Supplementary Table 1. Composition of the diets

	Standard diet	High Fat diet
Energy content (kcal/kg)	2508	3701
Protein (g/kg)	200	170
Carbohydrate (g/kg)	720	670
Total fat (g/kg)	80	160
	Saturated fatty acids	
Capric acid (g/kg)	0.0	4.7
Lauric acid (g/kg)	0.0	33.4
Myristic acid (g/kg)	0.1	15.7
Palmitic acid (g/kg)	5.2	28.3
Stearic acid (g/kg)	0.9	19.2
Arachidic acid (g/kg)	0.1	0.5
	Unsaturated fatty acids	
Palmitoleic acid (g/kg)	0.2	2.63
Oleic acid (g/kg)	5.1	29.0
Linoleic acid (g/kg)	15.1	11.2
Linolenic acid (g/kg)	3.2	2.5
Eicosaenoic acid (g/kg)	0.1	0.9
Arachidonic acid (g/kg)	0	0.4

Supplementary Table 2. List of Antibodies

Primary Antibody	Species	Dilution	Manufacturer	Corresponding Secondary Antibody & Dilution
Akt	Rabbit	1:1000	Cell Signaling Technology	HRP anti-rabbit, 1:2500
Activin A receptor type 1 B (Alk4)	Rabbit	1:1000	Abcam	HRP anti-rabbit, 1:2500
Calreticulin	Rabbit	1:1000	Stressgen Bioreagents	HRP anti-rabbit, 1:2500
GAPDH	Rabbit	1:10000	Abcam	HRP anti-rabbit, 1:2500
Glut 4 (C-20)	Goat	1:1000	Santa Cruz Technology	HRP anti-goat, 1:2500
p-Akt-Ser473	Rabbit	1:1000	Cell Signaling Technology	HRP anti-rabbit, 1:2500
p-Phospholamban	Mouse	1:200	Santa Cruz Technology	HRP anti-mouse, 1:2500
p-Smad-Ser465/467	Rabbit	1:500	Cell Signaling Technology	HRP anti-rabbit, 1:2500
Serca2a	Mouse	1:1000	Abcam	HRP anti-mouse, 1:2500
SMAD2/3		1:1000	B&D Bioscience	HRP anti-mouse, 1:2500
α-Tubulin	Mouse	1:1000	Calbiochem	HRP anti-mouse, 1:2500

Supplementary Table 3. Immunoreactivity in conditioned medium collected from epicardial and subcutaneous adipose tissue explants from guinea pigs

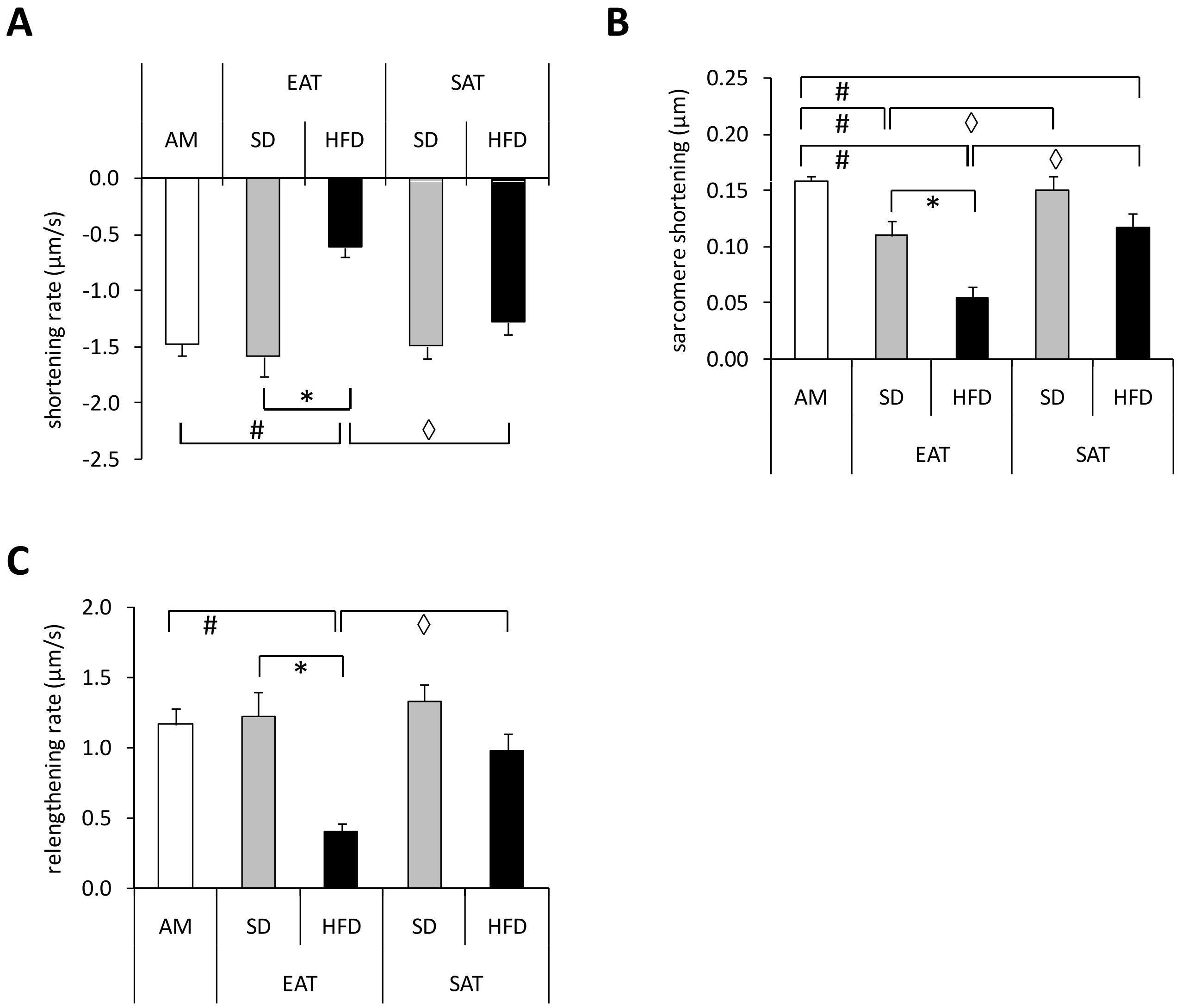
Swiss Prot	Name on array	Symbol	EAT (n=7)	SAT (n=7)	
Q15848	Acrp30	ADIPOQ	182 ± 42	519 ± 166	*
P08476	Activin A	INHBA	1718 ± 468	536 ± 212	*
O00253	AgRP	AGRP	1434 ± 521	1076 ± 141	
Q13740	ALCAM	ALCAM	8149 ± 6594	1286 ± 621	
P15514	Amphiregulin	AREG	1998 ± 568	1629 ± 557	
P03950	Angiogenin	ANG	208 ± 68	193 ± 64	
O15123	Angiopoietin-2	ANGPT2	2576 ± 754	1805 ± 342	
P30530	Axl	AXL	712 ± 220	258 ± 65	
P33681	B7-1 (CD80)	CD80	496 ± 119	438 ± 83	
P23560	BDNF	BDNF	820 ± 222	829 ± 144	
P09038	bFGF	FGF2	1328 ± 617	1359 ± 498	
O43927	BLC	CXCL13	388 ± 85	268 ± 74	
P12644	BMP-4	BMP4	719 ± 253	919 ± 227	
P22003	BMP-5	BMP5	1090 ± 342	958 ± 300	
P22004	BMP-6	BMP6	1087 ± 305	1310 ± 297	
P18075	BMP-7	BMP7	358 ± 73	245 ± 80	
P01138	b-NGF	NGF	4372 ± 1794	2995 ± 723	
P35070	BTC	BTC	1037 ± 330	649 ± 127	
Q16619	Cardiotrophin-1	CTF1	941 ± 289	400 ± 88	*
Q9NRJ3	CCL-28	CCL28	307 ± 128	290 ± 72	
P08571	CD14	CD14	371 ± 80	270 ± 58	
P55773	CK b 8-1	CCL23	1059 ± 401	1031 ± 246	
P26441	CNTF	CNTF	459 ± 79	513 ± 61	
Q9Y4X3	CTACK	CCL27	626 ± 110	767 ± 314	
Q9H2A7	CXCL-16	CXCL16	1252 ± 268	943 ± 222	
O75509	DR6 (TNFRSF21)	TNFRSF21	559 ± 224	440 ± 138	
Q06418	Dtk	TYRO3	637 ± 157	574 ± 179	
P01133	EGF	EGF	730 ± 162	876 ± 235	
P00533	EGF-R	EGFR	347 ± 113	445 ± 176	
P42830	ENA-78	CXCL5	966 ± 445	969 ± 313	
P17813	Endoglin	ENG	515 ± 101	326 ± 77	*
P51671	Eotaxin	CCL11	570 ± 144	532 ± 138	
O00175	Eotaxin-2	CCL24	875 ± 264	1046 ± 295	
Q9Y258	Eotaxin-3	CCL26	670 ± 211	551 ± 146	
P21860	ErbB3	ERBB3	834 ± 170	500 ± 88	
P16581	E-Selectin	SELE	440 ± 100	308 ± 85	*
P48023	Fas Ligand	FASLG	843 ± 146	621 ± 143	
Q549F0	Fas/TNFRSF6	FAF1	2641 ± 1082	2142 ± 856	
P08620	FGF-4	FGF4	3175 ± 1002	3931 ± 1427	
P10767	FGF-6	FGF6	283 ± 46	299 ± 95	
P21781	FGF-7	FGF7	273 ± 48	282 ± 65	
P31371	FGF-9	FGF9	846 ± 296	736 ± 151	
P49771	Fit-3 Ligand	FLT3LG	601 ± 313	555 ± 242	
P78423	Fractalkine	CX3CL1	302 ± 68	295 ± 63	

P80162	GCP-2	CXCL6	339 ± 60	415 ± 79	
P09919	GCSF	CSF3	513 ± 208	474 ± 246	
P39905	GDNF	GDNF	3799 ± 2962	2904 ± 1646	
Q9Y5U5	GITR	TNFRSF18	672 ± 185	2198 ± 1605	
Q9UNG2	GITR-Ligand	TNFSF18	596 ± 241	692 ± 466	
P04141	GM-CSF	CSF2	196 ± 72	206 ± 44	
P09341	GRO	CXCL1	699 ± 122	549 ± 94	
P09341	GROα	CXCL1	217 ± 51	286 ± 107	
O15467	HCC-4	CCL16	693 ± 206	765 ± 423	
P14210	HGF	HGF	254 ± 64	215 ± 63	
P22362	I-309	CCL1	292 ± 97	456 ± 110	
P05362	ICAM-1	ICAM1	521 ± 134	493 ± 108	
P13598	ICAM-2	ICAM2	15372 ± 5139	13015 ± 3916	
P32942	ICAM-3	ICAM3	703 ± 474	281 ± 136	
P01343	IGF-1	IGF1	443 ± 145	282 ± 49	
P08833	IGFBP-1	IGFBP1	531 ± 147	590 ± 136	
P18065	IGFBP-2	IGFBP2	348 ± 78	403 ± 85	
P17936	IGFBP-3	IGFBP3	794 ± 240	952 ± 579	
P22692	IGFBP-4	IGFBP4	582 ± 287	342 ± 145	
P24592	IGFBP-6	IGFBP6	1070 ± 314	951 ± 246	
P08069	IGF-I SR	IGF1R	290 ± 117	326 ± 93	
P01344	IGF-II	IGF2	5358 ± 3475	537 ± 156	
P27930	IL-1 R II	IL1R2	4512 ± 3582	2587 ± 1867	
Q01638	IL-1 RA/ST2	IL1RL1	683 ± 154	711 ± 270	
P14778	IL-1 RI	IL1R1	362 ± 114	337 ± 64	
P22301	IL-10	IL10	489 ± 57	404 ± 138	
Q08334	IL-10 Rβ	IL10RB	352 ± 56	234 ± 115	
P20809	IL-11	IL11	280 ± 151	443 ± 243	
P29459	IL-12 p40	IL12A	893 ± 344	798 ± 211	
P29460	IL-12 p70	IL12B	695 ± 213	708 ± 431	
P35225	IL-13	IL13	326 ± 105	204 ± 78	
Q14627	IL-13 Rα2	IL13RA2	847 ± 340	402 ± 132	
P40933	IL-15	IL15	234 ± 61	223 ± 57	
Q14005	IL-16	IL16	426 ± 78	382 ± 97	
Q16552	IL-17	IL17A	422 ± 234	551 ± 354	
Q13478	IL-18 BPα	IL18R1	224 ± 47	157 ± 37	
O95256	IL-18 Rβ	IL18RAP	802 ± 203	486 ± 90	
P01583	IL-1a	IL1A	670 ± 183	970 ± 215	
P01584	IL-1b	IL1B	192 ± 64	280 ± 60	
P18510	IL-1ra	IL1RN	191 ± 41	325 ± 75	
P60568	IL-2	IL2	114 ± 34	133 ± 20	
P31785	IL-2 Rγ	IL2RG	606 ± 102	429 ± 123	*
P01589	IL-2 Rα	IL2RA	493 ± 109	263 ± 38	
P14784	IL-2 Rβ	IL2RB	715 ± 300	838 ± 482	
Q9HBE5	IL-21R	IL21R	614 ± 161	311 ± 54	
P08700	IL-3	IL3	178 ± 82	281 ± 58	
P05112	IL-4	IL4	264 ± 132	380 ± 186	
P05113	IL-5	IL5	201 ± 43	128 ± 38	

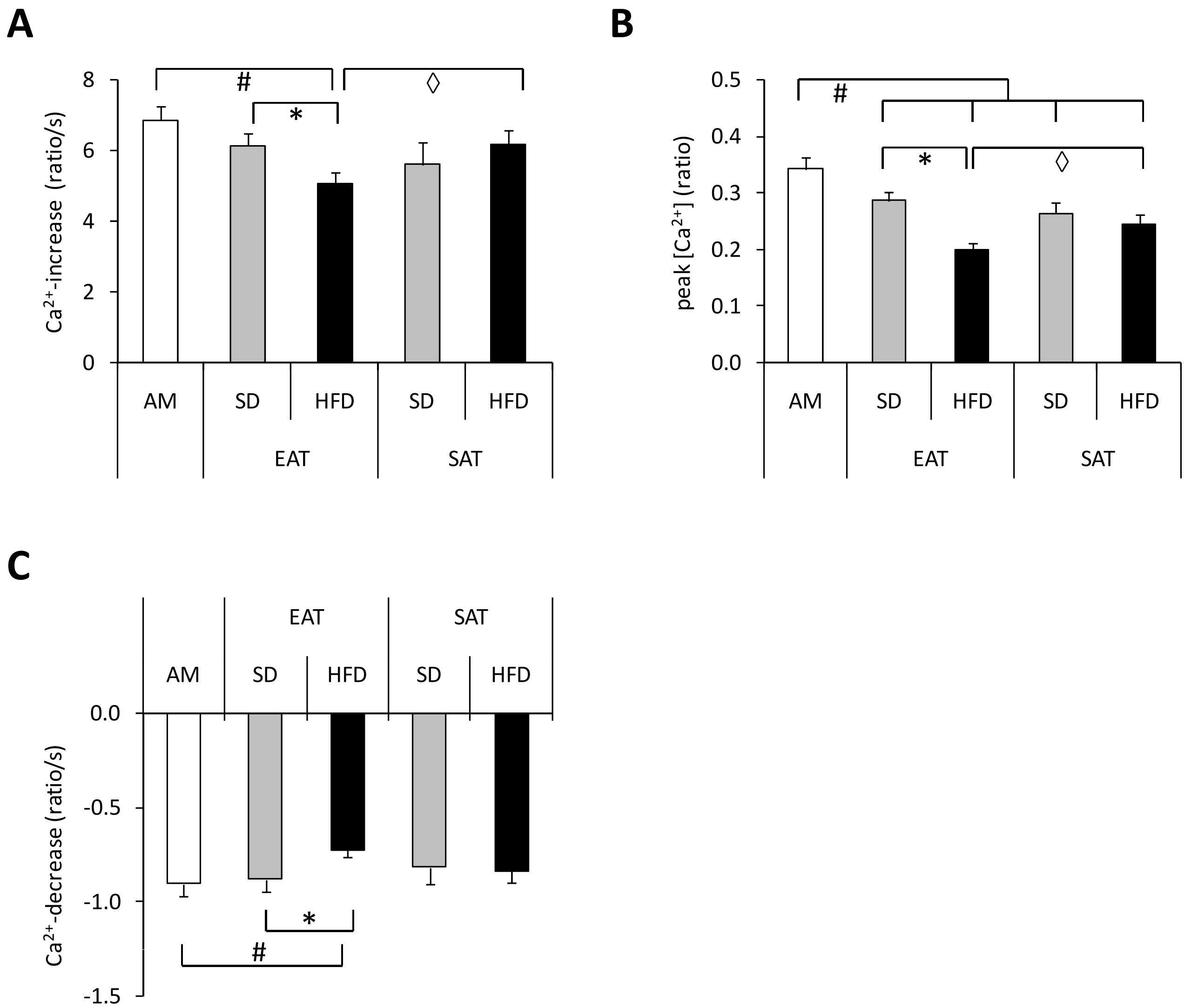
Q01344	IL-5 Rα	IL5RA	514 ± 133	137 ± 52	*
P05231	IL-6	IL6	519 ± 192	264 ± 96	
P08887	IL-6R	IL6R	1185 ± 311	1324 ± 214	
P13232	IL-7	IL7	150 ± 19	214 ± 81	
P10145	IL-8	IL8	420 ± 131	406 ± 209	
P15248	IL-9	IL9	831 ± 202	742 ± 188	
P01579	INFγ	IFNG	168 ± 28	270 ± 47	
P02778	IP-10	CXCL10	990 ± 396	451 ± 123	
O14625	I-TAC	CXCL11	507 ± 138	593 ± 133	
P17676	LAP	CEBPB	693 ± 229	297 ± 98	
P41159	Leptin	LEP	491 ± 135	501 ± 89	
P48357	Leptin R	LEPR	838 ± 196	713 ± 167	
P15018	LIF	LIF	646 ± 117	574 ± 159	
O43557	LIGHT	TNFSF14	682 ± 194	710 ± 183	
P14151	L-Selectin	SELL	511 ± 115	382 ± 139	
P47992	Lymphotactin	XCL1	1019 ± 287	1406 ± 476	
P13500	MCP-1	CCL2	304 ± 109	319 ± 64	
P80075	MCP-2	CCL8	454 ± 170	354 ± 73	
P80098	MCP-3	CCL7	218 ± 109	290 ± 74	
Q99616	MCP-4	CCL13	562 ± 364	185 ± 44	
P09603	M-CSF	CSF1	498 ± 161	807 ± 191	
P07333	M-CSF R	CSF1R	376 ± 113	165 ± 52	
O00626	MDC	CCL22	629 ± 105	890 ± 224	
P14174	MIF	MIF	2203 ± 491	2891 ± 1565	
Q07325	MIG	CXCL9	379 ± 148	347 ± 112	
P10147	MIP-1a	CCL3	1017 ± 359	921 ± 115	
P13236	MIP-1b	CCL4	1172 ± 283	1320 ± 539	
Q16663	MIP-1d	CCL15	852 ± 468	738 ± 199	
P78556	MIP-3a	CCL20	237 ± 85	281 ± 90	
Q99731	MIP-3b	CCL19	229 ± 41	330 ± 62	
P03956	MMP-1	MMP1	1355 ± 171	1194 ± 276	
P45452	MMP-13	MMP13	405 ± 96	207 ± 76	
P08254	MMP-3	MMP3	478 ± 116	314 ± 73	
P14780	MMP-9	MMP9	406 ± 179	228 ± 63	
P55773	MPIF-1	CCL23	262 ± 70	170 ± 35	
P26927	MSPa	MST1	559 ± 140	431 ± 131	
P02775	NAP-2	PPBP	3162 ± 1314	4162 ± 1257	
P08138	NGF R	NGFR	272 ± 72	240 ± 20	
P20783	NT-3	NTF3	594 ± 239	721 ± 182	
P34130	NT-4	NTF4	617 ± 122	485 ± 116	
P13725	Oncostatin	OSM	575 ± 120	537 ± 91	
O00300	Osteoprotegerin	TNFRSF11B	552 ± 192	496 ± 119	
P55774	PARC	CCL18	858 ± 362	1571 ± 322	
P04085	PDGF AA	PDGFA	897 ± 142	453 ± 149	*
P16234	PDGF Rα	PDGFRA	395 ± 120	168 ± 44	*
P09619	PDGF Rβ	PDGFRB	386 ± 86	563 ± 182	
na	PDGF-AB		661 ± 98	489 ± 77	
P01127	PDGF-BB	PDGFB	479 ± 119	505 ± 118	

P16284	PECAM-1	PECAM1	278 ± 36	168 ± 48	*
Q07326	PIGF	PIGF	982 ± 290	1058 ± 286	
P01236	Prolactin	PRL	554 ± 151	302 ± 85	
P13501	RANTES	CCL5	2158 ± 472	2727 ± 885	
P21583	SCF	KITLG	563 ± 117	391 ± 93	
P10721	SCF R	KIT	679 ± 137	554 ± 87	
P48061	SDF-1	CXCL12	470 ± 316	474 ± 207	
P48061	SDF-1β	CXCL12	389 ± 105	158 ± 45	
P40189	sgp 130	IL6ST	1782 ± 526	1324 ± 370	
O15389	Siglec-5	SIGLEC5	406 ± 106	196 ± 54	
P19438	sTNFR I	TNFRSF1A	2271 ± 1064	2308 ± 1287	
P20333	sTNFR II	TNFRSF1B	1194 ± 430	792 ± 288	
Q92583	TARC	CCL17	359 ± 78	323 ± 36	
O15444	TECK	CCL25	746 ± 203	498 ± 149	
P01135	TGFα	TGFA	728 ± 224	615 ± 222	
P01137	TGFβ1	TGFB1	916 ± 731	594 ± 397	
P61812	TGFβ2	TGFB2	1264 ± 328	1461 ± 364	
P10600	TGFβ3	TGFB3	398 ± 98	274 ± 31	
P40225	Thrombopoeitin	THPO	729 ± 151	498 ± 85	
P35590	Tie-1	TIE1	516 ± 122	488 ± 119	
Q02763	Tie-2	TEK	734 ± 187	381 ± 90	
P01033	TIMP-1	TIMP1	882 ± 408	958 ± 553	
P16035	TIMP-2	TIMP2	47654 ± 16491	35681 ± 92975	
Q99727	TIMP-4	TIMP4	3368 ± 1237	5444 ± 3623	
P01375	TNFα	TNF	248 ± 69	251 ± 66	
P01374	TNFβ	LTA	814 ± 285	770 ± 179	
O14798	TRAIL R3	TNFRSF10C	361 ± 77	299 ± 87	
Q9UBN6	TRAIL R4	TNFRSF10D	628 ± 121	526 ± 86	
Q03405	uPAR	PLAUR	450 ± 148	416 ± 102	
P33151	VE-Cadherin	CDH5	437 ± 104	348 ± 111	
P15692	VEGF	VEGFA	727 ± 208	1092 ± 723	
P35968	VEGF R2	KDR	536 ± 96	230 ± 54	*
P35916	VEGF R3	FLT4	4452 ± 1326	3822 ± 1781	
O43915	VEGF-D	FIGF	2536 ± 1190	2702 ± 1816	

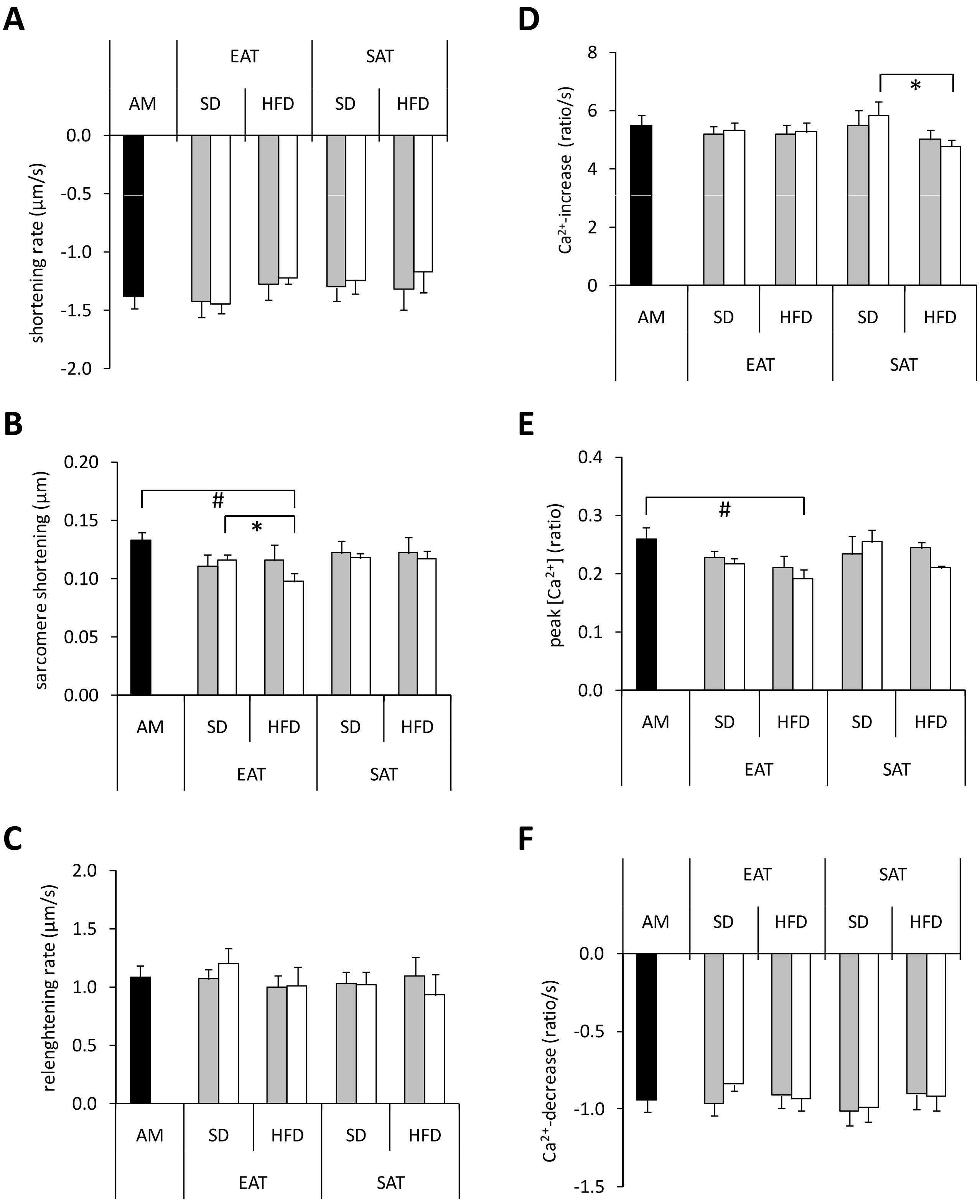
*, $P<0.05$ epicardial adipose tissue (EAT) versus subcutaneous adipose tissue (SAT)



Supplementary Figure 1. Effect of conditioned medium from epicardial and subcutaneous adipose tissue on sarcomere shortening in cardiomyocytes. Primary adult rat cardiomyocytes were incubated with control AM or CM (diluted 1:2) from EAT and SAT from SD- and HFD-fed guinea pigs for 30 min before analysis of contractile function. **A-C**. Effect of exposure of cardiomyocytes to CM on departure velocity of contraction (**A**), peak sarcomere shortening (**B**), and return velocity of contraction (**C**). Open bars, AM; gray bars, CM from SD-fed animals; black bars, CM from HFD-fed animals. Data are expressed as mean ± S.E.M. of at least 8 independent experiments. Differences between the experimental groups were calculated by one-way ANOVA and unpaired students t-tests. #, *P*<0.05 versus AM; *, *P*<0.05, HFD versus SD; ◊, *P*<0.05 EAT versus SAT.



Supplementary Figure 2. Effect of conditioned medium from epicardial and subcutaneous adipose tissue on cytosolic $[Ca^{2+}]$ in cardiomyocytes. Primary adult rat cardiomyocytes were incubated with control AM or CM (diluted 1:2) from EAT and SAT from SD- and HFD-fed guinea pigs for 30 min before analysis of cytosolic $[Ca^{2+}]$. **A-C.** Effect of exposure of cardiomyocytes to CM on $[Ca^{2+}]$ increase (**A**), peak $[Ca^{2+}]$ (**B**), and $[Ca^{2+}]$ decrease (**C**). Open bars, AM; gray bars, CM from SD-fed animals; black bars, CM from HFD-fed animals. Data are expressed as mean ± S.E.M. of at least 8 independent experiments. Differences between the experimental groups were calculated by one-way ANOVA and unpaired students t-tests. #, $P<0.05$ versus AM; *, $P<0.05$, HFD versus SD; ◊, $P<0.05$ EAT versus SAT.



Supplementary Figure 3. Contractile function in cardiomyocytes 2 hours after removal of conditioned media. Primary adult rat cardiomyocytes were incubated with control AM or CM from EAT and SAT from SD- and HFD-fed guinea pigs for 30 min. Then, the CM were replaced by control AM. Following a 2 h incubation, contractile function and cytosolic [Ca^{2+}] was analyzed. **A-C.** Reversibility effect of exposure of cardiomyocytes to CM on departure velocity of contraction (**A**), peak sarcomere shortening (**B**), and return velocity of contraction (**C**). **D-F.** Reversibility effect of exposure of cardiomyocytes to CM on [Ca^{2+}] increase (**D**), peak [Ca^{2+}] (**E**), and [Ca^{2+}] decrease (**F**). Black bars, AM; gray bars, cells exposed to CM diluted 1:4; open bars, cells exposed to CM diluted 1:4. Data are mean ± S.E.M. from at least 8 independent experiments. Groups were compared by one-way ANOVA and unpaired students t-test. #, $P<0.05$ versus AM; *, $P<0.05$, HFD versus SD.