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# 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 Haematoxylin 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	Published Application	<a href="#">2022038693</a>	12/08/2022	2019-580
Patent Cooperation Treaty	Published Application	<a href="#">2021/092489</a>	06/24/2021	2019-580

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [An Optical System for Parallel Acquisition of Raman Spectra from a 2-Dimensional Laser Beam Array](#)
- ▶ [Label-free, Non-genetic Methods of Sorting Human Stem Cell Derived Cardiomyocytes](#)

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## INVENTORS

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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

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