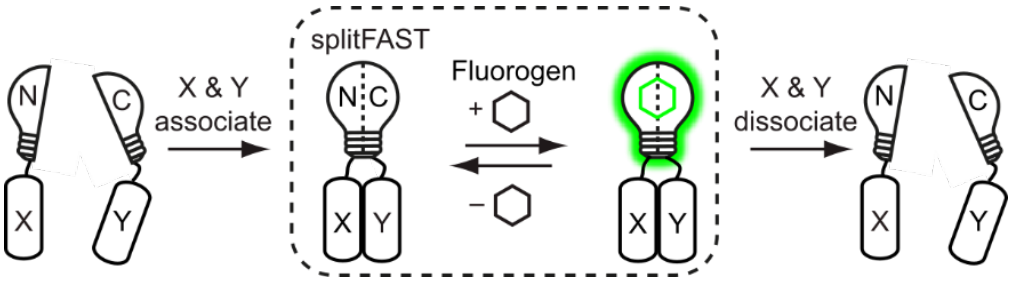
Department of CHEMISTRY

Press Release

Paris, July 5, 2019

Spying on protein-protein interactions with fluorescent chemical-genetic hybrids

Protein-protein interactions are at the heart of many biological processes that govern how cells respond to and interact with their surroundings. While these interactions may be stable, long-lived interactions, many of the most important and difficult to detect are dynamic and transient. Characterizing these interactions in space and time has been difficult due to a lack of methods that are capable of capturing their dynamics. A promising technique, bimolecular fluorescence complementation, which uses a fluorescent protein cut in two pieces that reassembles in the presence of the protein-protein interaction, has been limited in its use by slow fluorescence maturation and irreversibility.



Alison Tebo and Arnaud Gautier from the UMR 8640 PASTEUR (ENS/CNRS/SU) have developed a new bimolecular fluorescence complementation system that allows one, for the first time, to monitor the assembly and disassembly of a protein-protein interaction. This new system, called splitFAST, is based upon a previously developed technology in the lab: the Fluorescence-activating and Absorption Shifting Tag (FAST), which is a small protein tag that interacts rapidly and reversibly with a series of fluorogenic molecules. SplitFAST, like FAST, does not display any delay in fluorescence maturation and furthermore is fully reversible. It was demonstrated that splitFAST can detect known protein-protein interactions in a variety of contexts and will be an important tool for protein-protein interaction research.

Source :

A split fluorescent reporter with rapid and reversible complementation

Alison G. Tebo and Arnaud Gautier*

PASTEUR, Département de chimie, École normale supérieure, PSL University, Sorbonne Université, CNRS, 24 Rue Lhomond, 75005 Paris, France

Nature Communications **10**, 2822 (2019)

DOI : 10.1038/s41467-019-10855-0

Research Contact :

Arnaud GAUTIER, MCF ENS
UMR 8640 PASTEUR (ENS/CNRS/SU)
arnaud.gautier@ens.fr

Contact Communication Contact :

Nicolas LEVY,
Departement of Chemistry ENS (www.chimie.ens.fr)
nicolas.levy@ens.fr