Tissue Imaging Technique Using Reflectance Microscopy

Tech ID: 31980 / UC Case 2019-597-0

ABSTRACT

Researchers at the University of California, Davis have developed a method for imaging a tissue sample using white-light reflectance microsopy.

FULL DESCRIPTION

Traditionally, formalin-fixation and paraffin-embedding (FFPE) tissue processing with microtome sectioning and staining have proven to be the most practical and logistically-feasible method for handling, preserving, and evaluating tumor samples. However, FFPE-based processing is sub-optimal for molecular assays and cannot be used for certain applications due to its inherent limitations related to fixative, heat, and solvent-induced nucleic acid fragmentation and degradation. In addition, diagnosticians are confronted by two serious challenges: (1) the increasing number and complexity of ancillary molecular diagnostic tests; and (2) the requirements for these tests to use ever-smaller biopsy samples. These shortcomings demonstrate the need for more effective tissue preparation and diagnostic methods that do not require FFPE.

Researchers at the University of California, Davis have developed a method for imaging a tissue sample using reflectance microscopy. Light is used to illuminates a stained tissue sample, which can be thick, fresh, or fixed, but unsectioned tissue. This technique allows for analysis within minutes of acquiring a tissue specimen. Sample preparation steps such as dehydration, paraffin-embedding, sectioning, and mounting the sample on slides are not required, thus reducing both the time and costs associated with acquiring high-quality tissue images.

APPLICATIONS

- Rapid analysis of a wide variety of tissue specimens

FEATURES/BENEFITS

- Images are brighter than those produced by current slide-free technologies
- Allows use of high-magnification lenses
- Imaging times in the low-milliseconds/frame, allowing for much faster large-field-of view imaging
- Compatible with immunofluorescence reagents
- More affordable than existing methods that achieve similar-quality images

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,019,250	06/25/2024	2020-538
United States Of America	Issued Patent	11,808,703	11/07/2023	2019-597
Patent Cooperation Treaty	Published Application	2021/252280	12/16/2021	2020-538

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OTHER INFORMATION

KEYWORDS

Brightfield imaging, FFPE, Histopathology, Microscopy, Pathology

CATEGORIZED AS

- **Imaging**
  - Medical
- **Medical**
  - Diagnostics
  - Imaging
  - Screening

RELATED CASES

2019-597-0, 2020-538-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Simple All-in-One UV Waveguide Microscope with Illumination Sectioning for Surface Morphology and Fluorescence Imaging
- White Dwarf: Cross-Polarized White Light Slide-Free Imaging

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