AZA-GADIPY, A VERY PROMISING TOOL FOR IN VIVO BIMODAL IMAGING

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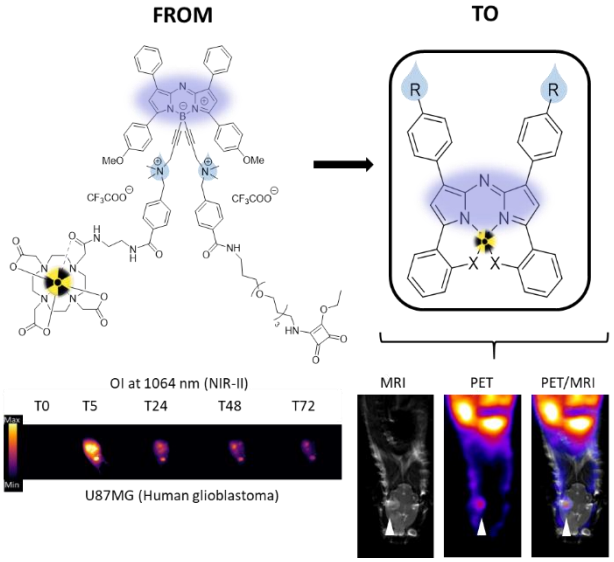
Removing a tumor is not an easy process. It implies to be fast and precise. Thus, being able to localise precisely the tumor preoperatively to plan the surgery and peroperatively to guide the surgeon is a guarantee of efficiency. That is why there is a need of contrast agent that make make this possiple. Aza-boron-dipryrromethenes (Aza-BODIPYs) are well known fluorophores that are more and more used as contrast agents for *in vivo* optical imaging (OI), especially in fluorescence-guided surgery (FGS). They have attracted the interest of researchers thanks to their quick synthesis, their high chemical and photochemical stability, and their interesting photophysical properties (good quantum yield, tunable absorption and emission wavelength that can reach the near infrared II (NIR-II) optical window (1000-1700 nm)).[1] This wavelength range is appealing because of the low autofluorescence of biological tissues and limited scattering, that increase the resolution of images and thus the precision of the FGS.

The main drawback of fluorescence imaging is its limited penetration depth. To overcome this weakness, it can be combined with a radioisotopic imaging technique, such as PET (positron emission tomography). Indeed, the two imaging techniques are complementary: the PET imaging has no penetration limitations and can be used as preoperative modality, while OI that displays high spatial resolution, good sensitivity and no limit in time can be used as peroperative technics.[2] Until today, most of researchers build multimodal imaging probe by linking two monomodal probes.[3] Even if this strategy gave good results, it implies lond and complex synthesis and large resulting probes.



In this study, we decided to include the radioisotope directly into the fluorophore to access to a compact and watersoluble probe. Inspired by the chemistry and the geometry of Salen compounds, we have modulated the aza-DIPY skeleton, in the aim of chelating some group 13 ions.[4]

The synthesis, the photophysical characterization, the stability tests, and the radiochemistry of this probe will be presented. Then, we will focus on *in vivo* experiments, using PET and fluorescence imaging on mice bearing orthotopic glioblastoma tumor.

References

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