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Author Correction: Generation of somatic mitochondrial DNA-replaced cells for mitochondrial dysfunction treatment

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Correction to: *Scientific Reports* <https://doi.org/10.1038/s41598-021-90316-1>, published online 25 May 2021

The original version of this Article contained an error in the long term culture of Figure 2(g). As a result,

" $\rho(-)$ ".

now reads:

"Mock".

Consequently, Figure 2(g) legend has been modified accordingly,

"MirCs were generated from mitochondrial disease patient-derived (7S) fibroblasts. (a) mtDNA CN during the procedure of MirC generation. Fibroblasts that received gene transfer, designated as 7S_ $\rho(-)$ were cultivated with or without isolated mitochondria. Mock transfectants that received a plasmid without the endonuclease, designated as 7S_Mock, were subjected to the same protocol. (n = 9, respectively). (b) TaqMan qPCR SNP genotyping assay demonstrated the dominance of exogenous mtDNA. MirCs derived from 7S fibroblasts were designated as 7S_MirC. (n = 3, respectively). (c) Heteroplasmic sc-ddPCR discriminated three different populations: healthy homoplasmic cells (Cluster 1: CL1, red), heteroplasmic cells (CL2, brown), and mutated homoplasmic cells (CL3, blue) for mtDNA. Representative analyses are shown in the quadrant plotting, and the averages are depicted as a bar graph. Donor mitochondria for MirCs were isolated from EPC100 cells. (n = 3, respectively). (d) Cell growth of MirCs compared with the original cells and $\rho(-)$ cells by using time-lapse imaging recorder from day 7 to day 12 in the protocol. The confluency was automatically calculated by JuLI STAT software. (e) Microscopic photographs of cell cultures following mitochondrial replacement 5 days after replating at a concentration of 1×10^5 cells on day 12 in the protocol. (f) The yield of cells and the doubling time of MirCs were similar to those of 7S fibroblasts. The black bar indicates 200 μm . (n = 3, respectively). (g) Long-term culture showed the lifespan extension of MirCs. (n = 3, respectively). (h) The cell size of MirCs was maintained during culture, whereas that of the original cells was significantly enlarged from early PDL with time. (n = 3, respectively). (i) Short tandem repeats (STRs) demonstrated no contamination of the original MirCs by EPC100 cells that provided the donor mitochondria for MirCs. (j) TERT expression in MirCs to deny carcinogenic transformations. The full-length gel of cropped gels is shown in Supplementary Fig. S4. mtDNA, mitochondrial DNA. CNT, no treatment control cell. $\rho(-)$, rho minus, indicates cells with a low mtDNA number. CN, copy number. MC, medium change. DT, doubling time. PDL, population doubling level."

now reads:

"MirCs were generated from mitochondrial disease patient-derived (7S) fibroblasts. (a) mtDNA CN during the procedure of MirC generation. Fibroblasts that received gene transfer, designated as 7S_ $\rho(-)$ were cultivated with or without isolated mitochondria. Mock transfectants that received a plasmid without the endonuclease, designated as 7S_Mock, were subjected to the same protocol. (n = 9, respectively). (b) TaqMan qPCR SNP genotyping assay demonstrated the dominance of exogenous mtDNA. MirCs derived from 7S fibroblasts were designated as

7S_MirC. (n = 3, respectively). (c) Heteroplasmic sc-ddPCR discriminated three different populations: healthy homoplasmic cells (Cluster 1: CL1, red), heteroplasmic cells (CL2, brown), and mutated homoplasmic cells (CL3, blue) for mtDNA. Representative analyses are shown in the quadrant plotting, and the averages are depicted as a bar graph. Donor mitochondria for MirCs were isolated from EPC100 cells. (n = 3, respectively). (d) Cell growth of MirCs compared with the original cells and $\rho(-)$ cells by using time-lapse imaging recorder from day 7 to day 12 in the protocol. The confluency was automatically calculated by JuLI STAT software. (e) Microscopic photographs of cell cultures following mitochondrial replacement 5 days after replating at a concentration of 1×10^5 cells on day 12 in the protocol. (f) The yield of cells and the doubling time of MirCs were similar to those of 7S fibroblasts. The black bar indicates 200 μm . (n = 3, respectively). (g) Long-term culture showed the lifespan extension of MirCs. (n = 3, respectively). Mock means cells that received gene transfection procedure without plasmid and subsequently were co-incubated with isolated mitochondria with the same protocol as MirC generation. (h) The cell size of MirCs was maintained during culture, whereas that of the original cells was significantly enlarged from early PDL with time. (n = 3, respectively). (i) Short tandem repeats (STRs) demonstrated no contamination of the original MirCs by EPC100 cells that provided the donor mitochondria for MirCs. (j) TERT expression in MirCs to deny carcinogenic transformations. The full-length gel of cropped gels is shown in Supplementary Fig. S4. mtDNA, mitochondrial DNA. CNT, no treatment control cell. $\rho(-)$, rho minus, indicates cells with a low mtDNA number. CN, copy number. MC, medium change. DT, doubling time. PDL, population doubling level.”

The original Figure 2 and accompanying legend appear below.

The original Article has been corrected.

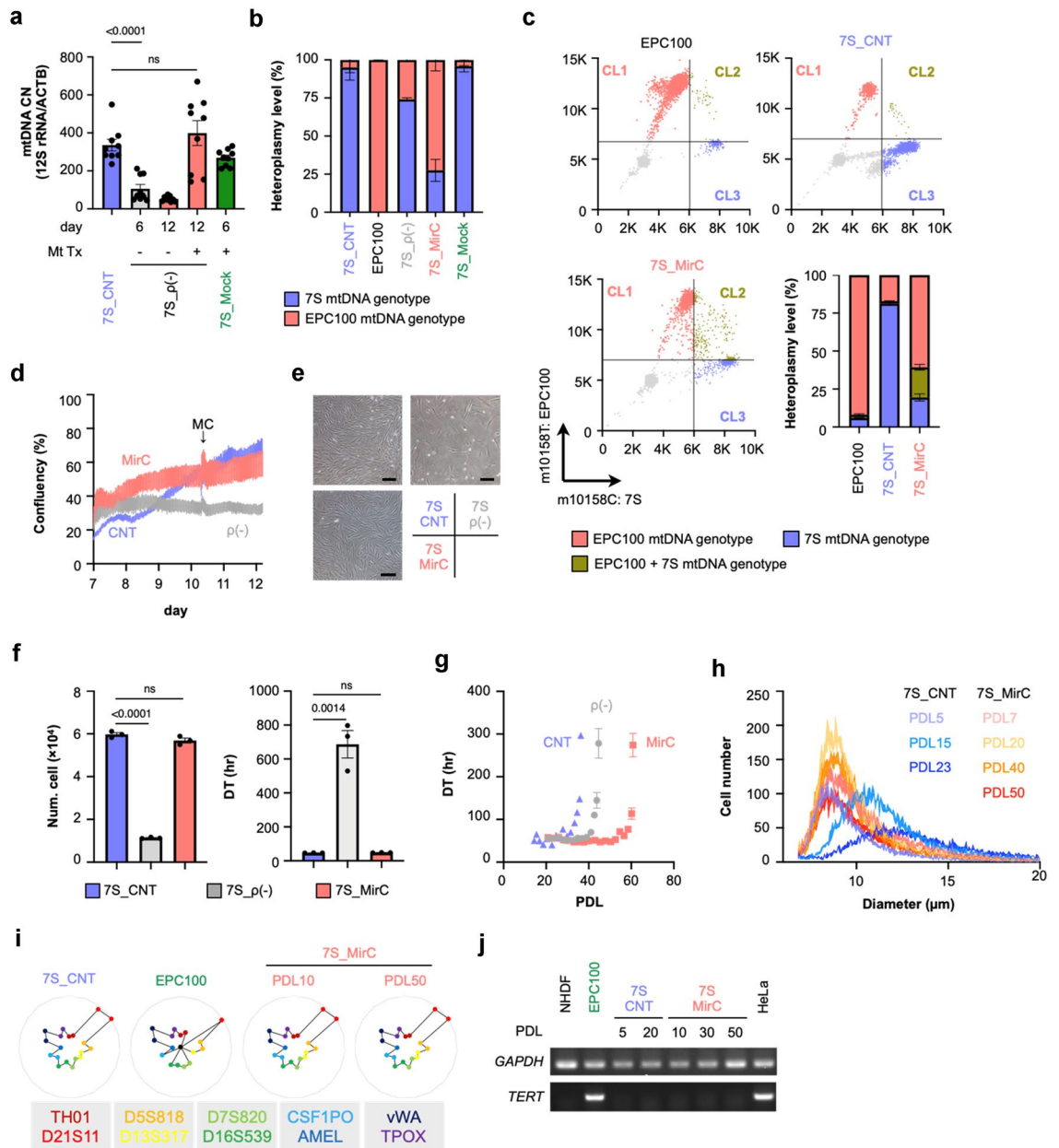


Figure 2. MirCs were generated from mitochondrial disease patient-derived (7S) fibroblasts. **(a)** mtDNA CN during the procedure of MirC generation. Fibroblasts that received gene transfer, designated as 7S_ρ(-) were cultivated with or without isolated mitochondria. Mock transfectants that received a plasmid without the endonuclease, designated as 7S_Mock, were subjected to the same protocol. (n=9, respectively). **(b)** TaqMan qPCR SNP genotyping assay demonstrated the dominance of exogenous mtDNA. MirCs derived from 7S fibroblasts were designated as 7S_MirC. (n=3, respectively). **(c)** Heteroplasmic sc-ddPCR discriminated three different populations: healthy homoplasmic cells (Cluster 1: CL1, red), heteroplasmic cells (CL2, brown), and mutated homoplasmic cells (CL3, blue) for mtDNA. Representative analyses are shown in the quadrant plotting, and the averages are depicted as a bar graph. Donor mitochondria for MirCs were isolated from EPC100 cells. (n=3, respectively). **(d)** Cell growth of MirCs compared with the original cells and ρ(-) cells by using time-lapse imaging recorder from day 7 to day 12 in the protocol. The confluency was automatically calculated by JuLI STAT software. **(e)** Microscopic photographs of cell cultures following mitochondrial replacement 5 days after replating at a concentration of 1×10^5 cells on day 12 in the protocol. **(f)** The yield of cells and the doubling time of MirCs were similar to those of 7S fibroblasts. The black bar indicates 200 μm. (n=3, respectively). **(g)** Long-term culture showed the lifespan extension of MirCs. (n=3, respectively). **(h)** The cell size of MirCs was maintained during culture, whereas that of the original cells was significantly enlarged from early PDL with time. (n=3, respectively). **(i)** Short tandem repeats (STRs) demonstrated no contamination of the original MirCs by EPC100 cells that provided the donor mitochondria for MirCs. **(j)** TERT expression in MirCs to deny carcinogenic transformations. The full-length gel of cropped gels is shown in Supplementary Fig. S4. mtDNA, mitochondrial DNA. CNT, no treatment control cell. ρ(-), rho minus, indicates cells with a low mtDNA number. CN, copy number. MC, medium change. DT, doubling time. PDL, population doubling level.



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