BIOORTHOGONAL REACTION FOR SAFER AND MORE ACCURATE IMMUNOPET IMAGING

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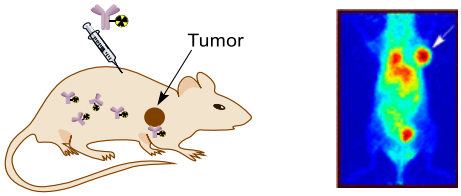
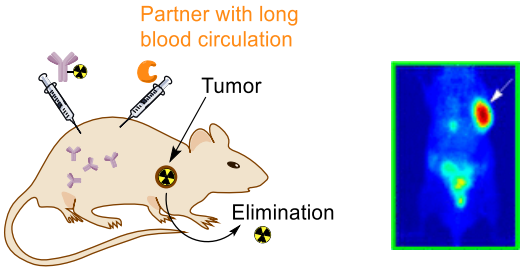
In the classical approach, ImmunoTEP's potential for precision cancer diagnosis has not be fully realized due to imperfect targeting and sub-optimal antibody pharmacokinetics. Indeed, only a limited percentage of the injected dose (generally <10%) reaches its target after several days, due to the intrinsically long biological half-life of antibodies in the body. This results in a persistent background in PET imaging. Furthermore, antibodies are generally labelled with zirconium-89, which has a half-life of 3.2 days. The use of zirconium generates dosimetry problems for the patient and makes the clinical organization of examinations complicated.



The aim of our work is to improve PET imaging by enabling "chemically controlled" removal of the



radioelement using in vivo click reactions. We are planning a bioorthogonal reaction to detach the radioelement from the antibody between a iminosydnone and cycloalkyne[1,2]. Once released from its antibody, the radioelement should be rapidly eliminated, thus improving the signal-to-noise ratio in ImmunoPET imaging and reducing the dose to the patient. The antibody would remain attached to the click partner, bearing groups such as a PEG arm that allow long blood circulation, so as to maintain its therapeutic activity.

Keywords: Medical imaging, ImmunoPET, bioorthogonal chemistry, clearing agent, masking agent, pre-targeting

References:

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