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Chemical Physiology of Antibody Conjugates and Natural Products

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ABSTRACT

Our research uses chemistry principles to address questions of importance in life sciences and molecular medicine. This lecture will cover recent examples of emerging areas in our group in:
(i) methods developed for site-selective chemical modification of proteins at cysteine, disulfide and lysine and their use to build stable and functional protein conjugates for in vivo applications [1-3];
(ii) bioorthogonal cleavage reactions for drug activation in cells [4,5];
(iii) we are using principles of data science and statistical learning to swiftly deconvolute phenotypic screen hits of bioactive natural products, and prioritize target-based biochemical assays. We have assembled machine learning models for drug target identification, and have, for example, decrypted β-lapachone as an allosteric 5-lipoxygenase inhibitor [6].

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