



Near-Infrared Window Light-Mediated Control of Implanted Cells for Immunosuppression and Regenerative Medicine

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Patent Status: Patent-Pending

Description of Technology

Cellular therapy is a medical procedure that implants cells into a patient to treat a disease or stimulate the regeneration of tissue. Many different cell types have been tested and are pending clinical use for a variety of applications. The drawback to these cells is that once they are implanted into the patient, the behavior of the cells cannot be controlled and they spread throughout the body. This makes it difficult to achieve the same results in separate patients. Another issue with these cells is that the immune system must be suppressed so the body accepts the new cells. Since there is no way to control where the cells move, systematic immunosuppression, or suppressing the immune system of the entire body, must take place to ensure the patient's body will not reject the new cells. Systematic immunosuppression brings many problems with it including an increased risk of patients becoming sick while undergoing treatment.

In order to correct many of these problems, researchers at the University of Wyoming have created cells that react to near-infrared therapeutic window (NIRW) light. The NIRW light is a low energy light that penetrates deep into tissues without causing irritation to the patient. Once these cells are implanted into the patient, they can be controlled by an external light source to target specific locations. This amount of control allows repeatability of results from patient to patient. It also eliminates the need for systematic immunosuppression. Instead, only the immune system of the specific region where the cells are implanted needs to be suppressed. These cells could save a lot of patients from complications during cellular therapy.

Applications

This technology is applicable in medical procedures where cells are implanted to stimulate cell regeneration or to help cure a disease. These cells also negate the need for systematic immunosuppression which makes it easier to treat at risk patients. The controllable aspect of these cells can make a big impact in the medical industry.

Features & Benefits

- Reacts to NIRW light
- Better target specific locations
- Increases repeatability of results
- Eliminates to need for systematic immunosuppression



Figure: Example of a commercially available NIRW light-emitting device

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