Table Supplementary 1. Quantitative PCR primer sequence

Gene	Sequence (5' - 3') sense, antisense	Gene	Sequence (5' - 3') sense, antisense
ADAR1	GATGGAATACCCACAGGCTTAT	IFNLX1/2	TGACCACCTGGTTACCTACA
	TAAATTCCAGGAGGCCACTAAC		CCAGGAA TCTCA TGTCCTCAATC
APOBEC2	CCCTGCTTCTTCTTTCATGTTTC	Irf1	AGAAGGAGACCGACCCTAAA
	TATTTGAGCCTCAGGTCTTTCC		CTGCACTAGGAGCCTTTGTAT
BST1	TACACTCGCTGGTTGGATTG	Irf2	GGAGAATTGTCCTCTCCCTTAC
	AATGCCTCCTGTGGGTTATTT		GGTCTTGTCGGGAGCTATTT
CSF1	CTCTGTCCAAGCTGGATGATT	Irf3	GCCTGATTTGGATGAATGAAGAAA
	GCCTTATTCATCCCATGTGTTTC		CAATAGCCCAGCCCTCAAATA
CSF3	AGGCATAACAGCCCAGAAC	Irf4	CTGGTGAGGCTATTCCATTCTC
	GTCGGAAAGGATGAGGAACAT		GTGAGATCCTGCAACCTTCTT
ERV 3-1	CTTGGCGATCTGTCTGTTGA	Irf5	GACAAGATGGTGGAGCAGTTTA
	GGTAACACTGATCTGGGCTAAG		CACACTCAGGGTTGGGTATTG
ERV K-18	GCAAGAATGAGTGGCGATTTG	Irf6	TGGTGGCTCAGGTAGATAGT
	CATCTGGTGGAATCTGGCTAAA		CTATGCCTTGTGGCATGTTTC
ERV K-113	ACTGGAGAAGGAGGTTCTAGTC	Irf7	GATCCACCTAACCAAGACCATC
	AGCCAGGTAGTGAGTCCTTTA		CCCTGGATTTGCCTACTCTTT
FV3 DNA pol	CAAGAACGTGTGCTACTCCA	Irf8	GAGAGGCGTCCTCTTGTTAAG
	AGCCTCTCGTACTCTACCTTC		TTCGAGCTTTGTGGGTCTATC
GAPDH	ACCCCTTCATCGACTTGGAC	Irf9	CATGACGAGGATGCAGCTATT
	AGA TGGAGGAGTGAGTGTCACCAT		CAAGGCACAACGCAGTCTA
Gbp1	TCTTCCTGGTGGTCTCTTAGT	Mx1	GAGCAGAGTCAGATGTTGTCAG
	CAAGGACAGCATTCTCCATACA		CAGCGAAAGGTTCTCCTGTATC
IFITM1	CCAAGCATTATGCCTCAACATC	Nfkb	CTCAGCAACAAACTCTTCTG
	ATGGCCTTGTCCCACTATTC		AGGGAAAGCATCCTAAGATT
IFIT1b	CTAGAACCGACACCAGATCTTC	PKR	GATCTCAGATGTCCGAGTTTGT
	GCCTTCTTCAGGACTCCAATAG		TCTGGTTTCTGGCTCTCTAAAC
IFN7	TCTGTAGGAAGTCTCCGAAGTA	Rig1	ATAGGACGAAGCAAGAGGAATG
	CACATTCAGTTGGAACCCTTTC		AGCAACTGAGGTAGCAATCAA
IFNX6	CAGTCCATCTCCTCACACTAAC	SOCS3	GCGCAAACTCCAAGAAAGTG
	CGCTTGATCCTGTGTCTTGTA		TCAGAGCTGTCTCGGATAAGA
IFNX11	CATGCCAACAACTGGTTTCTC	TRIM28	CACATGTGGCCAGTGTAGAA
	AATGCTGAGCCTCTGAAGATT		GAGGTGAGATCCTGGCATAAC
IFNX13	TGCAAGAGGCTTGGACTTAC	TNF	TGTCAGGCAGGAAAGAAGCA
	ATCCTTATATGCGACCGTGTATG		CAGCAGAGCAAAGAGGATGGT
IFNX20	CATGGTGGTGCATACAGTCTAC	VIPERIN	ACTCCGACCAGTGTGAATTATC
	CCTCCAGAAGGGAACGTAGATA		CCTCGCTTGGCTTCTTCTAT
IFNL3	GTCCTTTCAGCGATGGGATAA	Xen1	TCGTTCGGAATCACTCCTTTG
	ACGGCTTATGGCGAAACA		AATGGACGTTGAGGCGATAC

Table Supplementary 2. Sequences of cloning primers

Primer	Sequence (5' - 3')
pcDNA3_fwd	CTCGAGTACTCCGGTATTG
pcDNA3_rev	GGTGGCAAGCTTAAGTTTAAAC
Xen1_fwd	TTAAACTTAAGCTTGCCACCATGTCATGCTCTAATTGTG
Xen1_rev	GCAATACCGGAGTACTCGAGCTAAAGGTATGACAAAAGGTTC

Table Supplementary 3: Primers used for sgRNA production

Gene target	Sequence (5' - 3')
csf3.s	**AATTTAATACGACTCACTATA**GGGGATAAAACTCCCGGGAG*GTTTTAGAGCTAGAAA*
csf3.l	**AATTTAATACGACTCACTATA**GGCCTCTCAGCTCCCCTCCC*GTTTTAGAGCTAGAAA*

Bold region depicts the T7 promoter region, underline nucleotides are added for improved mutagenic activity, italicized nucleotides are universal reverse.

Table Supplementary 4: List of primers used for genotyping

Gene target	Sequence (5' - 3') sense, antisense
csf3.s	TGTGTGTAGCATCTCTTGGG
	CCATGTGAGGGTTACCAGATC
csf3.l	CAAAGGGAAATGATAGGAGG
	GCTCTGATGCCACATAGGTA

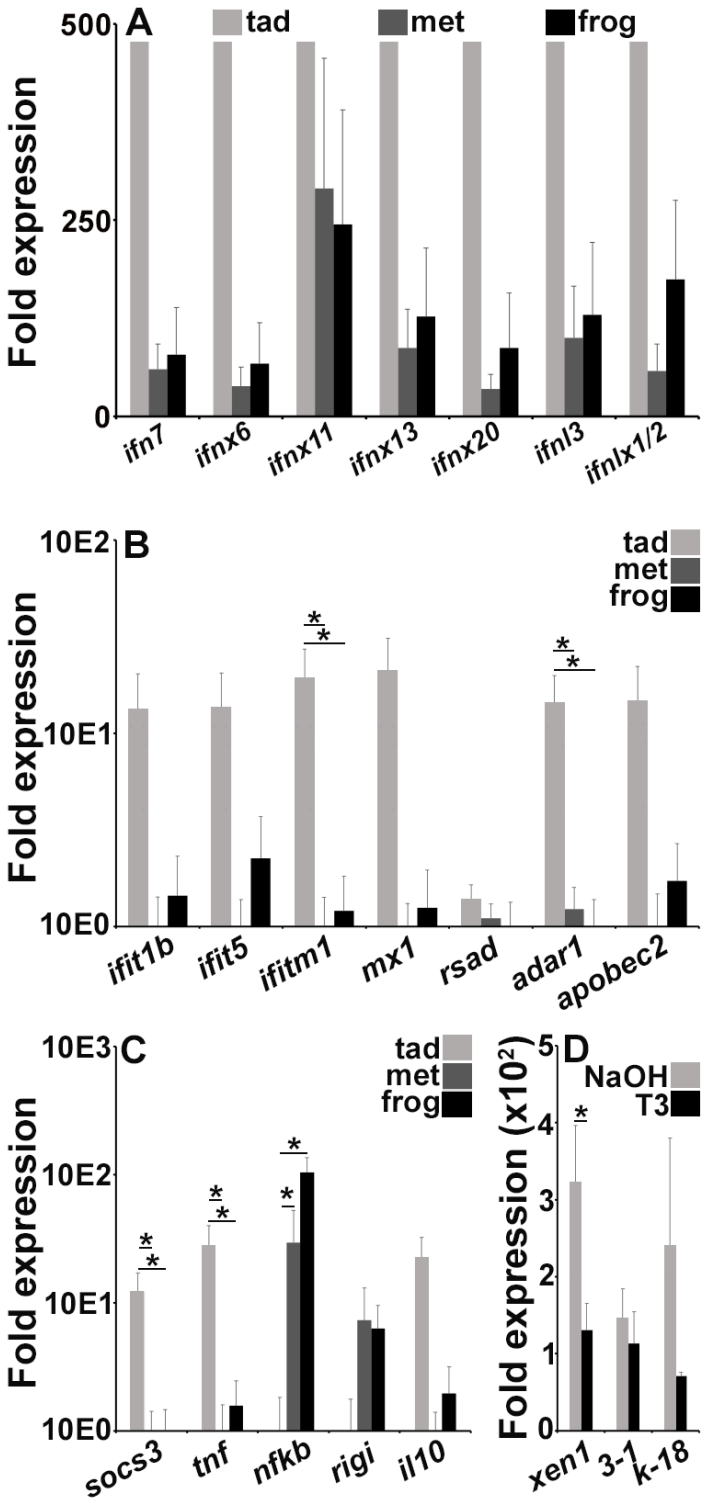

Figure Supplemental 1. Baseline and T3 induced immune gene expression in tadpole kidneys. Tadpoles and froglet kidneys were compared for expression of (A) antiviral and (B) immunomodulatory genes (N=6/ group). (C) Tadpoles were reared in water containing T3 (10 nM final concentration) or solvent control (NaOH) for 5 days and their kidney expression of ERVs was subsequently assessed (*N*=6). The results are means + SEM. All gene expression was assessed relative to the *gapdh* endogenous control. Asterisks (*) above lines indicate statistical differences between treatment groups indicated by those lines.

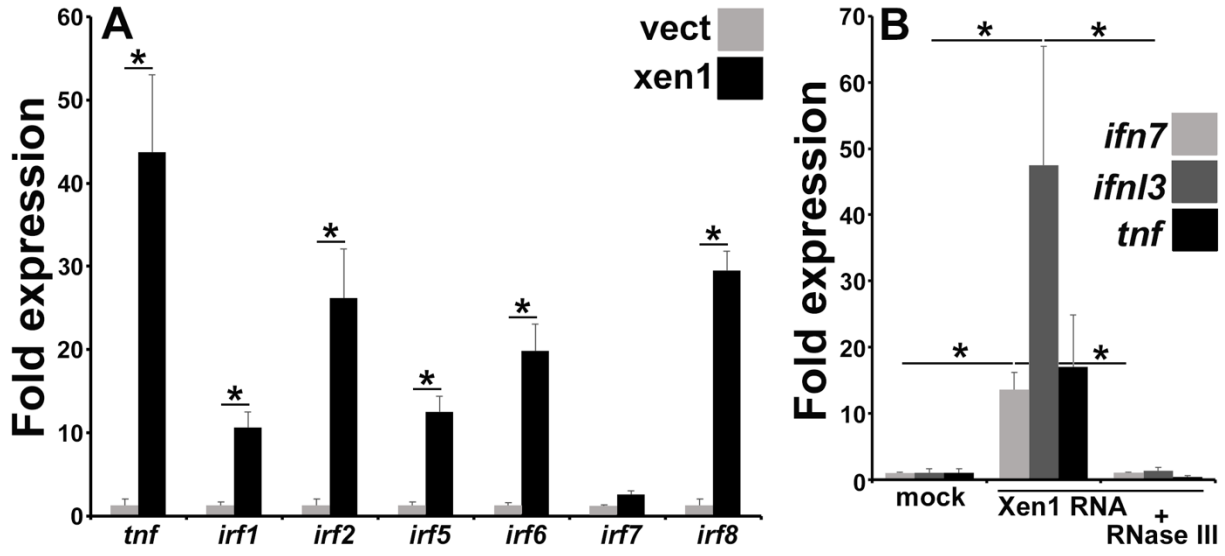

Figure Supplemental 2. Xen1 induces antiviral and innate immune gene expression in A6 cells. (A) TNF and IRF gene expression in A6 cells transfected with a Xen1 expression construct or an empty expression vector (vect; *N*=6). (B) IFN and TNF gene expression in mock-transfected (mock) A6 cells and A6 cells transfected Xen1 ORF1 RNA that had or had not been digested with RNase III, which specifically cleaves dsRNA (*N*=4). The results are means + SEM. In (A) All gene expression (C) was assessed relative to the *gapdh* endogenous control. Asterisks (*) above lines indicate statistical differences between treatment groups indicated by those lines.

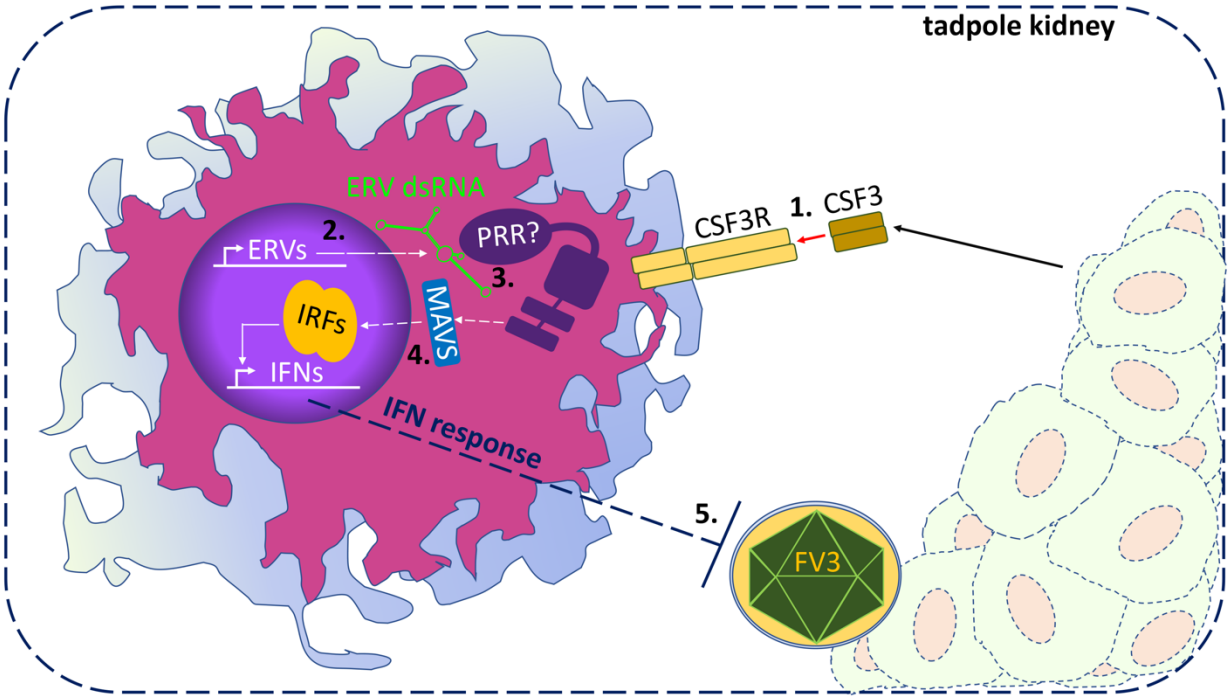

Figure Supplemental 3. Schematic of proposed mechanisms of antiviral protection by tadpole kidney-resident myeloid cells (1.) Large esterase-positive myeloid cells are homed and/or retained in the tadpole kidney by CSF3, which is produced by kidney cells and/or other resident leukocytes. (2.) These myeloid cells possess robust expression of ERVs, which results in the production of dsRNA. (3.) The ERV-derived dsRNA is detected by (an unknown) intracellular patter recognition receptor(s) (PRR), which signal through MAVS and presumably activate IRFs. (4.) The activated IRFs facilitate the increased expression of antiviral IFN (and other innate immune) genes within the large myeloid cells. (5.) The antiviral IFNs (and other innate immune effectors) produced by the large myeloid cells result in a heightened antiviral state within tadpole kidneys, thereby rendering them less susceptible to FV3.