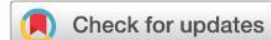




2022 Literature report I

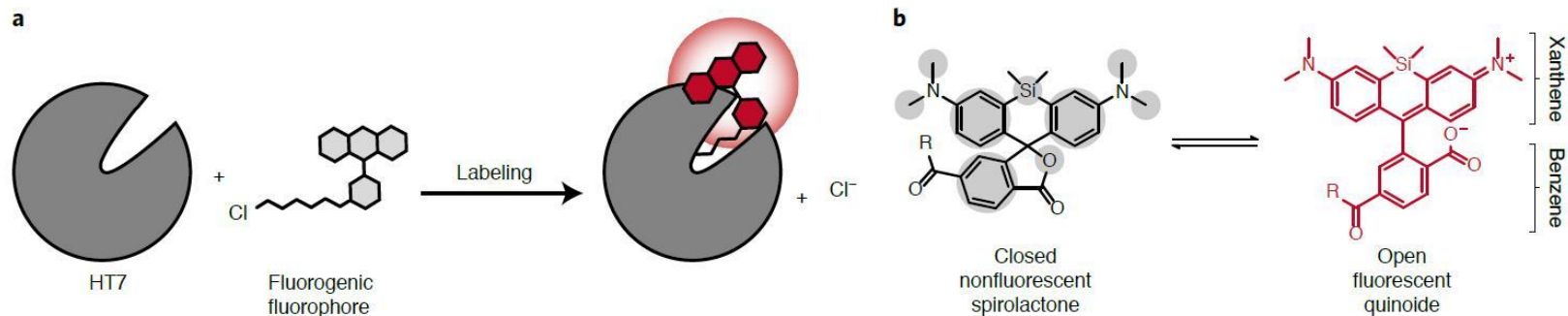
Reporter: Wu Shaowei

Date: 2021-01-21



OPEN Engineered HaloTag variants for fluorescence lifetime multiplexing

Michelle S. Frei ^{1,2}, Miroslaw Tarnawski³, M. Julia Roberti⁴, Birgit Koch¹, Julien Hiblot ¹ and Kai Johnsson ^{1,2} ✉



Author



Kai Johnsson

Position and Status

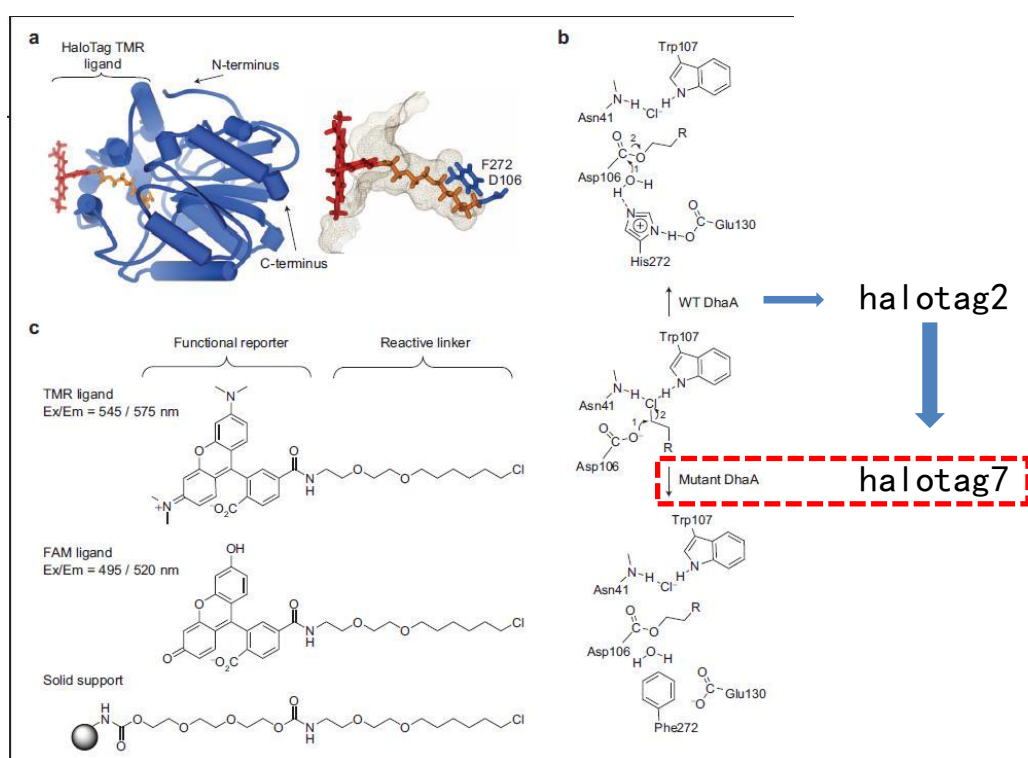
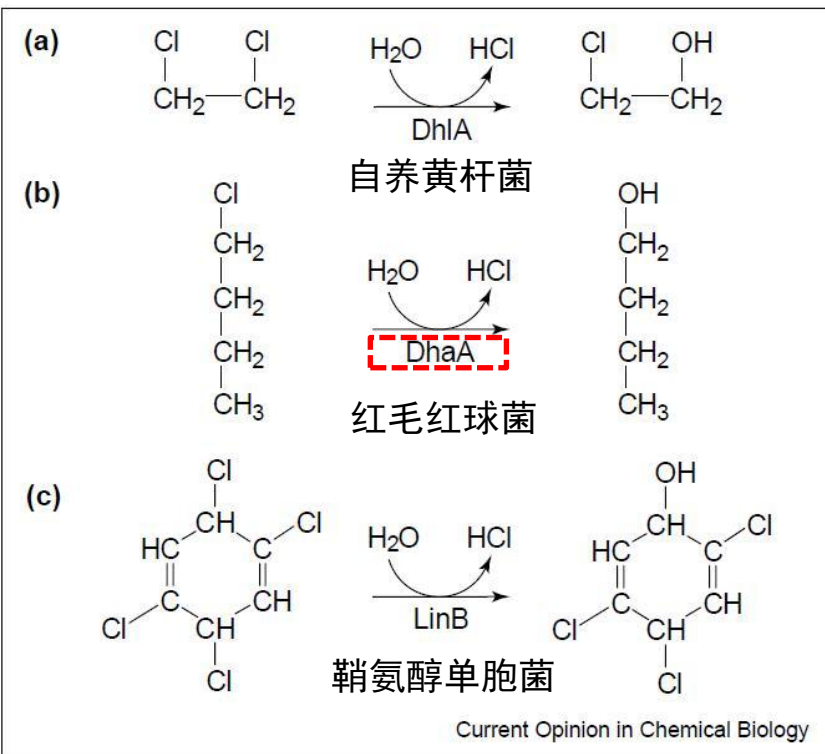
Professor EPFL

Director at the Max Planck Institute for Medical Research, Department of Chemical Biology

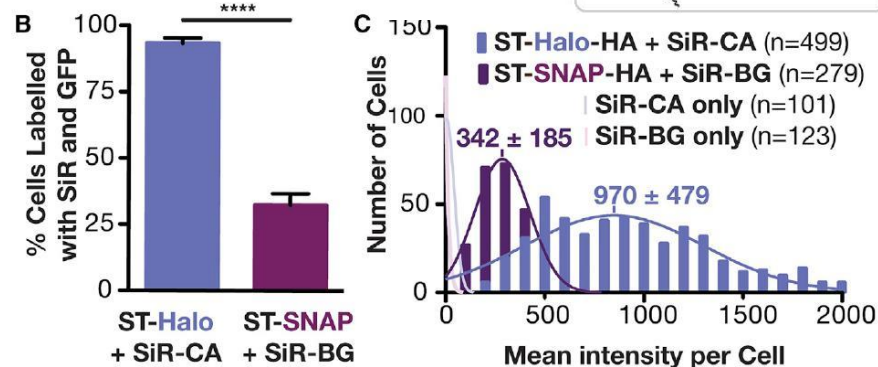
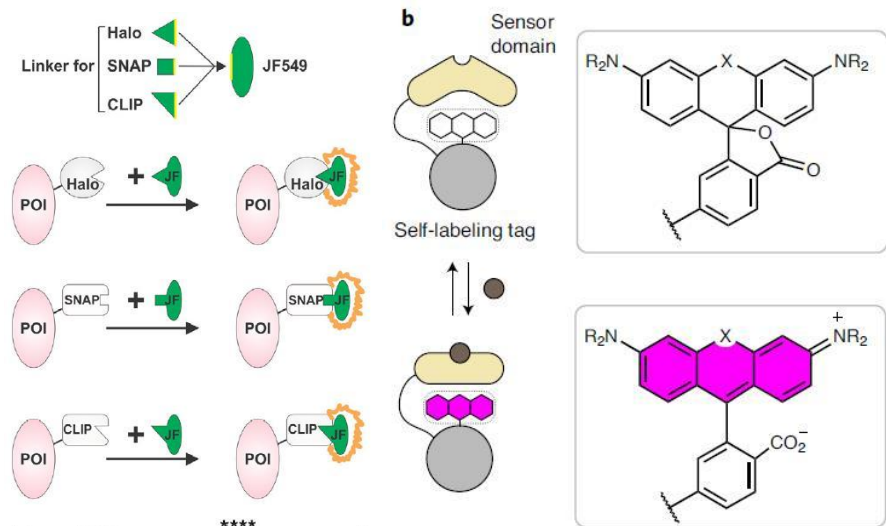
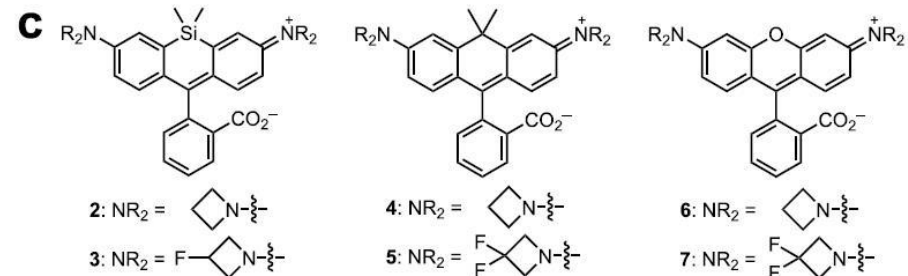
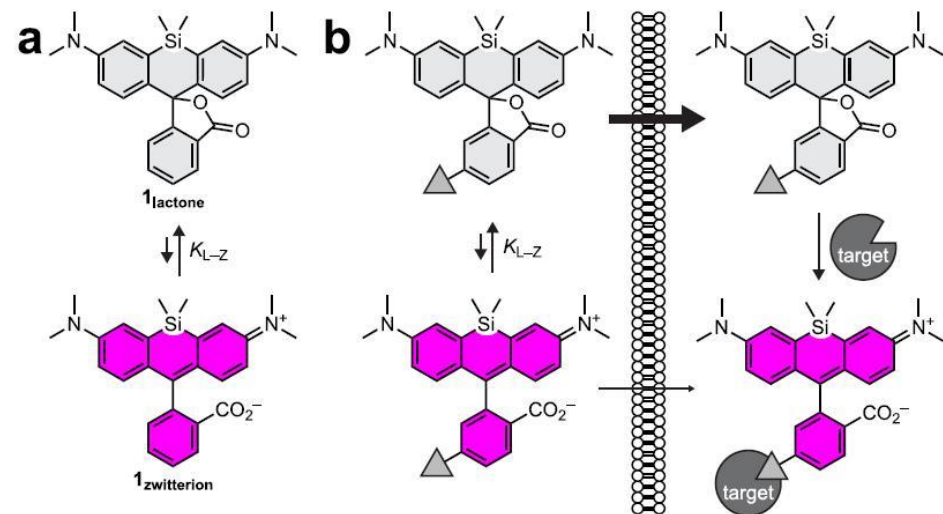
Research topics

- Development of semisynthetic fluorescent sensor proteins to measure key metabolites in living cells.
- Development and application of methods for characterizing protein-protein interactions.
- Generation of small molecules for controlling protein function in living cells.
- Engineering of new protein functions for applications in functional proteomics.
- Synthesis of new spectroscopic probes for applications in cell biology.
- Mechanistic studies on drug candidates

Introduction

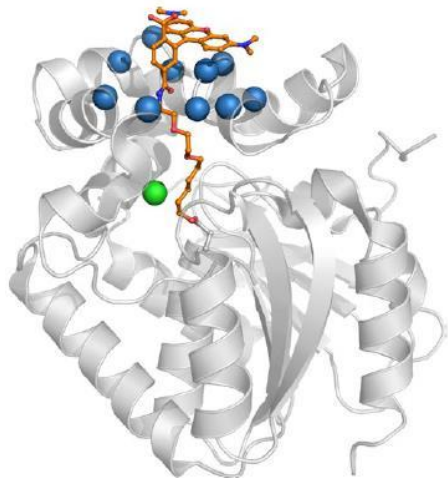


Introduction

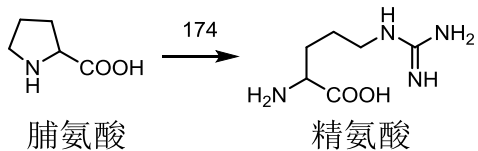
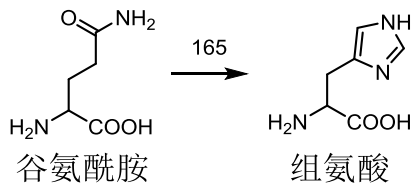


HaloTag engineering and characterization

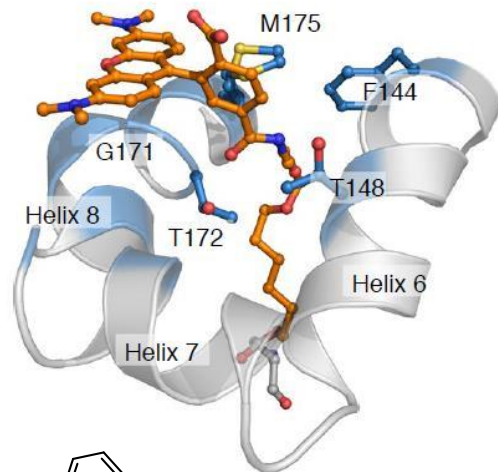
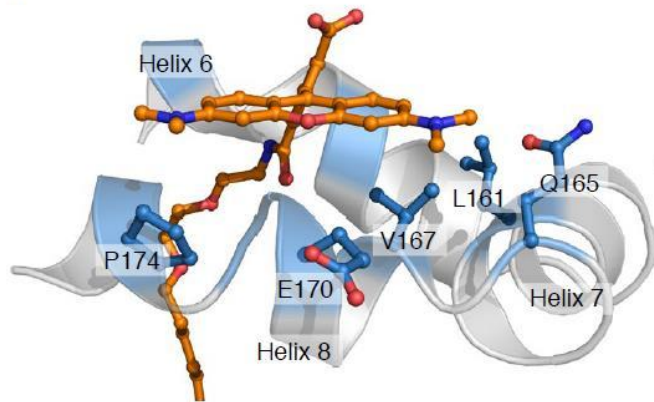
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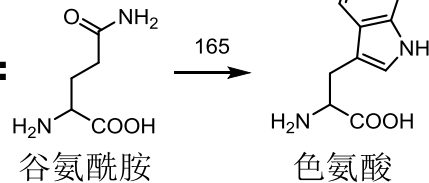
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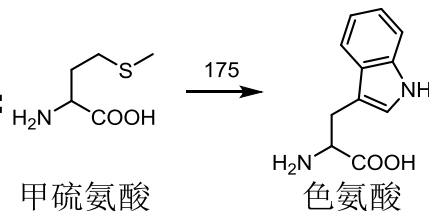
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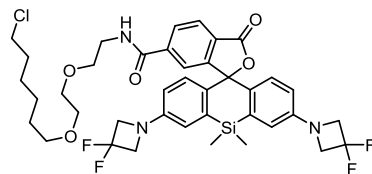
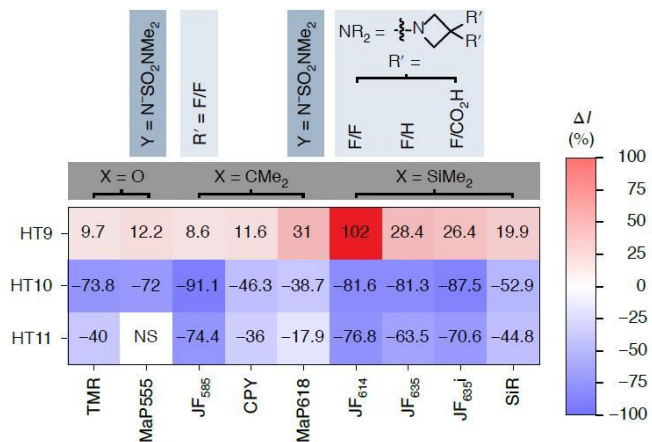
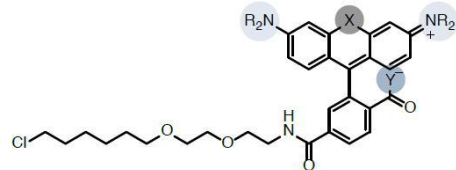


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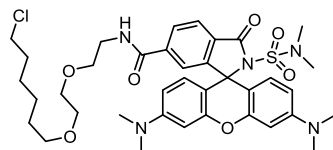


HaloTag engineering and characterization

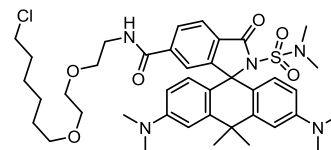
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JF₆₁₄-CA

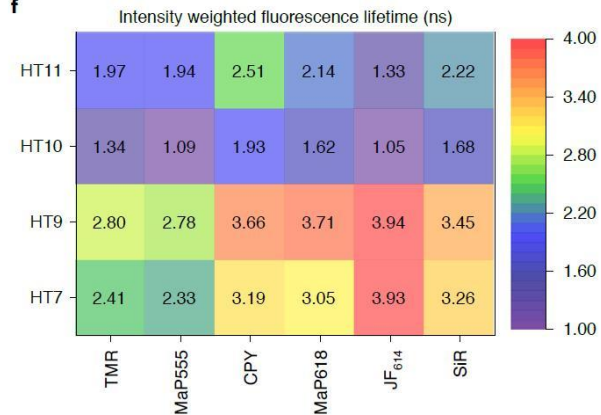


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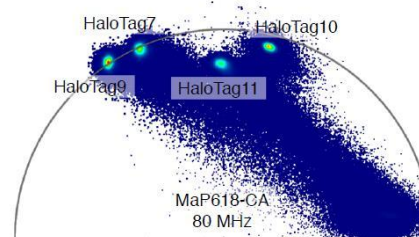


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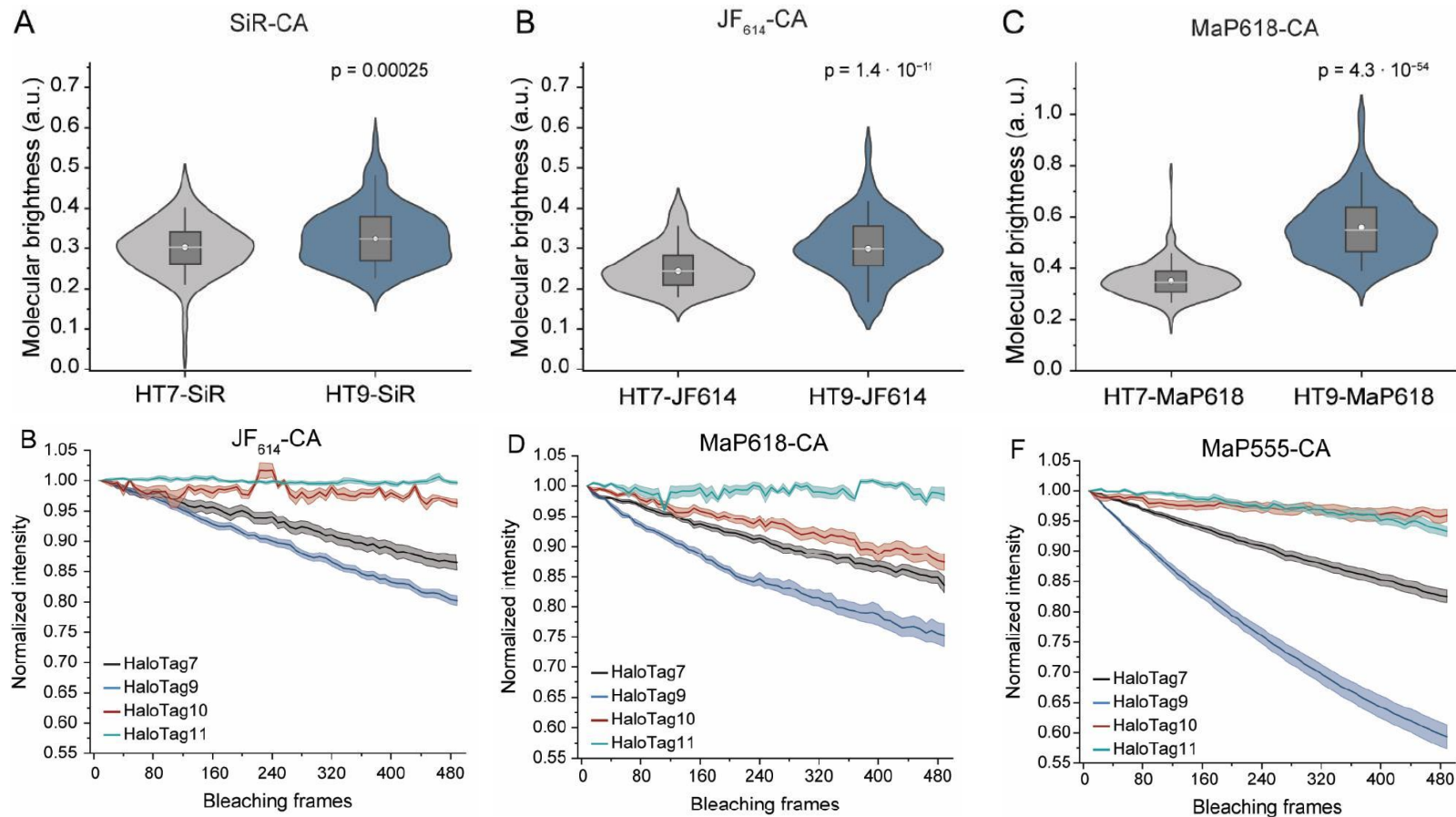
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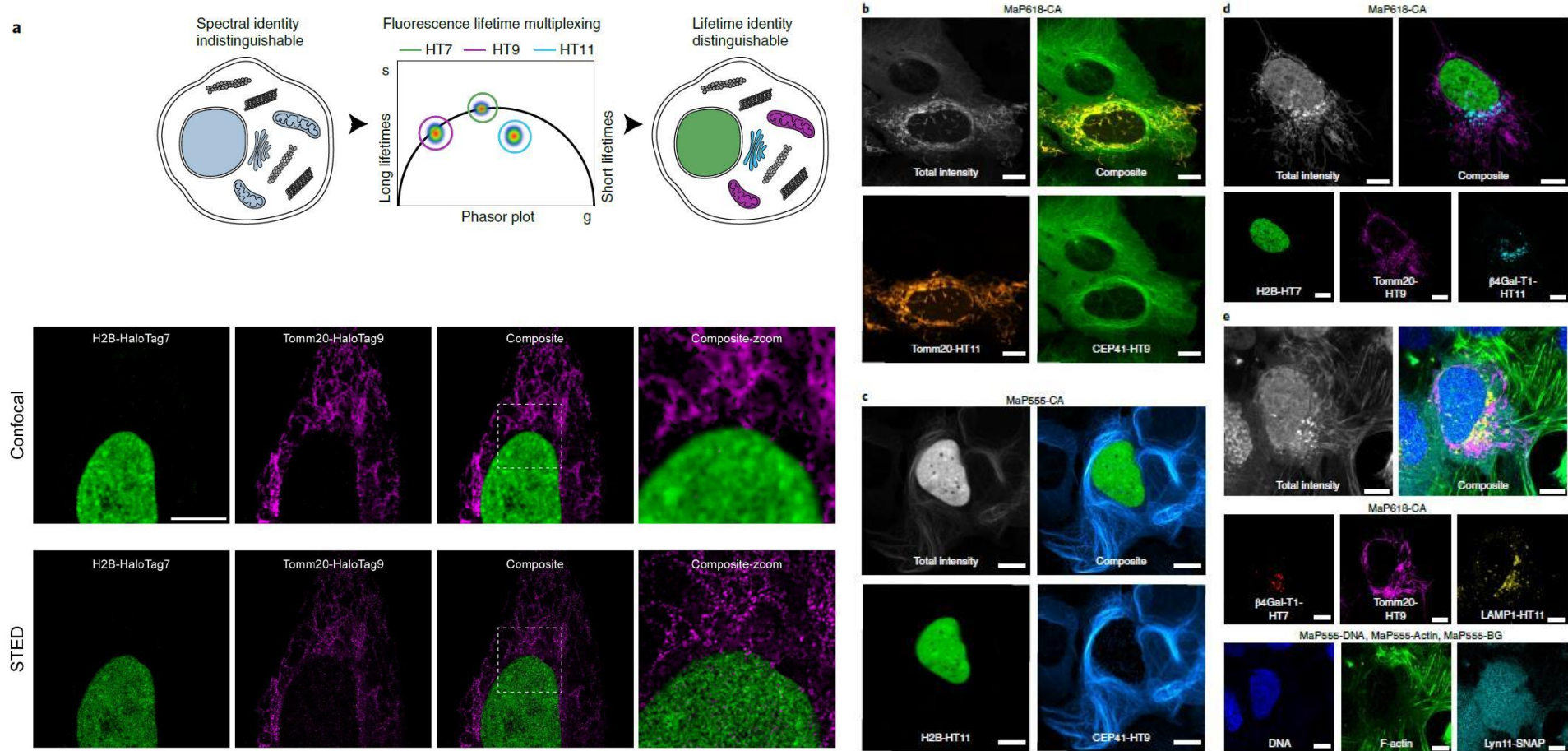
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HaloTag engineering and characterization



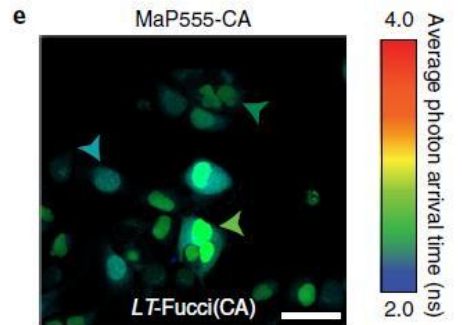
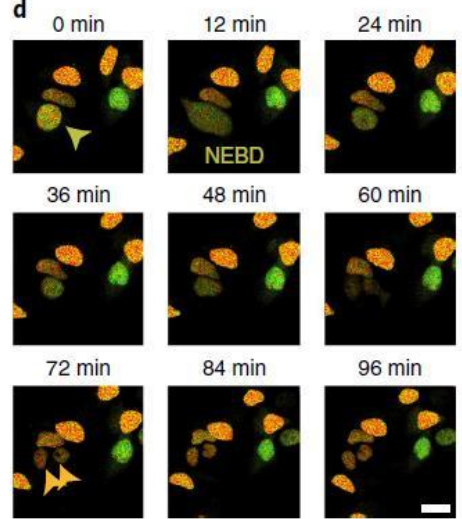
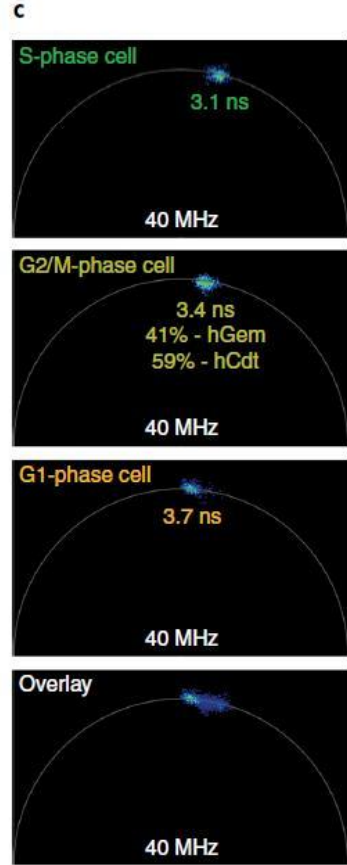
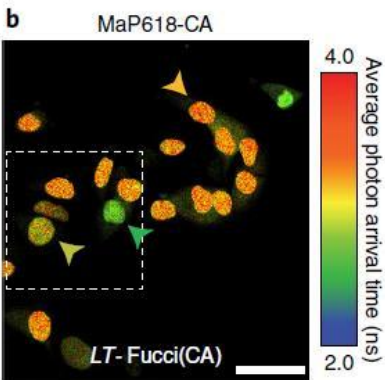
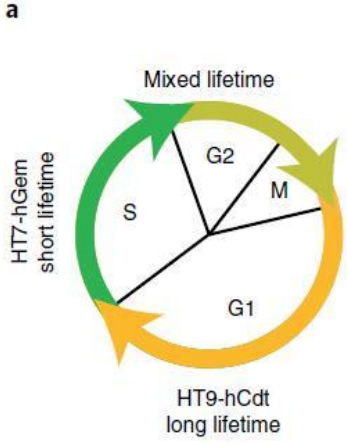
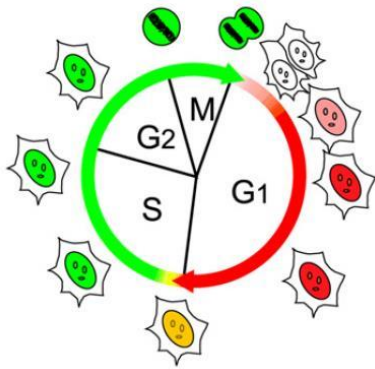
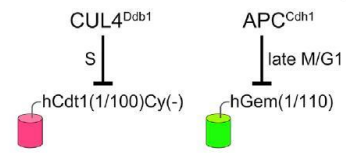
Fluorescence lifetime multiplexing



Lifetime-based biosensors

Fucci i (fluorescent, ubiquitination-based cell cycle indicator)

Balance between $CUL4^{Ddb1}$ and APC^{Cdh1} E3 ligase activities



Summary

- 筛选了对荧光团具有不同影响的halotag
- 利用不同halotag对荧光团寿命的影响实现单一荧光团的多目标成像
- 基于荧光寿命变化开发了细胞周期生物传感器
- 该策略未来可能应用于其他标签蛋白