

Point Mutation Rescue

We can successfully repair a point mutation by knocking in a wild type repair template to restore gene function.

Below is a visual readout of knock-in repair in F0 (injected, generation zero) zebrafish larvae, to determine if this repair has been transmitted through the germline. We would have to raise them to adults and screen their progeny for development of pigment cells.



nacre 48 hpf*: a nacre mutant larvae, homozygous loss of function mutation in the gene *mitfa* (microphthalmia-associated transcription factor a) causing a loss of melanophores (pigment cells)



wt 48 hpf*: a wild type larvae with normal development and distribution of melanophores



ODN rescue 48 hpf*: nacre mutant embryos injected with Cas9 + gRNA + ssODN (single stranded oligodeoxynucleotides) showing repair of the *mitfa* mutation, resulting in rescued development of melanophores to varying degrees (highest to lowest degree of rescue, top to bottom)

***hpf: hours post fertilization**