Literature Report

Reporter: Miao Lu

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ARTICLE

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Decorating bacteria with self-assembled synthetic receptors

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Nature Communications **2020**, *11*, 1

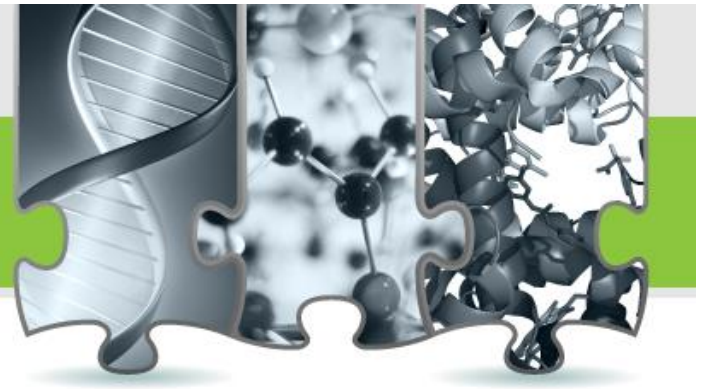
Introduction

- Self-assembled biomimetics
- Cross-reactive sensor arrays
- Fluorescent molecular sensors

מכון ויצמן למדע
WEIZMANN INSTITUTE OF SCIENCE | Organic Chemistry

Bio Organic Chemistry Lab

David Margulies



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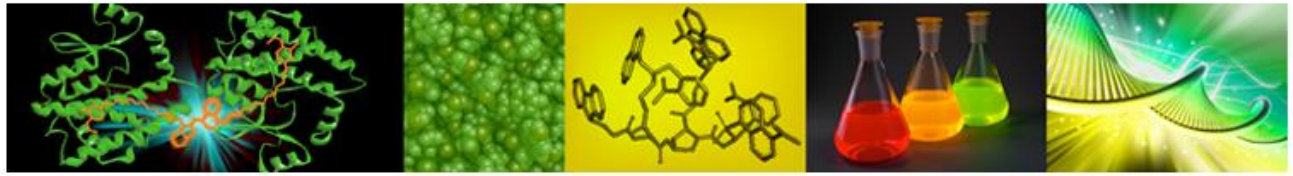
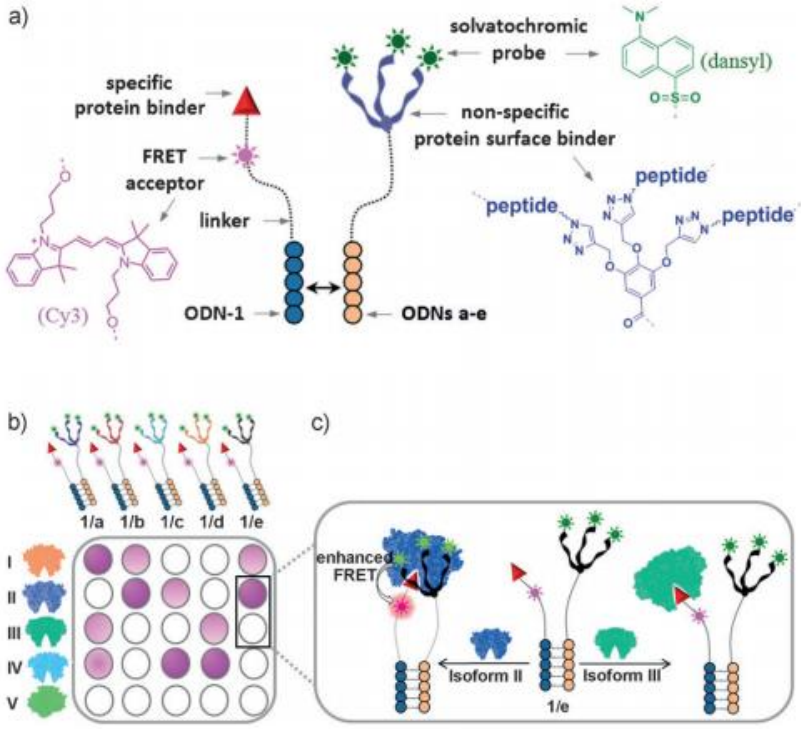
Our Research



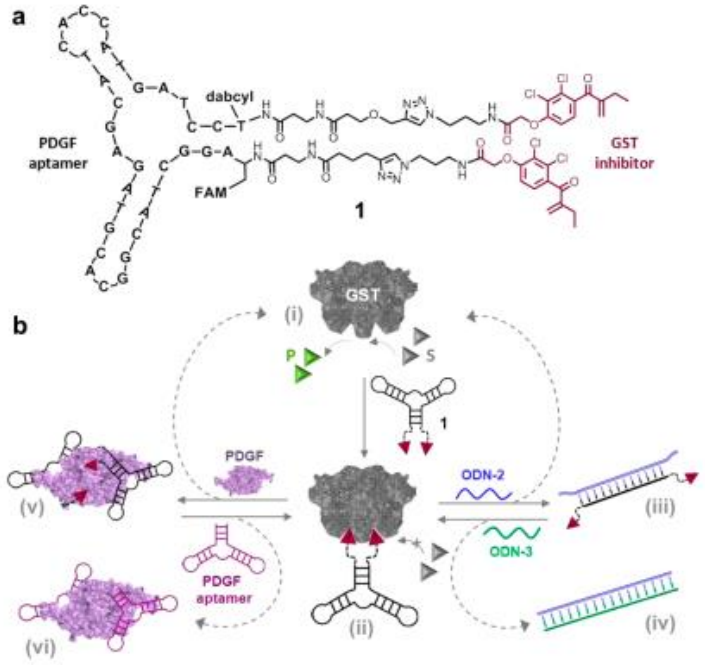
The research in our group is concerned with diverse aspects of bioorganic chemistry with emphasis on designing synthetic receptors that interact with proteins and sense or regulate their function. The lab employs a multidisciplinary approach that combines organic synthesis, protein mimicry, self-assembly, and fluorescent molecular sensor design in order to address fundamental challenges at the interface of chemistry and biology. Supra-molecular structures, based on synthetic molecules, DNA fragments, metal-complexes as well as light-harvesting groups, are applied in developing unconventional biosensors, protein mimetics, and molecular-based devices.

Introduction

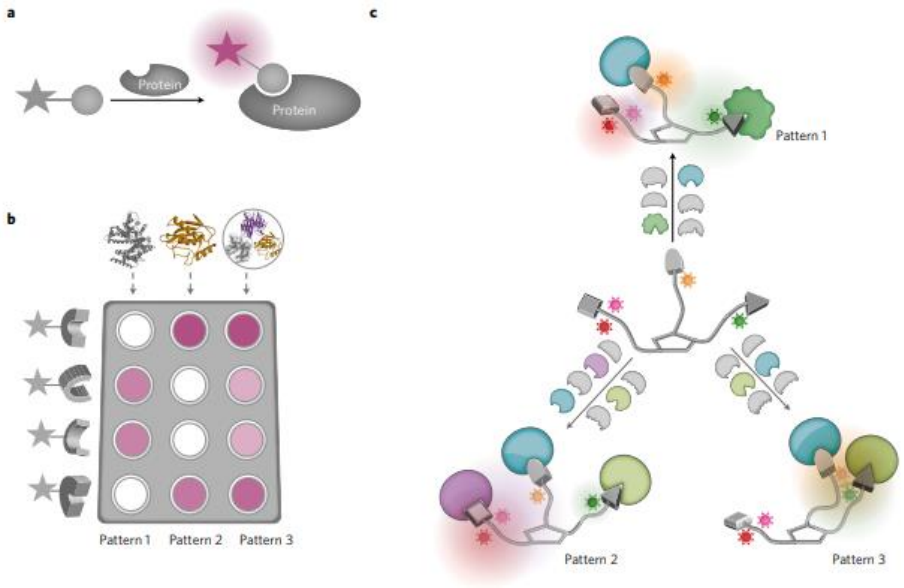
Oligodeoxynucleotide (ODN)–small-molecule conjugates



Angew. Chem. Int. Ed. **2014**, *53* :9289

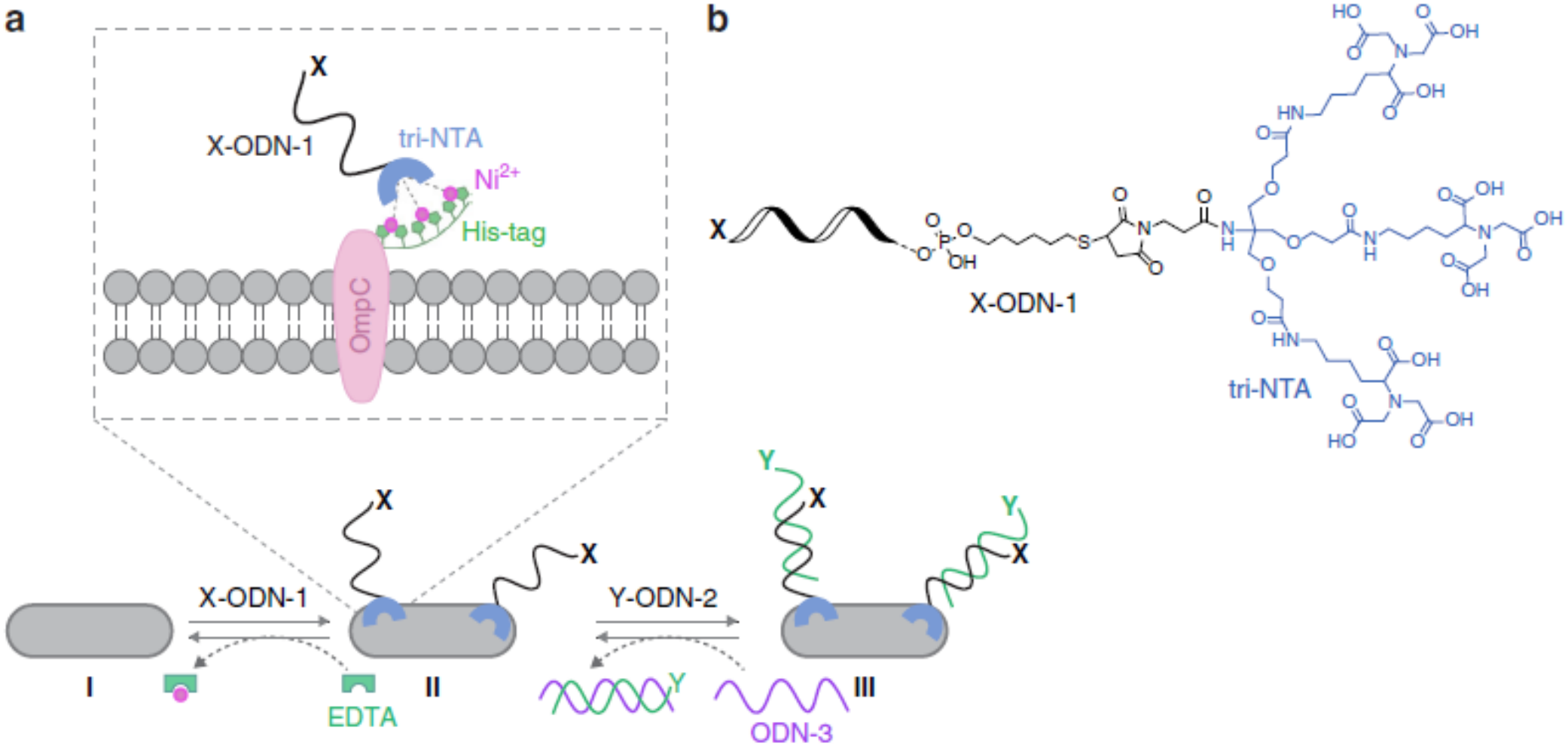


J. Am. Chem. Soc. **2015**, *137*, 9507



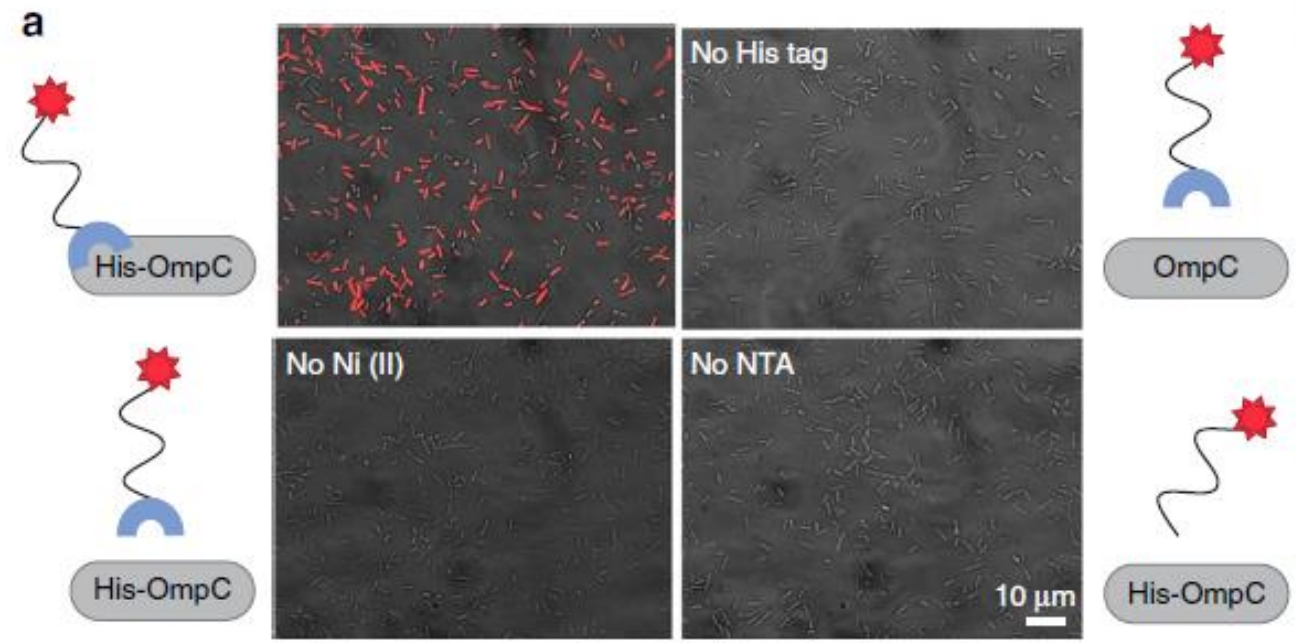
Nature Nanotechnol. **2017**, *12* :1161

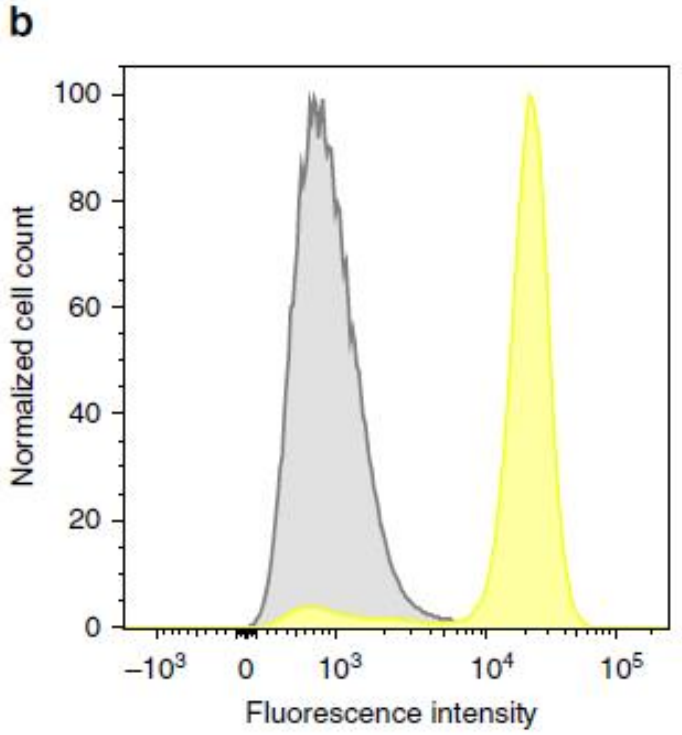
Design

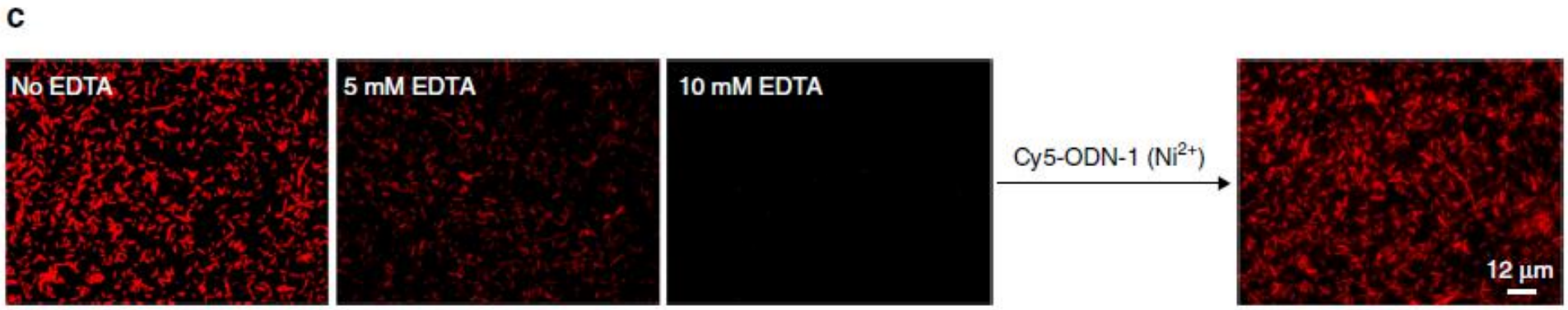


Reversible, non-covalent modification of a bacterial membrane

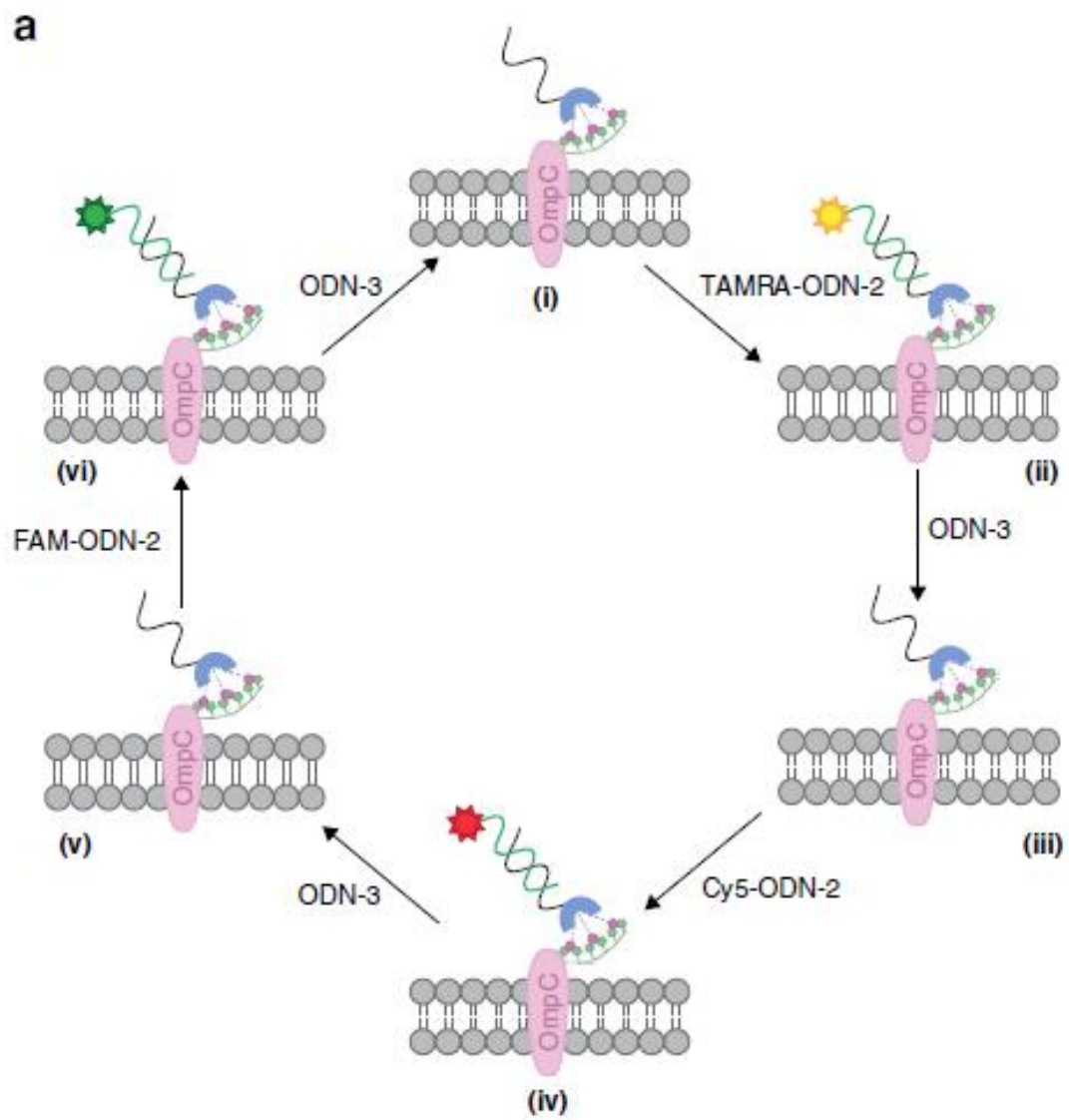
Result and Discussion

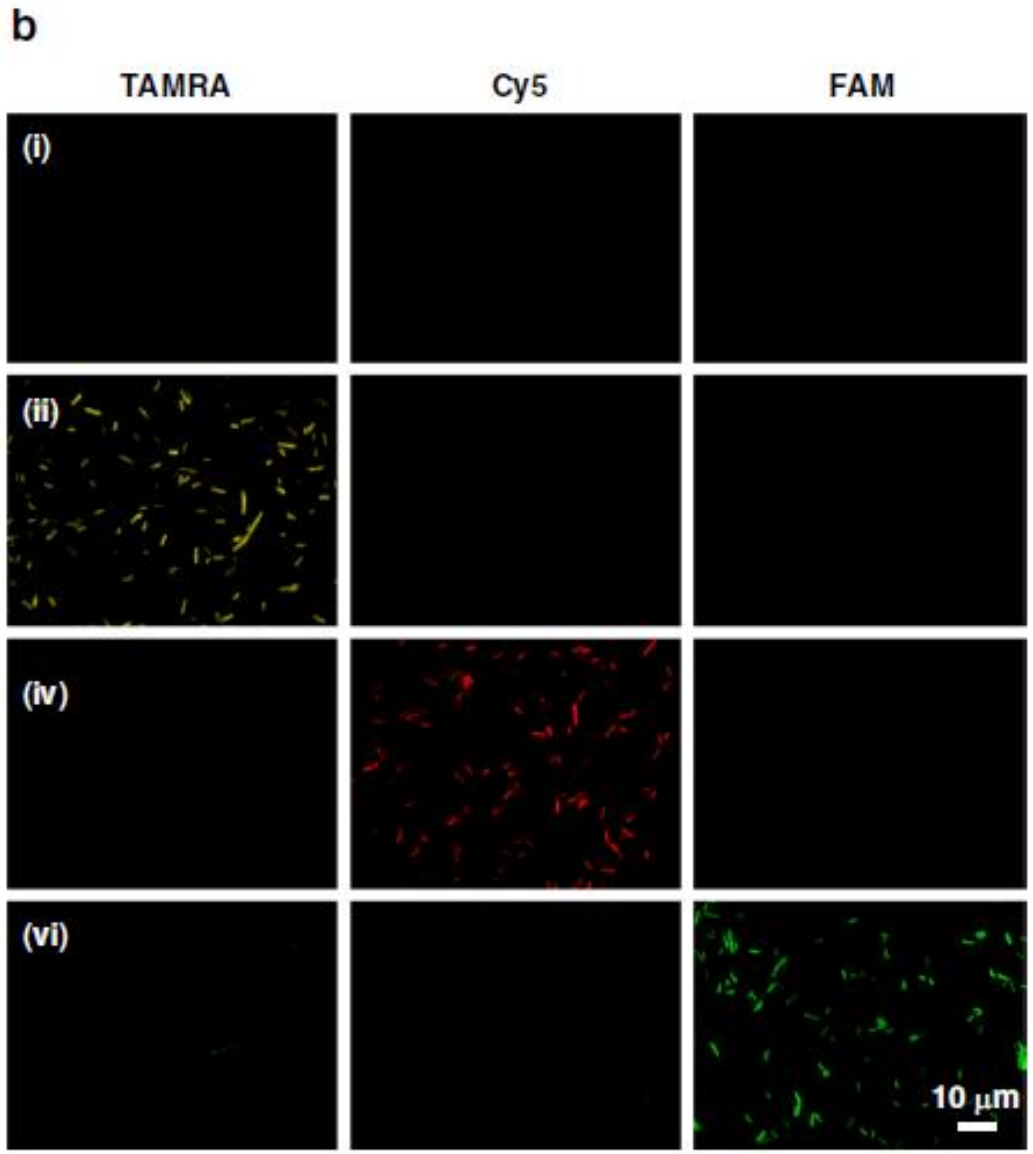






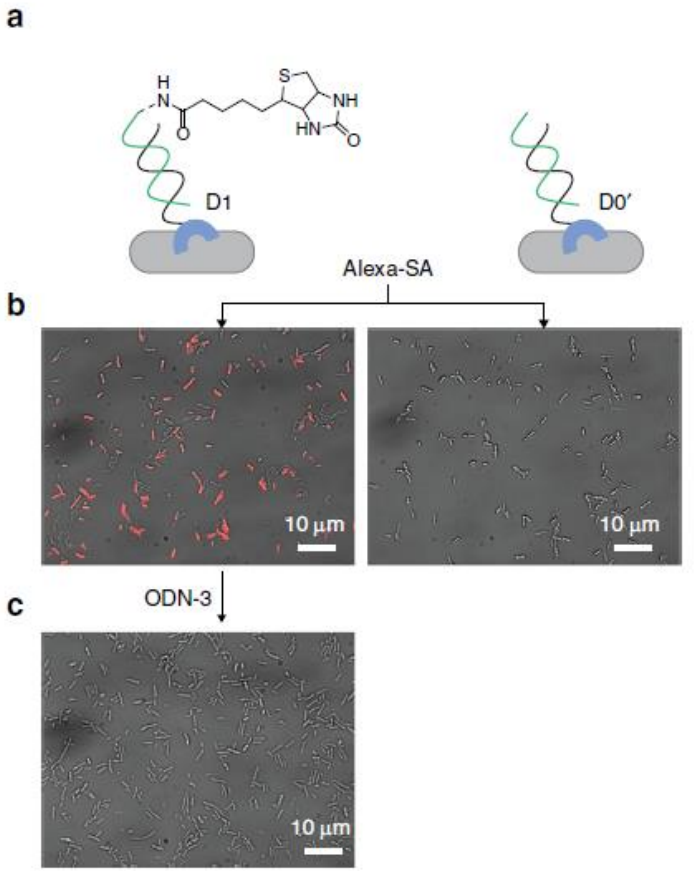
Result and Discussion



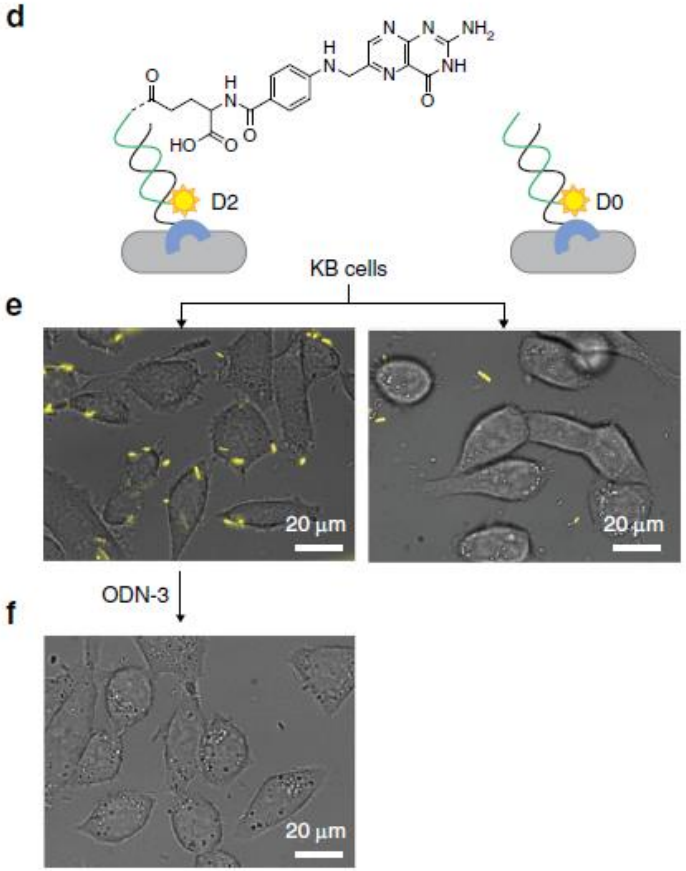


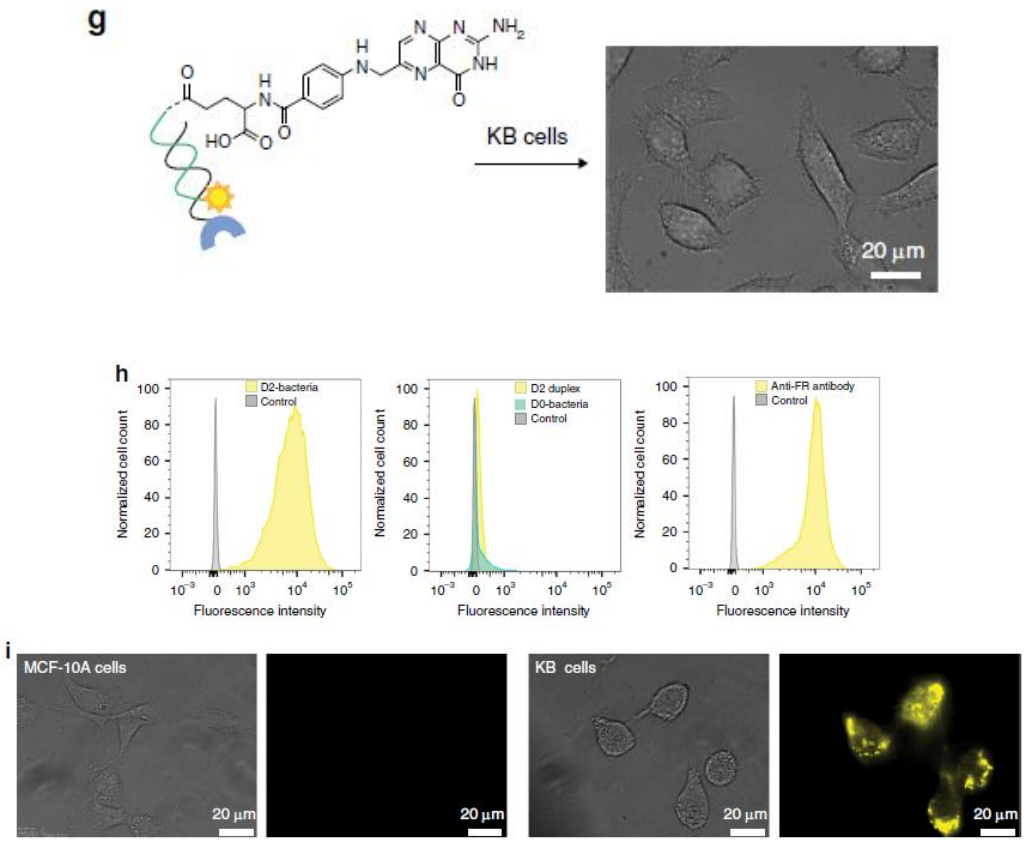
Result and Discussion

unnatural cell–protein interactions



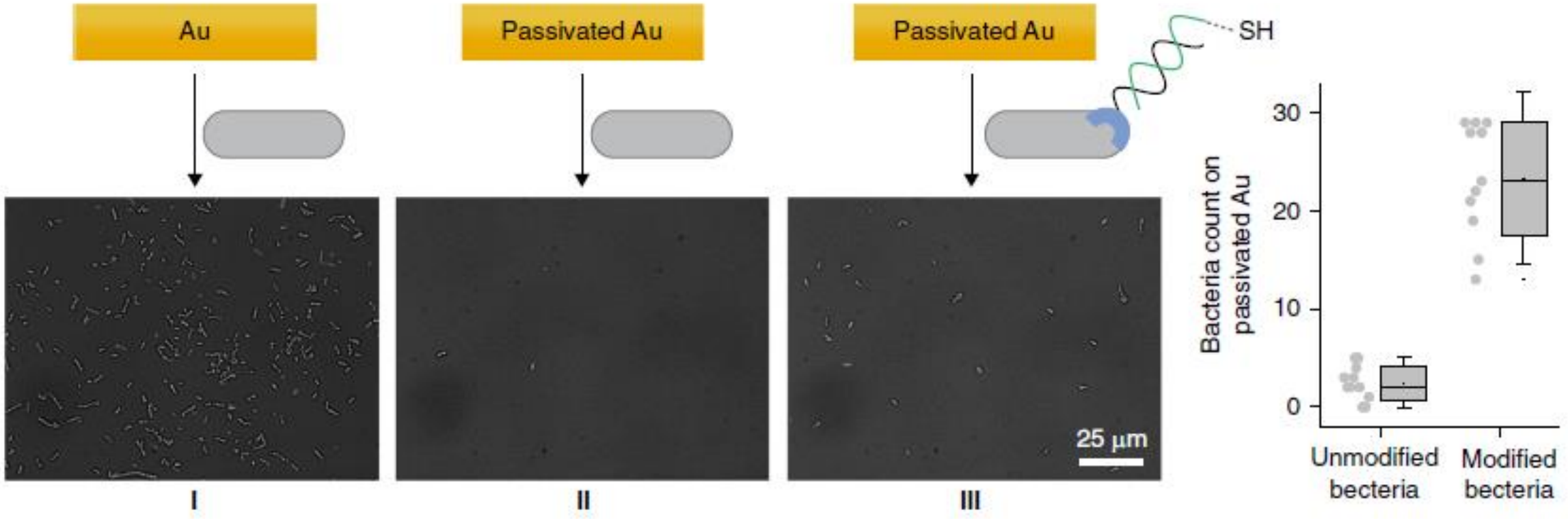
unnatural cell–cell interactions.



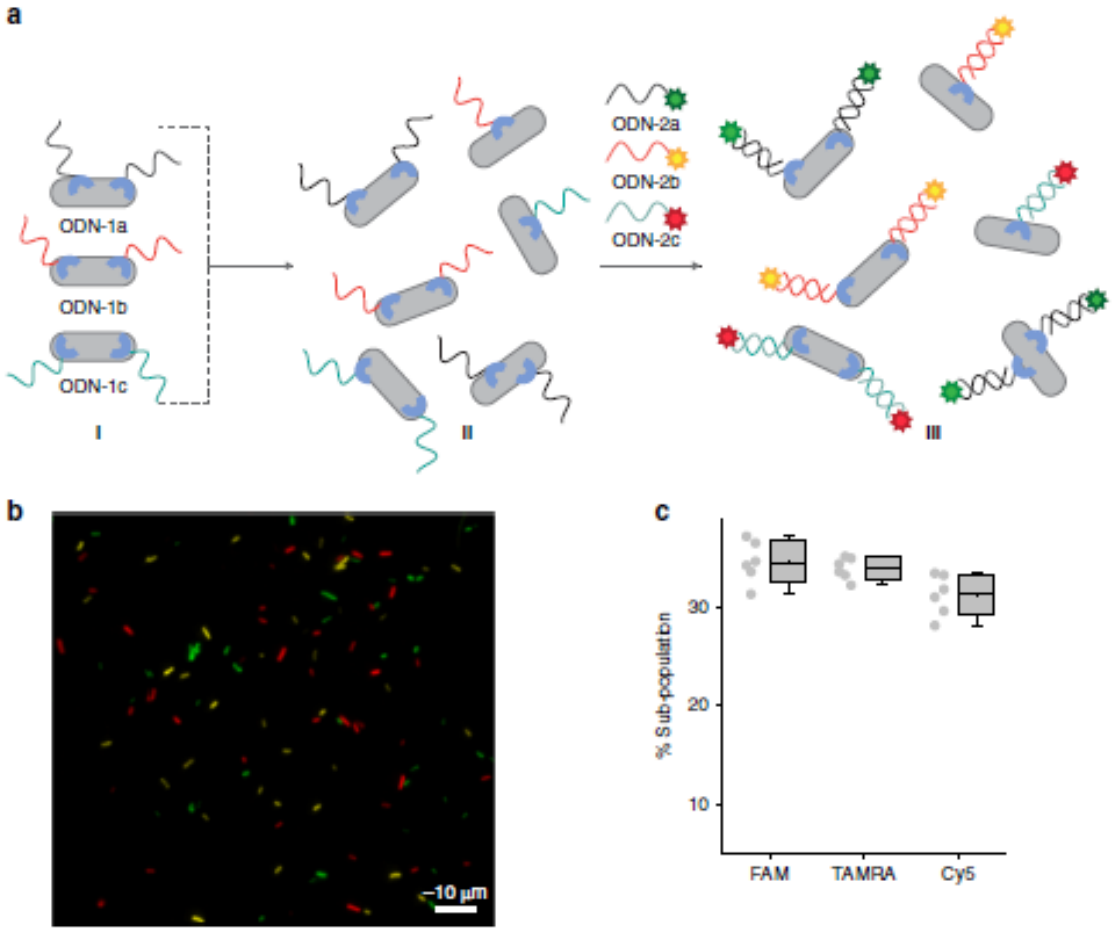


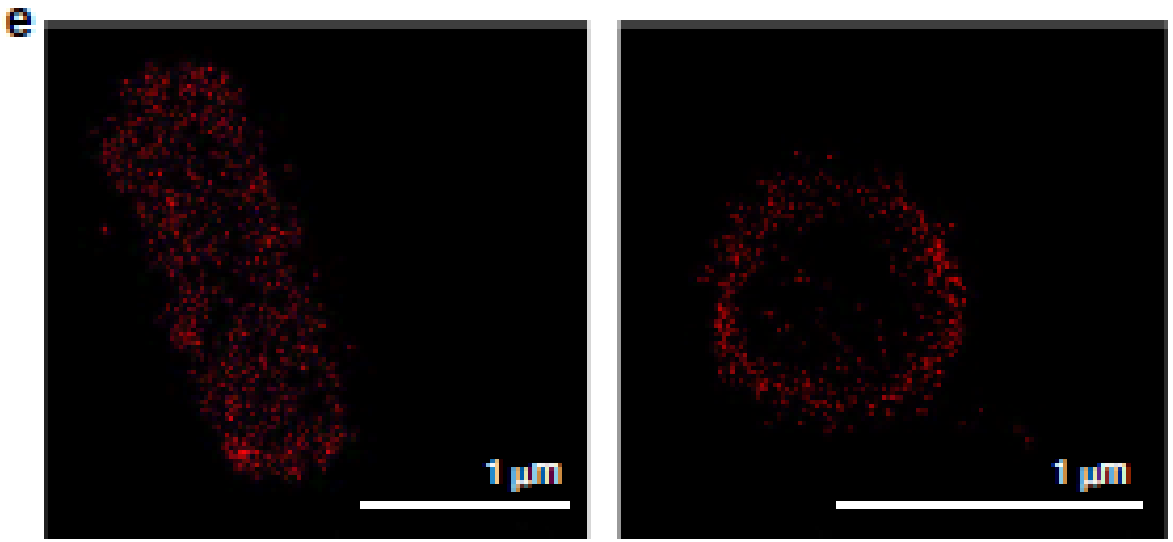
Result and Discussion

Unnatural adhesion to solid support



Result and Discussion





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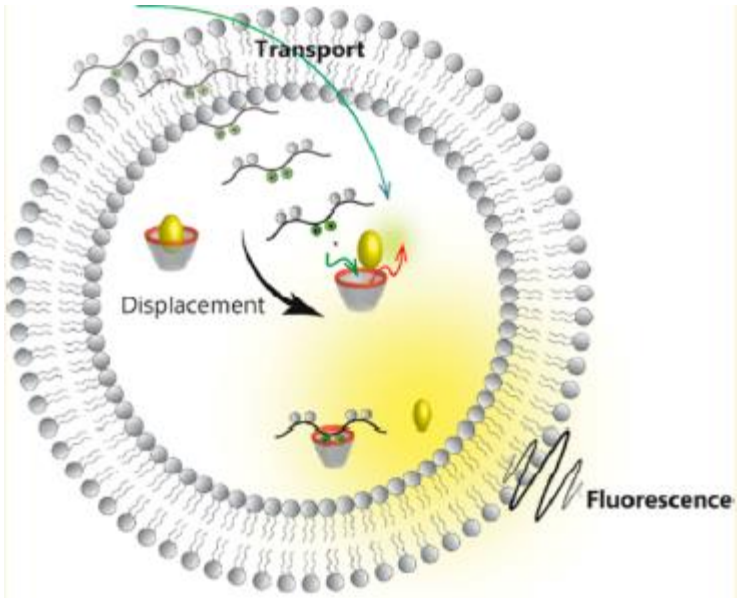
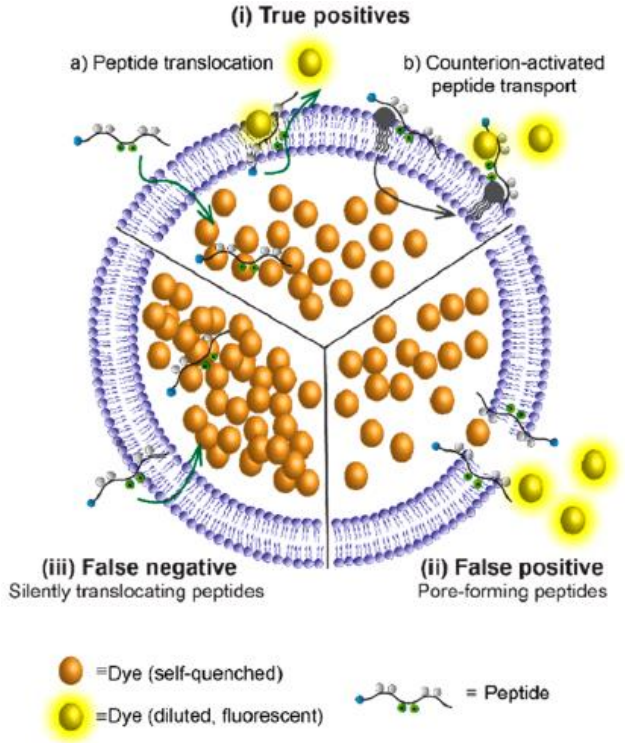
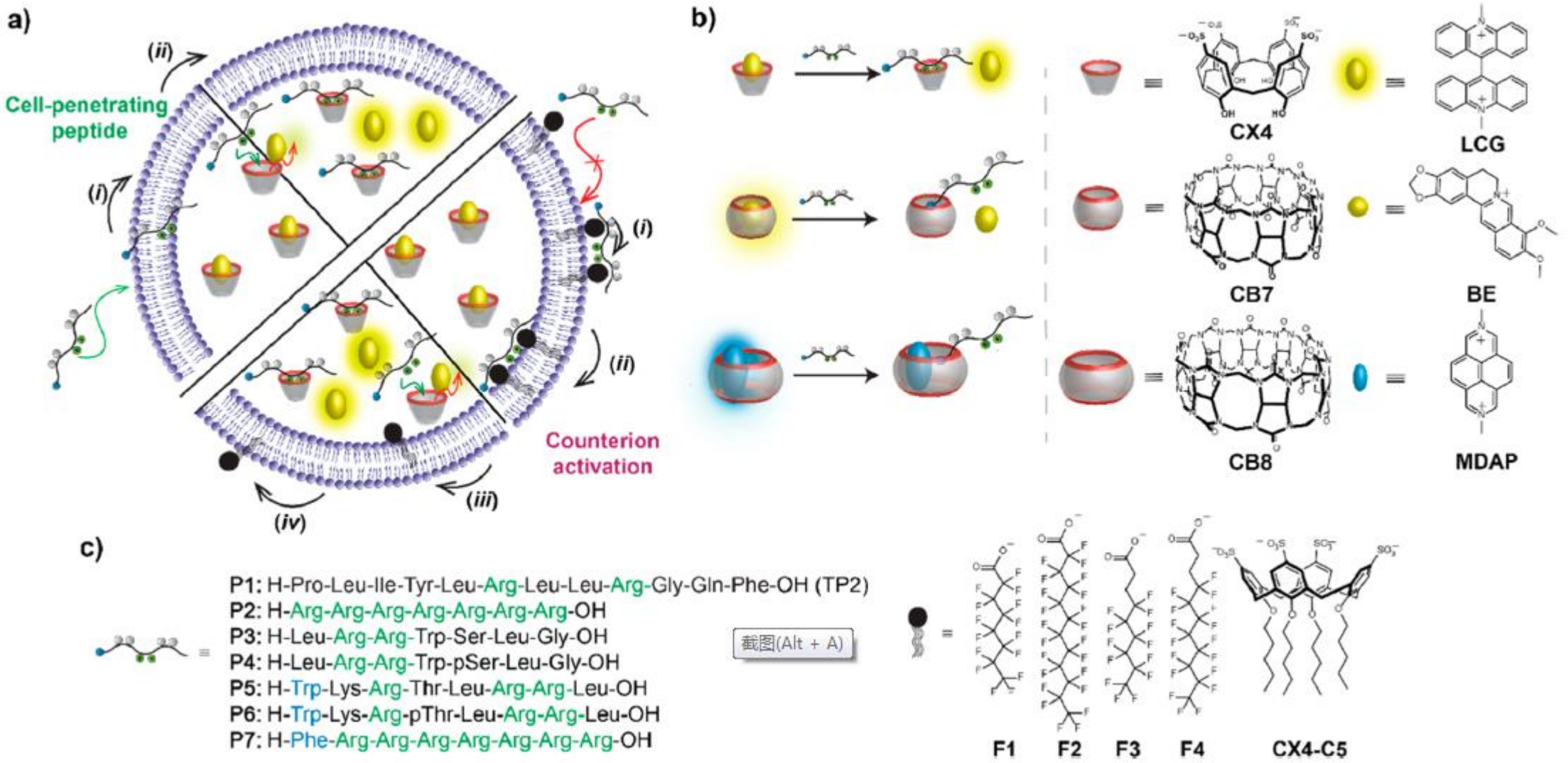
Fluorescence Monitoring of Peptide Transport Pathways into Large and Giant Vesicles by Supramolecular Host−Dye Reporter Pairs

Andrea Barba-Bon,[†] Yu-Chen Pan,[§] Frank Biedermann,[‡] Dong-Sheng Guo,[§] Werner M. Nau,*[,†] and Andreas Hennig*[,†]





J. Am. Chem. Soc. **2019**, *141*, 20137


a)
(ii)
Cell-penetrating peptide
(i)
(i)
(ii)
Counterion activation
(iii)
(iv)
b)
CX4
LCG
CB7
BE
CB8
MDAP
c)
P1: H-Pro-Leu-Ile-Tyr-Leu-Arg-Leu-Leu-Arg-Gly-Gln-Phe-OH (TP2)
P2: H-Arg-Arg-Arg-Arg-Arg-Arg-Arg-Arg-OH
P3: H-Leu-Arg-Arg-Trp-Ser-Leu-Gly-OH
P4: H-Leu-Arg-Arg-Trp-pSer-Leu-Gly-OH
P5: H-Trp-Lys-Arg-Thr-Leu-Arg-Arg-Leu-OH
P6: H-Trp-Lys-Arg-pThr-Leu-Arg-Arg-Leu-OH
P7: H-Phe-Arg-Arg-Arg-Arg-Arg-Arg-Arg-OH
截图(Alt + A)
F1
F2
F3
F4
CX4-C5