Resource Summary Report

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ClampFISH

DOI:10.17504/protocols.io.qeydtfw
Type: Protocol

Proper Citation

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Protocol Information

URL: https://dx.doi.org/10.17504/protocols.io.qeydtfw

Authors: Sara H Rouhanifard, Ian A Mellis, Margaret Dunagin, Sareh Bayatpour, Orsolya Symmons, Allison Cote, Arjun Raj

Group: Human Cell Atlas Method Development Community

Summary: Non-enzymatic, high-gain signal amplification methods with single-cell, single-molecule resolution are in great need. We present click-amplifying FISH (clampFISH) for the fluorescent detection of RNA that combines the specificity of oligonucleotides with bioorthogonal click chemistry in order to achieve high specificity and extremely high-gain (>400x) signal amplification. We show that clampFISH signal enables detection with low magnification microscopy and separation of cells by RNA levels via flow cytometry. Additionally, we show that the modular design of clampFISH probes enables multiplexing, that the locking mechanism prevents probe detachment in expansion microscopy, and that clampFISH works in tissue samples.

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