SEMINAIRE ISMO

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Real-Time Near Infrared Fluorescence Imaging : research tools with the potential for clinical use

Near infrared (NIR) fluorophores continue to attract research attention due to the ever growing need for their use in material, biological and medical applications. Imaging within the NIR spectral range is advantageous for prolonged live cellular and in vivo imaging while also offering clinical uses such as fluorescence-guided surgery. We have recently developed the NIR-AZA class of near infrared fluorophore from which in vitro and in vivo imaging probes can be developed. They have excellent photophysical characteristics such as tunable emission maxima between 675 and 800 nm, exceptional photostability and high quantum yields. But in spite of the advantages offered by longer wavelength NIR emissions a common limitation with fluorescence imaging is the difficulty in discriminating non-specific fluorescence from fluorescence localized at a specific region of interest. This can restrict imaging to individual time points at which non-specific background fluorescence has been minimized. As such, it is of significant advantage when emission is modulated from off to on in response to specific biological events as this permits imaging of such events in real-time without background interference. Several of our most recent approaches that achieve this will be outlined including (i) the real-time recording of the cellular effects of the anion transporter prodigiosin (ii) the use of disaggregation induced emission for endogenous labelling of exosomes, (iii) fluorogenic probes based on 1,2,4,5-tetrazine substituted NIR-AZAs and (iv) directed self-assembly of fluorescence responsive NIR-AZA nanoparticles and their use for real-time surface and cellular imaging. The principles behind each of the NIR-fluorescence off/on switching will be explained and illustrated *in vitro* and *in vivo*.

Mardi 17 juillet 2018 à 11 h

Amphithéâtre du bât 520 (3ème étage)

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