Electronic Supplementary Material (ESI) for Analyst

Supplementary Information

GENOMAGNETIC ASSAY FOR ELECTROCHEMICAL DETECTION OF OSTEOGENIC DIFFERENTION IN MESENCHYMAL STEM CELLS

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† **Electronic Supplementary Information (ESI) available:** Characterization by flow cytometry, the histograms and tables representing the results for electrochemical detection of sequence-selective DNA hybridization related to OSC, OSN and OSP.

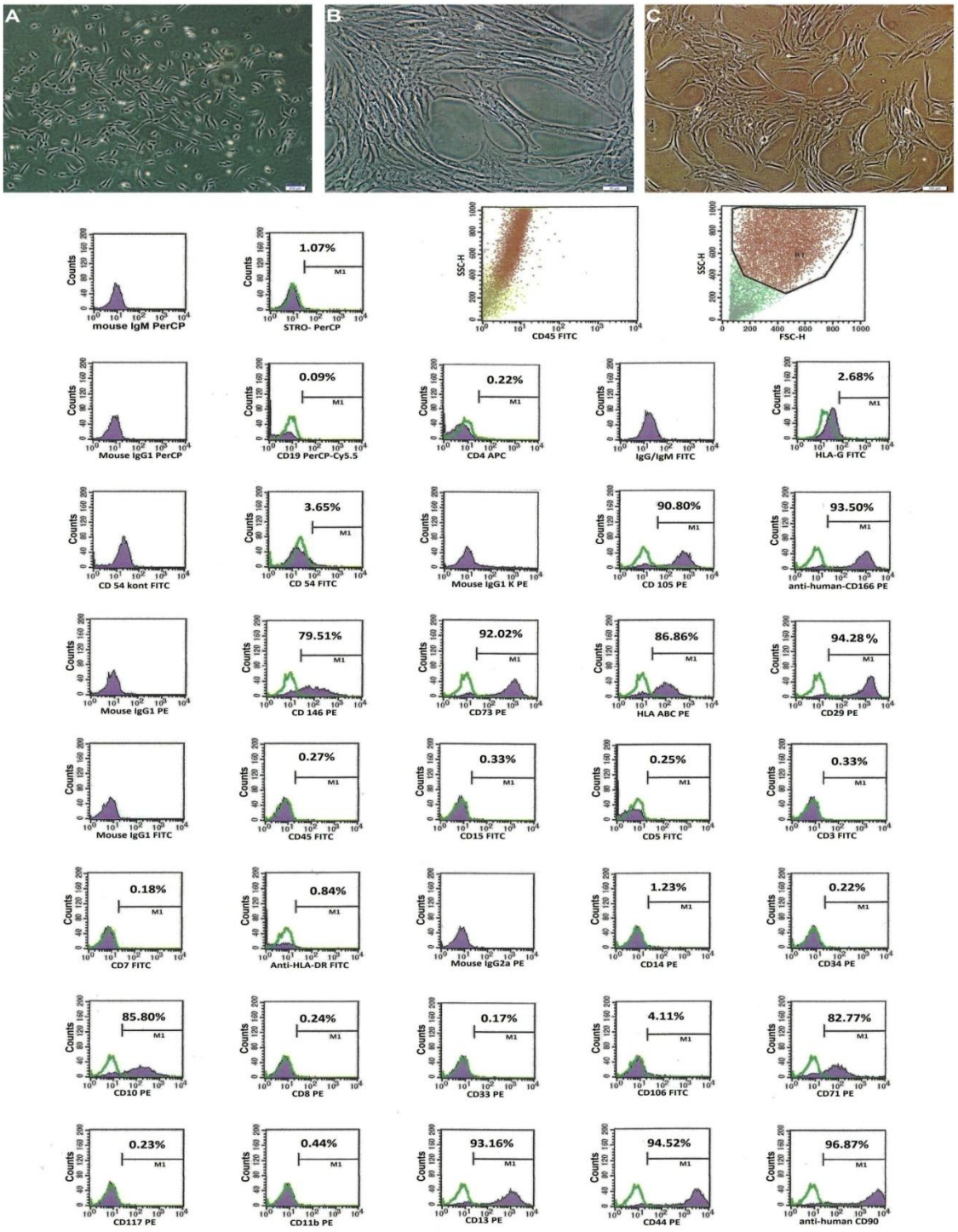

Fig. S1. Culture of hBM-MSCs and characterization by flow cytometry. Colony formation of stem cells after isolation (A; P0, 8 days). Morphology of hBM-MSCs in culture represented large, flattened structures (B; P1, 17 days. C; P3, 3 days). Representative flow cytometry analysis of cell-surface markers of MSCs (D; P3).

Table S1. The changes at the oxidation signals of guanine and adenine after hybridization between each DNA probe and its complementary target; OSC, OSN and OSP.

	Guanine	**Adenine**
OSC	% 140 increase	% 100 increase
OSN	% 30 decrease	% 283 increase
OSP	% 25 decrease	% 100 increase

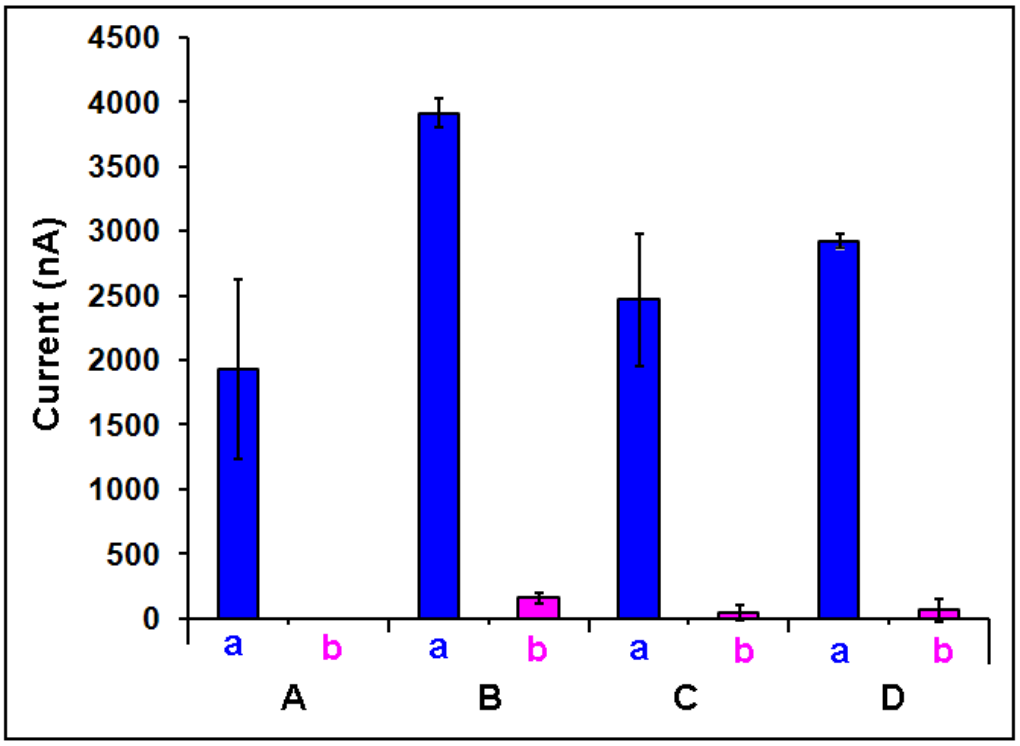

Fig. S2. Histograms representing the guanine **(a)** and adenine **(b)** signals by using OSC DNA probe immobilized magnetic particles before hybridization **(A)** and after hybridization in the presence of OSC complementary target **(B),** OSN target **(C)** and OSP target **(D).**

Table S2. Changes in the oxidation signals of guanine and adenine signals after hybridization between OSC DNA probe and its complementary target **(A),** OSN target **(B)** and OSP target **(C)**.

	Guanine	**Adenine**
A	%102 increased	%100 increased
B	%28 increased	%100 increased
C	%51 increased	%100 increased

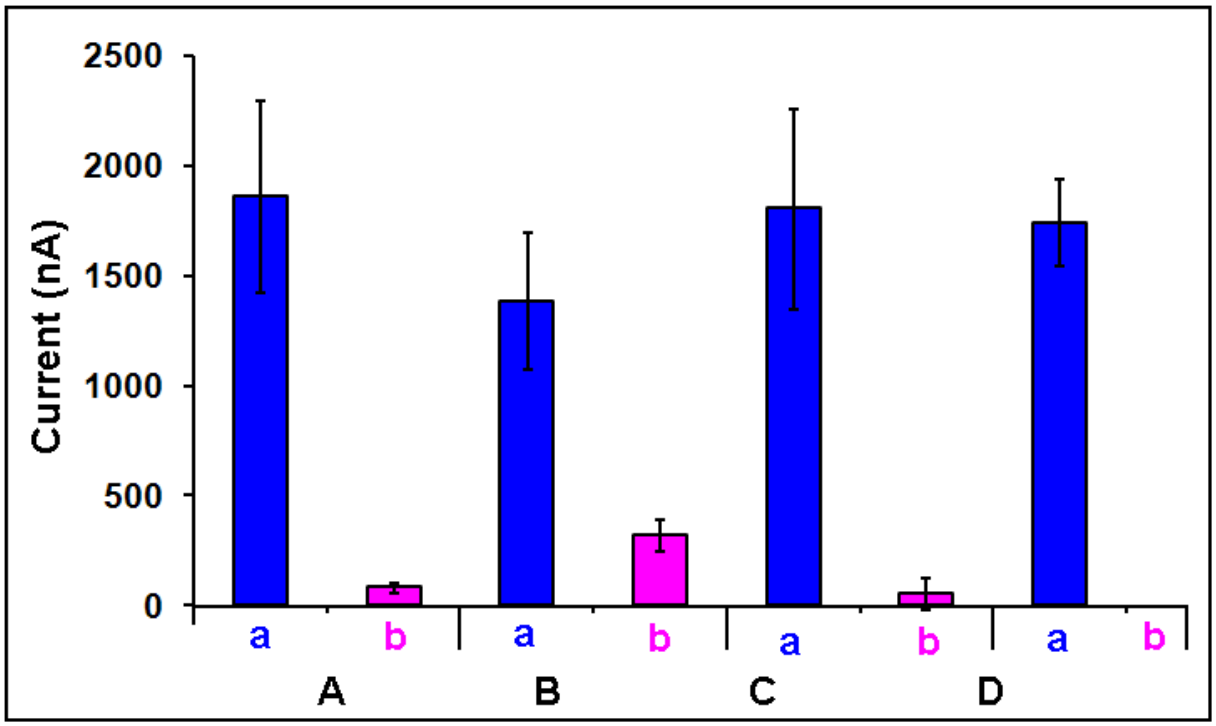

Fig. S3. Histograms representing the guanine **(a)** and adenine **(b)** signals by using OSN DNA probe immobilized magnetic particles before hybridization **(A)** and after hybridization in the presence of OSN complementary target **(B),** OSC target **(C)** and OSP target **(D).**

Table S3. Changes in the oxidation signals of guanine and adenine signals after hybridization between OSN DNA probe and its complementary target **(A),** OSC target **(B)** and OSP target **(C).**

	Guanine	**Adenine**
A	%30 decreased	% 283 increased
B	%2.8 decreased	% 37 increased
C	% 6.3 decreased	%100 decreased

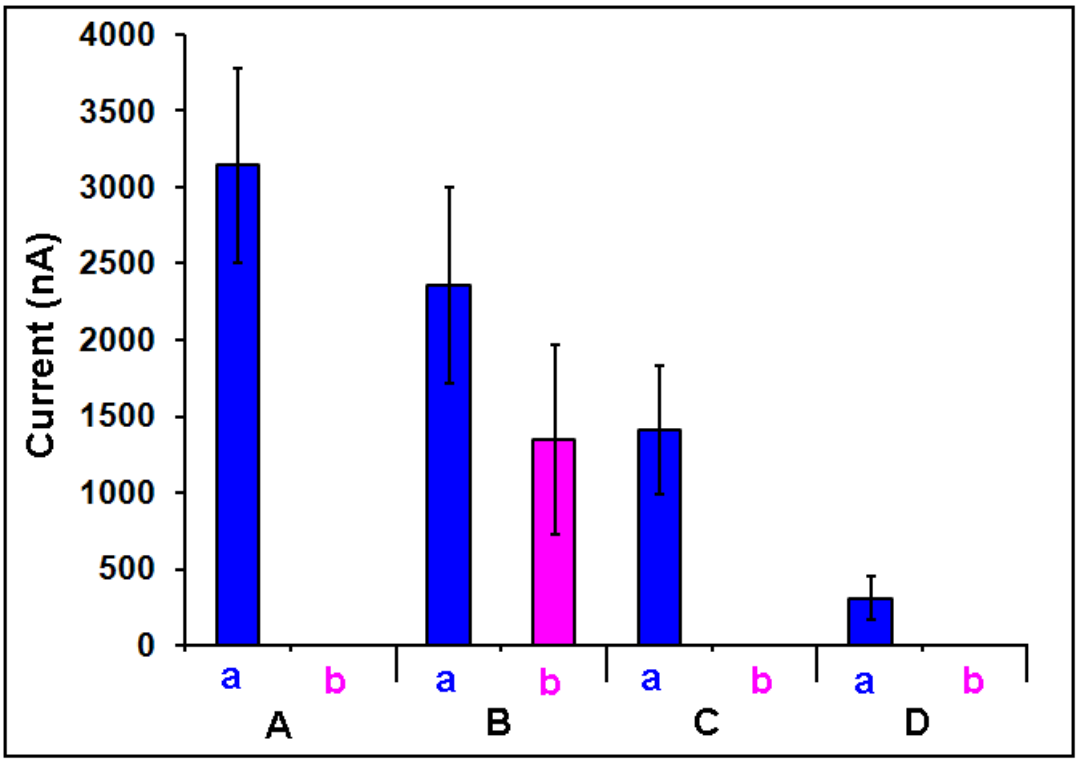

Fig. S4. Histograms representing the guanine **(a)** and adenine **(b)** signals by using OSP DNA probe immobilized magnetic particles before hybridization **(A)** and after hybridization in the presence of OSP complementary target **(B),** OSC target **(C)** and OSN target **(D).**

Table S4. Changes in the oxidation signals of guanine and adenine signals after hybridization between OSP DNA probe and its complementary target **(A),** OSC target **(B)** and OSN target **(C).**

	Guanine	**Adenine**
A	%25 decreased	% 100 increased
B	%55 decreased	% 100 decreased
C	% 90 decreased	%100 decreased