

Systems for Analyzing Microtissue Arrays

Background

Tissue microarrays involve the use of hundreds or even thousands of small discs of tissues obtained from histologic sections of patient specimens arranged on a paraffin block for the simultaneous analysis of the tissue samples. This allows for the conservation and efficient use of resources, as only small amounts of reagents are required to analyze entire cohort of specimens under identical experimental conditions. Additionally, tissue microarrays are amenable to a wide variety of conventional techniques such as histochemical stains, in situ hybridization and microdissection. However, unlike conventional formalin-fixed paraffin embedded materials, tissue microarrays permit the analysis of an entire cohort of tissue specimens on a single slide, which eliminates slide to slide variation in the data obtained.

Current methods of evaluation involve manual examination of microarrays under a microscope and scoring the signal at each location. Other methods involve digitizing the specimens followed by microscopic examination, which is slow, cumbersome and error prone. Tissue microarrays pose certain additional challenges such as heterogeneity of tissue sections and background signal. Thus, there is a significant need for improved methods for collection and analysis of tissue microarray data that overcome these challenges.

Description of the Technology

UMDNJ researchers have developed an imaging system that takes images, analyzes and stores data for samples in a tissue microarray. The system comprises a tissue microarray, a robotic microscope, and an imaging workstation that automatically controls operation of the microscope to capture images from the microarray and analyze results. The magnification of the microscope may be adjusted depending on the type of operation being performed. For example, a low magnification is used to capture and register specimens and obtain coordinates while a higher magnification may be used to analyze the images for each registered specimen. This system has color separation capabilities to measure and analyze the intensity of staining and utilizes a relational database to store data and images. The assembly may be local or remotely located thus enabling the use of the system for capturing and analyzing data from distant locations.

Advantages

- . •Reduced error rate and background signal
- . •Provides for unsupervised collection, analysis, and storage of tissue microarray data

Applications

- For the collection, analysis and storage of tissue microarray data

Patent Status

- PCT Application published on 08/14/2003 (Publication Number: WO 03/067256 A2)

Licensing Opportunity

- This technology is available for non-exclusive or exclusive license.

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