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DNA Damage and Aging

Genome Instability has been recognized as causal factor of cancer and recently also as a major contributing factor of aging. A number of skin cancer susceptibility and progeroid (premature aging-like) syndromes are linked to defects in nucleotide excision repair (NER). NER thus provides a highly relevant experimental system to study the role of genome integrity both in cancer and in aging. Using the NER system we recently uncovered a novel link between DNA damage accumulation and the regulation of longevity assurance programs and tumor suppressor mechanisms. We are using the powerful genetic system of *C. elegans* to identify mechanisms through which the stochastic accumulation of damage impacts aging and genetic pathways of longevity regulation. The conserved NER mechanisms in *C. elegans* enable us to study the effect of persistent DNA damage in proliferative germ cell compartments as well as in somatic tissues *in vivo*. Our work aims at the discovery of novel genes functioning in genome integrity and longevity regulation that might be instrumental for the development of preventive therapeutic strategies for age-related pathologies as well as for the treatment of rare genetic progeroid and skin cancer susceptibility syndromes.

Selected References

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