

# 1<sup>st</sup> Lecture: Pro- and anti-aging genes

## General part

- Aging definition
- Theories of aging
- How can aging be studied
- Model organisms to study aging

## Experimental part on *C. elegans*

- Advantages of *C. elegans* to study aging
- Age-associated changes (morphological and physiological)
- Lifespan regulating pathways (pro and anti-aging genes)

# Take home messages

1. Aging definition: a progressive loss of morphological and physiological integrity, leading to impaired functions and increased vulnerability to death.
2. Aging driving forces (Genetic program and Exogenous factors)
3. Model organism are suitable to study aging (conserved responses/effects between species)
4. *C. elegans* is a powerful model organism for aging and longevity studies (short life cycle, defined genetic associated phenotype, conserved pathways and responses etc...)
5. Many of the *C. elegans* longevity/aging pathways are conserved with higher eukaryotes
6. Aging can be artificially modulated by genetic and exogenous interventions
7. Detailed description of pro and anti aging genes belonging to different pathways (IGF/insulin, mTOR, CR, autophagy, germline)