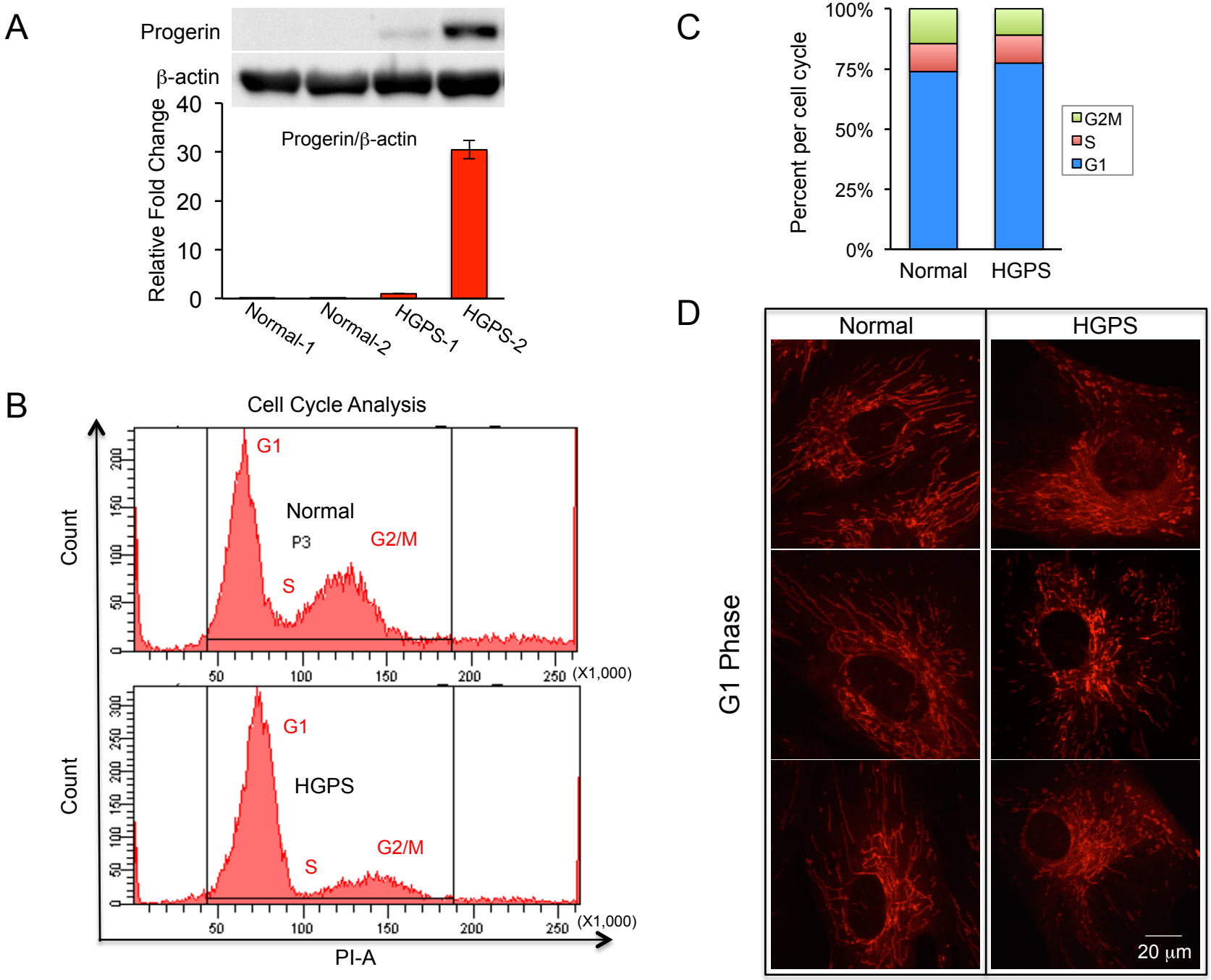
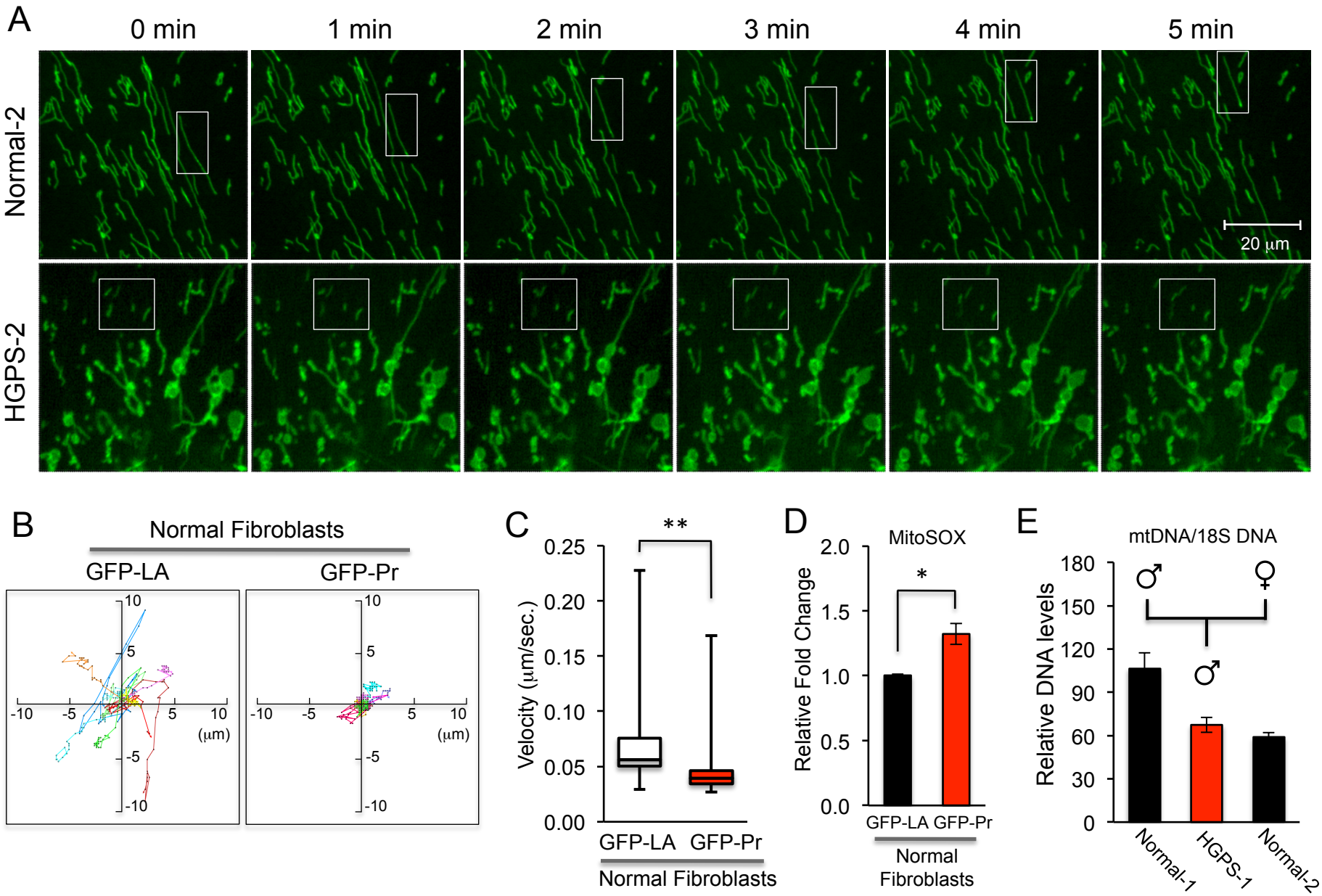
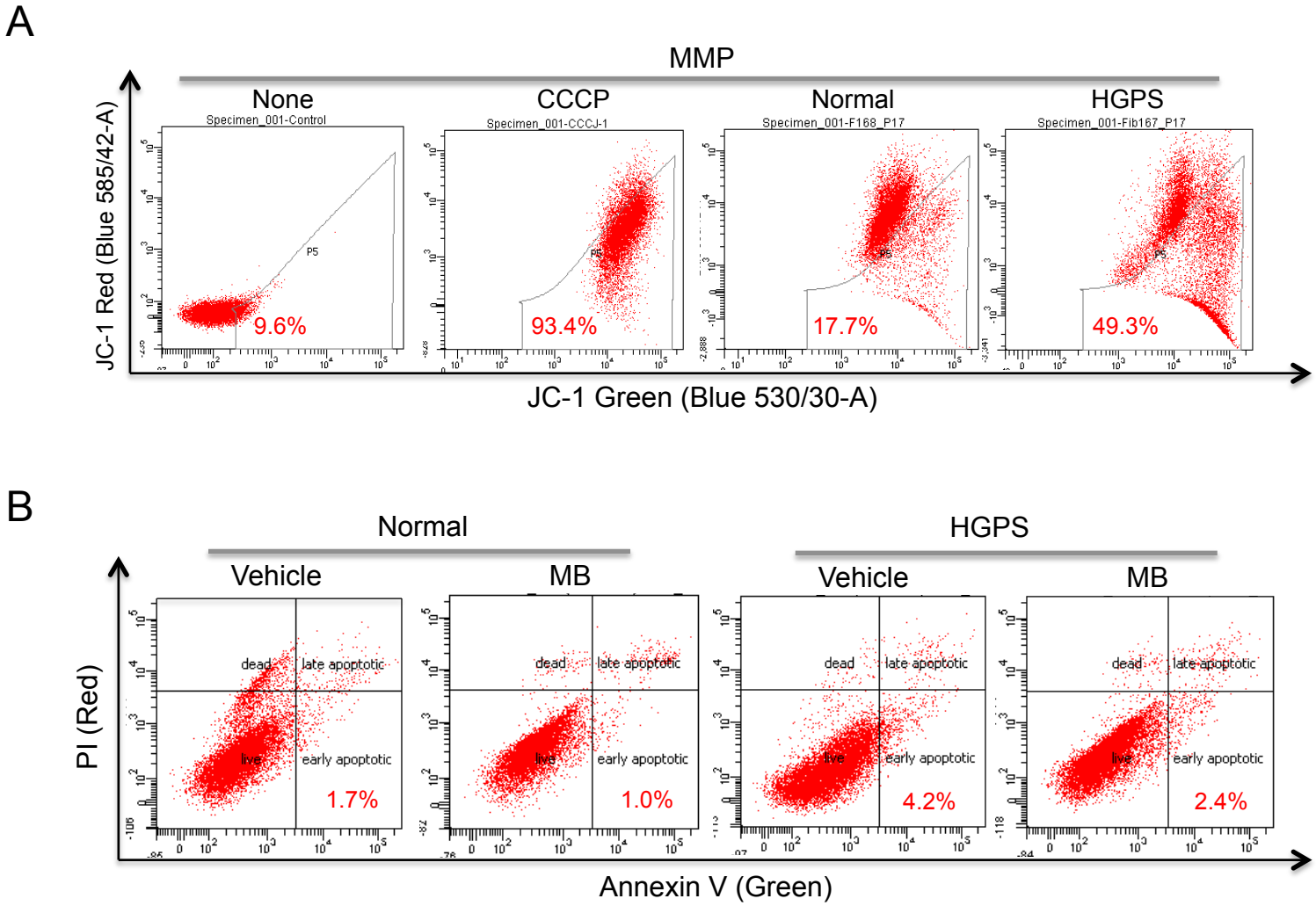
Supplemental Figure 1



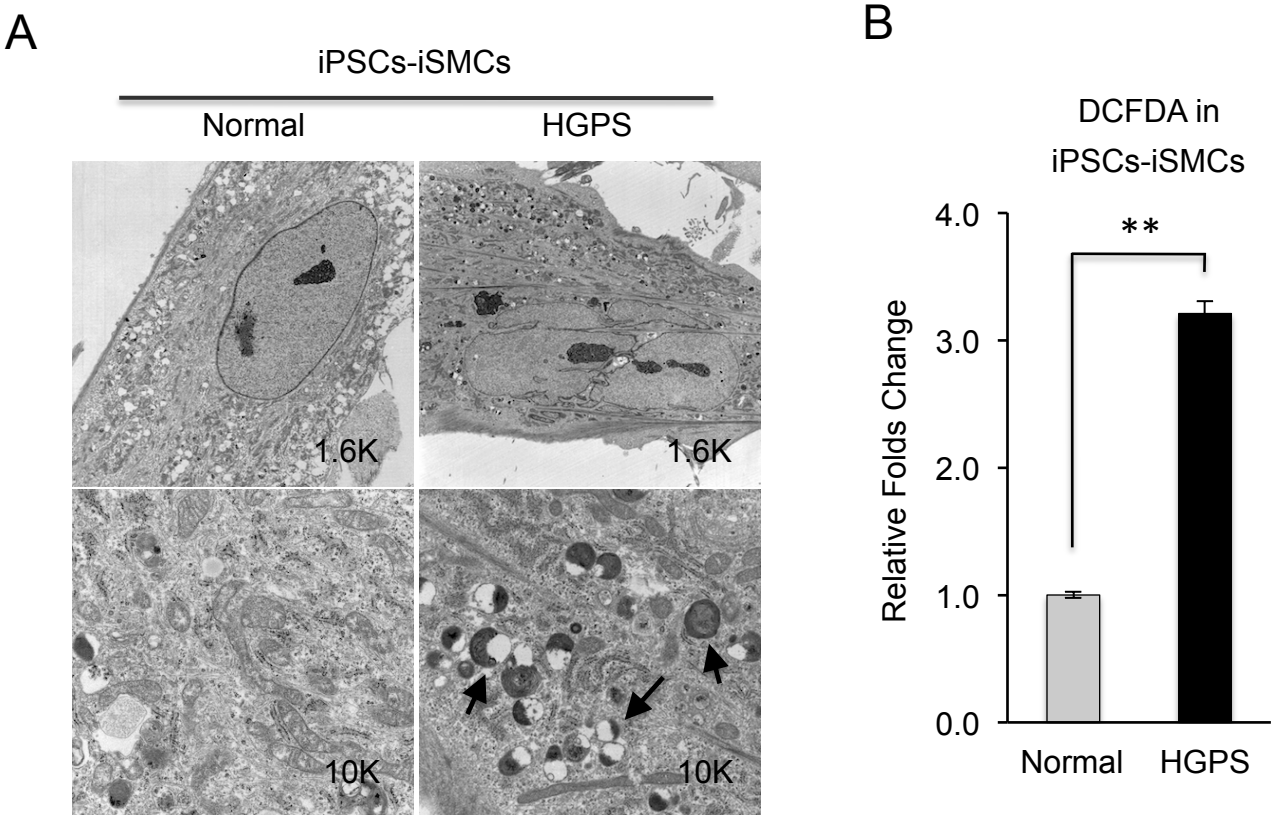
Supplemental Figure 2



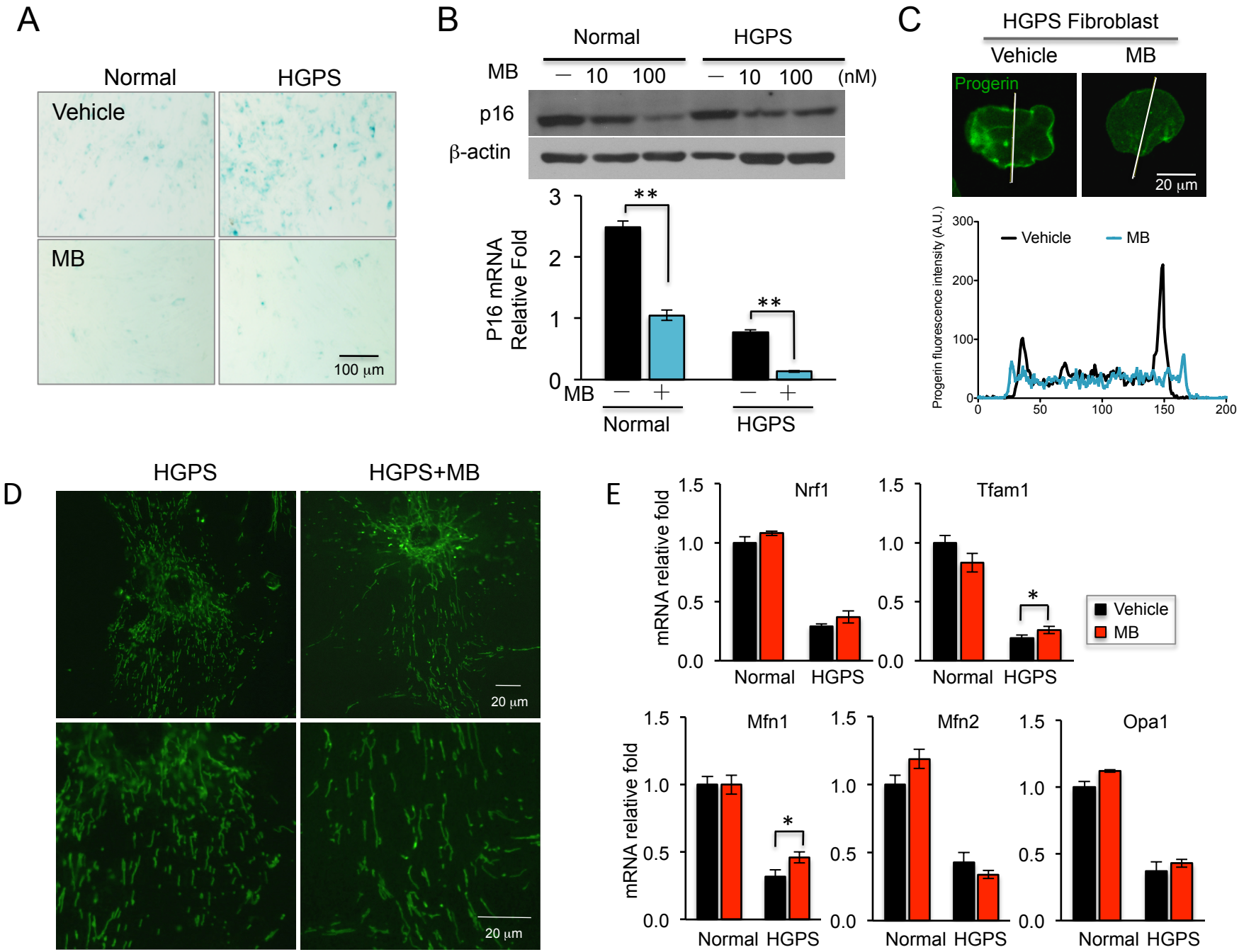
Supplemental Figure 3



Supplemental Figure 4



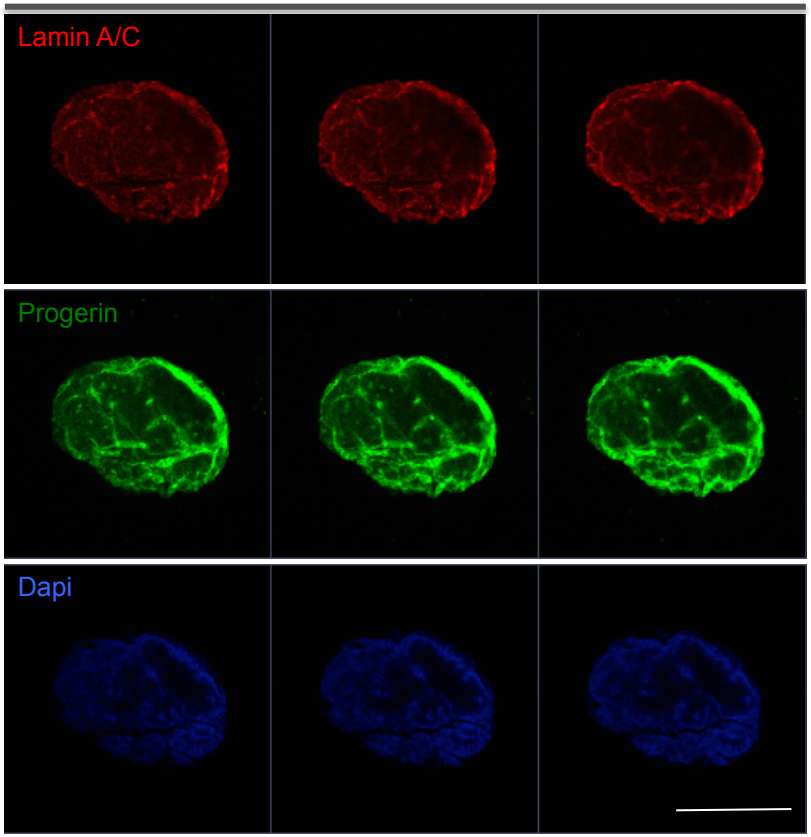
Supplemental Figure 5



Supplemental Figure 6

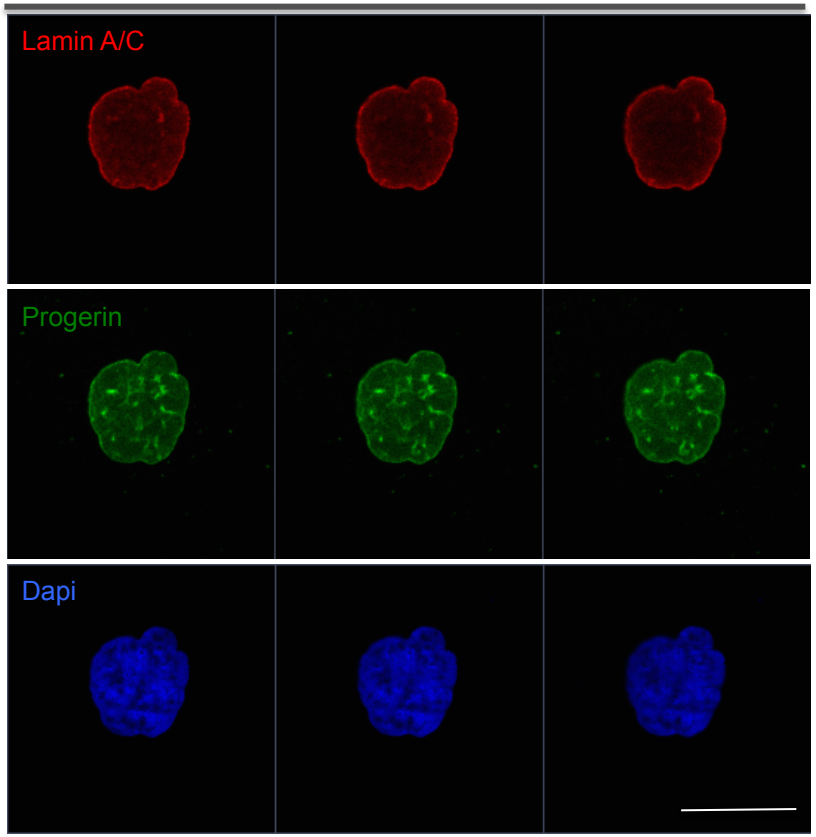
A

Vehicle (Z-Stack Images)

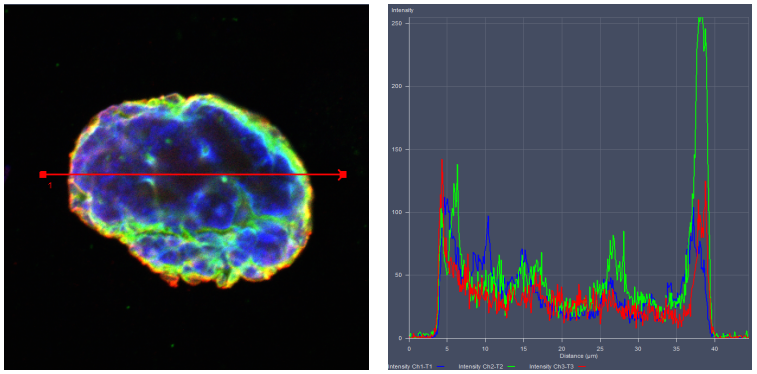


C

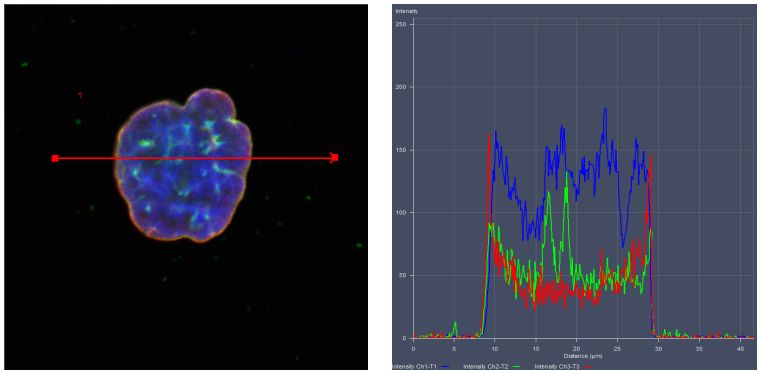
MB (Z-Stack Images)



B



D



Supplemental Table 1. Fibroblast Cell Line information

Cell line (Name in paper)	Passage Number * (Starting → Ending)	Gender	Donor Age	Mutation	Resource	Other
HGFDFN168 (Normal-1 or Normal)	P10 → P22	Male	40 yrs 5 mos	None	PRF **	Father
HGMDFN090 (Normal-2)	P10 → P22	Female	37 yrs 10 mos	None	PRF	Mom
HGADFN167 (HGPS-1 or HGPS)	P10 → P22	Male	8 yrs 5 mos	G608G	PRF	Son
HGADFN169 (HGPS-2)	P10 → P17	Male	8 yrs 6 mos	G608G	PRF	Unrelated child

*Normal and HGPS cell lines were carefully matched for passage number in each experiment.

** PRF - Progeria Research Foundation

Supplemental Table 2. Primer sequences for quantitative PCR (Human)

Gene	Sequence	
Lamin A	Sense	5’-GCAACAAGTCCAATGAGGACCA-3’
	Antisense	5’-CATGATGCTGCAGTTCTGGGGGCTCTGGAT-3’
Progerin	Sense	5’-GCAACAAGTCCAATGAGGACCA-3’
	Antisense	5’-CATGATGCTGCAGTTCTGGGGGCTCTGGAC-3’
Lamin C	Sense	5’-CTGCGTACGGCTCTCATCA-3’
	Antisense	5’-CGGCGGCTACCACTCAC -3’
b-actin	Sense	5'-CTGGAACGGTGAAGGTGACA-3'
	Antisense	5'-AAGGGACTTCCTGTAACAATG CA-3'
PGC-1a	Sense	5'-TGCCCTGGATTG TTGACATGA-3'
	Antisense	5'-TTTGTCAGGCTGGGGGTAGG-3'
18S rRNA	Sense	5’-TAGAGGGACAAGTGGCGTTC-3’
	Antisense	5′-CGCTGAGCCAGTCAGTGT-3’
mtDNA	Sense	5’-CACCCAAGAACAGGGTTTGT-3’
	Antisense	5′-TGGCCATGGGTATGTTGTTAA-3’
Nrf1	Sense	5'-GGAGTGATGTCCGCACAGAA-3'
	Antisense	5'-CGCTGTTAA GCGCCATAGTG-3'
Tfam1	Sense	5'-GACTTCTGCCAGCATAATAC-3'
	Antisense	5'-GAGTTCTGCCTGCTTTATG-3'
Mfn1	Sense	5'-CTCCAGCAACGCCAGATAATGC-3'
	Antisense	5'-ACTTGTTGGCACAGGCGAGC-3'
Mfn2	Sense	5'-GGATGC TGATGTGTTTGTGCTGG-3'
	Antisense	5'-GGATGCTGATGTGTTTGTGCT GG-3'
Opa1	Sense	5'-GGCTCTGCAGGCTCGTCTCAAGG-3'
	Antisense	5'-TTCCGCCAGTTGAACGCGTTTACC-3'
p16	Sense	5′-TAGTTACGGTCGG AGGCCGAT
	Antisense	5′-CTTTCAATCGGGGATGTCTGAG
Fis1	Sense	5’-CGAGCTGGTGTCTGTGGAGGACC-3’
	Antisense	5’-TGTCAA TGAGCCGCTCCAGTTCC-3’
Drp1	Sense	5’-AACTTGATCTCATGGATGCGGG-3’
	Antisense	5’-ATGAACCAGTTCCACACAGCGG-3’