Literature Report 1

Fang Xiangning

2020.11.26

A Visible and Near-Infrared Light Activatable Diazocoumarin Probe for Fluorogenic Protein Labeling in Living Cells

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Cite This: https://dx.doi.org/10.1021/jacs.0c08068

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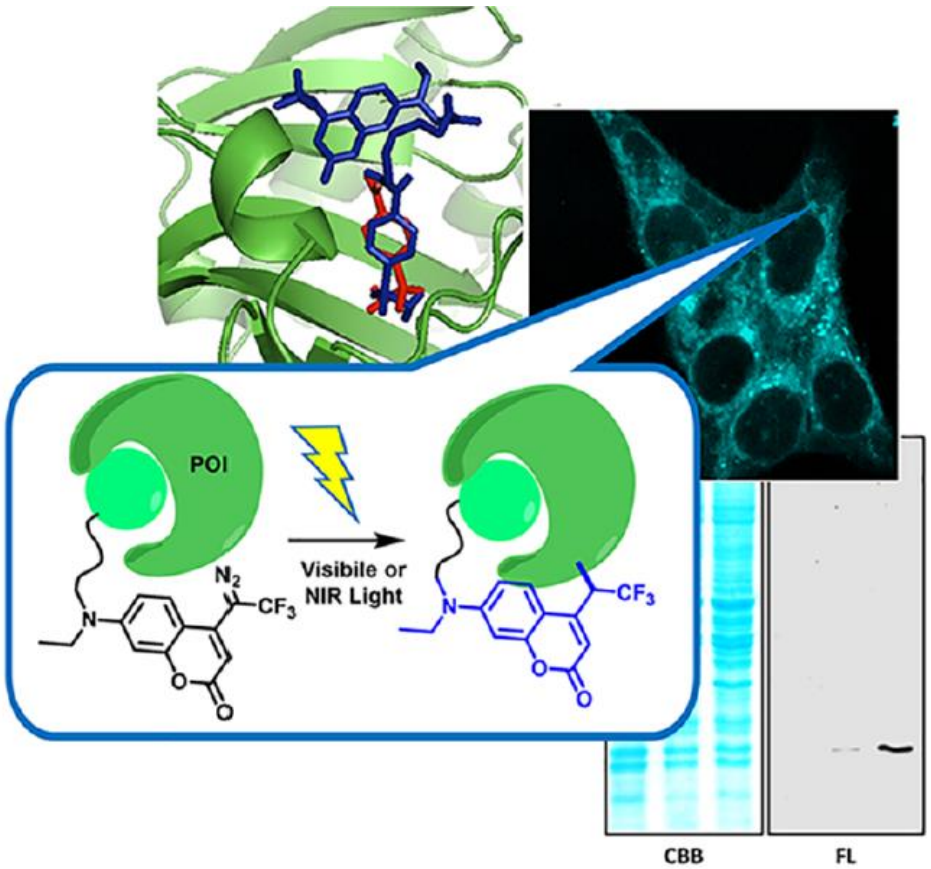
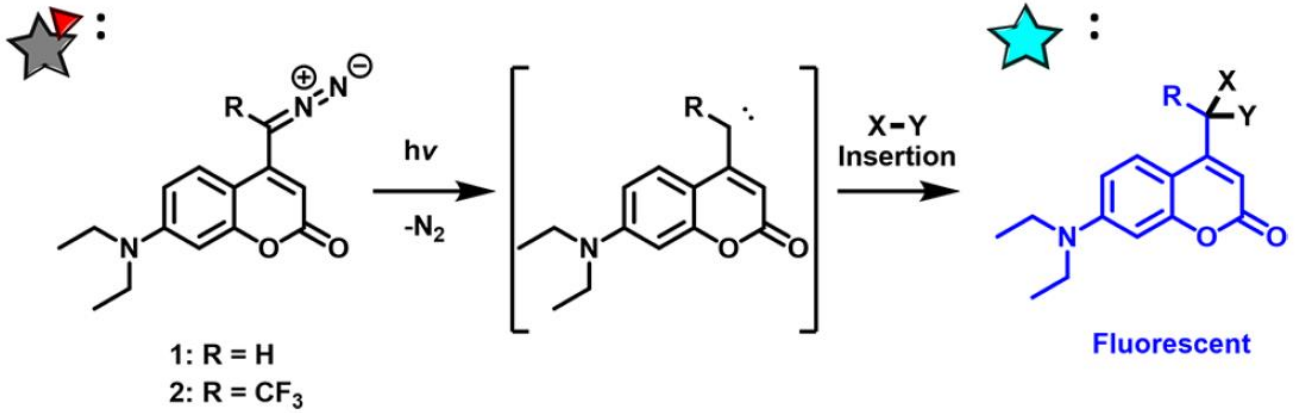
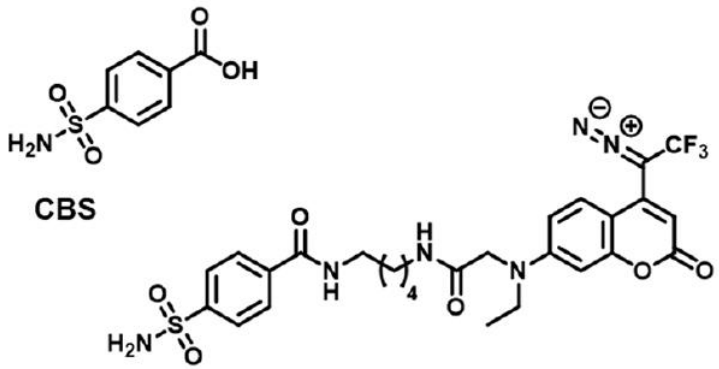
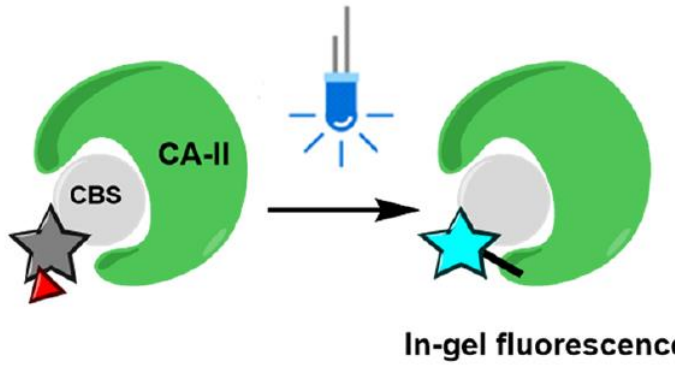
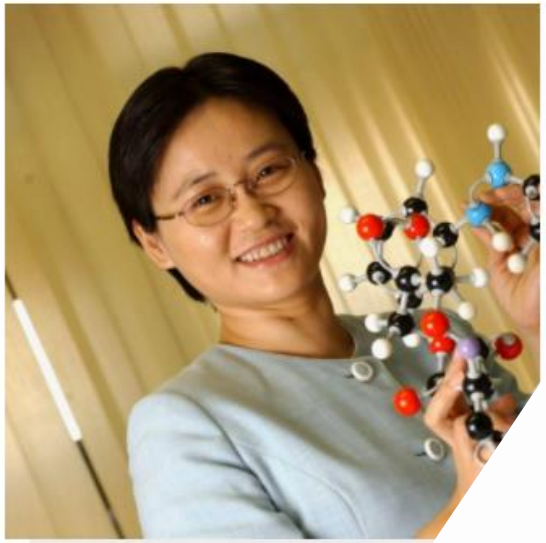








Corresponding author



Morningside Professorship in Chemical Biology

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Chair Professor

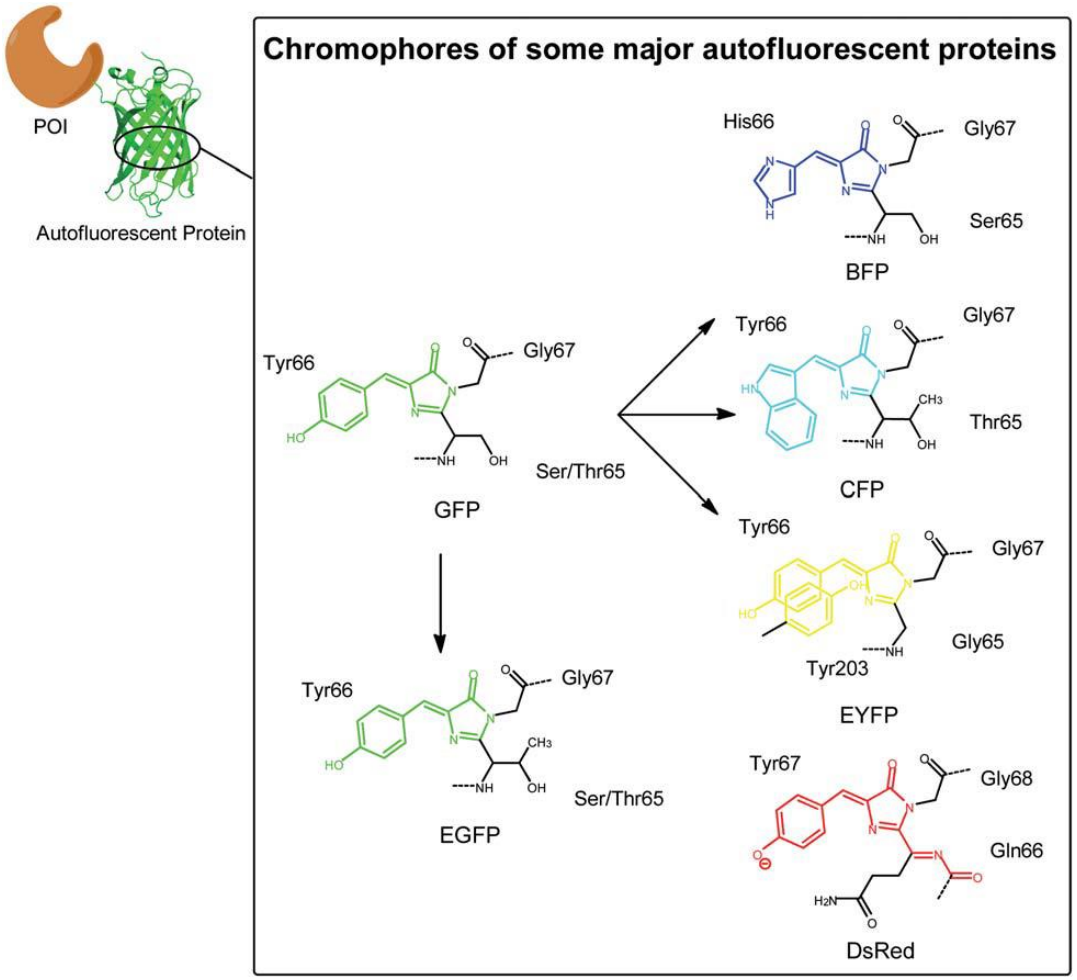
B.Sc. (Fudan), M.A. (Columbia), Ph.D. (Princeton); Postdoctoral (Harvard)

Research Interests:

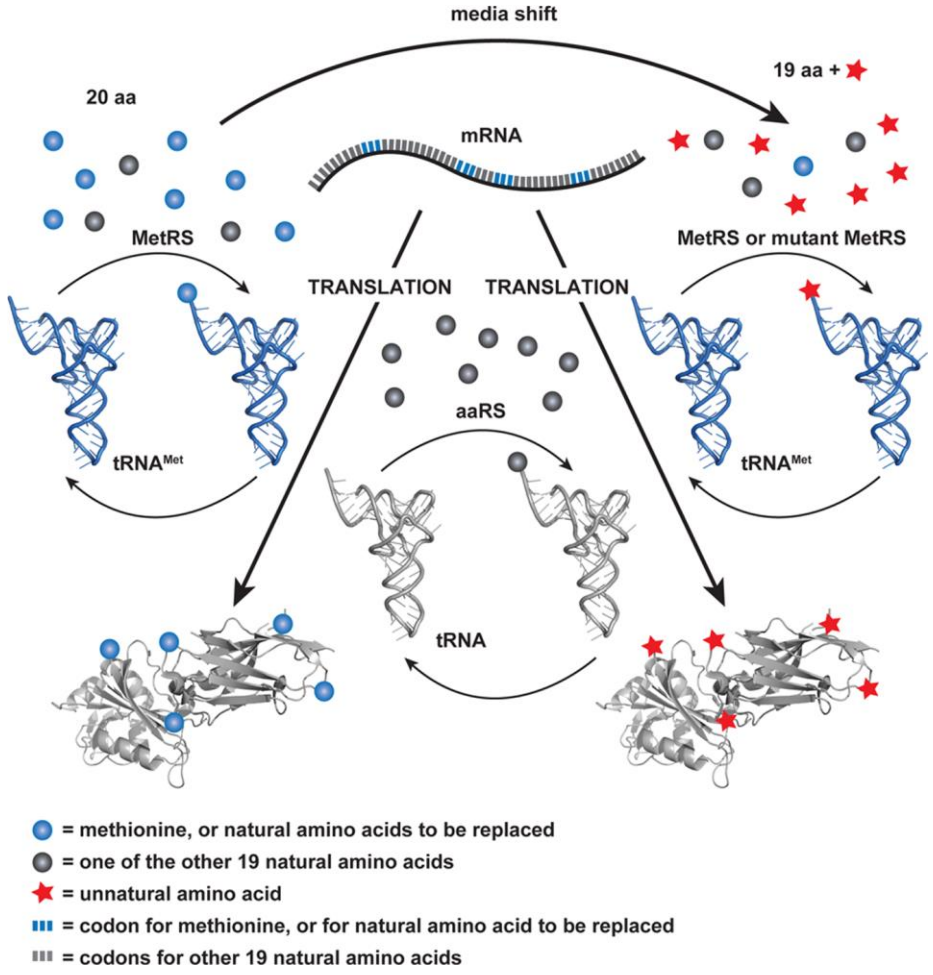
1. Developing fluorescent/chemiluminescent sensors for molecular detection and imaging of reactive oxygen species, lipids, DNA, metabolites and enzymes in living cells to study redox biology and human diseases.
2. Developing new molecular probes for proteins and nucleic acids to investigate epigenetic changes in relation to their functions.
3. Developing synthetic ion transporters and exploring their biological applications in eradicating cancer stem cells and drug-resistant bacteria.

Background: Protein labeling

Fluorescent protein tags



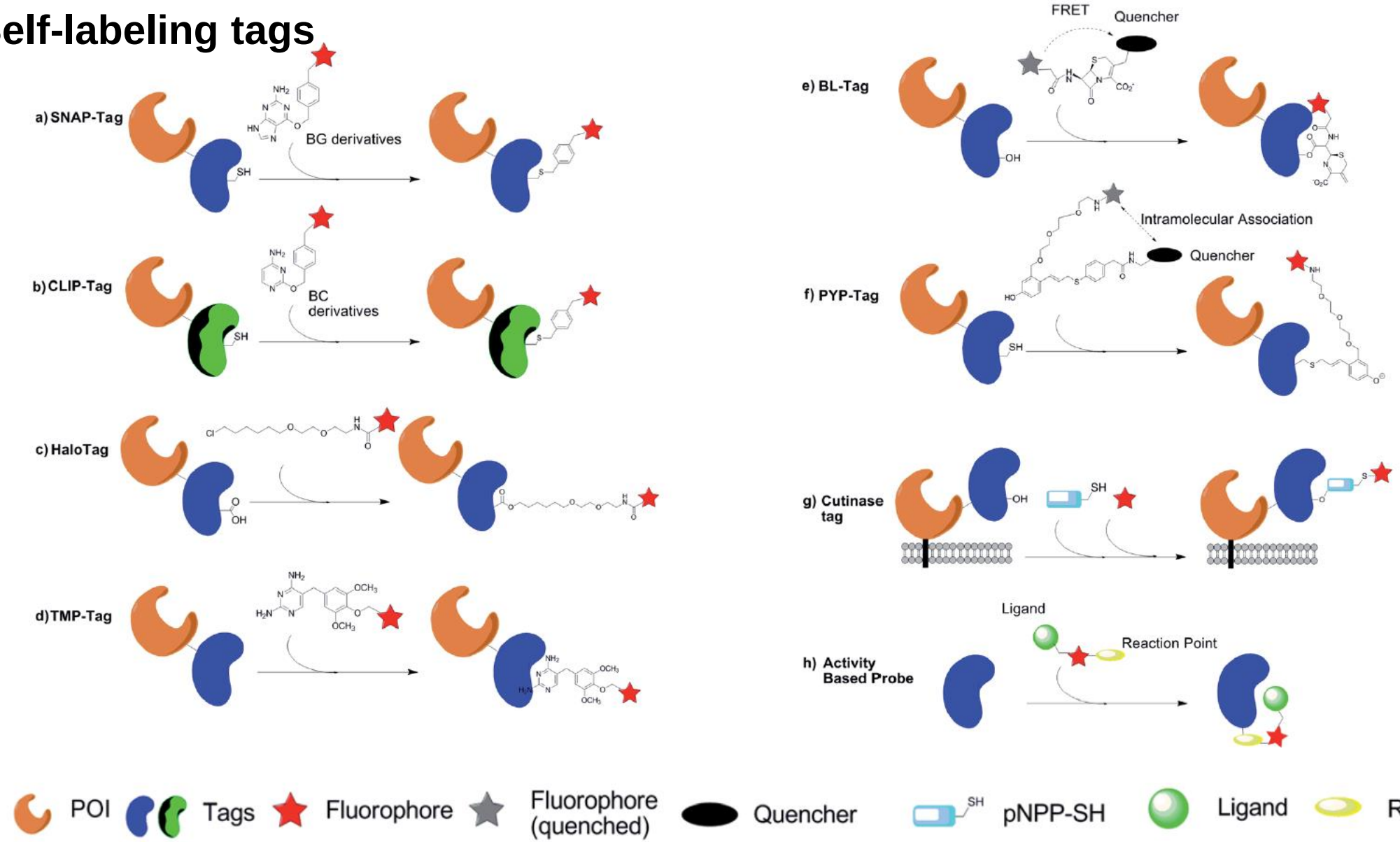
Incorporation of unnatural amino acids into proteins



Chem. Rev. 2014, 114, 4764−4806
RSC Adv., 2014, 4, 7235–7245

Background: Protein labeling

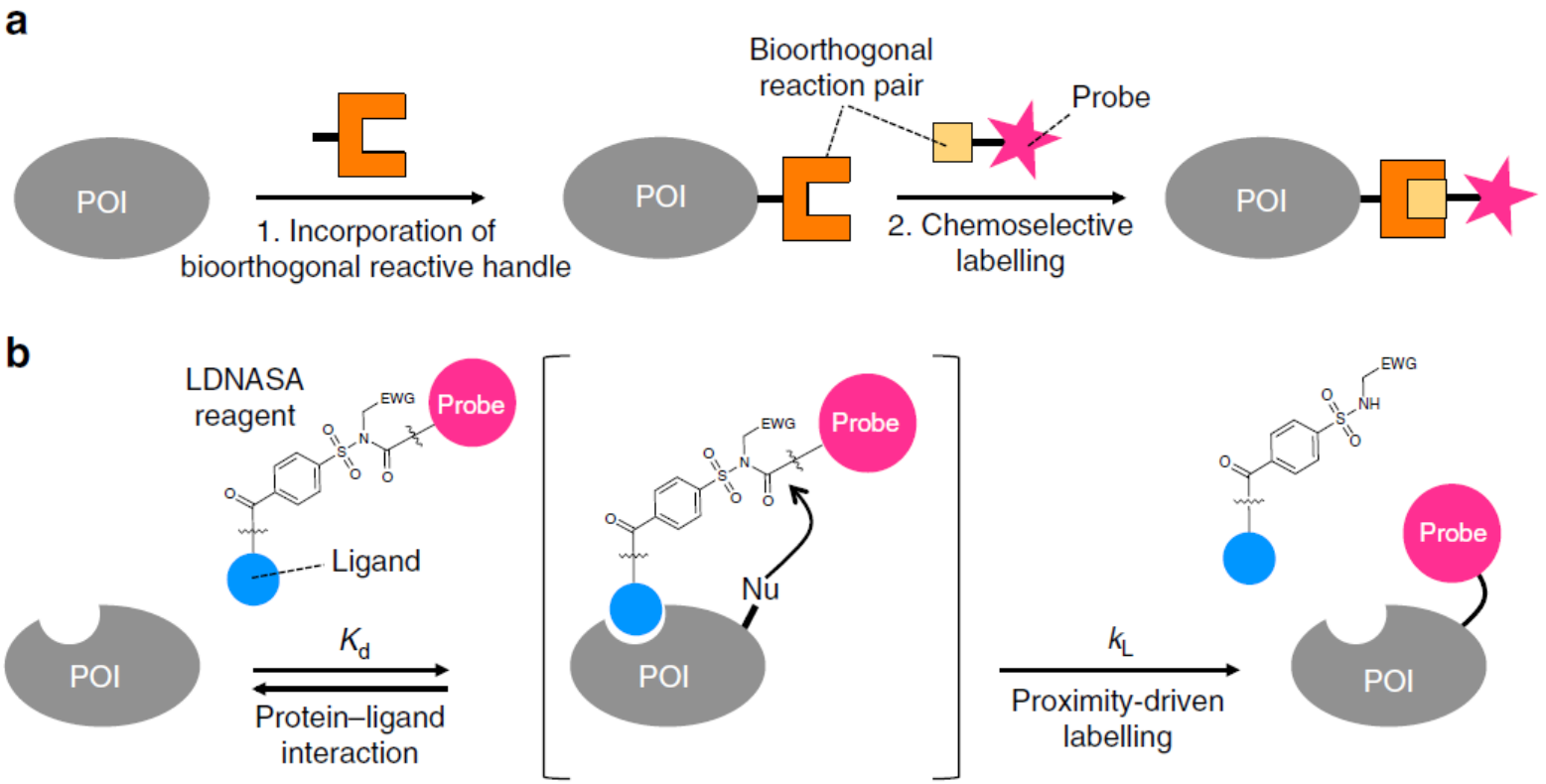
Self-labeling tags



RSC Adv., 2014, 4, 7235–7245

Background: Protein labeling

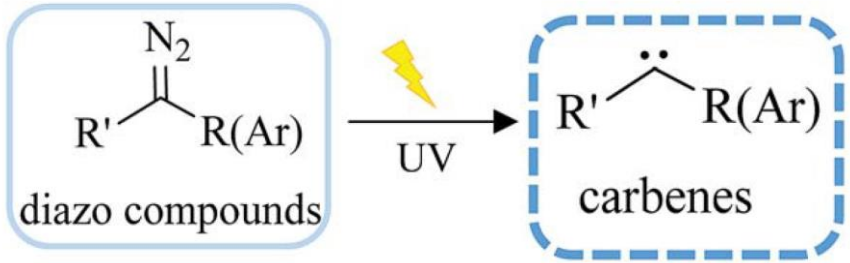
Bioorthogonal protein modification

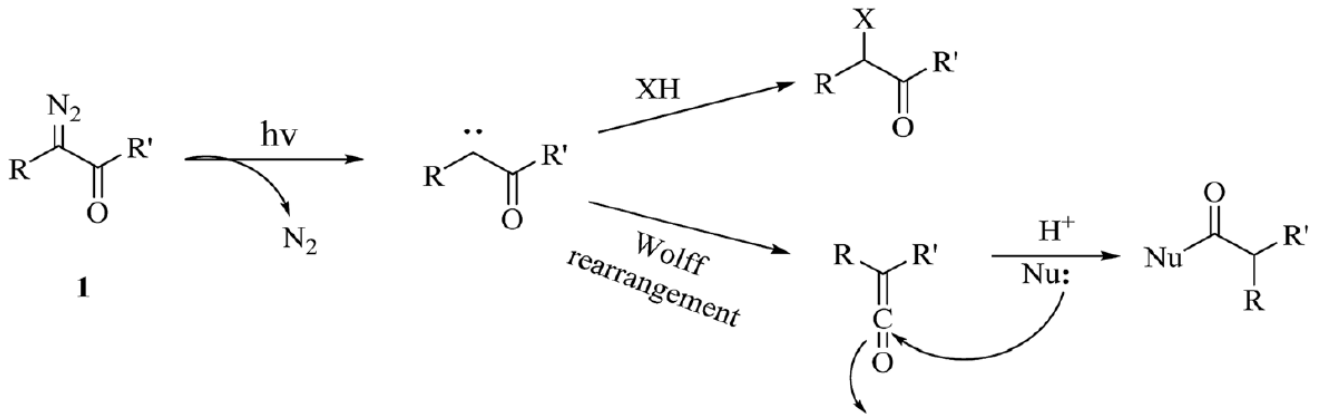


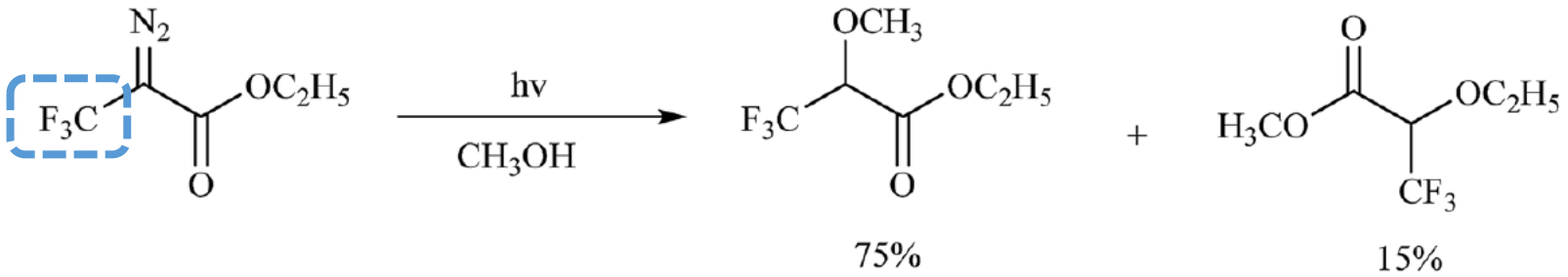
Ligand-directed chemistry

NATURE COMMUNICATIONS, 2018, 9, 1870

Background: Carbene-mediated photoaffinity labeling

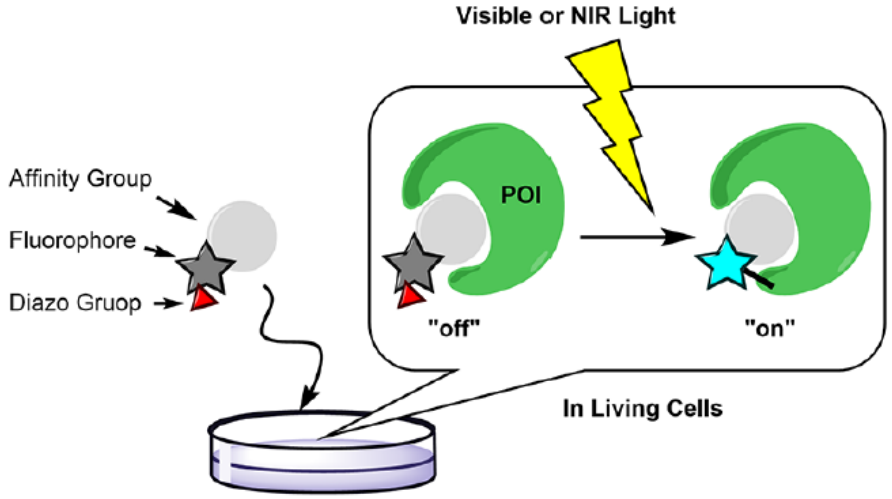


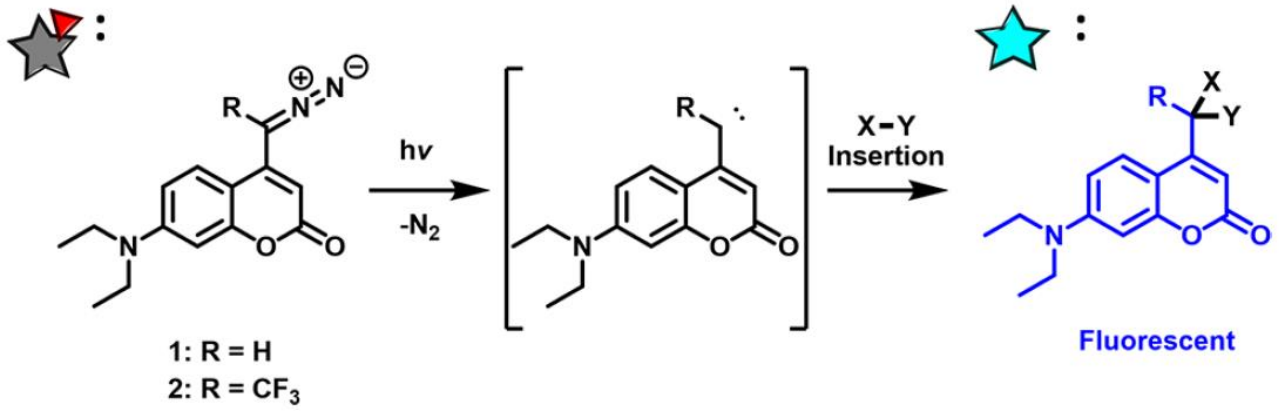


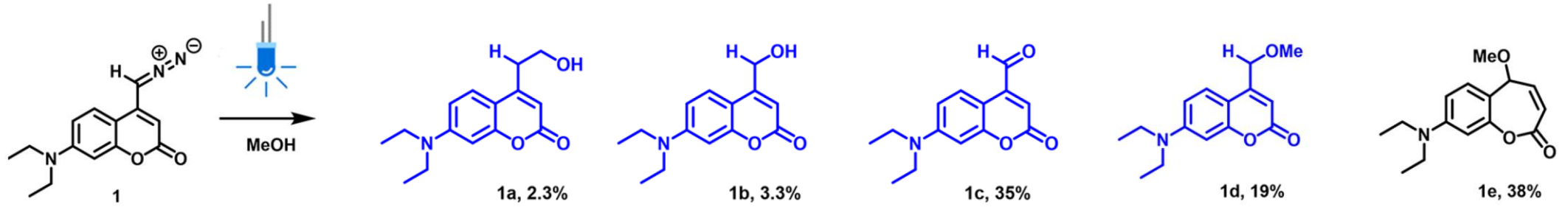


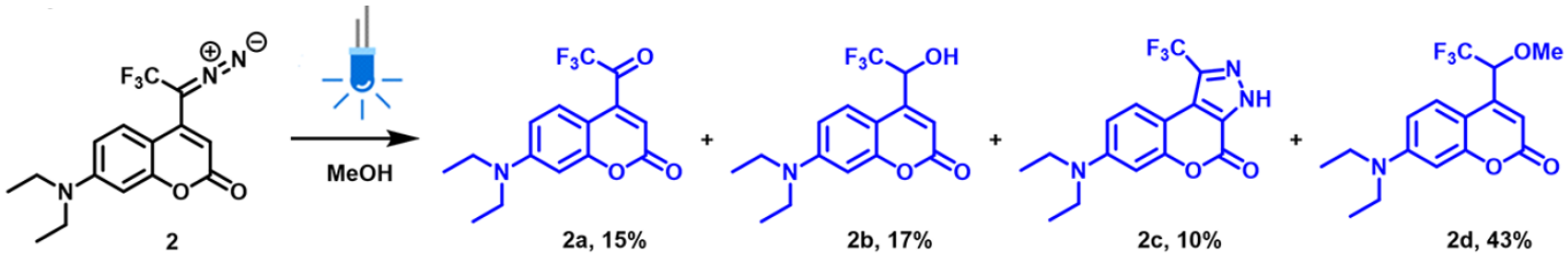
RSC Adv., 2018, 8, 29428

Probe design



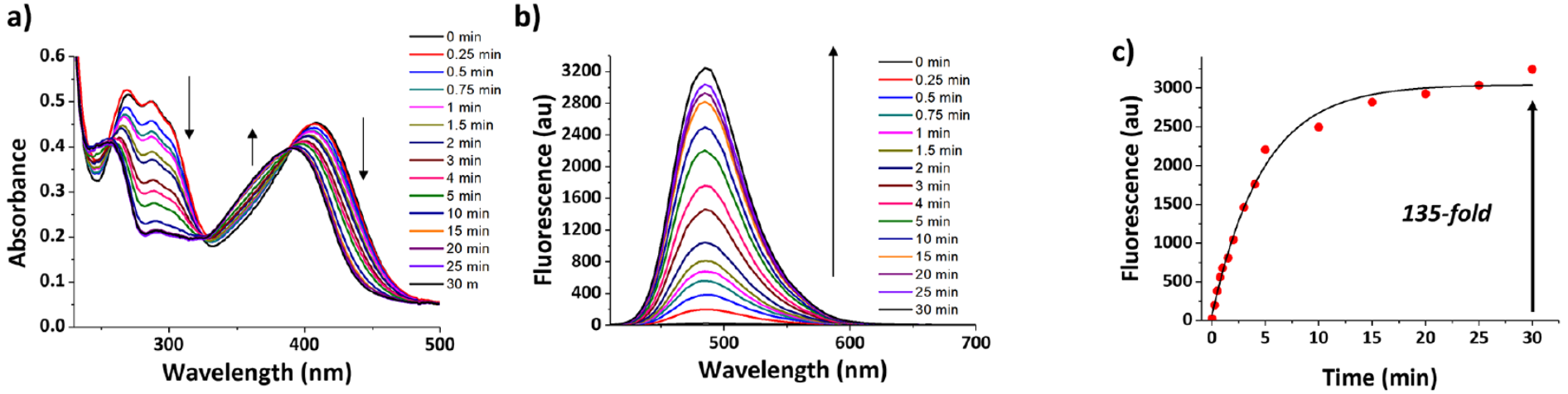




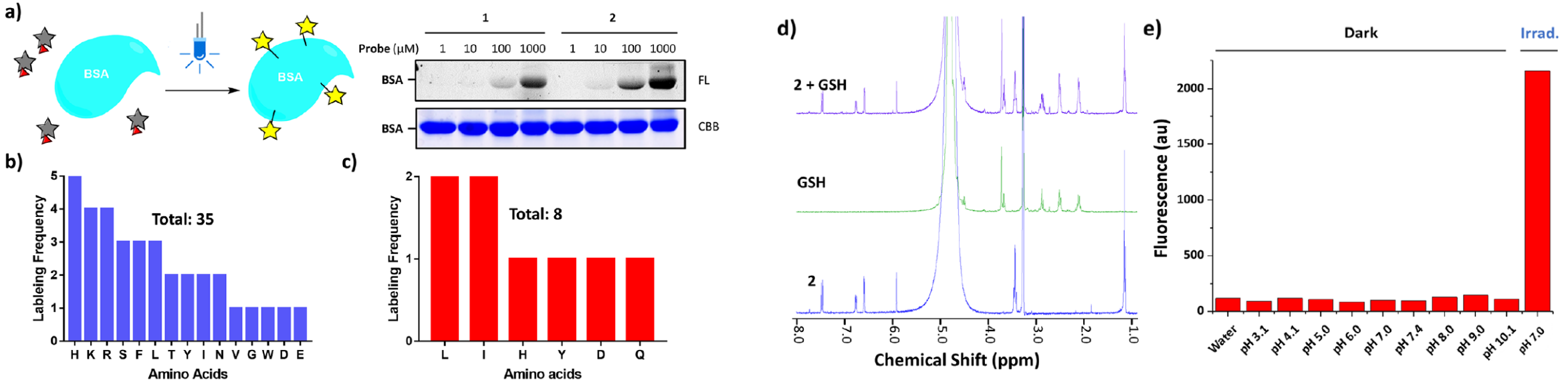


Characterizations

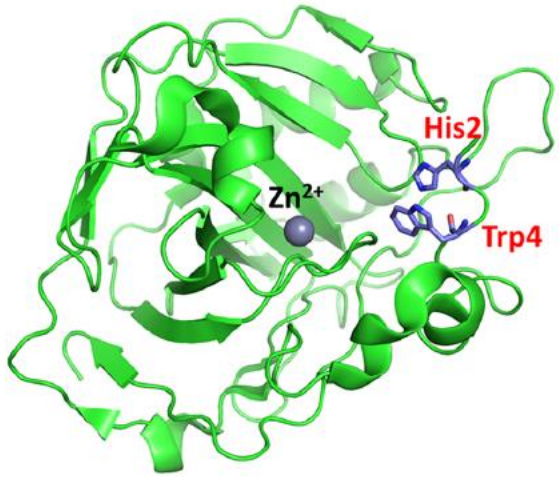
Photochemical characterizations

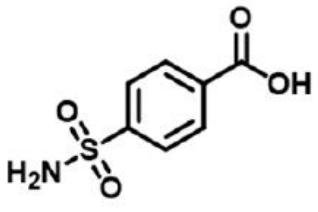


Reactivity and stability in biologically relevant conditions

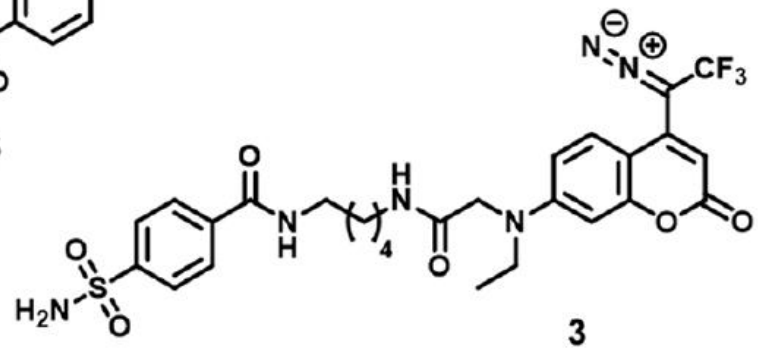


Labeling of CA-II





CBS



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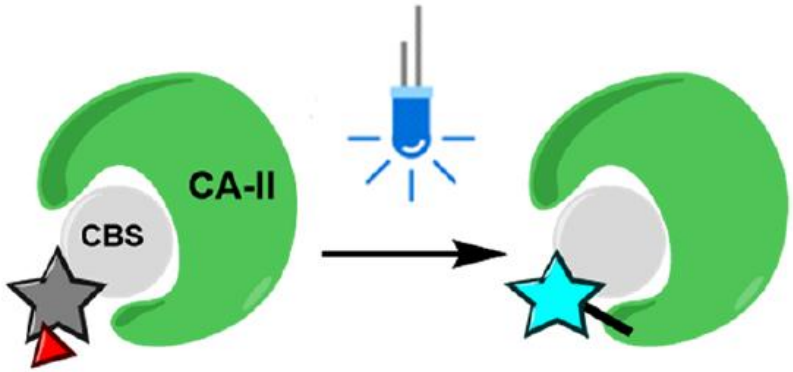
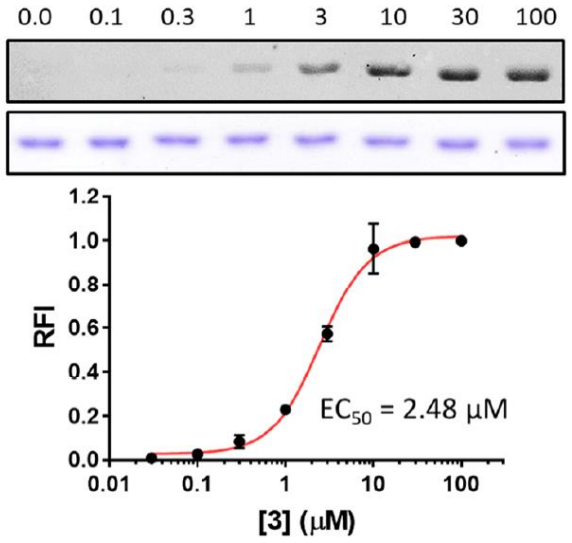
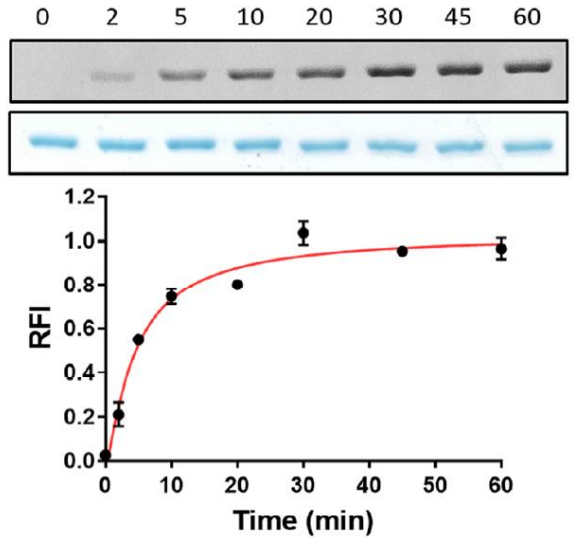
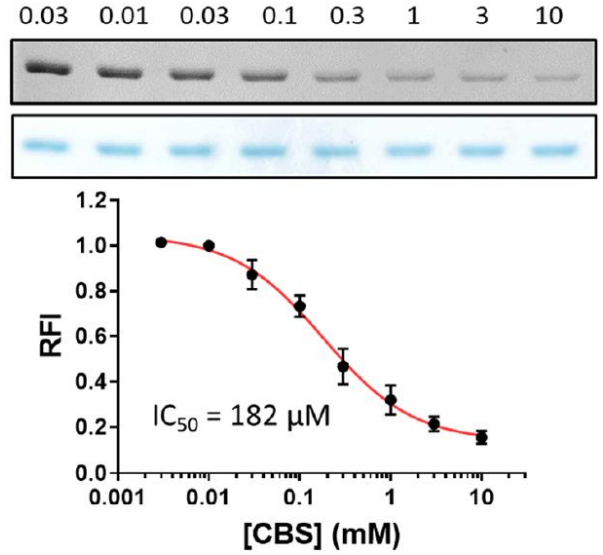
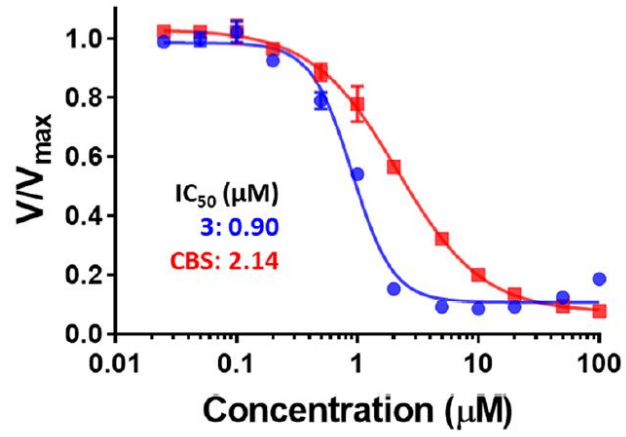


In-gel fluorescence

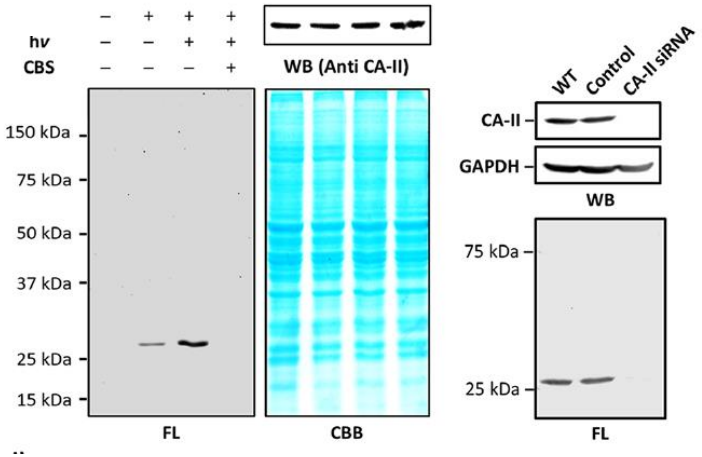


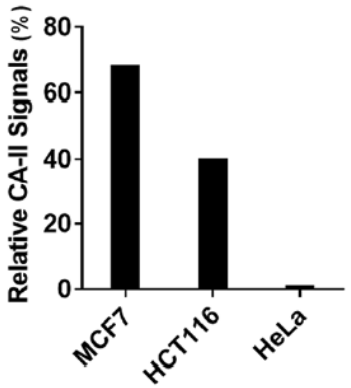


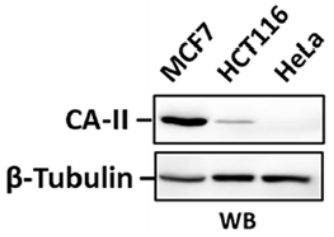


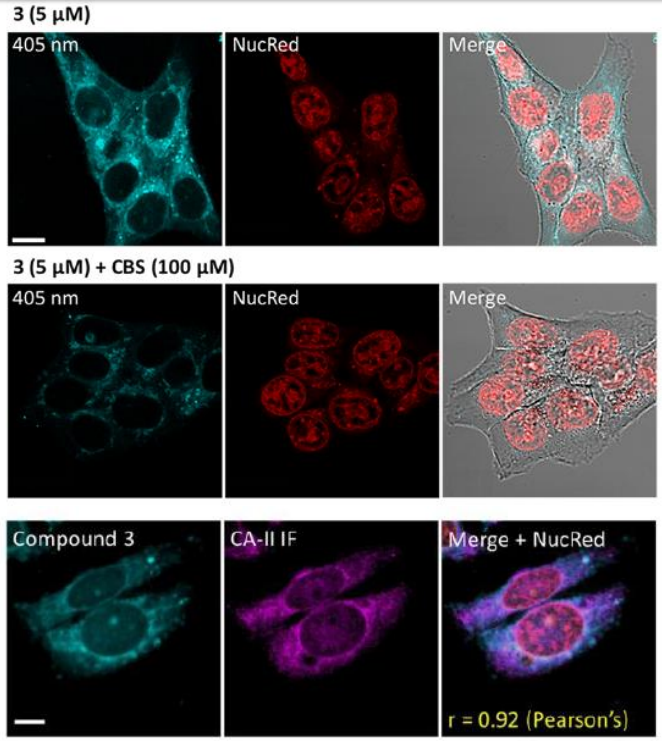


Labeling of CA-II









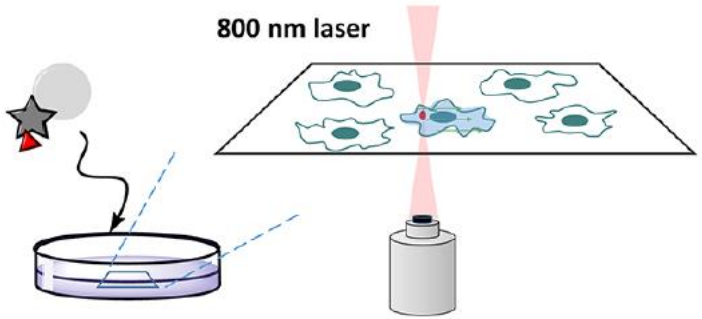
HCT116

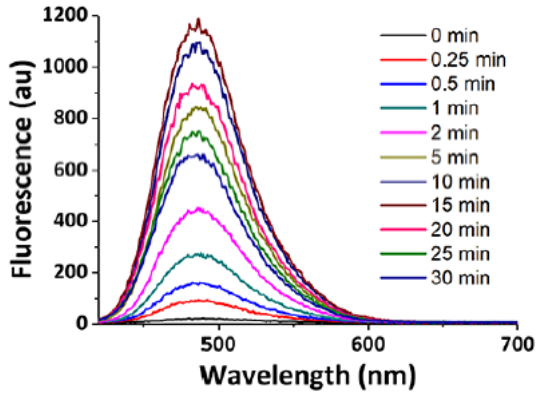
HCT116

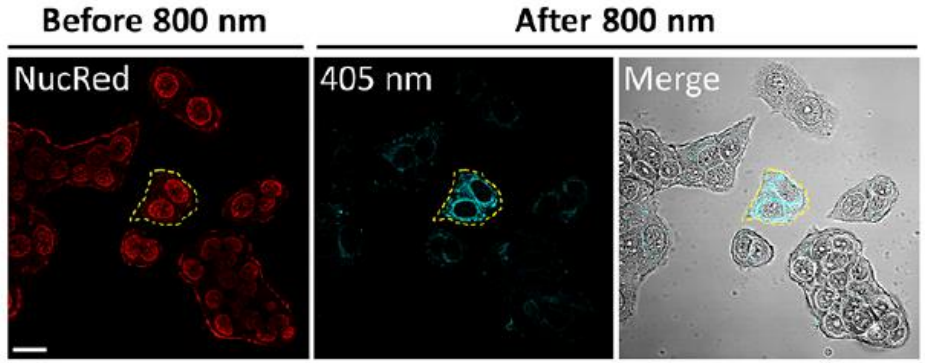
MCF7

MCF7, HCT116: express CA-II endogenously.

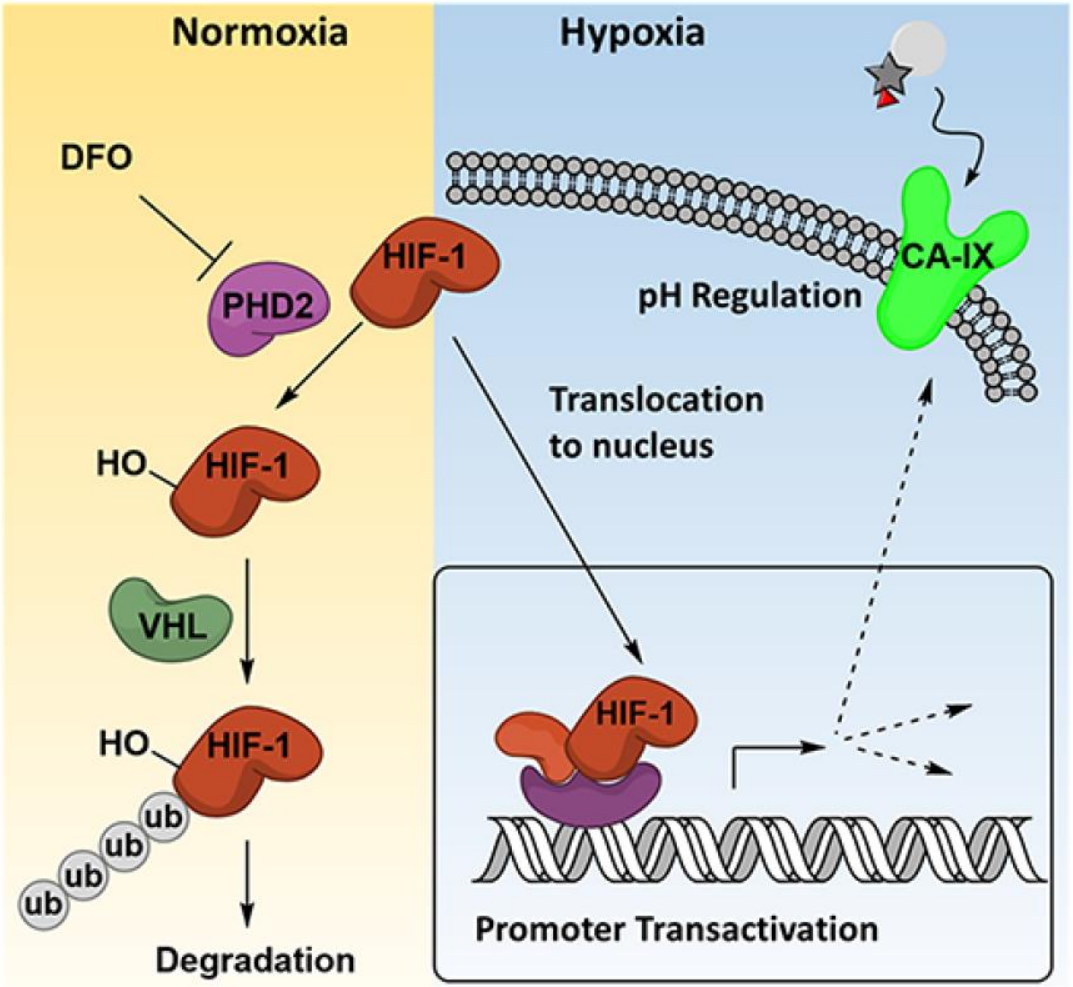
In situ two-photon imaging.

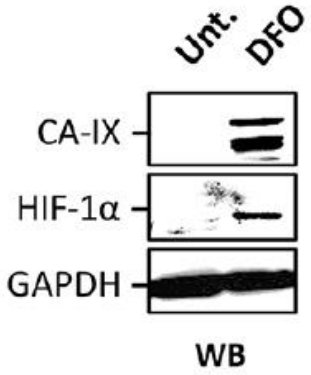


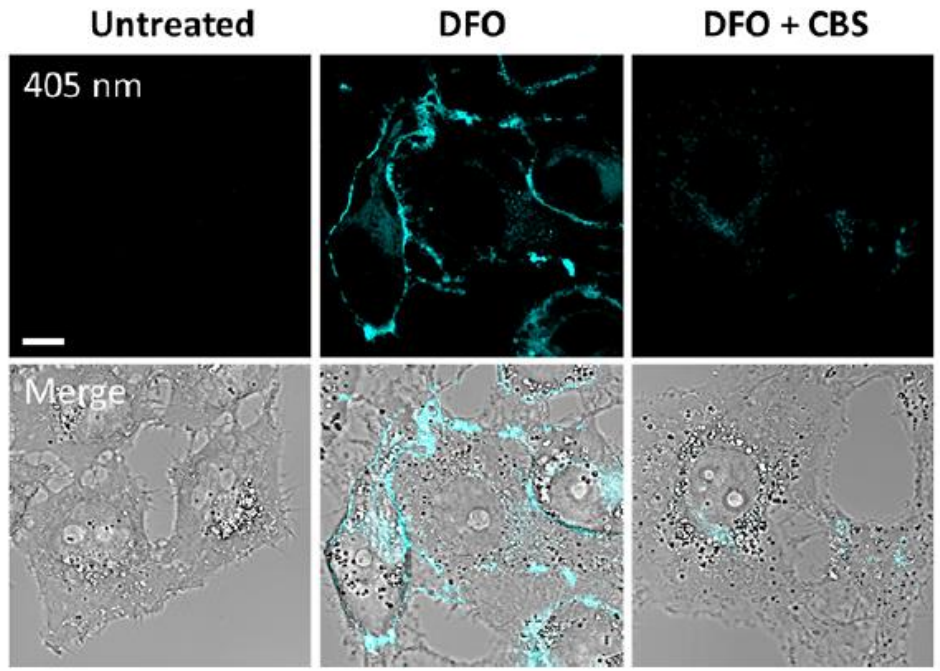




Labeling of CA-IX

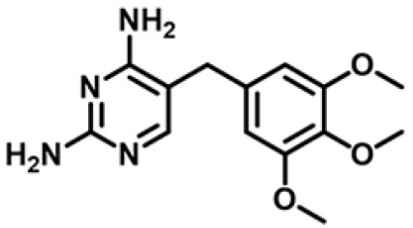




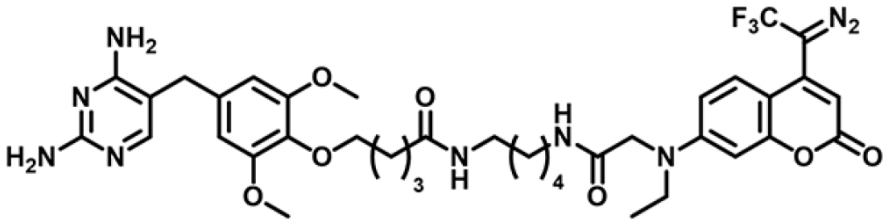


Labeling of EDHFR

Labeling strategy can be applied to other target proteins.



Trimethoprim (TMP)



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