SPIDERMASS

SATT NORD
Technology Transfer Office

GUIDED SURGERY BY REAL-TIME MASS SPECTROMETRY

Keywords

- Real Time Monitoring
- Mass Spectrometry
- In-vivo Diagnosis
- Guided Surgery
- Human & Animal health
- Oncology
- Tumor Margin/Grading
- Operating block

Intellectual Property

- Patent filed on the device: September 22 2014, FR145825,
- PCT/IB2015/057301
- The software and the different molecular banks will be protected.

Development Status

- TRL 4 “Component and/or breadboard validation in laboratory environment”
- A first prototype has been developed in order to provide a proof of concept and to optimize physical parameters.
- Ex vivo tissue sections were analysed.
- Ovarian cancer databank generated
- Laureate of MATWIN contest 2015 as a breakthrough technology

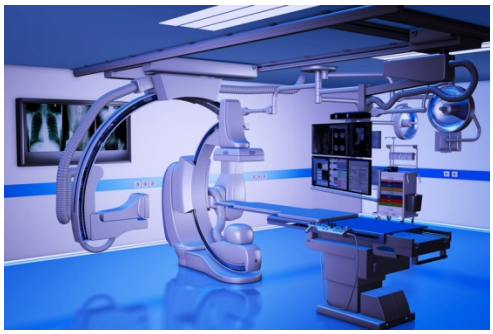
Partnership

Collaboration and/or licensing

Technology

It is known for cancers that there is a tight relation between patient’s favorable evolution and the capacity to remove the totality of cancer cells. Despite the large panel of different technologies available in the operating room, it is still extremely difficult for surgeons to appreciate if they have totally removed the tumor and if they have not missed distance micro-nodules.

For grading, surgeons have currently to wait under intra-operative conditions for the results of the pathologists in ex-temporaneous which generally require about 30 min.



SpiderMass is based on tissue sampling using laser ablation technology in fibers coupled to high resolution mass spectrometry in order to perform real-time analysis. The instrument is based on non-targeted molecular information. The system compares some generated data with databanks containing reference profiles associated to pathology.

Benefits

- SpiderMass is a device allowing the surgeons, in-real time during the surgery, to define the tumor margins, determine the existence of potential secondary tumor sites and get information on the potential aggressiveness of the tumor through tumor grading
- Low invasiveness, painless, no inflammation
- Real time diagnosis and treatment.
- No competitors in low invasiveness.
- Specificity : specific signal for each molecule, specific molecular profiles

Applications

- Molecular guided surgery:
  - Definition of tumor margins
  - Tumor grading by molecular signature
  - Real-time diagnosis and personalized medicine
- Opportunity:
  - Coupling to endoscope system
  - Addition of a second laser fiber for treatment
  - add SPIDERMASS to a surgical robot
- Other Applications: Food safety, forensic, dermatology, environment….

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