Supplementary Table 1. Statistics on ROCs before and after age at maximum body weight. Tests comparing means (paired t-tests) and standard deviations (Paired Pitman-Morgan test).

	ROC Before		ROC After		Compare Means	Compare Std. Devs
Var	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**p-value**	**p.value**
BW	1.23	0.19	-2.14	0.80	2.4E-21	5.0E-12
Cardiac Structure						
LVM	1.13	0.48	1.40	1.85	0.3648	2.3E-12
IVST	0.0075	0.0038	0.0171	0.0293	0.0886	0.0
PWT	0.0077	0.0055	0.0149	0.0311	0.2404	1.1E-15
EDV	0.27	0.30	0.58	2.78	0.5813	0.0
LAD	0.014	0.018	0.032	0.018	0.0012	0.8113
Cardiac Function						
ESV	0.85	0.25	1.26	2.07	0.2859	0.0
EF	-1.02	0.38	-0.86	0.28	0.0002	0.0055
SV	-0.64	0.33	-0.63	0.70	0.9265	0.0001
HR	3.10	1.42	-4.06	4.36	1.1E-08	5.5E-09
CO	-0.16	0.11	-0.35	0.28	0.0002	5.9E-07
Aortic Structure and Function						
PWV	3.38	3.32	8.14	10.50	0.0268	1.6E-08
AsA max	0.0083	0.0082	0.0028	0.0010	0.0003	0.0
AsA min	0.0116	0.0073	0.0075	0.0029	0.0068	2.7E-06
AsA FC	-0.32	0.10	-0.39	0.35	0.3430	3.1E-10
CA max	-0.23	0.65	3.64	11.49	0.0858	0.0
CA min	1.18	0.27	4.35	9.39	0.0704	0.0
CA FC	-0.47	0.07	-0.27	0.19	4.4E-07	8.1E-08
TA max	1.37	1.14	-3.76	17.11	0.1261	0.0
TA min	4.96	1.81	-4.11	14.88	0.0049	0.0
TA FC	-0.45	0.06	-0.02	0.27	8.4E-09	3.6E-15
AbA max	3.82	1.48	-3.83	10.80	0.0014	0.0
AbA min	5.03	1.31	-0.70	8.04	0.0016	0.0
AbA FC	-0.41	0.13	-0.49	0.37	0.1473	2.4E-10

Supplementary Table 2a. Descriptive statistics of variables

Age (Months)	6 (n = 31) Mean ± CI	9 (n = 31) Mean ± CI	12 (n = 31) Mean ± CI	15 (n = 31) Mean ± CI	18 (n = 31) Mean ± CI	21 (n = 31) Mean ± CI	24 (n = 31) Mean ± CI	27 (n = 18) Mean ± CI	30 (n = 4) Mean ± CI
BW (g)	36.8 ± 1.1	42.9 ± 1.3	46.8 ± 1.4	50.0 ± 1.3	51.3 ± 1.8	50.5 ± 2.3	45.4 ± 2.5	36.3 ± 2.4	32.8 ± 4.8
Cardiac Structure									
LVM (mg)	58.2 ± 2.8	62.3 ± 3.0	65.4 ± 2.6	69.9 ± 3.2	72.7 ± 3.2	74.4 ± 3.2	79.6 ± 5.1	84.1 ± 8.3	97.2 ± 25.5
IVST (mm)	0.65 ± 0.03	0.68 ± 0.02	0.70 ± 0.02	0.74 ± 0.03	0.76 ± 0.03	0.76 ± 0.03	0.81 ± 0.06	0.90 ± 0.09	0.96 ± 0.14
PWT (mm)	0.72 ± 0.03	0.74 ± 0.03	0.76 ± 0.03	0.81 ± 0.03	0.82 ± 0.03	0.82 ± 0.03	0.88 ± 0.06	0.94 ± 0.08	0.90 ± 0.17
EDV (mL)	70.5 ± 2.8	75.6 ± 3.4	77.2 ± 3.4	77.0 ± 3.7	75.0 ± 3.0	77.9 ± 2.9	78.9 ± 5.1	79.0 ± 12.3	96.2 ± 26.8
LAD (mm)	1.62 ± 0.10	1.62 ± 0.09	1.71 ± 0.09	1.76 ± 0.14	1.77 ± 0.15	1.86 ± 0.12	1.98 ± 0.15	2.05 ± 0.20	2.10 ± 0.55
Cardiac Function									
ESV (mL)	34.6 ± 1.9	41.9 ± 2.7	45.2 ± 3.1	46.6 ± 3.4	47.1 ± 3.2	51.3 ± 3.0	54.4 ± 4.6	55.2 ± 11.8	71.4 ± 30.6
EF (%)	51.0 ± 1.8	44.8 ± 1.8	41.7 ± 2.3	39.8 ± 2.5	37.6 ± 2.6	34.3 ± 2.3	31.3 ± 2.5	30.9 ± 4.3	26.7 ± 11.0
SV (mL)	35.9 ± 1.8	33.7 ± 1.7	31.9 ± 1.8	30.4 ± 1.9	28.0 ± 1.8	26.5 ± 1.7	24.5 ± 2.2	23.8 ± 3.8	24.8 ± 4.1
HR (bpm)	385 ± 15	405 ± 14	419 ± 18	411 ± 14	427 ± 17	428 ± 16	415 ± 14	409 ± 29	400 ± 44
CO (mL/min)	13.8 ± 0.8	13.6 ± 0.8	13.4 ± 1.0	12.4 ± 0.8	12.0 ± 1.0	11.4 ± 0.9	10.3 ± 1.0	9.7 ± 1.6	9.9 ± 2.0
Aortic Structure and Function									
PWV (cm/s)	391 ± 19	409 ± 20	420 ± 22	420 ± 24	432 ± 22	447 ± 27	481 ± 25	489 ± 45	452 ± 140
AsA max (μm)	563 ± 20	575 ± 17	592 ± 15	627 ± 19	611 ± 20	590 ± 18	591 ± 24	595 ± 68	643 ± 96
AsA min (μm)	476 ± 17	493 ± 15	515 ± 16	551 ± 17	539 ± 18	528 ± 16	539 ± 21	543 ± 62	583 ± 79
AsA FC (%)	18.2 ± 0.9	16.7 ± 1.3	15.2 ± 1.3	13.8 ± 1.0	13.5 ± 1.1	11.8 ± 0.9	9.6 ± 1.0	9.3 ± 1.8	10.3 ± 2.5
CA max (μm)	443 ± 12	452 ± 10	446 ± 9	447 ± 8	451 ± 10	445 ± 9	465 ± 27	461 ± 31	516 ± 26
CA min (μm)	353 ± 11	367 ± 9	365 ± 8	373 ± 9	375 ± 9	373 ± 8	395 ± 25	395 ± 26	443 ± 42
CA FC (%)	25.7 ± 1.3	23.3 ± 1.2	22.2 ± 1.2	19.9 ± 1.4	20.3 ± 1.3	19.3 ± 1.2	18.1 ± 1.5	16.6 ± 2.4	16.5 ± 6.4
TA max (μm)	1169 ± 17	1170 ± 27	1165 ± 20	1180 ± 25	1188 ± 24	1160 ± 20	1172 ± 32	1164 ± 54	1248 ± 138
TA min (μm)	976 ± 16	988 ± 26	1004 ± 20	1028 ± 24	1042 ± 24	1022 ± 18	1036 ± 26	1027 ± 47	1118 ± 132
TA FC (%)	19.8 ± 0.8	18.6 ± 1.1	16.1 ± 1.1	14.8 ± 0.8	14.1 ± 1.0	13.5 ± 0.7	13.1 ± 1.0	13.3 ± 1.4	11.7 ± 1.8
AbA max (μm)	1.60 ± 0.03	1.67 ± 0.05	1.70 ± 0.05	1.75 ± 0.05	1.72 ± 0.04	1.71 ± 0.05	1.75 ± 0.06	1.76 ± 0.07	1.77 ± 0.22
AbA min (μm)	1.37 ± 0.03	1.45 ± 0.05	1.49 ± 0.05	1.55 ± 0.05	1.53 ± 0.04	1.54 ± 0.05	1.60 ± 0.05	1.60 ± 0.06	1.60 ± 0.17
AbA FC (%)	16.8 ± 0.8	15.1 ± 1.0	14.7 ± 1.1	13.4 ± 1.2	12.3 ± 1.3	11.7 ± 1.2	9.9 ± 1.1	9.6 ± 1.5	10.7 ± 8.0

Supplementary Table 2b. Descriptive statistics of variables indexed to body weight

	6 (n = 31)	9 (n = 31)	12 (n = 31)	15 (n = 31)	18 (n = 31)	21 (n = 31)	24 (n = 31)	27 (n = 18)	30 (n = 4)
Age (Months)	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI	Mean ± CI
Cardiac Structure									
LVM/BW (mg/g)	1.59 ± 0.07	1.46 ± 0.07	1.41 ± 0.06	1.40 ± 0.06	1.43 ± 0.08	1.50 ± 0.09	1.79 ± 0.15	2.35 ± 0.28	2.97 ± 0.76
IVST/BW (mm/g)	17.8 ± 0.7	16.0 ± 0.6	15.1 ± 0.6	14.8 ± 0.6	15.0 ± 0.6	15.3 ± 0.9	18.2 ± 1.8	25.0 ± 2.5	29.3 ± 3.2
PWT/BW (mm/g)	19.5 ± 0.7	17.3 ± 0.7	16.4 ± 0.6	16.3 ± 0.7	16.1 ± 0.7	16.4 ± 0.9	19.8 ± 1.8	26.2 ± 2.3	27.5 ± 5.7
EDV/BW (mL/g)	1.92 ± 0.09	1.77 ± 0.09	1.66 ± 0.09	1.55 ± 0.08	1.48 ± 0.09	1.57 ± 0.10	1.78 ± 0.15	2.23 ± 0.38	2.95 ± 0.89
LAD/BW (mm/g)	44.1 ± 2.5	37.7 ± 2.1	36.7 ± 2.0	35.3 ± 2.6	34.8 ± 3.0	37.4 ± 2.7	44.7 ± 4.4	57.0 ± 5.9	63.7 ± 7.9
Cardiac Function									
ESV/BW (mL/g)	0.95 ± 0.06	0.98 ± 0.06	0.98 ± 0.07	0.94 ± 0.07	0.93 ± 0.08	1.04 ± 0.08	1.23 ± 0.13	1.55 ± 0.35	2.19 ± 0.98
EF/BW (%/g)	1.39 ± 0.06	1.05 ± 0.05	0.90 ± 0.05	0.80 ± 0.05	0.73 ± 0.05	0.69 ± 0.05	0.71 ± 0.07	0.87 ± 0.15	0.82 ± 0.37
SV/BW (mL/g)	0.98 ± 0.05	0.79 ± 0.04	0.69 ± 0.04	0.61 ± 0.04	0.55 ± 0.03	0.53 ± 0.04	0.55 ± 0.06	0.68 ± 0.13	0.76 ± 0.16
HR/BW (bpm/g)	10.5 ± 0.4	9.5 ± 0.3	9.0 ± 0.4	8.2 ± 0.3	8.4 ± 0.3	8.6 ± 0.5	9.3 ± 0.5	11.3 ± 0.6	12.2 ± 1.0
CI = CO/BW (mL/min/kg)	375 ± 20	318 ± 17	288 ± 21	249 ± 14	234 ± 18	228 ± 20	229 ± 25	271 ± 46	303 ± 45
Aortic Structure and Function									
PWV/BW (cm/sec/g)	10.7 ± 0.6	9.6 ± 0.5	9.1 ± 0.5	8.4 ± 0.5	8.5 ± 0.5	8.9 ± 0.5	10.7 ± 0.7	13.6 ± 1.3	13.7 ± 3.2
AsA max/BW (μm/g)	15.4 ± 0.7	13.5 ± 0.5	12.7 ± 0.4	12.6 ± 0.4	12.0 ± 0.5	11.8 ± 0.6	13.3 ± 0.9	16.7 ± 2.2	19.7 ± 4.2
AsA min/BW (μm/g)	13.0 ± 0.6	11.5 ± 0.4	11.0 ± 0.3	11.0 ± 0.3	10.6 ± 0.5	10.6 ± 0.5	12.1 ± 0.8	15.2 ± 2.1	17.9 ± 3.5
AsA FC/BW (%/g)	0.50 ± 0.03	0.39 ± 0.03	0.33 ± 0.03	0.28 ± 0.02	0.27 ± 0.02	0.24 ± 0.02	0.22 ± 0.03	0.26 ± 0.05	0.32 ± 0.12
CAd/BW (μm/g)	12.1 ± 0.5	10.6 ± 0.4	9.6 ± 0.4	9.0 ± 0.3	8.9 ± 0.4	8.9 ± 0.4	10.6 ± 1.0	13.0 ± 1.6	15.8 ± 2.7
CAs/BW (μm/g)	9.6 ± 0.4	8.6 ± 0.3	7.9 ± 0.3	7.5 ± 0.3	7.4 ± 0.3	7.5 ± 0.4	9.0 ± 0.9	11.2 ± 1.4	13.6 ± 2.0
CA FC/BW (%/g)	0.70 ± 0.04	0.55 ± 0.03	0.48 ± 0.04	0.40 ± 0.04	0.40 ± 0.03	0.39 ± 0.03	0.41 ± 0.04	0.47 ± 0.08	0.51 ± 0.25
TA max/BW (μm/g)	31.9 ± 1.0	27.4 ± 0.8	25.0 ± 0.8	23.7 ± 0.7	23.3 ± 0.9	23.3 ± 1.1	26.4 ± 1.7	32.6 ± 2.7	38.2 ± 5.9
TA min/BW (μm/g)	26.6 ± 0.8	23.1 ± 0.7	21.6 ± 0.6	20.7 ± 0.6	20.5 ± 0.8	20.6 ± 1.0	23.3 ± 1.5	28.7 ± 2.2	34.2 ± 5.1
TA FC/BW (%/g)	0.54 ± 0.03	0.44 ± 0.03	0.35 ± 0.03	0.30 ± 0.02	0.28 ± 0.02	0.27 ± 0.02	0.30 ± 0.03	0.38 ± 0.05	0.36 ± 0.11
AbA max/BW (μm/g)	0.044 ± 0.001	0.039 ± 0.002	0.037 ± 0.002	0.035 ± 0.002	0.034 ± 0.001	0.035 ± 0.002	0.040 ± 0.003	0.049 ± 0.004	0.055 ± 0.014
AbA min/BW (μm/g)	0.037 ± 0.001	0.034 ± 0.001	0.032 ± 0.001	0.031 ± 0.001	0.030 ± 0.001	0.031 ± 0.002	0.036 ± 0.003	0.045 ± 0.004	0.049 ± 0.010
AbA FC/BW (%/g)	0.46 ± 0.03	0.35 ± 0.03	0.32 ± 0.03	0.27 ± 0.03	0.24 ± 0.03	0.24 ± 0.03	0.23 ± 0.03	0.27 ± 0.04	0.34 ± 0.31

Supplementary Table 3a. Correlations among rates of change before and after maximum body weight: cardiac structure and function.

Cardiac Structure

Before	LVM	IVST	PWT	EDV	LAD	PWV	BW	After	LVM	IVST	PWT	EDV	LAD	PWV	BW
LVM : r	1	0.5447	0.7308	-0.193	0.0816	0.2283	-0.1964	LVM : r	1	0.2407	0.1791	0.5193	0.0802	-0.0336	-0.0296
LVM : p	NA	0.0015	3.0E-06	0.2983	0.6626	0.2168	0.2895	LVM : p	NA	0.1921	0.3351	0.0028	0.6678	0.8578	0.8742
IVST : r	0.5447	1	0.5191	-0.4338	-0.1967	0.0828	-0.1635	IVST : r	0.2407	1	0.9438	-0.5607	-0.4332	-0.1228	-0.3037
IVST : p	0.0015	NA	0.0028	0.0148	0.2890	0.6578	0.3796	IVST : p	0.1921	NA	1.8E-15	0.0010	0.0149	0.5105	0.0968
PWT : r	0.7308	0.5191	1	-0.3667	0.1268	0.041	-0.1229	PWT : r	0.1791	0.9438	1	-0.6055	-0.3586	-0.0682	-0.2277
PWT : p	3.0E-06	0.0028	NA	0.0424	0.4967	0.8267	0.5100	PWT : p	0.3351	1.8E-15	NA	0.0003	0.0476	0.7153	0.2180
EDV : r	-0.193	-0.4338	-0.3667	1	0.0516	-0.2286	-0.0703	EDV : r	0.5193	-0.5607	-0.6055	1	0.3372	0.0117	0.1157
EDV : p	0.2983	0.0148	0.0424	NA	0.7830	0.2161	0.7072	EDV : p	0.0028	0.0010	0.0003	NA	0.0635	0.9500	0.5354
LAD : r	0.0816	-0.1967	0.1268	0.0516	1	0.1967	-0.1689	LAD : r	0.0802	-0.4332	-0.3586	0.3372	1	-0.1539	0.3317
LAD : p	0.6626	0.2890	0.4967	0.7830	NA	0.2888	0.3637	LAD : p	0.6678	0.0149	0.0476	0.0635	NA	0.4084	0.0683
PWV : r	0.2283	0.0828	0.041	-0.2286	0.1967	1	0.349	PWV : r	-0.0336	-0.1228	-0.0682	0.0117	-0.1539	1	-0.2726
PWV : p	0.2168	0.6578	0.8267	0.2161	0.2888	NA	0.0543	PWV : p	0.8578	0.5105	0.7153	0.9500	0.4084	NA	0.1379
BW : r	-0.1964	-0.1635	-0.1229	-0.0703	-0.1689	0.349	1	BW : r	-0.0296	-0.3037	-0.2277	0.1157	0.3317	-0.2726	1
BW : p	0.2895	0.3796	0.5100	0.7072	0.3637	0.0543	NA	BW : p	0.8742	0.0968	0.2180	0.5354	0.0683	0.1379	NA

Cardiac Function

Before	ESV	EF	SV	HR	CO	PWV	BW	After	ESV	EF	SV	HR	CO	PWV	BW
ESV : r	1	-0.2649	-0.2059	-0.4431	-0.3121	0.0366	-0.1666	ESV : r	1	-0.2788	0.4111	0.3509	0.4234	0.0438	0.0887
ESV : p	NA	0.1498	0.2664	0.0125	0.0874	0.8449	0.3705	ESV : p	NA	0.1288	0.0216	0.0530	0.0176	0.8149	0.6351
EF : r	-0.2649	1	0.7961	0.2441	0.8547	-0.2998	-0.2286	EF : r	-0.2788	1	0.5943	-0.0436	0.491	-0.0116	-0.2056
EF : p	0.1498	NA	8.5E-08	0.1857	9.4E-10	0.1014	0.2161	EF : p	0.1288	NA	0.0004	0.8160	0.0050	0.9505	0.2673
SV : r	-0.2059	0.7961	1	0.1268	0.8362	-0.2876	-0.2346	SV : r	0.4111	0.5943	1	0.2429	0.8975	-0.1007	0.157
SV : p	0.2664	8.5E-08	NA	0.4966	4.7E-09	0.1167	0.2039	SV : p	0.0216	0.0004	NA	0.1880	8.0E-12	0.5900	0.3989
HR : r	-0.4431	0.2441	0.1268	1	0.3838	0.0105	0.0365	HR : r	0.3509	-0.0436	0.2429	1	0.5509	-0.0363	0.5305
HR : p	0.0125	0.1857	0.4966	NA	0.0330	0.9551	0.8455	HR : p	0.0530	0.8160	0.1880	NA	0.0013	0.8461	0.0021
CO : r	-0.3121	0.8547	0.8362	0.3838	1	-0.2972	-0.1552	CO : r	0.4234	0.491	0.8975	0.5509	1	-0.0788	0.343
CO : p	0.0874	9.4E-10	4.7E-09	0.0330	NA	0.1044	0.4045	CO : p	0.0176	0.0050	8.0E-12	0.0013	NA	0.6736	0.0589
PWV : r	0.0366	-0.2998	-0.2876	0.0105	-0.2972	1	0.349	PWV : r	0.0438	-0.0116	-0.1007	-0.0363	-0.0788	1	-0.2726
PWV : p	0.8449	0.1014	0.1167	0.9551	0.1044	NA	0.0543	PWV : p	0.8149	0.9505	0.5900	0.8461	0.6736	NA	0.1379
BW : r	-0.1666	-0.2286	-0.2346	0.0365	-0.1552	0.349	1	BW : r	0.0887	-0.2056	0.157	0.5305	0.343	-0.2726	1
BW : p	0.3705	0.2161	0.2039	0.8455	0.4045	0.0543	NA	BW : p	0.6351	0.2673	0.3989	0.0021	0.0589	0.1379	NA

Supplementary Table 3b. Correlations among rates of change before and after maximum body weight: aortic structure and function.

Aortic Structure and Function

Before	PWV	AsA max	AsA min	AsA FC	CA max	CA min	CA FC	TA max	TA min	TA FC	AbA max	AbA min	AbA FC	BW	LVM
PWV : r	1	-0.0134	0.0246	-0.1609	0.1632	0.2585	-0.0375	-0.0821	-0.1187	0.0648	-0.0917	-0.138	-0.0979	0.349	0.2283
PWV : p	NA	0.9428	0.8954	0.3872	0.3804	0.1603	0.8415	0.6607	0.5249	0.7291	0.6235	0.4590	0.6003	0.0543	0.2168
AoD.max : r	-0.0134	1	0.9565	0.2154	-0.12	0.3201	0.2053	0.0078	-0.0167	0.0622	0.0784	-0.008	-0.0634	0.0917	0.06
AoD.max : p	0.9428	NA	0.0E+00	0.2445	0.5202	0.0792	0.2678	0.9666	0.9291	0.7395	0.6750	0.9660	0.7346	0.6238	0.7483
AoD.min : r	0.0246	0.9565	1	-0.0335	-0.0232	0.2702	0.1415	-0.0626	-0.0623	0.0604	0.1398	0.0406	-0.124	0.1975	0.0491
AoD.min : p	0.8954	0.0E+00	NA	0.8581	0.9014	0.1416	0.4476	0.7378	0.7394	0.7470	0.4533	0.8282	0.5062	0.2869	0.7933
AoD.FC : r	-0.1609	0.2154	-0.0335	1	-0.2939	0.0512	0.1551	0.0209	-0.0856	0.1322	-0.2837	-0.2519	0.2635	-0.3119	0.0391
AoD.FC : p	0.3872	0.2445	0.8581	NA	0.1085	0.7846	0.4048	0.9113	0.6470	0.4785	0.1220	0.1717	0.1521	0.0876	0.8346
CAmax : r	0.1632	-0.12	-0.0232	-0.2939	1	0.0459	0.0889	-0.5353	-0.5638	0.3244	-0.0059	0.0144	0.1779	0.2018	-0.0419
CAmax : p	0.3804	0.5202	0.9014	0.1085	NA	0.8064	0.6343	0.0019	0.0010	0.0750	0.9750	0.9386	0.3384	0.2764	0.8231
CAmin : r	0.2585	0.3201	0.2702	0.0512	0.0459	1	0.3929	-0.2304	-0.2043	0.0523	-0.3613	-0.4218	0.2235	0.0534	0.1437
CAmin : p	0.1603	0.0792	0.1416	0.7846	0.8064	NA	0.0288	0.2123	0.2704	0.7800	0.0458	0.0181	0.2267	0.7754	0.4405
CA.FC : r	-0.0375	0.2053	0.1415	0.1551	0.0889	0.3929	1	-0.2324	-0.3452	0.5407	-0.2943	-0.3172	0.3941	-0.0977	-0.0192
CA.FC : p	0.8415	0.2678	0.4476	0.4048	0.6343	0.0288	NA	0.2083	0.0571	0.0017	0.1081	0.0821	0.0282	0.6009	0.9182
TA.max : r	-0.0821	0.0078	-0.0626	0.0209	-0.5353	-0.2304	-0.2324	1	0.9315	-0.1993	0.298	0.3492	-0.2765	-0.1783	0.0513
TA.max : p	0.6607	0.9666	0.7378	0.9113	0.0019	0.2123	0.2083	NA	2.8E-14	0.2825	0.1034	0.0541	0.1322	0.3373	0.7839
TA.min : r	-0.1187	-0.0167	-0.0623	-0.0856	-0.5638	-0.2043	-0.3452	0.9315	1	-0.4972	0.3196	0.3583	-0.4016	-0.2193	-0.006
TA.min : p	0.5249	0.9291	0.7394	0.6470	0.0010	0.2704	0.0571	2.8E-14	NA	0.0044	0.0797	0.0478	0.0251	0.2358	0.9742
TA.FC : r	0.0648	0.0622	0.0604	0.1322	0.3244	0.0523	0.5407	-0.1993	-0.4972	1	-0.1477	-0.1553	0.4731	0.0542	0.06
TA.FC : p	0.7291	0.7395	0.7470	0.4785	0.0750	0.7800	0.0017	0.2825	0.0044	NA	0.4278	0.4041	0.0072	0.7722	0.7486
AA.max : r	-0.0917	0.0784	0.1398	-0.2837	-0.0059	-0.3613	-0.2943	0.298	0.3196	-0.1477	1	0.9636	-0.5101	0.2203	-0.1484
AA.max : p	0.6235	0.6750	0.4533	0.1220	0.9750	0.0458	0.1081	0.1034	0.0797	0.4278	NA	0.0E+00	0.0034	0.2336	0.4256
AA.min : r	-0.138	-0.008	0.0406	-0.2519	0.0144	-0.4218	-0.3172	0.3492	0.3583	-0.1553	0.9636	1	-0.4875	0.1958	-0.1893
AA.min : p	0.4590	0.9660	0.8282	0.1717	0.9386	0.0181	0.0821	0.0541	0.0478	0.4041	0.0E+00	NA	0.0054	0.2912	0.3078
AA.FC : r	-0.0979	-0.0634	-0.124	0.2635	0.1779	0.2235	0.3941	-0.2765	-0.4016	0.4731	-0.5101	-0.4875	1	-0.2603	0.0681
AA.FC : p	0.6003	0.7346	0.5062	0.1521	0.3384	0.2267	0.0282	0.1322	0.0251	0.0072	0.0034	0.0054	NA	0.1573	0.7159
BW : r	0.349	0.0917	0.1975	-0.3119	0.2018	0.0534	-0.0977	-0.1783	-0.2193	0.0542	0.2203	0.1958	-0.2603	1	-0.1964
BW : p	0.0543	0.6238	0.2869	0.0876	0.2764	0.7754	0.6009	0.3373	0.2358	0.7722	0.2336	0.2912	0.1573	NA	0.2895
LVM : r	0.2283	0.06	0.0491	0.0391	-0.0419	0.1437	-0.0192	0.0513	-0.006	0.06	-0.1484	-0.1893	0.0681	-0.1964	1
LVM : p	0.2168	0.7483	0.7933	0.8346	0.8231	0.4405	0.9182	0.7839	0.9742	0.7486	0.4256	0.3078	0.7159	0.2895	NA

After	PWV	AsA max	AsA min	AsA FC	CA max	CA min	CA FC	TA max	TA min	TA FC	AbA max	AbA min	AbA FC	BW	LVM
PWV : r	1	-0.2091	0.1454	-0.301	-0.1743	-0.181	0.0113	0.0762	0.0335	0.0596	0.0419	0.0934	0.1303	-0.2726	-0.0336
PWV : p	NA	0.2590	0.4351	0.0999	0.3483	0.3298	0.9517	0.6838	0.8579	0.7501	0.8228	0.6174	0.4847	0.1379	0.8578
AoD.max : r	-0.2091	1	-0.5239	0.1949	-0.0805	-0.0351	-0.1637	-0.0683	-0.0475	-0.0431	-0.2689	-0.2586	-0.2072	0.0473	-0.0032
AoD.max : p	0.2590	NA	0.0025	0.2935	0.6667	0.8514	0.3790	0.7152	0.7998	0.8181	0.1435	0.1602	0.2633	0.8004	0.9862
AoD.min : r	0.1454	-0.5239	1	-0.6538	0.2434	0.1408	0.3659	0.2798	0.2811	0.0245	0.2776	0.2751	0.0528	0.137	-0.0512
AoD.min : p	0.4351	0.0025	NA	6.6E-05	0.1869	0.4501	0.0430	0.1273	0.1256	0.8959	0.1306	0.1342	0.7781	0.4624	0.7843
AoD.FC : r	-0.301	0.1949	-0.6538	1	-0.2636	-0.227	-0.0165	-0.0295	-0.0995	0.1765	-0.0263	-0.0563	-0.0273	-0.1286	0.0528
AoD.FC : p	0.0999	0.2935	6.6E-05	NA	0.1519	0.2194	0.9298	0.8750	0.5943	0.3422	0.8883	0.7637	0.8841	0.4904	0.7777
CAmax : r	-0.1743	-0.0805	0.2434	-0.2636	1	0.971	0.0058	-0.5402	-0.5616	0.1514	-0.0557	-0.0076	-0.1982	-0.2283	-0.0907
CAmax : p	0.3483	0.6667	0.1869	0.1519	NA	0.0E+00	0.9754	0.0017	0.0010	0.4161	0.7659	0.9675	0.2851	0.2168	0.6274
CAmin : r	-0.181	-0.0351	0.1408	-0.227	0.971	1	-0.2016	-0.6407	-0.6619	0.1306	-0.1083	-0.0484	-0.2574	-0.2987	-0.0312
CAmin : p	0.3298	0.8514	0.4501	0.2194	0.0E+00	NA	0.2767	0.0001	5.0E-05	0.4838	0.5621	0.7959	0.1621	0.1026	0.8677
CA.FC : r	0.0113	-0.1637	0.3659	-0.0165	0.0058	-0.2016	1	0.4354	0.416	0.0407	0.2001	0.1166	0.3078	0.2784	-0.1067
CA.FC : p	0.9517	0.3790	0.0430	0.9298	0.9754	0.2767	NA	0.0144	0.0199	0.8280	0.2805	0.5321	0.0921	0.1294	0.5677
TA.max : r	0.0762	-0.0683	0.2798	-0.0295	-0.5402	-0.6407	0.4354	1	0.9522	0.0795	0.4768	0.4326	0.1971	0.3394	0.0487
TA.max : p	0.6838	0.7152	0.1273	0.8750	0.0017	0.0001	0.0144	NA	2.2E-16	0.6706	0.0067	0.0151	0.2879	0.0618	0.7946
TA.min : r	0.0335	-0.0475	0.2811	-0.0995	-0.5616	-0.6619	0.416	0.9522	1	-0.1985	0.4239	0.3701	0.1916	0.4761	0.0902
TA.min : p	0.8579	0.7998	0.1256	0.5943	0.0010	5.0E-05	0.0199	2.2E-16	NA	0.2845	0.0175	0.0404	0.3019	0.0068	0.6294
TA.FC : r	0.0596	-0.0431	0.0245	0.1765	0.1514	0.1306	0.0407	0.0795	-0.1985	1	0.1114	0.1621	-0.0357	-0.499	-0.2576
TA.FC : p	0.7501	0.8181	0.8959	0.3422	0.4161	0.4838	0.8280	0.6706	0.2845	NA	0.5507	0.3837	0.8486	0.0043	0.1617
AA.max : r	0.0419	-0.2689	0.2776	-0.0263	-0.0557	-0.1083	0.2001	0.4768	0.4239	0.1114	1	0.973	0.5099	0.0254	0.4692
AA.max : p	0.8228	0.1435	0.1306	0.8883	0.7659	0.5621	0.2805	0.0067	0.0175	0.5507	NA	0.0E+00	0.0034	0.8920	0.0077
AA.min : r	0.0934	-0.2586	0.2751	-0.0563	-0.0076	-0.0484	0.1166	0.4326	0.3701	0.1621	0.973	1	0.398	-0.0301	0.5264
AA.min : p	0.6174	0.1602	0.1342	0.7637	0.9675	0.7959	0.5321	0.0151	0.0404	0.3837	0.0E+00	NA	0.0266	0.8722	0.0023
AA.FC : r	0.1303	-0.2072	0.0528	-0.0273	-0.1982	-0.2574	0.3078	0.1971	0.1916	-0.0357	0.5099	0.398	1	-0.0286	-0.0503
AA.FC : p	0.4847	0.2633	0.7781	0.8841	0.2851	0.1621	0.0921	0.2879	0.3019	0.8486	0.0034	0.0266	NA	0.8788	0.7880
BW : r	-0.2726	0.0473	0.137	-0.1286	-0.2283	-0.2987	0.2784	0.3394	0.4761	-0.499	0.0254	-0.0301	-0.0286	1	-0.0296
BW : p	0.1379	0.8004	0.4624	0.4904	0.2168	0.1026	0.1294	0.0618	0.0068	0.0043	0.8920	0.8722	0.8788	NA	0.8742
LVM : r	-0.0336	-0.0032	-0.0512	0.0528	-0.0907	-0.0312	-0.1067	0.0487	0.0902	-0.2576	0.4692	0.5264	-0.0503	-0.0296	1
LVM : p	0.8578	0.9862	0.7843	0.7777	0.6274	0.8677	0.5677	0.7946	0.6294	0.1617	0.0077	0.0023	0.7880	0.8742	NA

Supplementary Table 3c. Correlations of lifespan with rates of change during frailty.

Variable	Correlation	p-value	Variable	Correlation	p-value
Age at Max BW	0.034	0.0330	PWV	0.214	0.2471
BW	-0.186	0.3165	AsA Max	-0.191	0.3041
IVST	-0.197	0.2879	AsA Min	0.204	0.2715
PWT	-0.232	0.2098	AsA FC	-0.038	0.8413
LVM	0.019	0.9181	CA Max	-0.155	0.4064
LAD	0.075	0.6882	CA Min	-0.164	0.3788
EDV	0.110	0.5554	CA FC	-0.063	0.7379
ESV	0.015	0.9372	TA Max	0.306	0.0941
EF	0.300	0.1014	TA Min	0.332	0.0680
SV	0.277	0.1311	TA FC	-0.037	0.8428
HR	0.121	0.5158	AbA Max	0.289	0.1153
CO	0.335	0.0658	AbA Min	0.280	0.1275
CI	0.427	0.0167	AbA FC	0.150	0.4212

Supplementary Table 4a. Effects of Age on cardiovascular structure and function and body weight: main effect of Age and post-hoc p-values.

	Overall Average Effect p-value	Post-Hoc Comparisons (FDR adjusted)						
		6 vs. 18	6 vs. 30	18 vs. 24	18 vs. 27	18 vs. 30	24 vs. 27	24 vs. 30
Body Weight	<0.0001	<0.0001	0.1892	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cardiac Structure								
Left Ventricular Mass (LVM)	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	0.0421	<0.0001
Intraventricular Septum Thickness	<0.0001	<0.0001	<0.0001	0.0672	<0.0001	<0.0001	0.0015	0.0009
Posterior Wall Thickness	<0.0001	0.0001	0.0002	0.0195	0.0001	0.0508	0.0508	0.3957
End Diastolic Volume	<0.0001	0.0915	<0.0001	0.1110	0.0939	0.0003	0.6705	0.0033
Left Atrium Diameter at end systole (LAD)	<0.0001	0.0115	<0.0001	0.0004	<0.0001	0.0026	0.1315	0.1460
Cardiac Function								
End Systolic Volume	<0.0001	<0.0001	<0.0001	0.0009	0.0005	<0.0001	0.4220	0.0007
Ejection Fraction	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.4364	0.1010
Stroke Volume	<0.0001	<0.0001	<0.0001	0.0023	0.0016	0.1454	0.5690	0.8908
Heart Rate	0.0004	0.0001	0.4622	0.4622	0.4534	0.4622	0.6658	0.6658
Cardiac Output	<0.0001	0.0008	0.0008	0.0009	0.0008	0.0720	0.4205	0.7307
Aortic Structure and Function								
Pulse Wave Velocity	<0.0001	0.0003	0.0003	0.0001	<0.0001	0.0477	0.1915	0.8807
Maximum Abdominal Aorta Lumen Diameter	0.0002	0.0040	0.0086	0.2119	0.3792	0.2119	0.8174	0.0831
Minimum Abdominal Aorta Lumen Diameter	<0.0001	<0.0001	<0.0001	0.9893	0.9127	0.0421	0.9127	0.0421
Abdominal Aorta Lumen Fractional Changes	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	0.7213	0.5167
Maximum Carotid Artery Lumen Diameter	0.0120	0.5097	0.0043	0.2082	0.3563	0.0074	0.8538	0.0417
Minimum Carotid Artery Lumen Diameter	<0.0001	0.0163	<0.0001	0.0196	0.0196	0.0005	0.6958	0.0148
Carotid Artery Lumen Fractional Changes	<0.0001	<0.0001	<0.0001	0.0066	<0.0001	0.0066	0.0471	0.1140
Maximum Thoracic Aorta Lumen Diameter	0.3759	0.4203	0.1274	0.4203	0.4203	0.2221	0.8062	0.1274
Minimum Thoracic Aorta Lumen Diameter	<0.0001	0.0002	0.0002	0.7466	0.7188	0.0332	0.7466	0.0270
Thoracic Aorta Fractional Changes	<0.0001	<0.0001	<0.0001	0.1083	0.2467	0.0140	0.8062	0.0897
Maximum Abdominal Aorta Lumen Diameter	<0.0001	<0.0001	0.0177	0.3666	0.3499	0.6150	0.8206	0.8457
Minimum Abdominal Aorta Lumen Diameter	<0.0001	<0.0001	<0.0001	0.0234	0.0160	0.1071	0.5331	0.5331
Abdominal Aorta Fractional Changes	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Supplementary Table 4b. Effects of Age on cardiovascular structure and function of variables indexed to body weight: main effect of Age and post-hoc p-values.

	Overall Average Effect p-value	Post-Hoc Comparisons (FDR adjusted)						
		6 vs. 18	6 vs. 30	18 vs. 24	18 vs. 27	18 vs. 30	24 vs. 27	27 vs. 30
Cardiac Structure								
LVM/BW (mg/g)	<0.0001	0.0067	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
IVST/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
PWT/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EDV/BW (μL/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LAD/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cardiac Function								
ESV/BW (μL/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EF/BW (%/g)	<0.0001	<0.0001	<0.0001	0.4828	0.0082	0.4828	0.0011	0.3946
SV/BW (μL/g)	<0.0001	<0.0001	0.0004	0.8937	0.0018	0.0090	0.0020	0.0090
HR/BW (bpm/g)	<0.0001	<0.0001	0.0015	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
CI = CO/BW (mL/min/kg)	<0.0001	<0.0001	0.0059	0.7044	0.0239	0.0314	0.0133	0.0239
Aortic Structure and Function								
PWV/BW (cm/sec/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AsA Max/BW (μm/g)	<0.0001	<0.0001	<0.0001	0.0021	<0.0001	<0.0001	<0.0001	<0.0001
AsA Min/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AsA FC/BW (%/g)	<0.0001	<0.0001	<0.0001	0.0028	0.9145	0.9657	0.0233	0.1714
CA Max/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
CA Min/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
CA FC/BW (%/g)	<0.0001	<0.0001	<0.0001	0.7741	0.1006	0.2324	0.1303	0.2448
TA Max/BW (μm/g)	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
TA Min/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
TA FC/BW (%/g)	<0.0001	<0.0001	<0.0001	0.2879	<0.0001	0.2380	0.0001	0.4000
AbA Max/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AbA Min/BW (μm/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AbA FC/BW (%/g)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Fig.S1

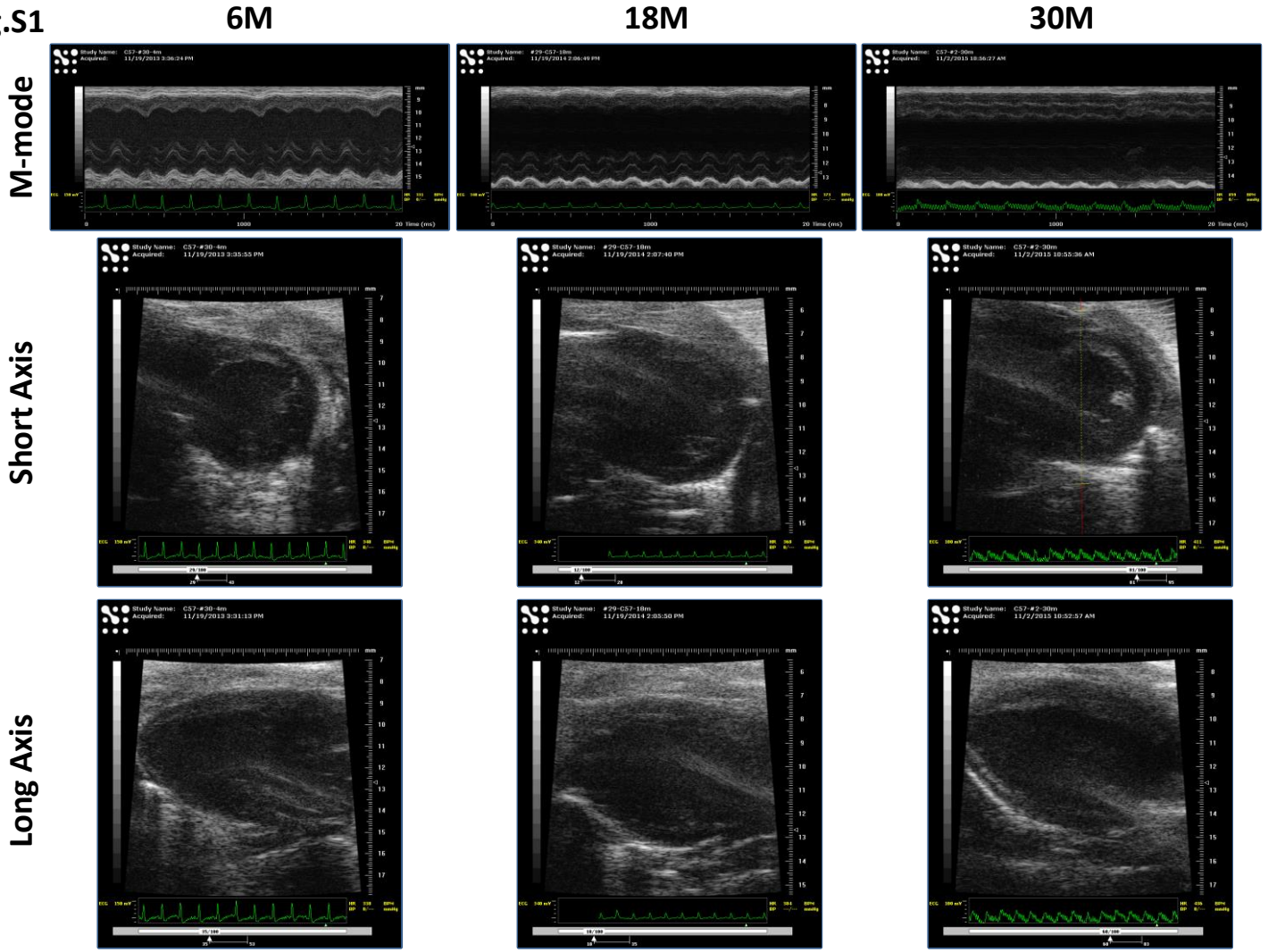

Figure S1: Representative Cardiac Echocardiographic Images. M-mode (top row), parasternal short-axis B-mode (middle row), and parasternal long-axis B-mode (bottom row) images from the same mouse at 6, 18, and 30 months of age. **At 6 months:** Normal wall thickness (IVSTT ~0.65mm, PWT ~0.72mm), adequate wall excursion, circular LV cavity, proportionate chamber size. **At 18 months:** Increased wall thickness (IVSTT ~0.76mm, PWT ~0.82mm) indicating concentric hypertrophy, maintained chamber geometry, preserved wall excursion. **At 30 months:** Further increased wall thickness (IVSTT ~0.96mm, PWT ~0.90mm) plus chamber dilatation indicating eccentric hypertrophy, reduced wall excursion, elevated ESV, and an enlarged left atrium. Progression demonstrates compensation (concentric hypertrophy at 18mo) to decompensation (eccentric hypertrophy at 30mo). Scale bars: 1mm. ECG traces show simultaneous Lead II recording.

Fig.S2

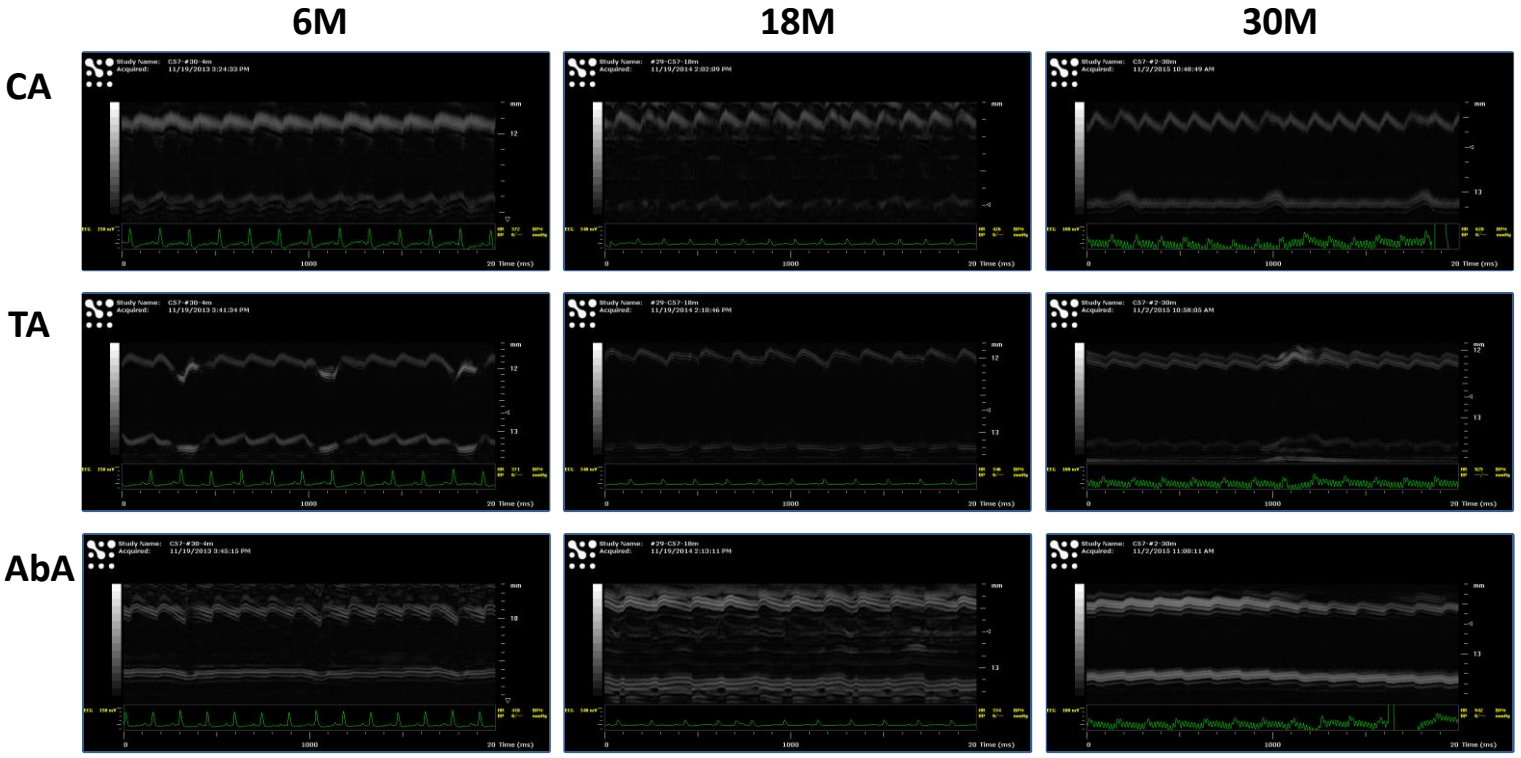

Figure S2: Representative Arterial Ultrasound Images. M-mode vascular ultrasound of carotid artery (CA, top row), thoracic aorta (TA, middle row), and abdominal aorta (AbA, bottom row) from the same mouse at 6, 18, and 30 months. Progressive changes across all segments: (1) luminal dilatation --- distance between arterial wall echoes increases, (2) reduced pulsatile amplitude --- distance change between systole and diastole decreases relative to lumen size, (3) wall thickening --- arterial wall echoes become thicker and more echogenic. Representative measurements: **CA**: Dmin 0.35→0.38→0.44mm; Dmax 0.45→0.47→0.52mm; FC 25.7→20.3→16.5%; **TA**: Dmin 0.98→1.04→1.12mm; Dmax 1.17→1.19→1.52mm; FC 19.8→14.1→11.7%; **AbA**: Dmin 1.37→1.53→1.60mm; Dmax 1.60→1.72→1.77mm; FC 16.8→12.3→10.7%. Declining FC despite dilatation confirms arterial wall stiffening. Scale bars: 0.5mm. Time scale: 500ms per division. ECG traces show simultaneous Lead II.