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| **Table 1 – Characteristics of senescent T cells** | | | |
| **Phenotype** | **Description** | **Evidence in human ageing (defined TSEN subset investigated and reference)** | |
| **CD4+ T cells** | **CD8+ T cells** |
| CD27-CD28- | Stimulatory co-receptors CD27 and CD28 are progressively lost during differentiation from naïve to memory T cell subsets | ↑ %CD27-CD28 (Moro-Garcia et al., 2013) | ↑ %CD27-CD28- (Plunkett et al., 2007)  ↑ %CD27-CD28 (Henson et al., 2009) |
| CD27-CD45RA+ (TEMRA) | CD27 and CD45RA define naïve, TN (27+RA+), central memory, TCM (27+RA-), effector memory, TEM (27-RA-), and senescent, TEMRA (27-RA+) | ↑ %TEMRA (Libri et al., 2011)  ↑ %TEMRA (Callender et al., 2020) | ↑ %TEMRA (Callender et al., 2020)  ↑ %TEMRA (Riddell et al., 2015) |
| SAβGhigh | Senescence-associated β-galactosidase | ↑ % SAβGhigh (Martinez-Zamudio et al., 2021) | ↑ %SAβGhigh (Martinez-Zamudio et al., 2021) |
| KLRG1+ | Killer Cell Lectin-like Receptor G1, co-inhibitory receptor | TEMRA (Di Mitri et al., 2011) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  TEMRA (Pereira et al., 2020)  CD27-CD28 (Henson et al., 2009) |
| CD57+ | Terminal differentiation marker | TEMRA (Libri et al., 2011) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  TEMRA (Pereira et al., 2020)  Old donor pan-CD8+ (Phadwal et al., 2012) |
| NKR+ | Natural Killer Receptors | Old donor pan-CD4+ (Alonso-Arias et al., 2011) | TEMRA (Pereira et al., 2020) |
| ↑ Cytokine and cytotoxic granule production | Contributor to cytotoxic and inflammatory nature of senescent T cells, e.g. IFNγ, TNFα, perforin, granzyme B | TEMRA (Libri et al., 2011) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  TEMRA (Callender et al., 2018) |
| ↑ Sestrins | Sestrin-MAPK activation complex (sMAC) drives maladaptive T cell functions and NKR-mediated cytotoxicity | CD27-CD28- (Lanna et al., 2017) | CD27-CD28- (Pereira et al., 2020) |
| ↓ autophagy | Decreased autophagic flux | Old donor pan-CD4+ (Bharath et al., 2020) | CD57+ (Phadwal et al., 2012)  TEMRA (Henson et al., 2014)  Old donor vaccine-specific cells (Alsaleh et al., 2020) |
| ↓ proliferative ability |  | TEMRA (Libri et al., 2011) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  CD27-CD28- (Plunkett et al., 2007) |
| ↓ telomerase activity |  | TEMRA (Di Mitri et al., 2011) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  CD27-CD28- (Plunkett et al., 2007) |
| ↓ telomere length |  | TEMRA (Di Mitri et al., 2011) (TEMRA had shorter telomeres than TN) | CD27-CD28- (Plunkett et al., 2007)  Old donor pan-CD8+ and TEMRA (Sanderson and Simon, 2017)  TEMRA shorter than TN (Riddell et al., 2015) |
| ↑ γH2AX |  | TEMRA (Di Mitri et al., 2011)  CD27-CD28- (Lanna et al., 2014)  TEMRA (Callender et al., 2020) | TEMRA (Henson et al., 2014)  TEMRA (Henson et al., 2015)  TEMRA (Callender et al., 2020) |
| ↑ p-ATM (Ser1981) | Phosphorylation/activation of DDR | CD27-CD28- (Lanna et al., 2014) |  |
| ↑ 53BP1+ | p53-binding protein 1, DNA damage sensor |  | SAβGhigh (Martinez-Zamudio et al., 2021) |
| ↑ p-p53 (Ser15) | Phosphorylation/activation during DDR |  | TEMRA (Callender et al., 2018) |
| ↑ ROS | Reactive Oxygen Species | CD27-CD28- (Lanna et al., 2014) | TEMRA (Henson et al., 2014)  Old donor pan-CD8+ (Sanderson and Simon, 2017) |
| ↑ Dysfunctional mitochondria |  | Old donor pan-CD4+ (Bharath et al., 2020) | TEMRA (Henson et al., 2014)  TEMRA (Callender et al., 2020) |