On line Supplementary Data

Online Figure Legends

Figure 1. Characteristics of DP-deficient HL-1 cells:

A. Detection of apoptosis by DNA laddering in the experimental groups.

B. Detection of p19 fragment of Caspase 3 in experimental groups by immunoblotting (upper panel). The lower panel shows an immunoblot for α-tubulin as a control for loading conditions.

C. Detection of apoptosis by TUNEL assay. DAPI-stained nuclei, TUNEL-positive cells and the overlay panels are shown in DP-competent (upper panels) and DP-deficient cells (lower panels).

D. Detection of proliferating nuclear cell antigen (PCNA) by immunofluorescence staining. DAPI-stained nuclei, PCNA-positive cells and the overlay panels are shown in DP-competent (upper panels) and DP-deficient cells (lower panels).

E. Quantification of TUNEL-positive cells in the experimental groups.

F. Quantification of PCNA-positive cells in the experimental groups.

G. Cell doubling time in DP-deficient and DP-competent HL-1 cells.

Figure 2. Impaired cardiogenesis in $DP^{-/-}$ mice:

A. Whole mount $DP^{+/+}$ (WT/WT) $DP^{+/-}$ (WT/floxed and α-MyHC) and $DP^{-/-}$ (floxed/floxed and α-MyHC) embryos at E15.5. $DP^{-/-}$ embryos show growth arrest and are smaller.

B. H&E staining of sections of whole mount embryos. Myocytes are dispersed without forming cardiac chambers (H) in pericardial sac in $DP^{-/-}$ embryo. Red blood cells (B) are visualized in the pericardial sac in $DP^{-/-}$ embryos as opposed to predominant localization in cardiac chambers.

Figure 3. Kaplan-Meier survival curves in the three experimental groups are shown.

Figure 4. Heart weight/body weight ratios in the three experimental groups are shown.

Table 1. Sequence of Oligonucleotide primers used in this study

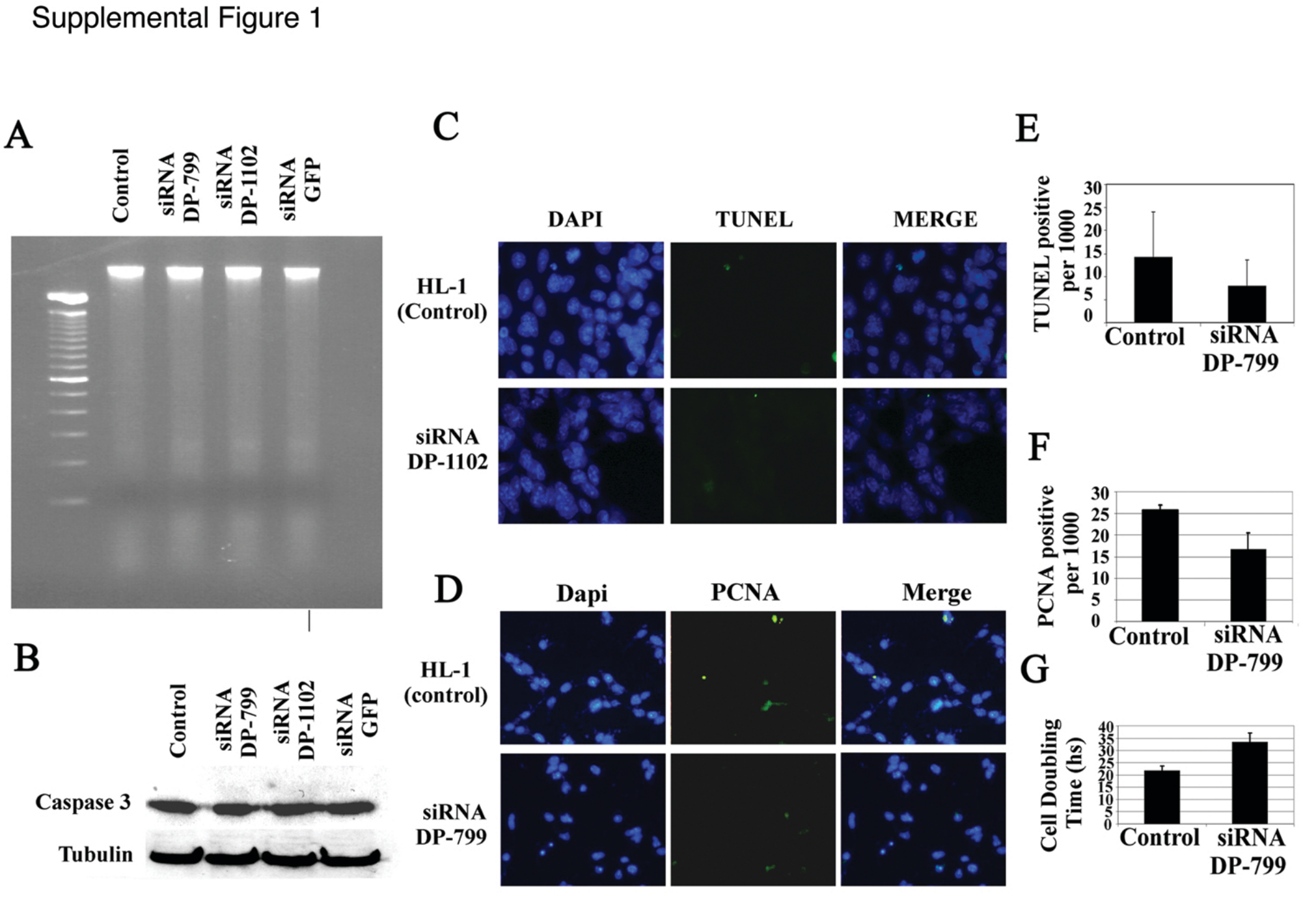
Gene Symbol	Forward	Reverse	Reaction
Adiponectin	CTGTTCCTCTTAATCCTGCCCAGT	GCGATACATATAAGCGGCTTCTCC	RT-PCR
β-catenin	GTTAAACTCCTGCACCCACCATC	TGGGAGAATAAAGCAACTGCACA	RT-PCR
Desmoplakin	CTGCTCTATGACTGGAGCGACAA	GTTTACCAAGTTCTGCACCTGAGG	RT-PCR
GAPDH	GGTGAAGGTCGGTGTGAACG	CCGTGAGTGGAGTCATACTGGAAC	RT-PCR
Perilipin	GAACGTGCTCCAGAGAGTTCTGC	GTAGAGATGGTGCCCTTCAGTTCAG	RT-PCR
Plakoglobin	ATACCTGTGTGCCCTCTGTAAGCA	CAGCTCTGCATCATCCTGGTAGTT	RT-PCR
C/EBP-α	TCCTGGGTGAGTTCATGGAGAAT	GGCTGGCGACATACAGTACACAC	RT-PCR
PPAR-γ	TGATGCACTGCCTATGAGCACTT	CATTGGGTCAGCTCTTGTGAATG	RT-PCR
c-myc	GAGCTGTTTGAAGGCTGGATTTC	GCTCTGCTGTTGCTGGTGATAGA	RT-PCR
Cyclin D1	CGTACCCTGACACCAATCTCCTC	AGGAAGCGGTCCAGGTAGTTCAT	RT-PCR
LPL	GAAAGGGCTCTGCCTGAGTTGTA	GTGAAGGGAATGTTCTCGCTCTC	RT-PCR
Cardiac actin	GTAGGTGATGAAGCCCAGAGCAA	GAGTTACACCATCGCCAGAATCC	RT-PCR
Collagen 1a1	CTGGTGAATCTGGACGTGAGG	CTCAAGGTCACGGTCACGAAC	RT-PCR
Collagen 1a2	CCATTCCTGGTGCTGTAGGTG	CTAGAGCCAGGGAGACCCAGA	RT-PCR
Collagen 3a1	CCTGGTGCTTCTGGTTCTCCT	GGTCCAGCTATTCCAGGGTTG	RT-PCR
Desmoplakin	TAAGCTCCCCTCACTTCTCCAG	TTCTCTTTGTCTGTTGCCATGT	PCR genotyping
α-MHC-Cre	CCACACCAGAAATGACAGACAGA	CGCATAACCAGTGAAACAGCAT	PCR genotyping
Desmoplakin	CCATGTTTCAGTAGAAGGTTTGCT	AATCCCAAGTGAGGGAATTGTT	Southern probe
siRNA DP-799	AACACCAACATCGCTCAGAAG		RNAi
siRNA DP-1102	AAATACCCCTGTGACAAGAAT		RNAi

Table 2: Electrophysiological Findings

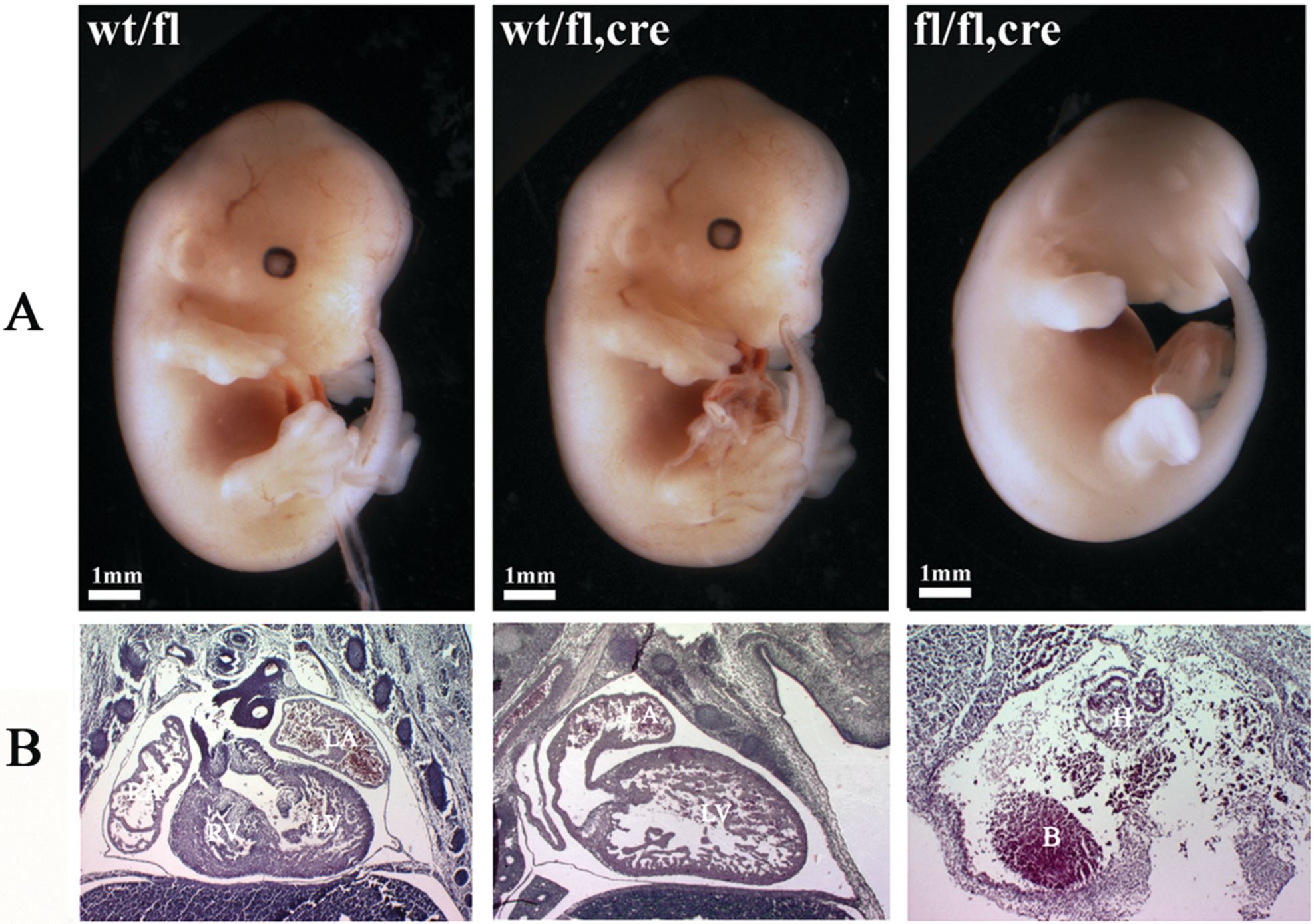
Phenotype	WT	WT/F-Cre	p
N	5	5	NA
Age (months)	9.0 ± 0.6	8.80 ± 1.1	0.734
M/F	3/2	4/1	0.487
Body Weight (g)	32.40 ± 2.53	31.60 ± 3.36	0.684
P duration (msec)	10.20 ± 1.30	10.20 ± 1.79	1.00
PR interval	34.40 ± 3.85	36.40 ± 5.41	0.522
QRS duration (ms)	12.20 ± 0.84	12.80 ± 0.84	1.00
QT interval	24.80 ± 2.86	25.60 ± 1.67	0.609
SCL (msec)	104.2 ± 15.4	106.0 ± 20.8	0.881
HR (bpm)	583.2 ± 73.4	580.0 ± 98.3	0.955
AVW	74.0 ± 15.2	76.00 ± 9.62	0.812
AV 2:1	62.0 ± 11.0	75.00 ± 7.07	0.160
cSNRT	31.6 ± 17.2	29.8 ± 10.6	0.849
AERP	42.0 ± 11.0	45.0 ± 7.07	0.625
AVNERP	51.0 ± 10.8	57.5 ± 11.9	0.430
VERP	32.0 ± 7.58	35.0 ± 5.0	0.488
Vent. Arrhythmias	0/5	4/5	0.004

Abbreviations: WT: Wild type; F: Floxed allele; Cre: Cre recombinase; M/F: Male/Female ratio; SCL: Sinus cycle length; HR: Heart rate; AVW: Atrioventricular Wenckeback; AV 2:1: Atrioventricular 2:1 block; cSNRT: Corrected sinus node recovery time; AERP: Atrial effective refractory period; AVNERP: Atrioventricular effective refractory period; VERP: ventricular effective refractory period; Vent arrhythmias: Ventricular arrhythmias

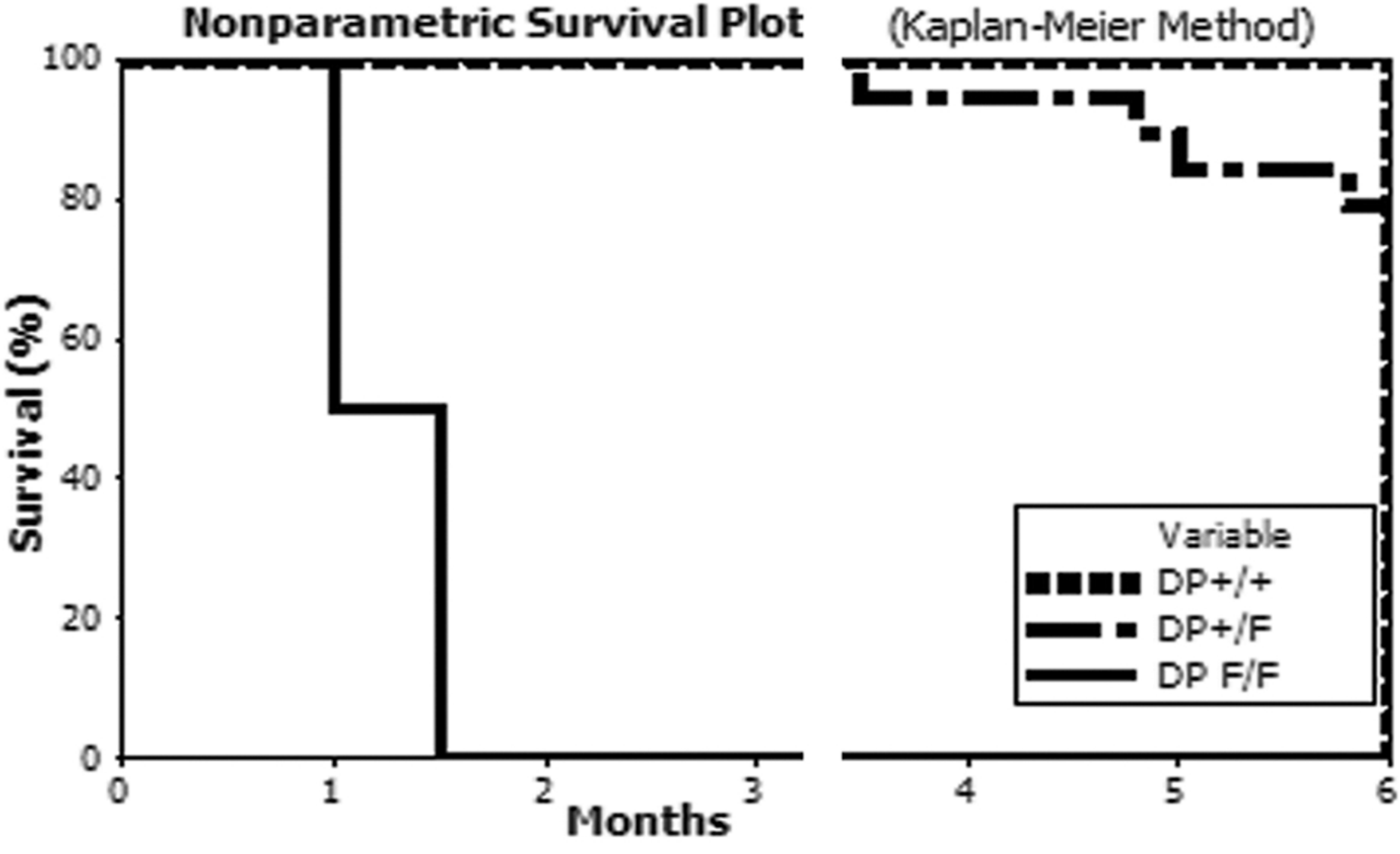
Supplemental Figure 1



Supplemental Figure 2



Supplemental Figure 3



Supplemental Figure 4