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## Mitochondria, telomeres and cell senescence: implications for lung ageing and disease

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### Abstract

Cellular senescence, the irreversible loss of replicative capacity in somatic cells, plays a causal role in the development of age-related pathology and in a number of age-related chronic inflammatory diseases. The ageing lung is marked by an increasing number of senescent cells, and evidence is mounting that senescence may directly contribute to a number of age-related respiratory diseases, including chronic obstructive pulmonary disease (COPD) and idiopathic pulmonary fibrosis (IPF). Telomere dysfunction and alterations in mitochondrial homeostasis frequently occur in cellular senescence and are important to the development of the often detrimental senescence-associated secretory phenotype (SASP). The roles of telomeres, the mitochondria and cellular senescence in lung ageing and disease are discussed. Therapeutic interventions targeting cellular senescence are considered for delaying or potentially reversing age-related respiratory disease.

**Keywords:** Cellular senescence, telomeres, mitochondria, lung ageing, COPD, fibrosis

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