

Pharmacologic Clearance of Senescent Cells and Rejuvenation of Tissue Stem Cells

Background

- Senescent cells (SCs) accumulate with age and after genotoxic stress, such as total-body irradiation (TBI).
- A *Nature* 2011 publication showed that genetic clearance of senescent cells (cells that lost the ability to divide) from a progeroid animal is beneficial, leading to delayed onset of age-related pathologies.
- Hypothesis: a “senolytic” pharmacological agent that can selectively kill SCs holds promise for rejuvenating tissue stem cells and extending health span.

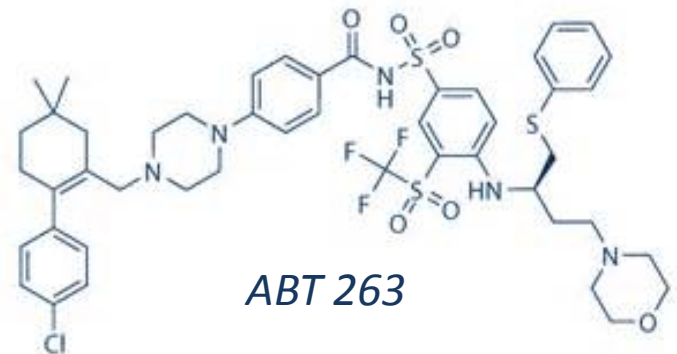
Advance

- ABT-263, a molecule initially developed as an anti-cancer therapy, when administered to aged or irradiated mice, results in the depletion of senescent cells (stem, bone marrow and muscle cells)
- The cell specific depletion appeared to reduce premature aging of the bone marrow caused by irradiation, and rejuvenated the function of stem cells in normally aged mice.
- Senolytic drugs may represent a new class of radiation mitigators and anti-aging agents.



Clearance of senescent cells by ABT263 rejuvenates aged hematopoietic stem cells in mice

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