



Biological Imaging Provides Full Imaging of Samples

Technology No. 99186

DNA Fluorescence

Electronic light detectors can be used to image and/or map biological samples and for DNA chip analysis. In contrast to conventional biological imaging techniques, this method scans across the sample and detects multiple images constructed from light emitted by the biological sample. The detector may be a linear charged-couple device (CCD) or a CMOS image sensor which gathers slices of the sample to be combined electronically into the full image.

The light emitted from the sample may include light generated by the sample itself, including chemi-luminescence, fluorescence adsorption and quenching. The biological sample may include biological holding structures such as a DNA spot array on a DNA chip and protein bands in a 2D gel. The array allows imaging methods such as fluorescence detection from a biological sample to be analyzed.

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Analysis of DNA Chip

Conventional approaches to visualize the surface of DNA chips place the DNA chip on a stage under a microscope, the stage is moved to bring the chip into focus and a visual image is then taken. Conventional microscopes are expensive instruments that require training and maintenance and their large size can be problematic. The light detector system offers a simpler and less expensive method of DNA chip and biological sample analysis.

BENEFITS OF BIOLOGICAL IMAGING AND SCANNING DNA CHIPS:

- The apparatus is able to take a full image of the sample.
- Several 'slices' are built up to a full image.
- Simpler biological imaging using an electronic light detector.
- Less expensive and less maintenance than current technology.
- Typical analysis includes DNA Chips, DNA spots and fluorescence analysis
- Holding apparatus allows for manipulation of substrate and biological sample

Phase of Development Proof of concept. Prototype built and tested.

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