

Theralase Files US Patent Application for Increased Targeting of Photo Dynamic Therapy

Toronto, Ontario – January 20, 2015, Theralase Technologies Inc. (“Theralase”) (TLT:TSXV) (TLTFF: OTC Pink®) announced today that it has filed a provisional US patent application for “Transferrin Enhanced Photo Dynamic Therapy (“PDT”) Cancer Destruction” significantly increasing the targeting of its PDT technology; hence, also the efficacy and safety of the treatment.”

Transferrin is a substance that naturally occurs in the body (iron-binding blood plasma glycoprotein) that controls the level of free iron in our biological fluids. When transferrin encounters a transferrin receptor (“TfR”) on the surface of a cell, it is able to more effectively bind to that specific cell and delivery its payload, in this case Theralase’s lead Photo Dynamic Compound (“PDC”), TLD-1433.

Overexpression of transferrin receptors for a variety of cancers has been scientifically documented and is attributed to the malignant transformation of normal cells into cancer cells.

Theralase’s recent scientific research, which is the subject of this particular patent application, have demonstrated that Theralase’s lead PDC, TLD-1433, when combined with human transferrin, dramatically increases the targeting mechanism of TLD-1433 towards cells overexpressing TfR, primarily cancer cells; hence, further increasing the efficacy and safety of TLD-1433 in destroying these cancer cells.

Theralase’s research in PDT, the combination of a PDC and the laser light used to activate it, to produce cytotoxic (cell killing) oxygen species, has been previously demonstrated to be a promising avenue for minimally invasive localized cancer treatment.

Theralase’s lead PDC, TLD-1433, has demonstrated high efficacy and safety in cancer and bacteria destruction during preclinical in-vivo animal studies and due to this latest transferrin discovery may be further enhanced through specific binding and targeting of cancer cells.

Theralase’s latest scientific research has shown that TLD-1433 directly bound to transferrin results in significant enhancements of TLD1433’s biomedical properties and its efficacy in the destruction of cancer cells.

TLD1433 bound to transferrin results in the following ground breaking improvements:

- More than doubles the maximum tolerated dose of TLD-1433, resulting in greater payloads of TLD-1433 to cancer cells and thus higher efficacy
- Photobleaching (loss of efficacy) resistance and reactive oxygen species (PDC potency) production are both increased resulting in longer photoactivation of the PDC and higher efficacy due to an improved therapeutic ratio, resulting in increased cancer cell kill
- Increased absorption in green light resulting in higher efficacy and new absorption in the red and Near Infra Red (“NIR”) wavelengths resulting in greater efficacy at increasing tissue depths (ability to destroy deeper tumours)
- Reduced dark toxicity (cell kill in the absence of light activation) resulting in higher margins of safety for healthy tissues (higher therapeutic ratio)

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Testing of TLD-1433 PDT efficacy in an *in-vivo* mouse model found that TLD-1433 bound to transferrin was able to increase the tumour free survival time of mice compared to TLD-1433 alone, at identical laser light exposures.

Dr. Arkady Mandel, Chief Scientific Officer of Theralase stated that, “Our scientific research team was thrilled when they discovered that transferrin directly binds to TLD-1433 significantly improving targeting, efficacy and therapeutic outcomes in the destruction of cancer cells. We are excited to announce a major scientific discovery that leads to a marked improvement in the already high efficacy of our lead PDC, TLD-1433. TLD-1433 has recently been selected as the lead drug for a Health Canada Clinical Trial Application (“**CTA**”) / Food and Drug Administration (“**FDA**”) Investigational New Drug (“**IND**”) application for Phase I / II a evaluation in a human clinical trial for Non Muscle Invasive Bladder Cancer (“**NMIBC**”).”

Dr. Lothar Lilge, Professor in the Department of Medical Biophysics, University of Toronto and Senior Scientist at the Ontario Cancer Institute, Princess Margaret Cancer Centre, University Health Network (“**UHN**”) stated that, “PDT of human cancer has traditionally been limited by the pharmacokinetics (path of a drug from the moment that it is administered up to the point at which it is completely eliminated from the body) of the PDC. The vast majority of Ruthenium based PDCs absorb in the blue-green light range, limiting their PDT effect to superficial cancers. Theralase has discovered that by pre-incubating their lead PDC, TLD-1433, with the human glycoprotein, transferrin, TLD-1433 mediated PDT efficacy is no longer limited by the PDC’s pharmacokinetics, as TLD-1433 directly binds to transferrin and thus greatly reduces the photo-bleaching of TLD-1433 when exposed to green light. Surprisingly TLD-1433 bound to transferrin strongly reduces the already low toxicity of TLD-1433 *in-vivo* enabling an increased safety for PDC mediated PDT. This decrease in toxicity in combination with lower photo-bleaching, results in higher TLD-1433 efficacy. We had already established TLD-1433 as a potent PDC for green light activated PDT; however, when bound to transferrin, TLD-1433 now has absorption in the red and Near Infra Red (“**NIR**”) light spectrums, opening up numerous new possibilities towards the destruction of cancers at larger distances from the light source.”

Dr. Lilge went on to say that, “These results place transferrin pre-incubation with TLD-1433 as a simple, novel, and potent way to improve selectivity towards a range of cancers, allowing them to accumulate a higher payload of TLD-1433 than previously achievable. This significantly increases the PDT specificity and destruction of cancer cells and at the same time the safety profile to healthy tissue, resulting in more effective cancer kill with virtually no impact to healthy tissue. The typically long lag times between laboratory discoveries and commercialization has been potentially shortened, as synthetic human transferrin is already in clinical trials. Its use here will assist in the further understanding of the discovery, as there may be more benefits other than improvements in the drug’s safety and efficacy profile. We are very encouraged by the success we have had with this very significant scientific discovery and plan to present the data at international scientific meetings this year.”

Roger Dumoulin-White, President and CEO of Theralase stated that, “This ground breaking discovery of combining naturally occurring transferrin with our PDCs will significantly increase the targeting of Theralase PDCs; hence a significant increase in efficacy and safety in the destruction of cancer. This will greatly increase our chances of success in the 2015 bladder cancer clinical studies slated for mid 2015; however, its utility does not stop here as it can also be applied to other non-Theralase metal based PDCs. This may open up additional opportunities pertaining to out-licensing the technology to large

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pharmaceutical companies that are currently manufacturing metal-based antibiotics and anti-cancer drugs.”

About Theralase Technologies Inc.

Founded in 1994, Theralase Technologies Inc. (“Theralase®”) (TSXV: TLT) (TLTFF: OTC Pink®) designs, manufactures and markets patented super-pulsed laser technology used for the elimination of pain, reduction of inflammation and dramatic acceleration of tissue healing. Theralase has sold over 1,200 systems to licensed healthcare practitioners, including: medical doctors, chiropractors, physical therapists and athletic therapists. Theralase has been so successful in healing nerve, muscle and joint conditions in clinical practice that Theralase’s scientists and clinicians have now turned their attention to investigating the application of its lasers in the destruction of cancer, using specially designed molecules called Photo Dynamic Compounds (“PDCs”), which are able to localize to the cancer cells and when light activated, destroy them.

Additional information is available at www.theralase.com and www.sedar.com .

This press release contains forward-looking statements, which reflect the Company's current expectations regarding future events. The forward-looking statements involve risks and uncertainties. Actual results could differ materially from those projected herein. The Company disclaims any obligation to update these forward-looking statements.

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