Chemoselective Cysteine Reengineering of Unprotected Peptides

PhD Seminar

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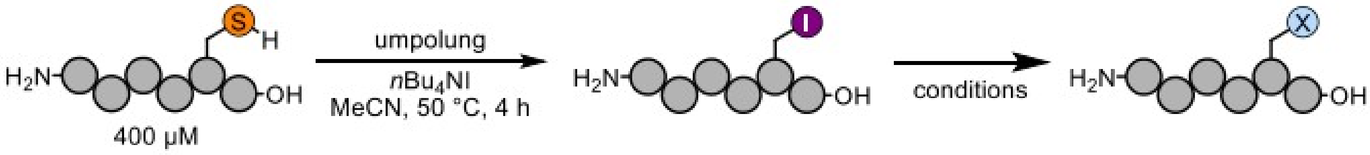
Fri, March 7, 2025
2:00 – 3:00 p.m.
Beaupre Room 105



Although functional group conversions are used routinely in small-molecule organic syntheses, such strategies are not generally applied to large biomolecules. Here, we take advantage of the unique reactivity of cysteine to convert the thiol side chain directly to an electrophilic alkyl iodide moiety under mild conditions. The novel method described here is highly selective for cysteine and well tolerated by other reactive amino acid side chains. Furthermore, the introduction of a carbon–iodide bond as a classical and versatile synthetic handle facilitates diverse chemical transformations, many of which are otherwise difficult to achieve in a biomacromolecular context. We expect that this cysteine reengineering process will find broad applications in basic biochemical research, as well as drug discovery and therapeutic development.

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