Supplementary Data

Figure S1. Global gene expression analyses of re-programmed 3T3/D3 cells. (A) Heat map of z-scored values for 3286 genes showing significant differences ($p<0.001$ and absolute log fold change of >1) between 3T3 and 3T3/D3 cells and the expression level of same genes in D3 cells. (**B**) Heat map of z-scored 99 genes down-regulated in 3T3 cells and up-regulated in D3 and 3T3/D3 cells. A partial list of up regulated or down regulated genes common to 3T3/D3 and D3 cells is shown in table 1 of the main text. (**C**) 3,286 genes found to be differentially expressed between 3T3 and 3T3/D3 cell types were categorized with respect to functional groups as per the software EASE (http://david.niaid.nih.gov/david/ease.htm). These functional groups include the modulation in the expression of genes involved in chromatin remodeling and methyltransferase activities.

Figure S2: 3T3/D3 cells acquire Cardiomyocyte and endothelial cell morphology. Phase contrast images showing cardiomyocyte and endothelial cell-like morphology of 3T3/D3 cells when cultured under conditions conducive to CMC or EC differentiation, in vitro.

Figure S3: Neuronal and adipogenic differentiation of 3T3/D3 cells.

Cells were cultured under neuronal and adipogenic differentiation conditions (*see methods in main text*) and the expression of neuronal markers (**A**) and adipocyte marker (**B**) were assessed by immunocytochemical staining. Representative images are shown.

Figure S4: **Endothelial and smooth muscle differentiation of 3T3/D3 cells transplanted in the ischemic hind limb.** Tissue sections from ischemic hind limbs transplanted with 3T3/D3 or 3T3/3T3 cells were analyzed for EC and skeletal muscle differentiation of transplanted cells. Fluorescent microscopy was conducted to visualize co-localization of CD31+ (green) and DiI+ (red) cells and alpha-SMA+ (green) and DiI+ (red) cells to determine EC and muscle differentiation, respectively and images in the same visual field were merged to generate composite images. As shown in **Fig. S4A** many CD31+DiI double positive cells (indicated by yellow fluorescence) were observed in the ischemic tissue of mice treated with 3T3/D3 cells compared to those treated with 3T3/3T3 cells. Similarly, a large number of 3T3/D3 cells co-expressed muscle marker, α-SMA, in the ischemic hind limbs while very few α-SMA +DiI double positive cells in 3T3/3T3 treated mice were observed (**Fig. S4B**). Similar patterns were observed when tissue sections were stained with additional EC and muscle cell markers (Isolectin B4 and desmin; data not shown).

Figure S5. Transplanted 3T3/D3 cells proliferate in the ischemic myocardium. We determined the number of proliferating GFP+ transplanted cells in the infracted myocardium 28 days following AMI and cell transplantation. A higher number of proliferating cells, (nuclei stained positive for Ki67 (red) were also observed in the myocardial sections from 3T3/D3 (yellow fluorescence) treated mice as compared to 3T3/3T3 cell treated mice ($p<0.05$).

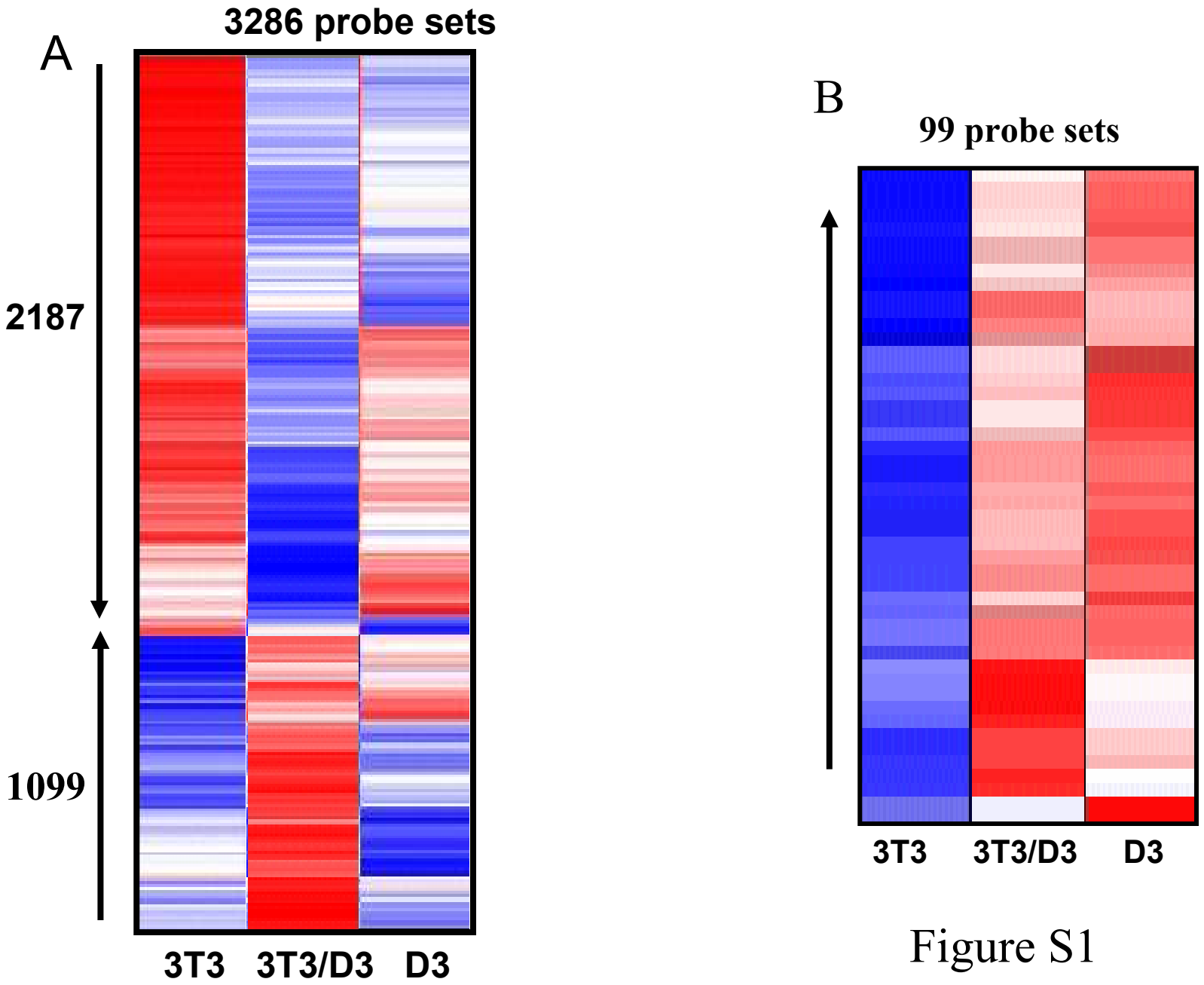
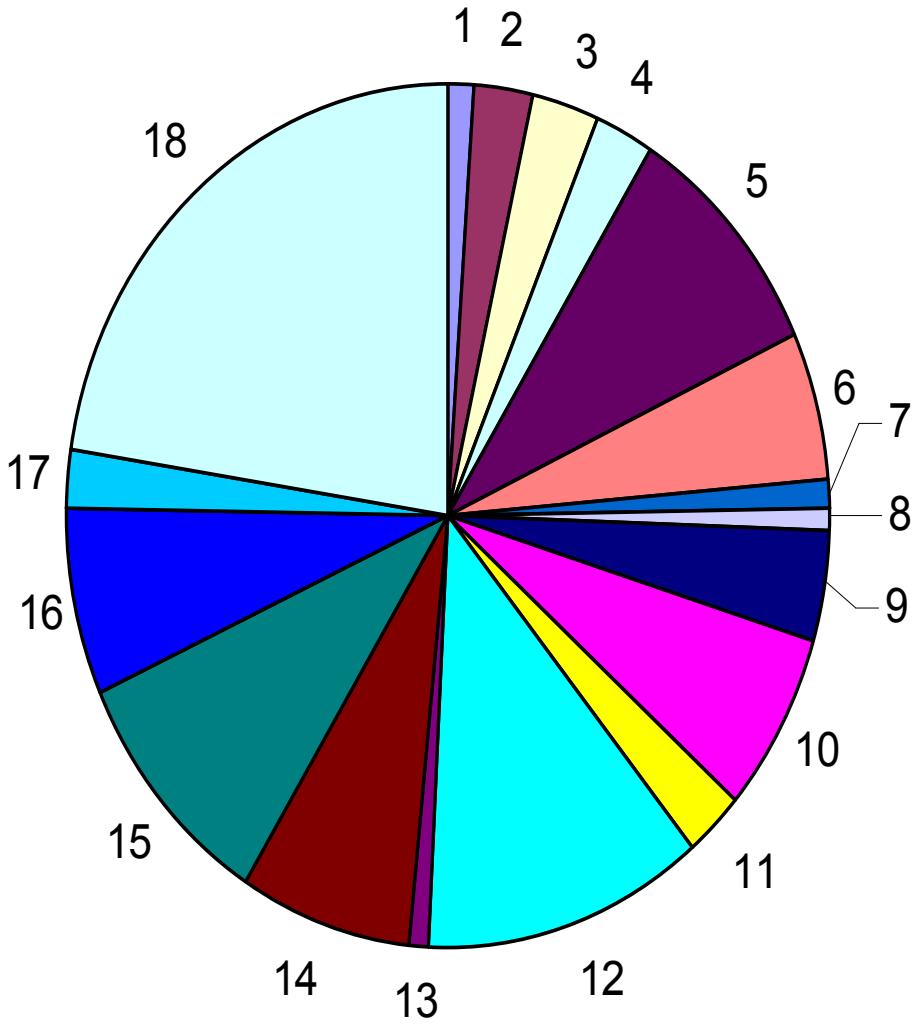

A
3286 probe sets
2187
1099
3T3
3T3/D3
D3
B
99 probe sets
3T3
3T3/D3
D3

Figure S1



1=Apoptosis (1%)
2=Catalytic activity (2.5%)
3=Cell cycle (3%)
4=Cell differentiation (2.5%)
5=Cell growth (9%)
6=Cell proliferation (5.5%)
7=Chromatin (1.2%)
8=Cytoskeleton (0.8%)
9=Development (4.3%)
10=Intracellular (6.7%)
11=Kinase activity (2.5%)
12=Metabolism (11.8%)
13=Methyltransferase (0.9%)
14=Transcription (7.1%)
15=Physiol. process (9.6%)
16=Signal transduction (7%)
17=Protein modification (2%)
18=Other/unknown (22.6%)

Figure S1C

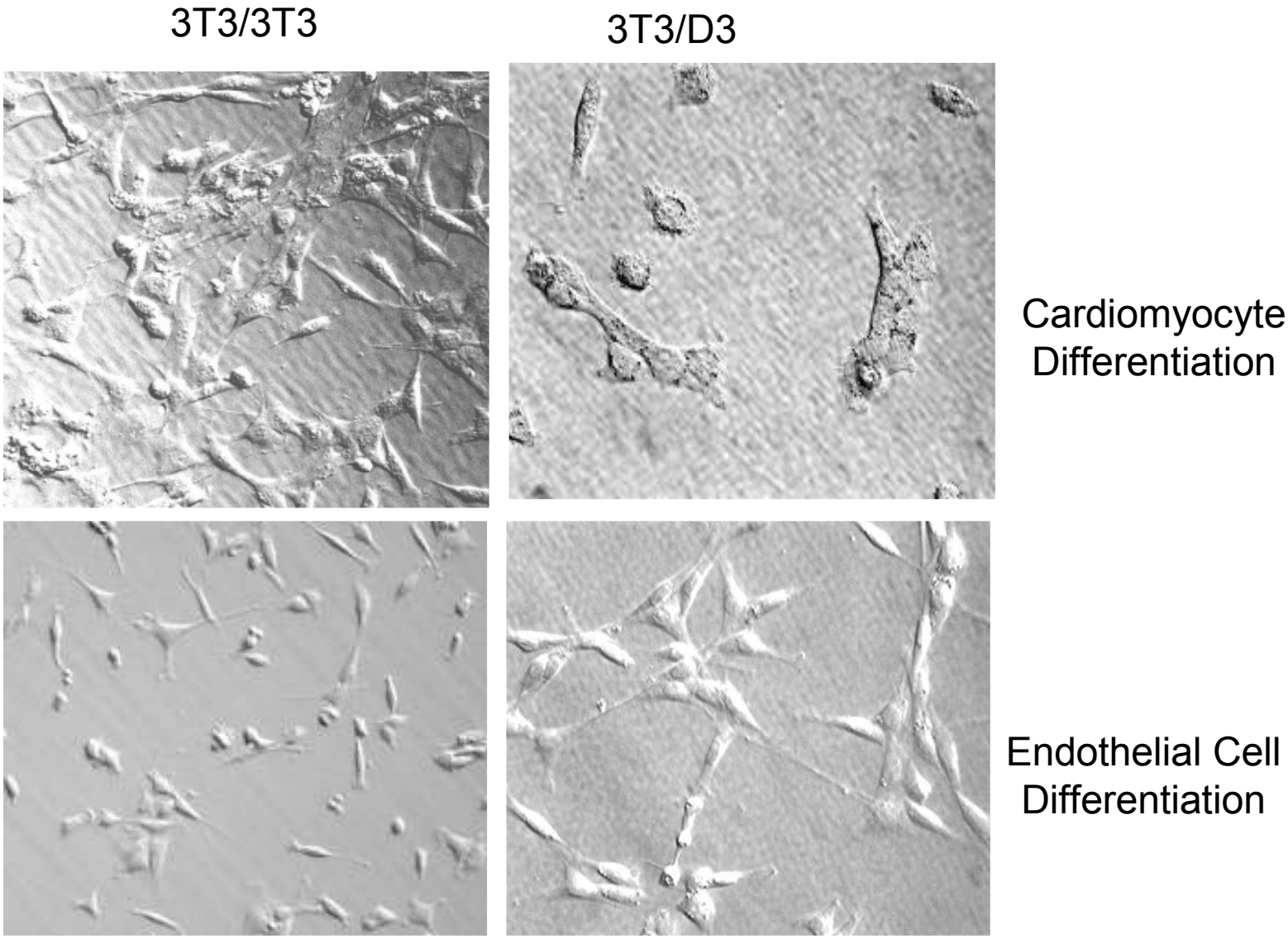

3T3/3T3
3T3/D3
Cardiomyocyte Differentiation
Endothelial Cell Differentiation

Figure S2

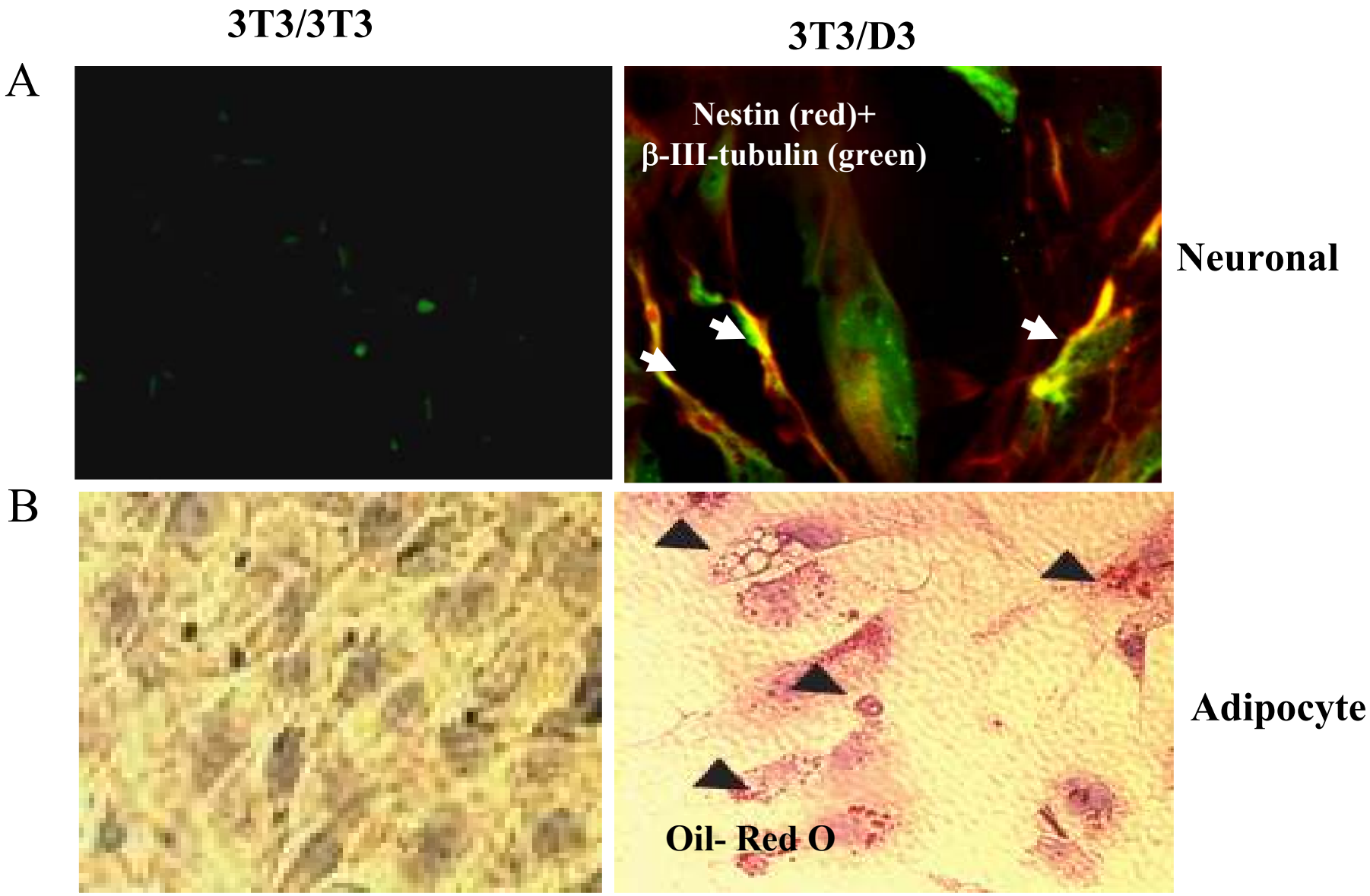

3T3/3T3
3T3/D3
A
Nestin (red)+
β-III-tubulin (green)
Neuronal
B
Oil- Red O
Adipocyte

Figure S3

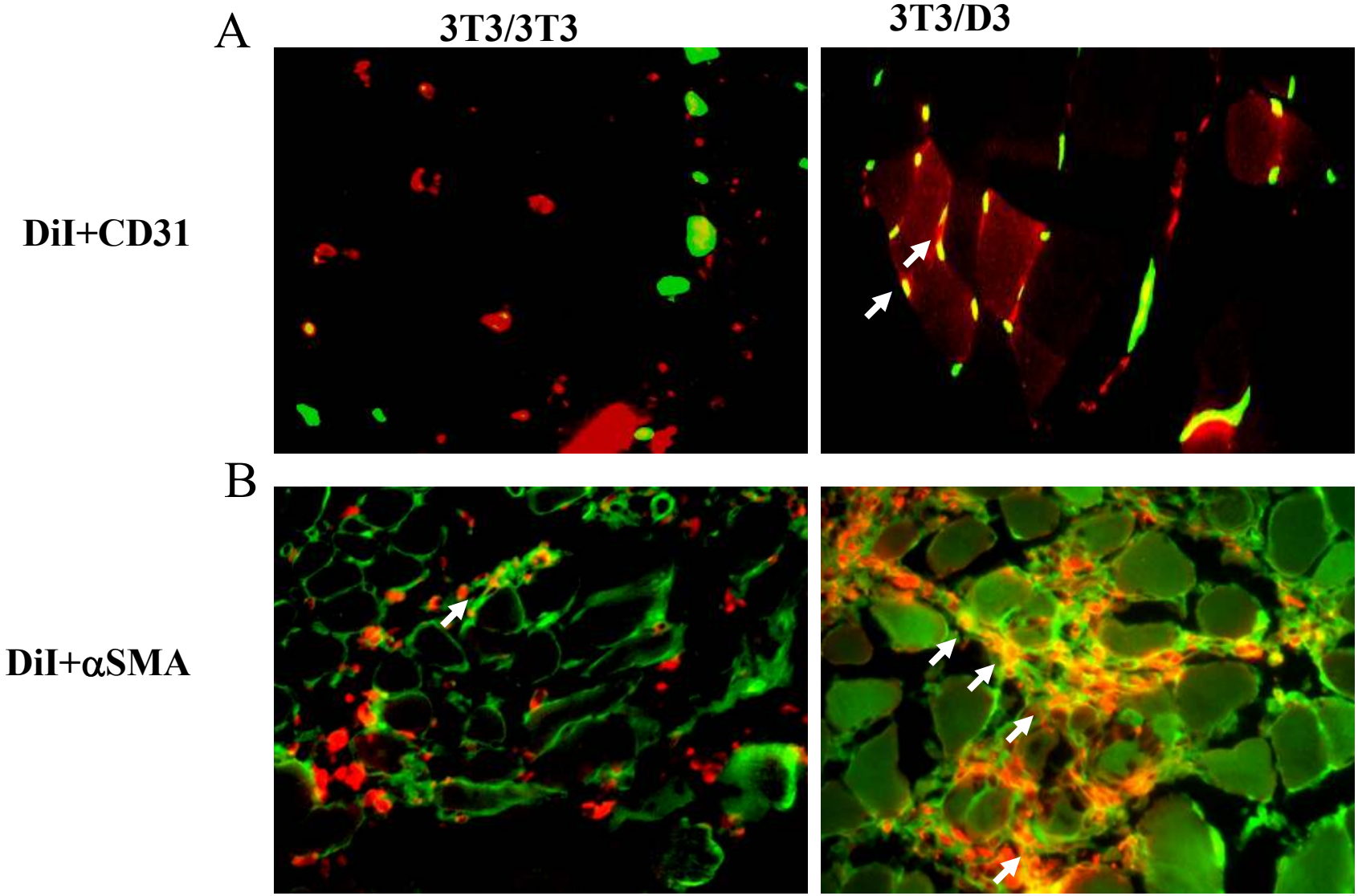


Figure S4

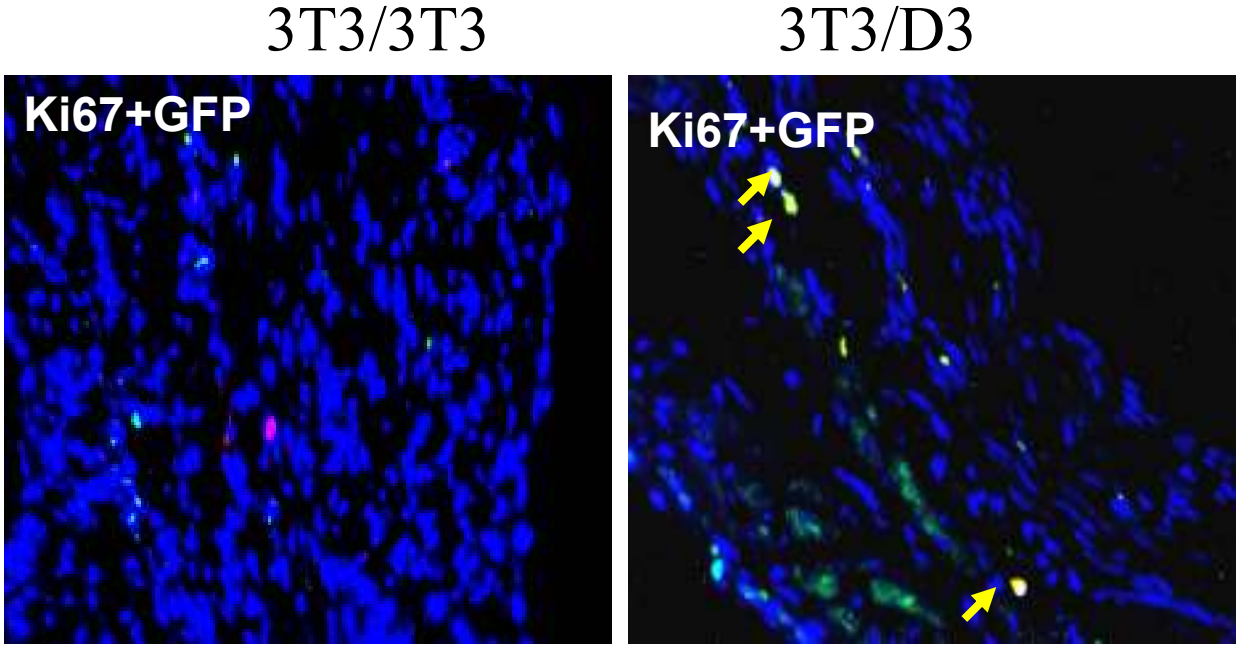


Figure S5