

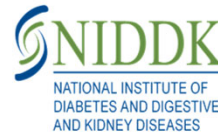
Effects of aging in the prostate

Teresa Liu, Ph.D.

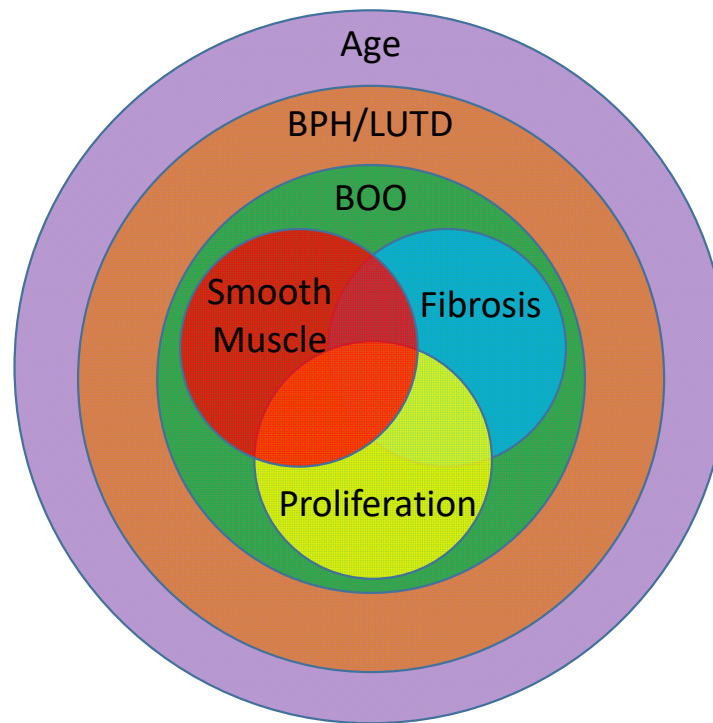
K Scholar



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BPH/LUTS is multifactorial disease

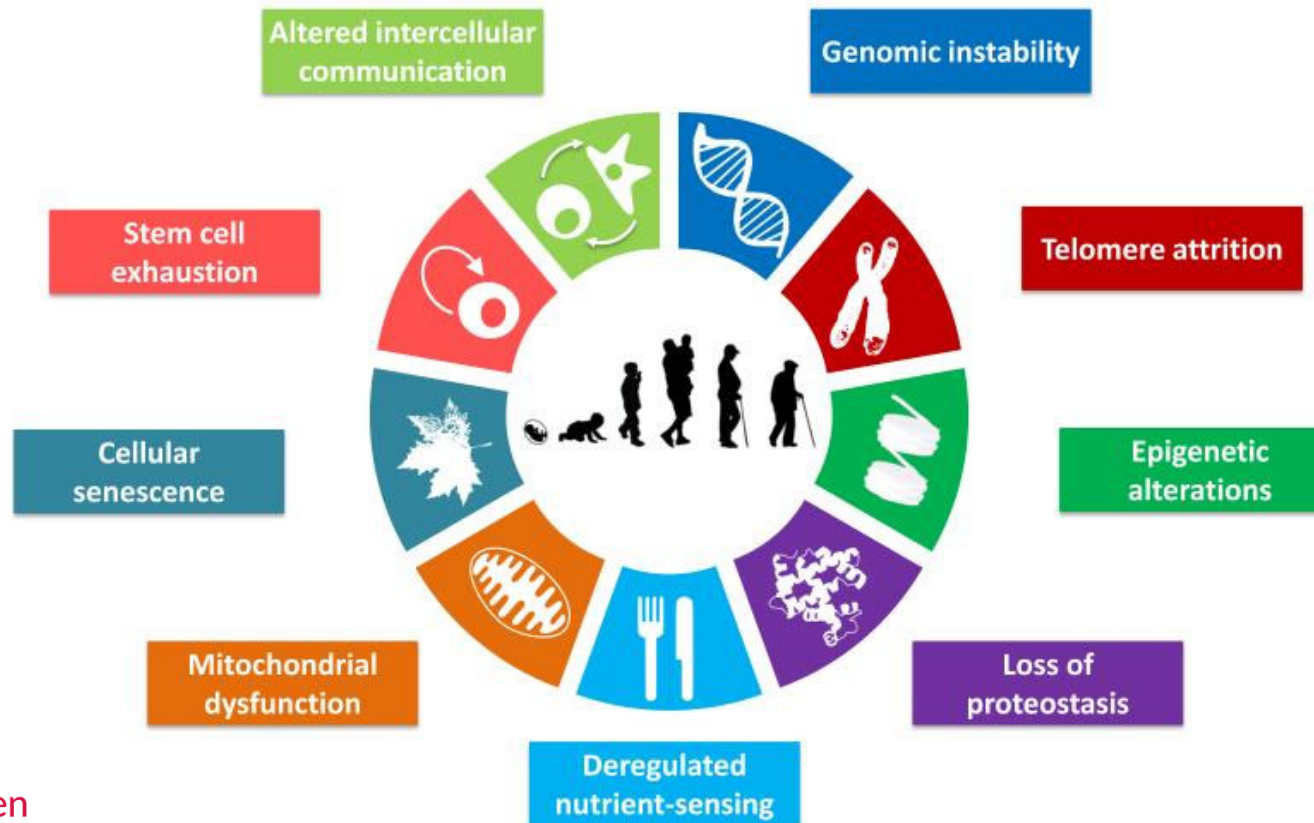


Adapted from Liu et al, 2019



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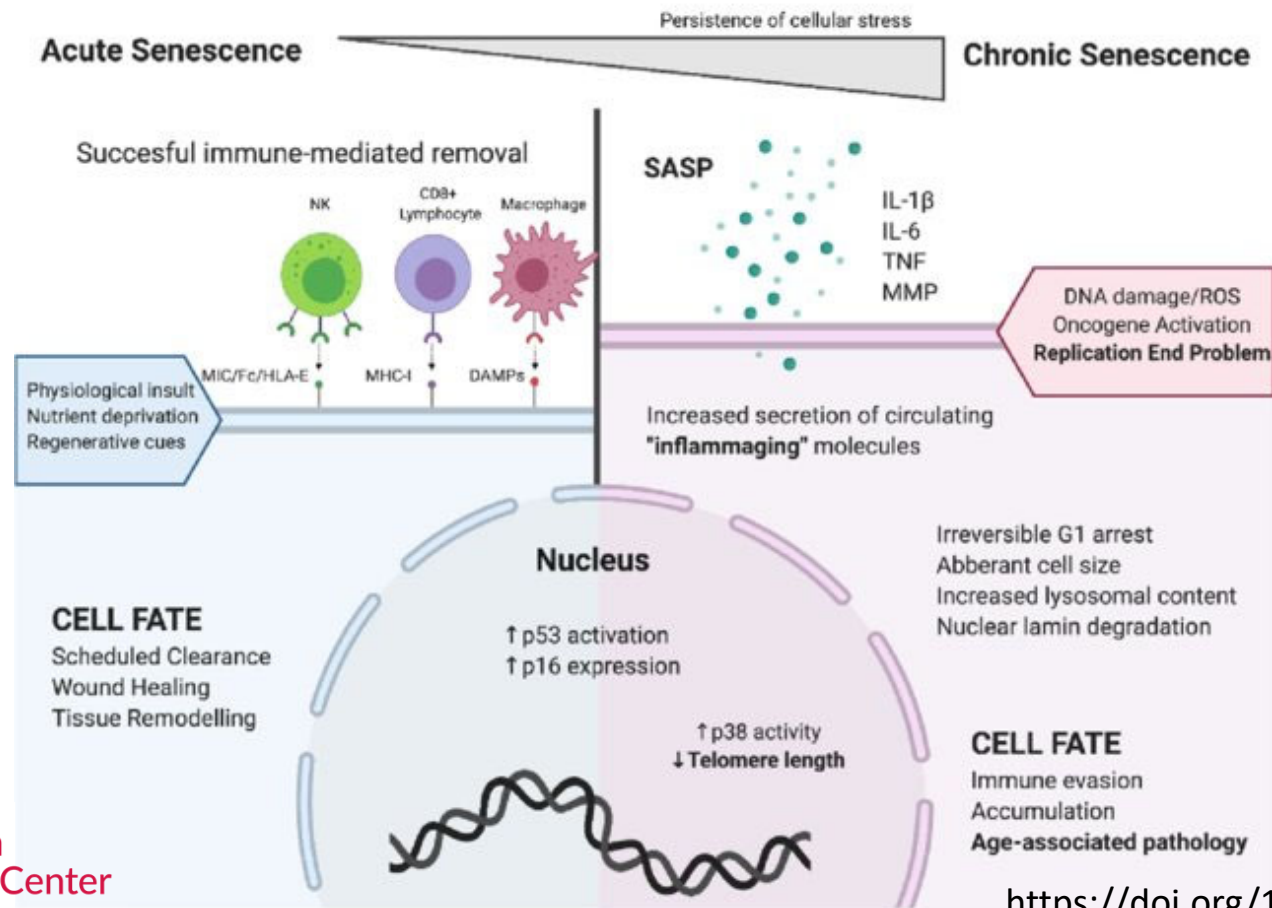
Hallmarks of Aging



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Adapted from: <https://doi.org/10.1016/j.cell.2013.05.039>

Cellular senescence

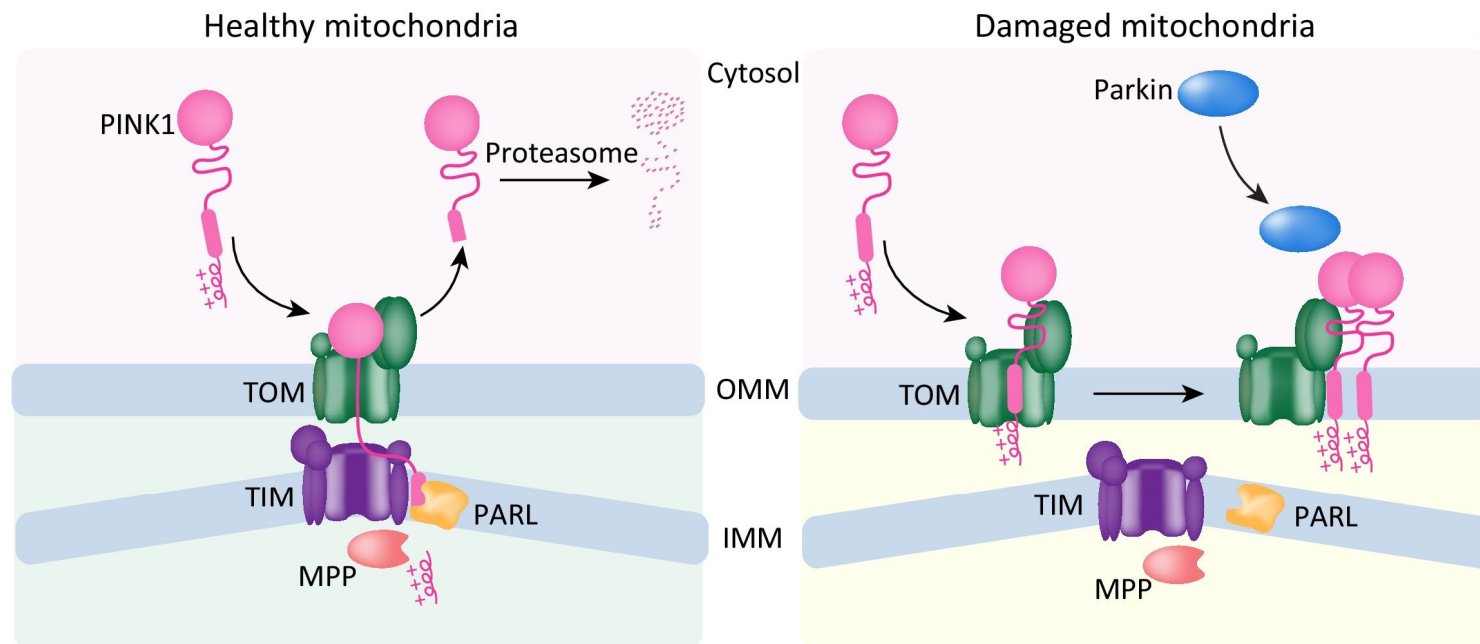


<https://doi.org/10.3390/cells9030766>



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Mitochondrial dysfunction



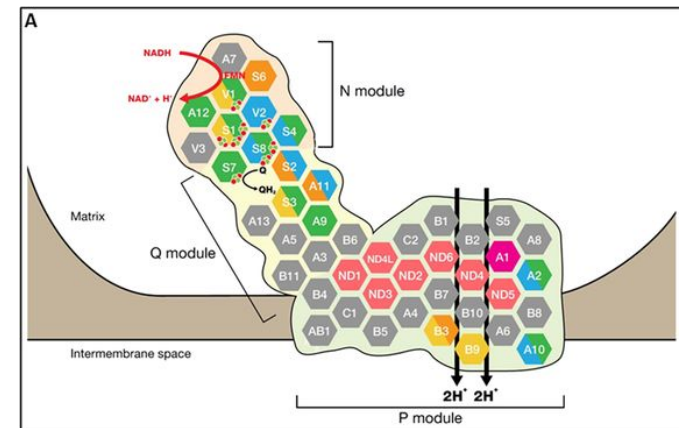
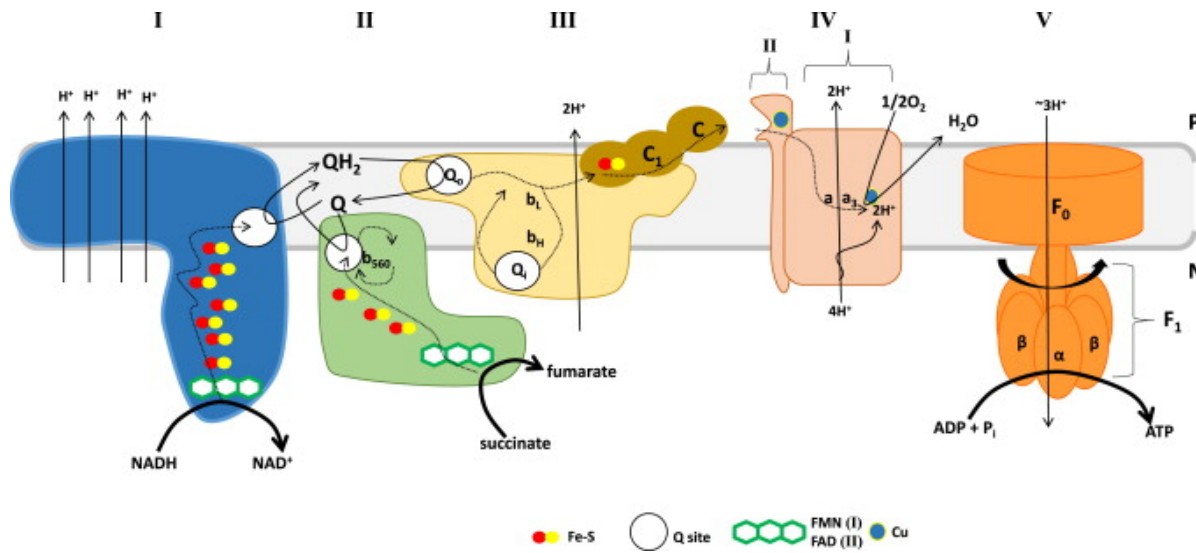
Trends in Cell Biology

<https://doi.org/10.1016/j.tcb.2016.05.008>



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Complex I dysfunction



Elisa Fassone, and Shamima Rahman J Med Genet 2012;49:578-590

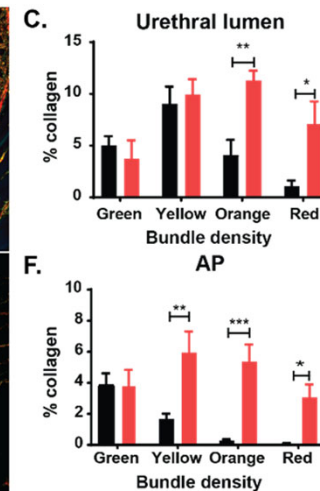
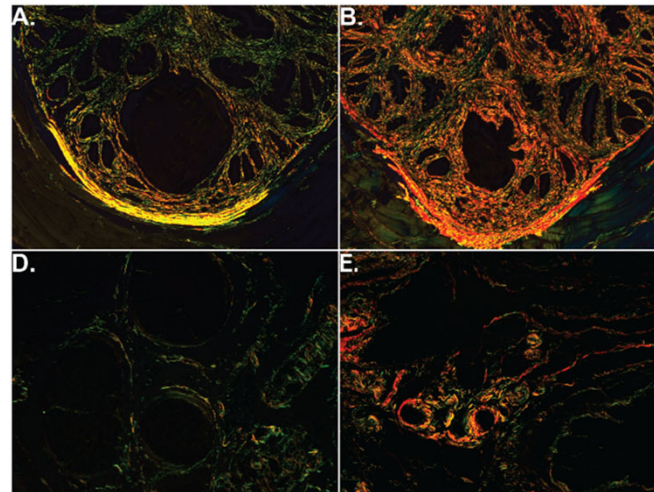
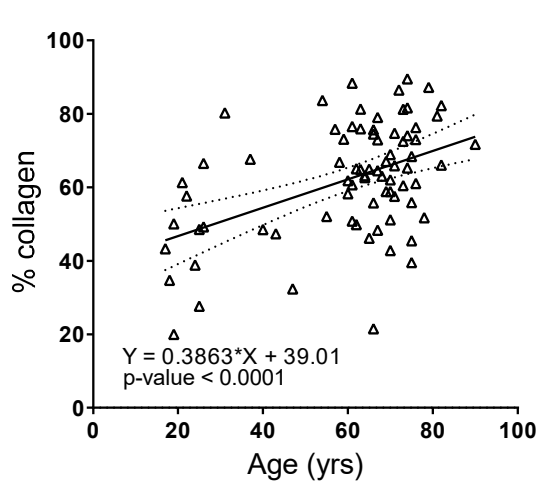
Ryan J. Mailloux Redox Biol 2015; 4:381-98



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Hypothesis

- Accumulation of cellular senescence and mitochondrial dysfunction in the prostate results in an increase in prostatic fibrosis leading to an increase in lower urinary tract dysfunction.



Conclusions

- Fibrosis increases with age in mice and men
- Cellular senescence increases with BPH/LUTD
- Mitochondrial dysfunction corresponds to age and disease
- Pirfenidone, an antifibrotic and a senolytics, can reverse fibrosis and mitochondrial dysfunction



Future directions

- Further examine the effect of pirfenidone on mitochondrial dysfunction and cellular senescence.
- Examine the effect of drugs that specifically bypass complex I to reverse mitochondrial dysfunction.



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