

Suppl. Table 1: Chromosome positions, and homology percentages of the zebrafish orthologs and quantity of human mRNA injected of the 29 genes in the 16p11.2 CNV.

	Zebrafish orthologs	Chromosome position (Zv9/danRer7)	Strand	Target % identity	Quantity of human mRNA injected into 1-2 cell stage embryos
<i>BOLA2</i>	1	chr7:60030421-60039342	-	60%	50pg
<i>GIYD2</i>	1	chr7:66029387-66031325	-	49%	50pg
<i>SULT1A4</i>	1	chr8:48625738-48639872	-	49%	50pg
<i>SULT1A3</i>	1	chr8:48713195-48735311	-	48%	50pg
<i>SPN</i>	no	N/A	N/A	N/A	50pg
<i>QPRT</i>	no	N/A	N/A	N/A	50pg
<i>C16orf54</i>	no	N/A	N/A	N/A	50pg
<i>MAZ</i>	2	chr12:4357264-4363999 chr3:21186552-21332644	- -	65% 40%	50pg
<i>PRRT2</i>	1	chr12:5758856-5773588	-	34%	50pg
<i>C16orf53</i>	1	chr12:4314052-4322109	+	45%	50pg
<i>MVP</i>	1	chr3:15313013-15339124	-	68%	50pg
<i>CDIPT</i>	1	chr3:21338354-21350423	-	69%	50pg
<i>SEZ6L2</i>	1	chr3:14834186-14869326	-	53%	50pg
<i>ASPHD1</i>	1	chr3:14876537-14889287	+	47%	50pg
<i>KCTD13</i>	1	chr3:14818574-14832260	-	62%	50pg
<i>TMEM219</i>	no	N/A	N/A	N/A	50pg
<i>TAOK2</i>	2	chr3:21351675-21379658 chr3:4487352-4509330	- -	54% 54%	10pg
<i>HIRIP3</i>	1	chr3:14798115-14815085	-	30%	50pg
<i>INO80E</i>	1	chr16:12022983- 12031914	+	50%	50pg
<i>DOC2A</i>	1	chr3:15155116-15212760	+	63%	50pg
<i>C16orf92</i>	no	N/A	N/A	N/A	50pg
<i>FAM57B</i>	2	chr3:21133041-21152454 chr3:4330878-4343261	- -	60% 60%	50pg
<i>ALDOA</i>	2	chr3:39561781-39571834 chr12:4732693-4750571	+ -	84% 84%	25pg
<i>PPP4C</i>	2	chr3:26790851-26798828 chr12:4644864-4658855	+ -	94% 98%	50pg
<i>TBX6</i>	1	chr12:4593057-4603583	+	20%	25ng
<i>YPEL3</i>	1	chr3:26843147-26848954	+	90%	50pg
<i>GDPD3</i>	2	chr12:4573551-4584390 chr3:26830240-26841515	- +	48% 47%	25pg
<i>MAPK3</i>	1	chr3:26812726-26823133	+	80%	50pg
<i>CORO1A</i>	2	chr7:19832691-19870773 chr3:31077483-31092481	- -	58% 69%	50pg

Suppl. Table 2: Statistical significance of *in vivo* observations shown in suppl. Figure 6. p-values based on two-tailed t-test comparison between co-injection of *KCTD13* mRNA and each gene present in the 16p11.2 CNV and injection of *KCTD13* mRNA alone.

	mRNA injections	Comparison with <i>KCTD13</i> mRNA
1	Control	N/A
2	<i>KCTD13</i>	N/A
3	<i>KCTD13+PRRT2</i>	Not significant
4	<i>KCTD13+C16orf53</i>	Not significant
5	<i>KCTD13+QPRT</i>	Not significant
6	<i>KCTD13+SEZ6L2</i>	Not significant
7	<i>KCTD13+SULTA4</i>	Not significant
8	<i>KCTD13+TBX6</i>	Not significant
9	<i>KCTD13+YPRL3</i>	Not significant
10	<i>KCTD13+BOLA</i>	Not significant
11	<i>KCTD13+FAM57B</i>	Not significant
12	<i>KCTD13+MAPK3</i>	P<0.001
13	<i>KCTD13+MVP</i>	P<0.01
14	<i>KCTD13+SULTA3</i>	Not significant
15	<i>KCTD13+ASPHD1</i>	Not significant
16	<i>KCTD13+DOC2A</i>	Not significant
17	<i>KCTD13+GIYD2</i>	Not significant
18	<i>KCTD13+SPN</i>	Not significant
19	<i>KCTD13+MAZ</i>	Not significant
20	<i>KCTD13+HIRIP3</i>	Not significant
21	<i>KCTD13+INO80E</i>	Not significant
22	<i>KCTD13+ALDOA</i>	Not significant
23	<i>KCTD13+PPP4C</i>	Not significant
24	<i>KCTD13+CORO1A</i>	Not significant
25	<i>KCTD13+GDPD3</i>	Not significant
26	<i>KCTD13+C16orf54</i>	Not significant
27	<i>KCTD13+C16orf92</i>	Not significant
28	<i>KCTD13+TMEM219</i>	Not significant
29	<i>KCTD13+TAOK2</i>	Not significant

Suppl. Table 3: MLPA probes. Probe locations for all 29 MLPA probes, including those within the 118 kb 16p11.2 putative critical region tested here (“Narrow”, three genes), probes outside of this critical region but still within the 16p11.2 microdeletion region (“Broad”, two genes) to enable assessment of full segment CNV compared to dosage alteration of the restricted region alone, and four control probes outside of the 16p11 region.

Gene	Probe ID	Probe target	Amplicon size (bp)	Chr. location	Region	
MVP	D-MVP-Ex1	Exon 1	112	16p11.2	Narrow	
	D-MVP-Ex2	Exon 2	178	16p11.2	Narrow	
	D-MVP-Ex3	Exon3	96	16p11.2	Narrow	
	D-MVP-Ex4	Exon 4	168	16p11.2	Narrow	
	D-MVP-Ex5	Exon 5	132	16p11.2	Narrow	
	D-MVP-Ex6	Exon 6	188	16p11.2	Narrow	
	D-MVP-Ex7	Exon 7	144	16p11.2	Narrow	
	D-MVP-Ex9	Exon 9	105	16p11.2	Narrow	
	D-MVP-Ex11	Exon11	163	16p11.2	Narrow	
	D-MVP-Ex12	Exon12	152	16p11.2	Narrow	
	D-MVP-Ex13	Exon13	120	16p11.2	Narrow	
	D-MVP-Ex14	Exon14	157	16p11.2	Narrow	
	CDIPT	D-CDIPT-Ex2	Exon 2	183	16p11.2	Narrow
		D-CDIPT-Ex3	Exon 3	128	16p11.2	Narrow
D-CDIPT-Ex4		Exon 4	136	16p11.2	Narrow	
D-CDIPT-Ex5		Exon 5	193	16p11.2	Narrow	
D-CDIPT-Ex6		Exon 6	140	16p11.2	Narrow	
KCTD13	D-KCTD13-int1	Intron 1	148	16p11.2	Narrow	
	D-KCTD13-int2	Intron 2	116	16p11.2	Narrow	
	D-KCTD13-int2a	Intron 2	198	16p11.2	Narrow	
	D-KCTD13-Ex4	Exon 4	173	16p11.2	Narrow	
	D-KCTD13-int5	Intron 5	102	16p11.2	Narrow	
	D-KCTD13-Ex6	Exon 6	203	16p11.2	Narrow	
TAOK2	TAOK_16p11.2	Exon 3	107	16p11.2	Broad	
TBX6	TBX6_16p11.2	Exon 3	114	16p11.2	Broad	
TITF1	D-TITF-E2	Exon 2	100	14q13	Control	
USP32	D-USP-intron2	Intron 2	98	17q23	Control	
GCH1	GCH1E5-R	Exon 5	110	14q22	Control	
Parkin	parkin-Ex8	Exon 8	124	6q25.2	Control	