Literature Report

Reporter: Guangying Wang

Date: 2021-05-27

Literature Source

REVIEWS

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Dual-locked spectroscopic probes for sensing and therapy

Luling Wu[1], Jiaguo Huang[2], Kanyi Pu[2]✉ and Tony D. James[1,3]✉

Tony D. James

巴斯大学的教授，也是皇家化学学会的会员，他目前享有盛名的皇家学会沃尔夫森研究优异奖（2017-2022）。

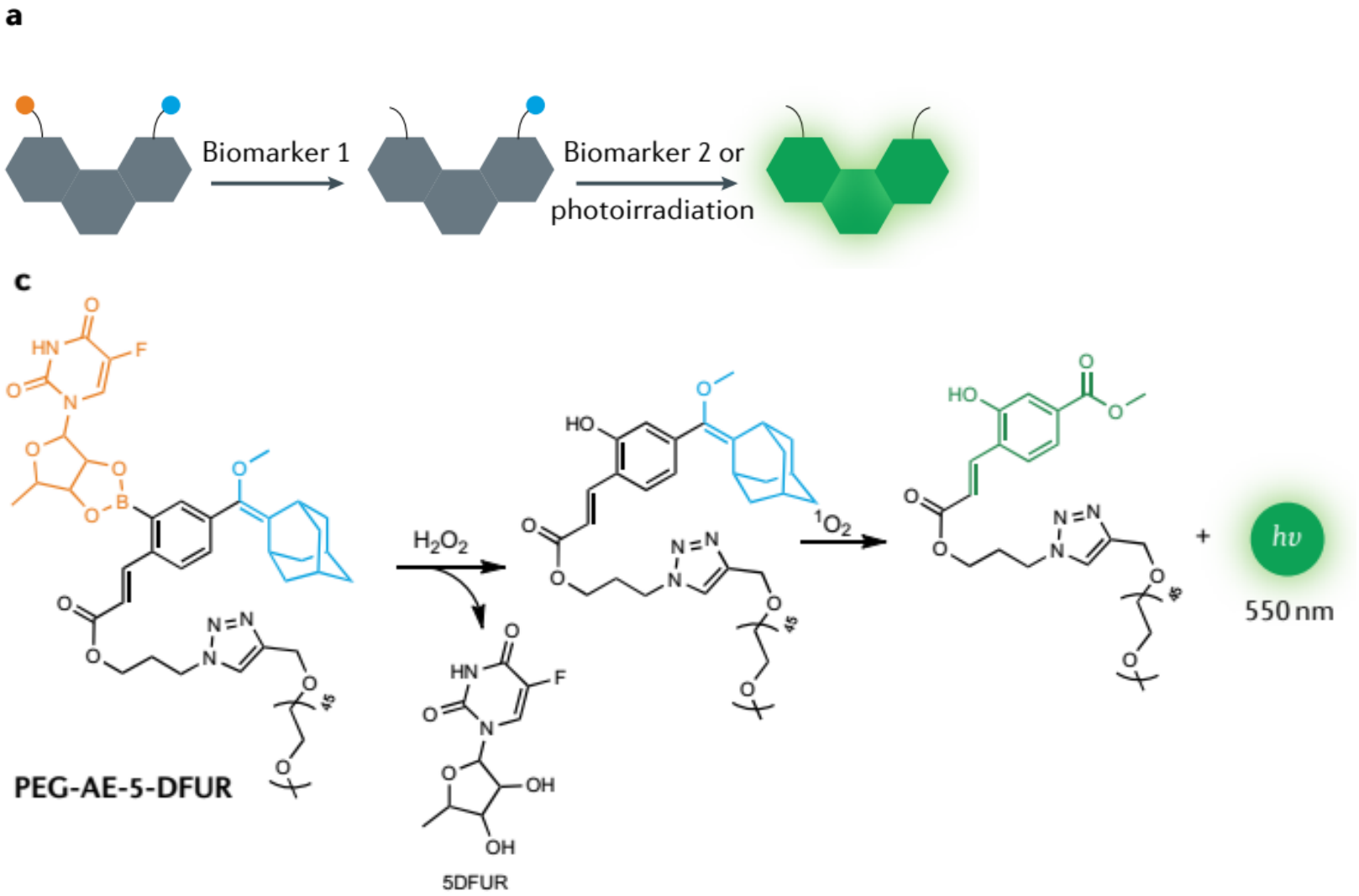
研究方向：分子识别；荧光传感器设计；荧光成像；治疗学系统；手性识别；糖类识别；阴离子识别；活性氧（ROS）传感器；氧化还原不平衡的探针。

南洋理工大学Kanyi Pu (浦侃裔)

目前的研究方向侧重于有机光学纳米探针在疾病诊疗与药物毒性检测中的应用，涉及智能响应型活体荧光、光声成像，纳米医药，光热调控离子通道与基因表达等研究。

Contents

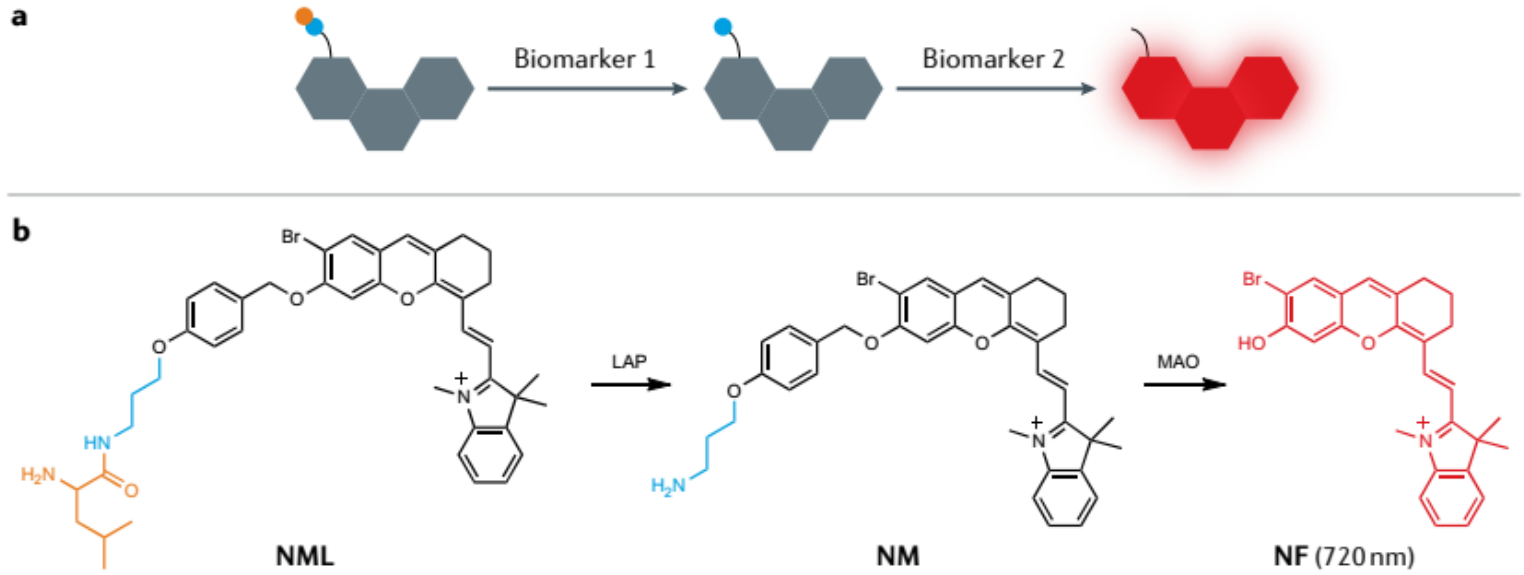
1.Sequentially activated optical probes



PEG- AE-5- DFUR和光敏剂共封装成纳米颗粒

Fig. 1 | **Dual-locked probes containing two reaction sites that undergo two sequential reactions.**

1. Sequentially activated optical probes

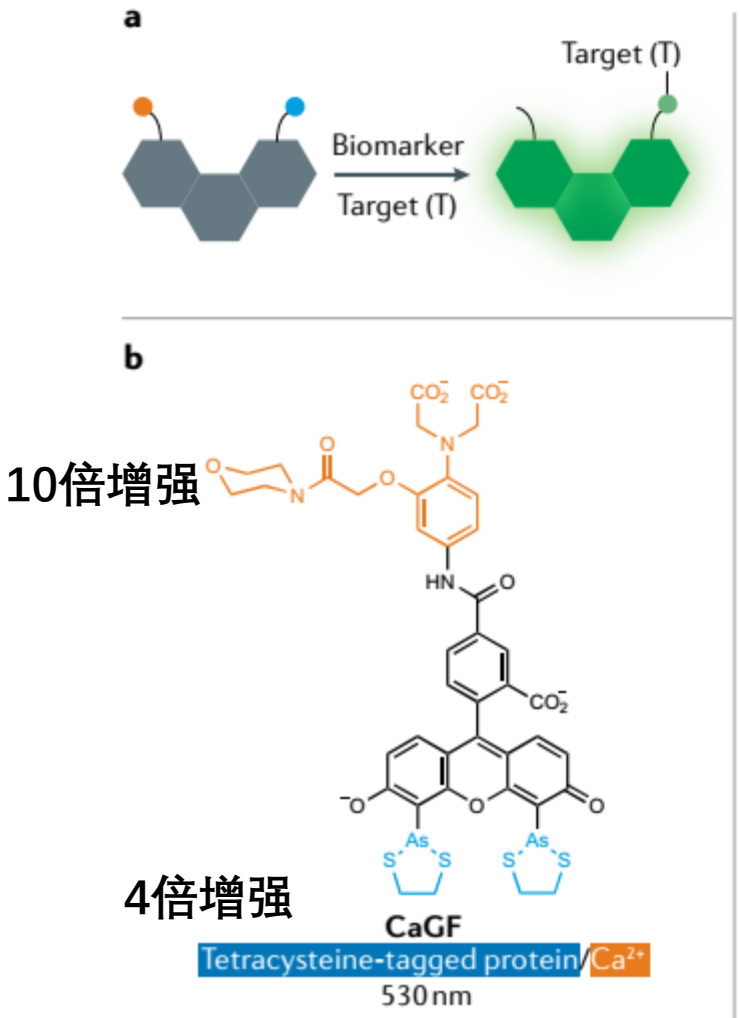


亮氨酸氨基肽酶(LAP)
单胺氧化酶(MAO)

Fig. 2 | **Dual-locked probes containing one reaction site that undergoes two sequential reactions.**

2. Signal activation and targeting

β-内酰胺酶(BlaC)
抗原85 (Ag85)酶



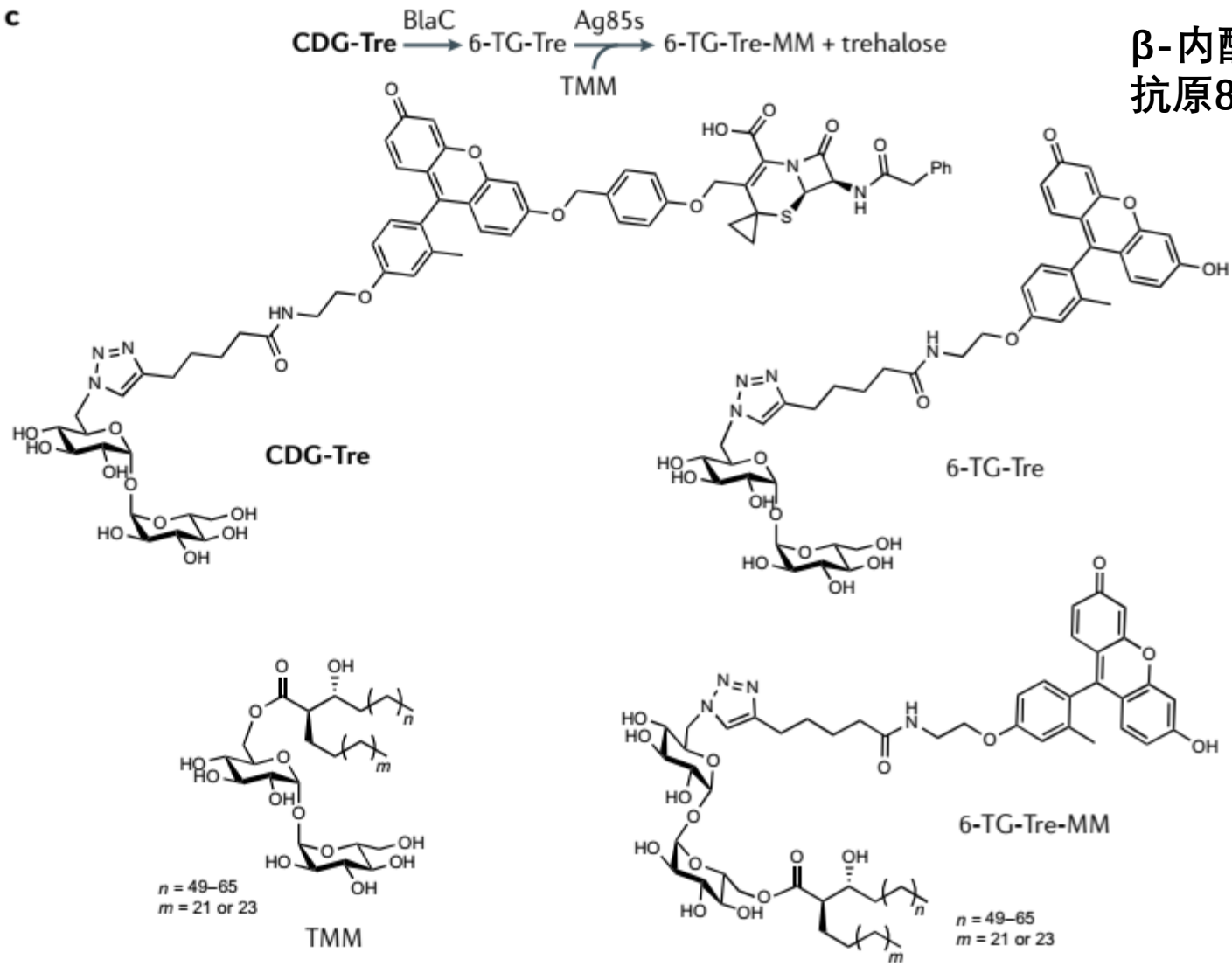
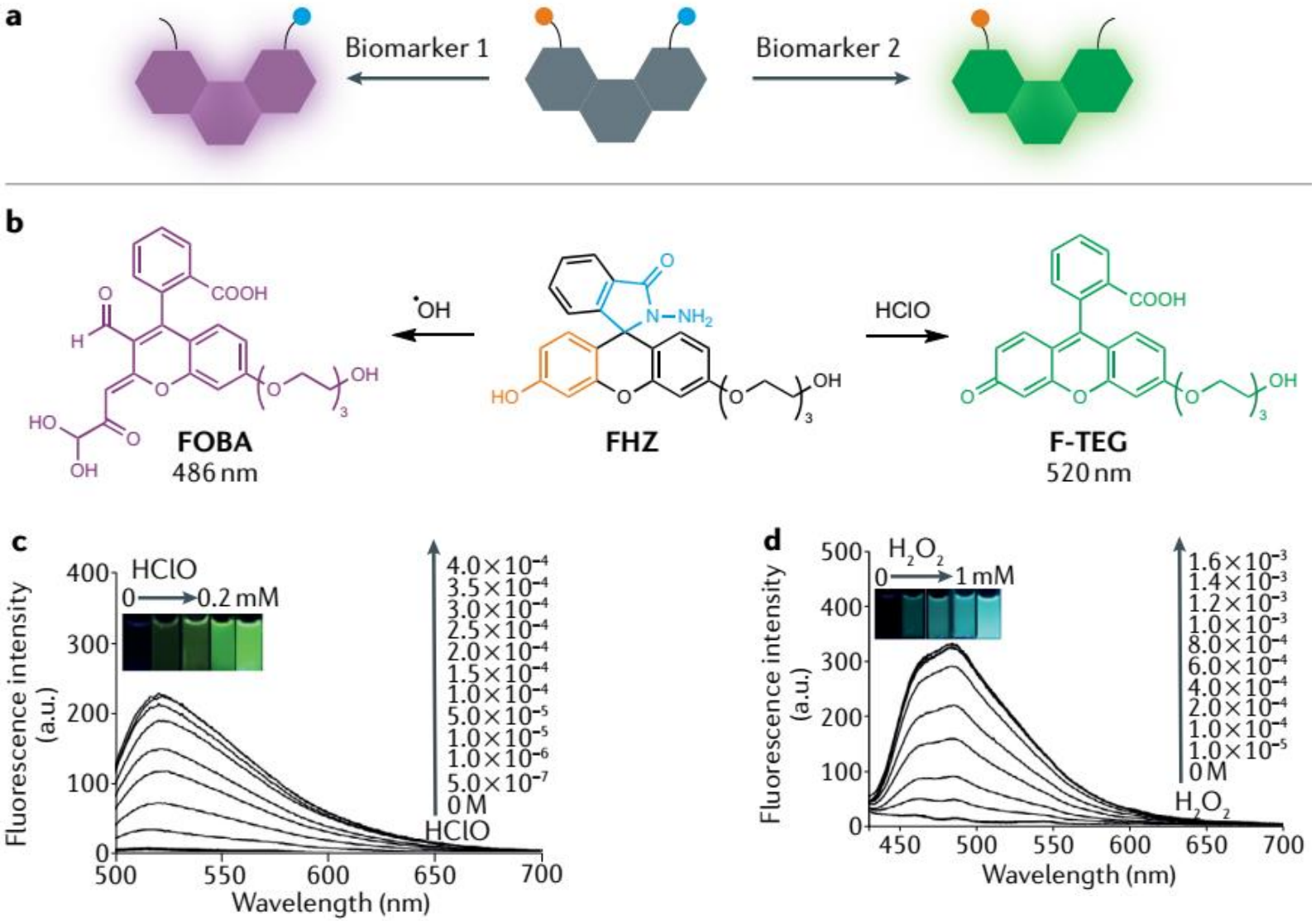


Fig. 3 | **Dual-locked probes containing two reaction sites enabling signal activation and targeting.**

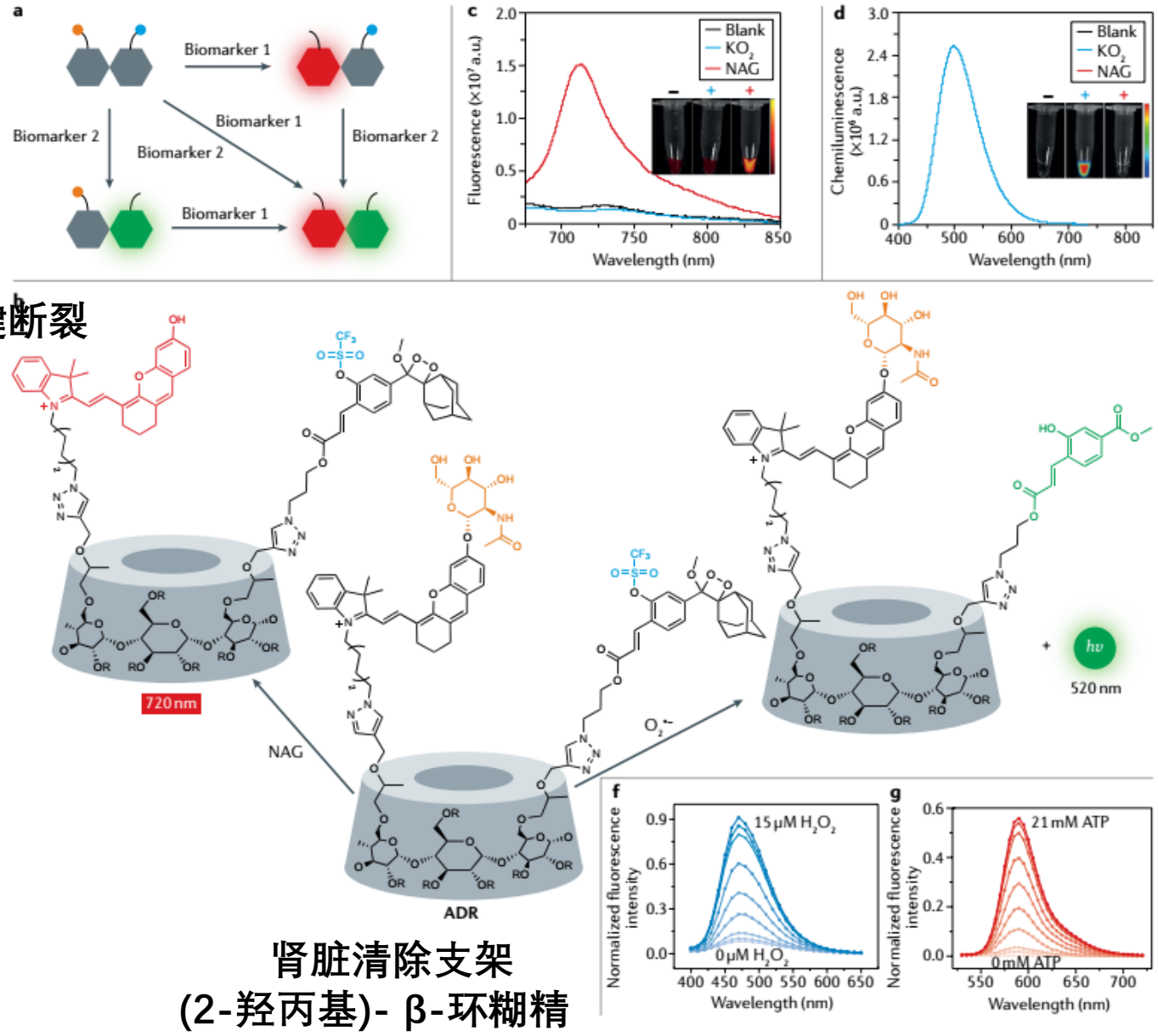
3. Probing with two independent optical channels



活性氧

Fig. 4 | **Dual-locked probes containing one fluorophore that can undergo two independent reactions.**

3. Probing with two independent optical channels



造影剂致急性肾损伤

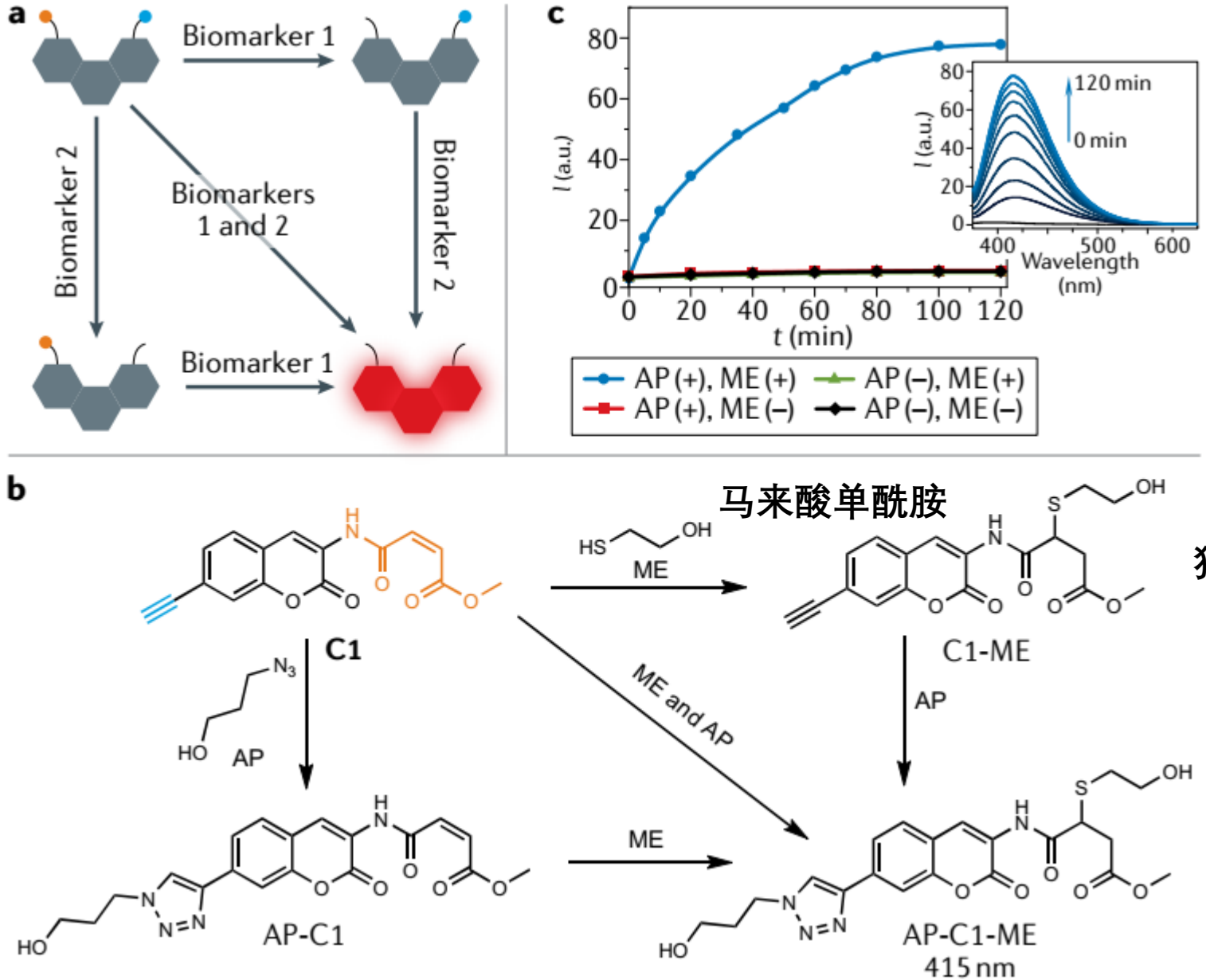
溶酶体酶N-乙酰- β- D-氨基葡萄糖酶(NAG)

糖苷键断裂

肾脏清除支架
(2-羟丙基)- β-环糊精

Fig. 5 | **Dual-locked probes based on two luminophores for duplex imaging.**

4. Fluorescent ‘AND’-based probes



猝灭基团失活

Fig. 6 | **AND-logic-based unimolecular fluorogenic probes.**

4. Fluorescent ‘AND’-based probes

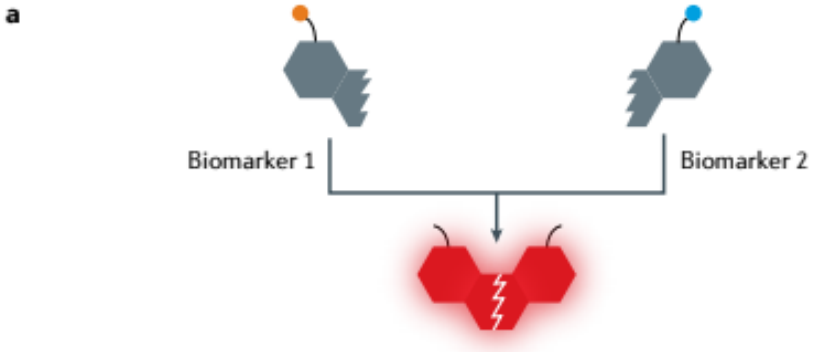
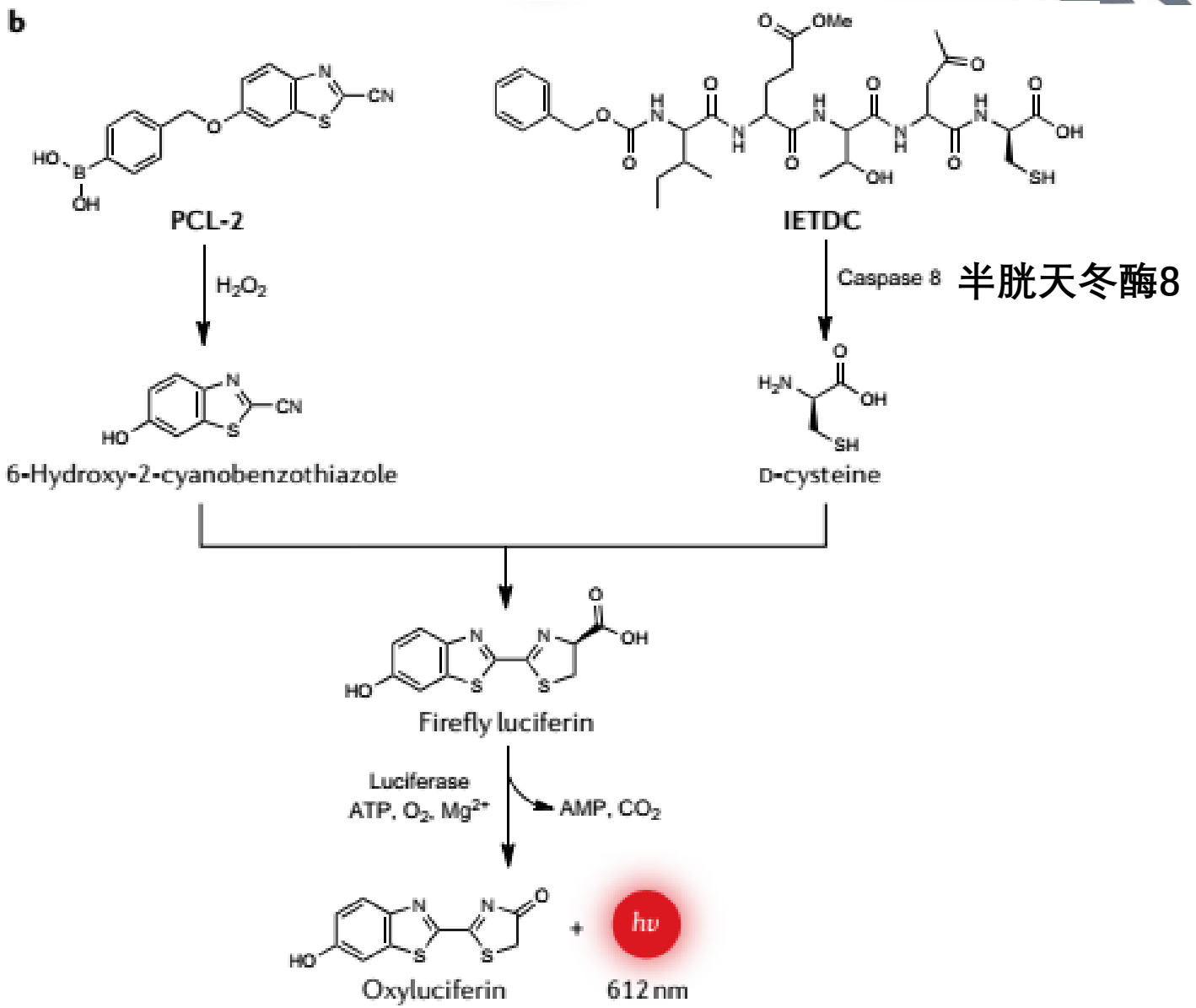
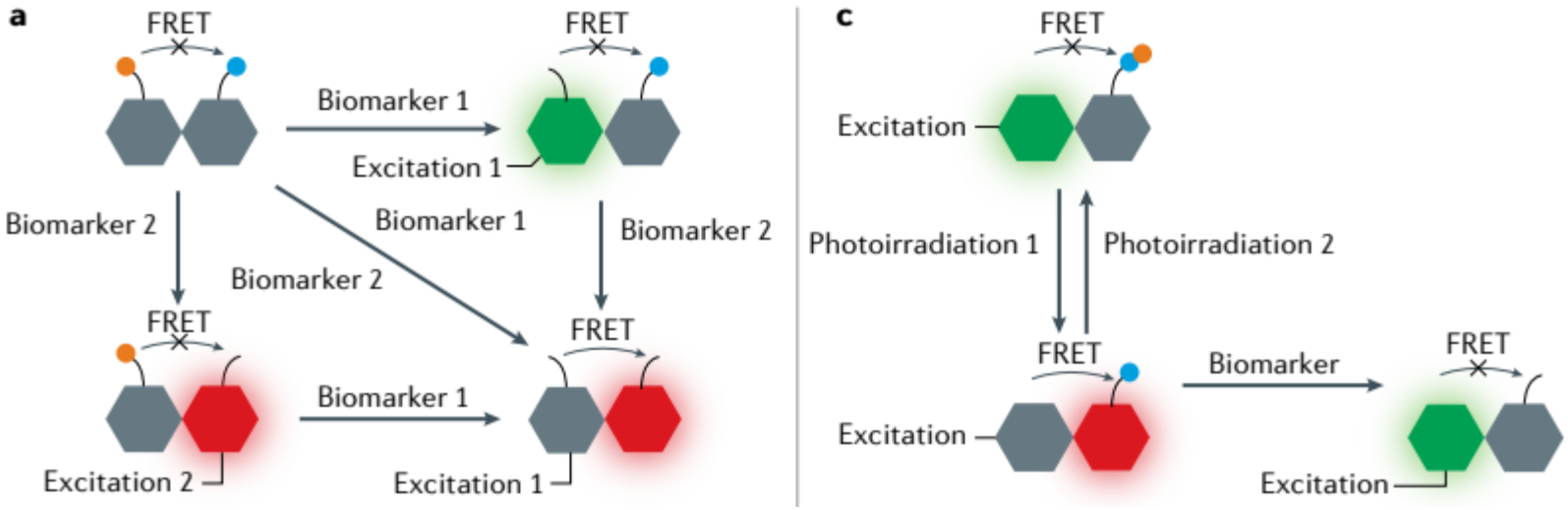


Fig. 7 | **AND-logic-based system using two precursor probes.**

两个探针两个分析物



5. FRET-based probes



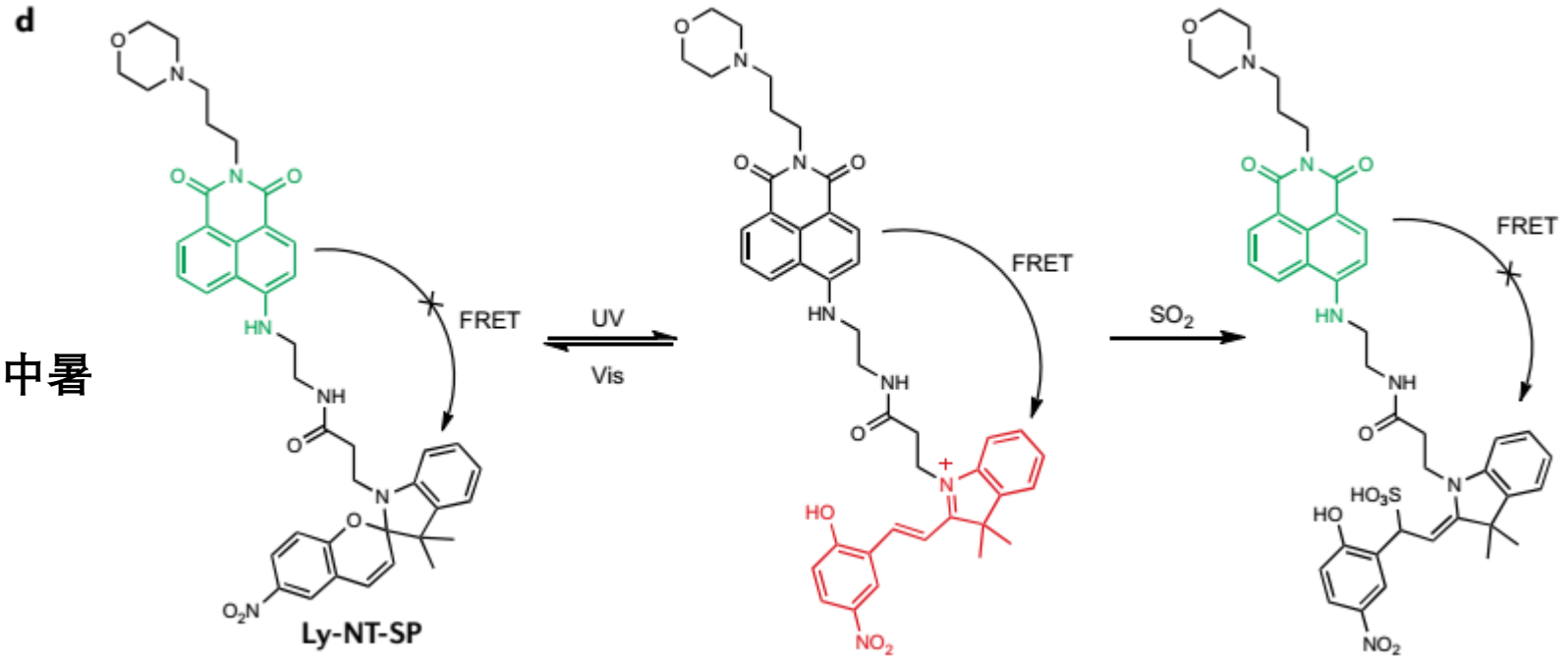


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Fig. 8 | **Förster resonance energy transfer in the construction of dual-locked fluorescent probes**

6. Other dual-locked probes

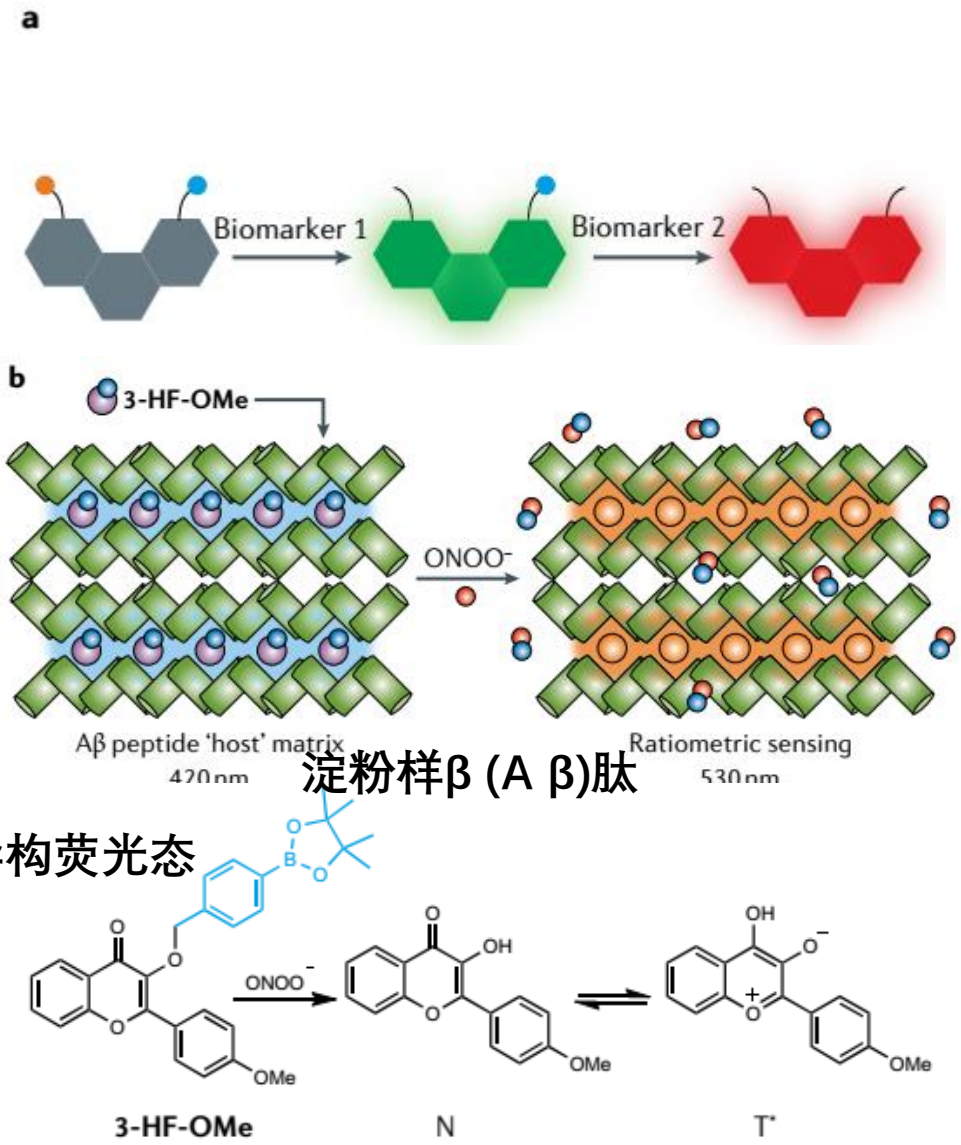

Fig. 9 | **sequential addition of two analytes to induce two different fluorescence channels in a dual-locked system.**

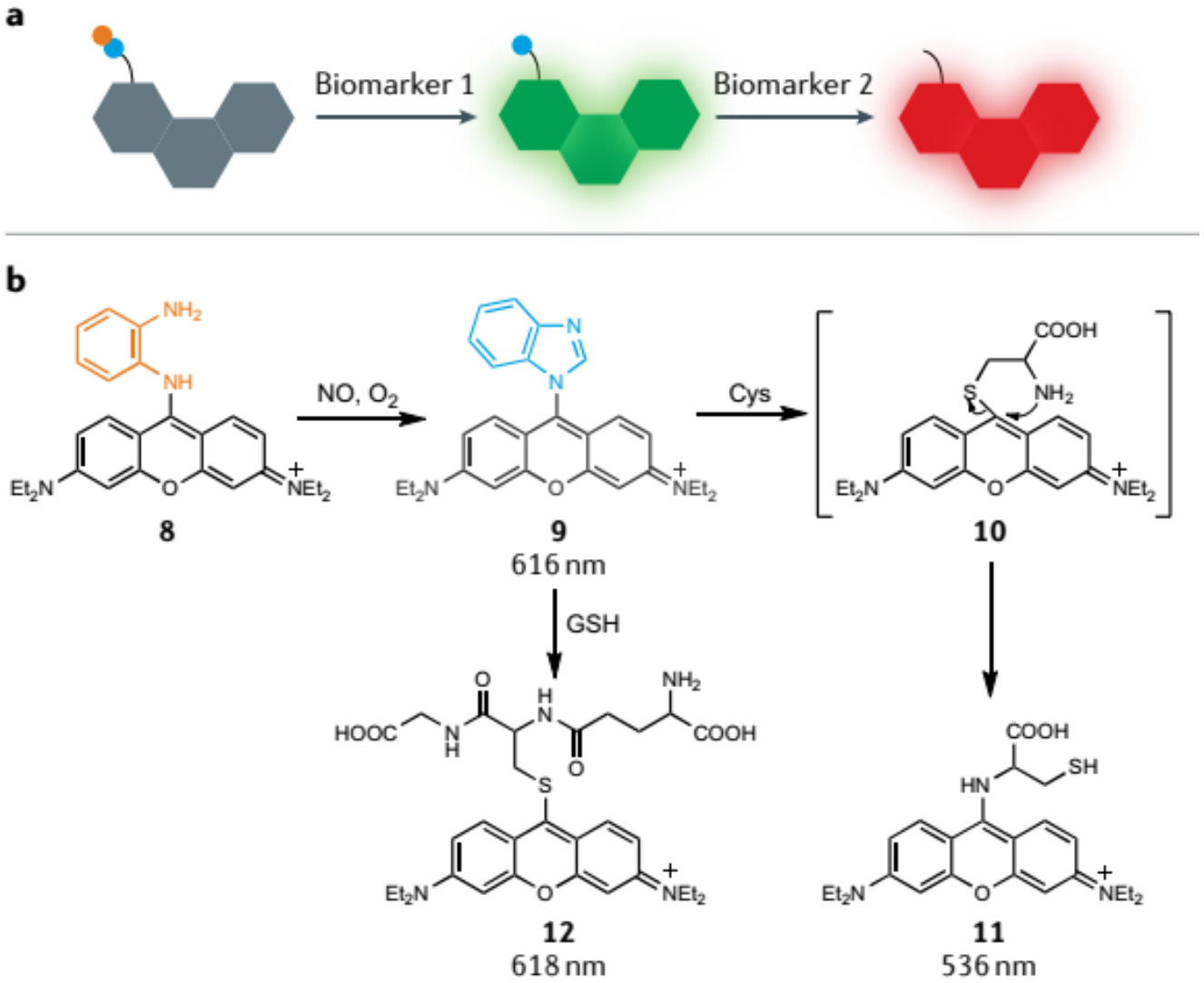

Fig. 10 | **Other types of dual-locked fluorescent probes.**

6. Other dual-locked probes

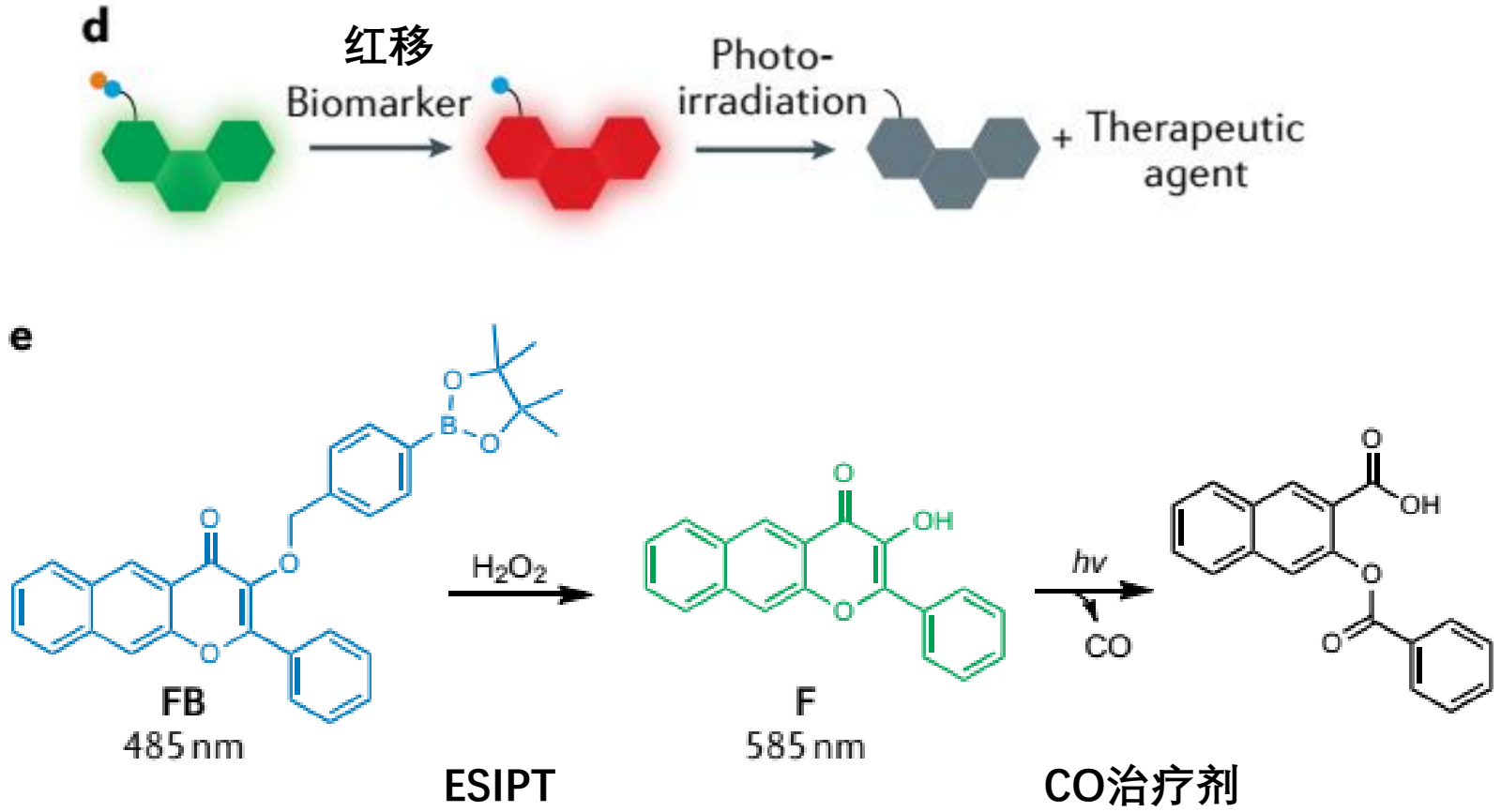

Fig. 10 | **Other types of dual-locked fluorescent probes.**

Thank you!