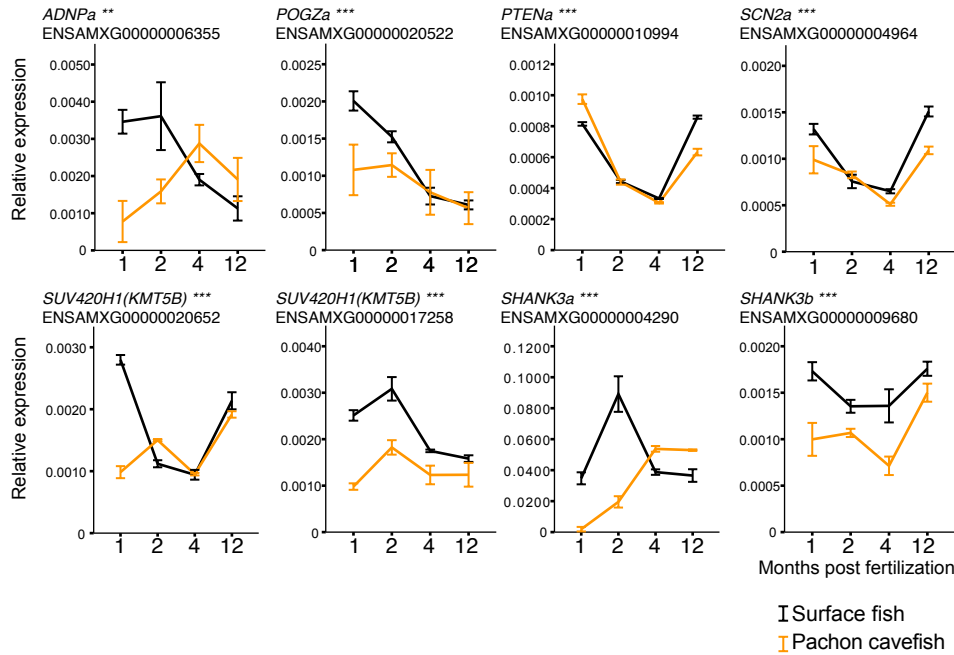




Example expression patterns of ASD-risk genes in SFARI Gene Category 1: Quantitative RT-PCR showed similarities to ASD patients.

mRNA were extracted from brain tissues from both morphs at the age of 1 month, 2 months, 4 months, and 1 year old. Due to the anatomy and physiology of *Astyanax* (also c.f. [1], we consider fish larvae younger than 5 days old to be roughly comparable to a human embryo; fish juvenile 5 days to 4 months old (free swimming with immature gonadal organs) are comparable to the human infant to the juvenile stage; fish sub-adults 4-6 months old can be compared to the humans at puberty; and fish adults 6 months to 1 year old are comparable to young to mature human adults. Each data point represents mean $\pm$ s.e.m. of 3 technical replicates using the same cDNA library (see Methods). Black: surface fish, Orange: cavefish. Eight example genes in the SFARI Gene Category 1 showed significantly different profiles of gene expression between surface fish and cavefish (See the table below). Note that the expression of surface fish *shank3a* showed a peak at the juvenile stage (2 months post fertilization), while *shank3a* in cavefish did not exhibit this peak. This peak can also be absent in ASD patients, due to over-methylation which attenuates *SHANK3* expression over development [2, 3]. *: $P < 0.05$, **: $P < 0.01$, ***: $P < 0.001$.

Two-way ANOVA for qRT-PCR results from three technical replicates

		F stats	P-values
<i>adnp</i> ENSAMXG00000006355	Population	$F(1,16) = 4.2$	0.056
	Age	$F(3,16) = 1.7$	0.207
	Pop $\times$ Age	$F(3,16) = 6.9$ **	0.003
<i>pogza</i> ENSAMXG000000020522	Population	$F(1,16) = 5.3$ *	0.034
	Age	$F(3,16) = 10.6$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 2.5$	0.099
<i>ptena</i> ENSAMXG00000010994	Population	$F(1,16) = 4.6$ *	0.048
	Age	$F(3,16) = 548.1$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 48.4$ ***	<0.001
<i>scn2a</i> ENSAMXG00000004964	Population	$F(1,16) = 18.3$ ***	<0.001
	Age	$F(3,16) = 47.4$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 5.1$ **	0.011
<i>suv420h1 (kmt5)</i> ENSAMXG00000020652	Population	$F(1,16) = 57.0$ ***	<0.001
	Age	$F(3,16) = 86.1$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 79.2$ ***	<0.001
<i>suv420h1 (kmt5)</i> ENSAMXG00000017258	Population	$F(1,16) = 61.6$ ***	<0.001
	Age	$F(3,16) = 16.6$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 6.0$ **	0.006
<i>shank3a</i> ENSAMXG00000004290	Population	$F(1,16) = 27.2$ ***	<0.001
	Age	$F(3,16) = 21.1$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 37.0$ ***	<0.001
<i>shank3b</i> ENSAMXG00000009680	Population	$F(1,16) = 35.2$ ***	<0.001
	Age	$F(3,16) = 9.7$ ***	<0.001
	Pop $\times$ Age	$F(3,16) = 2.3$	0.120