group of chemicals appears to be at least as active as standard cytotoxic drugs such as cisplatin. We now can work to bring the lead compound into the clinic.”

The studies in the laboratory of Professor de Souza are funded by Novogen and are part of an international research program initiated and coordinated by Novogen and involving some of the world’s most prestigious universities and hospitals. An ongoing structural-activity-relationship drug discovery program has produced a sub-family of SBP compounds with high potency against prostate cancer cells. A lead candidate compound has been identified and now will enter its lead optimization phase.

Professor de Souza will be the Lead Investigator in this program, with the aim of testing the investigational drug as a monotherapy in Australia in 2015 in men with advanced

prostate cancer who have failed standard of care. At the same time, Novogen will file an investigational new drug (IND) application with the U.S. Food and Drug Administration (FDA) seeking permission to conduct a U.S. clinical trial, also in 2015.

Novogen's proprietary SBP drug technology platform targets an oncogene that appears to be common to all forms of cancer. The oncogene produces a mutant form of an enzyme that regulates fundamental biochemical processes within all cells. When inhibited, the cell quickly dies. This mechanism of action offers the potential for SBP drugs to avoid the common problems associated with targeted therapies of the cancer cell being able to develop alternative signaling pathways or multi-drug resistance mechanisms. Other studies funded by Novogen at prestigious US universities have already identified two SBP structures with particular activity against ovarian cancer and glioblastoma cells respectively.

Dr David Brown, Novogen Group Chief Scientific Officer, said today, "The horizon for new and effective chemotherapeutics for prostate cancer is bleak. This discovery heralds in an entirely new and exciting area of clinical development. Other SBP compounds have already shown a potent ability to kill the full hierarchy of cancer cells within ovarian cancer and the main form of brain cancer, glioblastoma, and we have every confidence that what we are seeing in this study is the potential to do the same thing with prostate cancer."

"The prostate cancer cells used in this study respond poorly both in the laboratory and in the clinic to standard chemotherapy drugs, so our ability to kill them at such low drug concentrations suggests that we have broken through an important barrier".

Dr Graham Kelly, Novogen CEO, said, "This discovery extends Novogen's clinical focus into an entirely new area of cancer where patients desperately need new, better treatment options. We're excited to be moving all three of these programs forward towards human clinical trials."

### **About prostate cancer**

Prostate cancer is the second-most common cause of cancer-related death in males in Western society. The American Cancer Society estimates that in 2014, about 233,000 new cases of prostate cancer will be diagnosed and about 29,480 men will die of prostate cancer.

In men with late-stage disease where the cancer has metastasized to the skeleton and is unresponsive to androgen-ablation therapy, the standard of care includes the use of cytotoxic drugs (docetaxel or cabazitaxel) in combination with prednisone, a drug (abiraterone) that inhibits the production of testosterone and its ability to stimulate androgen receptors in prostate cancer cells, and a drug (zoledronic) that blocks the ability of prostate cancer cells to thrive in bone. Collectively, these drugs typically prolong life in men with late-stage prostate cancer by months, but not years.

### **About super-benzopyran drugs**

SBPs are a proprietary family of compounds that inhibit the internal trans-membrane proton pump mechanisms within cancer cells. The target is a nicotinamide adenosine

dinucleotide hydrogen (NADH) oxidase enzyme complex that regulates the movement of protons (hydrogen ions) across cellular membranes in support of a range of cellular functions including ATP production. The NADH oxidase isoforms targeted are tumour-associated, splice variants of normal NADH oxidases.

### **About Novogen**

Novogen is a public, Australian biotechnology company whose shares trade on both the Australian Securities Exchange ('NRT') and NASDAQ ('NVGN'). The Company is based in Sydney, Australia, and with a U.S. office in New Haven, Connecticut. The Company has two main drug technology platforms known as super-benzopyrans (SBP) and anti-tropomyosins (ATM).

SBP drugs have been designed to kill both cancer stem cells and their daughter cells are being developed for the treatment of ovarian cancer, glioblastoma (brain cancer) and prostate cancer. Novogen has entered into a joint venture with Yale University known as CanTx, Inc. with the aim of developing a novel approach to the treatment of ovarian cancer with an intra-peritoneal product.

ATM drugs target the cancer cell cytoskeleton and are being developed for the treatment of melanoma and neuroblastoma.

Novogen is part of CODA, an alliance between a number of parties including an Australia charity, The Kinds Cancer Project, and the Nationwide Children's Hospital in Columbus, Ohio, to develop novel treatments for childhood cancer.

Further information is available on the Company's website, [www.novogen.com](http://www.novogen.com).

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