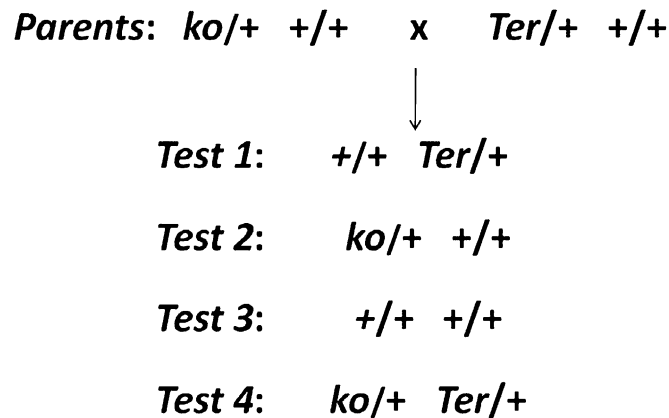


# Supporting Information

Nelson et al. 10.1073/pnas.1207169109



**Fig. S1.** Design of test for transgenerational gene interactions. Each parent was heterozygous for either *Apobec1<sup>ko</sup>* or *Dnd1<sup>Ter</sup>*, and the resulting offspring consisted of four genotypic classes: a test group of double-heterozygotes, and three control groups, each of the single heterozygotes and the wild-type homozygotes (see ref. 1 for details.)

1. Rassoulzadegan M, et al. (2006) RNA-mediated non-Mendelian inheritance of an epigenetic change in the mouse. *Nature*441:469–474.

**Table S1. Occurrence of males with a testicular germ cell tumor in various *Apobec1<sup>ko</sup>* and *Dnd1<sup>Ter</sup>* crosses**

| Male offspring genotype | Parental cross                 | N   | No. affected | No. expected | Percent affected | Percent expected | P     |
|-------------------------|--------------------------------|-----|--------------|--------------|------------------|------------------|-------|
| <i>ko/+, Ter/+</i>      | Total                          | 189 |              |              |                  |                  |       |
|                         | <i>Ter/+</i> x <i>ko/+</i>     | 25  | 5            | 1.8          | 20.0             | 7.3              | 0.01  |
|                         | <i>ko/+</i> x <i>Ter/+</i>     | 11  | 5            | 1.6          | 45.5             | 14.1             | 0.003 |
|                         | <i>Ter/+, ko/+</i> x 129       | 10  | 6            | 3.4          | 60.0             | 34.1             | Ns    |
|                         | 129 x <i>Ter/+, ko/+</i>       | 38  | 12           | 12.6         | 31.6             | 33.2             | Ns    |
|                         | <i>Ter/+</i> x <i>ko/ko</i>    | 17  | 4            | 6.1          | 23.5             | 35.0             | Ns    |
|                         | <i>ko/ko</i> x <i>Ter/+</i>    | 88  | 20           | 31.2         | 22.7             | 35.5             | Ns    |
| <i>+/+, Ter/+</i>       | Total                          | 124 |              |              |                  |                  |       |
|                         | <i>Ter/+</i> x <i>ko/+</i>     | 28  | 3            | 8.8          | 10.7             | 31.5             | 0.04  |
|                         | <i>ko/+</i> x <i>Ter/+</i>     | 19  | 2            | 6.0          | 10.5             | 31.5             | Ns    |
|                         | <i>Ter/+, ko/+</i> x 129       | 26  | 7            | 8.2          | 26.9             | 31.5             | Ns    |
|                         | 129 x <i>Ter/+, ko/+</i>       | 51  | 14           | 16.0         | 27.5             | 31.5             | Ns    |
| <i>ko/+, +/+</i>        | Total                          | 322 |              |              |                  |                  |       |
|                         | <i>Ter/+</i> x <i>ko/+</i>     | 24  | 2            | 2.4          | 8.3              | 9.2              | Ns    |
|                         | <i>ko/+</i> x <i>Ter/+</i>     | 17  | 2            | 0            | 11.8             | 0                | Ns    |
|                         | <i>Ter/+</i> <i>ko/+</i> x 129 | 30  | 4            | 0            | 13.3             | 0                | Ns    |
|                         | 129 x <i>Ter/+, ko/+</i>       | 69  | 6            | 6.4          | 8.7              | 9.2              | Ns    |
|                         | <i>Ter/+</i> x <i>ko/ko</i>    | 66  | 9            | 5.3          | 13.6             | 8.1              | Ns    |
|                         | <i>ko/ko</i> x <i>Ter/+</i>    | 116 | 8            | 0            | 6.9              | 0                | Ns    |
| <i>+/+, +/+</i>         | Total                          | 213 |              |              |                  |                  |       |
|                         | <i>Ter/+</i> x <i>ko/+</i>     | 34  | 4            | 2.5          | 12.0             | 7.2              | Ns    |
|                         | <i>ko/+</i> x <i>Ter/+</i>     | 61  | 5            | 4.4          | 8.2              | 7.2              | Ns    |
|                         | <i>Ter/+, ko/+</i> x 129       | 49  | 3            | 3.5          | 6.1              | 7.2              | Ns    |
|                         | 129 x <i>Ter/+</i> <i>ko/+</i> | 69  | 2            | 5.0          | 2.9              | 7.2              | Ns    |

**Table S2. Segregation ratios from heterozygous *Apobec1<sup>ko</sup>* and *Dnd1<sup>Ter</sup>* parents at two embryonic stages (embryonic days E3.5 and E12.5) and at weaning**

|  | Time point | <i>Apobec1</i> +/+ |               | <i>Apobec1</i> ko/+ |               | Litter size | N   |
|--|------------|--------------------|---------------|---------------------|---------------|-------------|-----|
|  |            | +/+                | <i>Ter</i> /+ | +/+                 | <i>Ter</i> /+ |             |     |
| <i>Apobec1<sup>ko/+</sup></i> ♀ x<br><i>Dnd1<sup>Ter/+</sup></i> ♂ | E3.5       | 13                 | 3             | 3                   | 1             | 5.0         | 20  |
|  | E12.5      | 16                 | 7             | 10                  | 2             | 7.2         | 35  |
|  | Weaning    | 89                 | 37            | 23                  | 17            | 6.1         | 166 |
| <i>Dnd1<sup>Ter/+</sup></i> ♀ x<br><i>Apobec1<sup>ko/+</sup></i> ♂ | E3.5       | 6                  | 7             | 6                   | 3             | 7.3         | 22  |
|  | Weaning    | 41                 | 43            | 54                  | 58            | 5.4         | 196 |

**Table S3. Litter size and sex ratio for intercrosses between *Apobec1<sup>ko</sup>* and *Dnd1<sup>Ter</sup>* heterozygotes**

|                     | <i>Apobec1</i> control cross |              | <i>Dnd1</i> control cross |               | <i>Apobec1</i> – <i>Dnd1</i> interaction |               |
|---------------------|------------------------------|--------------|---------------------------|---------------|--|---------------|
|                     | <i>ko</i> /+                 | +/+          | <i>Ter</i> /+             | +/+           | <i>ko</i> /+                             | <i>Ter</i> /+ |
| Maternal genotype   | <i>ko</i> /+                 | +/+          | <i>Ter</i> /+             | +/+           | <i>ko</i> /+                             | <i>Ter</i> /+ |
| Paternal genotype   | +/+                          | <i>ko</i> /+ | +/+                       | <i>Ter</i> /+ | <i>Ter</i> /+                            | <i>ko</i> /+  |
| Average litter size | 7.15                         | 7.09         | 7.23                      | 6.27          | 6.05                                     | 5.40          |
| No. females         | 187                          | 128          | 70                        | 127           | 64                                       | 123           |
| No. males           | 210                          | 120          | 90                        | 137           | 69                                       | 109           |
| % females           | 47                           | 52           | 44                        | 48            | 48                                       | 53            |