

Table S1. Myh6-Drp1KO mice were born at normal Mendelian frequency

	WT	Het	KO
Expected (%)	50	25	25
Actual (%)	50	22	28
Actual (<i>n</i>)	57	25	32

A total of 114 pups from 19 litters were analyzed at P0 or P1.

Myh6-Cre:Drp1^{+/*flox*} mice were crossed to Drp1^{*flox/flox*} mice.

WT, Drp1^{+/*flox*} and Drp1^{*flox/flox*}; Het, Myh6-Cre::Drp1^{+/*flox*}; KO, Myh6-Cre::Drp1^{*flox/flox*}.

Table S2. Echocardiographic analysis

P1	WT	Het	KO	
<i>n</i>	9	8	6	
LVEDD (mm)	1.40 ± 0.06	1.44 ± 0.04	1.71 ± 0.05	** KO vs WT and Het
LVESD (mm)	0.52 ± 0.02	0.54 ± 0.02	0.83 ± 0.07	*** KO vs WT and Het
IVSD (mm)	0.38 ± 0.01	0.39 ± 0.01	0.40 ± 0.03	ns
PWTEd (mm)	0.36 ± 0.01	0.35 ± 0.02	0.34 ± 0.02	ns
FS(%)	62.74 ± 0.81	62.42 ± 1.09	51.62 ± 3.83	** KO vs WT and Het
EF(%)	86.06 ± 0.60	85.79 ± 0.80	75.86 ± 3.75	** KO vs WT and Het
LV mass (mg)	7.65 ± 0.65	8.04 ± 0.48	10.59 ± 0.81	* KO vs WT and Het
RWT	0.52 ± 0.04	0.49 ± 0.03	0.40 ± 0.03	ns
HR (b/min)	383 ± 12.9	373 ± 17.4	288 ± 8.3	*** KO vs WT, ** vs Het

P7	WT	Het	KO	
<i>n</i>	6	7	5	
LVEDD (mm)	1.91 ± 0.08	2.07 ± 0.08	2.24 ± 0.16	ns
LVESD (mm)	0.71 ± 0.04	0.75 ± 0.03	1.31 ± 0.18	** KO vs WT and Het
IVSD (mm)	0.48 ± 0.01	0.46 ± 0.02	0.51 ± 0.03	ns
PWTEd (mm)	0.45 ± 0.01	0.45 ± 0.02	0.48 ± 0.02	ns
FS(%)	62.89 ± 0.56	63.69 ± 0.66	42.39 ± 5.20	*** KO vs WT and Het
EF(%)	86.21 ± 0.42	86.79 ± 0.49	65.73 ± 5.65	*** KO vs WT and Het
LV mass (mg)	17.59 ± 2.04	19.05 ± 1.07	25.69 ± 5.12	ns
RWT	0.48 ± 0.01	0.44 ± 0.03	0.43 ± 0.02	ns
HR (b/min)	523 ± 21.1	474 ± 19.6	362 ± 16.6	*** KO vs WT, ** vs Het

Values are mean ± SEM.

n, number of animals analyzed.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ns: not significant (ANOVA followed by Turkey *post hoc* test)

No significant differences were observed between WT and Het.

LVEDD, left ventricular end-diastolic dimension; LVESD, left ventricular end-systolic dimension; IVSD, inter-ventricular septum thickness diastol; PWTEd, posterior wall thickness end-diastol; FS, fractional shortening; EF, ejection fraction; LV mass, left ventricular mass; RWT, relative wall thickness; HR, heart rate

Table S3. Echocardiographic analysis for WT, Myh6-Drp1KO, ParkinKO and Parkin::Myh6-Drp1KO mice

	WT	Drp1KO	ParkinKO	ParkinDrp1KO	WT vs Drp1	WT vs Parkin	Drp1 vs ParkinDrp1
<i>n</i>	18	12	14	3			
LVEDD (mm)	1.91 ± 0.04	2.19 ± 0.07	1.84 ± 0.07	1.98 ± 0.14	***	ns	ns
LVESD (mm)	0.79 ± 0.03	1.22 ± 0.10	0.90 ± 0.06	1.38 ± 0.13	***	ns	ns
IVSD (mm)	0.52 ± 0.01	0.51 ± 0.01	0.51 ± 0.01	0.49 ± 0.02	ns	ns	ns
PWTED (mm)	0.48 ± 0.01	0.50 ± 0.01	0.50 ± 0.02	0.42 ± 0.05	ns	ns	ns
FS(%)	59.02 ± 1.25	45.12 ± 3.20	51.65 ± 2.32	30.21 ± 5.54	***	ns	*
EF(%)	82.94 ± 1.10	68.76 ± 3.60	75.92 ± 2.30	50.67 ± 7.51	***	ns	**
LV mass (mg)	19.26 ± 1.15	24.68 ± 2.16	18.41 ± 1.17	17.50 ± 1.18	ns	ns	ns
RWT	0.50 ± 0.01	0.46 ± 0.01	0.55 ± 0.03	0.43 ± 0.08	ns	ns	ns
HR (b/min)	513 ± 11	397 ± 12	507 ± 13	284 ± 22	***	ns	**

Values are mean ± SEM.

n, number of animals analyzed.

* p<0.05, **p<0.01, *** p<0.001, ns: not significant (ANOVA followed by Turkey *post hoc* test)

No significant differences were observed between WT and Parkin KO.

LVEDD, left ventricular end-diastolic dimension; LVESD, left ventricular end-systolic dimension; IVSD, inter-ventricular septum thickness diastol; PWTED, posterior wall thickness end-diastol; FS, fractional shortening; EF, ejection fraction; LV mass, left ventricular mass; RWT, relative wall thickness; HR, heart rate