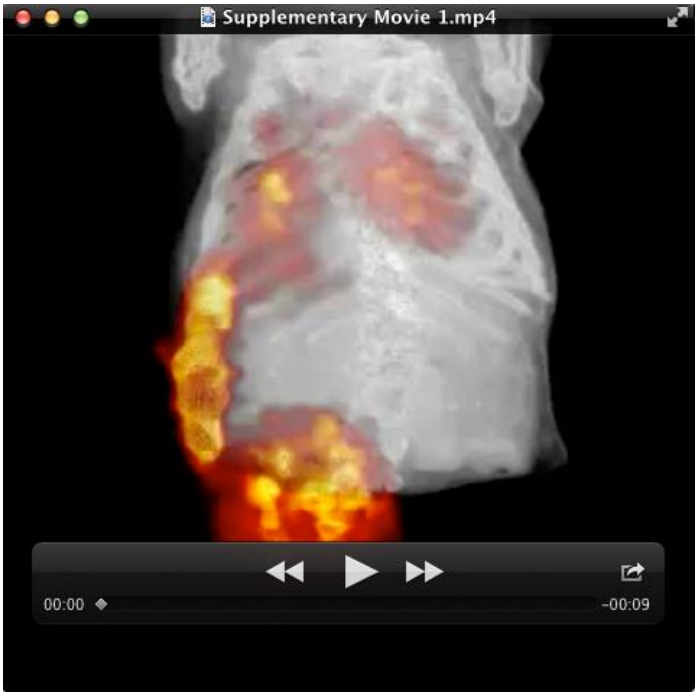
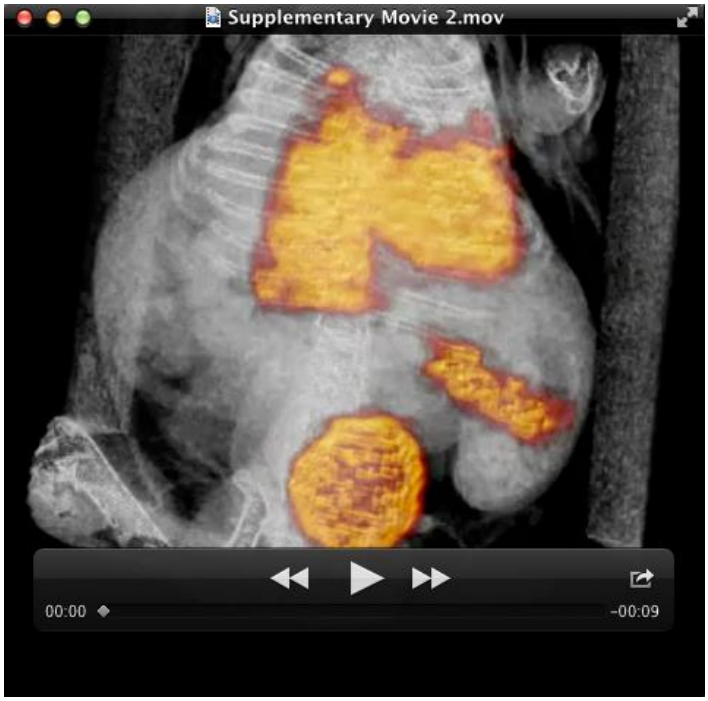
Movies:




**Movies 1 and 2.** Examples of 3D PET/CT cropped videos for SST-68Ga isotope absorption in a WT mouse (Movie 1) and a KI/KI mouse (Movie 2). SST-68Ga/gram observation is limited to the excretory system: kidneys (upper abdominal), ureter and bladder (lower abdominal). Stomach is not labeled.

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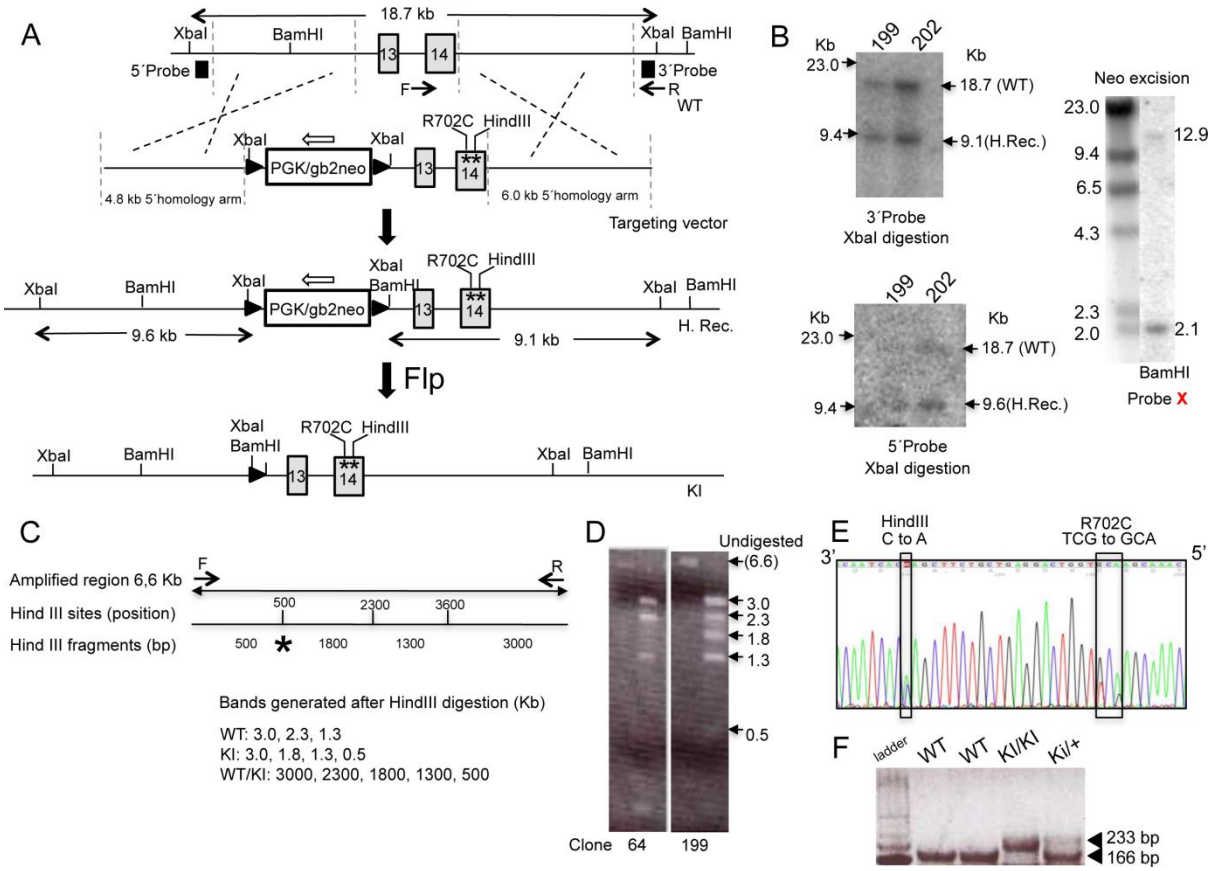


**Figure S1: Generation of the Atp4a_R702C knockin allele.** (A) Schematic representation (not in scale) of the gene targeting strategy. The WT allele, the targeting vector and the homologous recombinant knockin allele are drawn before and after Flp-mediated recombination of the frt (black triangles) -flanked neomycin cassette. Relevant exons are represented by grey boxes. Positions of relevant restriction sites, including the HindIII site introduced in Exon14 by gene targeting are shown. The position of the external probes (3´and 5´) used for Southern blot of neomycin-resintant clones (see section B) is shown. The expected size of the Xba fragments for the WT and the homologous recombinant allele after Xba digestion are indicated. The position of the primers used to amplify the 6.6 Kb band used to identify the recombinants containing the p.R702C mutation (see section C and D) are also shown. (B) Southern blot screening of homologous recombinant clones. Results are shown for two clones for which germ line transmission was achieved (199 and 202). The right-most picture shows the Southern blot used to confirm Flp-mediated excisison of the neo cassette after breeding the chimeras with Tg-CAG-Flpe females. Probe I (250 bp) was amplified from targeting vector DNA with primers forward: 5´

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CCCCGTTAGCCCACTATCTG 3´ and reverse: 5´CATCTGCTGTCCTCATACCCG 3´. MWS: molecular weight standard. (C) Strategy used for dentification of recombinant clones that had incorporated the R702C and HindIII new site in Atp4a exon14. Primers used to amplify the 6,6 Kb band are F (forward): 5´ TCAACTGTGTAAAGACTGGG 3´ (this sequence is part of intron 13) and R (reverse): 5´ CAGACTGTTCCAGTTTAACC 3´ (this sequence is external to the 3´homology arm) (see section A) for primer position). The expected fragment sizes after HindIII digestion are shown for WT, p.R702C recombinant allele and the combination of both. (D) HindIII digestion of bands amplified as described in c) from clone 199. Clone 64 was used as a negative control since it had not incorporated the R702C mutation but it was positive for homologus recombination. (E) Sequencing results that confirm the presence of the R702C mutation and the HindIII site in clone 199. Same result was obtained for clone 202. (F) PCR products for mouse genotyping. PCR amplifies a 166 bp-long and a 233 bp-long fragments from WT and KI alleles, respectively. Heterozygous mice amplify both fragments.

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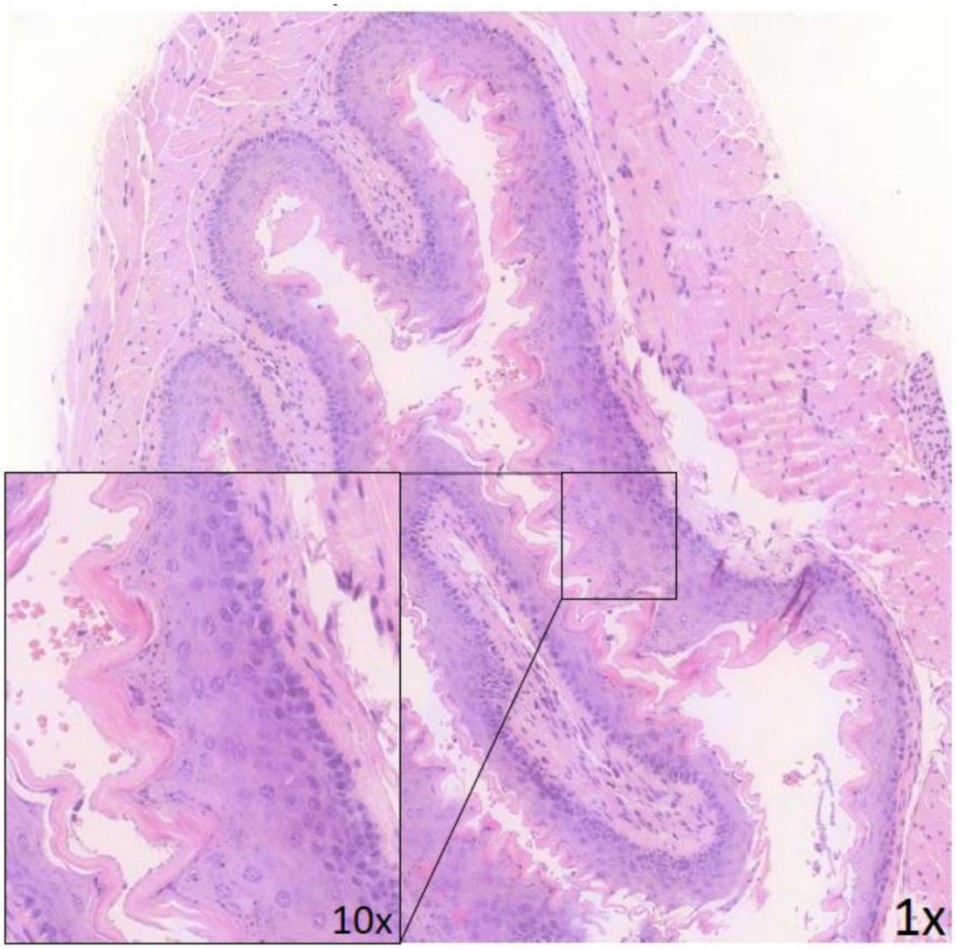


**Supplementary Figure 2:** H&E staining of an esophagus of a representative KI/KI mouse after 350 days of being given acidified water. Normal structure and cellular organization of both the muscular layers and keratinized epithelia of the esophagus were observed.

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**Table S1:** Antibody characteristics, antigen retrieval and incubation conditions used in immunostaining studies.

| Antibody | Reference | Clone | Expression | Antigen retrieval | Dilution | Incubation time (min) | Secondary Antibody |
|---|---|---|---|---|---|---|---|
| KI67 | DAKO: IR626 | MIB-1 | N | Citrate pH6,1 | Ready to use | 30 | FLEX+MOUSE |
| | | | | | 1/2000 | | FL |
| SST | DAKO: A0566 | Rbb Polyclonal | Mmb | Tris/EDTA pH9 | | 20 | EX |
| STR2 | Abcam: ab134152 | UMB1 | Mmb | Tris/EDTA pH9 | 1/300 | 20 | FLEX |
| Chromgranin A | DAKO: IR502 | Rbb Polyclonal | C | Tris/EDTA PH9 | Ready to use | 20 | FLEX |
| | | | | High pH (50x) | Ready to use | | |
| Gastrin | DAKO: IS519 | Rbb Polyclonal | C | (code: K8010/K8004) | | 20 | FLEX |

SST: Somatostatin
SSTR2: Somatostatin Receptor
IF: Intrinsic Factor

N: Nuclei Expression
Mmb: Membrane Expression
C: Cytoplasm Expression

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