

## SUPPLEMENTARY TABLES

**Supplementary Table 1. Detail of primers for quantitative real-time PCR.**

<b>Gene</b>	<b>Primer sequence (5'-3')</b>	<b>Length (bp)</b>	<b>Accession number</b>
Sod1	F: TTGGAGACCTGGGCAATGTGAC R: CTTCCAGCATTTCCTGCTTTGTA	184	NM_001190422
Gpx4	F: ATGCACGAATTCTCAGCCAAG R: GTGTAGTTTACCTCCGTCTTGCC	122	NM_214407
Cat	F: AGGTGGGGCTCCAAATTACTION R: CACCTGGGTGACATTATCTTCG	136	NM_214301
Bcl2l1	F: CTGGTGGTTGACTTTCTCTCCTAC R: GTTTCCGCTTCTGATTGAGTCC	119	NM_214285
Bax	F: CAGTAACATGGAGCTGCAGAGG R: GCCTTGAGCACCAGTTTACTGG	159	XM_003127290
Caspase3	F: CAGTTGAGGCAGACTTCTTGTATG R: AGTAAGAATGTGCATAAGCTCAAGC	149	NM_214131
Dnmt1	F: GCGTCTTGACAGGCTGGTCAGTA R: CTTCTTATCATCGACCACGACGCT	152	NM_001032355
Dnmt3a	F: ATGTGGTTCGGAGACGGCAAGT R: GCTCTCGTCGTTGTCATGGCA	195	NM_001097437
Tet1	F: TGTCGGCTTGGCAAGAAAGA R: AGACCACTGTGCTGCCATTA	115	NM_001315772
Tet3	F: CCCCTACTCAGGAAATGAGGTCTC R: CCCCAAATTCAGCCTCAAACCTG	126	XM_021087365
Eif1a	F: AGATGAGGCTAGAAGTCTGAAGGC R: CAATGTCATCAAACCTGGATTTTCATC	113	NM_001243218
Oct4	F: GAAGGTGTTTCAGCCAAACGAC R: CGATACTTGTCCGCTTTC	185	NM_001113060
Nanog	F: CCTCCATGGATCTGCTTATTC R: CATCTGCTGGAGGCTGAGGT	209	NM_001129971
Sox2	F: AACCAGAAGAACAGCCCAGAC R: TCCGACAAAAGTTTCCACTCG	155	NM_001123197
18s	F: AATCTCGGGTGGCTGAACGC R: CCGTTCTTAGTTGGTGGAGCGAT	143	NR_002170

**Supplementary Table 2. Detail of primers for bisulfite sequencing.**

Gene	Primer sequence (5'-3')	Length (bp)	Accession number
CenRep	F: GGTATTGTTGTTTGTGGTGATT R: AAAATTTATTCCTCAAACCCAATTT	231	Z75640
Oct4	Outer F: ATTAGATTTGTGTGAGGATTTGAGAG R: AAAACCCAATAAAACCAAAACTCTC	409	NC_010449
	Inner F: GTGTATAGAGTAGTGGAGAGGG R: CCAATCCCACCCACTAA	249	
Nanog	Outer F: TGAATTGGAGATTTAAAGGAG R: TAAAATCATAAAAATCTCCTCC	518	EF_522119
	Inner F: GGAGATTTAAAGGAGTTTATAGGTTAAGAAA R: TCTCCTCCAAATATTAATAAATATCAAAAA	498	
Sox2	Outer F: GTGTTTGTAAGGGGGAAAGTAG R: CCGCAACAATAAAATTACCACC	461	NC_010455
	Inner F: AAGGGAGAGAAGTTTGAGTTTTAGG R: AACTCCGTCTCCATCATATTATACATAC	321	

**Supplementary Table 3. Development of early embryos treated with different concentration EB1 for 24 h.**

EB1 ( $\mu$ M)	No. embryos (Rep)	No. embryos cleaved (% $\pm$ SEM)	No. blastocysts (% $\pm$ SEM)	Blastocyst cell number (mean $\pm$ SEM)*
0	192 (5)	155 (80.78 $\pm$ 1.78) <sup>a</sup>	40 (20.96 $\pm$ 0.73) <sup>a</sup>	41 $\pm$ 2 (n=40) <sup>a</sup>
5	187 (5)	140 (74.81 $\pm$ 2.80) <sup>ab</sup>	34 (17.96 $\pm$ 1.12) <sup>a</sup>	36 $\pm$ 2 (n=33) <sup>ab</sup>
10	198 (5)	140 (70.48 $\pm$ 1.09) <sup>bc</sup>	22 (10.73 $\pm$ 1.03) <sup>b</sup>	31 $\pm$ 2 (n=21) <sup>b</sup>
25	201 (5)	136 (67.97 $\pm$ 1.94) <sup>c</sup>	12 (6.11 $\pm$ 1.24) <sup>c</sup>	31 $\pm$ 3 (n=10) <sup>b</sup>
50	188 (5)	122 (65.04 $\pm$ 3.05) <sup>c</sup>	10 (5.61 $\pm$ 0.98) <sup>c</sup>	28 $\pm$ 3 (n=7) <sup>b</sup>

<sup>a-c</sup>Values in the same column with different superscripts differ significantly (P<0.05).

\*Blastocyst cell number, less than 16, was not included.

**Supplementary Table 4. Development of early embryos treated with 10  $\mu$ M EB1 for different time.**

Time (h)	No. embryos (Rep)	No. embryos cleaved (% $\pm$ SEM)	No. blastocysts (% $\pm$ SEM)	Blastocyst cell number (mean $\pm$ SEM)*
0	142 (3)	115 (81.23 $\pm$ 2.25) <sup>a</sup>	29 (20.20 $\pm$ 2.24) <sup>a</sup>	41 $\pm$ 3 (n=29) <sup>a</sup>
12	144 (3)	107 (74.72 $\pm$ 2.78) <sup>a</sup>	23 (15.86 $\pm$ 1.55) <sup>a</sup>	35 $\pm$ 3 (n=23) <sup>ab</sup>
24	159 (3)	110 (69.43 $\pm$ 1.92) <sup>b</sup>	15 (9.59 $\pm$ 0.90) <sup>b</sup>	30 $\pm$ 3 (n=14) <sup>b</sup>

<sup>a-b</sup>Values in the same column with different superscripts differ significantly (P<0.05).

\*Blastocyst cell number, less than 16, was not included.

**Supplementary Table 5. Effect of melatonin on the development of EB1-exposed embryos.**

Group	No. embryos (Rep)	No. embryos cleaved (% ± SEM)	No. blastocysts (% ± SEM)	Blastocyst cell number (mean ± SEM)*
CON	200 (5)	159 (79.80 ± 1.10) <sup>a</sup>	43 (21.75 ± 1.39) <sup>a</sup>	42 ± 2 (n=42) <sup>a</sup>
EB1	180 (5)	125 (69.57 ± 1.60) <sup>b</sup>	19 (10.67 ± 1.61) <sup>b</sup>	30 ± 3 (n=17) <sup>b</sup>
MT	174 (5)	147 (84.41 ± 1.23) <sup>c</sup>	50 (28.68 ± 1.71) <sup>c</sup>	48 ± 2 (n=49) <sup>c</sup>
ME	206 (5)	154 (75.25 ± 1.41) <sup>d</sup>	38 (18.26 ± 0.90) <sup>a</sup>	38 ± 1 (n=37) <sup>a</sup>

CON referred to embryos untreated. EB1 referred to embryos treated with Enniatin B1. MT referred to embryos treated with melatonin. ME referred to embryos treated with both melatonin and enniatin B1.

<sup>a-d</sup>Values in the same column with different superscripts differ significantly (P<0.05).

\*Blastocyst cell number, less than 16, was not included.

**Supplementary Table 6. Effect of melatonin on nuclear remodeling of EB1-exposed embryos during the first cell cycle.**

Time (h)	Group	No. embryos (Rep)	No. embryos unfertilized (%±SEM)	No. embryos with sperm nuclear condensation (%±SEM)	No. embryos with sperm nuclear decondensation (%±SEM)	No. embryos with paternal pronucleus (%±SEM)	No. embryos with nuclear division (%±SEM)	No. embryos with cytokinesis (%±SEM)
2	CON	44 (3)	7 (15.28±1.39)	15 (34.72±1.39) <sup>a</sup>	11 (25.00±1.60)	11 (25.00±1.60) <sup>a</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	EB1	43 (3)	6 (13.60±1.10)	22 (51.21±2.63) <sup>b</sup>	10 (23.36±2.33)	5 (11.84±0.66) <sup>b</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	MT	59 (3)	9 (15.29±0.50)	10 (16.88±1.09) <sup>c</sup>	17 (28.65±2.34)	23 (39.18±2.92) <sup>c</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	ME	45 (3)	7 (15.05±1.49)	15 (33.97±2.39) <sup>a</sup>	11 (24.80±2.72)	12 (26.18±1.96) <sup>a</sup>	0 (0.00±0.00)	0 (0.00±0.00)
4	CON	65 (3)	10 (15.41±1.27)	15 (23.26±1.53) <sup>a</sup>	13 (20.06±1.35)	27 (41.27±3.35) <sup>a</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	EB1	63 (3)	9 (14.31±0.39)	25 (39.67±0.83) <sup>b</sup>	15 (23.77±2.53)	14 (22.26±1.73) <sup>b</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	MT	60 (3)	9 (15.08±0.79)	4 (6.61±1.47) <sup>c</sup>	12 (20.11±1.06)	35 (58.20±1.91) <sup>c</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	ME	58 (3)	8 (13.68±0.98)	14 (24.11±0.45) <sup>a</sup>	13 (22.45±1.23)	23 (39.76±0.90) <sup>a</sup>	0 (0.00±0.00)	0 (0.00±0.00)
6	CON	70 (3)	8 (11.62±1.71)	11 (15.51±0.89) <sup>a</sup>	17 (24.32±0.35) <sup>a</sup>	34 (48.55±2.14) <sup>a</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	EB1	73 (3)	8 (10.87±0.67)	24 (32.91±1.13) <sup>b</sup>	22 (30.04±0.73) <sup>b</sup>	19 (26.19±1.63) <sup>b</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	MT	66 (3)	8 (12.10±1.24)	5 (7.84±1.93) <sup>c</sup>	7 (10.59±3.04) <sup>c</sup>	46 (69.48±2.24) <sup>c</sup>	0 (0.00±0.00)	0 (0.00±0.00)
	ME	54 (3)	6 (10.84±0.60)	9 (17.26±1.37) <sup>a</sup>	17 (31.19±0.61) <sup>b</sup>	22 (40.70±0.70) <sup>d</sup>	0 (0.00±0.00)	0 (0.00±0.00)
12	CON	55 (3)	8 (14.47±0.71)	4 (7.15±1.25) <sup>ac</sup>	7 (12.88±1.82) <sup>ac</sup>	36 (65.50±1.17) <sup>ac</sup>	0 (0.00±0.00) <sup>a</sup>	0 (0.00±0.00)
	EB1	86 (3)	10 (11.86±1.86)	21 (24.64±2.55) <sup>b</sup>	27 (30.97±2.81) <sup>b</sup>	28 (32.53±1.49) <sup>b</sup>	0 (0.00±0.00) <sup>a</sup>	0 (0.00±0.00)
	MT	73 (3)	9 (12.29±2.26)	2 (2.62±1.32) <sup>a</sup>	6 (8.40±2.78) <sup>a</sup>	52 (71.44±3.11) <sup>a</sup>	4 (5.25±2.64) <sup>b</sup>	0 (0.00±0.00)
	ME	76 (3)	10 (13.03±2.19)	9 (12.05±1.07) <sup>c</sup>	14 (18.16±2.27) <sup>c</sup>	43 (56.77±3.94) <sup>c</sup>	0 (0.00±0.00) <sup>a</sup>	0 (0.00±0.00)
18	CON	65 (3)	9 (13.73±2.29)	1 (1.59±1.59) <sup>a</sup>	1 (1.59±1.59) <sup>a</sup>	25 (38.58±2.34)	24 (36.85±1.79) <sup>a</sup>	5 (7.66±1.47) <sup>a</sup>
	EB1	77 (3)	8 (10.77±2.10)	11 (14.10±1.37) <sup>b</sup>	20 (25.98±1.01) <sup>b</sup>	29 (37.68±1.16)	9 (11.47±1.25) <sup>b</sup>	0 (0.00±0.00) <sup>b</sup>
	MT	58 (3)	7 (12.01±0.25)	0 (0.00±0.00) <sup>a</sup>	1 (1.39±1.39) <sup>a</sup>	21 (36.60±2.36)	20 (34.64±3.46) <sup>a</sup>	9 (15.36±1.82) <sup>c</sup>
	ME	70 (3)	8 (11.44±1.45)	2 (2.85±1.43) <sup>a</sup>	6 (8.30±3.85) <sup>a</sup>	27 (38.80±3.48)	23 (32.87±0.96) <sup>a</sup>	4 (5.75±1.48) <sup>a</sup>
24	CON	79 (3)	9 (11.29±1.32)	0 (0.00±0.00)	1 (1.45±1.45) <sup>a</sup>	18 (23.01±1.54) <sup>ac</sup>	15 (18.66±1.27) <sup>a</sup>	36 (45.59±1.26) <sup>a</sup>
	EB1	68 (3)	7 (10.21±0.71)	0 (0.00±0.00)	10 (15.06±2.54) <sup>b</sup>	25 (36.46±3.30) <sup>b</sup>	7 (10.21±0.71) <sup>b</sup>	19 (28.07±0.97) <sup>b</sup>
	MT	93 (3)	10 (10.72±0.22)	0 (0.00±0.00)	1 (0.93±0.93) <sup>a</sup>	16 (17.03±1.68) <sup>a</sup>	19 (20.70±3.46) <sup>a</sup>	47 (50.62±1.56) <sup>c</sup>
	ME	82 (3)	8 (9.80±1.33)	0 (0.00±0.00)	4 (4.79±0.94) <sup>a</sup>	23 (27.98±1.18) <sup>c</sup>	15 (18.30±1.97) <sup>a</sup>	32 (39.14±1.25) <sup>d</sup>

CON referred to embryos untreated. EB1 referred to embryos treated with Enniatin B1. MT referred to embryos treated with melatonin. ME referred to embryos treated with both melatonin and enniatin B1.

<sup>a-d</sup>Values at the same time in the same column with different superscripts differ significantly (P<0.05).