Sequence: Etv1 intergenic deletion genome editing design 2021.dna (Linear / 3301 bp)
Enzymes: Unique 6+ Cutters (21 of 678 total)
Features: 12 total
Primers: 5 total

Unique Cutters **Bold**

Start (0)

ApaLI

5' T C T G C T G G C T A A A G A G C T T C A G G G A C A C A G A A G T T T G C T A T T T T A T T A C A T T C C A T T T G T T G T C T A A T G A A A C A G T G C A C
3' A G A C G A C C G A T T T C T C G A A G T C C C T G T G T C T T C A A A C G A T A A A A T A A T G T A A G G T A A A C A A C A G A T T A C T T T G T C A C G T G

80

SwaI

A T A T T T C A G G A A G T C A T T A G C A C T C A C T G T T T A T T G A T T G A A T T A G T G A A A G T A T C A A T A C T G C C T G A T T T A A A T G T T C A
T A T A A A G T C C T T C A G T A A T C G T G A G T G A C A A A T A A C T A A C T T A A T C A C T T T C A T A G T T A T G A C G G A C T A A A T T T A C A A G T

160

T T A G A A A C C C T T A G A A A G A A A T G G A C A T G T T T T A T G C C T G A A A T T C T G C A T C A G C A A G A A C T T T A A T G T T T T T A T T G T G A
A A T C T T T G G G A A T C T T T C T T T A C C T G T A C A A A A T A C G G A C T T T A A G A C G T A G T C G T T C T T G A A A T T A C A A A A A T A A C A C T

240

AseI

G G A T T A A A T A A G T C A G A T T T T G T G A G G T C A C A C T T A G C T C A C A G A T A C T C A T A A T T A A T T G A A T T C T T C T C C A C C C C T T C
C C T A A T T T A T T C A G T C T A A A A C A C T C C A G T G T G A A T C G A G T G T C T A T G A G T A T T A A T T A A C T T A A G A A G A G G T G G G G A A G

320

A T T T C A A A T C A C T T A T T T C T T A A A C T A T A T A T A A A A C T A C T G T T C T C T G G A C T G T T T T T C T C A T A T G A A G A A G A A T T G A A
T A A A G T T T A G T G A A T A A A G A A T T T G A T A T A T A T T T T G A T G A C A A G A G A C C T G A C A A A A A G A G T A T A C T T C T T C T T A A C T T

400

A A A T A G T T G C A G G A T T T C T T A A A A T G G T T T A C T T T G G T A A G A A G T A G A G T A A A A T A A A A C A T T C A T A T A A A C T A A G T T T A
T T T A T C A A C G T C C T A A A G A A T T T T A C C A A A T G A A A C C A T T C T T C A T C T C A T T T T A T T T G T A A G T A T A T T T G A T T C A A A T

480

A G G C A T A G C T G C C T C T C T T G A T T T C A T T T G T G T G T G T G T G T G T G T G T G T G T G T G T G T G T A T T T G G G G T G T A G G G G T
T C C G T A T C G A C G G A G A G A A C T A A A G T A A A C A C A C A C A C A C A C A C A C A C A C A C A C A C A C A C A C A T A A A C C C C A C A T C C C C A

560

G G G G C A G G A T T C T T T C G A G G T A T T T G A A A C C T C G G T T C T C A C A C T C G C A A G T G C T C T A C T A T T A A G C T A T A G T C C A G C C C
C C C C G T C C T A A G A A A G C T C C A T A A A C T T T G G A G C C A A G A G T G T G A G C G T T C A C G A G A T G A T A A T T C G A T A T C A G G T C G G G

640

AflII

T T C T C T T A C T A T C T T A A G T A T T G G T A T C A T T G C T A A T A T C T G T A A T T A G C A G A G A A C T T T G T G T A T G A A A T G G C A T T G G T
A A G A G A A T G A T A G A A T T C A T A A C C A T A G T A A C G A T T A T A G A C A T T A A T C G T C T C T T G A A A C A C A T A C T T T A C C G T A A C C A

720

A G A T C T T C T C C T C T A C T T T T G T T A T A C A T T T C A G G A G C A A C A A T G T T C A T A A T G C A C G A A T C T T A T A A C A G T A A A G C T A G
T C T A G A A G A G G A G A T G A A A A C A A T A T G T A A A G T C C T C G T T G T T A C A A G T A T T A C G T G C T T A G A A T A T T G T C A T T T C G A T C

800

T A A G A T T T T A G G T T A A T A G T T G T T T T T C A G A A G G T A A A A A G A T C T G T A G T T A C A T A G A G A C A T T C A G T A A T T A A A C T G T C T
A T T C T A A A A T C C A A T T A T C A A C A A A A G T C T T C C A T T T T T C T A G A C A T C A A T G T A T C T C T G T A A G T C A T T A A T T T G A C A G A

880

XcmI

C T A T C C C A G A G G G A T T G A T T C C A T G A A C C C A A T G G A T A T T G A A A C A C A C T A A T T C T G A A G T C C C T T G T A T A A A A T A A T A T
G A T A G G G T C T C C C T A A C T A A G G T A C T T G G G T T A C C T A T A A C T T T G T G T G A T T A A G A C T T C A G G G A A C A T A T T T T A T T A T A

960

Primer 3
G C C T G C A A C C A T T G T G T T C C

A A C A T T G C C T G C A A C C A T T G T G T T C C C T C A A C T T A C T T C A A G T C A C C T T T A G A C T A T T T A G A A A A A C T A A C A C A A T G A T G
T T G T A A C G G A C G T T G G T A A C A C A A G G G A G T T G A A T G A A G T T C A G T G G A A A T C T G A T A A A T C T T T T T G A T T G T G T T A C T A C

1040

NsiI

G T G C T G T A T G C A T A G T T T T A A T A T T G T A T T A T T T A G G C A A T G G T A C T A G A G A G A T A C T G C A C A T G T T C A A T G T G G A T A C A
C A C G A C A T A C G T A T C A A A A T T A T A A C A T A A T A A A T C C G T T A C C A T G A T C T C T C T A T G A C G T G T A C A A G T T A C A C C T A T G T

1120

ScaI   **BclI***

TTTTGCTTTTGGGTTGGCAGTTGGTCAGGGAGTAACACTTGTAGGAGTACAACTTGCAGATATAAAGTACTGATCATTCT

AAAACGAAAACCCAACCGTCAACCAGTCCCTCATTGTGAACATCCTCATGTTGAACGTCTATATTTCATGACTAGTAAGA

1200

TGTCATTTGAAACTCCCTGTTCAAGCCTTATTGCCACCTAGTCTCCGTTCCCATAGCAGGCACACATAGTTTGATGGCTC

ACAGTAAACTTTGAGGGACAAGTTCGGAATAACGGTGGATCAGAGGCAAGGGTATCGTCCGTGTGTATCAAACTACCGAG

1280

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |

| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |
| Etv1_5_Rev1 |
| miscellaneous |

AlwNI

TGCCCTAACAAGGCTTTAAAGTAAGCCATTGGGTATGAAGCAAGTAAAAACATCCAGCGTGATGGGTTTGACAGACTCTG

ACGGGATTGTTCCGAAATTTCATTCGGTAACCCATACTTCGTTCATTTTTGTAGGTCGCACTACCCAAACTGTCTGAGAC

1360

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

GGTCGCACTACCCAAACTGT

Primer 1

BpuEI

AACTAAGAGCTGAGCTCCTTGGTTTTGGAAGGGCCGGACCCGTTTTGGTTTCAATTTTCTAATTTGTGGTAAGGAATACC

TTGATTCTCGACTCGAGGAACCAAAACCTTCCCGGCCTGGGCAAAACCAAAGTTAAAAGATTAAACACCATTCCTTATGG

1440

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

```
TCAAGATTTAGTCAAGGATTAAGCCTGTGGTTTAACTTCCTTCTTCCTAAGAGTATGAAGTGTTTGAGTCAAGCCACCAA
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
AGTTCTAAATCAGTTCCTAATTCGGACACCAAATTGAAGGAAGAAGGATTCTCATACTTCACAAACTCAGTTCGGTGGTT
```
1520

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

```
CCCGTATCCCTGCAGATGAAACCTATTTGCATTTCTCATGCGTGTAAGCCCAGTAAATGTGATTGCTTCCAGCTCACTGC
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
GGGCATAGGGACGTCTACTTTGGATAAACGTAAAGAGTACGCACATTCGGGTCATTTACACTAACGAAGGTCGAGTGACG
```
1600

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

```
CACAGCACCACTCTGCTGCCATTCTTTTACCAAATAACGAAGCCTCAAACAGAGGCTCCGTCTGTGTGCTAAACAGGAAG
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
GTGTCGTGGTGAGACGACGGTAAGAAAATGGTTTATTGCTTCGGAGTTTGTCTCCGAGGCAGACACACGATTTGTCCTTC
```
1680

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

```
CATGACTCACGCCTGGAACCCAGAGAGCCAGCAAACTGCAGCCGTGCTCTTAACTGGCTAAAAGGTCTGTTACCATAGCT
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
GTACTGAGTGCGGACCTTGGGTCTCTCGGTCGTTTGACGTCGGCACGAGAATTGACCGATTTTCCAGACAATGGTATCGA
```
1760

| chr12:38,928,700-38,929,500 |
| Deleted in F0-03 + XhoI RE site |
| Sequence present in N1-21 pup |
| Deletion in F0-05 NHEJ + TTCTCTCGAG |
| Deleted in F0-07 |
| Deleted in F0-07 |
| Deletion in F0-03 NHEJ + CT |
| Sequence in N1-5, N1-6, and N1-20 progeny |

EcoNI

TTGTAACATATATTCTAAGTGATGGCCTTCCCGACAGGCTTTCATAGGGAGCCTGGTTGAGGGCTAAGCAGATTGTTTTC

AACATTGTATATAAGATTCACTACCGGAAGGGCTGTCCGAAAGTATCCCTCGGACCAACTCCCGATTCGTCTAACAAAAG

1840

chr12:38,928,700-38,929,500

Deleted in F0-03 + XhoI RE site

Sequence present in N1-21 pup

Deletion in F0-05 NHEJ + TTCTCTCGAG

Deleted in F0-07

Deleted in F0-07

Deletion in F0-03 NHEJ + CT

Sequence in N1-5, N1-6, and N1-20 progeny

Primer 2

GTTCCTAACCACAGCACCCTACTGG

GTTCCTAACCACAGCACCCTACTGGCCCTAGTGGAAGGCTCCTCACGGAATTTGATCTTTACTCGTTTGGCATCTGTGCT

CAAGGATTGGTGTCGTGGGATGACCGGGATCACCTTCCGAGGAGTGCCTTAAACTAGAAATGAGCAAACCGTAGACACGA

1920

chr12:38,928,700-38,929,500

Deleted in F0-03 + XhoI RE site

Sequence present in N1-21 pup

Deletion in F0-05 NHEJ + TTCTCTCGAG

Deleted in F0-07

Deleted in F0-07

Deletion in F0-03 NHEJ + CT

Sequence in N1-5, N1-6, and N1-20 progeny

TATGTATTAGAATGTTTTTCTGCTGTTGTTAAAATGTCAACAACCAACCAACAAAAATCCCACGACAAATTATACCTCAC

ATACATAATCTTACAAAAAGACGACAACAATTTTACAGTTGTTGGTTGGTTGTTTTTAGGGTGCTGTTTAATATGGAGTG

2000

chr12:38,928,700-38,929,500

Deleted in F0-03 + XhoI RE site

Sequence present in N1-21 pup

Deletion in F0-05 NHEJ + TTCTCTCGAG

Deleted in F0-07

Deleted in F0-07

Deletion in F0-03 NHEJ + CT

Sequence in N1-5, N1-6, and N1-20 progeny

Etv1_3_Rev2

```
ATTGGTTTAGATACTTCACTCATGTATAAGTTAATGGATTTAAGGCAATGTTTGATGAACAGGTTTGGAGTTTTGTGTTT
TAACCAAATCTATGAAGTGAGTACATATTCAATTACCTAAATTCCGTTACAAACTACTTGTCCAAACCTCAAAACACAAA
```
2080

▨
chr12:38,928,700-38,929,500

▨
Deleted in F0-03 + XhoI RE site

▨
Sequence present in N1-21 pup

▨
Deletion in F0-05 NHEJ + TTCTCTCGAG

▨
Etv1_3_Rev2

```
TTTCCAATAAATTCTTTTTTCCTTGCCTGTTAGTTCCTTCGTTTTGTTACAGGAAAATAGTTTCAGCTATGCCAAAATGC
AAAGGTTATTTAAGAAAAAAGGAACGGACAATCAAGGAAGCAAAACAATGTCCTTTTATCAAAGTCGATACGGTTTTACG
                         GGAACGGACAATCAAGGAAGCAA
                         Primer 4
```
2160

```
CCCACTCTAGCTACTGGGTTTGCAATACAGACCTTCTACATTTATGCAACTATAGAAGAAAAATACCACACTTTATAGTA
GGGTGAGATCGATGACCCAAACGTTATGTCTGGAAGATGTAAATACGTTGATATCTTCTTTTATGGTGTGAAATATCAT
```
2240

EcoO109I*
```
TGTATGTCTCTTGAATAATCACTAATCACCAGGCCCTTTTGAATTGGTGCAAAGTGCAGGCAGACTGAACCAGGCTACTT
ACATACAGAGAACTTATTAGTGATTAGTGGTCCGGGAAAACTTAACCACGTTTCACGTCCGTCTGACTTGGTCCGATGAA
```
2320

BanI   PflMI
```
AGCACTCTTACCTCATTCCTTGTCTCTAATCTGAGATAATGCGGTGCCATTCACCAGTCACAGAGCCCCACAGCATGGCT
TCGTGAGAATGGAGTAAGGAACAGAGATTAGACTCTATTACGCCACGGTAAGTGGTCAGTGTCTCGGGGTGTCGTACCGA
                                        CACGGTAAGTGGTCAGTGTCTC
                                        Primer 5
```
2400

```
CTTAGTTGGTGTTAACACAGATCAAAAACACAAGGCCACTGCCACATGAAATCTAATTTAACCCCTGAATTCAGGAGGAT
GAATCAACCACAATTGTGTCTAGTTTTTGTGTTCCGGTGACGGTGTACTTTAGATTAAATTGGGGACTTAAGTCCTCCTA
```
2480

```
TGTGTTGGGGACTTCAGATTCACAAAAATTGTCATGTAACTTATTTTTTTTCCTTGTTCTTGTGAACTCTGTTCACTTCT
ACACAACCCCTGAAGTCTAAGTGTTTTTAACAGTACATTGAATAAAAAAAGGAACAAGAACACTTGAGACAAGTGAAGA
```
2560

```
GTTTCATGGAAGATCTTTGCAACGAAACTGCTCCTTGATTTCCGGTTTGTGTATATCCTTACCCCCGTCCCCCCACCCCT
CAAAGTACCTTCTAGAAACGTTGCTTTGACGAGGAACTAAAGGCCAAACACATATAGGAATGGGGGCAGGGGGGTGGGGA
```
2640

```
TCAAAGTTCTCATCTTGTCTCTGTAACATCAGAACCAAAAATAATTCAGTTGCTTTAAATGCCATATGGAATAAATAAAT
AGTTTCAAGAGTAGAACAGAGACATTGTAGTCTTGGTTTTTATTAAGTCAACGAAATTTACGGTATACCTTATTTATTTA
```
2720

BstAPI
```
GTTTCTAAACAGATCAAATTAAATTCCCTGTAAAACTTCTCAGCATTGGTTGCTCTGATTAAATATGGAAGAGGAGCAAA
CAAAGATTTGTCTAGTTTAATTTAAGGGACATTTTGAAGAGTCGTAACCAACGAGACTAATTTATACCTTCTCCTCGTTT
```
2800

PshAI
```
AGCCACAGCATTGGCGGGCTTATAAAAGAGAAATGAAAAGAATCGGAAAGCAAAAGACTAAAGTCAGTTGGTGAATTGGA
TCGGTGTCGTAACCGCCCGAATATTTTCTCTTTACTTTTCTTAGCCTTTCGTTTTCTGATTTCAGTCAACCACTTAACCT
```
2880

PvuII
MspA1I

```
AAGTGATGTAGTATTGTTATTTTTATAACTTCCCAGATTAAAATAAAAACTACGGGCTTGCAGCTGAAAATTATCCGGTC
TTCACTACATCATAACAATAAAAATATTGAAGGGTCTAATTTTATTTTTGATGCCCGAACGTCGACTTTTAATAGGCCAG
```
2960

MmeI

```
ATCACAGCCTGGCAGGGTACAAGGGCACATGTGCTATGTGGTTGGAGAGAGTGGCTATTGGGAGTCCTGCACTACATATG
TAGTGTCGGACCGTCCCATGTTCCCGTGTACACGATACACCAACCTCTCTCACCGATAACCCTCAGGACGTGATGTATAC
```
3040

```
GAAACAGCTATATTTGGAGGAAAATGCTATCAACCAAATAAAACCCAAGGAACAAATTTTGAGCCAGGAAGCACTGTGTC
CTTTGTCGATATAAACCTCCTTTTACGATAGTTGGTTTATTTTGGGTTCCTTGTTTAAAACTCGGTCCTTCGTGACACAG
```
3120

```
CCAGGTGTTGAAAGGGAATCAGAAAAAGAGGAAGAAGAGATGGCACTTTCCAGACTAGAGCTCTTTCTGTTAACTAAAAT
GGTCCACAACTTTCCCTTAGTCTTTTTCTCCTTCTTCTCTACCGTGAAAGGTCTGATCTCGAGAAAGACAATTGATTTTA
```
3200

MfeI

```
ATTTCTTTTAAATATAGGAACCCAGTTTTTAAAGGAAGGACAATTGCATTAGGCAGAGGGGCTGCTTCTGAGCAACGCTGT
TAAAGAAAATTTATATCCTTGGGTCAAAATTTCCTTCCTGTTAACGTAATCCGTCTCCCCGACGAAGACTCGTTGCGACA
```
3280

AccI   **End** (3301)

```
CTACCAGGGGTGAAGAAGCAG     3'
                          3301
GATGGTCCCCACTTCTTCGTC     5'
```