

Imaging Modalities and Methods for Enhanced, Label-free Histopathology During Surgery

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ABSTRACT

Researchers at the University of California, Davis have developed new techniques capable of producing near real-time tissue analysis with quality and accuracy attributes comparable to traditional Haemotoxylin and Eosin (H&E) histopathology methods.

FULL DESCRIPTION

H&E methods can involve multiple tissue or biopsy preparation steps. Thus, these processes typically require elapsed times that are often incompatible with optimal intra-operative decision-making regarding the amount of tissue to be removed during surgery. Therefore, the field of pathology would be advanced – and positive surgical outcomes with reduced side effects would increase – if histopathological processes with reduced time scales were implemented.

Researchers at the University of California Davis have developed a label-free, spectral, pathology method that can quickly identify regions of diseased tissue *in vivo* without the need for traditional hematoxylin and eosin staining. A multimodal microscope capable of acquiring varied and simultaneous microscopy/spectroscopy images of unstained tissue can survey the tissue structure and architecture, and - by comparing unique tissue signatures provided by the microscope, discriminate between diseased and healthy cells. This method overcomes historical limitations associated with current approaches to intra-operative histopathology.

APPLICATIONS

- ▶ Intraoperative pathology

FEATURES/BENEFITS

- ▶ Offers a label-free method for near, real-time pathology results
- ▶ Reduces average times surgical patients remain under anesthesia
- ▶ Increases accuracy of tissue removal during surgery

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,245,866	03/11/2025	2019-580

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OTHER INFORMATION

KEYWORDS

Pathology,

Histopathology, Inter-

operative, Label-free

CATEGORIZED AS

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

RELATED CASES

2019-580-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

► [An Optical System for Parallel Acquisition of Raman Spectra from a 2-Dimensional Laser Beam Array](#)

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