

ProNAi Licenses Oncology Drug Targeting DNA Damage Response Checkpoint Kinase 1 (Chk1) from CRT Pioneer Fund, UK

- PNT737 currently in Phase 1 clinical trials at the Royal Marsden, London, UK -
- Potential to exploit cancer-driving genetic mutations to achieve synthetic lethality -
- Broad development opportunities in combination with DNA damage-inducing chemotherapies -

September 27, 2016. ProNAi Therapeutics, Inc. (NASDAQ: DNAI), a clinical-stage drug development company advancing targeted therapeutics for the treatment of patients with cancer, today announced that it has obtained an exclusive license from the CRT Pioneer Fund LP for worldwide rights to develop and commercialize PNT737 (formerly CCT245737), a highly selective, orally available, small molecule inhibitor of Checkpoint kinase 1 (Chk1). PNT737 is being investigated in two recently initiated Phase 1 clinical trials, currently sponsored and managed by the Cancer Research UK Centre for Drug Development, led by The Institute of Cancer Research, London, and The Royal Marsden NHS Foundation Trust. (ClinicalTrials.gov identifiers: NCT02797977 and NCT02797964).

Under the terms of the agreement, ProNAi will pay the CRT Pioneer Fund an upfront payment of US\$7.0 million. ProNAi will take on sponsorship and management of the clinical development of the agent from Cancer Research UK's Centre for Drug Development and pay a fee of up to \$2.0 million upon the successful transfer of the two ongoing Phase 1 clinical trials to the Company. Additional payments in the aggregate amount of up to US\$319.5 million may become payable upon achievement of certain development, regulatory and commercial milestones. ProNAi will also owe CRT Pioneer Fund high single to low double digit royalties on net sales.

"This transaction adds another high-quality asset to our pipeline. PNT737 targets the DNA Damage Response (DDR) network, a promising approach to treating cancer based on recent leading-edge discoveries in cancer biology," said Dr. Nick Glover, President and CEO of ProNAi. "Cancer cells often depend on activated Chk1, a central cell cycle checkpoint regulator in the DDR network, as a strategy to survive and replicate despite accumulating extensive DNA damage due to replicative stress or in response to chemotherapeutic intervention. PNT737 is a potent and selective inhibitor of Chk1 that targets a potential Achilles' heel of cancer cell proliferation and survival."

PNT737 was discovered and initially developed by scientists in the Cancer Research UK Cancer Therapeutics Unit at The Institute of Cancer Research (ICR) in collaboration with Sareum Holdings plc (LSE AIM: SAR), with funding provided by Cancer Research UK, the ICR and Sareum. The program was licensed in September 2013 to the CRT Pioneer Fund, a specialist cancer investment fund established by Sixth Element Capital LLP (6EC), Cancer Research Technology (CRT) and the European Investment Fund (EIF) and managed by 6EC.

"This is another significant milestone on the development path for this promising Chk1 inhibitor. We recently initiated a Phase 1 single agent monotherapy study and a Phase 1 study of PNT737 in combination with DNA-targeting chemotherapies. ProNAi has a world-class oncology development team and is well-capitalized, and we believe these studies and the ongoing development strategy for this drug are in excellent hands," added Robert James, Managing Partner of 6EC.

Dr. Udai Banerji, Cancer Research UK Reader in Molecular Cancer Pharmacology at the ICR and Consultant at The Royal Marsden, stated: "This is an exciting opportunity to investigate a novel anticancer agent targeting the aberrant tumor DDR pathway. Two PNT737 clinical trials are now underway and, as Principal Investigator of these studies, I look forward to working closely with ProNAi to optimize the development path for this promising drug candidate."

Professor Paul Workman, Chief Executive and President of The Institute of Cancer Research, London, said: "I'm very pleased that ProNAi has secured the licence to take forward development of PNT737. This drug – which was discovered here at the ICR – represents an exciting new approach to targeting Chk1 and one that holds significant potential for treating several tumor types. I anticipate this agreement will help accelerate development of PNT737 and lead to an expanded program of clinical trials, to maximize the chances of patient benefit as quickly as possible."

Clinical development is currently taking place in facilities funded by Cancer Research UK, the National Institute for Health Research (NIHR) Biomedical Research Centre (BRC) at The Royal Marsden and ICR, and the Experimental Cancer Medicine Centre Network. ProNAi anticipates expanding on the current clinical program underway for PNT737, including into the United States, with the expectation of filing an Investigational New Drug application in the second half of 2017. To support broader studies, ProNAi plans to conduct research designed to explore markers of sensitivity to PNT737 that may facilitate patient selection and to identify additional therapeutic combination strategies.

"The ICR and The Royal Marsden are world renowned for their work together in cancer research and this is a great opportunity for our team to collaborate on the early clinical development of a promising anti-cancer agent, where we can potentially employ innovative development strategies and leverage emerging science," said Dr. Barbara Klencke, Chief Development Officer of ProNAi. "A possible development path for PNT737 is the treatment of tumors carrying mutations in genes known to contribute to DNA damage and genomic instability – a key hallmark of cancer. The significant and persistent DNA damage caused by these mutations, coupled with Chk1 inhibition, may result in death of the cancer cells, a synergistic effect referred to as 'synthetic lethality'. Similarly, excessive DNA damage can be induced with certain chemotherapies or radiation, highlighting the potential for synergies between these modalities and Chk1 inhibition."

"ProNAi is also advancing PNT141, a Cdc7 inhibitor that regulates DNA replication and the DDR network in a different, potentially complementary way to PNT737. Inhibiting both Chk1 and Cdc7 simultaneously may be advantageous and presents the potential for novel combination strategies for PNT737 and PNT141," added Dr. Christian Hassig, Senior Vice President, Research at ProNAi.

About PNT737 and Chk1

PNT737 is a highly selective, orally available, small molecule inhibitor of Checkpoint kinase 1 (Chk1).

DNA is continuously subject to damage through a variety of endogenous and exogenous mechanisms and, in turn, cells have developed complex processes to resolve this DNA damage. Chk1 is a central regulator in the DDR network of cellular pathways that detect and repair DNA damage. Chk1 impacts multiple cell cycle checkpoints, temporarily inhibiting the progression of cell replication and division in order for DNA repair processes to be undertaken.

Malignant cells tolerate substantially greater levels of DNA damage than would be acceptable in healthy cells. Cancer cells survive and replicate, despite accumulating DNA damage due to replicative stress, via an over-reliance on select components of the DDR network, including Chk1. As such, inhibition of Chk1 by PNT737 may be synthetically lethal to cancer cells and of potential benefit in the treatment of certain cancers.

Certain standard chemotherapeutic agents and radiotherapy also induce DNA damage in order to kill cancer cells. There exists potential for synergy between these standard therapies and Chk1 inhibitors such as PNT737.

About ProNAi Therapeutics

ProNAi Therapeutics is a clinical-stage drug development company advancing targeted therapeutics for the treatment of patients with cancer. Its lead product candidate is PNT737, targeting Chk1. ProNAi is also advancing PNT141, a potent, selective and orally bioavailable small molecule inhibitor of the Cdc7 kinase undergoing preclinical development. Cdc7 is a key regulator of both DNA replication and the DDR network, making it a compelling emerging target for the potential treatment of a broad range of tumor types. For more information, please visit www.pronai.com.

About The CRT Pioneer Fund

PNT737 is the lead asset in the CRT Pioneer Fund, a specialist oncology investment fund established in 2012 by Sixth Element Capital LLP (6EC), CRT, BACIT and the European Investment Fund and managed by 6EC. The CRT Pioneer Fund is dedicated to investment in oncology development programs in Europe. The focus for investment is pre-lead optimization through to early clinical trials in man. The Fund is dedicated to asset financing projects emanating from Europe and expects to commit two-thirds of its investment to projects derived from Cancer Research UK's oncology drug discovery portfolio with the remainder being invested in projects from outside Cancer Research UK.

About Sixth Element Capital LLP

Sixth Element Capital LLP (6EC) is a UK based fund manager, established initially to manage the CRT Pioneer Fund. 6EC's experienced partners focus on creative and collaborative novel financing solutions designed to fund and manage innovative science in order to bring new therapeutic products and technologies to market, creating long term value and benefit to stakeholders. The fund was established to bridge the investment gap between cancer drug discovery and early development. It takes potential cancer drugs, primarily discovered by Cancer Research UK, from discovery through to entry to Phase 2 clinical trials before partnering with pharmaceutical and biotechnology companies. To date the Fund has made eight oncology drug investments. For more information, please see <http://www.sixthelementcapital.com>.

About The Royal Marsden NHS Foundation Trust

The Royal Marsden opened in 1851 as the world's first hospital dedicated to cancer diagnosis, treatment, research and education. Today, together with its academic partner, ICR, it is the largest and most comprehensive cancer center in Europe treating over 50,000 patients every year. It is a center of excellence with an international reputation for groundbreaking research and pioneering cancer treatments and technologies.

About The Institute of Cancer Research, London

The ICR, London, is one of the world's most influential cancer research organizations. Scientists and clinicians at ICR are working every day to make a real impact on cancer patients' lives. Through its unique partnership with The Royal Marsden NHS Foundation Trust and 'bench-to-

bedside' approach, the ICR is able to create and deliver results in a way that other institutions cannot. Together the two organizations are rated in the top four centers for cancer research and treatment globally. The ICR's mission is to make the discoveries that defeat cancer. For more information, visit <http://www.icr.ac.uk>.

The National Institute for Health Research (NIHR) Biomedical Research Centre (BRC) for cancer is a partnership between The Royal Marsden NHS Foundation Trust and The Institute of Cancer Research (ICR).

About Cancer Research Technology (CRT)

Cancer Research Technology is a specialist commercialization and development company, which aims to develop new discoveries in cancer research for the benefit of cancer patients. CRT works closely with leading international cancer scientists and their institutes to protect intellectual property arising from their research and to establish links with commercial partners. CRT facilitates the discovery, development and marketing of new cancer therapeutics, vaccines, diagnostics and enabling technologies. CRT is a wholly owned subsidiary of Cancer Research UK, the world's leading cancer charity dedicated to saving lives through research. Further information about CRT can be found at www.cancertechnology.com and about Cancer Research UK at www.cancerresearchuk.org.

About Cancer Research UK's Centre for Drug Development

Cancer Research UK has a record of developing novel treatments for cancer. It currently has a portfolio of around 30 new anti-cancer agents in preclinical development, Phase 1 or early Phase 2 clinical trials. Since 1982, the Cancer Research UK Centre for Drug Development, formerly the Drug Development Office, has taken over 120 potential new anti-cancer agents into clinical trials in patients, five of which have made it to market and many others are still in development. These include temozolomide, a drug discovered by Cancer Research UK scientists, which is an effective treatment for brain cancer and abiraterone, which is used to treat prostate cancer.

About Cancer Research UK

- Cancer Research UK is the world's leading cancer charity dedicated to saving lives through research.
- Cancer Research UK's pioneering work into the prevention, diagnosis and treatment of cancer has helped save millions of lives.
- Cancer Research UK receives no government funding for its life-saving research. Every step it makes towards beating cancer relies on every pound donated.
- Cancer Research UK has been at the heart of the progress that has already seen survival in the UK double in the last forty years.
- Today, 2 in 4 people survive their cancer for at least 10 years. Cancer Research UK's ambition is to accelerate progress so that by 2034, 3 in 4 people will survive their cancer for at least 10 years.
- Cancer Research UK supports research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses.
- Together with its partners and supporters, Cancer Research UK's vision is to bring forward the day when all cancers are cured.

For further information about Cancer Research UK's work, visit www.cancerresearchuk.org.