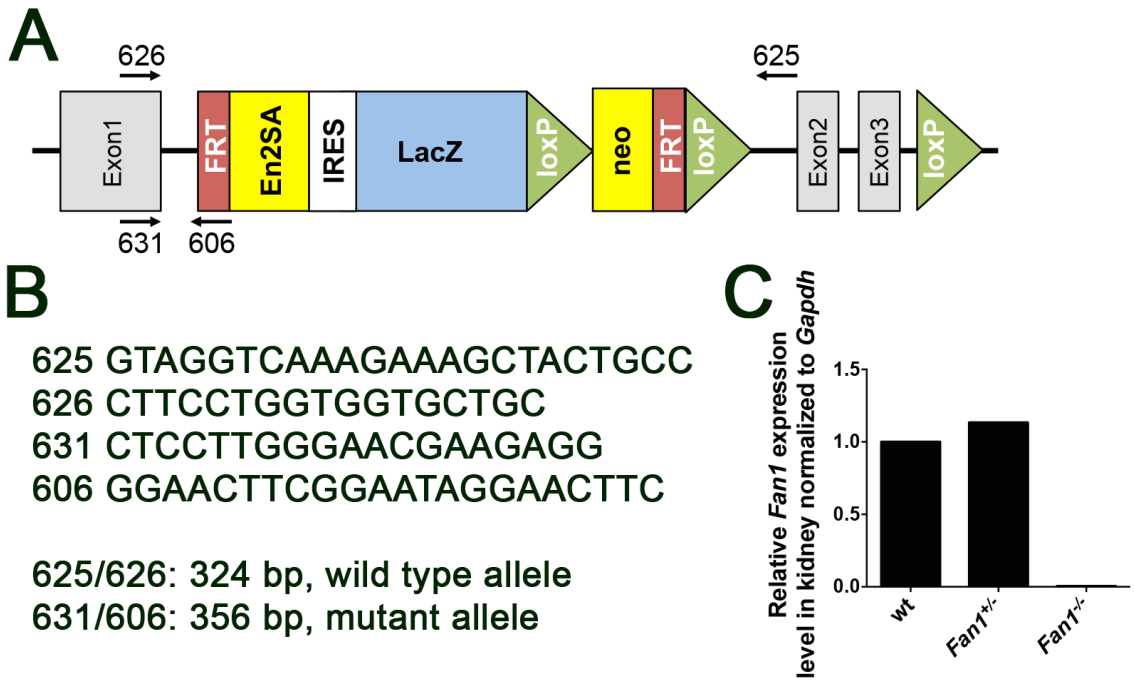
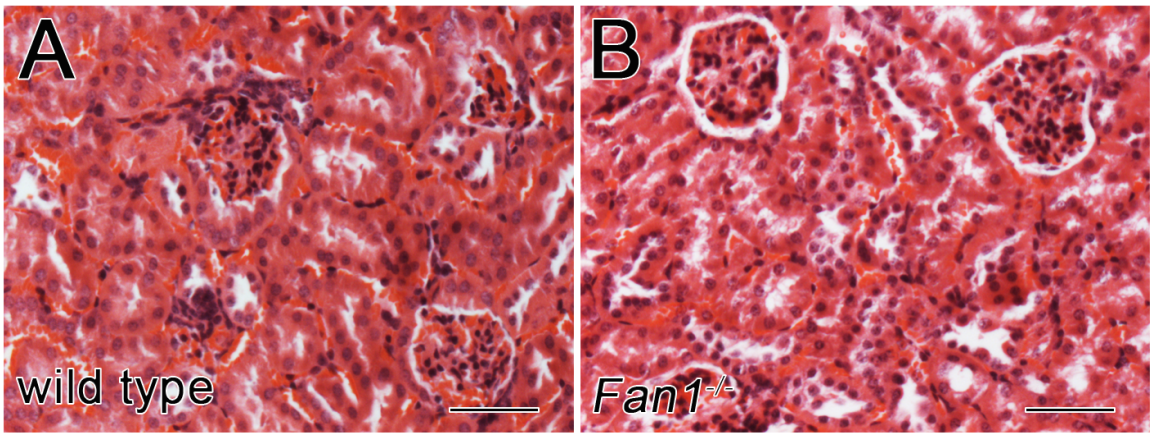


Supplementary Figure 1. Schematics of the Fan1 targeted allele.

(**A**) Schematic demonstrating the *Fan1* allele used in this work. Binding positions of the genotyping primers are indicated with arrows. FRT, flippase recognition target; En2SA, *Engrailed2,* splice acceptor; IRES, internal ribosomal entry site; lacZ, *beta-galactosidase* gene; loxP, loxP sequence; neo, neomycin resistance gene.

(**B**) Genotyping details. Primer positions are shown in **A**.

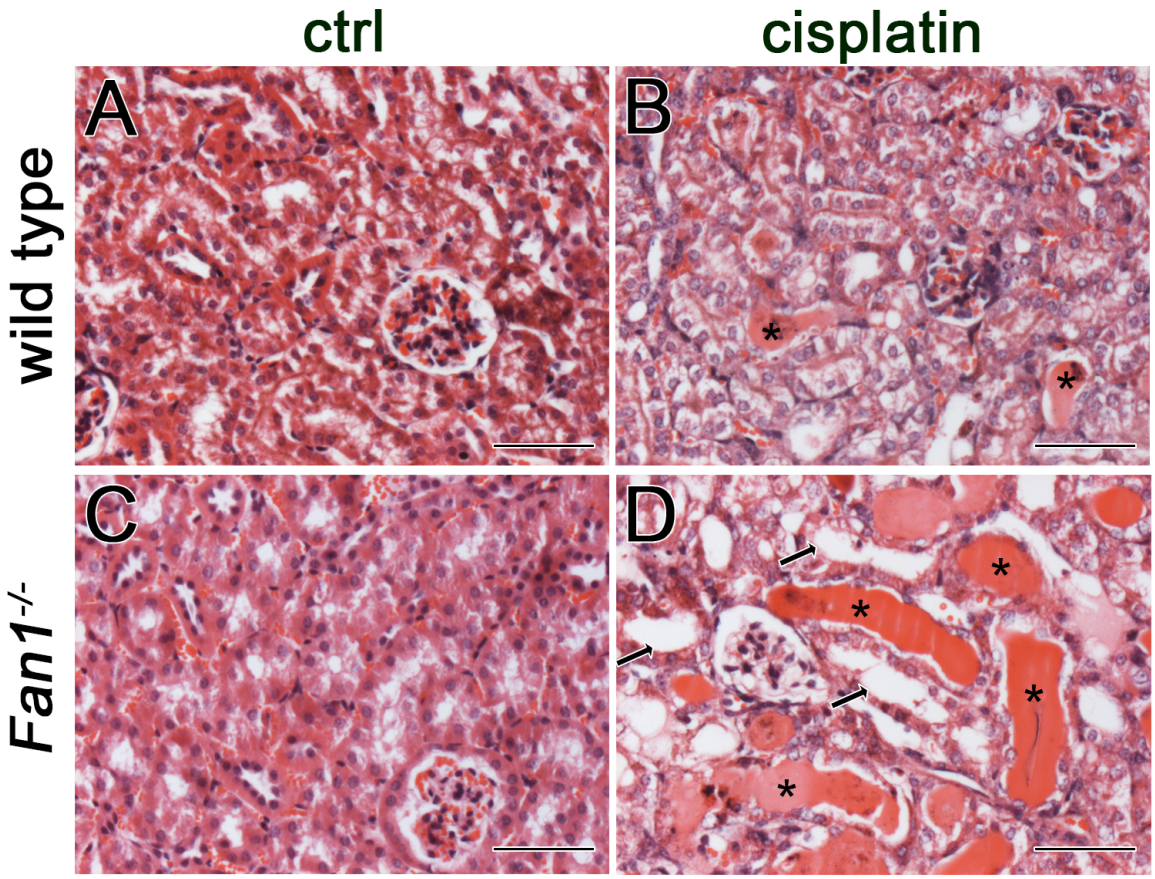
(**C**) qRT-PCR analysis demonstrates complete absence of *Fan1* expression in *Fan1*$^{-/-}$ kidneys.



Supplementary Figure 2. Histology of 18-months old *Fan1*$^{-/-}$ kidneys.

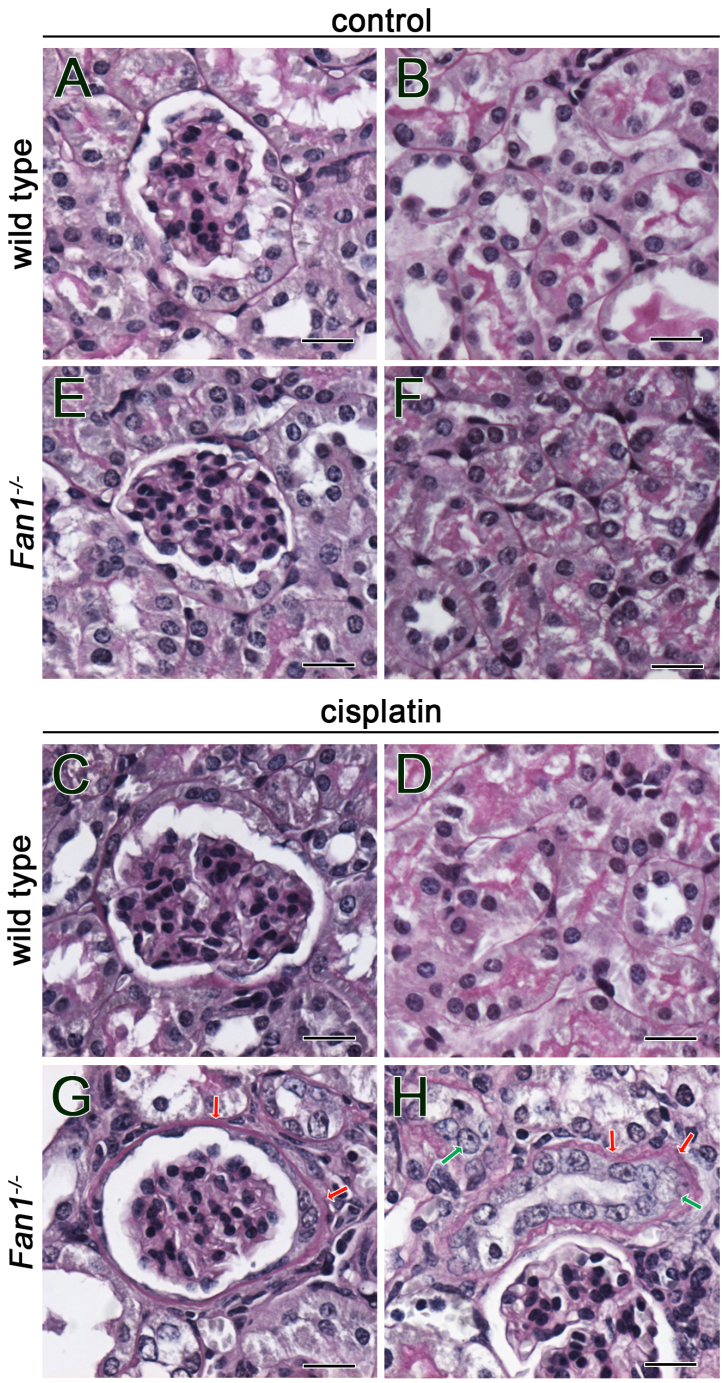
HE staining of wild type (**A**) and *Fan1*$^{-/-}$ (**B**) kidneys from 18-months old mouse does not reveal any histologic abnormalities in untreated *Fan1*$^{-/-}$ kidneys (n=4).

Scale bar: 50 μm.



Supplementary Figure 3. HE staining reveals repair in wild type kidneys, but not in *Fan1*$^{-/-}$ kidneys 7 days after cisplatin administration.

(**A**,**B**,**C**,**D**) Histology of kidneys from wild type and *Fan1*$^{-/-}$ animals, 7 days after cisplatin (20 mg/kg) administration. Untreated wild type (**A**) and *Fan1*$^{-/-}$ kidneys (**C**) appear histologically normal. Wild type kidneys treated with cisplatin (**B**) show reduced levels of protein casts in the proximal tubules (asterisks) compared to *Fan1*$^{-/-}$ kidneys (**D**) and wild type kidneys 3 days post-injury (see **Figure 1D**), indicating ongoing repair. In contrast, *Fan1*$^{-/-}$ kidneys treated with cisplatin (**D**) do not show improvement in renal histology compared to *Fan1*$^{-/-}$ kidneys 3 days post-injury (see **Figure 1F**). Note persistent sloughing of the brush borders, tubular dilations (arrows), and presence of massive protein casts in the proximal tubules (asterisks) of *Fan1*$^{-/-}$ kidneys. Scale bars 30 μm.



Supplementary Figure 4. PAS staining reveals segmental thickening of basement membrane in *Fan1*$^{-/-}$ kidneys upon treatment with cisplatin.

(**A, B** and **E, F**) Normal histology of wild type and *Fan1*$^{-/-}$ kidneys.

(**C, D**) Cisplatin administration at a dose of 2 mg/kg does not cause basement membrane changes in wild type kidneys.

(**G, H**) Cisplatin (2 mg/kg) causes basement membrane thickening of the Bowman's capsule and renal tubules (red arrows), and formation of karyomegalic nuclei (green arrows). Scale bar 20 μm.