

## **Bioorthogonal Ligations in Radiopharmaceutical Sciences**

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Highly selective and fast bioorthogonal ligations render biological systems into reaction vessels: Covalent linkages are formed in living systems with the aid of small molecule reactants. Those reactions allow manifold applications in radiopharmaceutical sciences and nuclear medicine. Long circulating agents (e.g. nanomedicines such as antibodies) can be visualized using short-lived PET nuclides, and off-target dose in radioimmunotherapy can be significantly lowered using these pre-targeting strategies. Ligation rates, biodistribution, metabolic stability as well as membrane permeability of employed radiolabeled agents require careful optimization, to path the way for successful *in vivo* application. Within this talk our progress in the field of bioorthogonal chemistry and its application to radiochemistry and nuclear medicine with focus on fluorine-18 and astatine-211 labeled agents will be presented.