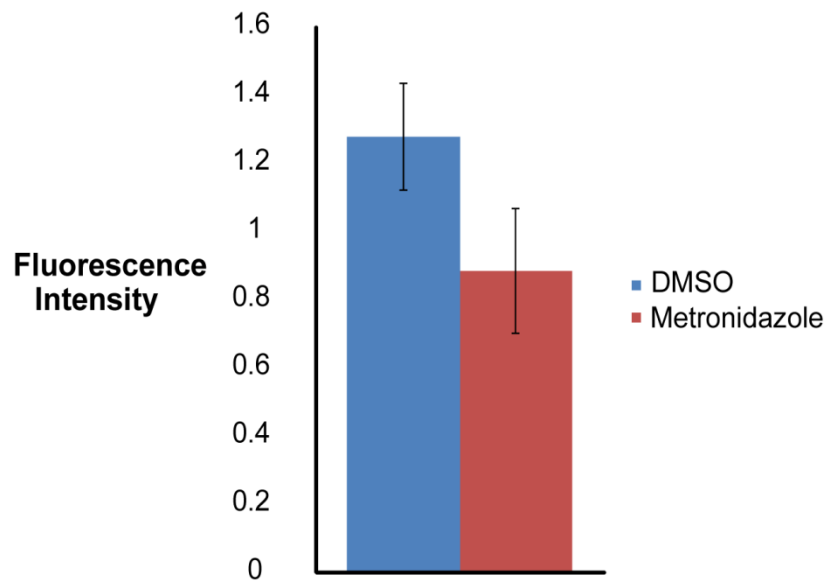
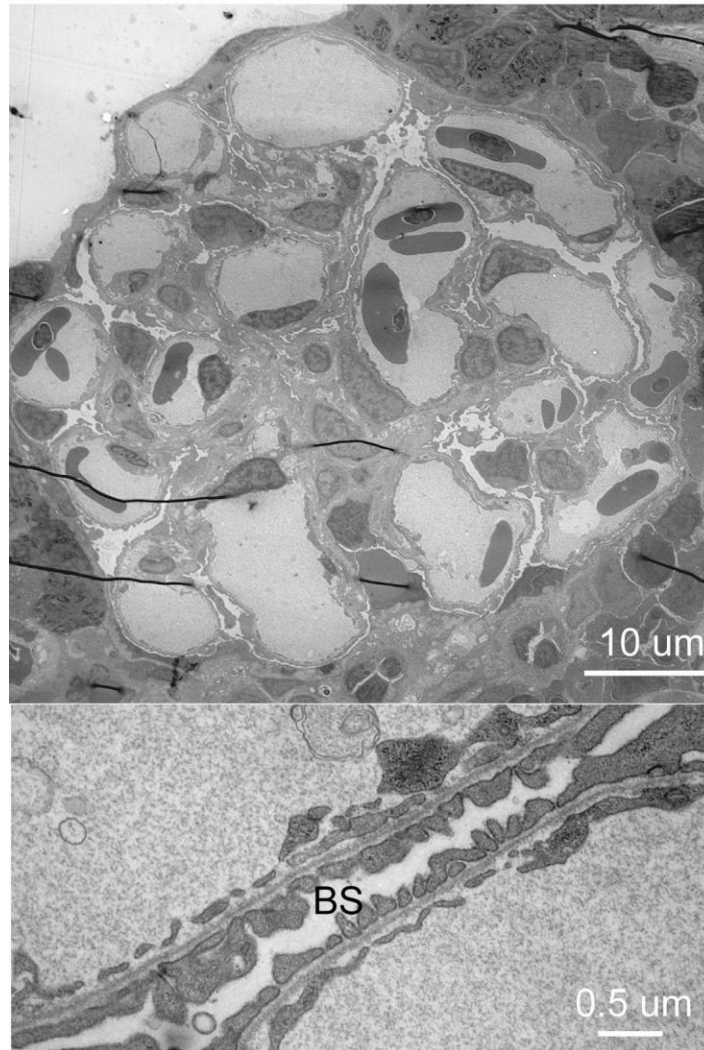


### Supplementary Data:

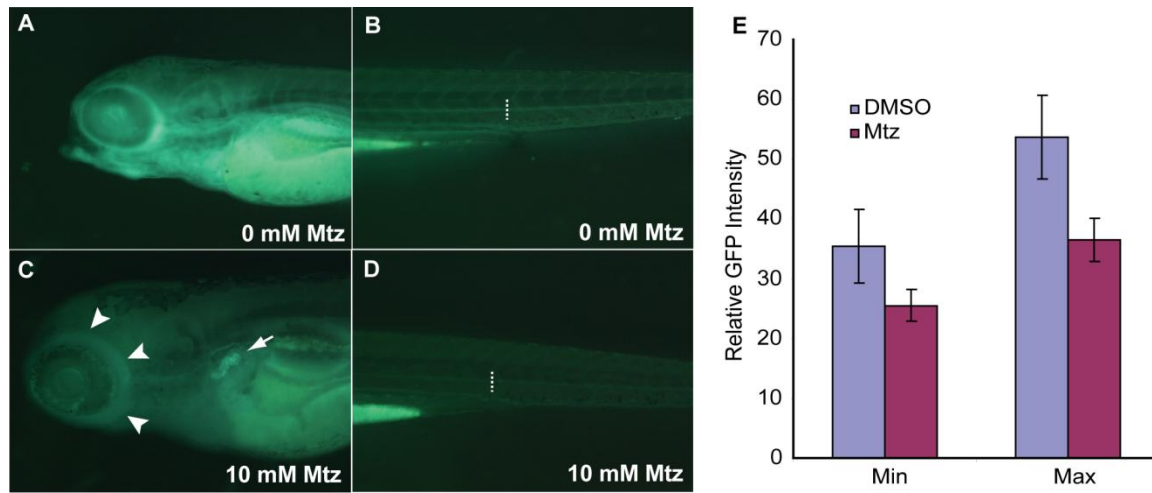


**Supplementary Figure 1: Measurement of mCherry fluorescence in mesonephric glomeruli.** Following 24 hours of MTZ (10mM) treatment, the average intensity of mCherry fluorescence significantly drops to  $0.88 \pm 0.17$  (n=6), compared to  $1.12 \pm 0.15$  (n=5) DMSO-treated control group. ( $p < 0.005$ )

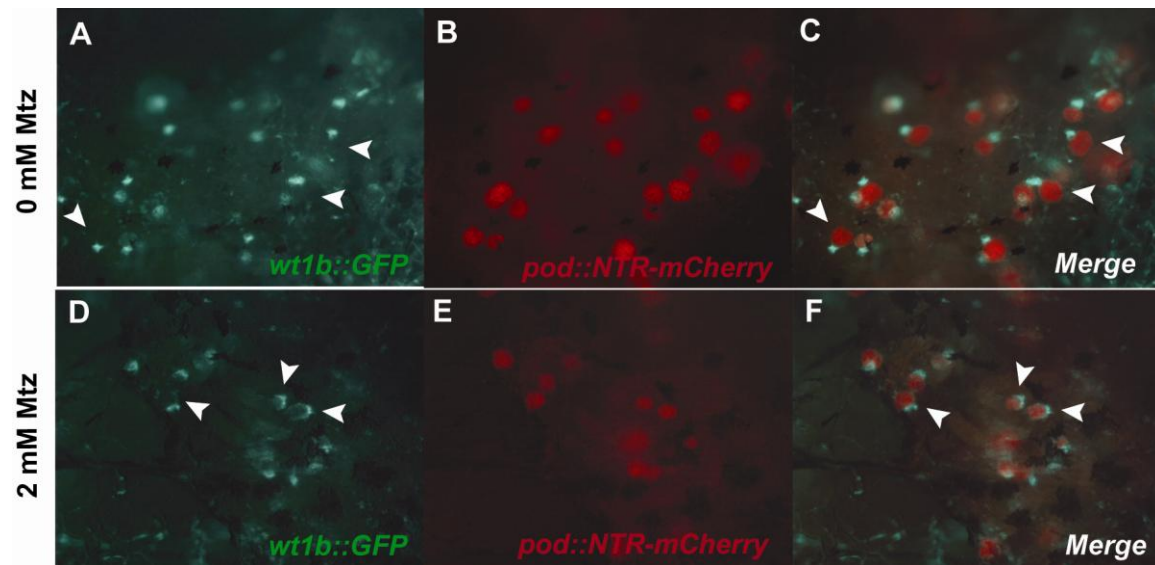
## WT 10mM Mtz



**Supplementary Figure 2. Transmitting electron micrograph of mesonephric glomerulus in Metronidazole-treated wild type fish.** Wild type adult fish were treated with 10mM MTZ for 24 hours and TEM showed that no foot process effacement in mesonephric glomeruli and no protein cast in Bowman's space (BS).



**Supplementary Figure 3: Measurement of intravascular VDBP-GFP.** *pod::NTR-mCherry/VDBP-GFP* double-transgenic fish were treated with 5 mM MTZ (n=15) or 0.1% DMSO (n=12) in fish water from 4 dpf to 5 dpf and then side-view images were taken for each larva with identical optical settings. The MTZ-treated larvae developed visible periocular edema (arrow heads in C), VDBP-GFP accumulation in proximal tubule (arrow in C) and a significant reduction of GFP fluorescence throughout the whole fish (C, D) compared to DMSO-treated control (A, B). Line intensity of GFP fluorescence was measured across the dorsal aorta (dash lines in B and D) and the quantification is shown in (E). The maximal fluorescent intensity along the measurement line (Max) represents the VDBP-GFP concentration in the dorsal aorta and the minimal fluorescent intensity (Min) represents the VDBP-GFP in surrounding capillaries and interstitial tissues. Both were significantly reduced ( $p < 0.001$ ) following induction of podocyte injury, suggesting a massive loss of serum proteins.



**Supplementary Figure 4. Post-injury response in zebrafish mesonephric glomeruli.** (A-C) In *wt1b::GFP/pod::NTR-mCherry* double-transgenic fish, *wt1b::GFP* expression is restricted to the urinary pole of the Bowman's capsule of matured nephron (arrowheads). (D-F) After 48 hours of recovery following 48 hours of MTZ treatment, *wt1b::GFP* expression was expanded into the glomeruli of injured matured nephrons (arrowheads).

**Supplementary Movie 1. Confocal Z-stacks of a mesonephric glomerulus in *flk1::GFP/pod::NTR-mCherry* double transgenic fish.** Glomerular podocytes are red and endothelial cells are green.

**Supplementary Movie 2. Confocal Z-stacks of a mesonephric glomerulus in *pod::NTR-mCherry/wt1b::GFP* transgenic fish.** Mesonephric kidney from double-transgenic fish was stained with an antibody against mCherry protein (red) and an antibody against GFP (green). No signal was observed outside of the glomerulus, indicating that zebrafish *podocin* promoter drives a specific expression of NTR-mCherry in podocytes.