Neutron Therapeutics Installs Europe’s First Accelerator-Based Boron Neutron Capture Therapy (BNCT) Platform – On Track for First Cancer Patient Treatment in 2019

*Neutron Therapeutics, Inc (NTI) has installed its compact accelerator-based neutron source for Boron Neutron Capture Therapy (BNCT) at Helsinki University Hospital (HUH). The system is currently operational and generating neutron intensity at the level recommended by the IAEA for BNCT. The HUH installation is the first accelerator-based BNCT system in Europe and the first of its kind in the world. NTI is commissioning the neutron source for clinical use by the end of 2019.*

HELSINKI and DANVERS, Mass. (PRWEB) April 18, 2019 -- BNCT is a powerful alternative to traditional radiotherapy and proton therapy, with the ability to deliver targeted radiation to cancer cells while sparing surrounding healthy tissue. NTI’s unique and patented neutron source replaces the nuclear reactor in traditional BNCT research platforms. Engineered from the ground up for high reliability and ease of maintenance, NTI’s platform can enable the widespread adoption of BNCT.

In BNCT treatment, a boron carrier compound injected into the blood stream is selectively absorbed by tumor cells. The tumor is irradiated with a therapeutic neutron beam. The neutron beam reacts with the boron, while safely passing through surrounding tissue. The boron reaction produces highly excited alpha particles of very short path lengths (5–9 µm) that destroy tumor cells from the inside with minimal effect on immediately surrounding tissue. BNCT has successfully been used to treat cancer patients in cases where other treatment options have been exhausted. Typical BNCT therapies utilize two patient treatments vs. dozens for traditional radiotherapy, reducing stress on patients while enhancing treatment center efficiency and patient throughput.

The adoption of BNCT has been limited by the lack of neutron sources suitable for hospital environments. NTI's system is the first accelerator-based neutron source of its kind in operation. NTI’s patented electrostatic accelerator design and proprietary rotating solid lithium target technology deliver excellent performance and reliability.

Helsinki University Hospital is a pioneer in the clinical use of BNCT. Using a research nuclear reactor as the neutron source, HUH has applied BNCT to over 200 cancer patients. Using NTI’s BNCT platform, HUH will continue its leadership in the development of clinical applications for a number of cancer indications. The establishment of the first in-hospital system in Europe at HUH is anticipated to accelerate the pace of clinical studies and drug development for BNCT.

Dr. Johanna Mattson, Director of HUH Cancer Center: “Our past research in BNCT has demonstrated great potential for some of the most difficult and otherwise untreatable cancers. We are eager to continue our work in BNCT with Neutron Therapeutics, and develop more clinical protocols.”

Ted Smick, CEO of NTI: “Our partnership with HUH allows us to learn from some of the most experienced BNCT physicians in the world. We owe the success of our BNCT treatment suite in large part to their deep knowledge and ongoing support.”

During tests conducted in March, HUH and NTI measured epithelial neutron flux from the system’s treatment
aperture of $1.34 \times 10^9$ neutrons/cm$^2$/s. This value exceeds $1.0 \times 10^9$ neutrons/cm$^2$/s, the minimum epithermal neutron flux recommended by the International Atomic Energy Agency for BNCT. This successful demonstration of the required neutron flux is considered a major milestone on the path to clinical use of the neutron source.

Bill Buckley, Chairman of NTI: “We are excited about reaching this milestone at such an early stage of the commissioning process. It is a testament to the high-quality design that the NTI team has created. This puts us well on our way to making BNCT widely available to cancer sufferers throughout the world.”

Helsinki University Hospital is responsible for providing treatment for rare and severe diseases to patients from all over Finland. HUH is an OECI-designated comprehensive cancer center, underscoring their internationally recognized leadership in cancer treatment. As a university hospital, HUH is committed to the continued advancement and improvement of patient care.

Neutron Therapeutics is a Boston-area medical equipment company founded in 2015 by New Zealander, Bill Buckley. The mission of NTI is to provide innovative technology solutions that will enable BNCT to realize its maximum potential in the treatment of difficult cancers.

The Neutron Therapeutics neutron source is not approved for commercial or clinical use by the FDA or EMA or other regulatory body.

For More Information, please contact inquiries(at)nt-bnct.com, or visit us online at:
Neutron Therapeutics - http://www.neutrontherapeutics.com
Helsinki University Hospital - http://www.hus.fi
Contact Information
Noah Smick
Neutron Therapeutics, Inc
http://www.neutrontherapeutics.com
+1 978-777-0846

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