A therapeutic approach for cancers with special genetic mutations using in vivo synthetic chemistry

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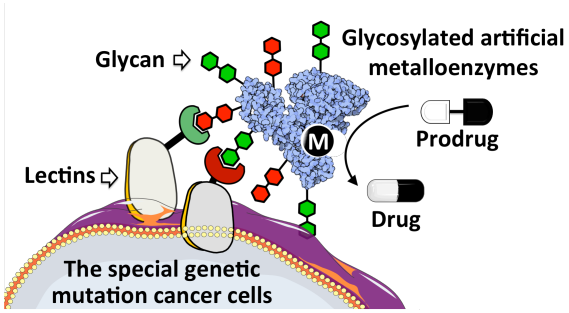
Keywords: Therapeutic in vivo synthetic chemistry; Glycotargeting; Artificial metalloenzymes; Genetic mutant cancers; Prodrug

A special gene mutation is present in approximately 25% of tumors, making it one of the most common gene mutations linked to cancer. There are currently no effective targeting methods or treatments available for patients with these special genetically modified cancers. One of the major components that drives cell-to-cell interactions is glycan recognition with lectins. Since most types of malignant cells compared to healthy cells have altered their glycan patterns, this represents a potential targeting mechanism for targeting the special genetic mutant cancers.

We have found several kinds of glycoproteins that enable effective targeting of the special genetic mutant cancer cells. Through adapting the targeting glycoproteins to become the glycosylated artificial metalloenzymes (GArMs)[1-5], the prodrug therapy activated by the GArMs exerted excellent anticancer activity in cell-based assays. Furthermore, in vivo drug synthesis via the GArMs was found to induce a reduction in implanted special genetic mutant tumor growth in mice.



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