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## Supplementary Information

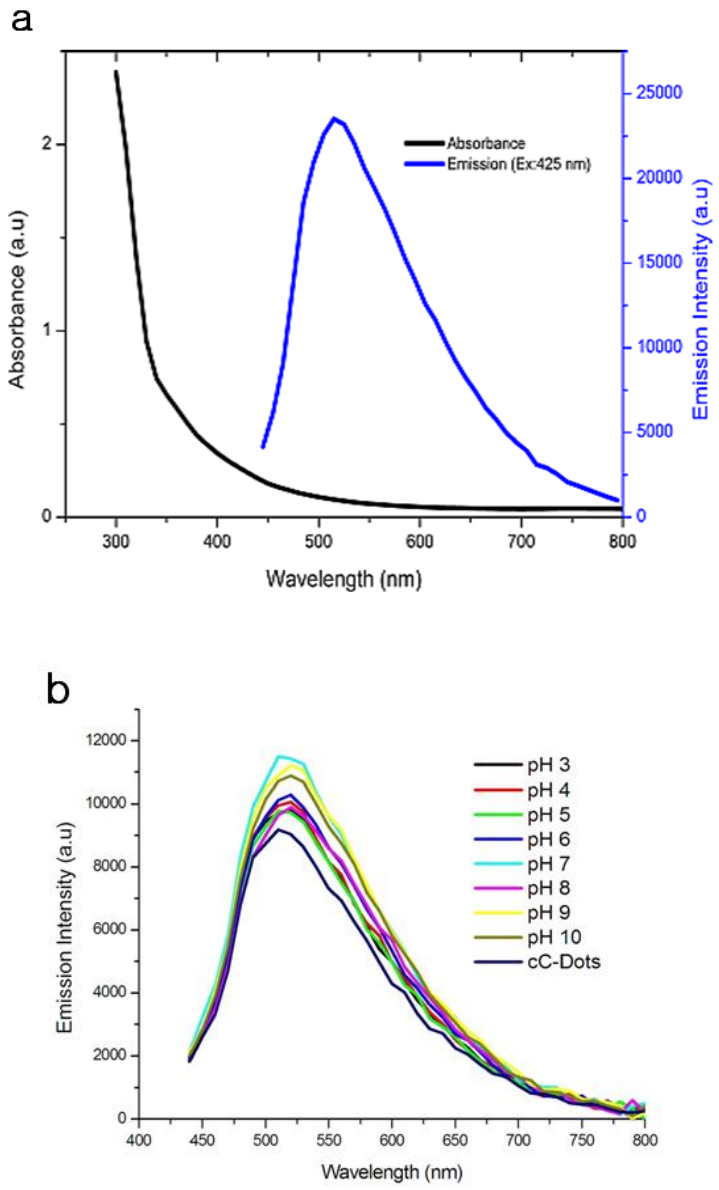


**Fig. S1.** (a) UV /Vis absorbance and emission spectra of the cC-dots. The maximum absorbance of the cC-dots is 300 nm and the maximum emission is 525 nm. (b) pH-dependent emission spectra of the cC-dots with excitation of 525 nm. The pH buffer ranging from 3 to 10 was mixed with the cC-dots.

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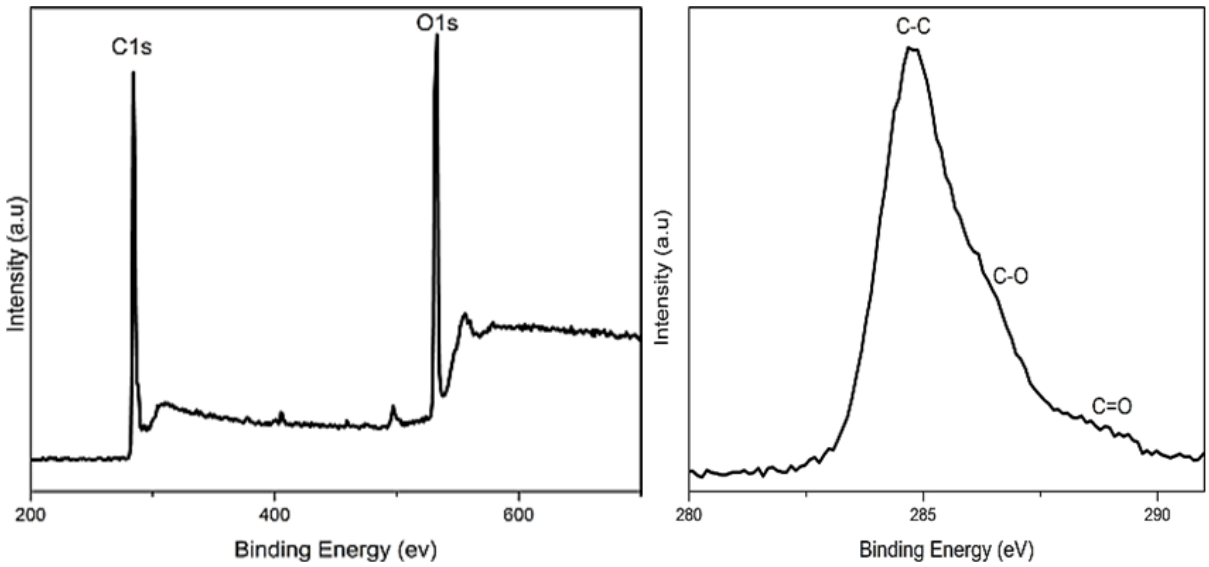


**Fig. S2.** XPS spectra of the cC-dots (left) and high-resolution XPS C1s spectrum of the cC-dots (right).

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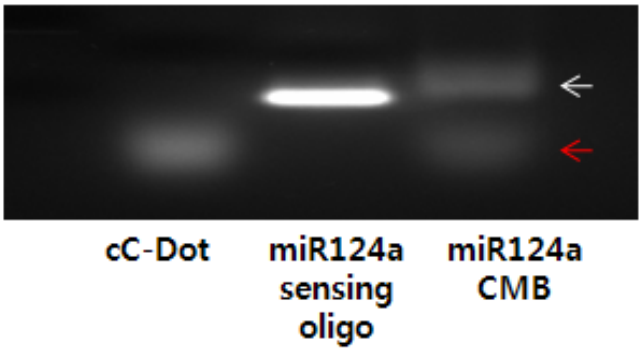


**Fig. S3.** Conjugation efficiency of the miR124a CMB by electrophoresis. 20 µl of 1 mg/ml of the cC-Dots alone (lane 1), 80 pmol of the miR124a sensing oligo (lane 2) and conjugated mixture of both the cC-Dots and the miR124a sensing oligo (lane 3) were loaded onto a 2% agarose gel. A white arrow and a red arrow indicated the position of the miR124a sensing oligo and the cC-Dots, respectively.

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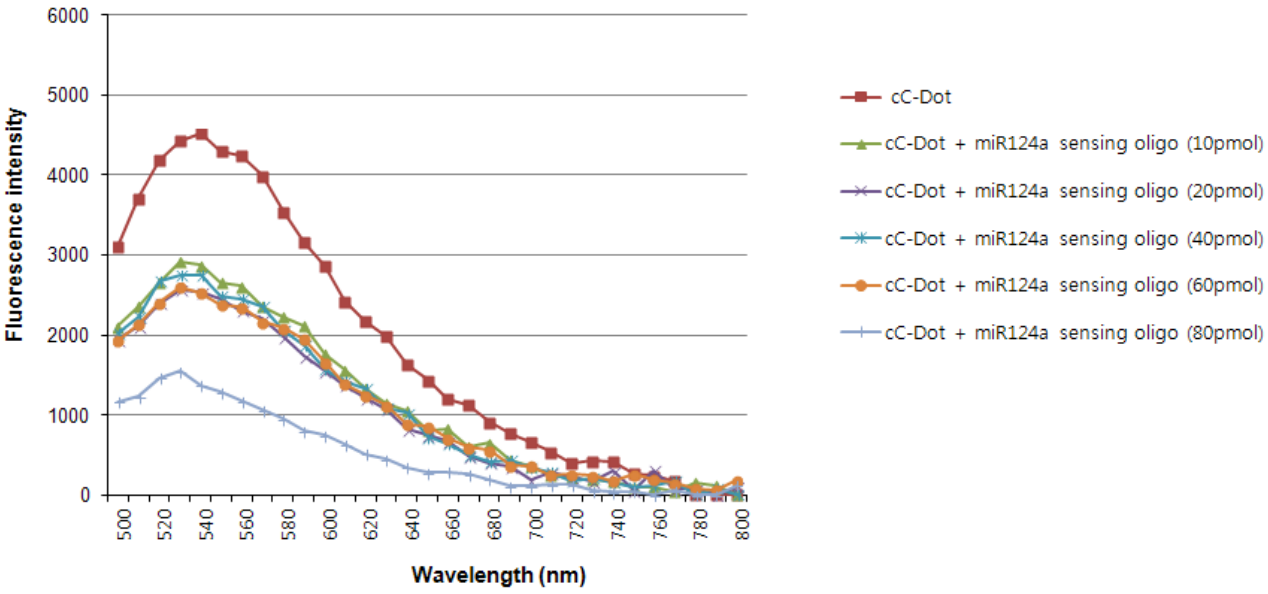


**Fig. S4.** Spectral fluorescence intensity for the quenching efficiency of the cC-Dots with excitation of 480 nm. The cC-Dots were conjugated with various concentrations (0, 10, 20, 40, 60 and 80 pmol) of the miR124a sensing oligo in a microtube.

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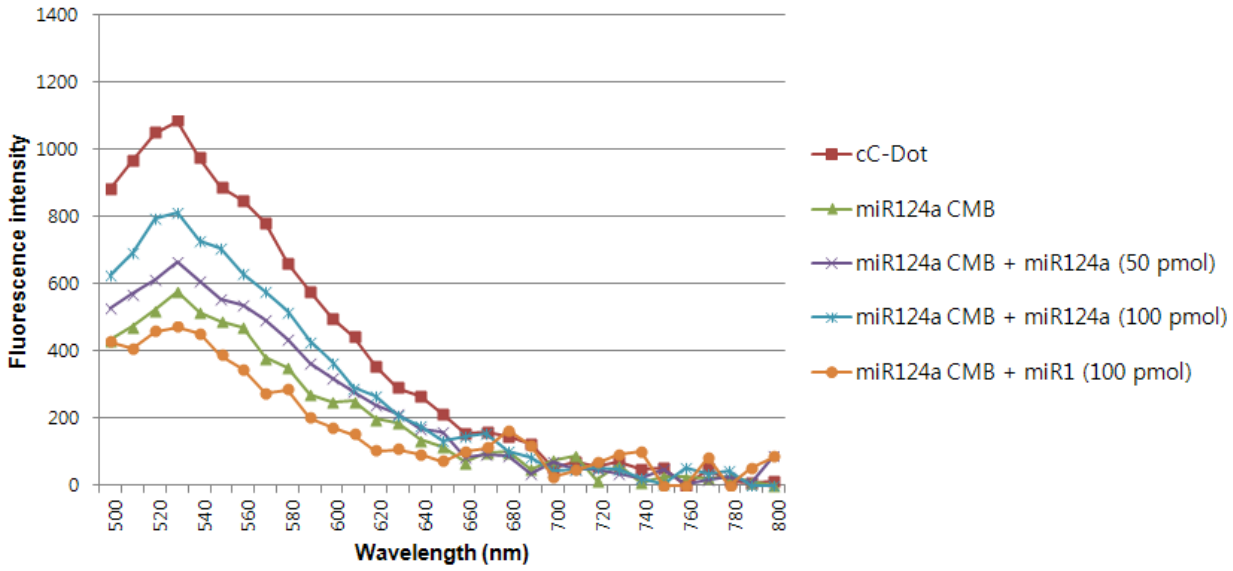


**Fig. S5.** Spectral fluorescence intensity of the miR124a CMB with excitation at 480 nm for sensing the miR124a. Various concentrations (0, 50 and 100 pmol) of miR124a and 100 pmol of miR1 were incubated with the miR124a CMB in a microtube.

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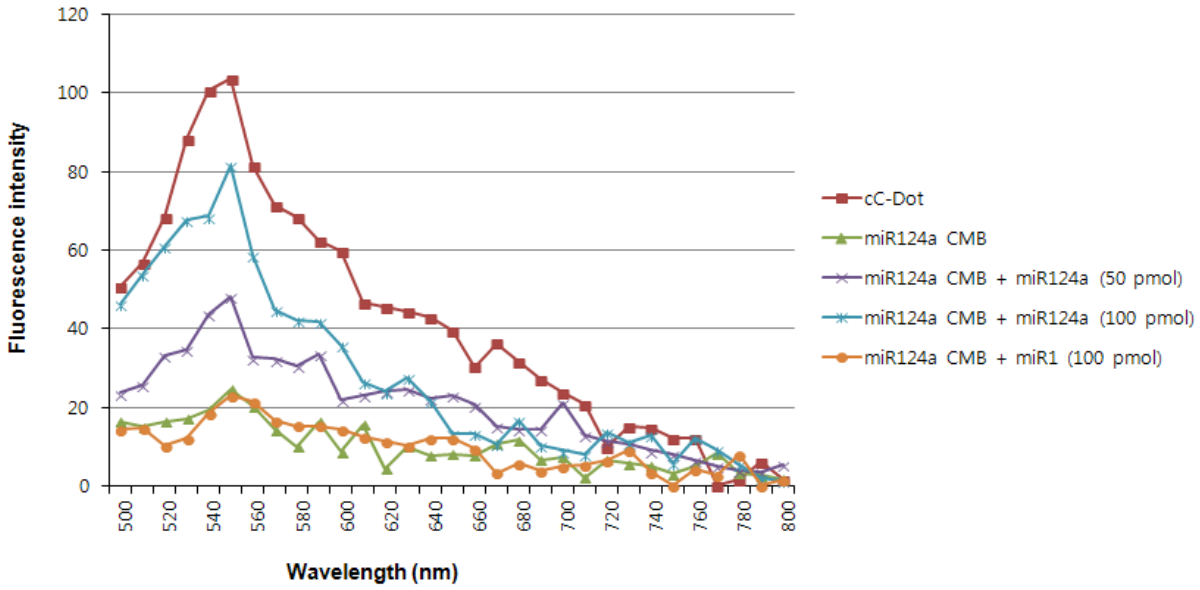


**Fig. S6.** Spectral fluorescence intensity of sensing the miR124a with excitation at 480 nm using the miR124a CMB in CHO cells. Various concentrations (0, 50 and 100 pmol) of the miR124a and 100 pmol of the miR1 were transfected into CHO cells which were incubated with the miR124a CMB.

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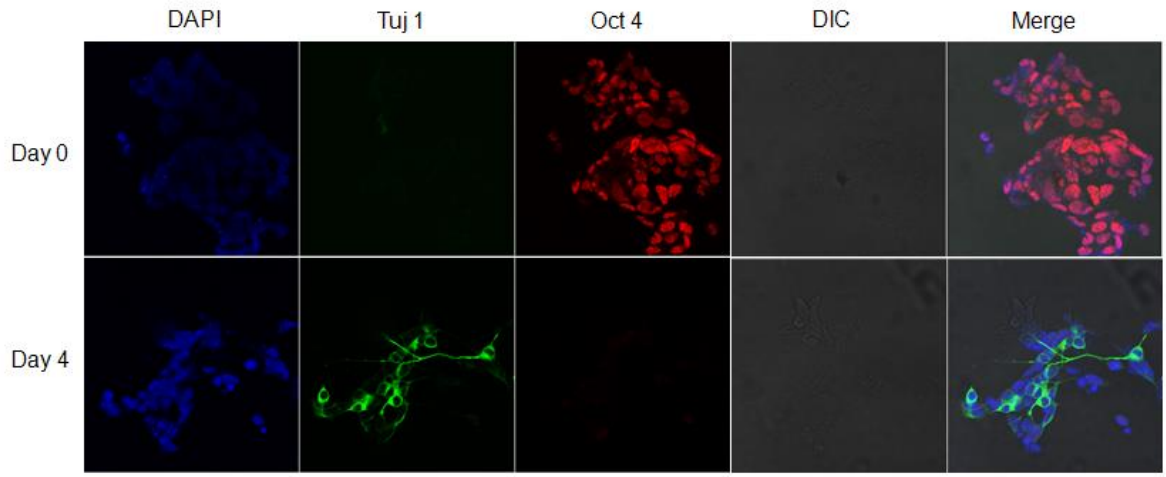


**Fig. S7.** Immunofluorescence staining of the P19 cells from both undifferentiated (Day 0) and differentiated (Day 4) using Oct4 (stem cell marker) and Tuj1 (neuronal marker) antibodies. All images were merged with the 4', 6-diamidino-2-phenylindole (DAPI) image (nucleus staining, 460 nm) and cellular morphology.

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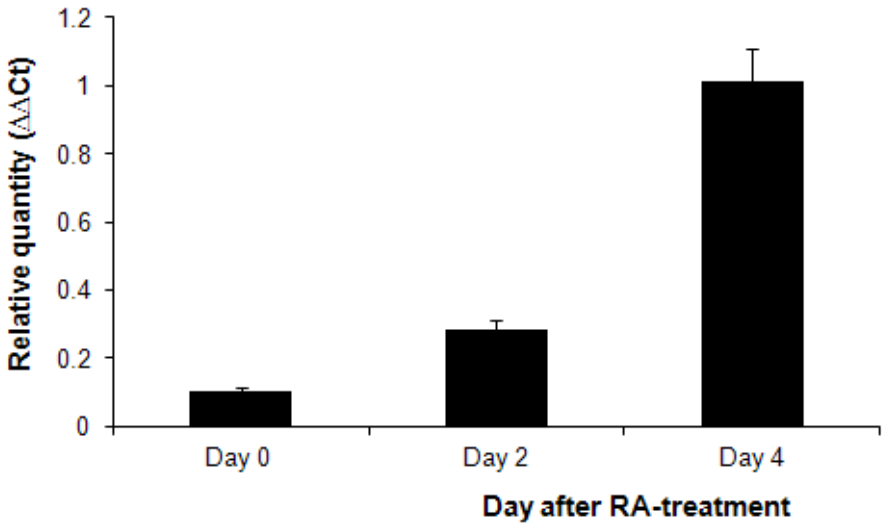


**Fig. S8.** Real-time PCR of mature miR124a on 0, 2 and 4 days after neuronal differentiation of P19 cells. Data was expressed as means ±standard deviation in triplicate samples (*, $P<0.05$; **, $P<0.005$).

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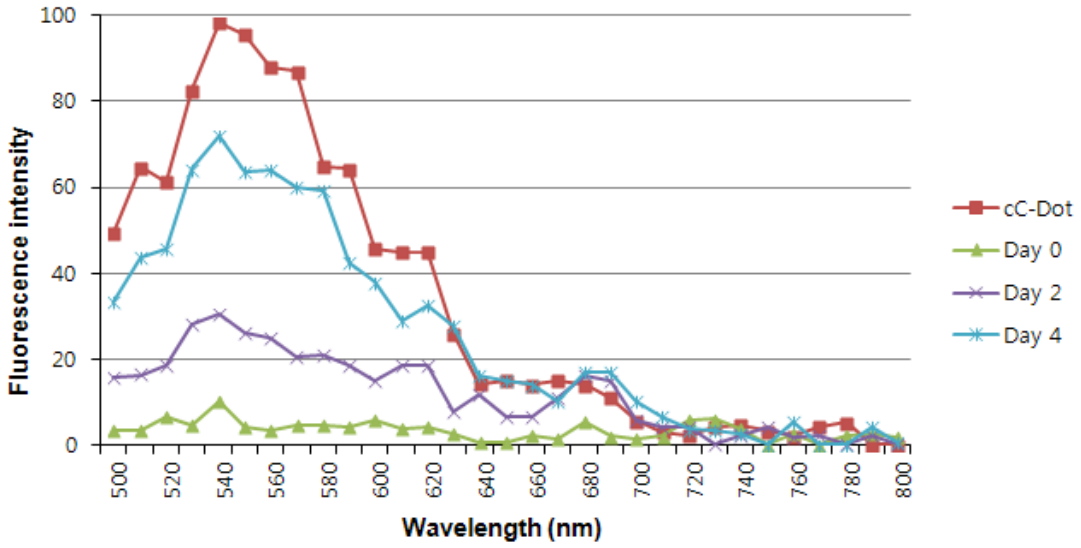


**Fig. S9.** Spectral fluorescence intensity of sensing the endogenous miR124a with excitation at 480 nm using the miR124a CMB on 0, 2 and 4 days after neuronal differentiation of P19 cells.