

# VGER CRISPR gene editing: lessons learned

Since mid-2017, we have provided a full-service approach to CRISPR gene editing, enabling us to refine and optimize genome editing technologies and improve overall project outcomes. Of the 46 projects designed, we have a 93% success rate of producing the desired mutation and 89% of the time it was in a live mouse. The 4% difference is due to unanticipated embryonic lethality which occurred in two projects.

We have undertaken and successfully completed a wide range of different genome editing projects, the more complicated of which have often utilized long single stranded DNA templates to drive homology directed repair. Using this approach, seven mice containing either conditional or fluorescent reporter alleles have been generated, with the longest insertion or exchange being 1.5 kb in length. While the majority of projects we design are successful, we have learned that certain types of gene editing designs are unlikely to succeed using this strategy, particularly conditional inversion alleles. After three unsuccessful attempts to knock-in inverted exons using single stranded DNA templates, we recommend a conventional gene targeting approach for these models.

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