SUPPLEMENTAL INFORMATION

Endothelial-derived cardiovascular disease-related microRNAs elevated with prolonged sitting pattern among postmenopausal women

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Supplementary Tables

Table S1. Identification of Interrupted Sitters (IS) and Super Sitters (SS) based on quartiles of mean sitting bout duration and moderate-to-vigorous physical activity (MVPA)

MVPA (min/day)	Mean sitting bout duration (min/day)			
	<29.8	29.8-36.4	36.5-43.7	>43.7
<7.0	18*	19	37	53†
7.0-15.5	20	35	39	35
15.6-29.4	47	33	27	23
>29.4	43	42	26	18

*IS, interrupted sitters; †SS, super sitters

Table S2. List of 84 miRs in Human Cardiovascular disease miScript miRNA PCR array

let-7a-5p	let-7b-5p	let-7c	let-7d-5p	let-7e-5p	let-7f-5p
miR-1	miR-100-5p	miR-103a-3p	miR-107	miR-10b-5p	miR-122-5p
miR-124-3p	miR-125a-5p	miR-125b-5p	miR-126-3p	miR-130a-3p	miR-133a
miR-133b	miR-140-5p	miR-142-3p	miR-143-3p	miR-144-3p	miR-145-5p
miR-146a-5p	miR-149-5p	miR-150-5p	miR-155-5p	miR-15b-5p	miR-16-5p
miR-17-5p	miR-181a-5p	miR-181b-5p	miR-182-5p	miR-183-5p	miR-185-5p
miR-18b-5p	miR-195-5p	miR-199a-5p	miR-206	miR-208a	miR-208b
miR-21-5p	miR-210	miR-214-3p	miR-22-3p	miR-221-3p	miR-222-3p
miR-223-3p	miR-224-5p	miR-23a-3p	miR-23b-3p	miR-24-3p	miR-25-3p
miR-26a-5p	miR-26b-5p	miR-27a-3p	miR-27b-3p	miR-29a-3p	miR-29b-3p
miR-29c-3p	miR-302a-3p	miR-302b-3p	miR-30a-5p	miR-30c-5p	miR-30d-5p
miR-30e-5p	miR-31-5p	miR-320a	miR-328	miR-342-3p	miR-365a-3p
miR-378a-3p	miR-423-3p	miR-424-5p	miR-451a	miR-486-5p	miR-494
miR-499a-5p	miR-7-5p	miR-92a-3p	miR-93-5p	miR-98-5p	miR-99a-5p

Table S3. MiRs from the CVD array analysis (N=74) not included in the Top 10 ranking of miRs differentially expressed between IS and SS (Table 2).

	Mean Difference in Relative Expr	Relative Expr, SD	Standardized ATE Rank	standardized ATE	SD Rank
miR-221-3p	9.04	5.46	11	4.16	56
miR-125b-5p	2.06	1.26	12	4.11	23
miR-224-5p	1.97	1.00	13	4.11	19
miR-22-3p	4.84	2.25	14	4.09	41
miR-93-5p	5.93	2.11	15	4.01	37
miR-7-5p	3.85	2.02	16	3.99	35
miR-214-3p	5.54	2.30	17	3.99	43
miR-149-5p	2.07	1.27	18	3.93	24
miR-100-5p	1.26	0.71	19	3.93	12
miR-210	6.21	3.07	20	3.89	47
miR-10b-5p	3.77	2.16	21	3.86	38
miR-1	0.44	0.35	22	3.85	7
miR-107	1.30	0.72	23	3.85	13
miR-181a-5p	1.88	0.89	24	3.79	16
miR-29c-3p	3.35	1.64	25	3.71	29
miR-133a	1.49	1.17	26	3.64	21
miR-18b-5p	2.22	0.97	27	3.62	18
miR-499a-5p	0.11	0.10	28	3.58	1
miR-423-3p	13.14	6.69	29	3.57	62
miR-26b-5p	4.85	2.63	30	3.57	44
miR-124-3p	8.71	4.30	31	3.50	50
miR-16-5p	33.14	14.37	32	3.45	77
miR-208a	1.13	0.50	33	3.45	9
let-7c	18.01	6.18	34	3.42	60
miR-30a-5p	4.17	1.51	35	3.34	26
miR-30d-5p	4.31	1.94	36	3.32	31
miR-26a-5p	40.54	18.24	37	3.30	80
miR-144-3p	3.03	1.57	38	3.29	28
miR-31-5p	7.85	3.21	39	3.21	48
miR-99a-5p	0.68	0.44	40	3.19	8
miR-25-3p	28.93	9.92	41	3.13	69
miR-451a	9.37	7.30	42	2.93	65
miR-30e-5p	2.77	1.17	43	2.91	22
miR-92a-3p	94.44	25.34	44	2.86	83
miR-302a-3p	9.38	4.63	45	2.84	52
miR-328	21.42	10.53	46	2.75	71
miR-30c-5p	28.86	10.08	47	2.68	70
miR-27a-3p	25.35	9.26	48	2.64	67

miR-183-5p	4.60	3.35	49	2.61	49
miR-126-3p	22.88	9.54	50	2.58	68
miR-98-5p	0.65	0.33	51	2.57	6
miR-208b	1.73	0.76	52	2.57	14
miR-365a-3p	0.30	0.18	53	2.55	3
miR-185-5p	3.37	1.97	54	2.47	33
miR-206	10.94	6.37	55	2.43	61
miR-24-3p	2.15	2.06	56	2.42	36
miR-122-5p	0.29	0.14	57	2.40	2
miR-23b-3p	0.92	0.71	58	2.33	11
miR-494	16.53	6.75	59	2.31	63
let-7b-5p	25.47	11.95	60	2.31	73
miR-15b-5p	2.85	2.66	61	2.31	45
let-7f-5p	1.18	0.95	62	2.30	17
miR-21-5p	8.04	7.30	63	2.28	66
miR-130-3p	32.62	12.03	64	2.26	74
miR-27b-3p	4.70	2.16	65	2.21	39
miR-195-5p	31.29	11.05	66	2.13	72
miR-320a	74.51	33.29	67	2.12	84
miR-223-3p	23.16	25.18	68	2.11	82
miR-29b-3p	5.38	2.69	69	2.10	46
miR-29a-3p	11.51	4.82	70	1.98	53
miR-17-5p	15.70	5.87	71	1.98	59
miR-182-5p	22.11	12.76	72	1.97	76
miR-302b-3p	4.62	1.75	73	1.88	30
let-7a-5p	0.84	1.12	74	1.84	20
miR-486-5p	68.52	18.75	75	1.84	81
miR-222-3p	16.40	7.24	76	1.68	64
miR-378a-3p	13.36	5.34	77	1.66	55
miR-150-5p	14.19	5.50	78	1.61	57
miR-342-3p	58.65	17.14	79	1.60	79
miR-143-3p	5.88	1.98	80	1.40	34
miR-125a-5p	16.62	5.85	81	1.37	58
miR-23a-3p	3.66	4.48	82	1.35	51
miR-145-5p	44.65	12.27	83	1.28	75
miR-181b-5p	37.27	15.11	84	0.49	78

List was sorted by standardized ATE and SD of miR levels from IS and SS groups. ATE, average treatment effect: weighted mean difference of miR levels between SS and IS; Standardized ATE, ATE divided by bootstrapped SD of ATE. SD, standard deviation; Expr: expression.

Table S4. Identification of Interrupted Sitter (IS+) and Super Sitter (SS+) groups with augmented representation of Hispanic ethnicity.

MVPA (min/day)	Mean Sitting bout duration (min/day)			
	<29.8	29.8-36.4	36.5-43.7	>43.7
<7.0	18*	19	37	53†
7.0-15.5	13+7*	35	39	28+7†
15.6-29.4	47	33	27	23
>29.4	43	42	26	18

All women who self-identified as Hispanic and who were in the 2nd-lowest quartile of MVPA and 1st and 4th quartiles of mean sitting bout duration (N=7 each) were included to create the amended groups IS+ (n=25) and SS+ (n=60), respectively, with augmented representation of Hispanic ethnicity in the groups.

*IS+, Interrupted Sitters with augmented diversity in Hispanic ethnicity.

†SS+, Super Sitters with augmented diversity in Hispanic ethnicity.

Table S5. Age and Activity-Related Characteristics of IS+ and SS+ Groups

	Total (n=85)	IS+ (n=25)	SS+ (n=60)	*P*-value
Age, mean (sd)	65.7 (6.4)	63.7 (4.7)	66.5 (6.8)	0.06
Activity-related measures, mean (sd)				
Total sitting time; min/day	594.0 (122.7)	440.3(69.9)	658.1 (72.5)	<0.01*
Mean sitting bout duration; min/day	52.0 (26.0)	25.9 (2.8)	62.8 (23.4)	<0.01*
Moderate-to-vigorous activity; min/day	4.8 (3.4)	6.5 (3.8)	4.1 (3.0)	<0.01*
Walking time; min/day	34.9 (29.1)	56.3 (36.9)	26.0 (19.3)	<0.01*

P-values computed using t-tests

*$P<0.05$

Table S6. Correlation analysis among 3 targeted microRNAs

		Let-7d-5p	miR-133b	miR-142-3p
Let-7d-5p	Pearson Correlation	1	0.16	0.426*
	P-value		0.145	0.01
miR-133b	Pearson Correlation	0.16	1	0.16
	P-value	0.145		0.143
miR-142-3p	Pearson Correlation	0.426*	0.16	1
	P-value	0.01	0.143	
*Significant correlation (2-tailed)				

Table S7. Functional pathway analysis of literature-based miR target genes (continuation of Table 4)

KEGG Pathway**	Proteoglycans in cancer	Endocytosis	Protein processing in endoplasmic reticulum	Chronic myeloid leukemia	Hepatitis B	Bacterial invasion of epithelial cells	Thyroid hormone signaling pathway
P-value	2.30E-04	3.42E-03	6.42E-03	7.74E-03	1.86E-02	2.16E-02	2.24E-02
MicroRNAs associated with prolonged sitting	let-7d-5p miR-142-3p	let-7d-5p	let-7d-5p miR-142-3p	miR-142-3p let-7d-5p	let-7d-5p	miR-142-3p	let-7d-5p
Literature-supported target genes (direct target)	*ACTB* *ACTG1* *ARHGEF1* *BRAF* *CASP3* *CCND1* *CDKN1A* *ESR1* *FZD1* *FZD3* *HIF1A* *IGF1R* *ITGAV* *MTOR* *MYC* *NRAS* *PLCG1* *PRKACA* *PTPN6* *RAC1* *RPS6KB2* *SMAD2* *TLR4* *TP53*	*CCR5* *CLTA* *CXCR4* *HSPA8* *IGF1R* *PARD6B* *SMAD2* *SMAD3* *SMAD7* *TGFBR1* *TGFBR2*	*ATF6B* *CAPN1* *ERO1L* *HSPA8* *HSP90AA1* *MAN1A1* *MAPK8* *MOGS* *RPN2* *STT3B*	*AKT2* *BRAF* *CCND1* *CDK4* *CDKN1A* *CRK* *E2F2* *E2F3* *MAPK1* *MYC* *NRAS* *PIK3CD* *PIK3R2* *PIK3R5* *RUNX1* *SMAD3* *SMAD4* *TGFBR1*† *TGFBR2* *TP53* *TGFBR2*	*APAF1* *ATF6B* *CASP3* *CCNA2* *CCND1* *CCNE2* *CDK4* *CDKN1A* *CREBBP* *DDX3X* *DDB1* *E2F2* *E2F3* *FADD* *MAPK1* *MAPK8* *MYC* *NRAS* *TGFBR1* *TLR4* *TP53* *SMAD3* *JAK1*	*CLTA* *CRK* *CTNNB1* *PIK3CD* *PIK3R2* *PIK3R5* *RAC1*	*ACTB* *ACTG1* *CCND1* *CREBBP* *ESR1* *HIF1A* *ITGAV* *MAPK1* *MDM2* *MTOR* *MYC* *NRAS* *PLCG1* *PRKACA* *TP53*

Literature-supported target genes (non-direct target)	*CTSL* *FGFR1* *FLNC* *FZD7* *IGF2* *ITPR3* *MAPK1* *MDM2†* *MSN* *PPP1CA* *PPP1R12A* *RDX* *SDC4* *TFAP4* *TWIST2* *VAV2* *WNT9A*	*ADRB2* *AGAP3* *AP2A1* *AP2B1* *ARF1* *ARF3* *ARF6* *ASAP1* *EEA1* *EHD4* *EPN2* *LDLR* *MDM2* *NEDD4* *NEDD4L* *PIP5K1C* *RAB11A* *RAB22A* *RAB5B* *RAB5C* *SNF8* *TSG101* *VPS25* *VPS37C* *ZFYVE20*	*CKAP4* *DERL1* *DNAJA1* *DNAJA2* *DNAJB1* *DNAJB11* *EDEM2* *EDEM3* *EIF2AK2* *EIF2S1* *ERP29* *HERPUD1* *LMAN1* *MAN1A2* *MAP2K7* *MBTPS1* *NPLOC4* *PPP1R15A* *RPN1* *SEC24B* *SEC24C* *SSR1* *SVIP* *TRAM1* *UBE2D4* *UBE2J1* *UBE4B* *XBP1* *YOD1* *LMAN1*	*CDKN1B* *MDM2†* *PTPN11*	*MAP2K4* *MAP3K1* *PCNA*	*ARPC1B* *CTTN* *GAB1* *HCLS1* *WASL*	*ATP1A1* *MED13L* *MED13* *NCOA3* *PFKP* *SLC16A10* *THRA*

**KEGG pathway analysis based on Tarbase v7.0

†Target genes for 2 miRs

Table S8. Functional pathway analysis of literature-based miR target genes (continuation of Table VII)

KEGG Pathway**	Apoptosis	Pancreatic cancer	Colorectal cancer	Estrogen signaling pathway	Prostate cancer	N-Glycan biosynthesis
P-value	2.27E-02	2.61E-02	3.28E-02	3.36E-02	4.65E-02	4.79E-02
MicroRNAs associated with prolonged sitting	let-7d-5p	miR-142-3p	let-7d-5p	miR-142-3p	let-7d-5p	let-7d-5p
Literature-supported target genes (direct target)	*APAF1* *BIRC2* *CAPN1* *CASP3* *FADD* *PRKACA* *TP53*	*AKT2* *E2F2* *PIK3R2* *PIK3R5* *PIK3CD* *RAC1* *SMAD4* *TGFBR1*	*BRAF* *CASP3* *CCND1* *MAPK1* *MAPK8* *MSH6* *MYC* *RAC1* *SMAD2* *SMAD3* *TGFBR1* *TGFBR2* *TP53*	*AKT2* *PIK3CD* *PIK3R2* *PIK3R5*	*AR* *BRAF* *CCND1* *CCNE2* *CDKN1A* *CREBBP* *E2F2* *E2F3* *FGFR1* *HSP90AA1* *IGF1R* *MAPK1* *MDM2* *MTOR* *NRAS* *TP53*	*ALG3* *ALG8* *DOLK* *DPM2* *MAN1A1* *MGAT1* *MGAT4A* *MOGS* *RPN1* *RPN2* *STT3B* *ST6GAL1*
Literature-supported target genes (non-direct target)	*BIRC3* *DFFA* *IL1R1* *PRKAR1B* *PRKAR2A* *TNFRSF10B* *XIAP*			*ATF2* *CREB3L2* *CREB5* *GNAQ* *GNAS* *HSPA1B* *PRKCD*	*PDGFB*	

**KEGG pathway analysis based on Tarbase v7.0.

†Target genes for 2 miRs.

Table S9. Primer assays for 5 selected miRs and control panels used for validation studies

miScript Primer Assay	Targets mature miRs	Target organism	Vendor	Catalog#
Hs_miR-199a_1	miR-199a-5p	Homo sapiens	Qiagen	MS00006741
Hs_le7d_1	let-7d-5p	Homo sapiens	Qiagen	MS00003136
Hs_miR-140_1	miR-140-5p	Homo sapiens	Qiagen	MS00003500
Hs_miR-142-3p_2	miR-142-3p	Homo sapiens	Qiagen	MS00031451
Hs_miR-133b_2	miR-133b	Homo sapiens	Qiagen	MS00031430
Hs_SNORD61_11	SNORD61 small RNA	Homo sapiens	Qiagen	MS00033705
Cel-miR-39_1	cel-miR-39-3p	C-elegans	Qiagen	MS00019789

Table S10. Target genes of the 3 miRs

let-7d-5p	miR-133b	miR-142-3p
A1CF	*AAK1*	*ABCA9*
AAK1	*ABCC1*	*ABCD3*
AASS	*ABCD2*	*ABI2*
ABCB9	*ABCG4*	*ABL2*
ABCC10	*ABL2*	*AC012123.1*
ABCC5	*ACAT2*	*ACBD5*
ABHD17C	*ACTR1A*	*ACVR2A*
ABL2	*ADAMTS5*	*ADAMTS3*
AC008443.1	*ADARB2*	*ADCY9*
AC010441.1	*ADCY5*	*AFF1*
AC023632.1	*ADCY6*	*AFF2*
AC068987.1	*ADCYAP1*	*AKIRIN2*
AC140061.12	*ADRA2B*	*AKT1S1*
ACAP3	*AFAP1*	*ANK3*
ACER2	*AFTPH*	*ANKFY1*
ACER3	*AGRP*	*ANKRD11*
ACPP	*AIF1L*	*ANKRD33B*
ACSL6	*AK2*	*ANKRD40*
ACVR1B	*AKAP9*	*ANKS1A*
ACVR1C	*AL117190.3*	*AP5M1*
ACVR2A	*ALDH5A1*	*APC*
ACVR2B	*AMD1*	*ARHGAP12*
ADAM15	*ANAPC1*	*ARHGEF12*
ADAMTS1	*ANK2*	*ARHGEF2*
ADAMTS14	*ANKRD12*	*ARID5B*
ADAMTS15	*ANKRD28*	*ARL1*
ADAMTS5	*ANKRD44*	*ARL15*
ADAMTS8	*ANKRD46*	*ARNTL*
ADCY9	*ANKRD52*	*ARRDC3*
ADIPOR2	*AOX1*	*ASAP2*
ADRB1	*AP1AR*	*ASB7*
ADRB2	*AP1B1*	*ASH1L*
ADRB3	*AP2M1*	*ATF7IP*
ADRBK2	*AP4E1*	*ATG16L1*
AEN	*AQP1*	*ATP1B1*
AFF2	*ARFIP2*	*ATP2A2*
AGAP1	*ARHGAP12*	*ATXN1L*
AGO1	*ARHGAP24*	*ATXN2*
AGO3	*ARHGAP39*	*ATXN7*
AGO4	*ARHGAP9*	*BACH1*
AGPAT6	*ARHGDIA*	*BACH2*
AGPAT9	*ARL3*	*BAZ1A*
AHCTF1	*ARNTL2*	*BCL2L1*
AIFM1	*ARPC5*	*BCLAF1*
AKAP5	*ARRB1*	*BIRC3*
AKAP6	*ARX*	*BNC2*
AKT2	*ASB1*	*BOD1*

ALDH6A1	*ASH1L*	*BRWD3*
ALKBH1	*ATOX1*	*BTBD7*
ALPK3	*ATP2A2*	*BTLA*
AMER3	*ATP6AP2*	*C16orf70*
AMMECR1L	*ATRX*	*C18orf25*
AMOT	*B3GALNT1*	*C20orf112*
AMT	*B3GNT2*	*C20orf194*
ANGPTL2	*B3GNT9*	*C4orf32*
ANKFY1	*BAMBI*	*C5orf24*
ANKRD28	*BAZ2A*	*C6orf47*
ANKRD33B	*BCL2L1*	*C9orf72*
ANKRD46	*BCL2L2*	*CA5B*
ANKRD52	*BCORL1*	*CASK*
AP1S1	*BHLHE41*	*CASZ1*
APBA1	*BICC1*	*CCDC6*
APBB3	*BNC2*	*CCNJ*
APC2	*BNIP3L*	*CCNT2*
APPBP2	*BTBD10*	*CD84*
ARG2	*BTBD3*	*CDC14A*
ARHGAP20	*C11orf58*	*CELF2*
ARHGAP28	*C12orf43*	*CFL2*
ARHGEF15	*C17orf96*	*CHMP3*
ARHGEF38	*C1QL1*	*CHRNE*
ARHGEF7	*C20orf194*	*CHURC1-FNTB*
ARID3A	*C2orf69*	*CIITA*
ARID3B	*CACNA1B*	*CLCN5*
ARL4D	*CACUL1*	*CLIC4*
ARL5A	*CALM1*	*CLOCK*
ARL5B	*CAMK1D*	*CLTA*
ARL6IP6	*CAP1*	*CNIH4*
ARMC8	*CAPN15*	*COG4*
ARPP19	*CAPN5*	*COL24A1*
ARRDC4	*CASC3*	*COPG1*
ASAP1	*CCDC117*	*COPS7A*
ATAD2B	*CCDC144A*	*CPEB2*
ATG16L1	*CCDC176*	*CRK*
ATG4B	*CCDC30*	*CRTAM*
ATP2A2	*CCNDBP1*	*CTNND1*
ATP2B3	*CCNT1*	*CTTN*
ATP2B4	*CD47*	*CXADR*
ATP6V1C1	*CDCA8*	*CYSLTR2*
ATP8B4	*CDIP1*	*DCUN1D4*
ATPAF1	*CDK13*	*DHX30*
ATXN1L	*CDK5R1*	*DIDO1*
ATXN7L3	*CDK8*	*DIRC2*
ATXN7L3B	*CDYL2*	*DYNC1LI2*
B3GALT1	*CECR6*	*EDEM3*
B3GAT1	*CELF1*	*EHF*
B3GAT3	*CELF5*	*EML4*

B3GNT1	*CELF6*	*EPN1*
B3GNT7	*CEP128*	*ERC1*
BACE2	*CEP85L*	*ERG*
BACH1	*CERS2*	*FAM114A1*
BAHD1	*CETN3*	*FAM127A*
BBX	*CGGBP1*	*FAM127B*
BCAP29	*CHD2*	*FAM208B*
BCAT1	*CHD3*	*FAM73A*
BCL2L1	*CHRM3*	*FBXO21*
BCL7A	*CKAP4*	*FBXO3*
BDP1	*CLCN6*	*FBXO45*
BEGAIN	*CLTA*	*FKBP1A*
BEND4	*CMPK1*	*FLVCR1*
BIN3	*CMTM6*	*FMNL2*
BLOC1S5	*CNKSR2*	*FNBP1L*
BLOC1S6	*CNN2*	*FNDC3A*
BMP2	*CNNM2*	*FNTB*
BMP5	*CNNM4*	*FOXO1*
BMPR1A	*CNOT1*	*FOXO4*
BNC2	*CNTNAP1*	*GAB1*
BRWD3	*COL1A1*	*GFI1*
BSN	*COL25A1*	*GHR*
BSND	*COL8A1*	*GNAQ*
BTBD3	*CORO1C*	*GNAS*
BTBD9	*CPLX2*	*GNB2*
BTF3L4	*CPNE3*	*GOLGA1*
BTG2	*CREB5*	*GPCPD1*
BZW1	*CRK*	*GPR137C*
BZW2	*CRTAM*	*GPRIN3*
C11orf57	*CSNK1G3*	*GTF2A1*
C11orf84	*CSRNP1*	*HAVCR1*
C14orf28	*CSTF2*	*HEATR5A*
C15orf39	*CTBP2*	*HECTD1*
C15orf41	*CTGF*	*HHIP*
C16orf52	*CTSV*	*HIPK1*
C17orf85	*CUL4B*	*HMGA1*
C19orf26	*CUX2*	*HMGA2*
C19orf47	*CYLD*	*HMGB1*
C1GALT1	*DAPK2*	*HNRNPC*
C1orf147	*DBNL*	*HSPE1-MOB4*
C20orf112	*DCBLD1*	*IER3*
C20orf194	*DCLRE1A*	*IL1RAPL1*
C2orf88	*DCP1A*	*IL6ST*
C3orf52	*DCUN1D4*	*IL7R*
C5orf51	*DDX19B*	*INHBA*
C6orf203	*DDX3X*	*INPP5A*
C6orf211	*DDX3Y*	*IPMK*
C8orf58	*DESI1*	*IPO7*
C9orf40	*DIAPH2*	*IRAK1*

C9orf41	*DLG2*	*ITGA8*
CACFD1	*DLGAP3*	*ITGAV*
CACNA1E	*DMXL1*	*ITGB8*
CACNA1I	*DNAJB1*	*ITPKB*
CACNB4	*DNAJC3*	*ITPR3*
CACNG4	*DOLPP1*	*JMJD1C*
CADM2	*DOT1L*	*JMJD7-PLA2G4B*
CALM1	*DSN1*	*KAT2B*
CALN1	*DSTYK*	*KAT7*
CALU	*DUSP1*	*KCNJ6*
CANT1	*DUSP7*	*KCNS2*
CAPN3	*DYNC1LI2*	*KDELR2*
CASK	*E2F7*	*KDM6A*
CASKIN1	*EDEM1*	*KIF5B*
CASP3	*EEF1A1*	*KLF13*
CASP5	*EFNA4*	*KMT2A*
CBFA2T3	*EGFR*	*LCOR*
CBL	*EIF3J*	*LLGL2*
CBX2	*EIF4A1*	*LMO3*
CBX5	*ELAVL1*	*LPP*
CCDC141	*ELF2*	*LRP1B*
CCDC144A	*ELF3*	*LRRC1*
CCDC71L	*ELFN1*	*LRRC17*
CCDC93	*ELMO1*	*LRRC32*
CCL3	*ELP5*	*LRRC59*
CCL3L1	*EMP2*	*MANBAL*
CCL3L3	*ENC1*	*MAP2*
CCL7	*ENPEP*	*MAP2K6*
CCND1	*ENPP5*	*MAP3K11*
CCND2	*ENPP6*	*MAP4K3*
CCNF	*ENTPD7*	*MARCH1*
CCNJ	*EPHA7*	*MARCKS*
CCNJL	*EPHB4*	*MARK3*
CCNT2	*EPS15*	*MBD6*
CCNY	*ERMP1*	*MEF2C*
CCR7	*ESRRG*	*MEIS1*
CCSAP	*ESYT1*	*MGAT4A*
CD200R1	*ESYT2*	*MLXIP*
CD86	*ETF1*	*MMGT1*
CDC25A	*EXD2*	*MOB4*
CDC34	*EYA1*	*MOCS1*
CDC42SE1	*EYA4*	*MORF4L1*
CDCA8	*FAF2*	*MORF4L2*
CDH22	*FAM102B*	*MRFAP1*
CDK14	*FAM117B*	*MSI2*
CDK6	*FAM13A*	*MTCH1*
CDK8	*FAM160B1*	*MTMR9*
CDKN1A	*FAM193B*	*MYH10*
CDV3	*FAM199X*	*MYH9*

CDYL	*FAM19A5*	*MYLK*
CEBPD	*FAM208A*	*MYO5A*
CECR2	*FAM43B*	*NCK2*
CECR6	*FAM46A*	*NDC1*
CELF1	*FAM46C*	*NFIB*
CEP135	*FAM49A*	*NHSL1*
CEP164	*FAM57A*	*NKX2-3*
CEP85L	*FAM73A*	*NOL7*
CERCAM	*FARP1*	*NR1D2*
CFL2	*FBN1*	*NR2F6*
CGNL1	*FBN2*	*NR3C1*
CHD4	*FBXL19*	*NSF*
CHD7	*FBXL2*	*NSUN3*
CHD9	*FBXW11*	*NUCKS1*
CHIC1	*FGF1*	*P2RY1*
CHRD	*FGFR1*	*PAFAH1B2*
CHRFAM7A	*FLVCR1*	*PAN3*
CHRNA7	*FOSL2*	*PAPD7*
CHST3	*FOXC1*	*PARD6B*
CHSY3	*FOXG1*	*PARP8*
CHUK	*FOXK2*	*PATZ1*
CLASP2	*FOXL2*	*PCGF3*
CLCN5	*FOXN3*	*PDE4B*
CLDN12	*FOXP1*	*PDE8A*
CLOCK	*FOXP2*	*PGRMC2*
CLP1	*FOXP4*	*PHF12*
CLPB	*FOXQ1*	*PICALM*
CMTM6	*FRS2*	*PIK3CG*
CNNM2	*FSCN1*	*PIK3R6*
CNOT2	*FST*	*PLCB1*
CNOT6L	*FTL*	*PLEKHA3*
CNTRL	*FURIN*	*PMAIP1*
COIL	*GABARAPL1*	*POMGNT1*
COL11A1	*GABBR2*	*PPP1R10*
COL14A1	*GABPB2*	*PPP1R15B*
COL15A1	*GABRB1*	*PPP1R37*
COL1A1	*GALNT16*	*PPP3CA*
COL1A2	*GARNL3*	*PPP3R1*
COL24A1	*GBA2*	*PRLR*
COL27A1	*GCH1*	*PROM1*
COL3A1	*GCLC*	*PROX1*
COL4A1	*GDF11*	*PRRG1*
COL4A2	*GDI1*	*PSMB5*
COL4A3BP	*GDI2*	*PSMD11*
COL4A5	*GDNF*	*PTBP3*
COL4A6	*GID8*	*PTPN23*
COL5A2	*GIGYF1*	*PUM1*
COL9A1	*GLRA2*	*PURB*
COL9A3	*GMEB1*	*QKI*

CPA4	*GNB4*	*RAB11A*
CPD	*GPM6A*	*RAB11FIP2*
CPEB1	*GPR173*	*RAB12*
CPEB2	*GRIA2*	*RAB1A*
CPEB3	*GRID2*	*RAB2A*
CPEB4	*GRM5*	*RAB3A*
CPED1	*GRM7*	*RAB3D*
CPM	*GXYLT1*	*RAB40C*
CPSF4	*GZF1*	*RAC1*
CRB2	*HAPLN1*	*RAP1GAP2*
CRBN	*HECW1*	*RARG*
CRCT1	*HHIP*	*RASSF3*
CRK	*HIC2*	*RBFOX2*
CRTAP	*HIVEP2*	*RBM27*
CRY2	*HLF*	*RBM47*
CSNK2A1	*HLTF*	*RBMS1*
CSRNP3	*HMGXB3*	*RERE*
CTB-54O9.9	*HOXA9*	*RFWD3*
CTDSPL2	*HOXB5*	*RGL2*
CTIF	*HOXD1*	*RHEB*
CTNS	*HS2ST1*	*RHOBTB3*
CTPS1	*HS3ST5*	*RICTOR*
CXorf36	*HSPA13*	*RIMKLB*
CYB561D1	*HSPA4L*	*RLF*
CYP19A1	*ICK*	*RNF103-CHMP3*
CYP46A1	*ID4*	*RNF157*
CYTH3	*IDH1*	*RNF24*
DAB1	*IFIT2*	*RNF38*
DAGLA	*IGF1R*	*ROCK2*
DAPK1	*IL6ST*	*RPRD1A*
DARS2	*IMPG1*	*RREB1*
DCAF15	*INSR*	*RSF1*
DCAF8	*IQGAP2*	*S1PR3*
DCUN1D2	*ISCA2*	*SEC22A*
DCUN1D3	*ITPRIPL2*	*SEMA5B*
DCX	*JAZF1*	*SERAC1*
DDI2	*JDP2*	*SERP1*
DDN	*KCNA6*	*SETD1B*
DDX19A	*KCND3*	*SGK1*
DDX19B	*KCNJ12*	*SH2B1*
DDX26B	*KCNK7*	*SH3GLB1*
DENND6A	*KCTD15*	*SIK1*
DHX57	*KCTD16*	*SIK2*
DIAPH2	*KCTD20*	*SKP1*
DICER1	*KDM2A*	*SLC17A5*
DKK3	*KIAA0141*	*SLC1A3*
DLC1	*KIAA0232*	*SLC25A22*
DLGAP4	*KIAA0430*	*SLC35A1*
DLST	*KIAA1024*	*SLC35F5*

DMD	*KIAA1045*	*SLC37A3*
DMP1	*KIAA1239*	*SLC38A4*
DNA2	*KIAA1429*	*SLC6A11*
DNAH10OS	*KIAA1432*	*SLC7A11*
DNAJA2	*KIAA1522*	*SLCO4C1*
DNAJB14	*KIAA1549*	*SMG1*
DNAJB9	*KIF21A*	*SMUG1*
DNAJC1	*KIF3C*	*SNX18*
DNAJC10	*KIRREL*	*SOCS6*
DNAL1	*KLF7*	*SOX11*
DOCK3	*KLHDC10*	*SOX5*
DPF2	*KLHL11*	*SP4*
DPH1	*KLHL2*	*SP8*
DPH3	*KLHL42*	*SPNS1*
DPP3	*KLHL9*	*SPRED1*
DPYSL3	*KMT2C*	*SS18*
DSG3	*KPNA6*	*STAM*
DST	*LAMB3*	*STAM2*
DTX2	*LANCL2*	*STAU1*
DTX4	*LASP1*	*STRN3*
DUSP1	*LDLRAP1*	*STX12*
DUSP16	*LDOC1*	*STX7*
DUSP22	*LEPROTL1*	*SUCO*
DUSP4	*LETMD1*	*SYPL1*
DUSP7	*LGALS8*	*TAB2*
DUSP9	*LHFP*	*TAGAP*
DVL3	*LHX5*	*TAOK1*
DYRK1A	*LHX9*	*TARDBP*
DYRK2	*LIN28B*	*TBC1D2B*
DZIP1	*LIN7A*	*TBL1X*
E2F2	*LIN7C*	*TBL1XR1*
E2F5	*LOXL4*	*TCEB3*
E2F6	*LPGAT1*	*TEAD1*
EDA	*LPHN1*	*TESK2*
EDEM3	*LPIN2*	*TET3*
EDN1	*LRRC2*	*TEX2*
EEA1	*LRRC7*	*TFG*
EEF2K	*LTBP1*	*TGFB2*
EFHD2	*LUZP1*	*TGFBR1*
EGLN2	*LZTS2*	*THSD4*
EGR3	*LZTS3*	*TIPARP*
EIF2B2	*MAEA*	*TIRAP*
EIF2S2	*MAFG*	*TMED7*
EIF4G2	*MAML1*	*TMEFF2*
EIF5B	*MAML3*	*TMEM110*
ELF4	*MAN1A2*	*TMEM115*
ELK4	*MAP3K2*	*TMEM200B*
ELOVL4	*MAP3K3*	*TMEM55B*
EMB	*MAP7*	*TMEM59*

ENTPD7
EOGT
EPHA3
EPHA4
ERCC4
ERCC6
ERGIC1
ERGIC2
ERO1L
ERP29
ESPL1
ETNK1
ETNK2
ETV3
EXOC5
EZH1
FADS3
FAM103A1
FAM104A
FAM118A
FAM135A
FAM155A
FAM160B2
FAM178A
FAM189A1
FAM208A
FAM214B
FAM222B
FAM43A
FAM83G
FAM84B
FARP1
FAS
FASLG
FASTK
FAXC
FBXL19
FBXO21
FBXO30
FBXO32
FBXO45
FGD6
FGF11
FGF5
FIGN
FKRP
FNDC3A
FNDC3B
FNIP1
MCL1
MECOM
MECP2
MED12L
MED8
MEIS1
MEIS2
METTL21B
MFSD6
MID2
MIER3
MKL2
MLLT3
MLXIP
MMGT1
MMP14
MMP15
MPPED1
MRC2
MRFAP1
MRGBP
MRPL44
MSN
MTMR4
MTX3
MYH9
MYO9B
MYRF
NAA40
NAGS
NCAM2
NCAN
NCKAP5L
NDRG1
NEBL
NELFA
NELL2
NFAT5
NFIA
NFIB
NFYA
NIPA1
NIPA2
NKD1
NLGN2
NMT1
NR6A1
NRG3
NRIP3
TNKS
TNRC18
TP53INP2
TPM4
TSEN34
TTBK2
TWF1
TXLNA
UNKL
USP6NL
UTRN
UTY
VAMP3
VANGL1
WASL
WHSC1L1
WIZ
WNK3
XIAP
XPO1
ZBTB10
ZBTB20
ZBTB41
ZCCHC14
ZCCHC24
ZEB1
ZEB2
ZFP36L2
ZFP91
ZFR
ZMYND8
ZNF217
ZNF395
ZNF618
ZNF644
ZNF652
ZNF827
ZNF831
ZZZ3

FNIP2	*NTNG1*
FOPNL	*NUP153*
FOXP1	*NUP160*
FOXP2	*NUS1*
FRAS1	*ORAI2*
FREM2	*ORC4*
FRMD4B	*OTUD4*
FRMD5	*OTUD7B*
FRS2	*PAN3*
FSD2	*PANK3*
FSTL4	*PAOX*
FZD3	*PAPD5*
FZD4	*PARD6G*
G3BP1	*PARVA*
GAB2	*PAWR*
GABBR2	*PAX7*
GABPA	*PCDH1*
GABRA6	*PCDH17*
GABRB1	*PCSK5*
GALC	*PCSK6*
GALE	*PDE10A*
GALNT1	*PDE1C*
GALNT15	*PDE7A*
GALNT2	*PDE8B*
GALNT4	*PDIK1L*
GAN	*PDK3*
GAREM	*PEAK1*
GAS7	*PEX5L*
GATM	*PFAS*
GCNT4	*PFKFB3*
GDAP2	*PFN2*
GDF6	*PHTF2*
GDPD1	*PIK3C2A*
GEMIN7	*PIKFYVE*
GHR	*PIP4K2B*
GIPC1	*PITPNB*
GJA9	*PITPNM2*
GJC1	*PITPNM3*
GK5	*PKNOX1*
GLRX	*PLCL2*
GNAL	*PLEKHA3*
GNG5	*PLEKHA8*
GNPTAB	*PML*
GNS	*POLH*
GOLGA4	*POU4F1*
GOLGA7	*POU6F2*
GOLT1B	*PPFIA2*
GOPC	*PPFIA3*
GPATCH2	*PPM1H*

GPATCH3
GPC4
GPCPD1
GPR132
GPR137
GPR137C
GPR156
GPR157
GPR26
GPR61
GPR63
GRAMD1B
GREB1
GREB1L
GRID2IP
GRIK2
GRIN2B
GRIN3A
GRPEL2
GSG1L
GTF2I
GXYLT1
GYG2
HABP4
HAND1
HAND2
HAS2
HBEGF
HCFC2
HDHD1
HDLBP
HDX
HECTD2
HECTD4
HELZ
HIC1
HIC2
HIF1AN
HIF3A
HIP1
HIPK2
HK2
HLF
HMGA1
HMGA2
HNRNPA1
HOOK1
HOXA1
HOXA9
PPP1R9B
PPP2CA
PPP2CB
PPP2R2D
PPP2R4
PPP2R5E
PPP6R3
PRDM1
PRDM16
PRDM6
PREX1
PRKAB1
PRKCB
PRMT6
PROX1
PRPF38A
PRRT2
PSD3
PSEN1
PTBP1
PTBP2
PTBP3
PTMA
PTPN22
PTPRD
PTPRK
PTPRT
PTPRZ1
PURB
PWWP2B
QKI
RAB11FIP4
RAB27B
RAB30
RAB5C
RAD51L3-RFFL
RAP2C
RAPH1
RARB
RAVER1
RB1CC1
RBM23
RBMS1
RBMX
RBMXL1
RBPJ
RCE1
RFC1
RFFL

HOXB1	*RFX3*
HOXC11	*RFX6*
HOXD1	*RHOA*
HS2ST1	*RIMS1*
HSPE1-MOB4	*RLN2*
HTR1E	*RP1-170O19.20*
HTR4	*RPAP2*
ICK	*RPL17-C18orf32*
ICMT	*RRP15*
ICOS	*RTN4RL1*
IDH2	*RUNX1T1*
IGDCC3	*RWDD2A*
IGDCC4	*SACM1L*
IGF1	*SAMD5*
IGF1R	*SCN1A*
IGF2BP1	*SCN2B*
IGF2BP2	*SCOC*
IGF2BP3	*SDC2*
IGLON5	*SEC61B*
IGSF1	*SEPHS2*
IKBKAP	*SESN1*
IKBKE	*SESN3*
IKZF2	*SETD6*
IL10	*SF3B1*
IL13	*SF3B4*
IL6R	*SFMBT2*
IMPG2	*SFT2D3*
INO80D	*SFXN2*
INPP5A	*SFXN5*
INSR	*SGK1*
INTS2	*SGMS2*
INTU	*SGPP1*
IPO11	*SGSM1*
IPO9	*SGTB*
IQCB1	*SH3GL2*
IRGQ	*SH3PXD2B*
IRS2	*SHISA5*
ISLR	*SIMC1*
ITGA1	*SIRT1*
ITGB3	*SIX5*
ITGB8	*SLC25A36*
ITSN1	*SLC25A39*
JOSD1	*SLC25A51*
KATNAL1	*SLC26A2*
KATNBL1	*SLC27A4*
KCMF1	*SLC30A3*
KCNA6	*SLC30A5*
KCNC1	*SLC30A7*
KCNC2	*SLC33A1*

KCNC3	*SLC35F5*
KCNC4	*SLC39A1*
KCNJ11	*SLC41A1*
KCNJ3	*SLC4A1*
KCNJ6	*SLC4A8*
KCNK6	*SLC50A1*
KCNQ4	*SLC6A1*
KCNV1	*SLC6A6*
KCTD10	*SLC7A2*
KCTD15	*SLC7A8*
KCTD16	*SLC8A1*
KCTD17	*SLC8A2*
KCTD21	*SLMO2*
KDM3A	*SMARCA2*
KHNYN	*SMARCD1*
KIAA0391	*SMC2*
KIAA0895L	*SMIM14*
KIAA0930	*SMPD4*
KIAA1147	*SNRK*
KIAA1161	*SNX15*
KIAA1244	*SNX30*
KIAA1467	*SOBP*
KIAA1549	*SOCS2*
KIAA1919	*SOGA1*
KIAA1958	*SOGA3*
KIAA2022	*SORBS3*
KIF21B	*SOX4*
KIF2A	*SP1*
KLF8	*SP3*
KLF9	*SPOPL*
KLHDC8B	*SPRN*
KLHL13	*SPRY4*
KLHL23	*SPTBN1*
KLHL31	*SPTLC2*
KLHL36	*SPTSSA*
KLHL6	*SPTY2D1*
KLK10	*SRGAP3*
KMT2D	*SRP19*
KMT2E	*SRPK1*
KPNA1	*SRSF10*
KPNA4	*ST8SIA3*
KPNA5	*STARD13*
KREMEN1	*STOM*
L2HGDH	*STX5*
LBH	*STXBP6*
LBR	*SUMO1*
LCOR	*SUPT16H*
LCORL	*SV2A*
LDB1	*SVOP*

LEPROTL1	*SYAP1*
LGR4	*SYNPO2L*
LIMD1	*SYNRG*
LIMD2	*SYT1*
LIMK2	*SYT2*
LIN28A	*SYT9*
LIN28B	*TAGLN2*
LINGO1	*TAOK1*
LIPH	*TBL1X*
LIPT2	*TBPL1*
LMLN	*TCF7*
LMX1A	*TEAD1*
LONRF3	*TENM1*
LOR	*TET3*
LOXL4	*TFAP2D*
LPGAT1	*TFE3*
LPHN3	*TFG*
LRFN4	*TG*
LRIG2	*TGFB2*
LRIG3	*TGFBR1*
LRRC10B	*TGOLN2*
LRRC20	*THNSL1*
LRRC59	*THRAP3*
LRRC8B	*THUMPD3*
LSM11	*TIMM17A*
LTN1	*TK2*
LUC7L3	*TM9SF3*
LYVE1	*TMEM110*
LZIC	*TMEM158*
MAP3K1	*TMEM167A*
MAP3K13	*TMEM170B*
MAP3K2	*TMEM180*
MAP3K3	*TMEM200B*
MAP3K9	*TMEM33*
MAP4K3	*TMEM57*
MAP4K4	*TMEM87B*
MAPK1IP1L	*TMOD3*
MAPK6	*TNFRSF10B*
MAPK8	*TNIK*
MARCH9	*TNRC6B*
MARS2	*TOB2*
MBD2	*TOR2A*
MBTD1	*TPD52*
MBTPS2	*TPM4*
MDFI	*TRAF3*
MDM4	*TRAF3IP2*
MED28	*TRAM2*
MED6	*TRHDE*
MED8	*TRIM44*

MEF2C
MEF2D
MEGF11
MEIS1
MEIS2
MESDC1
MEX3A
MFAP3L
MFSD4
MGA
MGAT4A
MGLL
MIB1
MICALCL
MIEF1
MIOS
MLLT10
MLXIP
MMP11
MOB4
MON2
MPST
MRS2
MSANTD3
MSI2
MSN
MTDH
MTMR12
MTMR3
MTUS1
MVB12B
MXD1
MYCBP
MYCL
MYCN
MYO1F
MYO5B
MYRIP
NAA20
NAA30
NAP1L1
NAPEPLD
NAT8L
NCOA1
NCOR1
NDST2
NEDD4L
NEFM
NEK3
TRIM55
TRIM56
TSPAN18
TTC31
TTPAL
TTYH3
TUBB1
TXLNA
TYRO3
UBA2
UBE2K
UBE2Q1
UBE2Z
UBFD1
UBXN7
UCK2
UNC13A
UNC80
UNK
UNKL
USH1G
USP32
USP38
USP6
VAMP2
VAMP3
VAPB
VAT1
VEGFC
VKORC1
VPS13B
VPS4B
VPS54
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YES1
YIPF4
YPEL2
ZBTB10

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NHLRC3
NID2
NIPA1
NIPAL4
NKAP
NKD1
NKIRAS2
NLK
NLN
NME4
NME6
NNT
NOS1
NOVA1
NPEPL1
NR6A1
NRAS
NRK
NSD1
NSMCE2
NTN1
NUMBL
NUP155
NXT2
NYNRIN
OLR1
ONECUT1
ONECUT2
ONECUT3
OSBPL3
OSMR
OSTF1
OTOF
OTUB2
OTUD3
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P4HA2
PACS2
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PAK1
PALD1
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PARM1
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ZHX3
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ZNRF3

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PAX3
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PBX2
PBX3
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PCYT1B
PDE12
PDGFB
PDHB
PDP2
PDPR
PDSS1
PDZD8
PEG10
PEX11B
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PGRMC1
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PHF8
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PIAS4
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PIGU
PIK3CA
PIK3IP1
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PKN2
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PLA2G3
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PLCXD3
PLD3
PLD5
PLEKHA3
PLEKHA8
PLEKHG7
PLEKHH1
PLEKHO1
PLXNA2
PLXNA4
PLXNC1

PLXND1
PMAIP1
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POGLUT1
POGZ
POLR2D
POLR3D
POTEE
POTEG
POTEM
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POU6F2
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PPP1R16B
PPP2R2A
PPP3CA
PPTC7
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PTAR1
PTPRD
PTPRU
PURB
PXDN
PXMP4
PXT1
PYGO2
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RAB15
RAB22A
RAB30

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RAB40C
RAB8B
RADIL
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RALB
RALGPS1
RANBP2
RASGRP1
RASL10A
RASL10B
RAVER2
RB1
RBFOX1
RBFOX2
RBM38
RBMS1
RBMS2
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RCN1
RCSD1
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REEP1
REL
RFX6
RGAG1
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RGS17
RICTOR
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RIMS3
RIOK3
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RNF7
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RP11-766F14.2
RPS6KA3

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RSPO2
RTCA
RUFY3
RUNX1T1
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SALL3
SALL4
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SAP30L
SBK1
SBNO1
SCARA3
SCD
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SCN4B
SCN5A
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SCRT2
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SEC14L5
SEC16B
SEC31B
SECISBP2L
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SEMA4F
SEMA4G
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SESN3
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SH3RF3
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SLC25A4
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SLC2A12
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SLC30A7
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SLC6A1
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SLC6A5
SLC7A14
SLC8A2
SLC9A9
SLCO5A1
SLK
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SMARCAD1
SMARCC1
SMC1A
SMCR8
SMIM13
SMIM3
SMUG1
SNAP23
SNN
SNX1
SNX16
SNX17
SNX30
SNX6
SOCS1
SOCS4
SOCS7

SOST
SOWAHA
SOX13
SOX6
SP8
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SPATA2
SPEG
SPIRE1
SPOCD1
SPRED3
SPRYD4
SPTBN4
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SRGAP3
SSH1
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ST8SIA1
STAB2
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STARD3NL
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STAT3
STEAP3
STK24
STK40
STOX2
STRBP
STRN
STX17
STX3
STXBP5
STYX
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SUCLG2
SULF1
SULF2
SURF4
SUV39H2
SWT1
SYNCRIP
SYNJ2BP
SYT1
SYT11
SYT2

SYT7
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TAOK1
TARBP2
TBKBP1
TBX5
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TENM2
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TET3
TEX261
TFR2
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TGFBR3
THAP9
THBS1
THOC2
THRA
THRSP
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TMEM251
TMEM255A
TMEM26
TMEM41A
TMEM65
TMOD2
TMPPE
TMPRSS2
TMTC3
TMX4
TNFAIP3
TNFRSF1B
TNFSF9
TNIK

TOB2
TOR1AIP2
TP53
TPP1
TRABD
TRANK1
TRHDE
TRIB1
TRIB2
TRIM41
TRIM67
TRIM71
TRIOBP
TRPM6
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TSPEAR
TSPYL5
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TTC39C
TTL
TTLL4
TUSC2
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TXLNG
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UBN2
UFM1
UGCG
UGGT1
UHRF2
ULK2
UNC5A
USP12
USP21
USP24
USP32
USP38
USP44
USP47
USP49
USP6
UTP15
UTRN
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VASH2
VAV3

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VEZT
VGLL3
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VSNL1
VSTM5
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ZNF74
ZNF740
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ZNF783
ZNF784
ZNF879
ZPLD1
ZSWIM4
ZSWIM5

Table S11. Balance diagnostics before and after inverse propensity score weighting

	Absolute weighted standardized difference (%)			
	Means	Higher order moments*	Interactions†	Kolmogorov smirnov test statistic
Model A				
Before weighting	32% - 72%	33% - 66%	23% - 86%	0.23- 0.42
After weighting	4% - 27%	0.2% - 15%, except 30% for Age	0.7% - 28%	0.13 - 0.31
Improvement in balance?	Yes	Yes	Yes	Yes
Model B				
Before weighting	11% - 70%	9% - 59%	21% - 76%	0.13 - 0.39
After weighting	0.1% - 12%, except 24% for Age	0.1% - 8%, except 26% for Age	0.2% - 21%	0.14 - 0.30
Improvement in balance?	Yes	Yes	Yes	Yes

Model A, IS and SS; Model B, IS+ and SS+.

*Only second order moments (squares) assessed.

†Only two-way interactions assessed.

Supplemental Figures

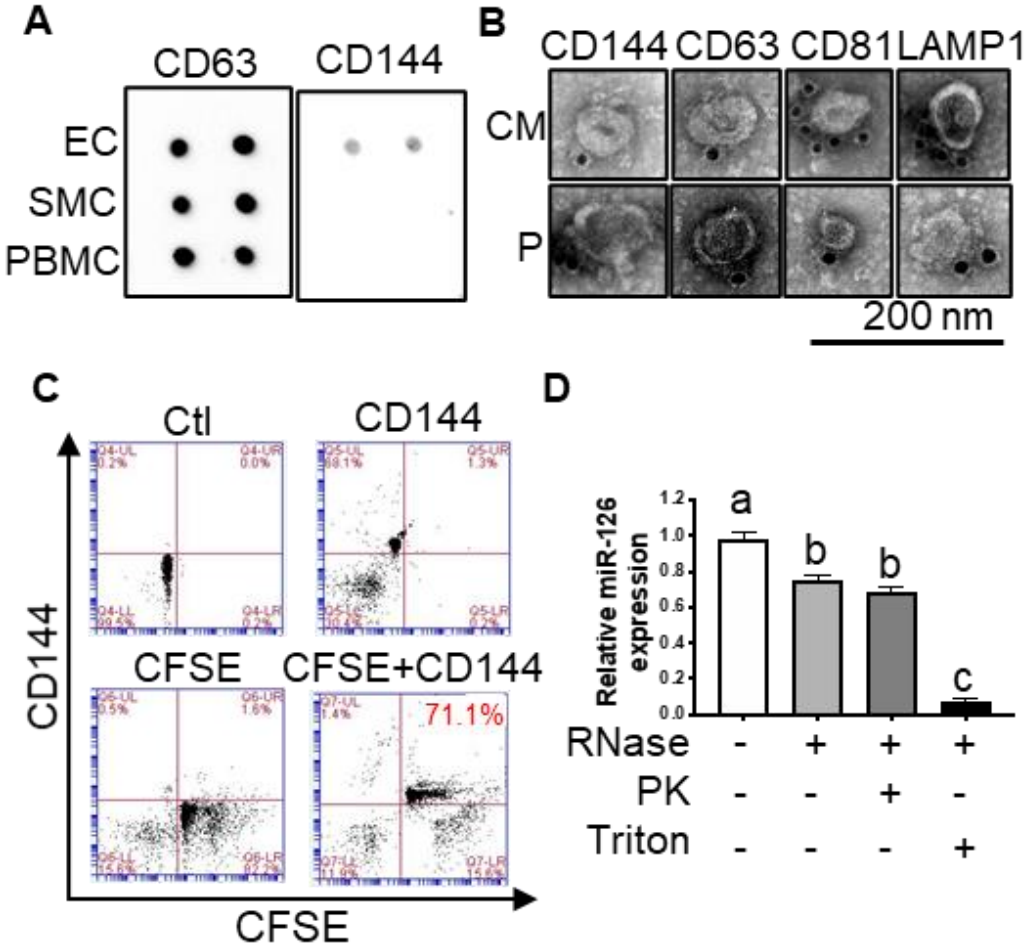

Figure S1. Characterizations of EC-EVs. A, Dot blot immunostaining of CD63 and CD144 in EVs collected from conditioned media of endothelial cells (EC), smooth muscle cells (SMC), and peripheral blood mononuclear cells (PBMC). N=2 replicates each, equal protein loading per spot. **B,** Immunogold staining of EVs from EC-conditioned media (CM) and human plasma (P) with EV-specific markers (CD81, CD63, and LAMP1) and EC-surface marker (CD144) on EC-EVs. **C,** Flow cytometry shows the presence of $CD63^{+}CD144^{+}$ EVs in human plasma samples using magnetic beads conjugated with anti-CD63 antibody and co-stained with anti-CD144 antibody. CFSE dye was used to labeled lipid-based EVs. **D**, Protection assay demonstrates the ability of EC-EVs isolated from EC conditioned media to protect miR-126. Expressional levels of miR-126 in each group was normalized to Mock. Ctl: beads incubated with plasma without stains; PK: protein kinase.

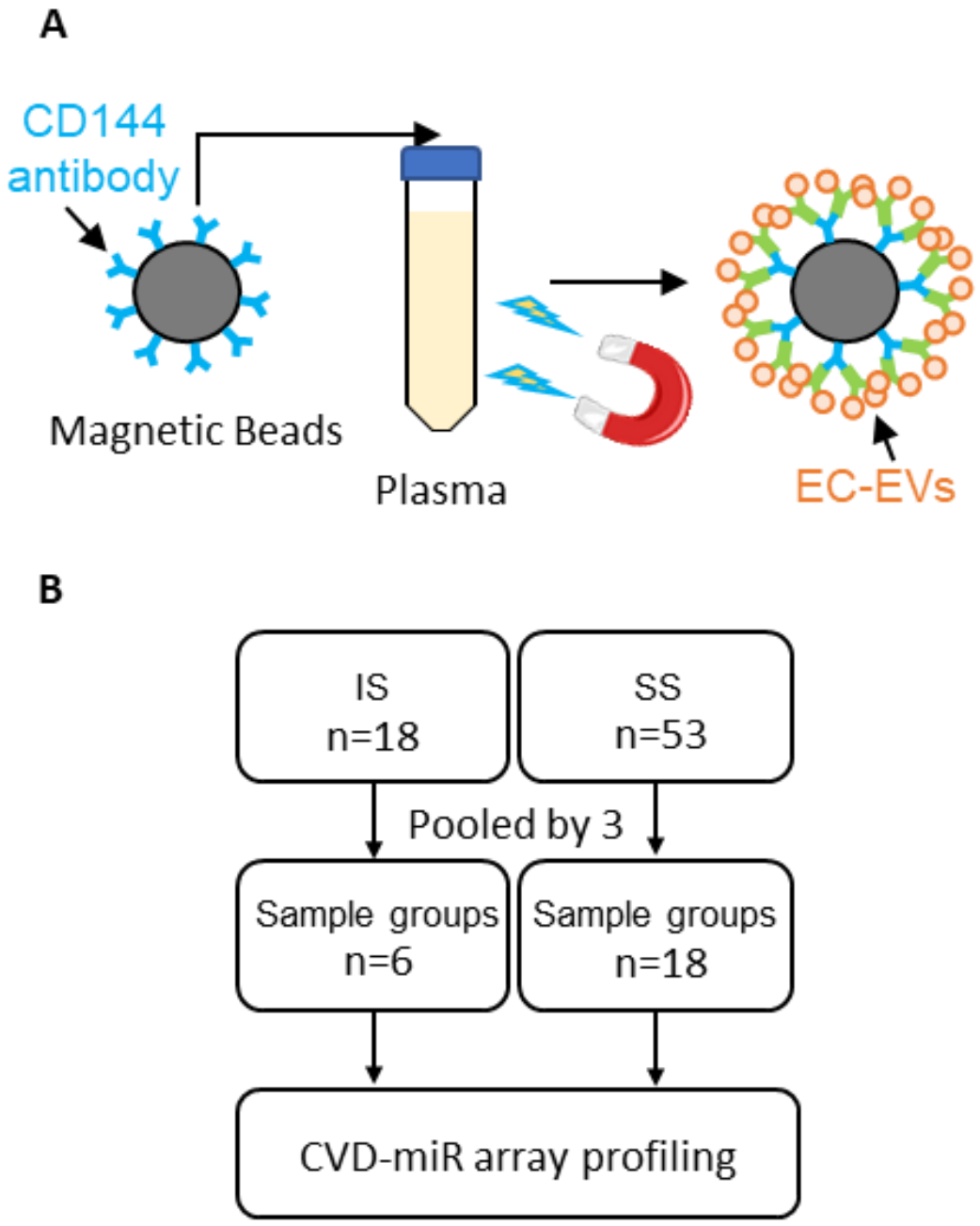

Figure S2. Strategy of cardiovascular disease (CVD)-related miR profiling from IS and SS groups. **A,** Schematic protocol of EC-EV immunoprecipitation from plasma. **B,** Schematic protocol of EC-EV miR analysis and CVD-miR profiling (Human Cardiovascular Disease Array, Qiagen) using pooled RNA samples from IS and SS groups.

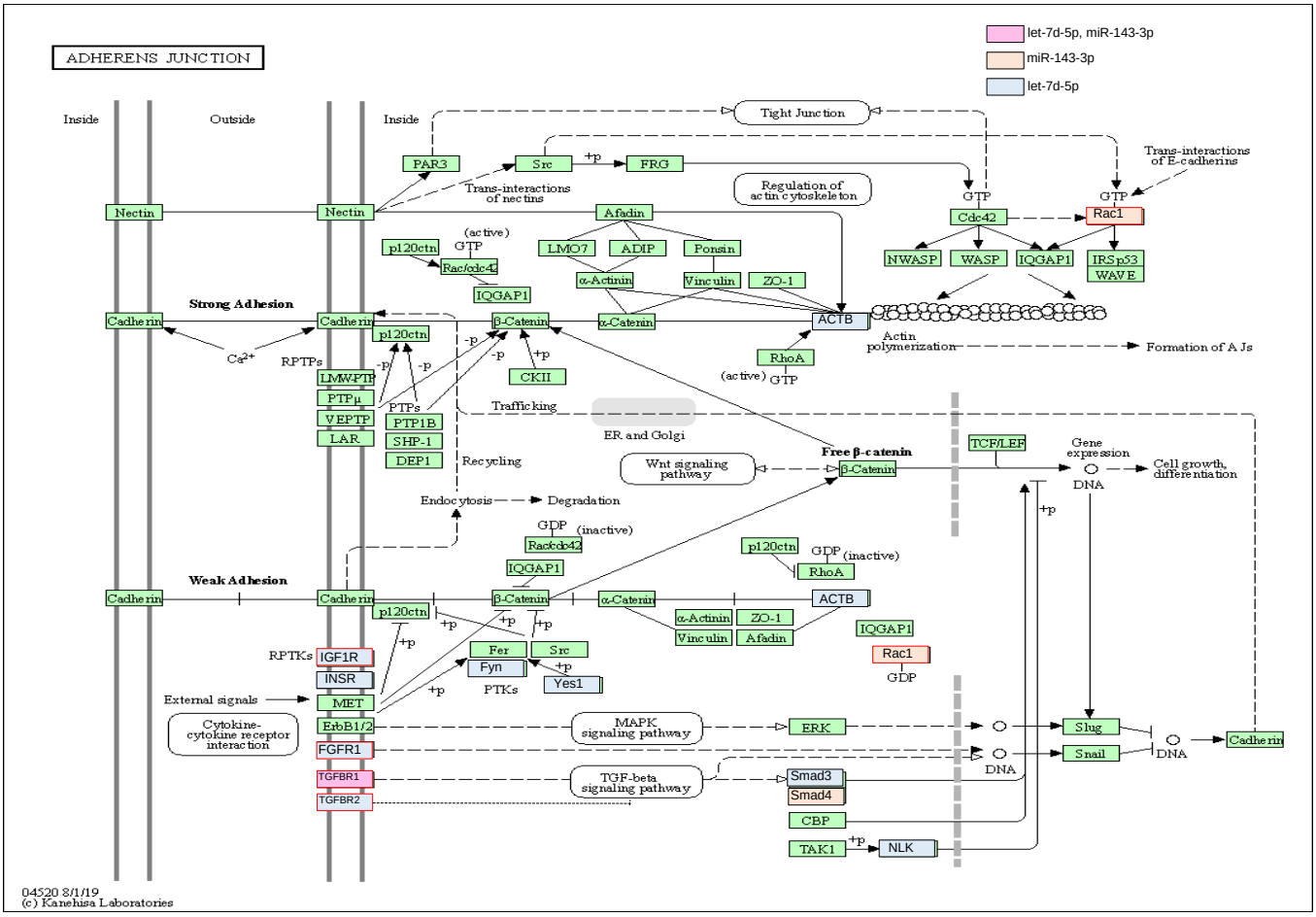

Figure S3. Molecular map of KEGG adherens junction pathway highlighting sitting time-associated miR target genes. Adherens junction pathway components targeted by let-7d-5p or/and miR-143-3p are color-coded (see legend). Red outline indicates components that are direct targets of let-7d-5p and/or miR-143-3p, black outline indicates components that are indirect targets. KEGG pathway image (map04520) is used with permission from KEGG.[1]

[1] Kanehisa M, Sato Y, Kawashima M, Furumichi M, Tanabe M. KEGG as a reference resource for gene and protein annotation. Nucleic Acids Res. 2016 Jan 4;44(D1):D457-62. doi: 10.1093/nar/gkv1070.