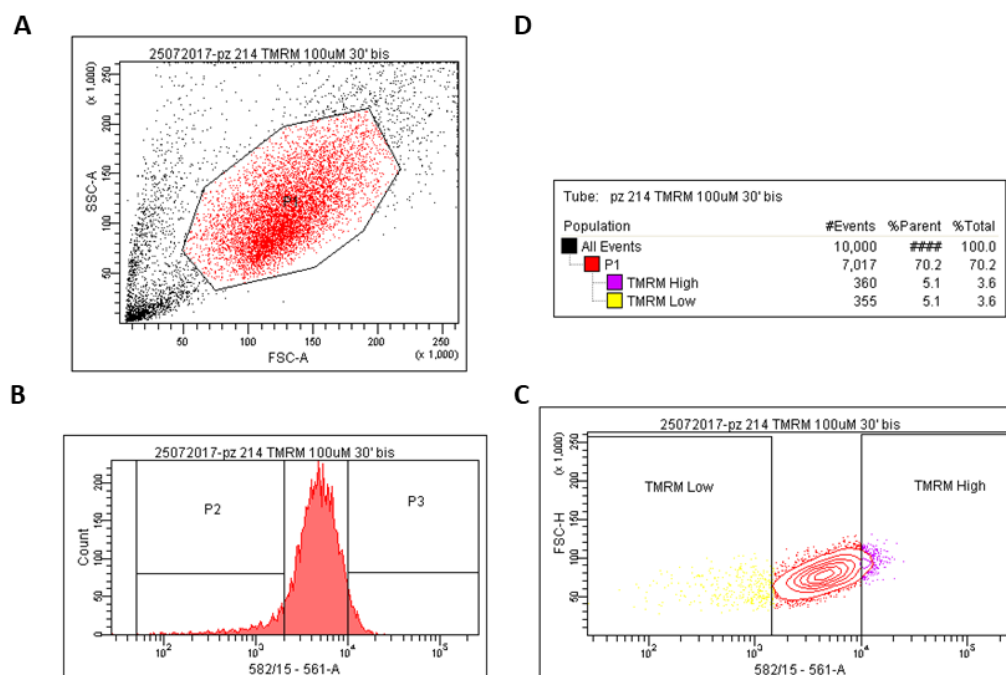
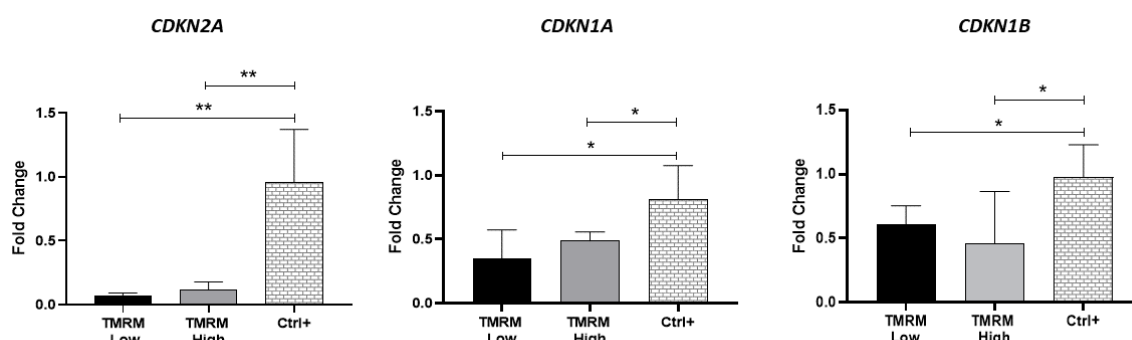


## Supplementary Figures and Table:



**Supplementary Figure S1.** Sorting procedure for hCmPCs. A hierarchical gating strategy was adopted; (A) shows the initial gating that was established on the scatter plot to identify cells with appropriate dimensions and complexity within the unselected hCmPC cells. (B-C) The appropriate gating to separate TMRM Low from TMRM High cells was established each time using phycoerythrin fluorescence intensity to sorted populations with lowest 5% (TMRM Low in gate P2) or highest 5% mitochondrial membrane potential (TMRM High in gate P3) as reported in panel (D).



**Supplementary Figure S2. Senescence gene expression in TMRM Low and High cells.** Expression of genes involved in cell senescence: Cyclin-dependent kinase inhibitor 2A (*CDKN2A*, p16), Cyclin-dependent kinase inhibitor 1 (*CDKN1A*, p21) and Cyclin-dependent kinase inhibitor 1B (*CDKN1B*, p27). Data are represented as mean  $\pm$  SD of the fold change.  $n=3$  per group. Statistical differences were calculated significant as  $*p < 0.05$ ,  $**p < 0.01$  determined by Student t-test.

**Supplementary Table S1.** Real-time PCR primer sequences.

| Mitochondrial DNA quantification                 |                                                                              |                                   |                                   |
|--------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Gene Symbol                                      | Gene Name                                                                    | Forward Sequence<br>(5'-3')       | Reverse Sequence<br>(5'-3')       |
| <i>B2M</i>                                       | Beta-2-microglobulin                                                         | TTG TCT TTC AGC<br>AAG GAC TGG    | TGA TGC TGC TTA<br>CAT GTC TCG    |
| <i>ND5</i>                                       | Mitochondrially Encoded<br>NADH: Ubiquinone<br>Oxidoreductase Core Subunit 5 | GGG GAT TGT GCG<br>GTG TGT G      | CTT CTC CTA TTT<br>ATG GGG GT     |
| Gene Expression analysis                         |                                                                              |                                   |                                   |
| <i>ACAN</i>                                      | Aggrecan                                                                     | ACC AGA CGG GCC<br>TCC CAG AC     | ACA GCA GCC ACA<br>CCA GGA AC     |
| <i>ACTA2</i><br>( $\alpha$ -SMA)                 | Alpha smooth muscle actin                                                    | GCT CCC CTA AAT<br>CCC AAG GC     | ATC ACC TGA ATC<br>CAG GAC GAT    |
| <i>ACTC1</i><br>( $\alpha$ -Sarcomeric<br>Actin) | Alpha sarcomeric actin                                                       | TGT CCT GAG ACA<br>CTC TTC        | TGA TGC TAT TGT<br>AAG TTG TT     |
| <i>B2M</i>                                       | $\beta$ 2-microglobulin                                                      | CAT TCC TGA AGC<br>TGA CAC CAT TC | TGC TGG ATG ACG<br>TGA GTA AAC C  |
| <i>COL2A1</i>                                    | Collagen Type II<br>Alpha 1 Chain                                            | TGA GGG CGC GGT<br>AGA GAC CC     | TGC ACA CAG CTG<br>CCA GCC TC     |
| <i>COL10A1</i>                                   | Collagen Type X<br>Alpha 1 Chain                                             | GCC CAC AGG CAT<br>AAA AGG CCC    | GAA GGA CCT GGG<br>TGC CCT CGA    |
| <i>CDKN2A (p16)</i>                              | Cyclin-dependent kinase<br>inhibitor 2A                                      | CTT CCT GGA CAC<br>GCT GGT        | CAA ACC CAC AAA<br>TGG TTT CC     |
| <i>CDKN1A</i><br>( <i>p21</i> )                  | Cyclin-dependent kinase<br>inhibitor 1                                       | GGA AGA CCA TGT<br>GGA CCT GT     | GGA TTA GGG CTT<br>CCT CTT GG     |
| <i>CDKN1B (p27)</i>                              | Cyclin-dependent kinase<br>inhibitor 1B                                      | ACC TGC AAC CGA<br>CGA TTC TTC    | GGG CGT CTG CTC<br>CAC AGA        |
| <i>COX4I2</i>                                    | Cytochrome c oxidase subunit<br>4I2                                          | GGT GGA AGA CGA<br>GGG ATG CA     | CAG CTG GGT CCA<br>GCT TCC CT     |
| <i>FABP4</i>                                     | Fatty acid binding<br>protein 4                                              | TTC ATA CTG GGC<br>CAG GAA TTT    | TCC ATC CCA TTT<br>CTG CAC AT     |
| <i>FIS1</i>                                      | Mitochondrial fission 1 protein                                              | GGA GGA ACA<br>GCG GGA TTA CGT    | CTT CAT GGC CTT<br>GTC AAT GAG C  |
| <i>GATA-4</i>                                    | GATA Binding Protein 4                                                       | AGC CTG GCC TGT<br>CAT CTC ACT    | GGC CAG ACA TCG<br>CAC TGA CT     |
| <i>KDR</i>                                       | Kinase Insert Domain Receptor                                                | CCC TGC GAA GTA<br>CCT TGG TT     | TGG GGT GGG ACA<br>TAC ACA AC     |
| <i>KLF4</i>                                      | Krüppel-like factor 4                                                        | ACA TTA ATG AGG<br>CAG CCA CCT G  | AGA CGC GAA CGT<br>GGA GAA AG     |
| <i>MMP13</i>                                     | Matrix metalloproteinase 13                                                  | ATG CGG GGT TCC<br>TGA TGT GG     | GGC CCA GGA<br>GGA AAA GCA TG     |
| <i>MDR-1</i>                                     | Multidrug-resistance                                                         | GGC TCC GAT ACA<br>TGG TTT TCC    | CCA GTG GTG TTT<br>TTA GGG TCA TC |

|                                     |                                                                             |                                    |                                      |
|-------------------------------------|-----------------------------------------------------------------------------|------------------------------------|--------------------------------------|
| <i>MFN2</i>                         | Mitofusin 2                                                                 | CCC CCT TGT CTT<br>TAT GCT GAT GTT | TTT TGG GAG AGG<br>TGT TGC TTA TTT C |
| <i>MYC</i><br>(c-Myc)               | MYC                                                                         | TTC TCT CCG TCC<br>TCG GAT TCT CT  | AGA AGG TGA TCC<br>AGA CTC TGA CCT   |
| <i>NANOG1</i>                       | Nanog Homeobox                                                              | AAT ACC TCA GCC<br>TCC AGC AGA TG  | TCG GTC ACA CCA<br>TTG CTA TTC TTC   |
| <i>NKX2.5</i>                       | NK2 Homeobox 5                                                              | AAG TGT GCG TCT<br>GCC TTT         | GTT GTC CGC CTC<br>TGT CTT C         |
| <i>NOS3</i><br>(eNOS)               | Endothelial Nitric Oxide<br>Synthase                                        | GTG GCT GGT ACA<br>TGA GCA CT      | TGG CTA GCT GGT<br>AAC TGT GC        |
| <i>PPARGC1A</i><br>(PGC1 $\alpha$ ) | Peroxisome proliferator-<br>activated receptor gamma<br>coactivator 1-alpha | ACT CAA GTG GTG<br>CAG TGA CC      | CTG GGT ACT GAG<br>ACC ACT GC        |
| <i>PLIN1</i>                        | Perilipin 1                                                                 | CAT TGA GAA GGT<br>GGT GGA GTA     | CTT GGC CTT GGG<br>AGA CTT           |
| <i>POU5F1</i><br>(Oct-4)            | Octamer-binding transcription<br>factor 4                                   | TGG GCT CGA GAA<br>GGA TGT G       | TGT GCA TAG TCG<br>CTG CTT GAT       |
| <i>PPAR<math>\gamma</math></i>      | Peroxisome proliferator-<br>activated receptor gamma                        | ACA TAA AGT CCT<br>TCC CGC TGA CCA | AAA CTG GCA GCC<br>CTG AAA GAT GC    |
| <i>RUNX-2</i>                       | Runt-related transcription<br>factor 2                                      | TCT GGC CTT CCA<br>CTC TCA GT      | GAC TGG CGG GGT<br>GTA AGTA          |
| <i>SOD2</i>                         | Superoxide dismutase 2                                                      | GCT GCA CCA CAG<br>CAA GCA GTC C   | CCA GCA ACT CCC<br>CTT TGG GT        |
| <i>SOX9</i>                         | SRY-Box Transcription Factor 9                                              | GGA CCA GTA CCC<br>GCA CTT GCA     | GTT CTT CAC CGA<br>CTT CCT CCG CCG   |
| <i>SPP1</i><br>(Osteopontin)        | Secreted Phosphoprotein 1                                                   | GCC GAG GTG ATA<br>GTG TGG TT      | TGA GGT GAT GTC<br>CTC GTC TG        |
| <i>TBX5</i>                         | T-Box Transcription Factor 5                                                | TAG CAG TGA CTT<br>CCT ACC         | ACG GGA TAT TCT<br>TTA CTT T         |
| <i>TNNT2</i><br>(cTNT)              | Cardiac muscle troponin T                                                   | CAC CTC AAG CAG<br>GTG AAG AA      | TCC ATT CCA CTC<br>AGT GCA TC        |