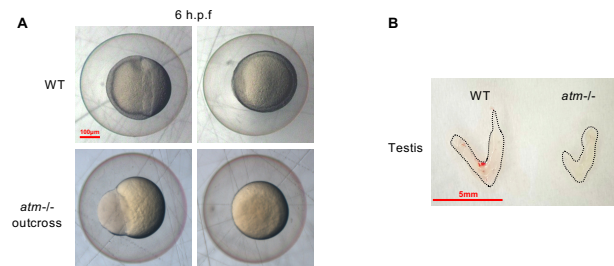
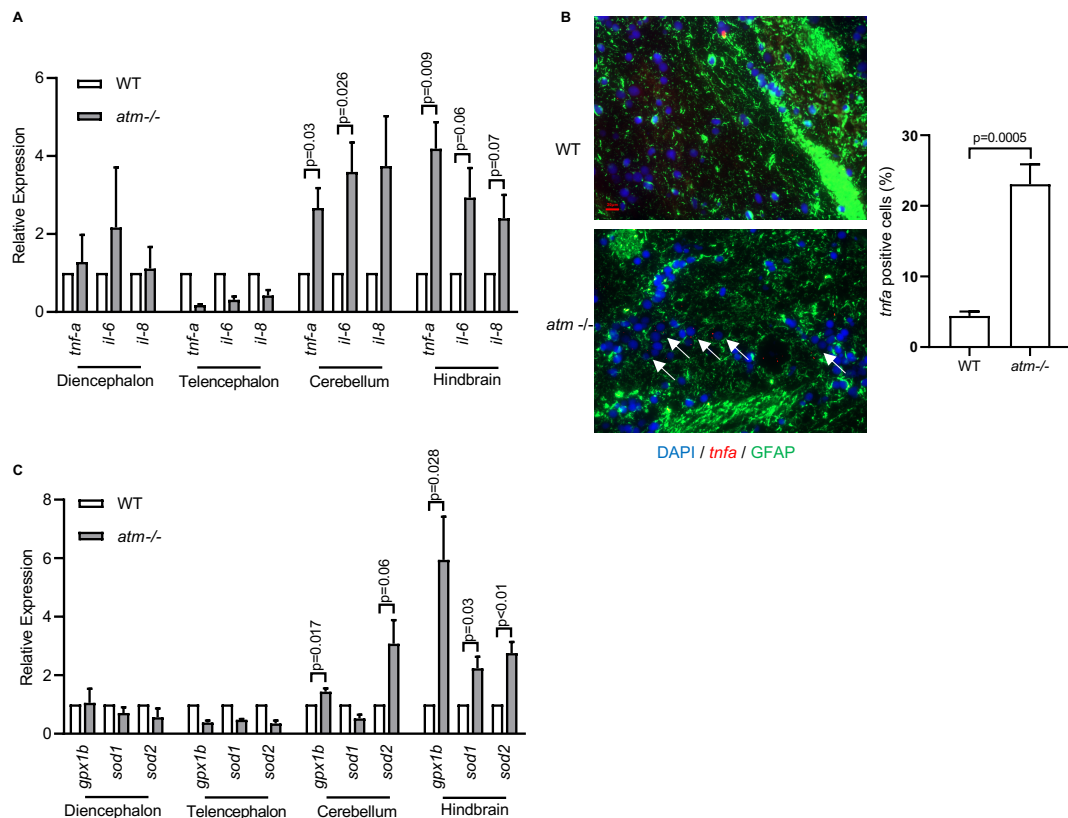


Supplementary Figure S1



Supplementary Figure S1. Observation of infertility phenotype in *atm*^{-/-} zebrafish. (A) 6-hpf embryos from *atm*^{-/-} male fish outcrosses. hpf: hours post fertilization. (B) General observation *atm*^{-/-} and WT fish's testis.

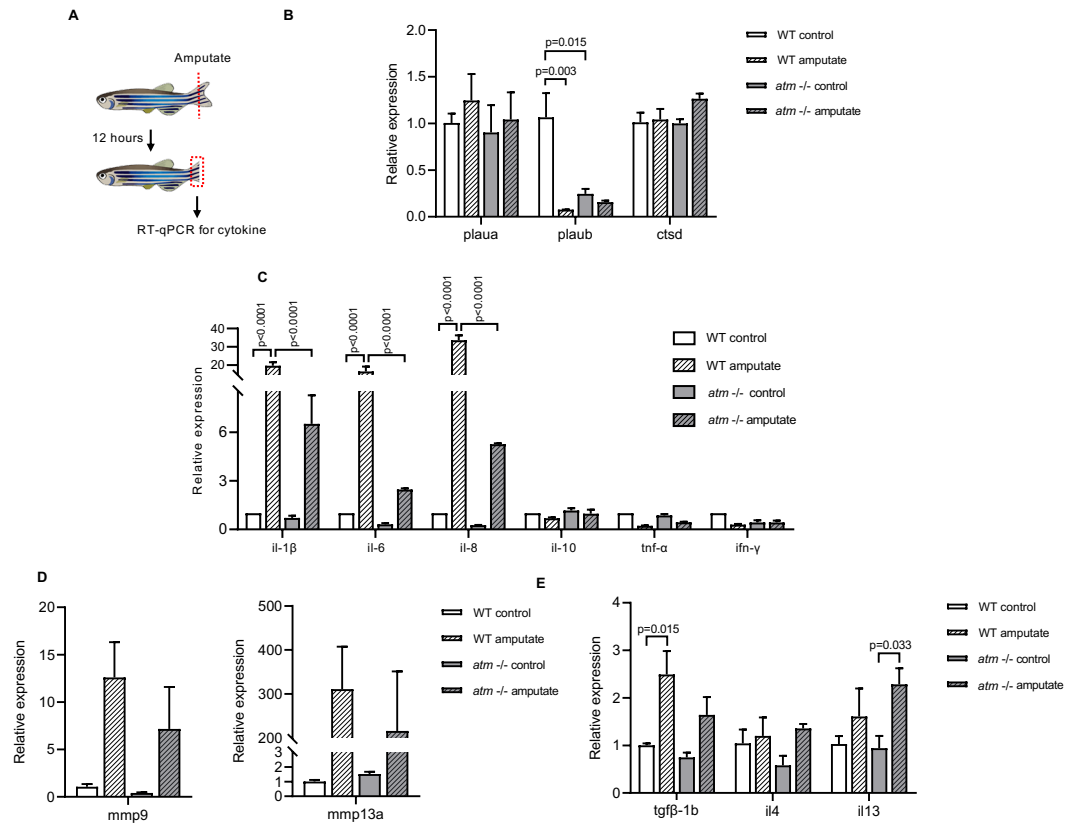
Supplementary Figure S2



Supplementary Figure S2. Oxidative stress and neural inflammatory in *atm*^{-/-} fish's brain.

(A) Relative expression levels of *il-6*, *il-8* and *tnf- α* genes in diencephalon, telencephalon, cerebellum, and hindbrain of WT and *atm*^{-/-} fish (n=3 for each group). (B) Co-detection RNA-scope images of *tnfa* mRNA (red) and GFAP (green) in WT and *atm*^{-/-} fish's hindbrain. Quantification of *tnfa* positive cells in WT and *atm*^{-/-} group (n=5 for WT, n=9 for *atm*^{-/-}). (C) Relative expression levels of *gpx1b*, *sod1* and *sod2* genes in diencephalon, telencephalon, cerebellum, and hindbrain of WT and *atm*^{-/-} fish (n=3 for each group). The statistical significance is analyzed using the two-tailed Student's t-test. Data are shown in means \pm SEM.

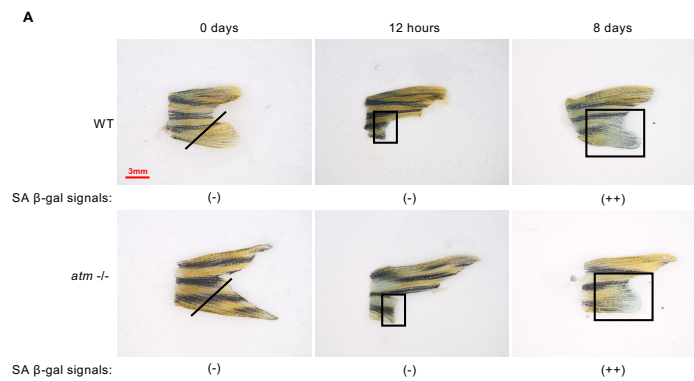
Supplementary Figure S3



Supplementary Figure S3. The cytokine profile determined 12 hours after caudal fin amputation of *atm*^{-/-} fish.

(A) Schematic representation of the caudal fin amputation system used throughout the study. (B) Relative expression levels of *plaua*, *plaub* and *ctsd* genes in WT and *atm*^{-/-} with or without amputation. (C) Relative expression levels of *il-1 β* , *il-6*, *il-8*, *il-10*, *tnf- α* and *ifn- γ* genes in WT and *atm*^{-/-} with or without amputation. (D) Relative expression levels of *mmp9* and *mmp13a* genes in WT and *atm*^{-/-} with or without amputation. (E) Relative expression levels of *tgfb-1b*, *il-4* and *il-13* genes in WT and *atm*^{-/-} with or without amputation. The statistical significance is analyzed using one-way ANOVA. n=3 for each group. Data are shown in means \pm SEM.

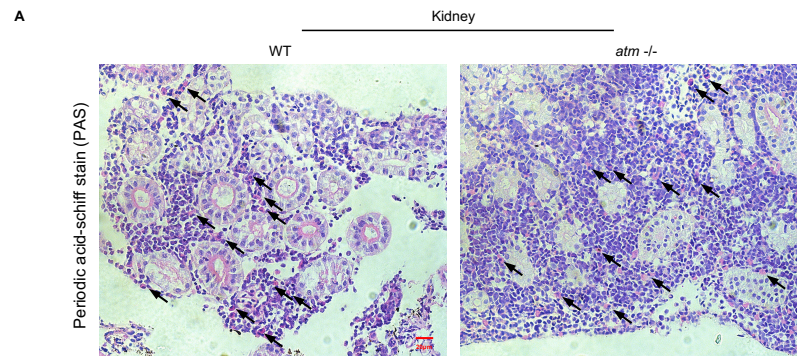
Supplementary Figure S4



Supplementary Figure S4. Senescence-associated β -galactosidase of amputated caudal fin.

(A) Senescence-associated β -galactosidase experiments are operated on amputated caudal fin from WT and *atm*^{-/-} zebrafish after 12 hours and 8 days post-amputation. The non-amputated group served as negative control. The signal levels are identified (n=3 for each group).

Supplementary Figure S5



Supplementary Figure S5. Periodic acid-schiff stain of kidney tumor

(A) Periodic acid-schiff stain of kidney tumor in *atm*^{-/-} fish compare to WT. Arrows point to the positive signals (n=3 independent experiments).