



Richelle Hoveling

Making the invisible visible

Quest Medical Imaging

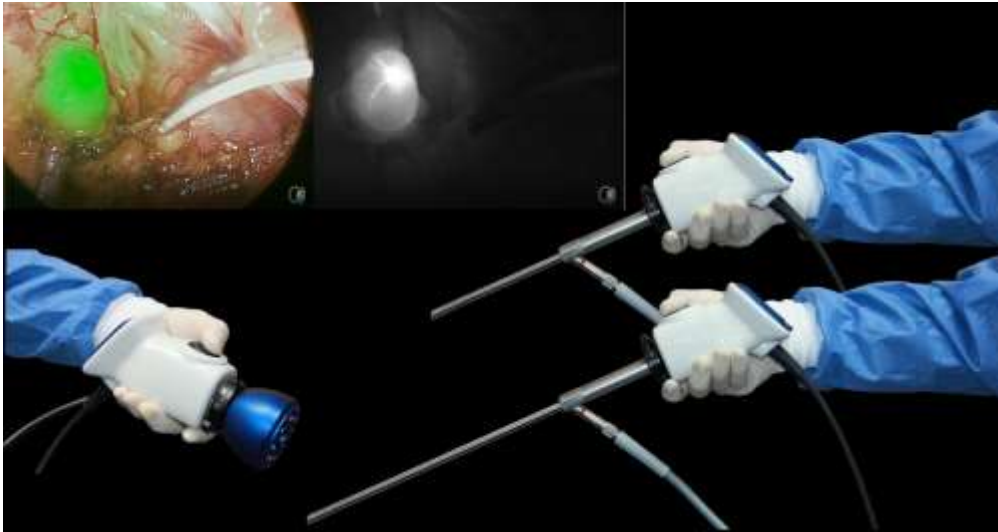
- Fluorescence image guided surgery
- Real-time visualization

Quest Spectrum



Quest Spectrum

Fluorescence imaging platform



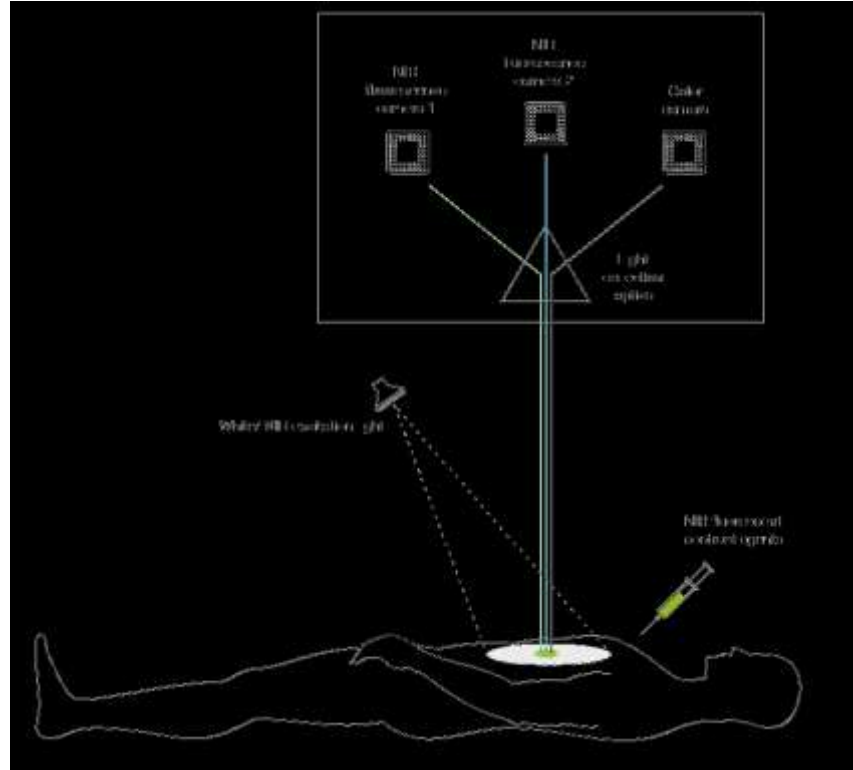
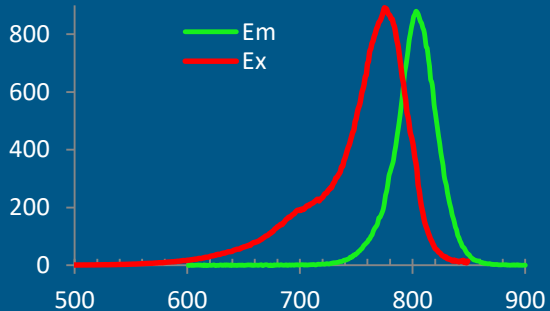


Fluorescence imaging in surgery

Fluorescence

The camera system is used in combination with a fluorescent agent e.g. ICG

Indocyanine green





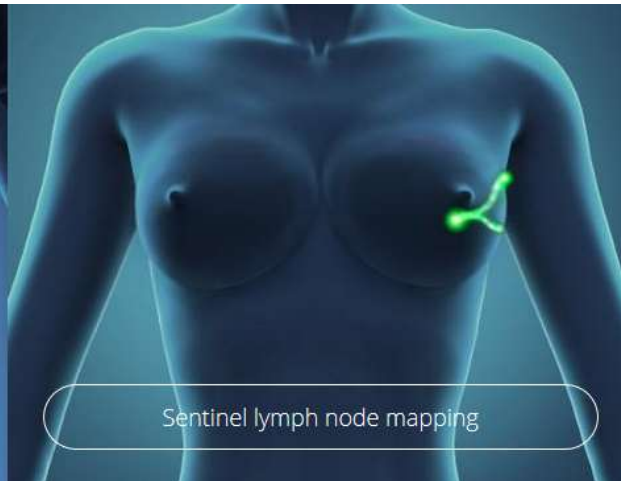
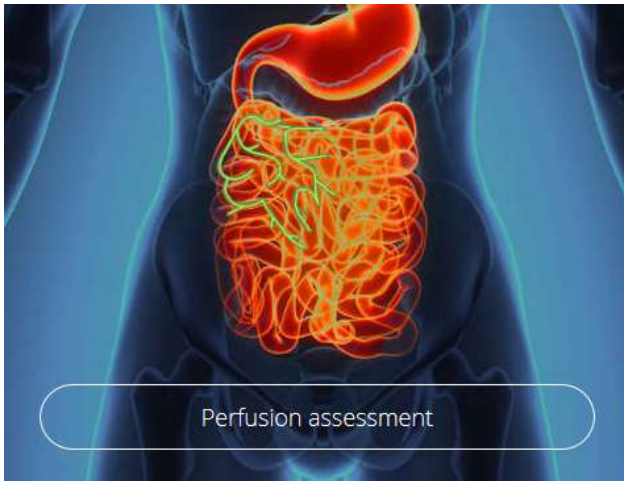
Fluorescence imaging in surgery

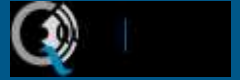




Quest Spectrum

- Applications





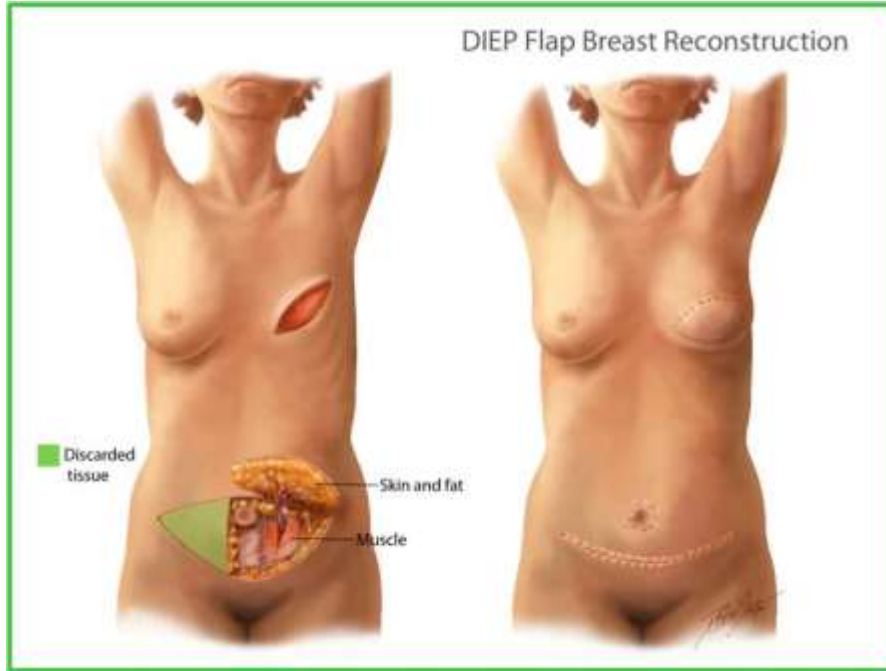
WARNING GRAPHIC CONTENT





Breast reconstruction

Perfusion assessment



- Reconstruction
- Risk of complications
 - Necrosis
 - Flap loss

www.hopkinsmedicine.org



Breast reconstruction

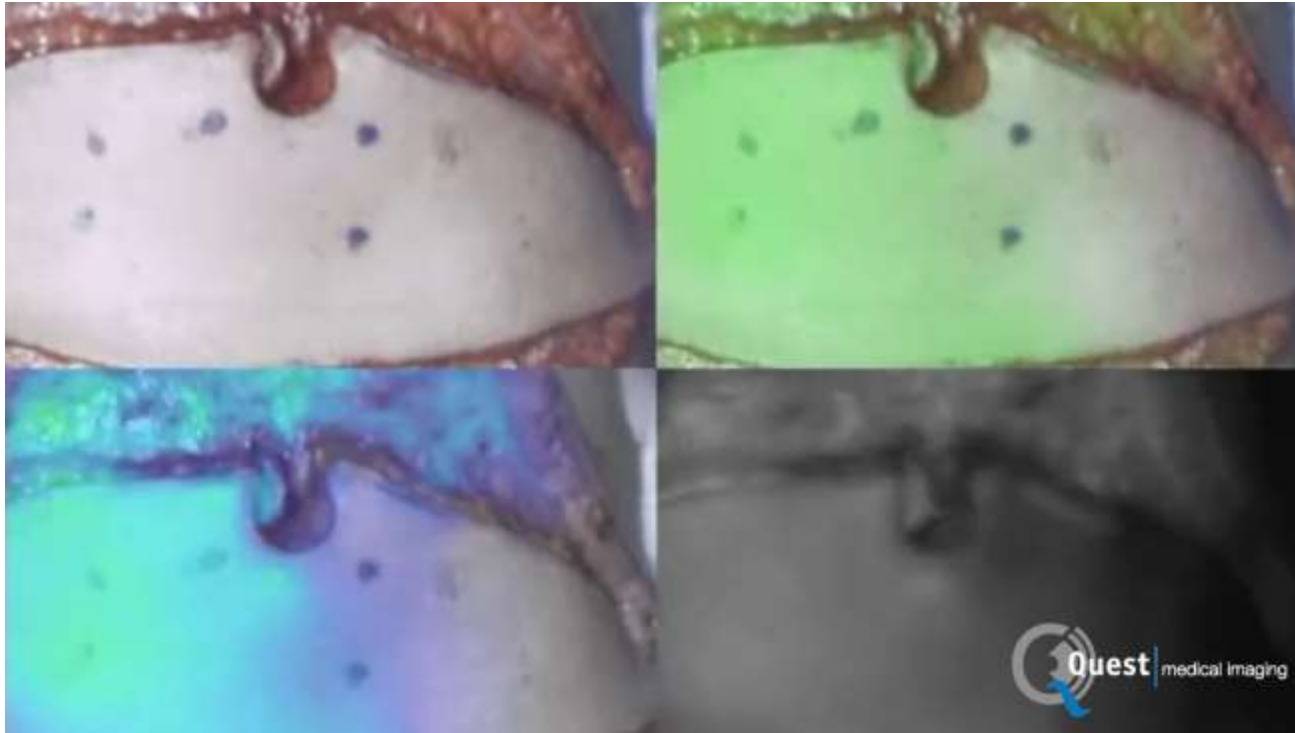
Perfusion assessment





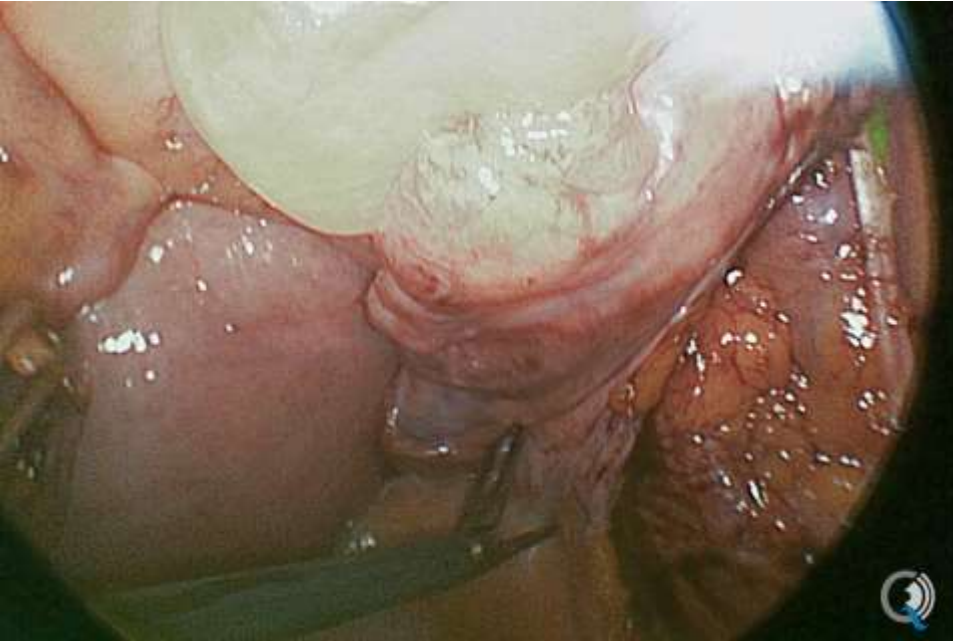
Breast reconstruction

Perfusion assessment



Sentinel Lymphnode Mapping

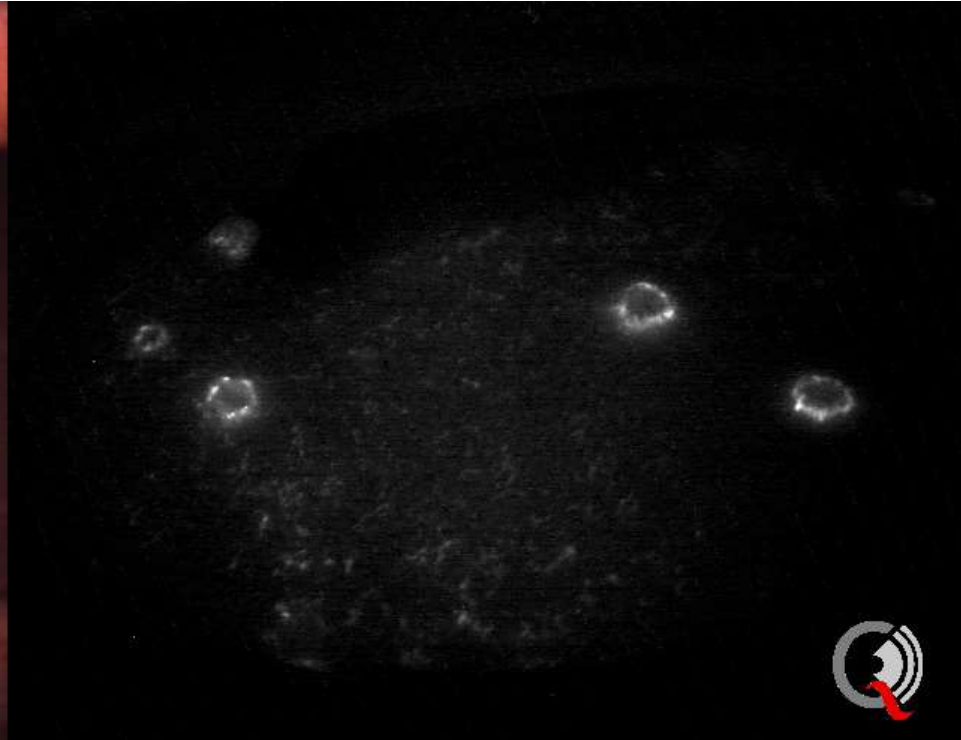
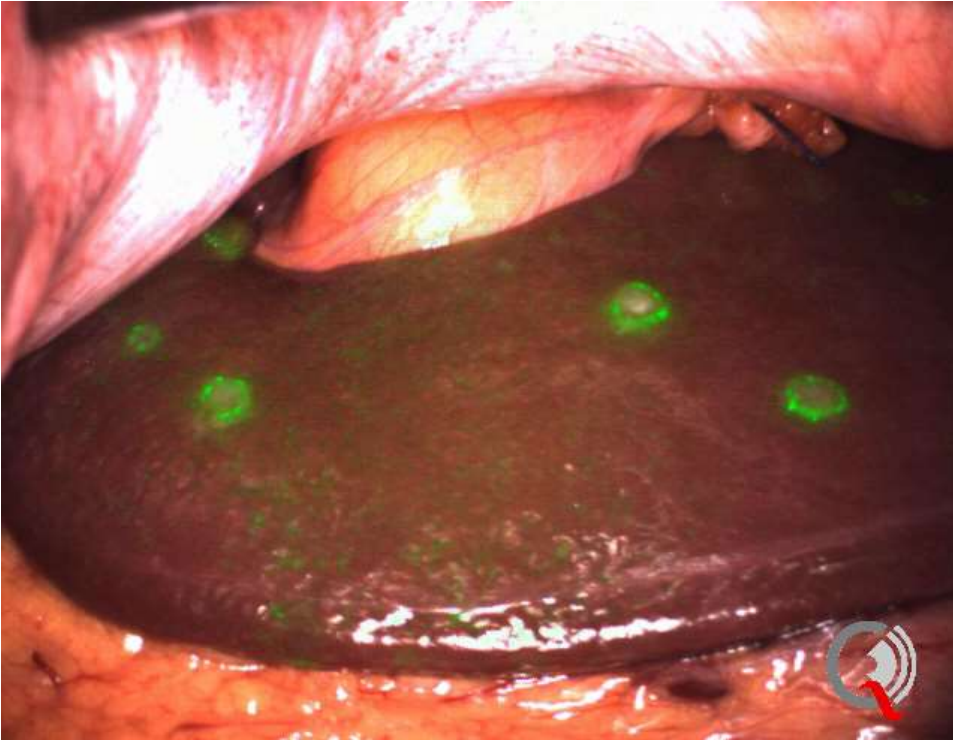
Endometrial cancer



Liver metastasis surgery



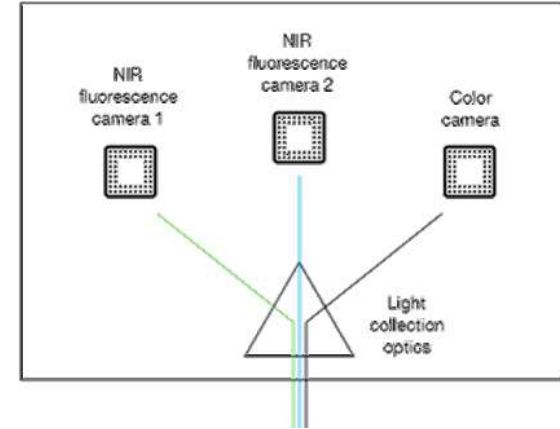
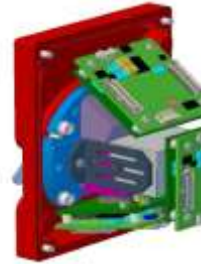
LUMC Leids Universitair
Medisch Centrum





Camera technology

- Prism based
 - Multiple channels
 - Fully aligned
- RGB + ...
 - Fluorescence imaging
 - Spectral imaging



Fluorescence systems

- Quest Spectrum
 - RGB
 - Methylene blue
 - Indocyanine green
- Custom system
 - Clinical trial
 - Tumor specific fluorescent contrast agent

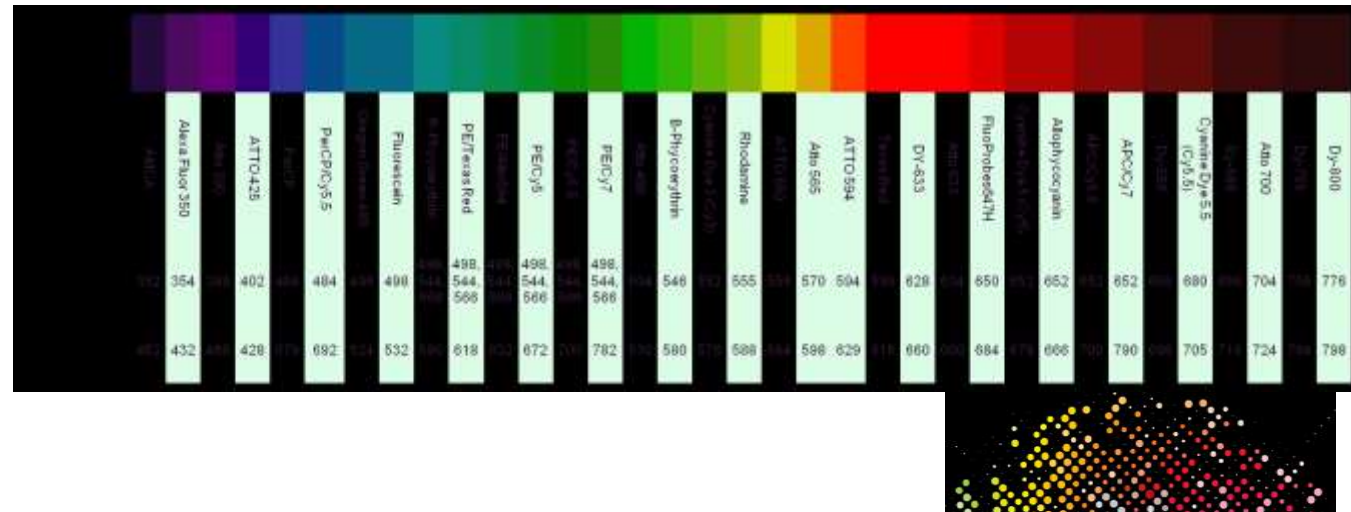




Trial systems

- 17 clinical trials
 - Avelas, Surgimab

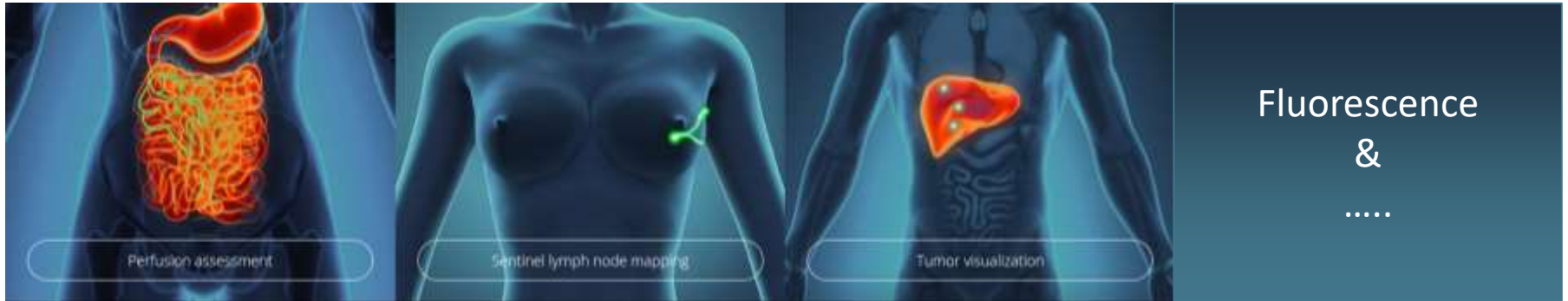
- Future





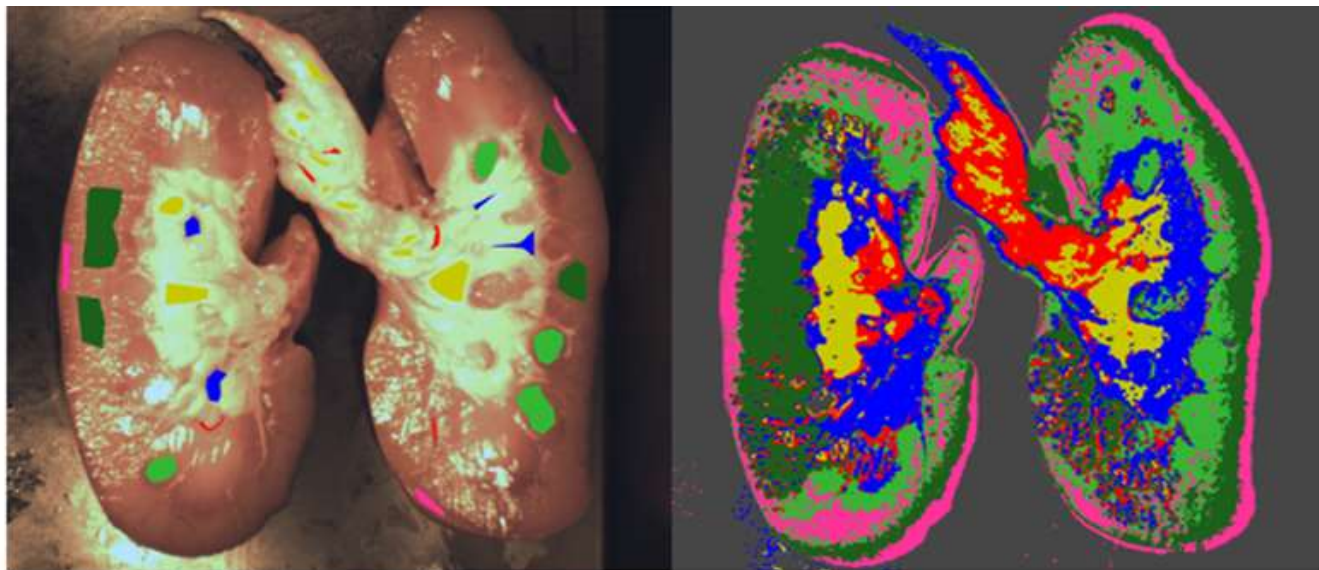
Future applications

- Applications



Anatomy classification

Animal kidney



Capsule
Cortex
Medulla
Urine tubes
Blood vessel
Fat



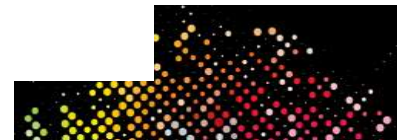
TNO innovation
for life



EXIST



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019150



Blood vessel detection



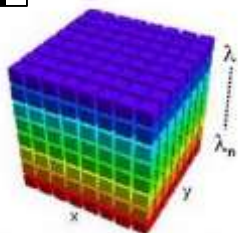
TNO innovation for life



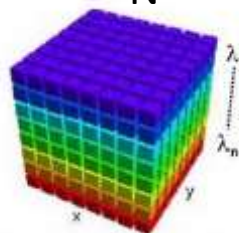
OCCEL This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017721



Acquisition using chosen sensor combination (sensor demosaicing)



Lighting normalization by mean signal across all bands in an $X \times X$ window around each pixel



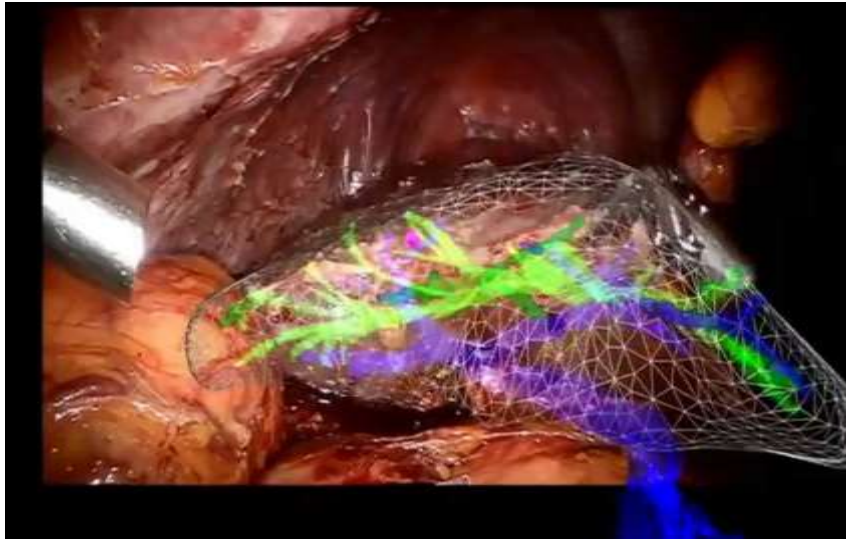
Classification using model trained on this sensor combination



Noise reduction on classification results (optional)



Beyond fluorescence



Real time visualization

Specific Optical Intelligence (SOI)

- Lymph Tracks
- Nerve Identification
- Tumor Margin Identification (TMI)
- Blood And Tissue Oximetry
- Blood Flow
- Distinguish Veins And Arteries
- Vascularity
- Artificial Intelligence





www.quest-mi.com

Richelle Hoveling

Making the invisible visible