

**Table S1. Classification of CHD subtypes in our study**

Diagnosis	Number
Conotruncal	139 (33.3%)
Septal <sup>a</sup>	138 (33.1%)
RVOTO	46 (11.0%)
AVSD	22 (5.3%)
LVOTO	17 (4.1%)
APVR	12 (2.9%)
Complex <sup>b</sup>	10 (2.4%)
Heterotaxy	3 (0.7%)
Others <sup>c</sup>	30 (7.2%)
<b>Total</b>	<b>417 (100%)</b>

AVSD: Atrioventricular septal defect; APVR: Anomalous pulmonary venous return; LVOTO: Left Ventricular outflow tract obstruction; RVOTO: Right ventricular outflow tract obstruction; PDA: Patent ductus arteriosus.

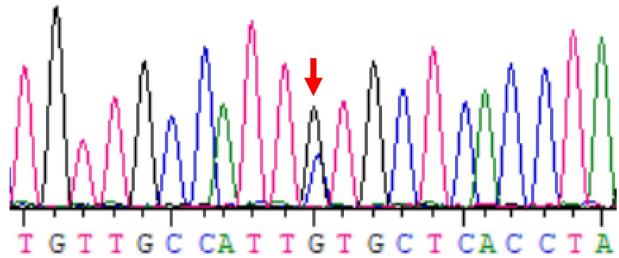
<sup>a</sup> Group “Septal” includes VSD, ASD (Except ASD I) etc.

<sup>b</sup> Group “Complex” includes single ventricle, L-TGA and multiple complex heart anomalies.

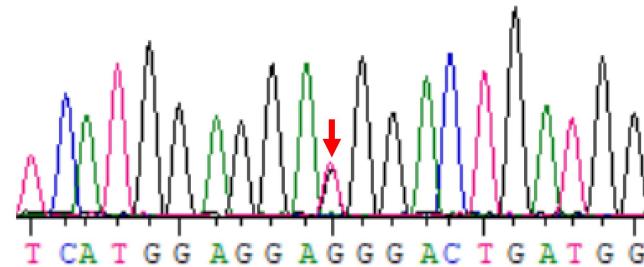
<sup>c</sup> 387 out of 417 cases were classified into first eight groups according to the method introduced by Lorenzo et al. <sup>[1]</sup>. Whereas 30 cases can't be classified into the study mentioned above and are sorted into “Other” groups, which includes 17 cases of isolated PDA, 8 cases of aproctia with CHD, 2 cases of mitral insufficiency, 2 cases of aortopulmonary window and 1 mitral stenosis.

1. Botto, L.D., A.E. Lin, T. Riehle-Colarusso, S. Malik, A. Correa, and S. National Birth Defects Prevention, *Seeking causes: Classifying and evaluating congenital heart defects in etiologic studies*. Birth Defects Res A Clin Mol Teratol, 2007. **79**(10): p. 714-27.

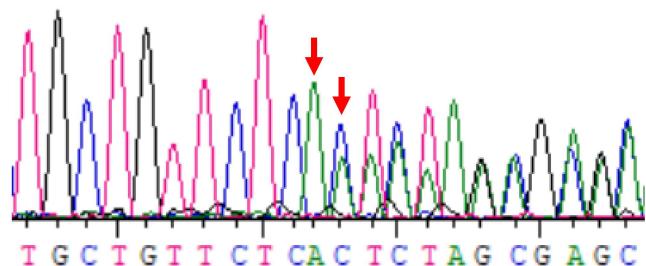
### c.G711C (p.Q237H)



### c.T811G (p.W271G)



### c.933\_934 ins AA (p.T312K fs\*55)



### c.A1558C (p.S520R)

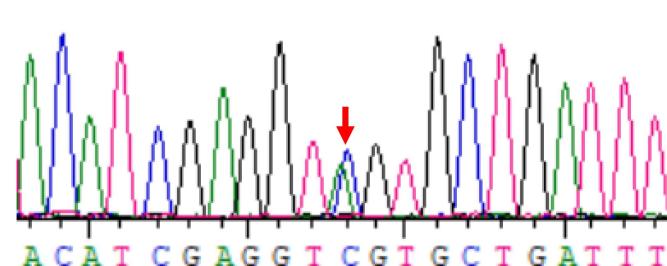


Table S2 Summary of mutations and clinical information of the carriers

Nucleotide <sup>a</sup>	Amino Acid <sup>b</sup>	SIFT	POLYPHEN-2	Age	Gender	Diagnosis
c.G711C	p.Q237H	Tolerated	Benign	1.3	Male	PDA
c.T811G	p.W271G	Deleterious	Possibly damaging	7.75	Male	VSD, ASD, PDA
c.933_934 ins AA	p.T312K fs*55	N/A	N/A	3	Female	ASD, PS
c.A1558C	p.S520R	Deleterious	Benign	5.5	Female	ASD, PS
c.C2186T	p.A729V	Tolerated	Benign	11	Female	Healthy control

<sup>a</sup> NM\_020774.3; <sup>b</sup> NP\_065825.1.

ASD: Atrial septal defect; VSD: Ventricular septal defect; PDA: Patent ductus arteriosus; PS: Pulmonary Stenosis.

Table S3 Phenotypic statistics of zebrafish embryo injection

	<b>Normal</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>	<b>n</b>	<i>p</i> (vs WT)	
<b>Uninjected</b>	221	3	1	0	225		
<b>Vector</b>	168	6	4	0	178		
<b>Wild Type</b>	112	25	7	28	172		
<b>p.Q237H</b>	101	21	13	9	144	*	Pearson
<b>p.W271G</b>	193	33	16	3	245	**	Pearson
<b>p.T312K fs*55</b>	182	12	7	6	207	**	Fisher
<b>p.S520R</b>	217	45	19	16	297	**	Pearson

\*p<0.05; \*\*p<0.01