

The Twinkle Factory

match715

a.k.a. HPAR-3,5DOM

Reference match715-50X

Quantity 81 µg

Store at 2-8 °C

Spectral properties of match715 upon FIRE_{tag} & nir-FIRE_{mate} interaction

Excitation wavelength 636 nm

Emission wavelength 715 nm

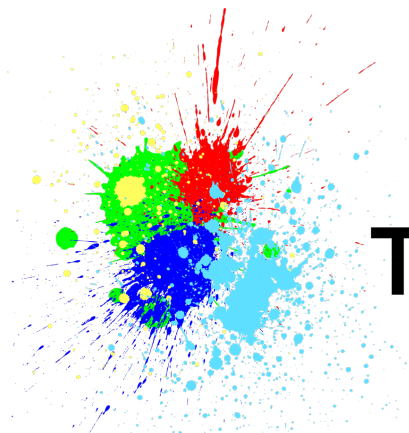
match715 is a fluorogenic molecular glue that selectively induces the dimerization of proteins fused to cognate nir-FIRE_{mate} and FIRE_{tag}. One vial includes 250 nmol of match715, enabling to prepare 50 mL of a 5 µM dimerizing solution.

The match715_{nir-FIRE_{mate}}-FIRE_{tag} system pertains to the Twinkle Factory technology CATCHFIRE (Chemically Assisted Tethering of Chimera by Fluorogenic Induced Recognition), a fluorogenic chemically induced dimerization technology that enables one not only to artificially control the proximity of two proteins of interest in cells, but also to see their interactions by fluorescence-based techniques. More specifically, it is a variant adapted for near-infrared reporting, nirCATCHFIRE. The two proteins of interest are genetically fused to two small protein domains (nir-FIRE_{mate} and FIRE_{tag}), the proximity of which is induced -in a reversible fashion- by the addition of match715. When the two domains interact, the fluorescence of match715 increases 100-fold, enabling to see the newly induced interaction by fluorescence microscopy.

The use of CATCHFIRE implies cloning and expressing proteins fused to nir-FIRE_{mate} and FIRE_{tag}, and treating cells with match715. The protocol is described below. Note that proteins of interest can be expressed with nir-FIRE_{mate} and FIRE_{tag} as either N- or C-terminal fusions.

The Twinkle Factory provides match715, the near-IR fluorogenic dimerizer, for nirCATCHFIRE. The Twinkle Factory also provides a range of fluorogenic dimerizers of various emission wavelengths, match540, match550, & match600, and a non-fluorogenic dimerizer, matchDark. Caution, those work with the legacy system FIRE_{mate}-FIRE_{tag} instead of nir-FIRE_{mate}-FIRE_{tag}.

Cells expressing proteins fused to nir-FIRE_{mate} and FIRE_{tag} are not supplied by The Twinkle Factory. Plasmids containing nir-FIRE_{mate} and FIRE_{tag} genes would be available at Addgene www.addgene.org/Arnaud_Gautier/.



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Protocol of labeling in living cells

Dissolve one vial of **match715** in 50 μL of DMSO to yield a 5 mM stock solution. Mix by vortexing for few seconds until all the **match715** is dissolved. Note that different stock concentrations can be made depending on your requirements. **match715** is soluble in DMSO up to at least 50 mM.

Dilute the stock solution 1:500 in medium or buffer to yield a 10 μM dimerizing solution. Mix thoroughly by vortexing. For best performance, add **match715** to serum-free medium or buffer, and do not keep/store the dimerizing solution. Note that different concentrations can be made depending on your requirements. Optimal concentrations range from 1 to 10 μM .

Remove the cell culture medium, wash with D-PBS, and replace the buffer with the dimerizing solution to induce protein dimerization. Image with appropriate settings.

To reverse the dimerization, remove the dimerizing solution, wash with D-PBS, and replace with culture medium.

Storage

Dry **match715** should be stored at 2-8 $^{\circ}\text{C}$ in the dark. Once dissolved in DMSO, the solution should be aliquoted to avoid repeated freeze/thaw cycles and stored at -20 $^{\circ}\text{C}$ in the dark. With proper storage, **match715** should be stable at least three years dry or 6 months dissolved in DMSO.

Purity and Characterization

Purity of **match715** was determined to be > 99% by nuclear magnetic resonance (NMR) and elementary analysis.

References

A tunable and versatile chemogenetic near-infrared fluorescent reporter. *Nature Communications* **16**:2594. doi.org/10.1038/s41467-025-58017-9

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The Buyer/User has a non-exclusive license to use this system or any component thereof for research use only. The products and/or their use may be covered by one or more of the following patents and patent applications:

- EP 3,164,411; JP 2017-527,261; US 10,138,278 (Fluorogen activating and shifting tag (FAST))
- EP 3,719,007; US 2022-0,169,682 (Split photoactive yellow protein complementation system and uses thereof)
- EP Appl. 22,306,308.2 (Proximity inducing system and uses thereof)

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