Supplementary Tables

Supplementary Table 1. Fold change in mRNA expression in *CEMP1, COL I,* and *OPN* in aged parental PDL cells, cementoblastoma cells (TCN), STRO-1 positive PDL cells, and STRO-1 negative PDL cells compared to their young counterparts at two weeks. Data correspond to Figure 5.

CEMP1	PDL	TCN	S+	S-
Young	1	1	1	1
Aged	0.496546248	0.382447423	208.4176045	0.267943366
COL I	PDL	TCN	S+	S-
Young	1	1	1	1
Aged	2.118926189	0.777366405	3.095129987	1.995384353
OPN	PDL	TCN	S+	S-
Young	1	1	1	1
Aged	12.89136685	0.7456997	12.90626815	0.695762422

Supplementary Table 2. Fold change in mRNA expression for *CEMP1* in aged and young parental PDL cells, STRO-1 positive PDL cells, STRO-1 negative PDL cells, cementoblastoma (TCN) cells, and hMSC over time and under osteogenic (Tx) or control (UT) media conditions. Data correspond to Figure 4.

PDL *CEMP1*	Fold Increase/ Decrease	P value	STRO-1+ CEMP1	Fold Increase/ Decrease	P value	STRO-1- *CEMP1*	Fold Increase/ Decrease	P value
0h UT	1		0h UT	1		0h UT	1	
6h UT	1.599	0.009	6h UT	0.861	0.000001	6h UT	0.550	0.000002
6h Tx	1.623	0.003	6h Tx	0.827	0.00006	6h Tx	0.902	0.0000003
24h UT	3.581	0.00003	24h UT	1.174	0.0002	24h UT	0.307 (-3.2)	0.000003
24h Tx	3.454	0.00001	24h Tx	0.742	0.00003	24h Tx	0.823	0.00003
72h UT	2.841	0.0001	72h UT	1.023	0.0001	72h UT	0.678	0.00002
72h Tx	7.161	0.0000009	72h Tx	1.442	0.059	72h Tx	0.863	0.0000002
1wk UT	12.883	0.00001	1wk UT	5.707	0.0000004	1wk UT	0.348 (-2.8)	0.00004
1wk Tx	3.546	0.00004	1wk Tx	2.693	0.000009	1wk Tx	0.052 (-19.0)	0.0000008
TCN *CEMP1*	**Fold Increase/ Decrease**	**P value**				**hMSC *CEMP1***	**Fold Increase/ Decrease**	**P value**
0h UT	1					0h UT	1	
6h UT	0.510	0.001				6h UT	0.762	0.07
6h Tx	0.249 (-4.0)	0.00001				6h Tx	0.644	0.03
24h UT	0.638	0.02				24h UT	1.437	0.00005
24h Tx	0.394 (-2.5)	0.0001				24h Tx	0.900	0.004
72h UT	1.729	0.0002				72h UT	0.506	0.001
72h Tx	1.068	0.0001				72h Tx	1.012	0.00006
1wk UT	1.800	0.00003				1wk UT	1.765	0.009
1wk Tx	2.374	0.000003				1wk Tx	0.577	0.034

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Supplementary Table 3. Fold change in mRNA expression for *OPN* in aged and young parental PDL cells, STRO-1 positive PDL cells, STRO-1 negative PDL cells, cementoblastoma (TCN) cells, and hMSC over time and under osteogenic (Tx) or control (UT) media conditions. Data correspond to Supplementary Figure 2.
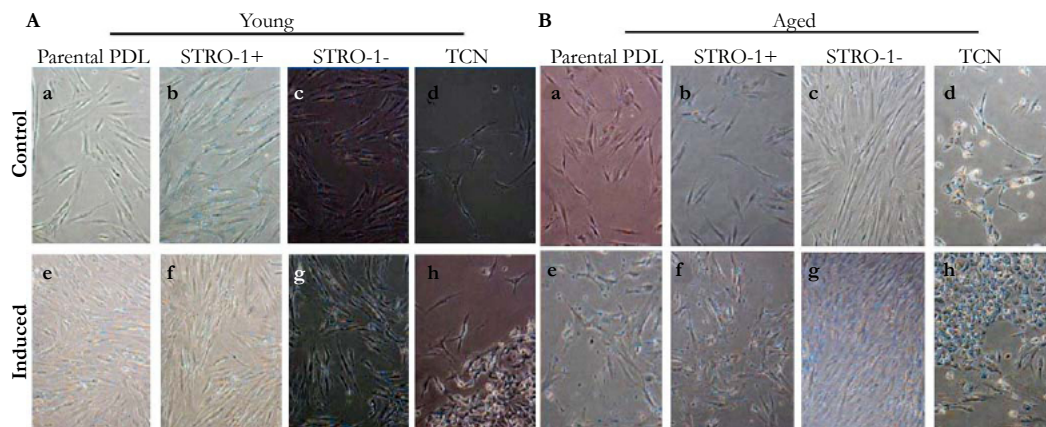
PDL OPN	Fold Increase/ Decrease	P value	STRO-1+ *OPN*	Fold Increase/ Decrease	P value	STRO-1- *OPN*	Fold Increase/ Decrease	P value
0h UT	1		0h UT	1		0h UT	1	
6h UT	1.379	0.0003	6h UT	1.052	0.00005	6h UT	3.857	0.059
6h Tx	1.366	0.00006	6h Tx	1.290	0.0006	6h Tx	3.440	0.324
24h UT	0.516	0.0004	24h UT	0.785	0.00007	24h UT	3.580	0.240
24h Tx	1.794	0.00004	24h Tx	2.915	0.0008	24h Tx	2.927	0.034
72h UT	1.310	0.0003	72h UT	1.934	0.003	72h UT	4.046	0.003
72h Tx	2.135	0.0001	72h Tx	16.344	0.0001	72h Tx	4.032	0.004
1wk UT	1.713	0.0003	1wk UT	62.552	0.00001	1wk UT	1.627	0.0009
1wk Tx	3.052	0.00009	1wk Tx	55.889	0.0000005	1wk Tx	0.146 (-6.8)	0.00003
TCN OPN	**Fold Increase/ Decrease**	**P value**				**hMSC OPN**	**Fold Increase/ Decrease**	**P value**
0h UT	1					0h UT	1	
6h UT	1.430	0.00003				6h UT	1.143	0.005
6h Tx	1.394	0.00003				6h Tx	0.863	0.891
24h UT	0.883	0.00003				24h UT	2.028	0.000001
24h Tx	1.172	0.00002				24h Tx	0.425 (-2.3)	0.00005
72h UT	1.560	0.00004				72h UT	0.429 (-2.3)	0.0001
72h Tx	0.255 (-3.9)	0.000005				72h Tx	0.502	0.345
1wk UT	1.706	0.002				1wk UT	0.157 (-6.3)	0.00002
1wk Tx	0.934	0.00002				1wk Tx	0.120 (-8.2)	0.00001

Supplementary Table 4. Fold change in mRNA expression for *COL I* in aged and young parental PDL cells, STRO-1 positive PDL cells, STRO-1 negative PDL cells, cementoblastoma (TCN) cells, and hMSC over time and under osteogenic (Tx) or control (UT) media conditions. Data correspond to Supplementary Figure 3.
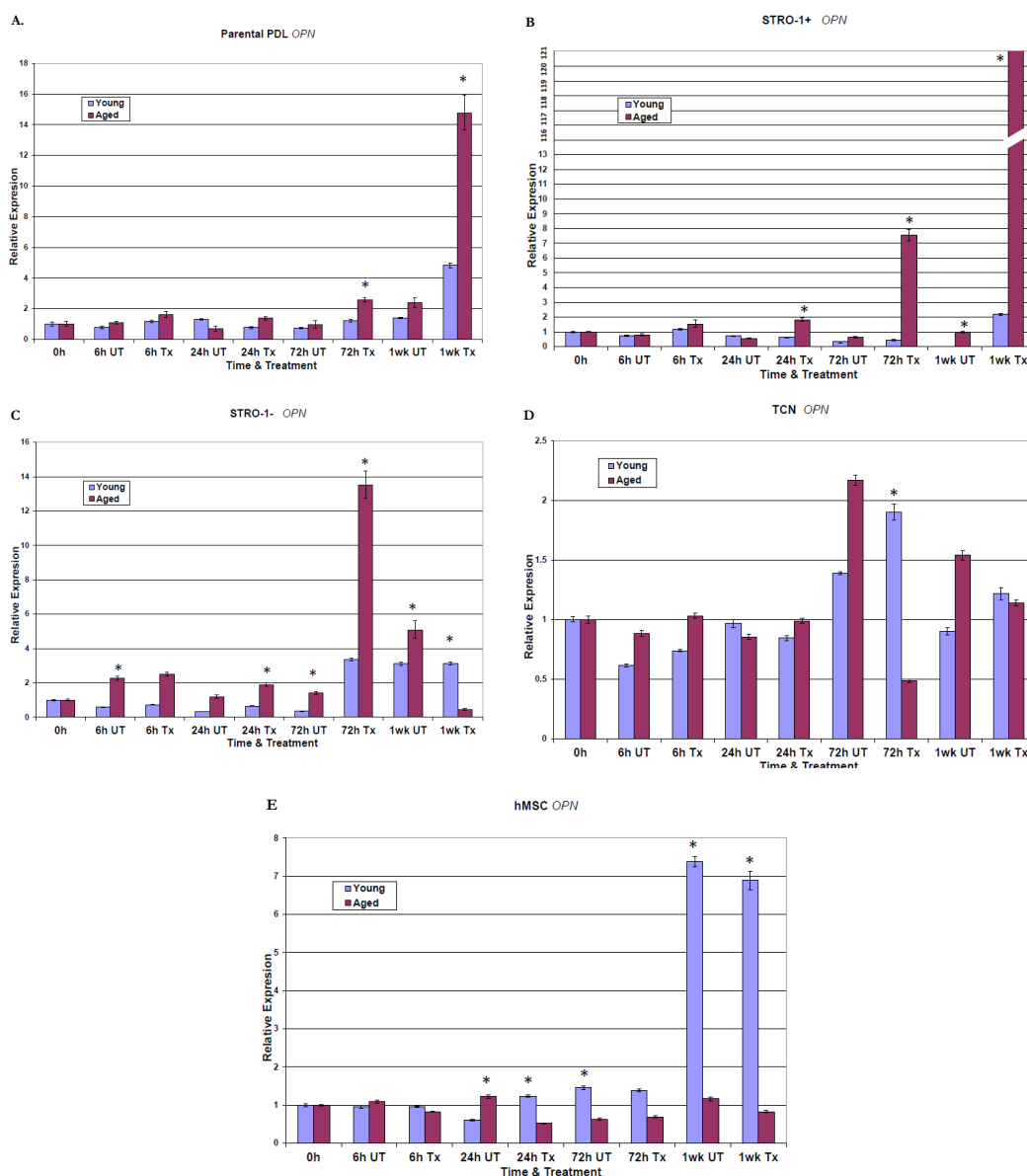
PDL *COL I*	Fold Increase/ Decrease	P value	STRO-1+ *COL I*	Fold Increase/ Decrease	P value	STRO-1- *COL I*	Fold Increase/ Decrease	P value
0h UT	1		0h UT	1		0h UT	1	
6h UT	0.941	0.325	6h UT	4.452	0.00004	6h UT	0.512	0.000007
6h Tx	0.547	0.000007	6h Tx	2.567	0.00006	6h Tx	0.638	0.0000001
24h UT	1.421	0.02	24h UT	5.667	0.0001	24h UT	0.397 (-2.5)	0.00001
24h Tx	0.958	0.03	24h Tx	2.121	0.00003	24h Tx	0.362 (-2.7)	0.00002
72h UT	1.388	0.00004	72h UT	3.753	0.831	72h UT	0.289 (-3.4)	0.001
72h Tx	1.583	0.000002	72h Tx	3.409	0.01	72h Tx	0.308 (-3.2)	0.0003
1wk UT	7.292	0.0000001	1wk UT	18.233	0.0000002	1wk UT	0.462 (-2.1)	0.00002
1wk Tx	2.051	0.000002	1wk Tx	15.829	0.000002	1wk Tx	4.183	0.000001
TCN *COL I*	**Fold Increase/ Decrease**	**P value**				**hMSC *COL I***	**Fold Increase/ Decrease**	**P value**
0h UT	1					0h UT	1	
6h UT	1.058	0.0003				6h UT	1.476	0.000004
6h Tx	1.147	0.0002				6h Tx	1.017	0.000001
24h UT	0.937	0.0007				24h UT	2.853	0.00002
24h Tx	1.297	0.372				24h Tx	1.887	0.0000001
72h UT	1.123	0.001				72h UT	2.775	0.0003
72h Tx	4.266	0.00001				72h Tx	5.563	0.00007
1wk UT	0.278 (-3.5)	0.00001				1wk UT	10.759	0.00003
1wk Tx	5.278	0.0001				1wk Tx	45.286	0.000003

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Supplementary Figures

Supplementary Figure 1. Phase contrast images of young and aged PDL cells grown under control and osteogenically induced conditions. A. Images of young (P3-4) PDL cells grown in control and osteogenically-induced media for 2 weeks. B. Images of aged (P11-13) PDL cells grown in control and osteogencially induced media for 2 weeks.

Supplementary Figure 2: Time course assays showing *Osteopointin (OPN)* expression in young and aged parental PDL, STRO-1 positive, STRO-1 negative, cementoblastoma (TCN), and human mesenchymal stem (hMSC) cells under osteogenic and control media conditions. The graphs show the relative expression of *OPN* (Y-axis) as assessed by real-time quantitative reverse transcription PCR from 0 hr through one week (X-axis) comparing control untreated cells (UT) and osteogenically induced cells (Tx). * indicates significant upregulation or downregulation of aged cells P< 0.05.

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Supplementary Figure 3. Time course assays showing *Collagen 1 (COL 1)* expression in young and aged parental PDL, STRO-1 positive, STRO-1 negative, cementoblastoma (TCN), and human mesenchymal stem (hMSC) cells under osteogenic and control media conditions. The graphs show the relative expression of *COL 1* (Y-axis) as assessed by real-time quantitative reverse transcription PCR from 0 hr through one week (X-axis) comparing control untreated cells (UT) and osteogenically induced cells (Tx). * indicates significant upregulation or downregulation of aged cells P< 0.05.

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