2020 Literature report II

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Date: 2020-12-17

nature chemistry

ARTICLES

https://doi.org/10.1038/s41557-020-00584-z

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Live cell PNA labelling enables erasable fluorescence imaging of membrane proteins

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Introduction

PNA（peptide nucleic acid）：肽核酸，一类以多肽骨架取代糖磷酸主链的DNA类似物

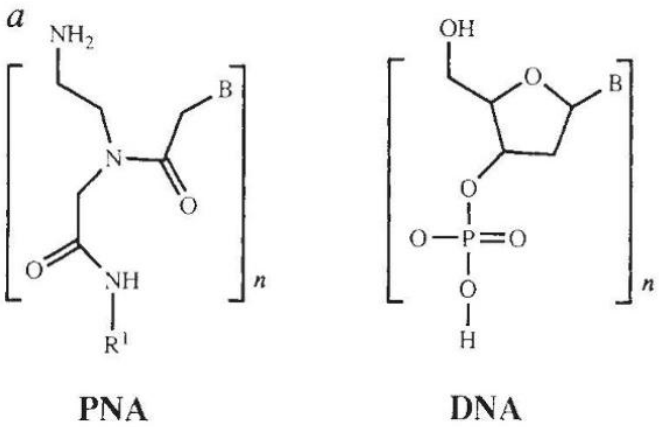


TABLE 1 Melting temperatures T_m (°C) for PNA–DNA, PNA–RNA, DNA–DNA and DNA–RNA complexes

First-strand sequence*	TGTACGTCACAACTA†	GTAGATCACT‡	AGTGATCTAC‡
PNA:DNA (parallel)	56.1	38.0	38.0
PNA:DNA (antiparallel)	69.5	51.0	49.0
PNA:RNA (parallel)	51.2	ND	ND
PNA:RNA (antiparallel)	72.3	ND	ND
DNA:DNA	53.3	33.5	33.5
DNA:RNA	50.6	ND	ND

Nature 1993 566；*Biochem. Pharmacol*. 1994 1310

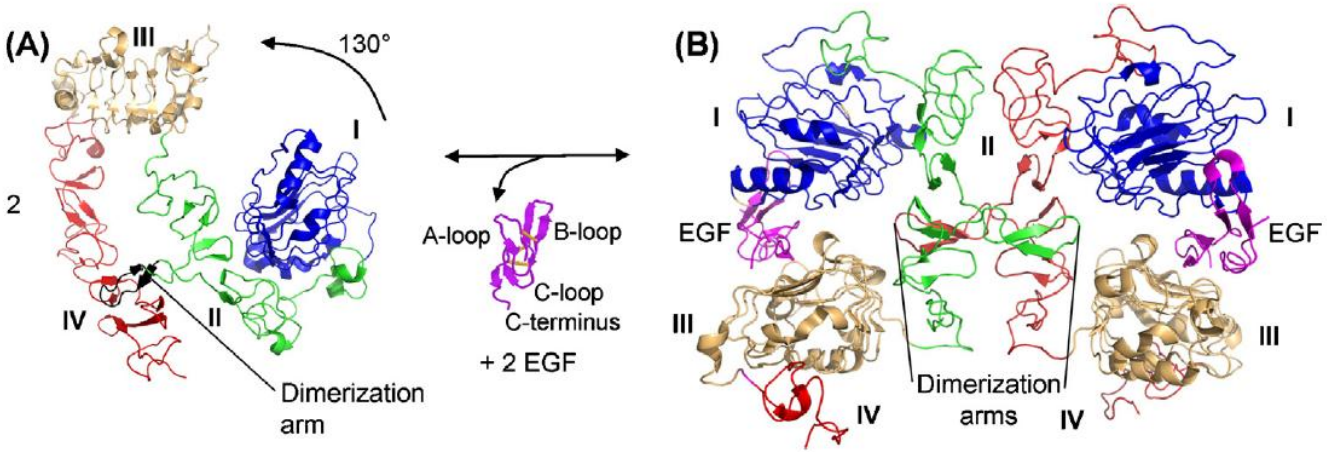
Introduction

DNA-蛋白连接方法

- 抗原-抗体标记：抗体分子太大（150 kDa）；非共价结合
- 代谢性糖工程：无法标记特定蛋白
- 融合蛋白标记：寡核苷酸易分解
- 小分子多肽标签：标记缓慢

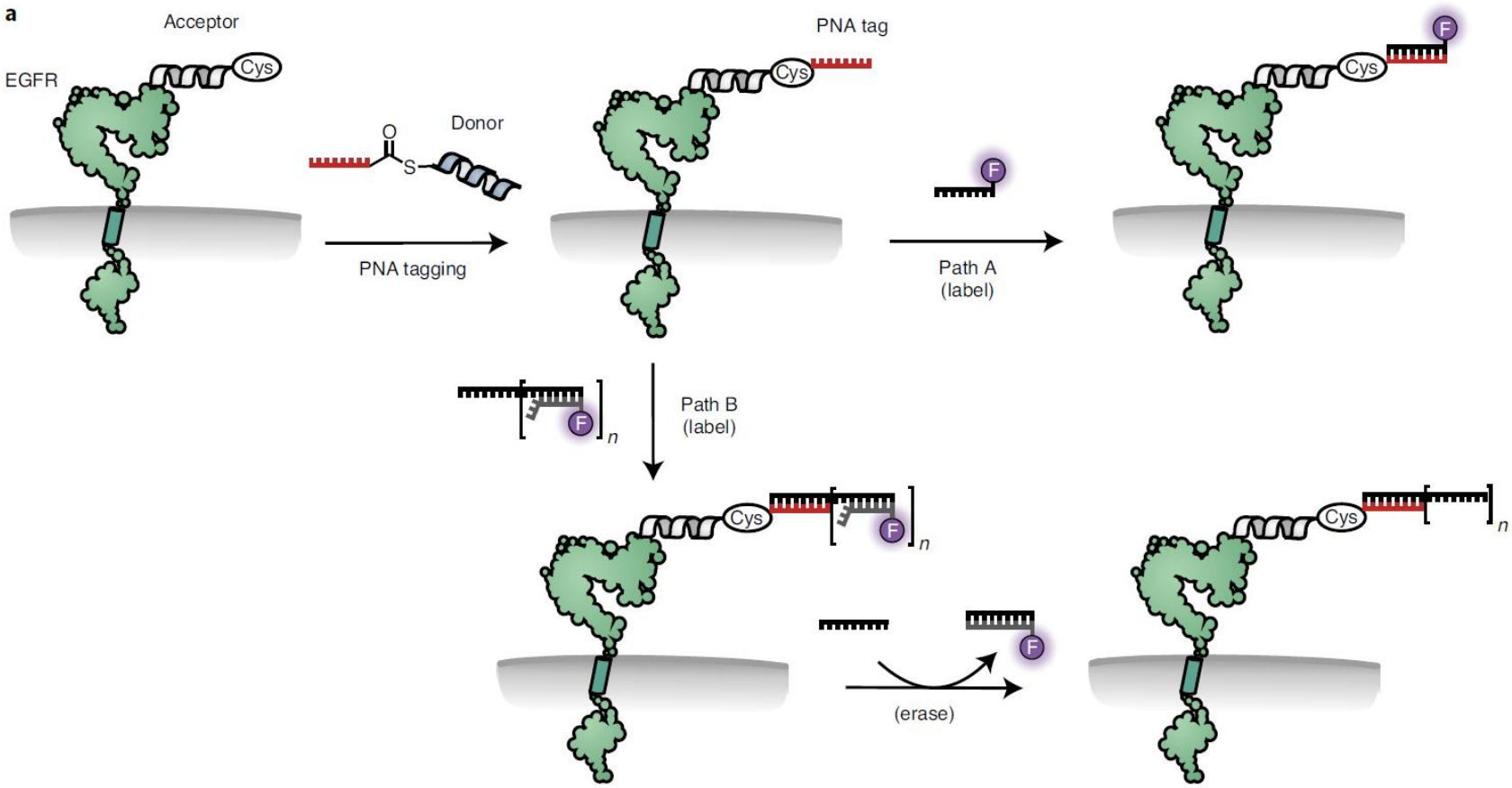
Introduction

EGFR：表皮生长因子受体，是一种跨膜蛋白。在肿瘤细胞的增殖、分化和迁移过程中起到重要作用；过度表达与多种癌症相关。



Pharmacol. Res. 2014

Design and principle



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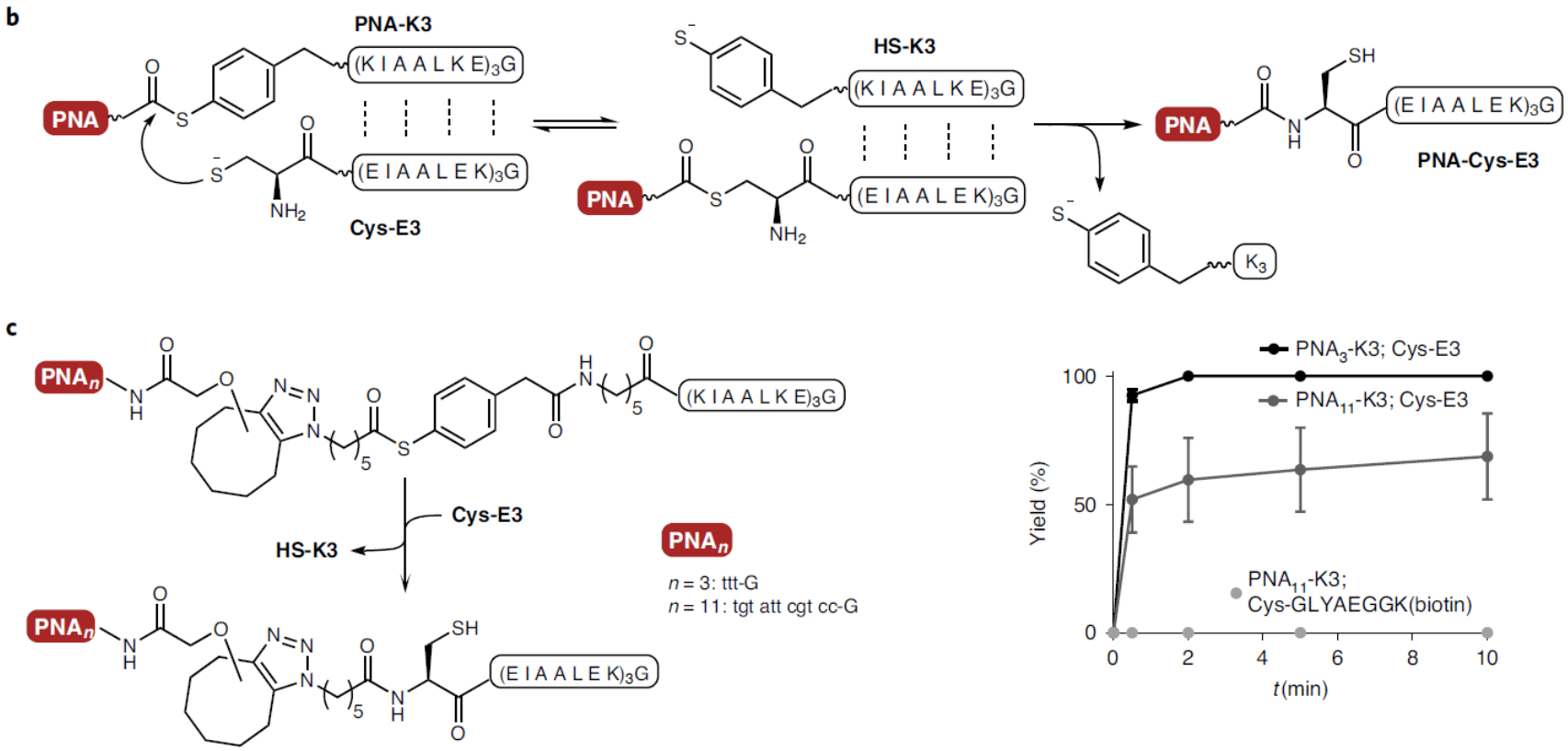
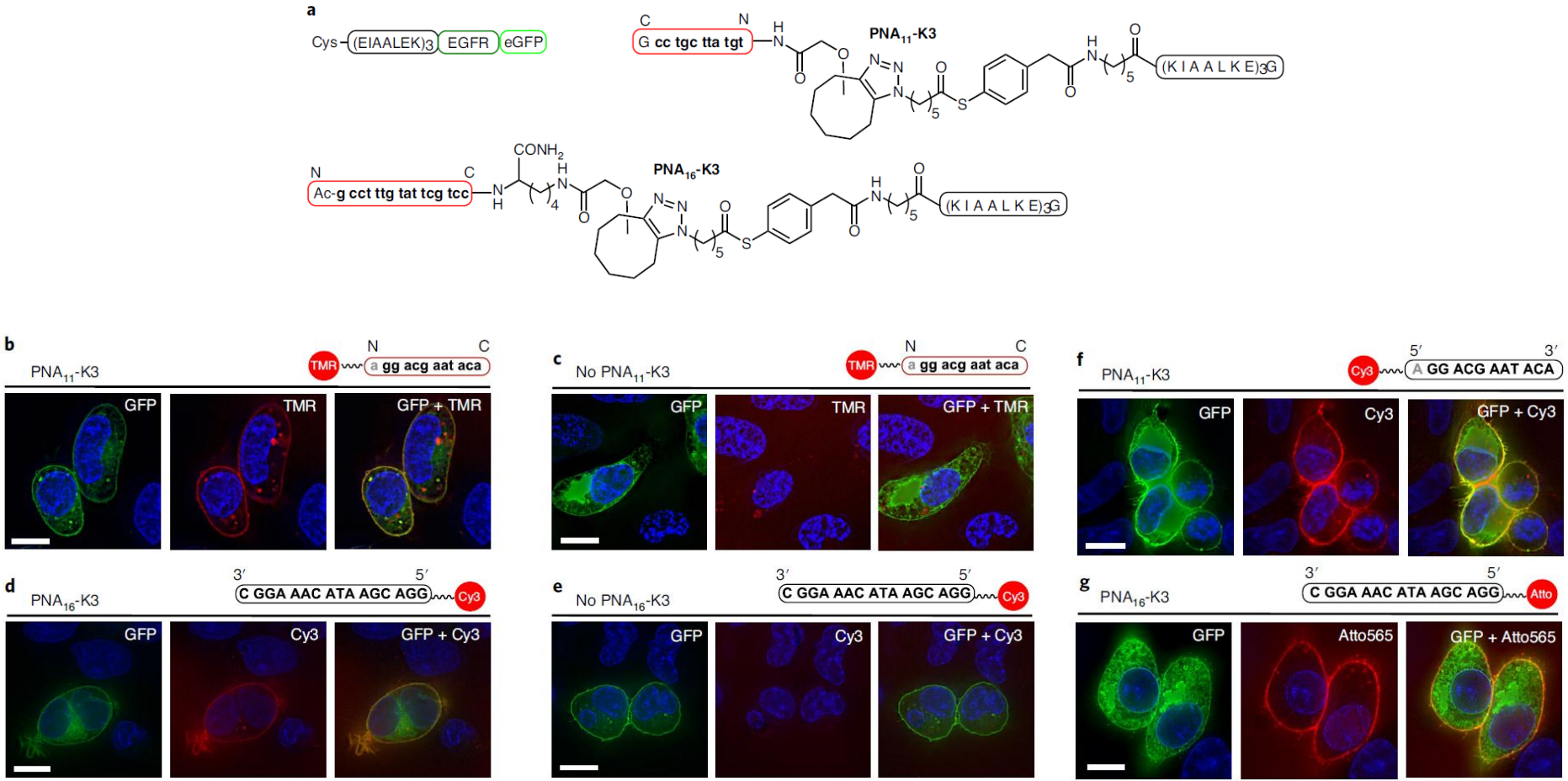


Characterization



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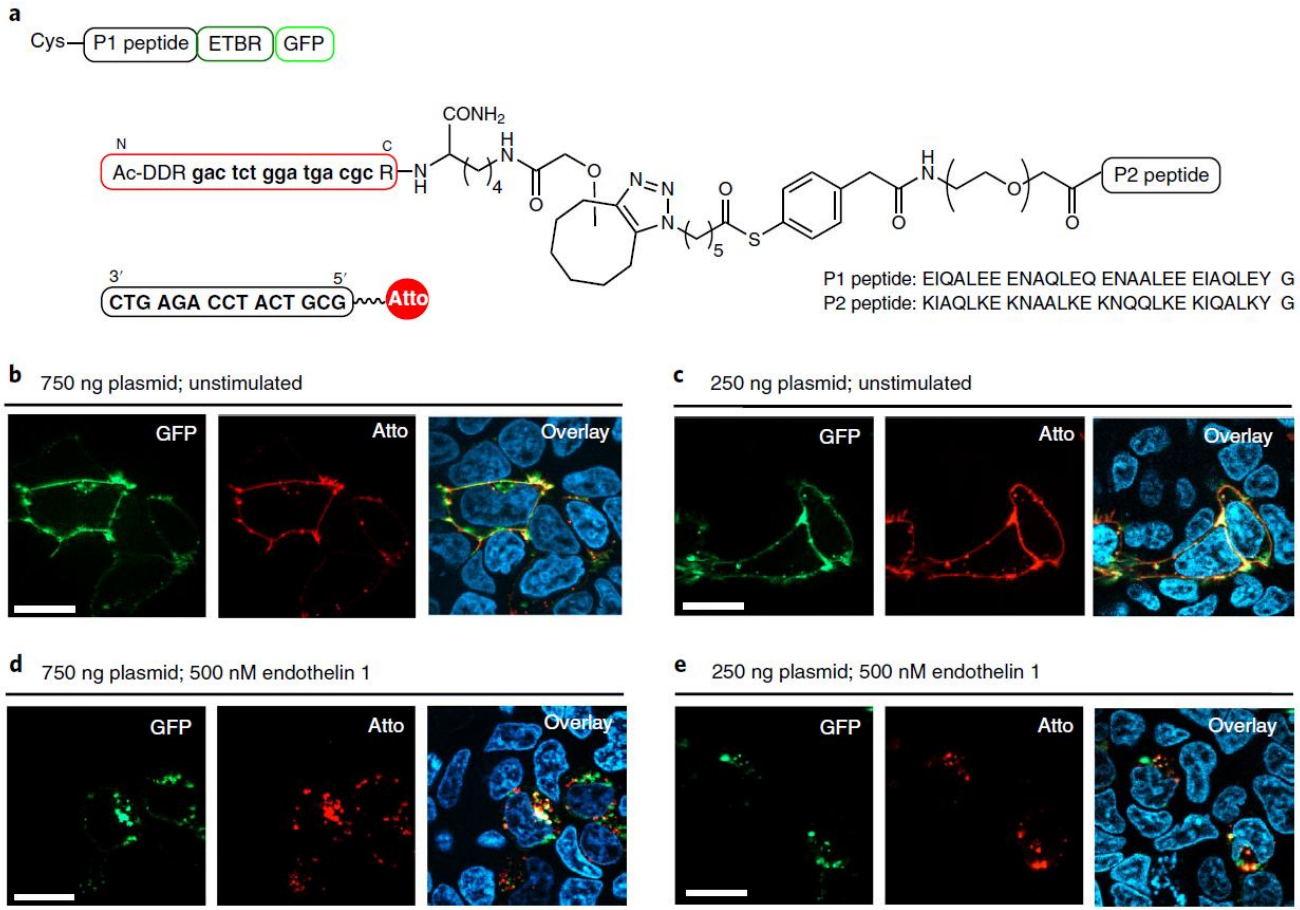

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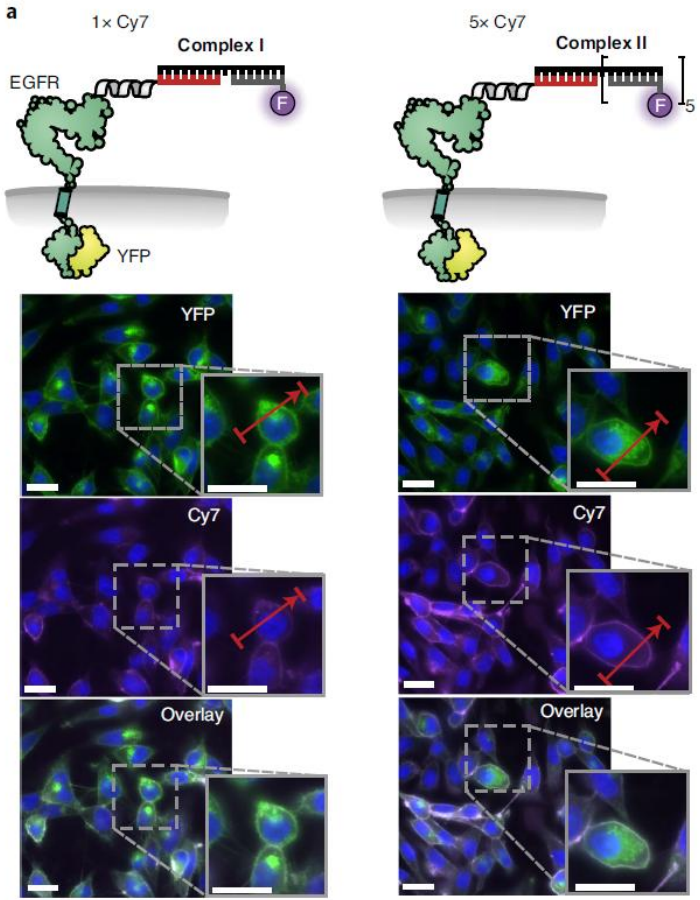
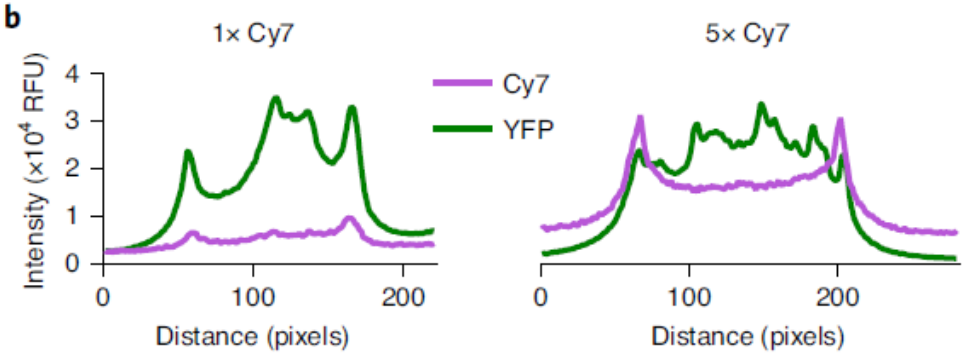
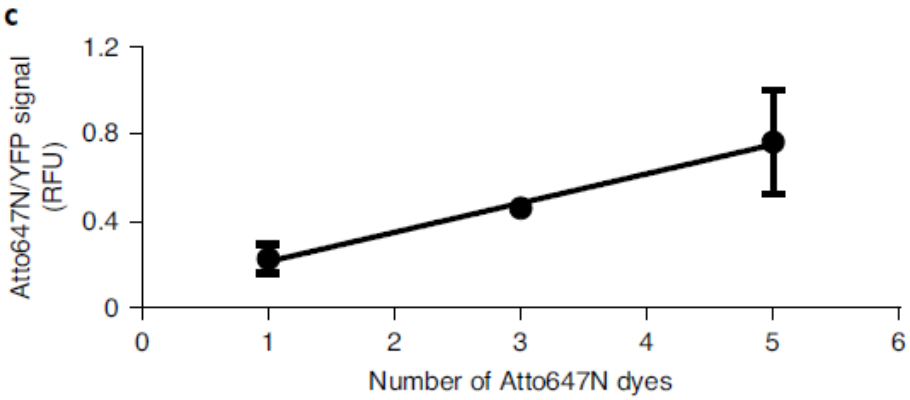
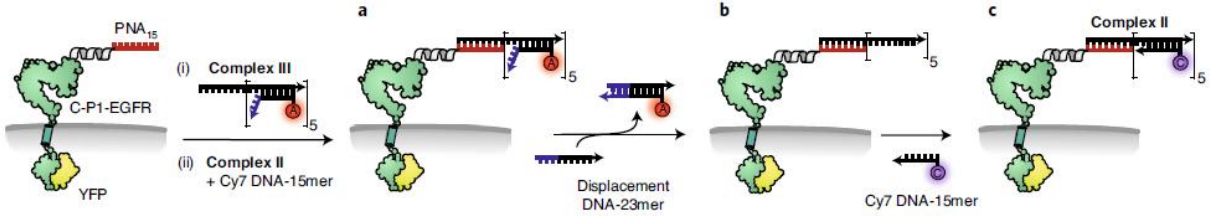
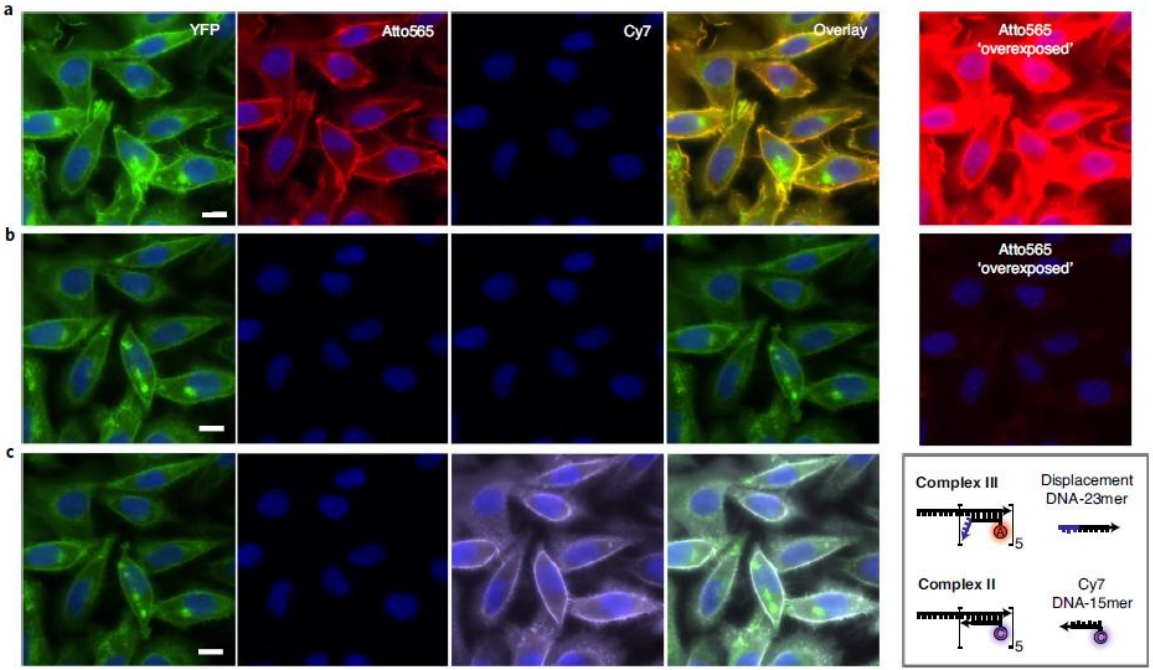






Application





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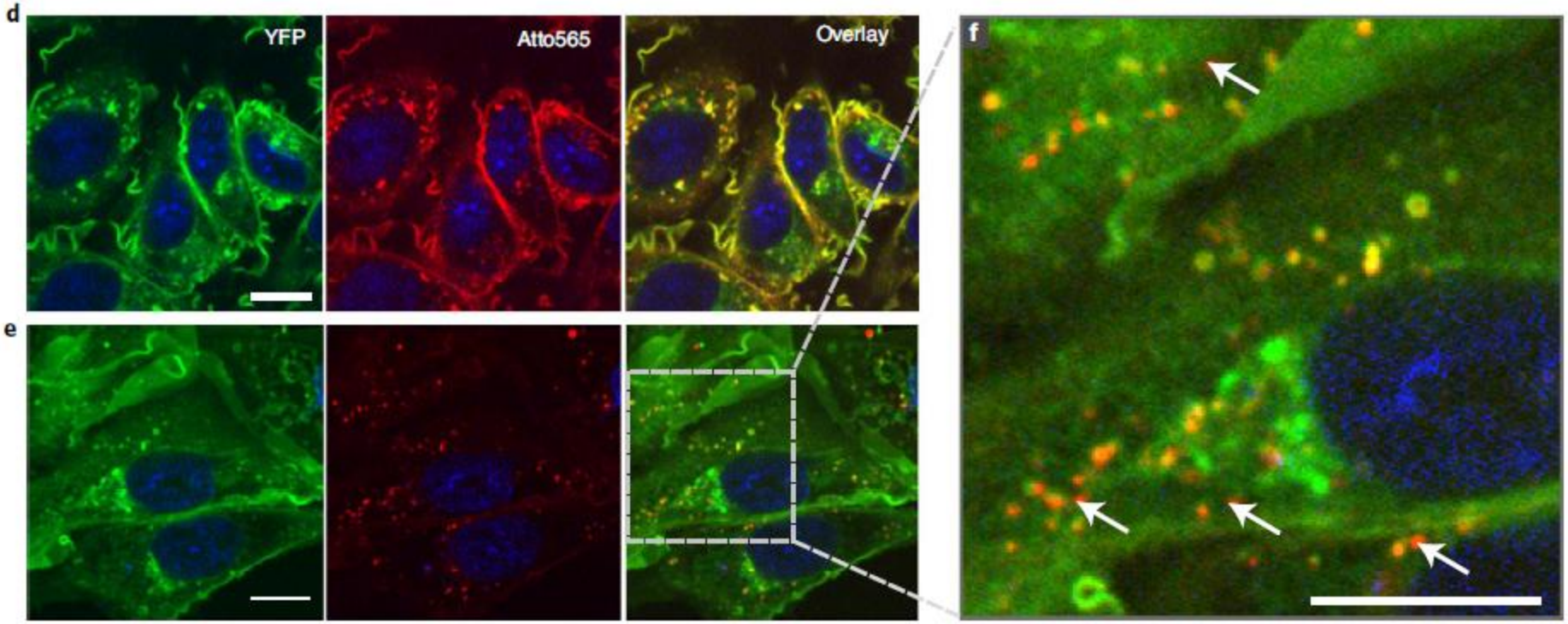

Summary

- 文章介绍了一种通用的生物稳定的活细胞蛋白定位PNA标记方法
- 可以在同一个位点同时标记多个荧光分子以提高亮度
- 适用于多种染料的可逆性标记，快速进行染料替换