



TECHNOLOGY AVAILABLE FOR LICENSING

Phase Subtraction Cell Counting Method

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Invention Details:

The invention is method of counting cells in tissues while retaining the viability of the tissue, such as an embryo or cluster of stem cells. The method involves obtaining a microscopic image of the unstained tissue that reveals cell boundaries, using at least two imaging methods, such as differential interference contrast (DIC), and an optical quadrature microscopy (OQM). Such a microscope provides tremendous advantage in imaging nearly transparent objects since changes in phase can be directly attributed to changes in the object's index of refraction while the small amplitude changes provide additional structural information. The boundaries of individual cells in the cell cluster are modeled as ellipses and used, together with the maximum optical path length deviation of a cell, to calculate ellipsoidal model cells that are subtracted from the OPD image. The process is repeated until the OPD image is depleted of phase signal attributable to cells of the cell cluster, and the cell count is obtained from the number of cells subtracted. The method is capable of accurately and non-invasively counting the number of cells in a living embryo at the 2-30 cell stage, and can be employed, for instance, to assess the developmental stage and health of human embryos for fertility treatments.

Benefits of the Invention:

Advantages:

Increases clarity of image
Requires no staining of sample retaining viability
Computes complex index of refraction

Uses:

Analysis of living tissue viability
I.e., 2-30 cell clusters
Diagnostics

The Bottom Line:

This counting method uses an instrument to assess images formed by the light's index of refraction. The invention is ideal for use when viability of biological samples must be preserved, such as determining the viability of embryos for in vitro fertilization. Available technology can not allow assessment of cells beyond the eight cell stage with retention of viability.

For More Information:

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