Table S1. Statistical comparisons between different exposure treatments within each killifish population.

Exposure comparisons	Population	Sex	Gene	Adjusted *p*-value	Significance
Vehicle_PCB126	SC	Pooled	*Cyp1a*	0.017	*
Vehicle_PCB153	SC	Pooled	*Cyp1a*	>0.999	Not significant
Vehicle_Mix PCB126/153	SC	Pooled	*Cyp1a*	<0.001	***
Vehicle_PCB126	SC	Pooled	*Pxr*	0.741	Not significant
Vehicle_PCB153	SC	Pooled	*Pxr*	0.963	Not significant
Vehicle_Mix PCB126/153	SC	Pooled	*Pxr*	0.991	Not significant
Vehicle_PCB126	SC	Pooled	*Cyp3a56*	0.989	Not significant
Vehicle_PCB153	SC	Pooled	*Cyp3a56*	0.475	Not significant
Vehicle_Mix PCB126/153	SC	Pooled	*Cyp3a56*	0.881	Not significant
Vehicle_PCB126	NBH	Pooled	*Cyp1a*	0.878	Not significant
Vehicle_PCB153	NBH	Pooled	*Cyp1a*	0.791	Not significant
Vehicle_Mix PCB126/153	NBH	Pooled	*Cyp1a*	>0.999	Not significant
Vehicle_PCB126	NBH	Pooled	*Pxr*	0.112	Not significant
Vehicle_PCB153	NBH	Pooled	*Pxr*	0.328	Not significant
Vehicle_Mix PCB126/153	NBH	Pooled	*Pxr*	0.973	Not significant
Vehicle_PCB126	NBH	Pooled	*Cyp3a56*	>0.999	Not significant
Vehicle_PCB153	NBH	Pooled	*Cyp3a56*	0.442	Not significant
Vehicle_Mix PCB126/153	NBH	Pooled	*Cyp3a56*	>0.999	Not significant

Vehicle_PCB126	SC	Females	*Cyp1a*	0.388	Not significant
Vehicle_PCB153	SC	Females	*Cyp1a*	0.982	Not significant
Vehicle_Mix PCB126/153	SC	Females	*Cyp1a*	0.085	Not significant
Vehicle_PCB126	SC	Females	*Pxr*	>0.999	Not significant
Vehicle_PCB153	SC	Females	*Pxr*	0.975	Not significant
Vehicle_Mix PCB126/153	SC	Females	*Pxr*	>0.999	Not significant
Vehicle_PCB126	SC	Females	*Cyp3a56*	>0.999	Not significant
Vehicle_PCB153	SC	Females	*Cyp3a56*	0.012	*
Vehicle_Mix PCB126/153	SC	Females	*Cyp3a56*	0.435	Not significant
Vehicle_PCB126	NBH	Females	*Cyp1a*	>0.999	Not significant
Vehicle_PCB153	NBH	Females	*Cyp1a*	>0.999	Not significant
Vehicle_Mix PCB126/153	NBH	Females	*Cyp1a*	0.971	Not significant
Vehicle_PCB126	NBH	Females	*Pxr*	0.979	Not significant
Vehicle_PCB153	NBH	Females	*Pxr*	0.977	Not significant
Vehicle_Mix PCB126/153	NBH	Females	*Pxr*	>0.999	Not significant
Vehicle_PCB126	NBH	Females	*Cyp3a56*	0.143	Not significant
Vehicle_PCB153	NBH	Females	*Cyp3a56*	0.479	Not significant
Vehicle_Mix PCB126/153	NBH	Females	*Cyp3a56*	0.990	Not significant

Vehicle_PCB126	SC	Males	*Cyp1a*	0.010	**
Vehicle_PCB153	SC	Males	*Cyp1a*	>0.999	Not significant
Vehicle_Mix PCB126/153	SC	Males	*Cyp1a*	<0.001	***
Vehicle_PCB126	SC	Males	*Pxr*	0.692	Not significant
Vehicle_PCB153	SC	Males	*Pxr*	0.995	Not significant
Vehicle_Mix PCB126/153	SC	Males	*Pxr*	0.997	Not significant
Vehicle_PCB126	SC	Males	*Cyp3a56*	0.955	Not significant
Vehicle_PCB153	SC	Males	*Cyp3a56*	>0.999	Not significant
Vehicle_Mix PCB126/153	SC	Males	*Cyp3a56*	0.999	Not significant
Vehicle_PCB126	NBH	Males	*Cyp1a*	0.205	Not significant
Vehicle_PCB153	NBH	Males	*Cyp1a*	0.072	Not significant
Vehicle_Mix PCB126/153	NBH	Males	*Cyp1a*	>0.999	Not significant
Vehicle_PCB126	NBH	Males	*Pxr*	0.051	Not significant
Vehicle_PCB153	NBH	Males	*Pxr*	0.283	Not significant
Vehicle_Mix PCB126/153	NBH	Males	*Pxr*	0.803	Not significant
Vehicle_PCB126	NBH	Males	*Cyp3a56*	0.381	Not significant
Vehicle_PCB153	NBH	Males	*Cyp3a56*	0.724	Not significant
Vehicle_Mix PCB126/153	NBH	Males	*Cyp3a56*	0.857	Not significant

SC (Scorton Creek, MA, USA)

NBH (New Bedford Harbor, MA, USA)

Table S2. Statistical comparisons between the two killifish populations.

Population comparisons	Sex	Gene	Adjusted *p*-value	Significance
Vehicle SC_Vehicle NBH	Pooled	*Cyp1a*	0.003	**
PCB126 SC_PCB126 NBH	Pooled	*Cyp1a*	<0.001	***
PCB153 SC_PCB153 NBH	Pooled	*Cyp1a*	<0.001	***
Mix SC_Mix NBH	Pooled	*Cyp1a*	<0.001	***
Vehicle SC_Vehicle NBH	Pooled	*Pxr*	0.580	Not significant
PCB126 SC_PCB126 NBH	Pooled	*Pxr*	0.997	Not significant
PCB153 SC_PCB153 NBH	Pooled	*Pxr*	0.843	Not significant
Mix SC_Mix NBH	Pooled	*Pxr*	0.708	Not significant
Vehicle SC_Vehicle NBH	Pooled	*Cyp3a56*	>0.999	Not significant
PCB126 SC_PCB126 NBH	Pooled	*Cyp3a56*	0.850	Not significant
PCB153 SC_PCB153 NBH	Pooled	*Cyp3a56*	<0.001	***
Mix SC_Mix NBH	Pooled	*Cyp3a56*	0.473	Not significant
Vehicle SC_Vehicle NBH	Females	*Cyp1a*	0.168	Not significant
PCB126 SC_PCB126 NBH	Females	*Cyp1a*	<0.001	***
PCB153 SC_PCB153 NBH	Females	*Cyp1a*	0.013	*
Mix SC_Mix NBH	Females	*Cyp1a*	<0.001	***
Vehicle SC_Vehicle NBH	Females	*Pxr*	0.973	Not significant

PCB126 SC_PCB126 NBH	Females	*Pxr*	0.998		Not significant
PCB153 SC_PCB153 NBH	Females	*Pxr*	0.978		Not significant
Mix SC_Mix NBH	Females	*Pxr*	0.977		Not significant
Vehicle SC_Vehicle NBH	Females	*Cyp3a56*	0.528		Not significant
PCB126 SC_PCB126 NBH	Females	*Cyp3a56*	>0.999		Not significant
PCB153 SC_PCB153 NBH	Females	*Cyp3a56*	<0.001		***
Mix SC_Mix NBH	Females	*Cyp3a56*	0.062		Not significant
Vehicle SC_Vehicle NBH	Males	*Cyp1a*	0.031		*
PCB126 SC_PCB126 NBH	Males	*Cyp1a*	<0.001		***
PCB153 SC_PCB153 NBH	Males	*Cyp1a*	<0.001		***
Mix SC_Mix NBH	Males	*Cyp1a*	<0.001		***
Vehicle SC_Vehicle NBH	Males	*Pxr*	0.426		Not significant
PCB126 SC_PCB126 NBH	Males	*Pxr*	>0.999		Not significant
PCB153 SC_PCB153 NBH	Males	*Pxr*	0.969		Not significant
Mix SC_Mix NBH	Males	*Pxr*	0.895		Not significant
Vehicle SC_Vehicle NBH	Males	*Cyp3a56*	0.963		Not significant
PCB126 SC_PCB126 NBH	Males	*Cyp3a56*	0.360		Not significant
PCB153 SC_PCB153 NBH	Males	*Cyp3a56*	0.979		Not significant
Mix SC_Mix NBH	Males	*Cyp3a56*	0.984		Not significant

SC (Scorton Creek, MA, USA)

NBH (New Bedford Harbor, MA, USA)

Mix (PCB126/PCB153)

Table S3. *Cyp1a* and *Pxr* mRNA levels in gills in F1/F2 generation killifish, separated by sexes.

Treatment	*Cyp1a* – Males	*Cyp1a* – Females	*Pxr* – Males	*Pxr* – Females
Scorton Creek population – F1 Generation				
Vehicle	0.066 ±0.032 (n=5)	0.024 ±0.007 (n=3)	0.003 ±0.002 (n=5)	0.002 ±0.0005 (n=3)
PCB126	0.414 ±0.204 (n=5) **adj. *p* = 0.010 ***	0.102 ±0.024 (n=4) adj. *p* = 0.388	0.002 ±0.001 (n=5) adj. *p* = 0.692	0.002 ±0.001 (n=4) adj. *p* >0.999
PCB153	0.066 ±0.034 (n=6) adj. *p* >0.999	0.046 ±0.021 (n=5) adj. *p* = 0.982	0.004 ±0.001 (n=6) adj. *p* = 0.995	0.003 ±0.001 (n=5) adj. *p* = 0.975
Mix PCB126/153	0.870 ±0.447 (n=5) **adj. *p* <0.001 ****	0.196 ±0.095 (n=4) adj. *p* = 0.085	0.003 ±0.001 (n=5) adj. *p* = 0.997	0.002 ±0.0004 (n=4) adj. *p* >0.999
New Bedford Harbor population – F2 Generation				
Vehicle	0.020 ±0.020 (n=5)	0.007 ±0.010 (n=5)	0.007 ±0.005 (n=5)	0.004 ±0.003 (n=5)
PCB126	0.004 ±0.003 (n=4) adj. *p* = 0.205	0.005 ±0.002 (n=4) adj. *p* >0.999	0.002 ±0.001 (n=4) adj. *p* = 0.051	0.003 ±0.002 (n=4) adj. *p* = 0.979
PCB153	0.003 ±0.001 (n=5) adj. *p* = 0.072	0.009 ±0.008 (n=5) adj. *p* >0.999	0.004 ±0.003 (n=5) adj. *p* = 0.283	0.002 ±0.001 (n=5) adj. *p* = 0.977
Mix PCB126/153	0.017 ±0.018 (n=5) adj. *p* >0.999	0.002 ±0.0004 (n=3) adj. *p* = 0.971	0.004 ±0.001 (n=5) adj. *p* = 0.803	0.003 ±0.0004 (n=3) adj. *p* >0.999

Each value represents the mean and the mRNA data are presented as $2^{-\Delta Ct(target\ gene-ef1\alpha)}$ ±standard deviation. The number of fish (n) are presented in parenthesis followed by sex-specific two-way ANOVA Tukey adjusted (adj.) p-value comparing PCB treatment to vehicle control. * $p < 0.05$ and *** $p < 0.001$.

Cyp3a56 vs. Cyp1a in Females from
Scorton Creek (SC) and New Bedford Harbor (NBH)