Bioconjugation Under Low-Energy Photocatalysis

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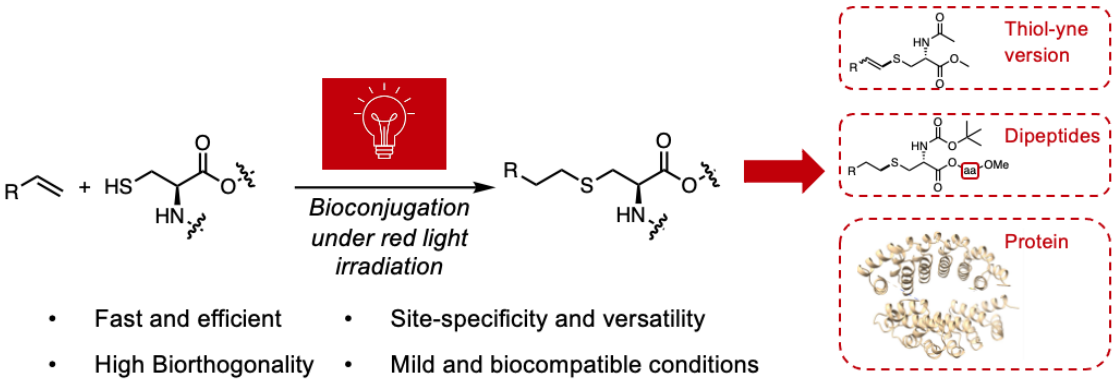
Visible-light photocatalysis is a blossoming research area. Among all the synthetic applications, selective modification of biomolecules via bioconjugation is an attractive method, allowing precise functionalization without disrupting native protein function.[1] Due to its low abundance, cysteine stands out as an interesting target for selective protein modification. In this context, the functionalization involving a thiol-ene or thiol-yne reaction has been among the most commonly explored strategy.[2] However, applications of such strategy for protein bioconjugation under photochemical conditions are still rather limited. Indeed, photochemical radical thiol-ene processes have relied mainly on UV radiation or radical initiators.[3] High-energy blue-light photocatalyzed thiol-ene reactions have been reported recently,[4] albeit sensitive protein can be denatured or damaged in these conditions.[5] In this presentation, we will present our work on photocatalyzed thiol-ene and thiol-yne reaction as a new bioconjugation method under low-energy red-light irradiation combining mild reaction conditions, efficiency and bio-orthogonality.[6]



Scheme 1. Bioconjugation method under low-energy red-light irradiation

References

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[6] Manuscript in preparation.