

LICENSING OPPORTUNITY: USING MACHINE LEARNING AND/OR NEURAL NETWORKS TO VALIDATE STEM CELLS AND THEIR DERIVATIVES (2-D CELLS IN CULTURE AND 3-D TISSUES) FOR USE IN CELL THERAPY AND TISSUE ENGINEERED PRODUCTS

DESCRIPTION

Problem

Most current methods for assessing stem cell health and differentiation are invasive, subjective, or destructive, making them unsuitable for real-time quality control in regenerative medicine and drug screening. There is a critical need for a non-invasive, automated solution that enables accurate, high-throughput monitoring without compromising sample integrity, as the lack of such tools leads to inconsistent product quality, increased costs, and delays in clinical translation.

Invention

The technology provides a non-invasive, image-based system that uses machine learning to assess the state and functionality of stem cells and their derivatives. The system is able to predict key biological properties such as differentiation status, viability, and therapeutic potential without disrupting the cells.

BENEFITS

Potential Commercial Applications

- **Cell Therapy Manufacturing:** Can be used in cell therapy manufacturing to non-invasively monitor and ensure the consistency and quality of stem cell-derived products.
- **Drug Discovery and Screening:** Supports drug discovery and screening by enabling high-throughput, automated analysis of cellular responses to various compounds without damaging the samples.
- **Tissue Engineering and Regenerative Medicine:** Allows real-time assessment of engineered tissues, reducing the risk of failure and accelerating time to market.

Competitive Advantage

Compared to traditional assays, the technology offers a competitive advantage by enabling non-invasive, real-time, and automated assessment of cell health and functionality, eliminating the need for destructive or manual testing methods. Its integration of machine learning further enhances predictive accuracy, setting it apart as a scalable, cost-effective solution for quality control in cell-based application.

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