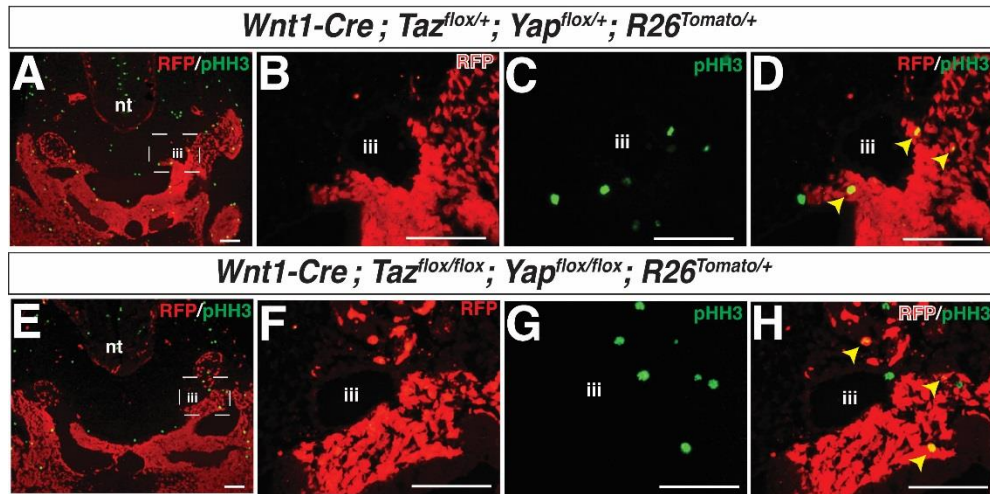


**Figure S1. Yap/Taz neural crest null embryos display normal migration and patterning of cardiac neural crest.** (A) Transverse sections of E10.5 *Wnt1-Cre; Taz<sup>flox/+</sup>; Yap<sup>flox/+</sup>; R26<sup>Tom/+</sup>* embryos stained for tdTomato (RFP). (B) Transverse sections of E10.5 *Wnt1-Cre; Taz<sup>flox/flox</sup>; Yap<sup>flox/flox</sup>; R26<sup>Tom/+</sup>* embryos stained for tdTomato (RFP). Both series of images begin at the mandibular component of the first arch artery (i), progress through the aortic sac (Ao), the outflow tract (OFT) and end at the developing heart (A=atria, V=ventricle). Scale bar (located in last image of each series, same for all images): 100  $\mu$ m.



**Figure S2. Yap/Taz neural crest null embryos display no alterations in proliferation.**

(A-D) Transverse sections of E10.5 *Wnt1-Cre; Taz<sup>flox/+</sup>; Yap<sup>flox/+</sup>; R26<sup>Tom/+</sup>* embryos stained for tdTomato (RFP) and phospho-histone H3 (pHH3) as a marker of proliferation (A), RFP (B), pHH3 (C) or merged RFP/pHH3 (D). (E-H) Transverse sections of E10.5 *Wnt1-Cre; Taz<sup>flox/flox</sup>; Yap<sup>flox/flox</sup>; R26<sup>Tom/+</sup>* embryos stained for tdTomato (RFP) and phospho-histone H3 (pHH3) as a marker of proliferation (E), RFP (F), pHH3 (G) or merged RFP/pHH3 (H). Yellow arrows indicate co-positive RFP/pHH3 cells. Images were merged by combining respective red and green channels using Photoshop software (Adobe, A, D, E, H). Scale bars: 100  $\mu$ m.

**Table S1**

Figure 4A: ANOVA, Tukey-Kramer Multiple Comparisons Test Results

Comparison	Mean Difference	q	P value
-/- vs NICD/-/-	-2.449	2.474	ns P>0.05
-/- vs Yap/-/-	-7.968	8.049	*** P<0.001
-/- vs NICD/Yap/-	-16.500	16.668	*** P<0.001
-/- vs DNTEAD1/-/-	0.08508	0.08595	ns P>0.05
-/- vs NICD/DNTEAD1/-	-1.870	1.890	ns P>0.05
-/- vs Yap/DNTEAD1/-	-6.909	6.980	** P<0.01
-/- vs NICD/Yap/DNTEAD1	-14.632	14.782	*** P<0.001
NICD/-/- vs Yap/-/-	-5.518	5.575	* P>0.05
NICD/-/- vs NICD/Yap/-	-14.051	14.194	*** P<0.001
NICD/-/- vs DNTEAD1/-/-	2.534	2.560	ns P>0.05
NICD/-/- vs NICD/DNTEAD1/-	0.5788	0.5847	ns P>0.05
NICD/-/- vs Yap/DNTEAD1/-	-4.460	4.505	ns P>0.05
NICD/-/- vs NICD/Yap/DNTEAD1	-12.183	12.307	*** P<0.001
Yap/-/- vs NICD/Yap/-	-8.532	8.619	*** P<0.001
Yap/-/- vs DNTEAD1/-/-	8.053	8.153	*** P<0.001
Yap/-/- vs NICD/DNTEAD1/-	6.097	6.159	** P<0.01
Yap/-/- vs Yap/DNTEAD1/-	1.058	1.069	ns P>0.05
Yap/-/- vs NICD/Yap/DNTEAD1	-6.665	6.733	** P<0.01
NICD/Yap/- vs DNTEAD1/-/-	16.585	16.754	*** P<0.001
NICD/Yap/- vs NICD/DNTEAD1/-	14.630	14.779	*** P<0.001
NICD/Yap/- vs Yap/DNTEAD1/-	9.591	9.688	*** P<0.001
NICD/Yap/- vs NICD/Yap/DNTEAD1	1.868	1.887	ns P>0.05
DNTEAD1/-/- vs NICD/DNTEAD1/-	-1.956	1.975	ns P>0.05
DNTEAD1/-/- vs Yap/DNTEAD1/-	-6.994	7.066	** P<0.01
DNTEAD1/-/- vs NICD/Yap/DNTEAD1	-14.718	14.868	*** P<0.001
NICD/DNTEAD1/- vs Yap/DNTEAD1/-	-5.039	5.090	* P<0.05
NICD/DNTEAD1/- vs NICD/Yap/DNTEAD1	-12.762	12.892	*** P<0.001
Yap/DNTEAD1/- vs NICD/Yap/DNTEAD1	-7.723	7.802	*** P<0.001

**Table S2**

Figure 4C: ANOVA, Tukey-Kramer Multiple Comparisons Test Results

Comparison	Mean Difference	q	P value
-/- vs NICD/-/-	-2.456	4.260	ns P>0.05
-/- vs Yap/-/-	-8.952	15.528	*** P<0.001
-/- vs NICD/Yap/-	-17.750	30.788	*** P<0.001
-/- vs DNTEAD1/-/-	0.3881	0.6732	ns P>0.05
-/- vs NCID/DNTEAD1/-	-1.245	2.160	ns P>0.05
-/- vs Yap/DNTEAD1/-	-6.616	11.476	*** P<0.001
-/- vs NICD/Yap/DNTEAD1	-12.511	21.701	*** P<0.001
NICD/-/- vs Yap/-/-	-6.496	11.268	*** P<0.001
NICD/-/- vs NICD/Yap/-	-15.294	26.528	*** P<0.001
NICD/-/- vs DNTEAD1/-/-	2.844	4.933	* P<0.05
NICD/-/- vs NICD/DNTEAD1/-	1.210	2.100	ns P>0.05
NICD/-/- vs Yap/DNTEAD1/-	-4.160	7.216	** P<0.01
NICD/-/- vs NICD/Yap/DNTEAD1	-10.055	17.441	*** P<0.001
Yap/-/- vs NICD/Yap/-	-8.798	15.260	*** P<0.001
Yap/-/- vs DNTEAD1/-/-	9.340	16.201	*** P<0.001
Yap/-/- vs NICD/DNTEAD1/-	7.707	13.368	*** P<0.001
Yap/-/- vs Yap/DNTEAD1/-	2.336	4.053	ns P>0.05
Yap/-/- vs NICD/Yap/DNTEAD1	-3.559	6.173	** P<0.01
NICD/Yap/- vs DNTEAD1/-/-	18.138	31.461	*** P<0.001
NICD/Yap/- vs NICD/DNTEAD1/-	16.505	28.628	*** P<0.001
NICD/Yap/- vs Yap/DNTEAD1/-	11.134	19.313	*** P<0.001
NICD/Yap/- vs NICD/Yap/DNTEAD1	5.239	9.087	*** P<0.001
DNTEAD1/-/- vs NICD/DNTEAD1/-	-1.634	2.833	ns P>0.05
DNTEAD1/-/- vs Yap/DNTEAD1/-	-7.004	12.149	*** P<0.001
DNTEAD1/-/- vs NICD/Yap/DNTEAD1	-12.899	22.374	*** P<0.001
NICD/DNTEAD1/- vs Yap/DNTEAD1/-	-5.370	9.315	*** P<0.001
NICD/DNTEAD1/- vs NICD/Yap/DNTEAD1	-11.266	19.541	*** P<0.001
Yap/DNTEAD1/- vs NICD/Yap/DNTEAD1	-5.895	10.226	*** P<0.001

**Table S3**

Figure 4D: ANOVA, Tukey-Kramer Multiple Comparisons Test Results

Comparison	Mean Difference	q	P value
Mst1 <sup>-/-</sup> vs NICD/Mst1 <sup>-/-</sup>	-2.863	0.6144	ns P>0.05
Mst1 <sup>-/-</sup> vs Yap/Mst1 <sup>-/-</sup>	-1.931	0.4143	ns P>0.05
Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1 <sup>-/-</sup>	-5.084	1.091	ns P>0.05
Mst1 <sup>-/-</sup> vs NICD/Yap <sup>-/-</sup>	-39.241	8.419	*** P<0.001
Mst1 <sup>-/-</sup> vs Mst1-KI <sup>-/-</sup>	-2.396	0.5140	ns P>0.05
Mst1 <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	-8.509	1.825	ns P>0.05
Mst1 <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-31.565	6.771	** P<0.01
Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-41.470	8.897	*** P<0.001
NICD/Mst1 <sup>-/-</sup> vs Yap/Mst1 <sup>-/-</sup>	0.9323	0.2000	ns P>0.05
NICD/Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1 <sup>-/-</sup>	-2.220	0.4763	ns P>0.05
NICD/Mst1 <sup>-/-</sup> vs NICD/Yap <sup>-/-</sup>	-36.378	7.805	*** P<0.001
NICD/Mst1 <sup>-/-</sup> vs Mst1-KI <sup>-/-</sup>	0.4678	0.1004	ns P>0.05
NICD/Mst1 <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	-5.645	1.211	ns P>0.05
NICD/Mst1 <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-28.701	6.158	** P<0.01
NICD/Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-38.607	8.283	*** P<0.001
Yap/Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1 <sup>-/-</sup>	-3.152	0.6763	ns P>0.05
Yap/Mst1 <sup>-/-</sup> vs NICD/Yap <sup>-/-</sup>	-37.310	8.005	*** P<0.001
Yap/Mst1 <sup>-/-</sup> vs Mst1-KI <sup>-/-</sup>	-0.4645	0.9965	ns P>0.05
Yap/Mst1 <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	-6.577	1.411	ns P>0.05
Yap/Mst1 <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-29.634	6.358	** P<0.01
Yap/Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-39.539	8.483	*** P<0.001
NICD/Yap/Mst1 <sup>-/-</sup> vs NICD/Yap <sup>-/-</sup>	-34.158	7.328	** P<0.01
NICD/Yap/Mst1 <sup>-/-</sup> vs Mst1-KI <sup>-/-</sup>	2.688	0.5767	ns P>0.05
NICD/Yap/Mst1 <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	-3.425	0.7348	ns P>0.05
NICD/Yap/Mst1 <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-26.481	5.681	* P<0.05
NICD/Yap/Mst1 <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-36.387	7.807	*** P<0.001
NICD/Yap <sup>-/-</sup> vs Mst1-KI <sup>-/-</sup>	36.845	7.905	*** P<0.001
NICD/Yap <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	30.732	6.594	** P<0.01
NICD/Yap <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	7.676	1.647	ns P>0.05
NICD/Yap <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-2.229	0.4782	ns P>0.05
Mst1-KI <sup>-/-</sup> vs NICD/Mst1-KI <sup>-/-</sup>	-6.113	1.312	ns P>0.05
Mst1-KI <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-29.169	6.258	** P<0.01
Mst1-KI <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-39.074	8.383	*** P<0.001
NICD/Mst1-KI <sup>-/-</sup> vs Yap/Mst1-KI <sup>-/-</sup>	-23.056	4.947	ns P>0.05
NICD/Mst1-KI <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-32.961	7.072	** P<0.01
Yap/Mst1-KI <sup>-/-</sup> vs NICD/Yap/Mst1-KI <sup>-/-</sup>	-9.905	2.125	ns P>0.05

**Table S4**

Figure 6A: ANOVA, Tukey–Kramer Multiple Comparisons Test Results

Comparison	Mean Difference	q	P value
-/- vs NICD/-	-8.353	1.144	ns P>0.05
-/- vs Yap/-	-28.897	3.958	ns P>0.05
-/- vs YapWW1/-	-15.530	2.217	ns P>0.05
-/- vs YapWW2/-	-34.967	4.789	* P<0.05
-/- vs YapWW1WW2/-	-15.999	2.191	ns P>0.05
-/- vs NICD/Yap	-59.762	8.185	*** P<0.001
-/- vs NICD/YapWW1	-17.164	2.351	ns P>0.05
-/- vs NICD/YapWW2	-62.327	8.536	*** P<0.001
-/- vs NICD/YapWW1WW2	-32.259	4.418	ns P>0.05
NICD/- vs Yap/-	-20.544	2.814	ns P>0.05
NICD/- vs YapWW1/-	-7.177	0.9829	ns P>0.05
NICD/- vs YapWW2/-	-26.614	3.645	ns P>0.05
NICD/- vs YapWW1WW2/-	-7.646	1.047	ns P>0.05
NICD/- vs NICD/Yap	-51.409	7.041	*** P<0.001
NICD/- vs NICD/YapWW1	-8.811	1.207	ns P>0.05
NICD/- vs NICD/YapWW2	-53.974	7.392	*** P<0.001
NICD/- vs NICD/YapWW1WW2	-23.906	3.274	ns P>0.05
Yap/- vs YapWW1/-	13.367	1.831	ns P>0.05
Yap/- vs YapWW2/-	-6.070	0.8314	ns P>0.05
Yap/- vs YapWW1WW2/-	12.898	1.766	ns P>0.05
Yap/- vs NICD/Yap	-30.866	4.227	ns P>0.05
Yap/- vs NICD/YapWW1	11.732	1.607	ns P>0.05
Yap/- vs NICD/YapWW2	-33.431	4.578	ns P>0.05
Yap/- vs NICD/YapWW1WW2	-3.363	0.4605	ns P>0.05
YapWW1/- vs YapWW2/-	-19.437	2.662	ns P>0.05
YapWW1/- vs YapWW1WW2/-	-0.4687	0.06420	ns P>0.05
YapWW1/- vs NICD/Yap	-44.232	6.058	** P<0.01
YapWW1/- vs NICD/YapWW1	-1.634	0.2238	ns P>0.05
YapWW1/- vs NICD/YapWW2	-46.797	6.409	** P<0.01
YapWW1/- vs NICD/YapWW1WW2	-16.729	2.291	ns P>0.05
YapWW2/- vs YapWW1WW2/-	18.968	2.598	ns P>0.05
YapWW2/- vs NICD/Yap	-24.795	3.396	ns P>0.05
YapWW2/- vs NICD/YapWW1	17.803	2.428	ns P>0.05
YapWW2/- vs NICD/YapWW2	-27.360	3.747	ns P>0.05
YapWW2/- vs NICD/YapWW1WW2	2.708	0.3708	ns P>0.05
YapWW1WW2/- vs NICD/Yap	-43.764	5.994	** P<0.01
YapWW1WW2/- vs NICD/YapWW1	-1.165	0.1596	ns P>0.05
YapWW1WW2/- vs NICD/YapWW2	-46.328	6.345	** P<0.01
YapWW1WW2/- vs NICD/YapWW1WW2	-16.261	2.227	ns P>0.05
NICD/Yap vs NICD/YapWW1	42.598	5.834	** P<0.01
NICD/Yap vs NICD/YapWW2	-2.565	0.3513	ns P>0.05
NICD/Yap vs NICD/YapWW1WW2	27.503	3.767	ns P>0.05
NICD/YapWW1 vs NICD/YapWW2	-45.163	6.185	** P<0.01
NICD/YapWW1 vs NICD/YapWW1WW2	-15.095	2.067	ns P>0.05
NICD/YapWW2 vs NICD/YapWW1WW2	30.068	4.118	ns P>0.05

**Table S5.** Quantitative RT-PCR primer sequences

<i>cmyc</i> Forward	5' CTGTTTGAAGGCTGGATTTCCT 3'
<i>cmyc</i> Reverse	5' CAGCACCGACAGACGCC 3'
<i>Hrt1</i> Forward	5' TTGTCAACACCACCCTAAAGTCG 3'
<i>Hrt1</i> Reverse	5' CACCTCGGTCCATCAAAGTAGTAAC 3'
<i>Hrt2</i> Forward	5' GTAAGTATGTCGTCATTTTCGG 3'
<i>Hrt2</i> Reverse	5' TGCCTGCTTCTTCTTTCTCAAC 3'
<i>Hrt3</i> Forward	5' TTCAGAAAAGTGGAAACAGAGGGC 3'
<i>Hrt3</i> Reverse	5' CCAATCAGGATGGATGCTCAAAG 3'
<i>Jagged1</i> Forward	5' GCTTCCACTGGCACTGGTAGTTTC 3'
<i>Jagged1</i> Reverse	5' TGCTGACATCAAATCCCCCTC 3'
<i>Tagln</i> Forward	5' CAACAAGGGTCCATCCTACGG 3'
<i>Tagln</i> Reverse	5' ATCTGGGCGGCCTACATCA 3'
<i>Acta2</i> Forward	5' GTCCCAGACATCAGGGAGTAA 3'
<i>Acta2</i> Reverse	5' TCGGATACTTCAGCGTCAGGA 3'
<i>Cnn1</i> Forward	5' AAACAAGAGCGGAGATTTGAGC 3'
<i>Cnn1</i> Reverse	5' TGTCGCAGTGTTCATGCC 3'
<i>Des1</i> Forward	5' GAGCTGGAGGATCGCTTTG 3'
<i>Des1</i> Reverse	5' GAAGGTCTGGATAGGAAGGTTGA 3'
<i>Gapdh</i> Forward	5' CGTCCCGTAGACAAAATGGT 3'
<i>Gapdh</i> Reverse	5' GAATTTGCCGTGAGTGGAGT 3'