Lumiblast™

Lumiblast™ is a platform technology aimed at improving cancer treatment using photodynamic therapy with intracellular light. It employs a novel approach utilizing compounds for targeted delivery and activation within cancer cells, enhancing precision in destroying tumors while minimizing damage to surrounding healthy tissue.

Business Opportunity

The Lumiblast™ technology presents a significant opportunity in the realm of cancer therapy, targeting a major unmet need for more effective and less invasive treatments. Current cancer treatments, particularly those for glioblastoma, often come with severe side effects due to their non-specific nature, affecting both cancerous and healthy cells. Lumiblast™ stands out by employing a targeted photodynamic therapy approach that activates only within cancer cells, potentially reducing collateral damage to healthy tissue and improving patient outcomes. The technology's potential product could address the growing global demand for improved cancer therapies. With an estimated 308,000 new cases of glioblastoma worldwide annually, this innovative treatment has a sizable patient base aiming to ensure better, more focused therapy. The global market for glioblastoma treatments alone is projected to grow significantly, fueled by the urgent demand for therapies with fewer side effects and greater precision. Lumiblast™ follows a strategic business model centered on licensing the technology to pharmaceutical companies experienced in further development and commercialization. This model minimizes the risks and costs associated with clinical trials and regulatory approval, leveraging the resources of established industry players to expedite the path to market. Known comparators in the industry, such as Gliolan®, illustrate the viability and market potential for products that utilize light activation in cancer treatment. Customer feedback and initial discussions with industry stakeholders have been instrumental in refining both the product and its go-to-market strategy. This feedback suggests strong interest in the approach due to its precision and potential to fill existing gaps in cancer treatment.

Technology Description

Lumiblast™ is a revolutionary cancer treatment technology utilizing photodynamic therapy (PDT) with intracellular light activation. The technology is designed to deliver light-sensitive agents directly inside cancer cells, ensuring that the light activation and subsequent therapeutic effects occur precisely where they are needed. This mechanism significantly reduces harm to surrounding healthy tissue, differentiating it from conventional treatments that often affect both cancerous and non-cancerous cells indiscriminately. The technology employs Gliolan®, a 5-aminolevulinic acid (5-ALA) product, a known photosensitizer used in, e.g., glioblastoma surgery for its ability to accumulate in cancerous tissue in the brain. Paired with a novel chemiluminescent Lumiblast™ compound, which generates light upon activation by the oxidative stress found in cancer cells, 5-ALA induces selective destruction of the cancer cells through the production of reactive oxygen species. By concentrating its effects on cancer cells, Lumiblast™ offers heightened precision and effectiveness, potentially enhancing patient outcomes with reduced side effects compared to existing treatments. As a product, Lumiblast™

Category

Therapies/Small Molecules
Therapies/Other interventions
Partnering/NLS Days 2025

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is intended for use in clinical settings where precision targeting and minimized invasiveness are paramount. Its design aligns with current medical practices but introduces a pivotal change in the activation and selectivity of cancer cell destruction, promising a new avenue for treatment that blends established methods with cutting-edge targeting technology.

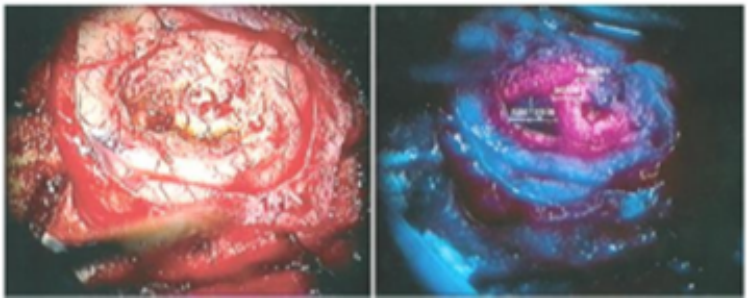

Fig. 1: Glioblastoma multiforme (GBM) cavity treated with 5-ALA, viewed intraoperatively with white light (left) and blue light (right).

Intellectual Property

The project has generated two Lumiblast™ patent families:

1. Mitochondria-targeting compounds: Filed under Patent Number WO2019243757 with a priority date of June 21, 2018. This patent family is in the national phase and has been granted in the USA, Japan, and India.
2. ER-targeting compounds: Filed under Patent Number WO2023041938 with a priority date of September 20, 2021. This patent family is also in the national phase.

Both patent families are filed in multiple jurisdictions, including the US, Canada, Japan, Australia, EPO, and India.

References

1. Mikroulis T, Cuquerella MC, Giussani A, et al.(2021) , https://pubs.acs.org/doi/10.1021/acs.joc.1c00890, https://pubs.acs.org/toc/joceah/86/17, 86(17), 11388-11398
2. Mastrangelopoulou M, Grigalavicius M, Berg K, Ménard M, Theodossiou TA.(2019) , https://onlinelibrary.wiley.com/doi/10.1111/php.12997, https://onlinelibrary.wiley.com/journal/17511097, 95(1), 387-396