Monitoring the Kinetic Evolution of Mesenchymal Stem Cell Differentiation using Raman Micropectroscopy

F. Ravera¹, E. Efeoglu², H.J. Byrne¹

¹FOCAS Research Institute, Technological University Dublin, City Campus, Dublin 8, Ireland ²NICB(National Institute for Cellular Biotechnology) at Dublin City University, Dublin 9 Ireland Corresponding Author: Francesca Ravera (D16126527@mytudublin.ie)



Supplementary Material

Figure S.1. A) MCR-ALS resolved components corresponding to the evolution of the nucleolus over a 21 day period of differentiation on 2D culture substrate (offset for clarity). **B)**

Three stage kinetic model of the evolution of the kinetic components $A \rightarrow B$, $B \rightarrow C$. C) Difference spectra between the first and the second component (blue) and second and third (red) (offset for clarity). The dashed lines indicate zero difference.



Figure S.2. A) MCR-ALS resolved components corresponding to the evolution of the nucleus over a 21 day period of differentiation on 2D culture substrate (offset for clarity). **B)** Three stage kinetic model of the evolution of the kinetic components $A \rightarrow B$, $B \rightarrow C$. **C)** Difference spectra between the first and the second component (blue) and second and third (red) (offset for clarity). The dashed lines indicate zero difference.



Figure S.3 A) MCR-ALS resolved components corresponding to the evolution of the cytoplasm over a 21 day period of differentiation on 2D culture substrate (offset for clarity). B) Three stage kinetic model of the evolution of the kinetic components $A \rightarrow B, B \rightarrow C. C$) Difference spectra between the first and the second component (blue) and second and third (red) (offset for clarity). The dashed lines indicate zero difference.



Figure S.4 A representative white-light image of MSCs. **B)** Mean spectra of nucleolus (red), nucleus (blue) and cytoplasm (green) of MSCs. The cellular regions are indicated with black arrows and respective spectra are provided in B. The spectra have been offset for clarity.