theraLASE®
Destroying Cancer at the Speed of Light™

# Clinical Stage Pharmaceutical Company

Focused on the commercialization of light activated Photo Dynamic Compounds ("**PDCs**") for bladder cancer

June 28, 2022

TSXV:TLT / OTCQB:TLTFF

# Forward Looking Statements

Forward Looking Statements ("**FLS**") contained in this presentation deal with the future revenue potential, business opportunities and/or strategic initiatives of Theralase® Technologies Inc. ("**Theralase®**" or the "**Company**"); including: information, analyses and/or projections as to future corporate developments reflect the current expectations of Company's management.

Such FLS, refer to the Company's ongoing technologically complex preclinical, clinical and/or medical device research and development efforts; including, but not limited to assumptions about Theralase®'s: business operations, continued performance on a basis consistent with prior years; ability to access financing from time to time on favourable terms or at all; ability to retain executive management, senior management, key personnel and/or key consultants or the non-disruptive replacement of them on reasonable terms; reasonably stable operating and/or general administrative expenses; future success of current research and development initiatives, achievement of commercialization activities and/or milestones; market success of its products over its competition; successful and timely achievement of regulatory and/or certification approvals; uncontested protection over its intellectual property in the markets in which it does business; market acceptance and/or revenue generation of it's products; operation in stable economic environments (Canada, the United States and elsewhere); ability to access currency, exchange rates, interest rates and/or commodity prices at reasonable rates.

No conclusions as to the successful outcome of the ongoing and planned research and development initiatives in which the Company is involved are intended or implied; nor can they be foreseen or predicted prior to definitive corporate announcements as to their outcome. Any statements that refer to expectations, projections, future events or achievement of strategic initiatives are FLS. Although Theralase®'s management believes that the expectations reflected in any FLS made in this presentation are reasonable, such statements are based on a number of assumptions, which may prove to be incorrect; including, but not limited to assumptions related to the risks and factors set out in the Company's current Annual Information Form ("**AIF**") and documentation available on SEDAR under the Company's profile at www.sedar.com. Accordingly, no assurances can be given that any of the events or circumstances contemplated by such FLS will transpire or occur or, if any of them transpire or occur, what impact they will have on Theralase®'s results of operations or financial condition. Furthermore, the FLS contained in this presentation are made as of the date hereof for the purpose of providing, investors with information regarding the Company's future plans for its business and expected milestones. The Company does not undertake any obligation to update publicly or to revise any of the included FLS, whether as a result of new information, future events, or otherwise, unless required by applicable laws. The FLS contained in this presentation are expressly qualified by this cautionary statement.

The Company's financial disclosure includes non-International Financial Reporting Standards ("**IFRS**") financial measures as supplemental indicators of the Company's financial and operating performance. The Company believes these supplemental financial measures reflect the Company's on-going business in a manner that allows for meaningful period-to-period comparisons and analyses of trends in its business. Accordingly, the Company believes that such financial measures may also be useful to prospective investors in enhancing their understanding of the Company's operating or future performance. These non-IFRS measures are not recognized under IFRS and do not have standardized meanings prescribed by IFRS; therefore, it is unlikely that these measures will be comparable to similarly titled measures reported by other issuers. Non-IFRS financial measures should be considered in the context of the Company's IFRS results. The Company cautions readers to consider these non-IFRS financial measures, in addition to, and not as an alternative for, measures calculated in accordance with IFRS. The financial statements of the Company are prepared in accordance with IFRS and are reported in Canadian dollars. All currency amounts in this presentation and all references incorporated are expressed in Canadian dollars, unless otherwise indicated.

# Company

## Scientific Research

Patented light-activated Photo Dynamic Compounds ("**PDCs**") researched for 18+ years to optimize their ability to destroy cancer, bacteria and viruses [1]

## Clinical Proof

Phase Ib Non-Muscle Invasive Bladder Cancer ("**NMIBC**") clinical study successfully completed demonstrating strong safety and a 67% Complete Response ("**CR**") rate for patients treated at the therapeutic dose [2]

In-progress pivotal Phase II NMIBC clinical study [3] under FDA Fast Track Designation since November 2020 [7]

## Pipeline

**Primary**
NMIBC [3]

**Secondary**
Non-Small Cell Lung Cancer ("**NSCLC**") [4]
GlioBlastoma Multiforme ("**GBM**") [5]
Vaccine for various enveloped viruses [6]

## Experience

Extensive pharmaceutical research, drug development, manufacturing, commercialization, preclinical and clinical research experience Slide 15

Partnered with leading scientific and clinical researchers from renowned research hospitals [8]

## Intellectual Property

42 issued patents for its PDC technology in the United States, Canada and internationally [9]

23 patents pending [9]

[1] Annual Information Form – June 3, 2021
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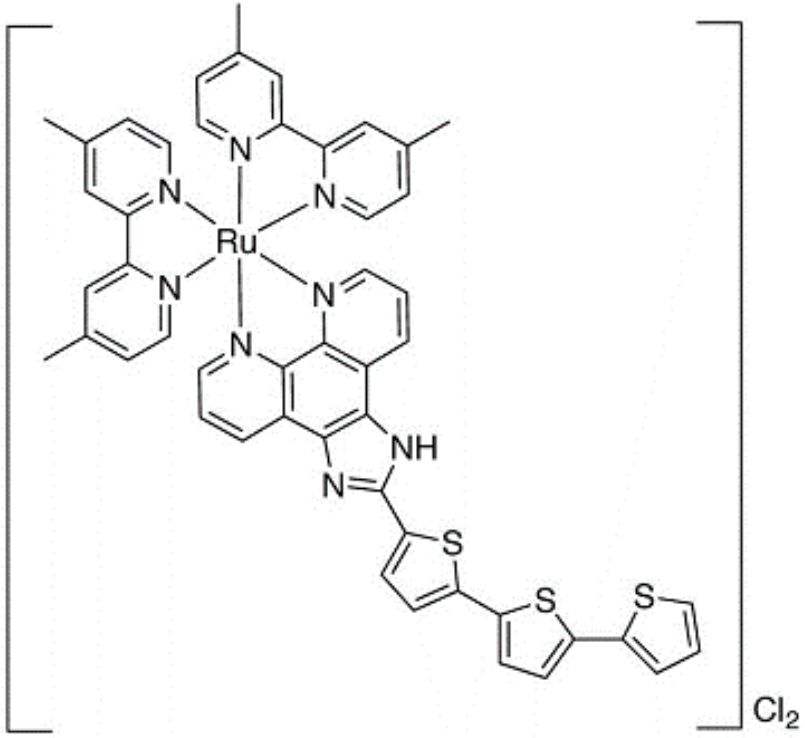
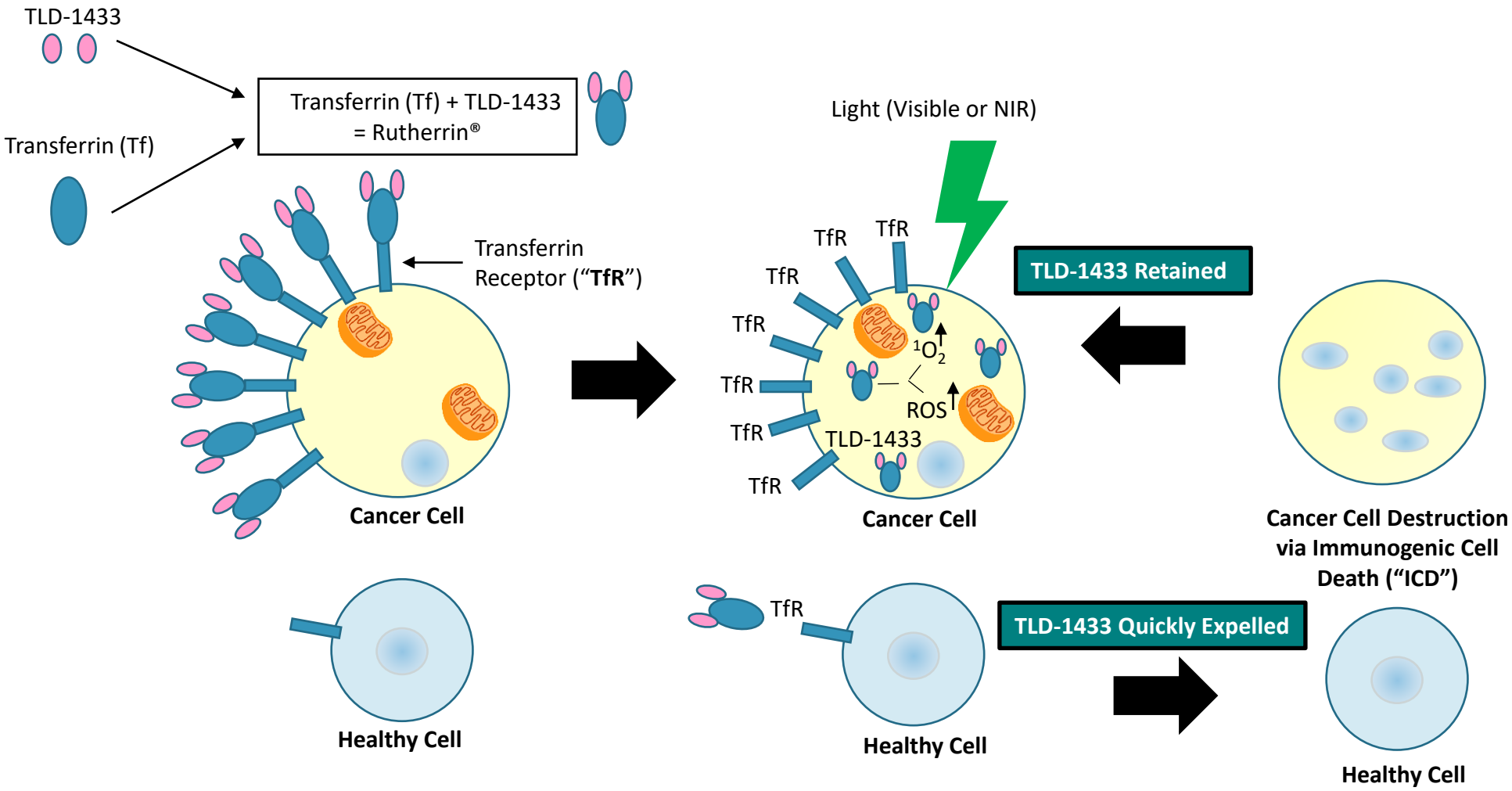
# TLD-1433




- Ruthenium based PDC
- Potential to destroy solid core tumours, such as bladder, brain, lung and breast [9]
- Preferentially absorbed into bladder cancer cells, leaving healthy urothelial cells intact [10]
- Pivotal Phase II NMIBC clinical study for patients with BCG-Unresponsive Carcinoma In-Situ ("**CIS**") in Canada and the United States (1/3 patients enrolled and provided primary study treatment) [3]
- Injectable form of TLD-1433 (**TLD-1433 + Transferrin = Rutherrin®**) in development for additional cancer indications; specifically, Non-Small Cell Lung Cancer ("**NSCLC**") and GlioBlastoma Multiforme ("**GBM**") [4]
- TLD-1433 manufactured according to Good Manufacturing Practices ("**GMP**") standards in preparation for commercialization [11]

[9] Annual Information Form – June 3, 2021
[10] Press Release - Patient Six Cancer-Free Twelve Months After Single Anti-Cancer Treatment, Results of Phase Ib Non-Muscle Invasive Bladder Cancer ("**NMIBC**") Clinical Study Demonstrate a 66% Complete Response ("**CR**") - April 2, 2019
[11] Press Release -Theralase Completes GMP Manufacture of Second Batch of Lead Drug – October 1, 2015

# Mechanism of Action [14]




[12] Kaspler P, Lazic S, Forward S, Arenas Y, Mandel A, Lilge L. A ruthenium(ii)based photosensitizer and transferrin complexes enhance photo-physical properties, cell uptake, and photodynamic therapy safety and efficacy. Photochem Photobiol Sci. 2016 Apr;15(4):481-95. doi: 10.1039/c5pp00450k. Epub 2016 Mar 7. PubMed PMID: 26947517.

[13] Transferrin receptor regulates pancreatic cancer growth by modulating mitochondrial respiration and ROS generation. Jeong SM, Hwang S, Seong RH

[14] A novel transferrin receptor-targeted hybrid peptide disintegrates cancer cell membrane to induce rapid killing of cancer cells. Megumi Kawamoto, Tomohisa Horibe, Masayuki Kohno, Koji Kawakami

# NMIBC

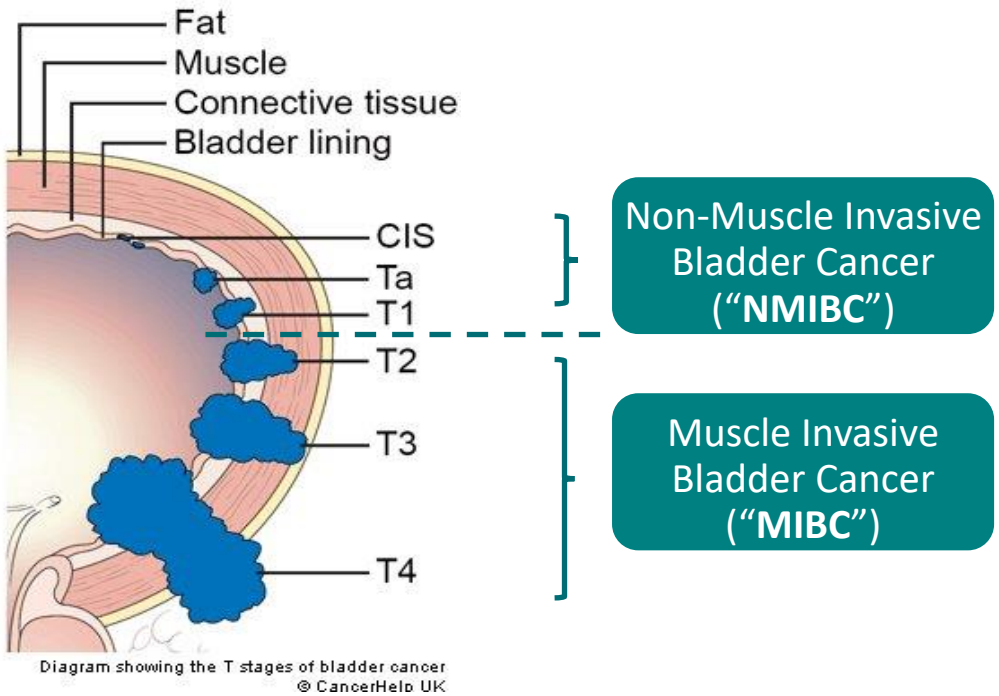
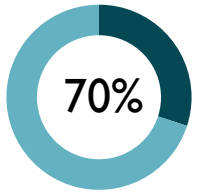


Diagram showing the T stages of bladder cancer
© CancerHelp UK

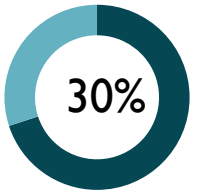
**243,000**

New patients diagnosed with bladder cancer each year (United States, Canada and Europe) [15]




**170,000**

Patients treated with intravesical Bacillus Calmette-Guérin ("**BCG**") standard of care treatment [16]




**51,000**

Patients recur within 1 year of BCG therapy and become BCG-Unresponsive [17]

Patients that fail BCG therapy are scheduled to have their bladder and associated tissue removed via a radical cystectomy to prevent recurrence and/or progression [19]

[15] Key Statistics for Bladder Cancer – American Cancer Society (2018); Canadian Cancer Society (2019) and Bladder Cancer – European Cancer Patient Coalition
[16] https://www.uptodate.com/contents/bladder-cancer-treatment-non-muscle-invasive-superficial-cancer-beyond-the-basics#!
[17] The management of BCG failure in non-muscle-invasive bladder cancer: an update (2009)
[18] European Organization for Research and Treatment of Cancer (EORTC) - (Veeratterapillay R, Heer R, Johnson MI, Persad R, Bach C. High-risk non-muscle-invasive bladder cancer-therapy options during intravesical BCG Shortage. Curr Urol Rep. 2016;17:68) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5769243/
[19] NCCN Guidelines Insights: Bladder Cancer, Version 5.2018, J Natl Compr Canc Netw 2018;16(9):1041–1053

# NMIBC Market Opportunity

**Social Demand** → Patients willing to pay between $USD 50,000 to $USD 150,000 per Quality Adjusted Life Year ("**QALY**") for treatment (Average = $USD 100,000) [20]

**Innovation Demand** → Bladder cancer patients face low Quality Of Life ("**QOL**") after radical cystectomy [21]

**Market Opportunity** →
- From diagnosis to death, it costs between $USD 89,000 to $200,000 to treat a bladder cancer patient [22]
- Bladder cancer has the highest lifetime treatment costs per patient of all cancers [22]

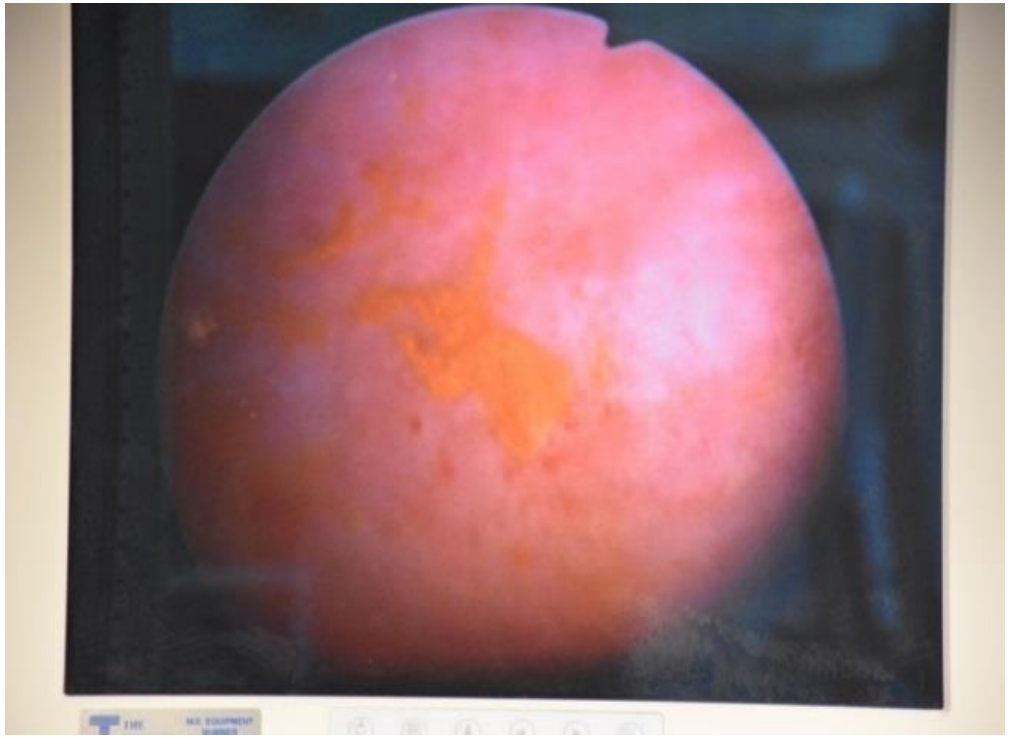
**$1.1 [23] to 1.7 [15, 16, 17, 20, 24] Billion Annually**

**243,000 [15] x 70% [16] x 30% [17] x $100,000 [20] = $5 Billion Annually**

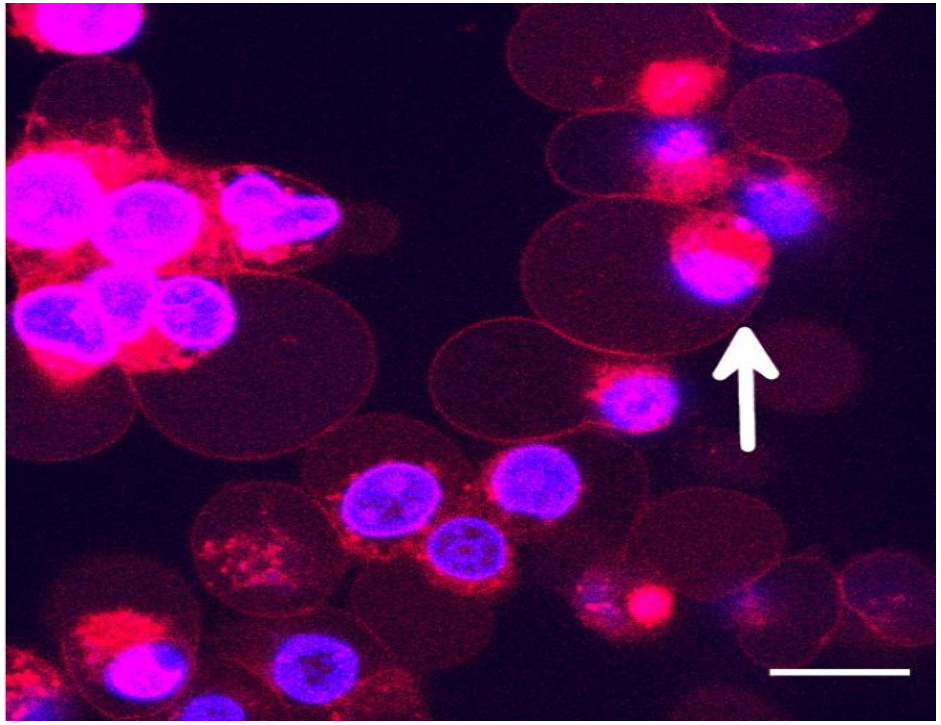
Market Opportunity Estimated Between $1.1 to $5 Billion Annually

[20] Willingness to pay per Quality Adjusted Life Year ("**QALY**") for competitor drug, Pembrolizumab. Source: Cost-effectiveness of Pembrolizumab in Second-line Advanced Bladder Cancer, July 2018
[21] Tyson MD 2nd, Barocas DA. Quality of Life After Radical Cystectomy. Urol Clin North Am. 2018 May;45(2):249-256. doi: 10.1016/j.ucl.2017.12.008. Epub 2018 Feb 21. PMID: 29650140.
[22] Sievert KD, Amend B, Nagele U, et al. Economic aspects of bladder cancer: what are the benefits and costs?. World J Urol. 2009;27(3):295–300. doi:10.1007/s00345-009-0395-z
[23] 2025 estimated bladder cancer market (US, France, Germany, Italy, Spain, UK & Japan). Source: Global Data: Bladder cancer market size to more than triple to over $1.1 billion by 2025, April 2017
[24] Ida K, Miyake M, Murakami K et al. Bacillus Calmette-Guérin-unresponsive non-muscle invasive bladder cancer outcomes in patients without radical cystectomy. Int J Clin Oncol. 2021 Nov;26(11):2104-2112. doi: 10.1007/s10147-021-01988-8. Epub 2021 Jul 27. PMID: 34313904.

# Study Treatment



TLD-1433 instilled in bladder via catheter [25]



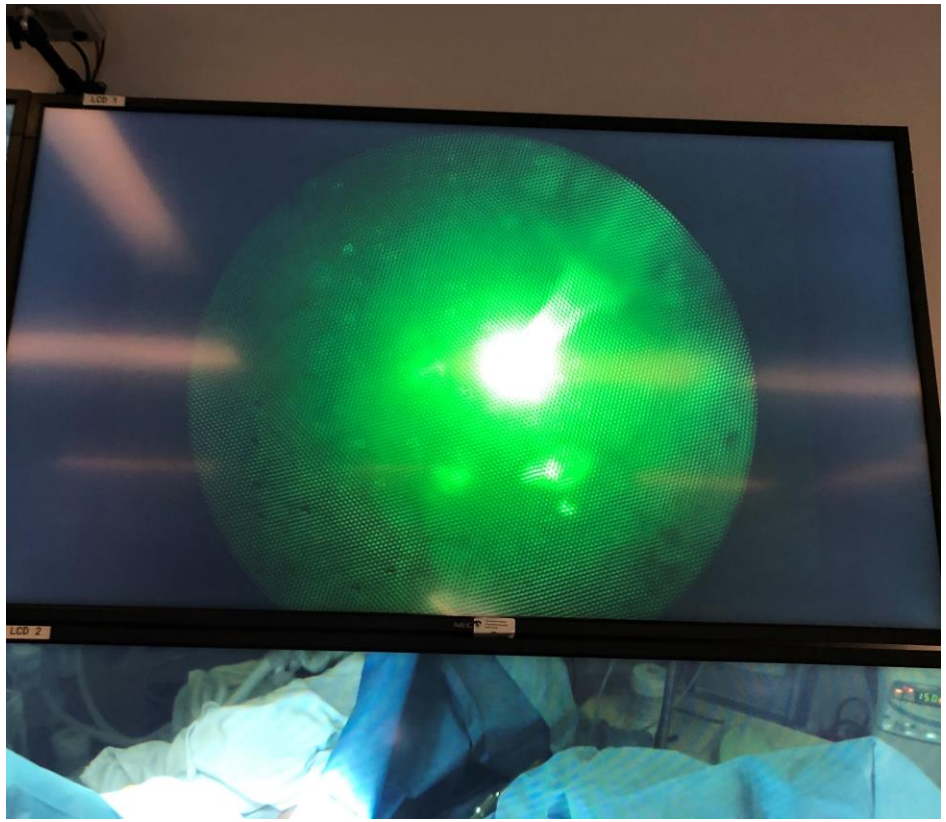
TLD-1433 localizes preferentially inside bladder cancer cells [26, 27]

[25] Phase Ib NMIBC clinical study patient cystoscopy photograph, after instillation of Study Drug, prior to TLC-3200 Light Activation, showing TLD-1433 localization to bladder cancer tumours

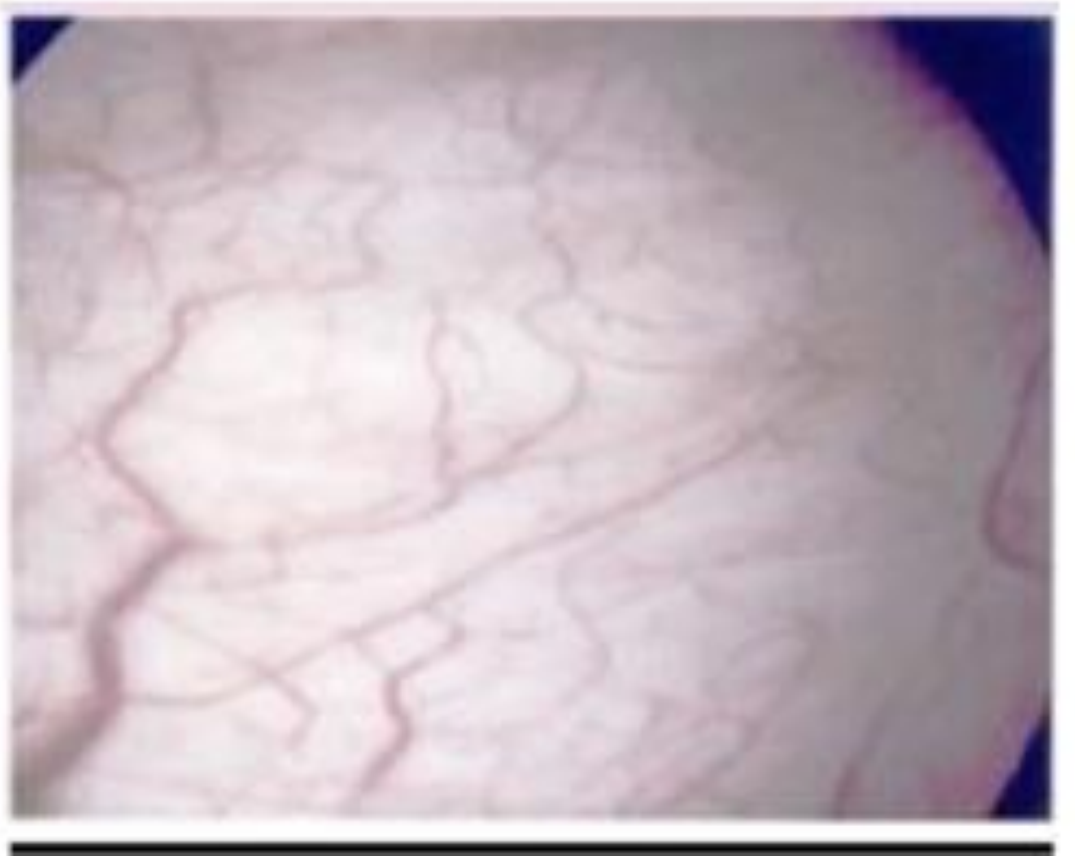
[26] Kalinina S, Breymayer J, Reeß K, Lilge L, Mandel A, Rück A. Correlation of intracellular oxygen and cell metabolism by simultaneous PLIM of phosphorescent TLD1433 and FLIM of NAD(P)H. J Biophotonics. 2018 Oct;11(10):e201800085. doi:10.1002/jbio.201800085. Epub 2018 Jul 9. PubMed PMID: 29877627.

[27] Reference: Urol Res. 1987;15(6):341-4.Transferrin receptor expression by human bladder transitional cell carcinomas, Seymour GJ, Walsh MD, Lavin MF, Strutton G, Gardiner RA

# Study Treatment



Green laser light activates TLD-1433 through fiber optics



Bladder cancer cells destroyed by the production of singlet oxygen and / or Reactive Oxygen Species ("**ROS**") [26]

[25] Phase Ib NMIBC clinical study patient cystoscopy photograph, after instillation of Study Drug, prior to TLC-3200 Light Activation, showing TLD-1433 localization to bladder cancer tumours

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[27] Reference: Urol Res. 1987;15(6):341-4.Transferrin receptor expression by human bladder transitional cell carcinomas, Seymour GJ, Walsh MD, Lavin MF, Strutton G, Gardiner RA

# Phase II NMIBC Clinical Study Design [25]

FDA Guidelines state that *"In BCG-Unresponsive NMIBC, a single-arm clinical trial with Complete Response ("**CR**") rate and duration of response as the primary endpoint can provide primary evidence of effectiveness to support a marketing application"* [31]

## Primary Objective

### Initial Efficacy

CR achieved at any point in time

(Negative cystoscopy and negative cytology)

(Positive cystoscopy (low grade) and negative cytology)

(Negative cystoscopy and positive cytology if Upper Tract Urothelial Cell Carcinoma ("**UTUCC**") is confirmed)

## Secondary Objective

### Duration of Efficacy

12 months duration of CR after initial CR

## Tertiary Objective

### Safety

Incidence and severity of Adverse Events ("**AEs**") > Grade 3 that do not resolve within 450 days post primary study treatment

Grade 1 = Mild
Grade 2 = Moderate
Grade 3 = Severe
Grade 4 = Life-threatening
Grade 5 = Death

[30] Clinical Protocol TLD-1433-2 (Version 8.0) Dated: April 16, 2019
[31] "BCG-Unresponsive Nonmuscle Invasive Bladder Cancer: Developing Drugs and Biologics for Treatment – Guidance for Industry" Dated: February 2018

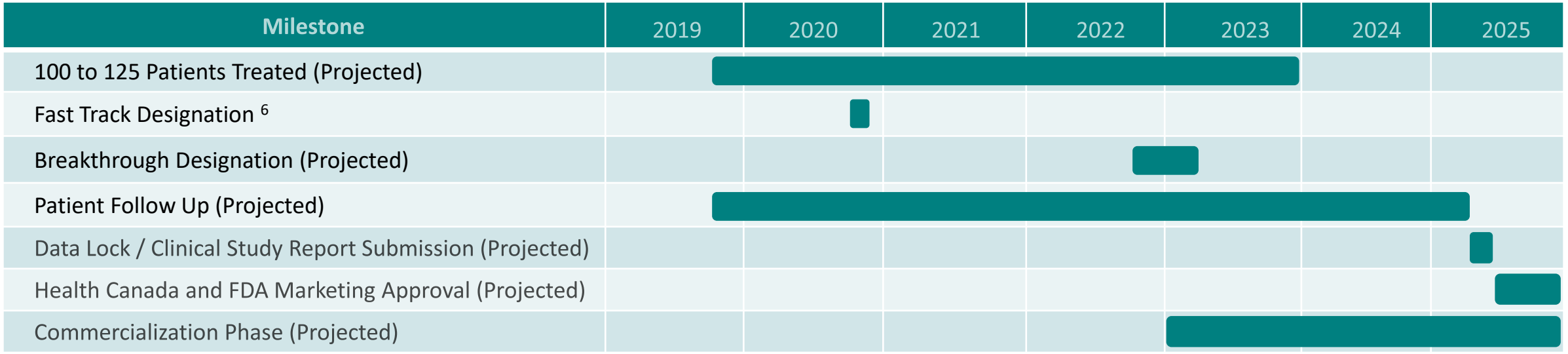
# Phase II NMIBC Preliminary Clinical Data

| Assessment | 90 Day | 180 Day | 270 Day | 360 Day | 450 Day |
|---|---|---|---|---|---|
| Complete Response (" **CR** ") | 46% | 50% | 39% | 22% | 23% |
| Partial Response (" **PR** ") | 22% | 22% | 8% | 17% | 9% |
| Total Response (" **CR + PR** ") | 68% | 72% | 46% | 39% | 32% |

**Note:** The data analysis is only a representation of the data accrued to date and does not intend to represent a tendency or portray any conclusion as to the effectiveness, duration or safety of the investigational treatment. This clinical data includes 3 patients treated in the Phase Ib clinical study.

[32] Theralase® Press Release - Theralase® Provides Update on Phase II Bladder Cancer Clinical Study – April 5, 2022
[33] Theralase® Press Release - Theralase® Provides Update on Phase II Bladder Cancer Clinical Study – April 5, 2022

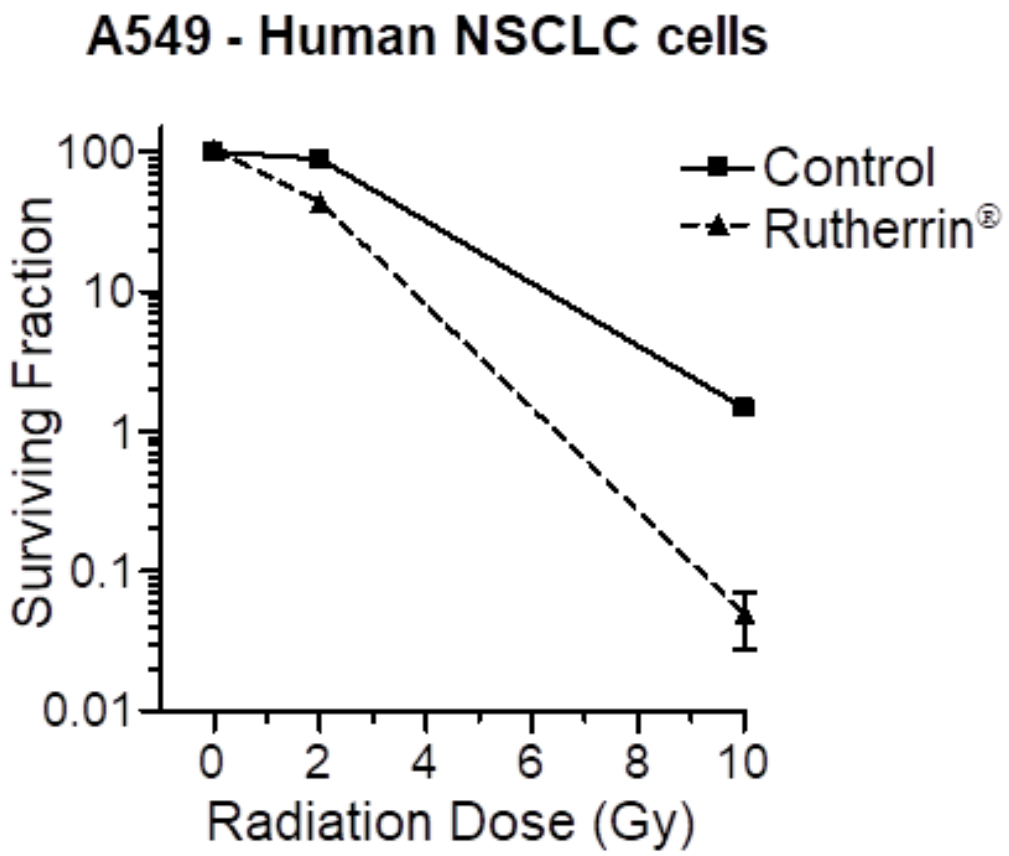
# Phase II NMIBC Clinical Study Timeline (Projected)




[34] Press Release - Theralase Announces First Patient Treated in Phase II Non-Muscle Invasive Bladder Cancer Clinical Study – September 4, 2019
[35] Theralase Launches Seventh US-Based Clinical Study Site and Treats First Patient in the US – June 11, 2021

# Non-Small Cell Lung Cancer ("**NSCLC**")

Non-Small Cell Lung Cancer - Rutherrin® + X-Ray Activation

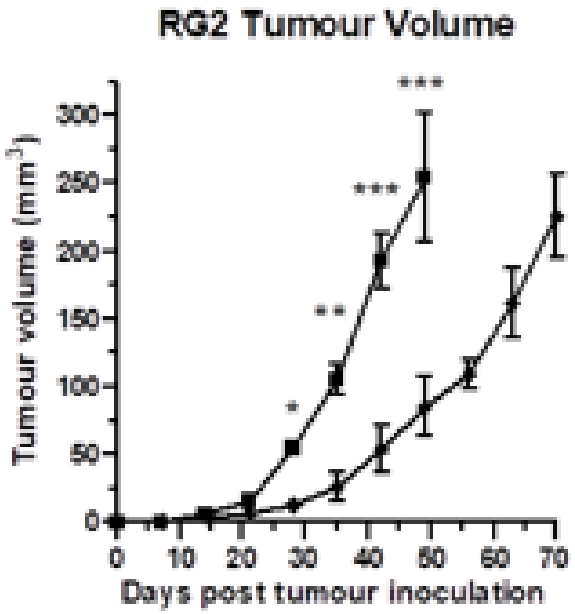


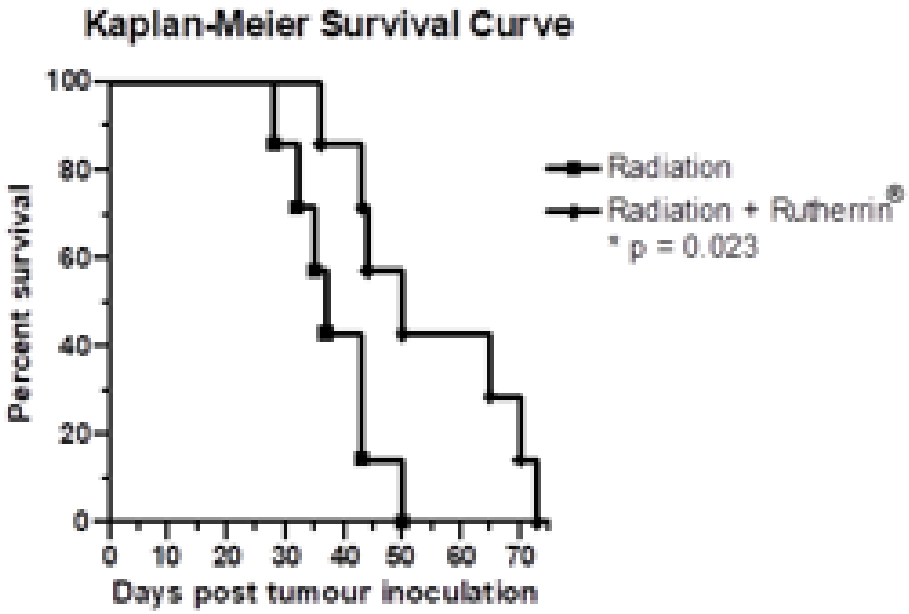

Rutherrin® + X-Ray Activation leads to a 3 log kill of human NSCLC cells in-vitro

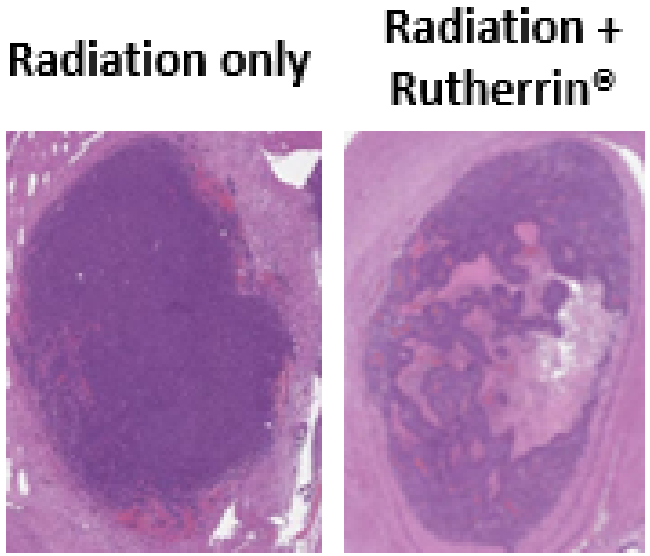
[36] Kaspler, P, Roufaiel, M, Mandel, A. Theralase Research Paper June 20, 2021

# GlioBlastoma Multiforme("**GBM**")

## Effect of Rutherrin® in glioblastoma (GBM) orthotopic rat model



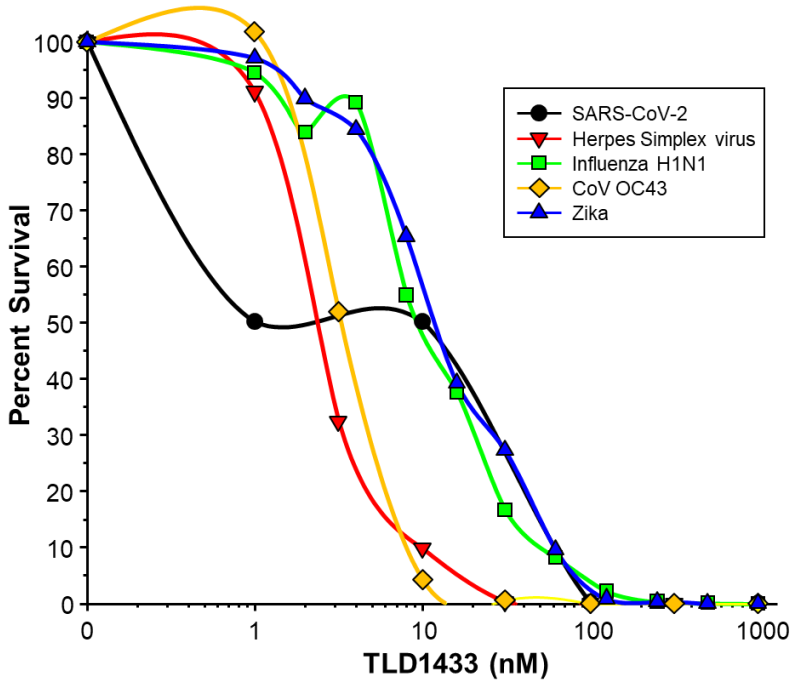
# Virus Vaccine Research and Development

**Primary:**

TLD-1433 has the ability to inactivate enveloped viruses by up to 6 log kill in-vitro an nanomolar concentrations, thus allowing the manufacture of a wholly-inactivated vaccine for H1N1 Influenza, Zika, Herpes Simplex and Corona viruses - Biological Safety Level ("**BSL**") 2 and 3) [37]

**Secondary**:

Investigate the use of the vaccine to build antibodies in animals via assays and to protect animals from contacting the virus via challenge models (Pending)




**Note:** Theralase® does not claim or profess that they have the ability to treat, cure or prevent the contraction of the SARS-CoV-2 coronavirus (COVID-19).

[37] Press Release – February 7, 2022 – Theralase® Demonstrates Proof-of-Concept for Canadian-Made COVID-19 Vaccine

# Management Team

**Arkady Mandel**
**M.D., Ph.D., D.Sc.**
Interim Chief Executive Officer and Chief Scientific Officer

30+ years of scientific, preclinical and clinical experience in technology creation and innovation. A key founder of the therapeutic use of medical lasers in dermatological treatments and other areas of clinical medicine.

**Kristina Hachey**
**CPA**
Chief Financial Officer

20+ years of financial and financing experience for public and private companies. Experienced in corporate governance and compliance.

**Vera Madzarevic**
**Ph.D.**
Director of Clinical Development and Quality Assurance

20+ years of experience in Phase I to IV clinical development, training, product development, strategic planning and implementing, monitoring and managing clinical and scientific activities.

# Board of Directors

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**Guy Anderson**
MDA, CFP®, CIM®

20+ years of financial experience, currently providing service to Aligned Capital Partners.

**Matthew Perraton**
PFP, FMA, FCSI

20+ years of financial experience, most recently as a Senior Investment Advisor for Jong Perraton Private Wealth Group.

**Randy Bruder**

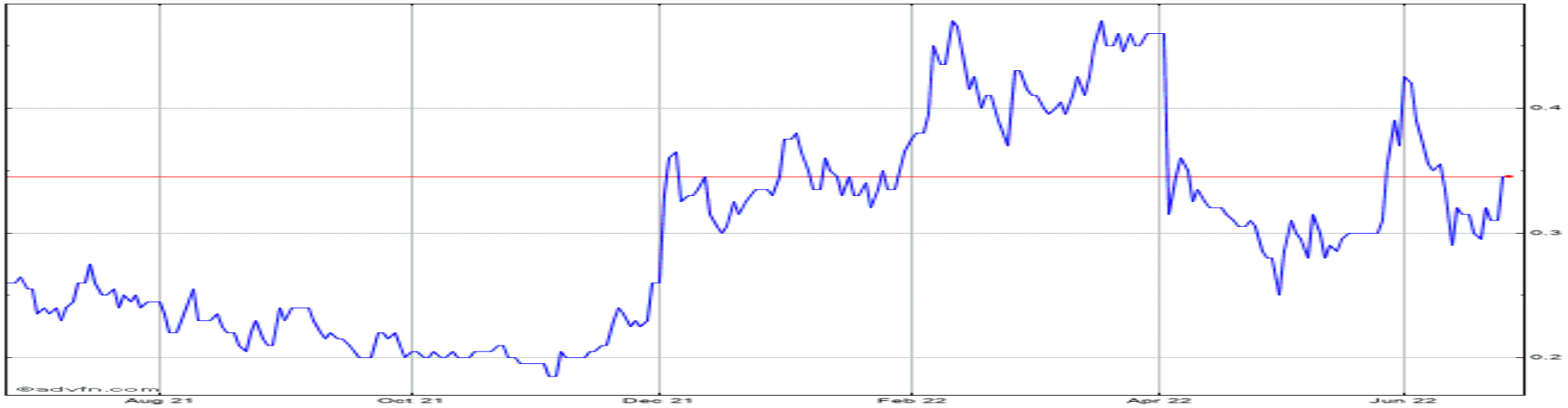
30+ years of senior management experience as owner and Chief Operation Officer of a Canadian wholesale/retail food processing organization.

# Capital Structure

**TSXV:TLT**

**Date: 06/27/2022**

| | | | |
|---|---|---|---|
| **Common share price** | $CAN 0.345 | **Warrants** | 67,768,615 |
| **Market Capital** | $CAN 70.9 M | **Options** | 10,440,000 |
| **Shares Outstanding** | 204,425,875 | **Insider Ownership** | ~ 10% |
| **Analyst Coverage** | Research Capital<br>Echelon Wealth Partners | **Target Price** | $CAN 01.20 – Research Capital<br>$CAN 0.50 - Echelon Wealth |



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**Contact Information**

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