

Abstract #14554

## FAST AND AUTOMATED ASSESSMENT OF TUMOR RESPONSE : INFRARED IMAGING

H. D'inca<sup>1</sup>, F. Pascale<sup>2</sup>, SH. Ghegediban<sup>3</sup>, M. Wassef<sup>3</sup>, C. Gobinet<sup>1</sup>, J. Namur<sup>4</sup>, A. Laurent<sup>5, 6, 7</sup> and M. Manfait<sup>1</sup>

The most common criteria to assess treatment efficacy are:

- Reduction of tumor viability
- Percentage of induced necrosis
- Biochemical modifications



**Automatically available on the same image**  
**with Infrared spectroscopy imaging**

⇒ **No staining or exogenous markers**

⇒ **No chemical dewaxing**

**Possible with a predictive classification model**

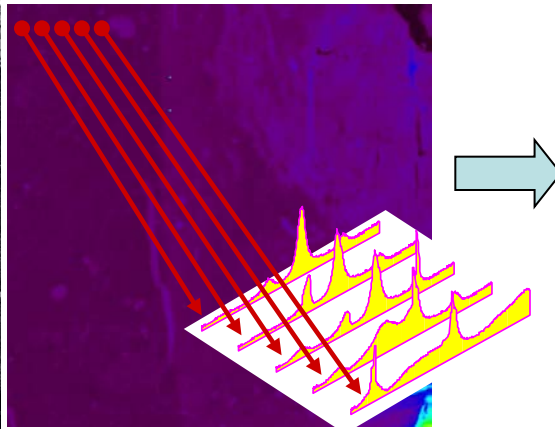
# WORKFLOW

## 1) Infrared image acquisition

Unstained tissue section

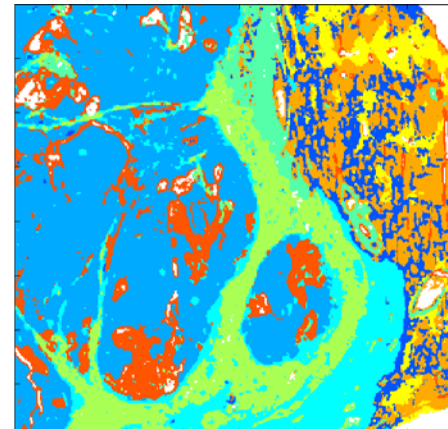


Raw IR image

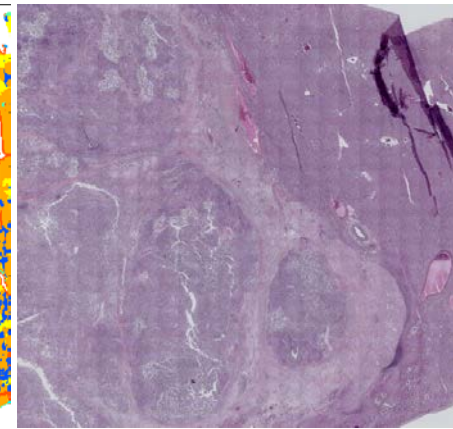


## 2) Spectra classification

False color image



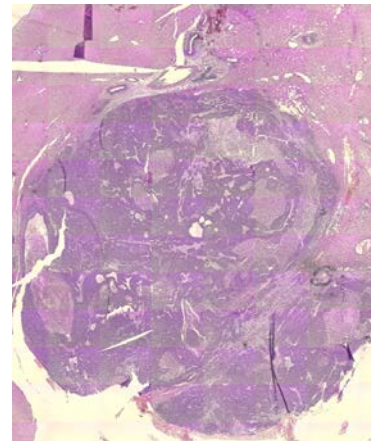
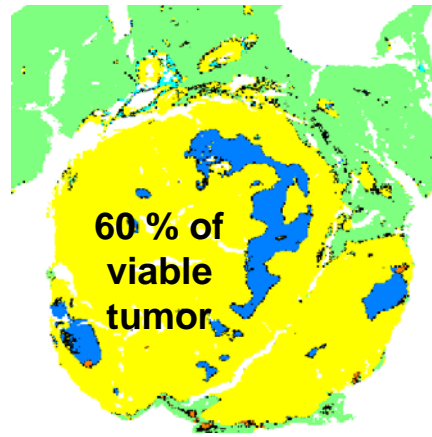
HES image



## 3) Database construction => Predictive classification model

LDA predictive model

Class label and attributed color	n reference spectra per class
Class 1: normal liver parenchyma	
Class 2: viable tumor	
Class 3: intratumoral necrosis	
Class 4: intratumoral fibrosis	



**Able to easily and objectively assess the treatment efficacy**

**Automatic tissue identification and quantification**