Resource Summary Report

Generated by dkNET on Sep 7, 2026

RNA Imaging with MERFISH - Design of Oligonucleotide Probes

DOI:10.17504/protocols.io.menc3de
Type: Protocol

Proper Citation

Jeffrey R. Moffitt, Xiaowei Zhuang 2018. RNA Imaging with MERFISH - Design of Oligonucleotide Probes. protocols.io dx.doi.org/10.17504/protocols.io.menc3de

Protocol Information

URL: https://dx.doi.org/10.17504/protocols.io.menc3de

Authors: Jeffrey R. Moffitt, Xiaowei Zhuang

Group: Human Cell Atlas Method Development Community, Neurodegeneration Method Development Community

Summary: The first step in any MERFISH experiment is the design of the oligonucleotide probes that will be used to label individual RNA species. In our current implementation of MERFISH, each oligonucleotide encoding probe consists of three basic components as illustrated in Figure 2. The first region is a 30-nt targeting region that is complementary to a portion of the sequence of the RNA to which it is designed to bind. The second region is a set of sequences that are called readout sequences, which were designed to be complementary and hence only bind to MERFISH readout probes and not other nucleic acid in the cell. Finally, the third region is a set of priming regions used in the construction of these probes, which will be discussed in detail in Probe Construction. In addition to the nucleotide sequences for each of these components, a codebook —the specific set of binary barcodes that will be used and their association with different RNA species of interest—must also be designed. In this section, we provide protocols to design these sequences and to build a codebook. Example code to perform these steps can be found at http://zhuang.harvard.edu/merfish/ .

Affiliations: Harvard University, Cambridge, Massachusetts, Harvard University, Cambridge, Massachusetts

External URL: https://www.ncbi.nlm.nih.gov/pubmed/27241748

Version: 1

Publication Date: 2018

Proper Citation: Jeffrey R. Moffitt, Xiaowei Zhuang 2018. RNA Imaging with MERFISH - Design of Oligonucleotide Probes. protocols.io dx.doi.org/10.17504/protocols.io.menc3de

Record Creation Time: 20210329T220539+0000

Record Last Update: 20210329T221058+0000

Data and Source Information

Source: