

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

Tech ID: 31816 / UC Case 2019-580-0

## 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	<a href="#">12,245,866</a>	03/11/2025	2019-580

## CONTACT

Victor Haroldsen  
[haroldsen@ucdavis.edu](mailto:haroldsen@ucdavis.edu)  
tel: 530-752-7717.



## INVENTORS

- ▶ Chan, James W.
- ▶ Saadai, Payam

## 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](#)

University of California, Davis  
Technology Transfer Office

1 Shields Avenue, Mrak Hall 4th Floor,  
Davis,CA 95616

Tel: © 2019 - 2025, The Regents of the University of  
530.754.8649 California  
[techtransfer@ucdavis.edu](mailto:techtransfer@ucdavis.edu) [Terms of use](#)  
[https://research.ucdavis.edu/technology-](https://research.ucdavis.edu/technology-transfer/) [Privacy Notice](#)  
  
Fax:  
530.754.7620