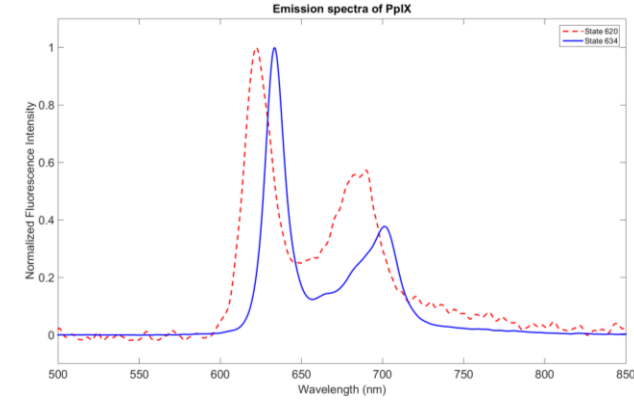
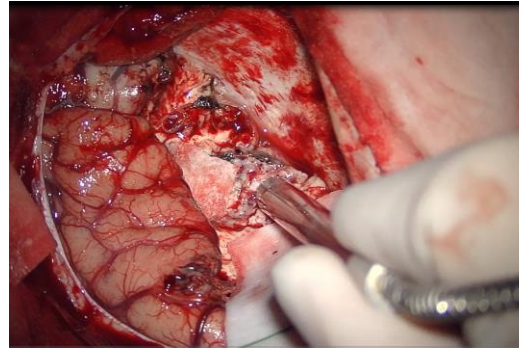
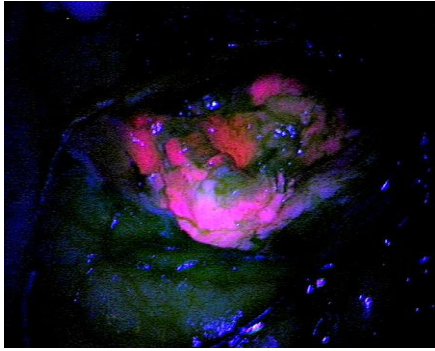




Interventional optical imaging: Fluorescence spectroscopy to assist surgical resection of glioma

L. Alston¹,

J. Guyotat², L. Mahieu-Williams¹, M. Hebert³, P. Kantapareddy², D. Meyronet², D. Rousseau¹, B. Montcel¹

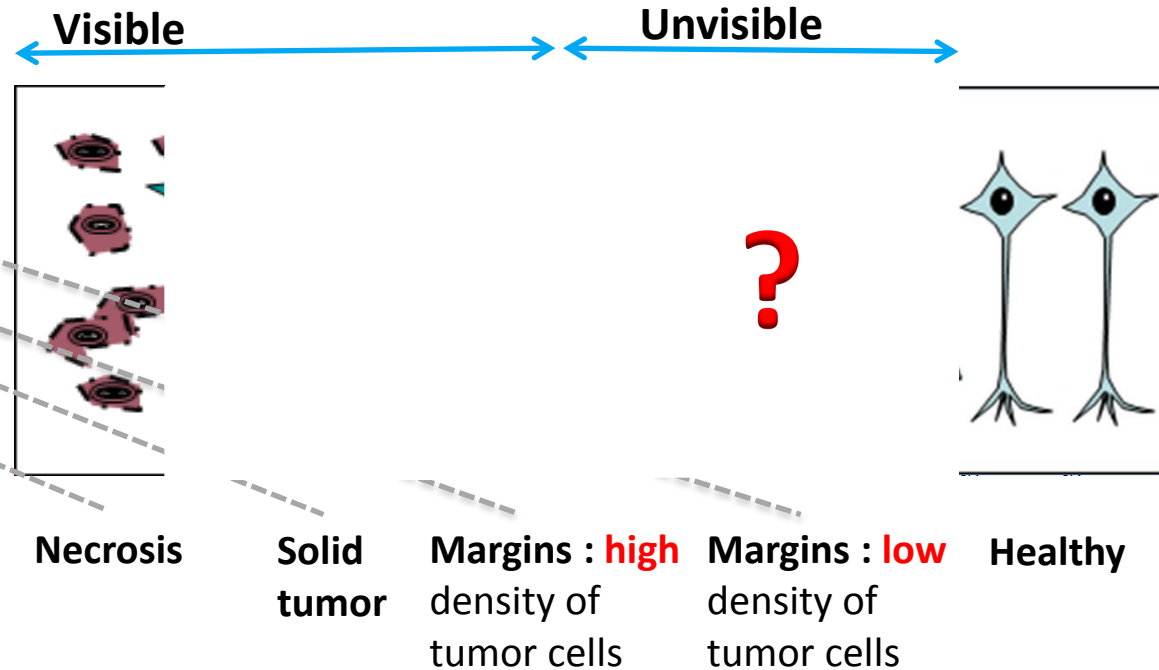
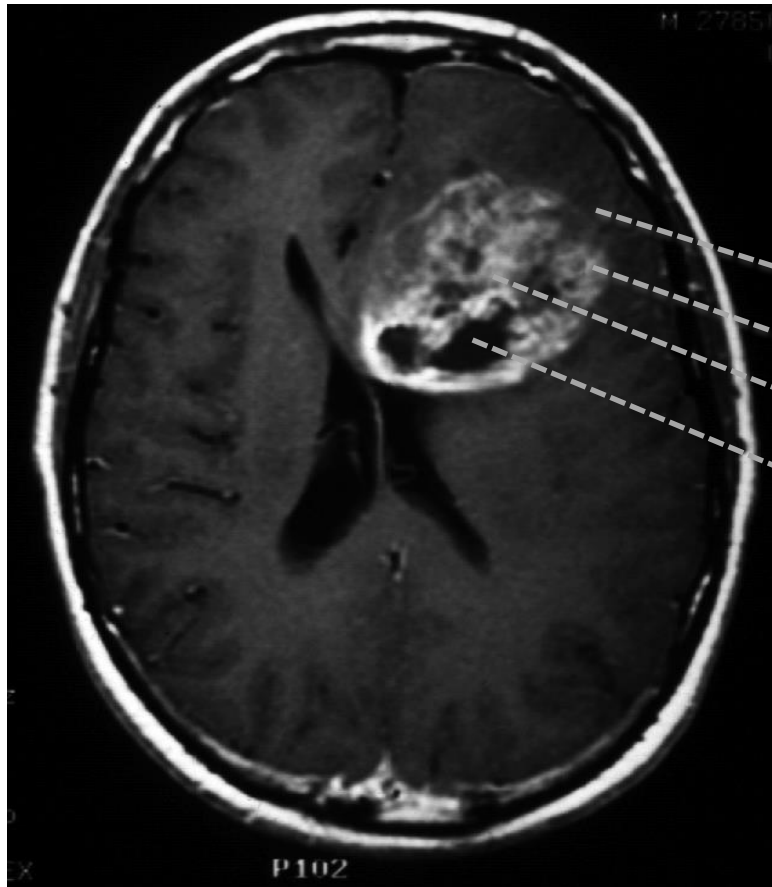
¹Univ Lyon, INSA-Lyon, Université Lyon 1, UJM-Saint Etienne, CNRS, Inserm, CREATIS UMR5220, U1206, F-69616, **Lyon, FRANCE**

²Hospices Civils de Lyon, Bron; **FRANCE**

³Univ Lyon, UJM-Saint-Etienne, CNRS, Institut d'Optique Grad. School, Lab. Hubert Curien UMR5516, F-42023, St Etienne, **FRANCE**

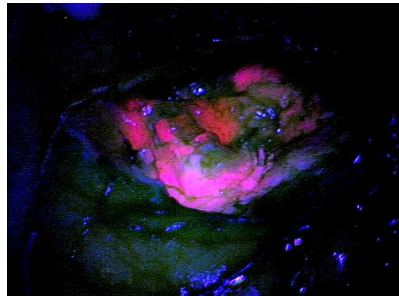
Glioma : infiltrative tumor

50 % primitive tumors of Central Nervous System¹; High-grade glioma mean survival rate: 14 months



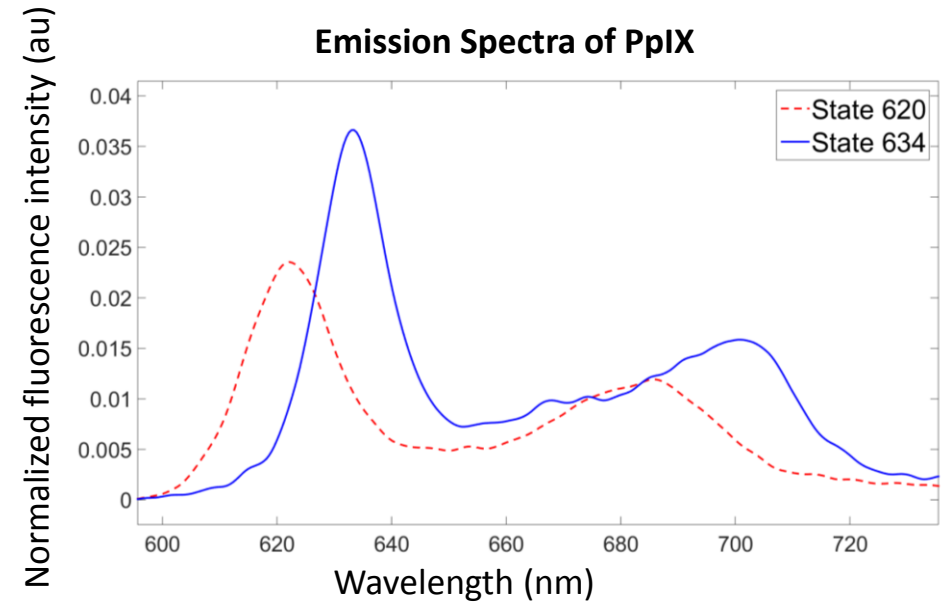
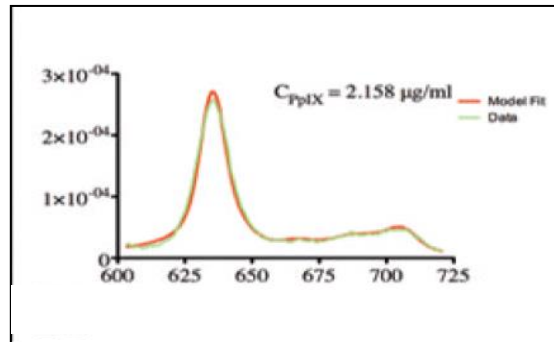
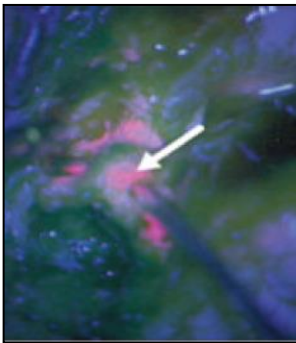
Protoporphyrin IX fluorescence

Microscopy



High Grade Glioma (HGG)

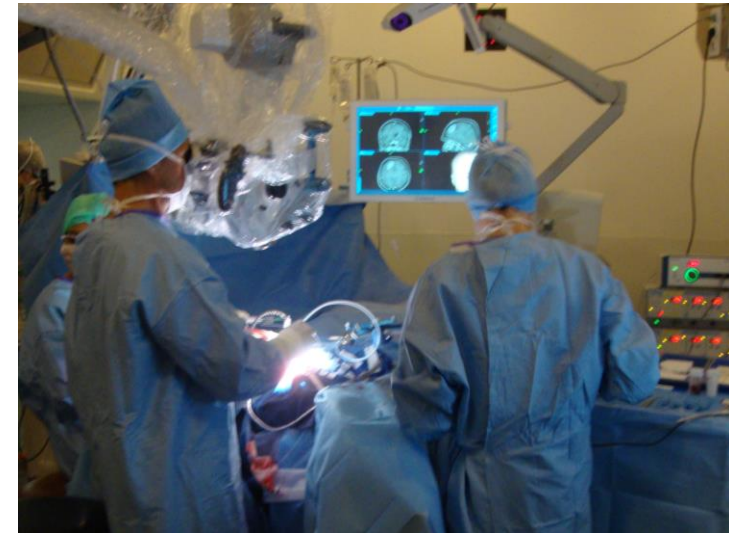
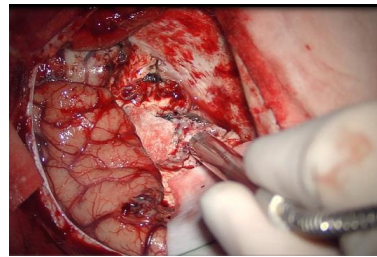
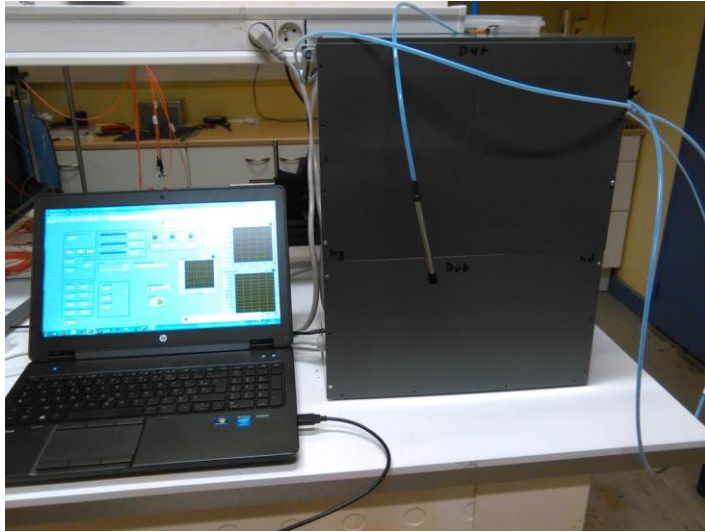
Spectroscopy



$$S_{\text{PpIX}}(\lambda) = \alpha_{620} [\text{PpIX}_{620}] S_{620}(\lambda) + \alpha_{634} [\text{PpIX}_{634}] S_{634}(\lambda)$$

Valdès, JNS, 115(1): 11–17, 2011

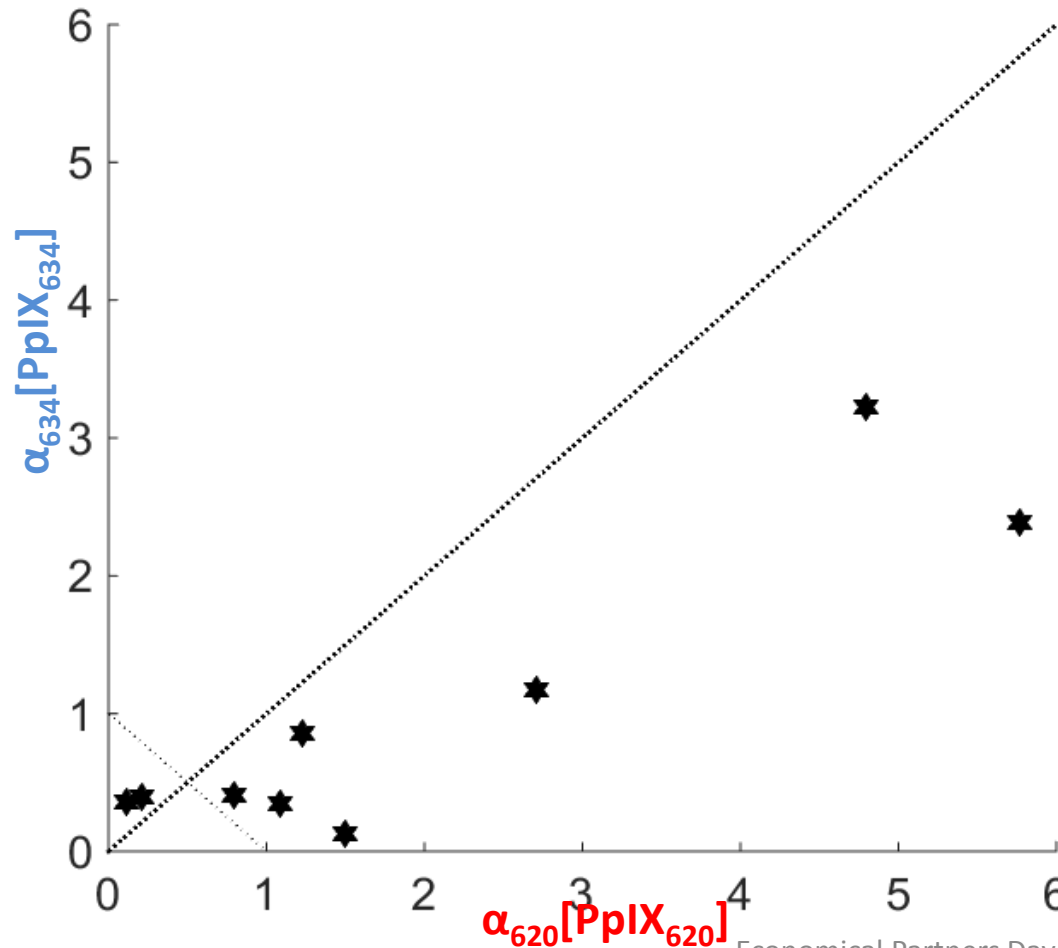
Instrumental Setup & clinical trial



- Clinical protocol approved by the French Agency for the Safety of Health Products (ANSM) and by ethical committee .
- Inclusion of 10 patients
- Comparison with gold standard (anatomo histo-pathological results) and classification depending on infiltration density

Tumor margins, low grade glioma

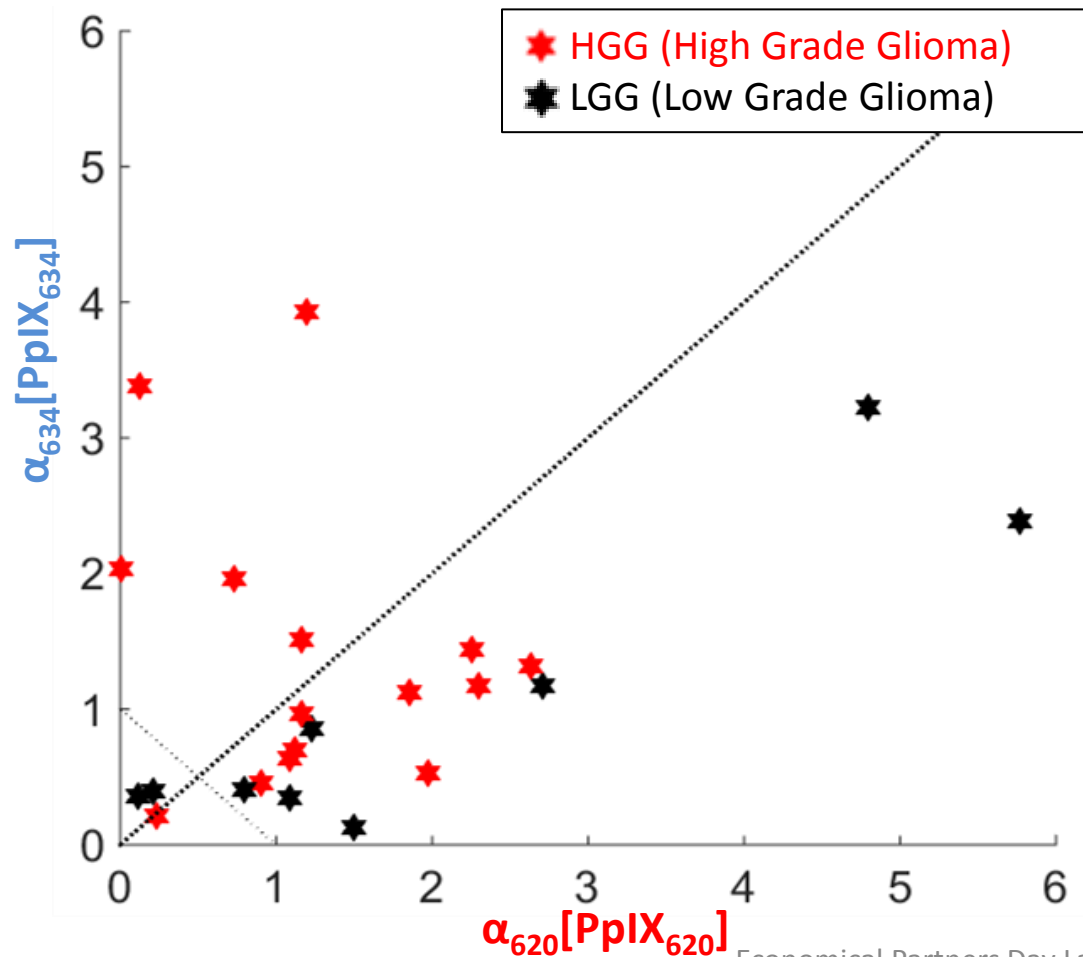
$$S_{\text{PpIX}}(\lambda) = \alpha_{620} [\text{PpIX}_{620}] S_{620}(\lambda) + \alpha_{634} [\text{PpIX}_{634}] S_{634}(\lambda)$$



⇒ Predominance of State 620 in Low Grade Glioma (★)

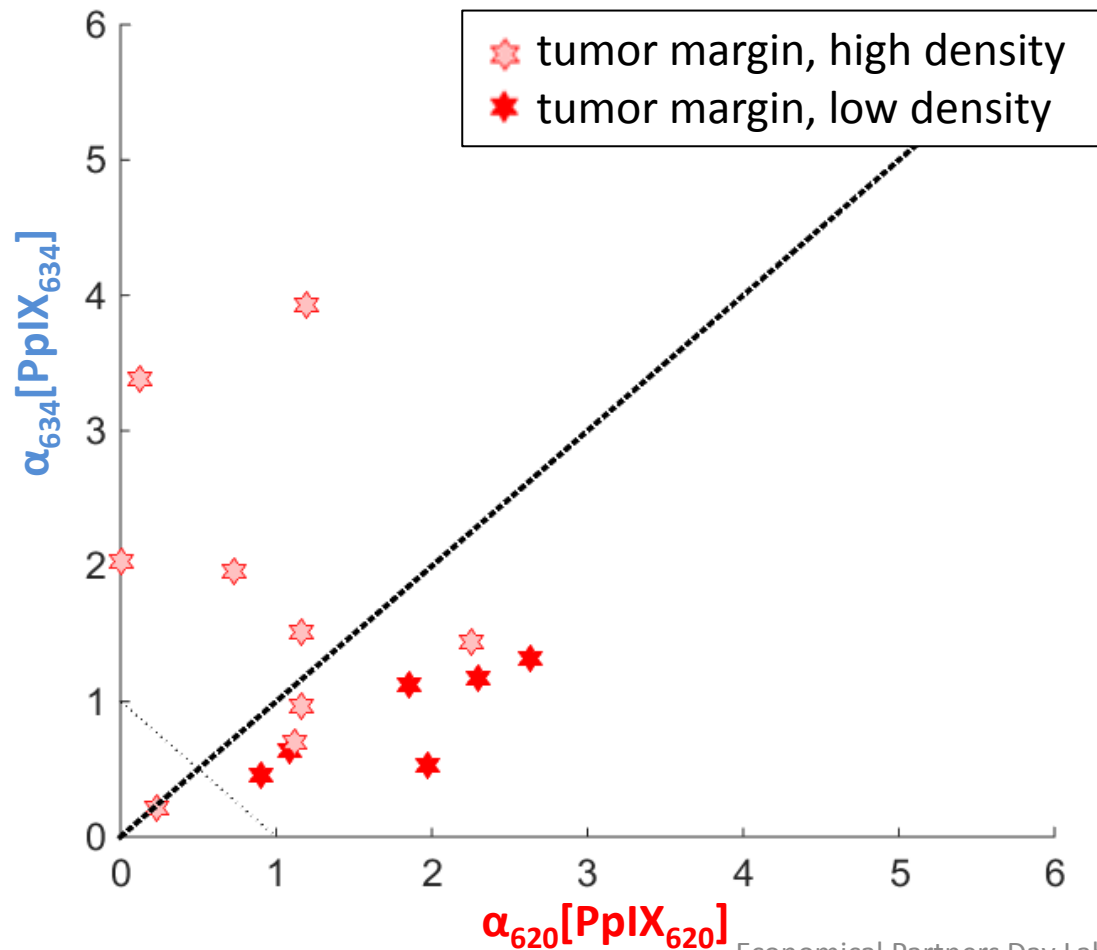
⇒ No visible fluorescence

Tumor margins, LGG and HGG



$$S_{\text{PpIX}}(\lambda) = \alpha_{620} [\text{PpIX}_{620}] S_{620}(\lambda) + \alpha_{634} [\text{PpIX}_{634}] S_{634}(\lambda)$$

HGG, tumor margins density variation



$$S_{\text{PpIX}}(\lambda) = \alpha_{620} [\text{PpIX}_{620}] S_{620}(\lambda) + \alpha_{634} [\text{PpIX}_{634}] S_{634}(\lambda)$$

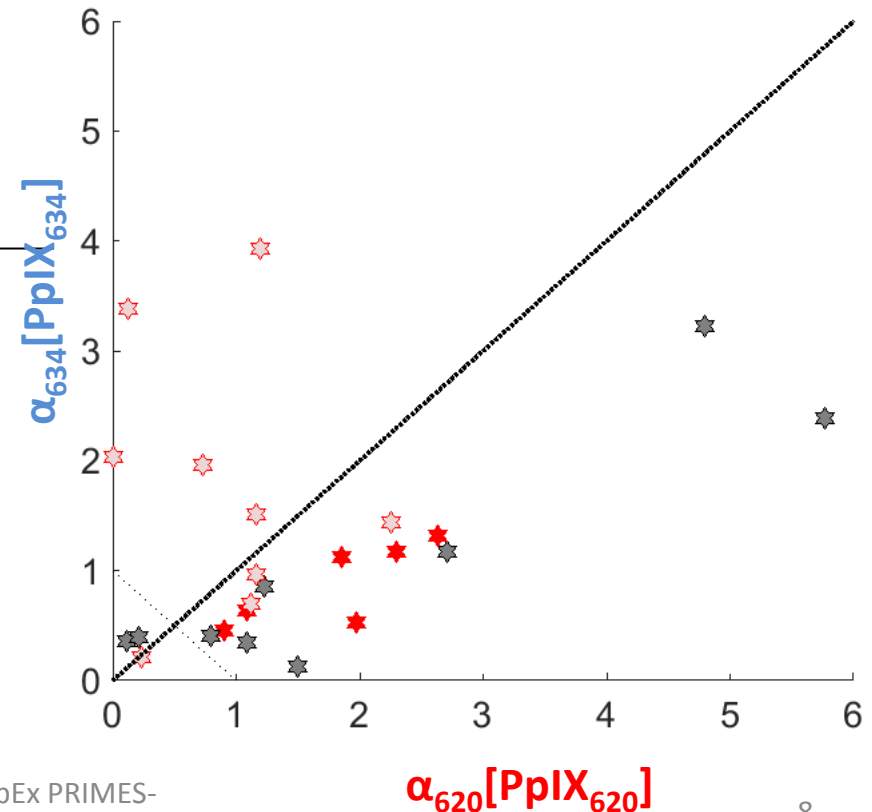
⇒ Predominance of State 620 in low density tumor margins (★)

⇒ No visible fluorescence

Conclusion

Development of an intraoperative tool to answer a need : **identify tumor margins during surgery of gliomas**

- ✓ Feasibility study to use our device
- ✓ Relevance of studying both states
- ✓ Dominance of State 620 in samples without visible fluorescence



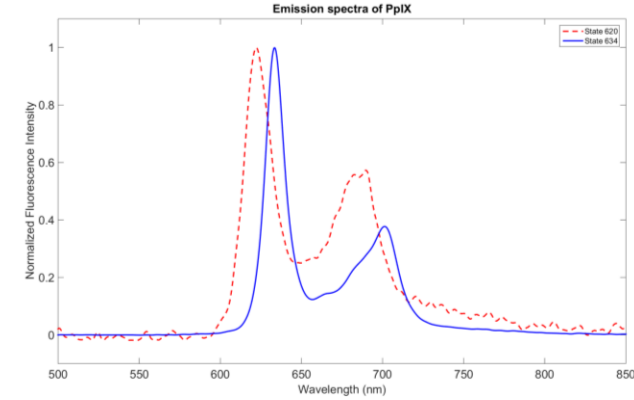
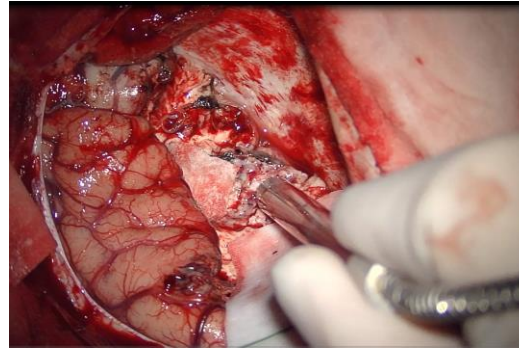
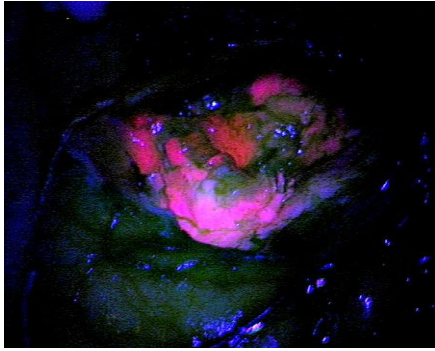
Thanks



Thank you for
your attention



Poster P3



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