

## SUPPLEMENTARY TABLES

**Supplementary Table 1. 260 circadian rhythm genes (CRGs) collected from the MSigDB database.**

ARNTL2	GFPT1	SRRD	JUN	ATF5	PPP1CB	CIPC
CRTC2	METTL3	HELZ2	PRF1	HOMER1	NLGN1	MAPK10
SIRT1	SLC9A3	TGS1	BHLHE40	NOS2	RORB	PRKDC
CLDN4	HDAC3	KLF9	PPP1CC	TYMS	CRTC3	BHLHE41
NONO	NCOA1	PTEN	CSNK1E	PER2	CIART	NR3C1
ARNTL	AGRP	FBXL17	NMU	CLOCK	HCRTR2	FASPS4
NR2F6	MTNR1A	USP2	CUL1	PROX1	PIWIL2	PER
TOP1	ID2	NR1D2	SKP1	CARM1	TOP2A	RIGUI
ATF4	ATG7	HIF1A	JUND	HS3ST2	NAMPT	TIM
MAPK8	HNF4A	UBA52	PRKG2	NTRK1	ADIPOQ	TIM1
NRIP1	PPARG	DRD1	RBM4	UTS2	CSF2	MAGEL2
BTBD9	USP7	KMT2A	DRD2	PER3	NKX2-1	PRKCG
PHLPP1	NCOA2	RELB	NOCT	CREB1	RORA	AVP
RXRA	AHCY	FBXL22	DBP	MAPK9	SERPINE1	NPAS2
CSNK1D	HDAC1	ADA	SMARCD3	RAI1	CHRM1	HNRNPU
RORC	MTTP	GHRH	CRX	CARTPT	IL6	NMS
CRTC1	TH	NR1H3	KCND2	HTR7	PAX4	TPH2
SFPQ	MTA1	SUV39H2	PRMT5	NTRK3	ATOH7	PER1
CRY2	BTRC	KLF15	CRY1	UTS2R	PASD1	TBL1XR1
SIN3A	HNRNPD PPARGC1A	DYRK1A	RBM4B	CREM	TIMELESS MEF2D	DDX5
DHX9	USP9X	LEP	DRD3	MTNR1B	AANAT	KDM5A
FBXW7	NCOA6	SETX	SIAH2	PTGDS	FAS	PROKR2
SUV39H1	AHR	FBXL3	ELOVL3	CPT1A	MC3R	FBXL12
UBB	MYBBP1A TNFRSF11A	ADCY1	SREBF1	RPS27A	SLC6A4	TP53
MED1	CCAR2	GHRHR	CST3	CAVIN3	GNA11	FBXW11
FBXL6	KDM2A	OPN3	KCNH7	ID3	ADRB1	NR1D1
MAGED1	PRKAA1	TARDBP	PROK1	PML	KLF10	GM129
FBXL8	ZFH3	UBC	SIK1	CRH	PSPC1	FASPS1
GNAQ	NCOR1	EGR1	DRD4	MTOR	CHD9	KIAA0347
PPARA	ARNT	LGR4	NPS	ROCK2	OGT	USP46
UBE3A	OPN5	SFTPC	EP300	CREBBP	PPP1CA	EGR3
HCRTR1	CDK1	ADORA1	TBL1X	CDK4	HNF1B	SIX3
STAR	PRKAA2	GHRL	DDC	ID4	NGFR	ADORA2A
HDAC2	ATF2	OPN4	KCNMA1	OPRL1	TPH1	GSK3B
HEBP1	NFIL3	THRAP3	PROK2	DDB1	PDE6B	FASPS3
NAGLU	ARNT2	MEF2C	FBXL21P	HNRNPD	CHRN2	CHRONO
SPSB4	PPARGC1A	EZH2	SOX14	KCNA2	TIMELESS	NPY2R
F7						

**Supplementary Table 2. 39 skin aging-related CRGs.**

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NR2F6	NRIP1	CLDN4	SIRT1	NONO	RXRA
CRTC2	TOP1	BTBD9	ARNTL	MAPK8	PHLPP1
ATF4	DHX9	OGT	UBB	GNAQ	HCRTR1
SIN3A	MED1	KLF10	SUV39H1	RORC	HDAC2
CRTC1	SFPQ	STAR	HEBP1	FBXW7	FBXL8
FBXL6	NAGLU	CSNK1D	MAGED1	PPARA	UBE3A
PSPC1	CHD9	CRY2			

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