

# Royalactin extends lifespan of *C. elegans* through EGF signaling

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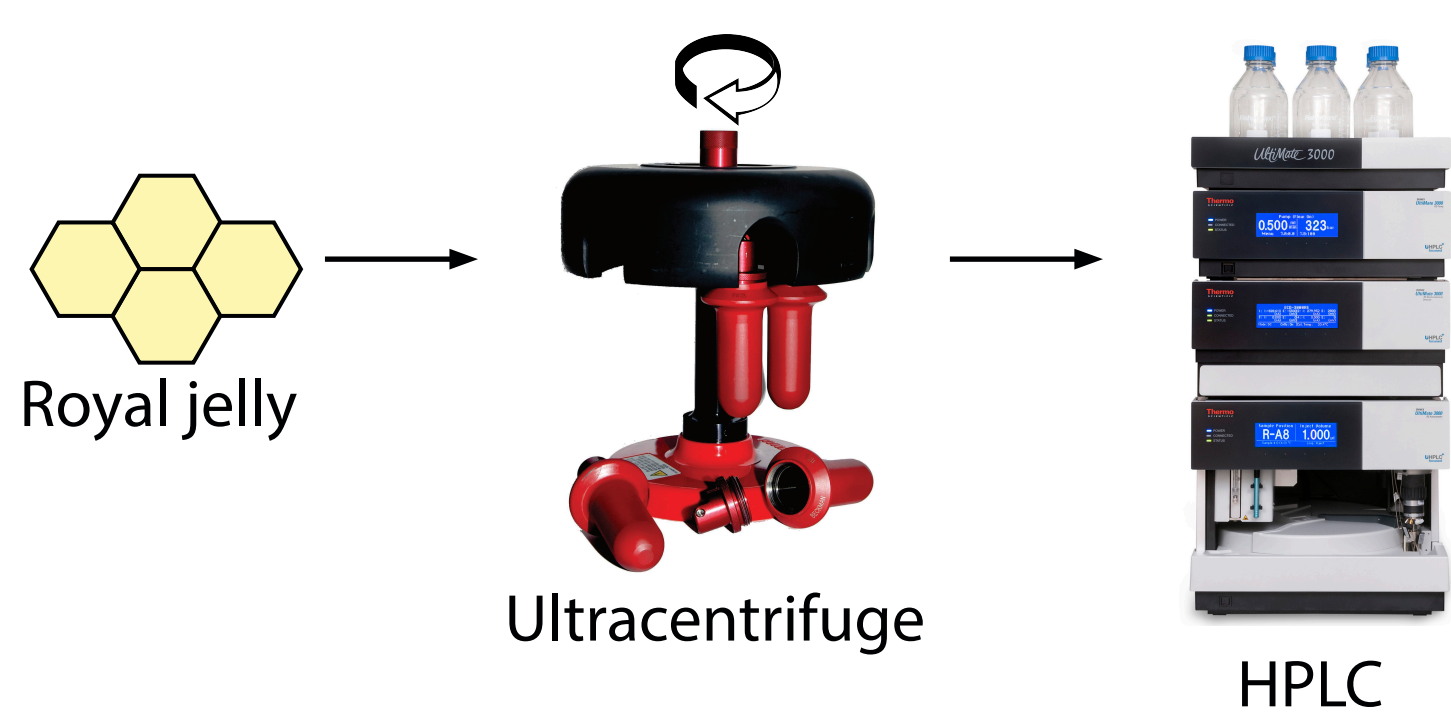
## Abstract

Royalactin is a glycoprotein essential for the development of long-lived queen honeybees. Only larvae fed with royal jelly, containing royalactin, develop into queens. Royalactin plays a central role in this process by switching on the epidermal growth factor (EGF) receptor signaling pathway which ultimately leads to epigenetic changes and a long-lived queen phenotype. Recently it was shown that royalactin by itself also extends lifespan in *Drosophila melanogaster*. Yet, the mechanisms by which this occurs remain largely elusive.

We set out to characterize the effects of royalactin on *C. elegans* lifespan, and clarify the possible involvement of EGF signaling in this process.

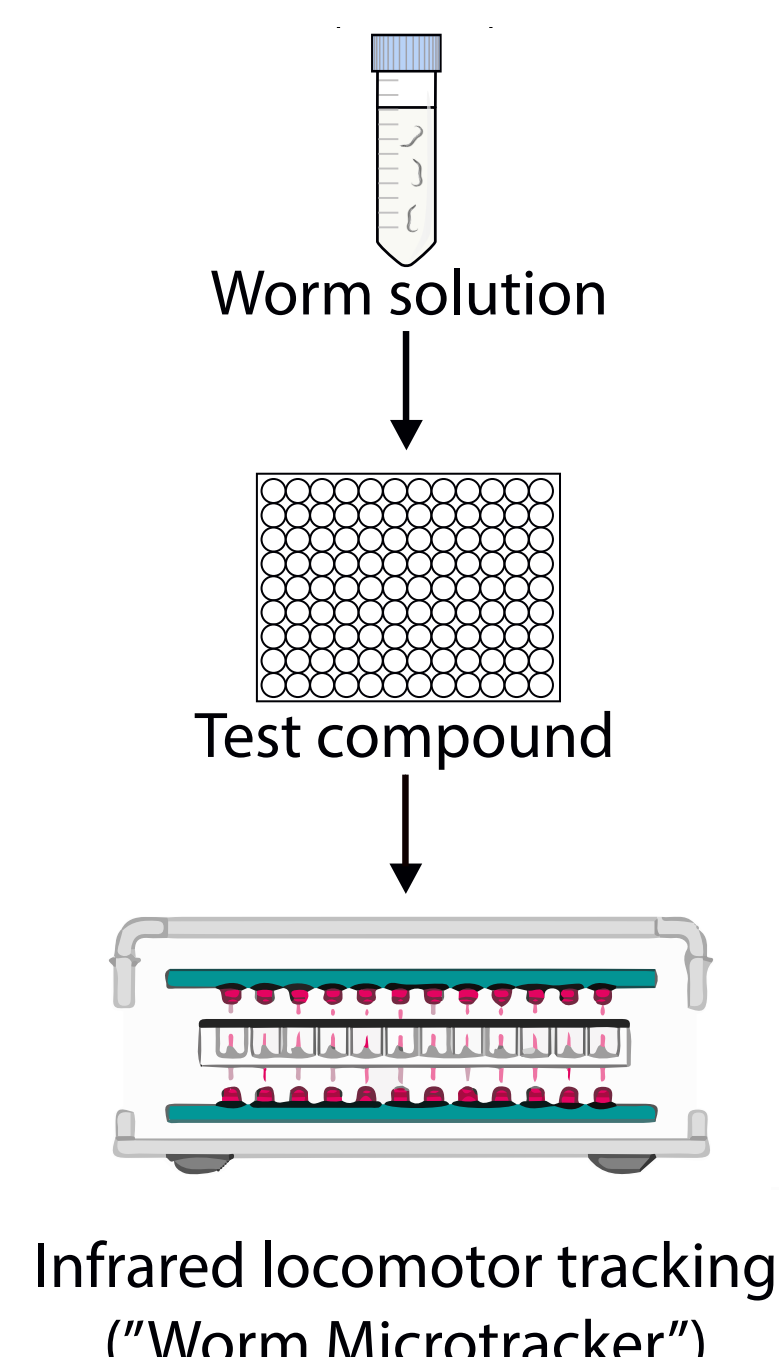
## Methods

Protein extraction from royal jelly:

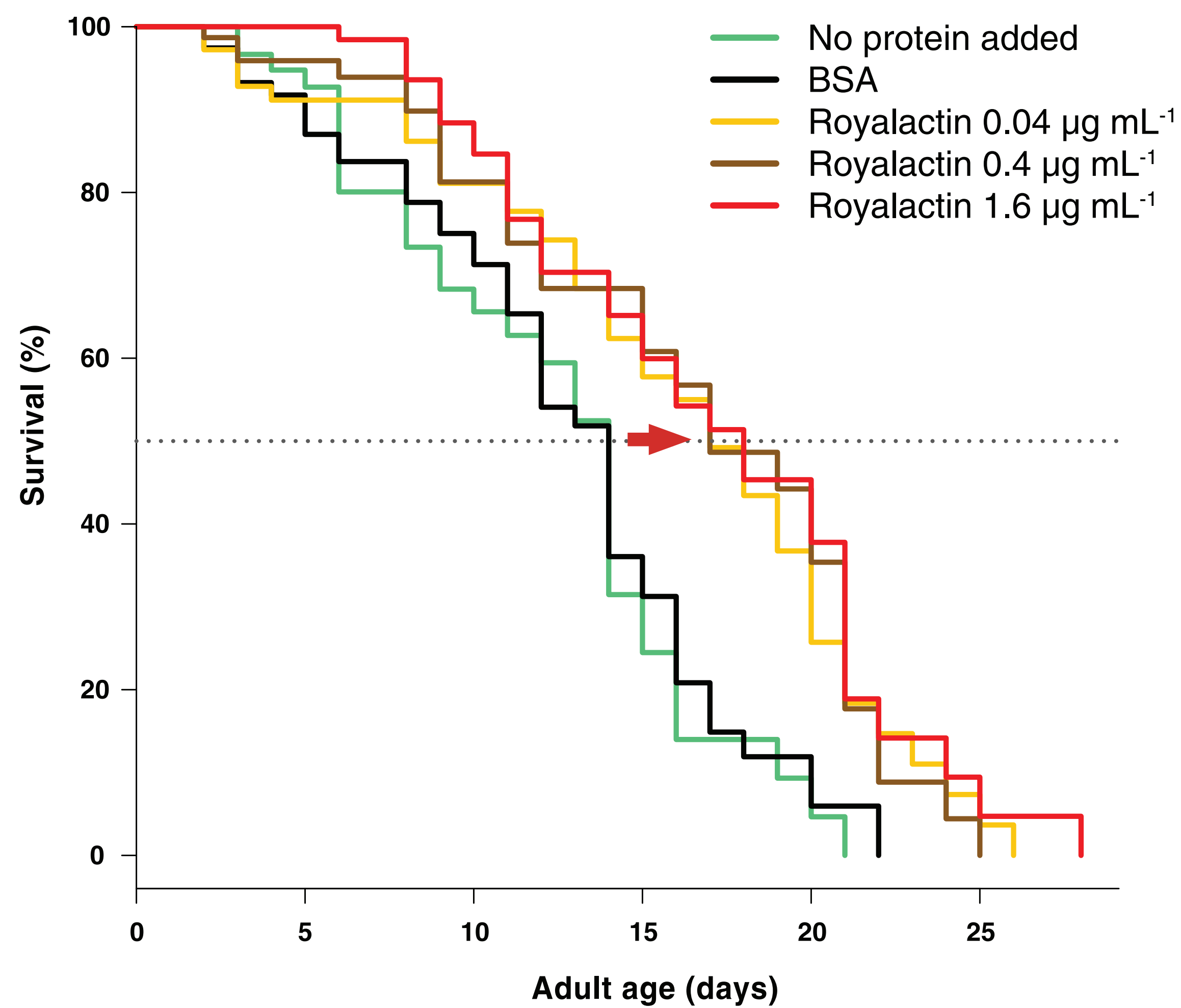
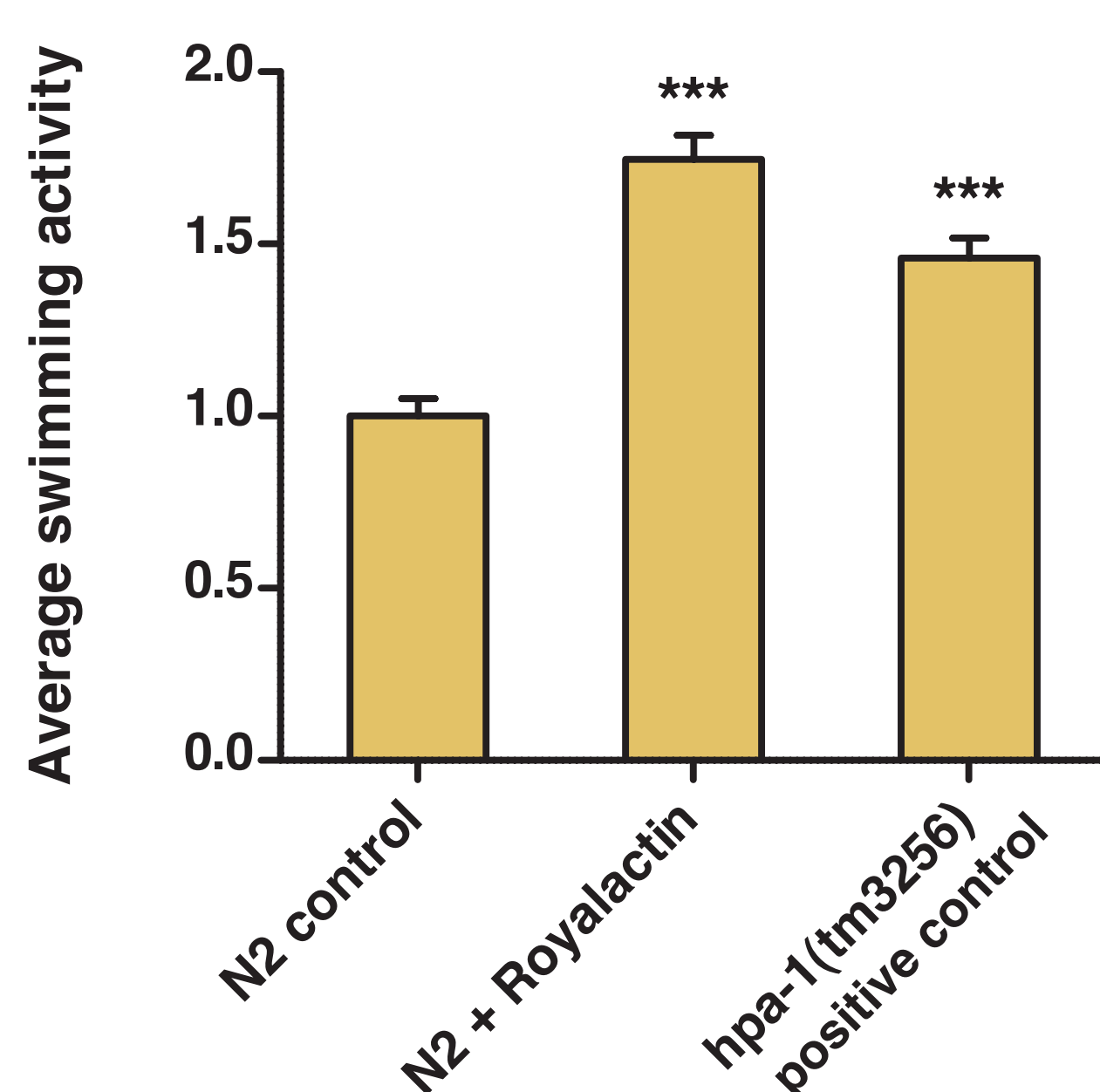
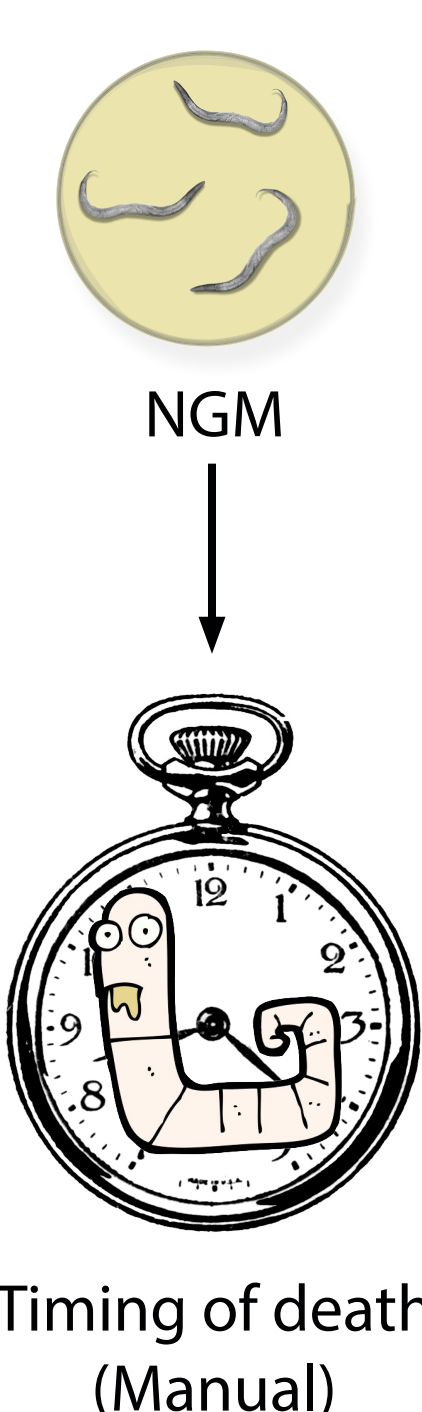


Assays:

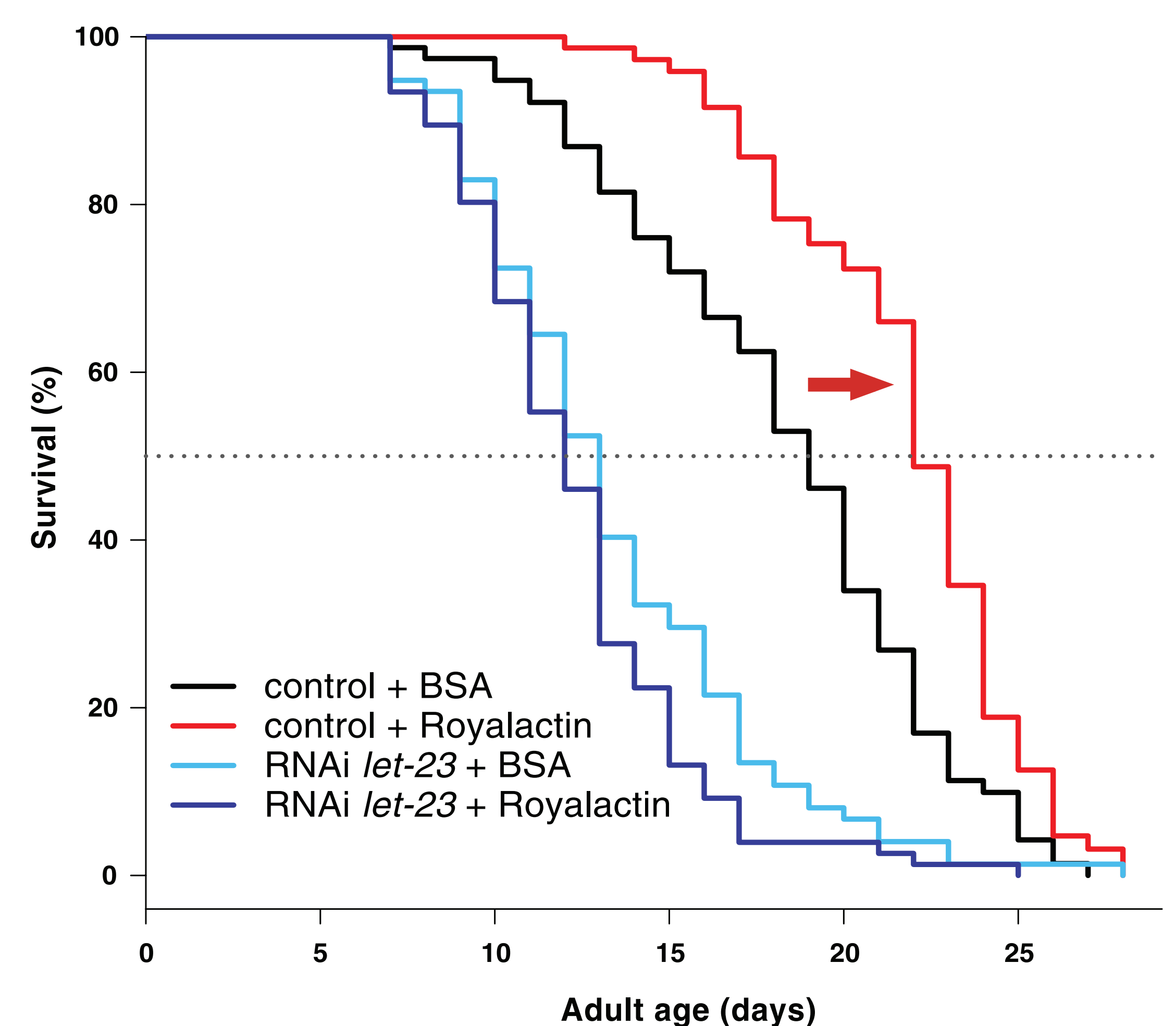
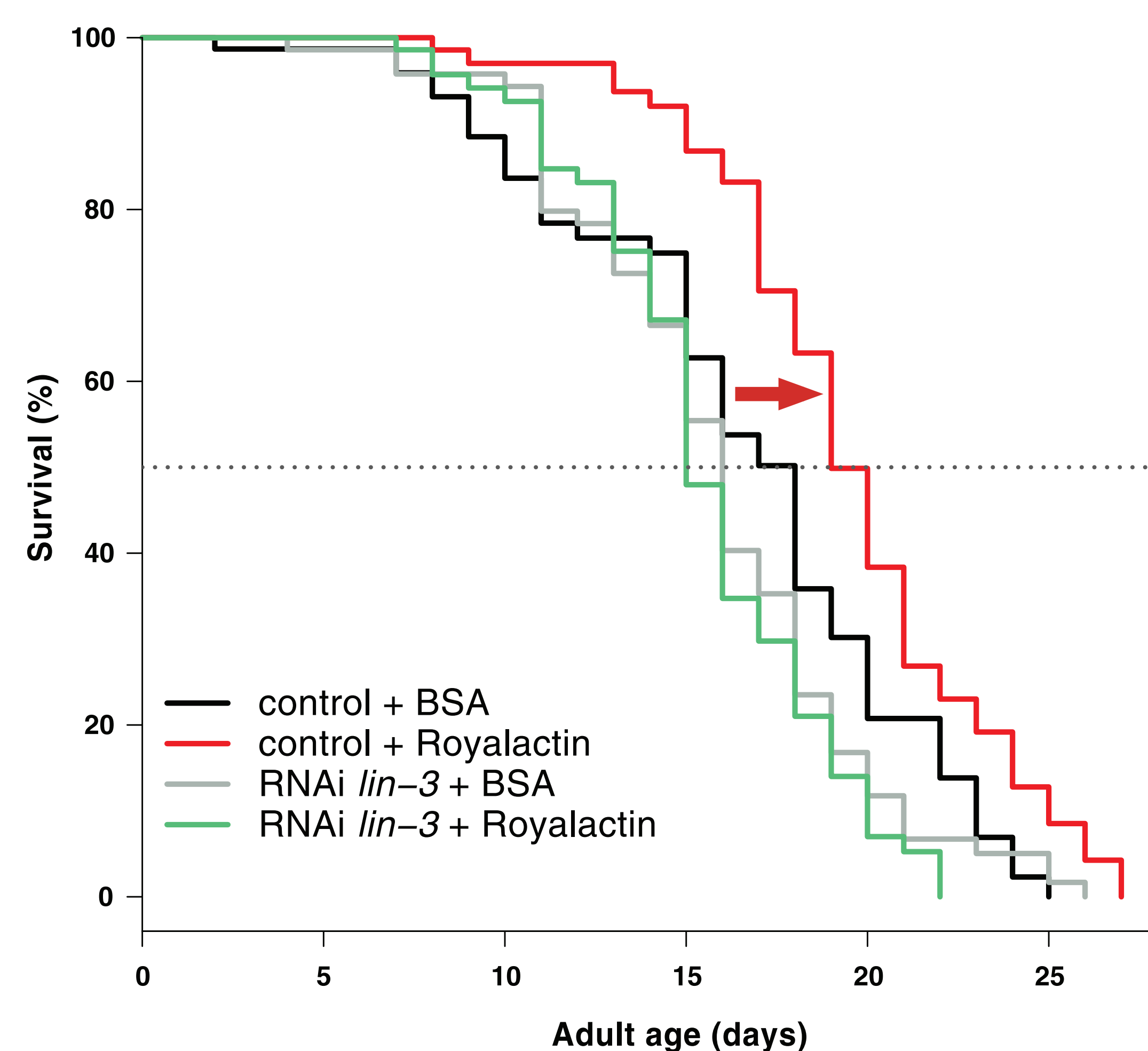
### locomotion



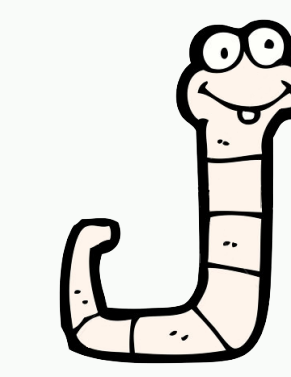
### lifespan



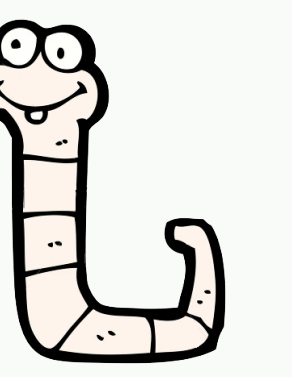
Royalactin, but not BSA, prolongs *C. elegans* lifespan.



Knockdown of the EGF homolog *lin-3* or its receptor *let-23* abolishes the lifespan-extending effect of royalactin.

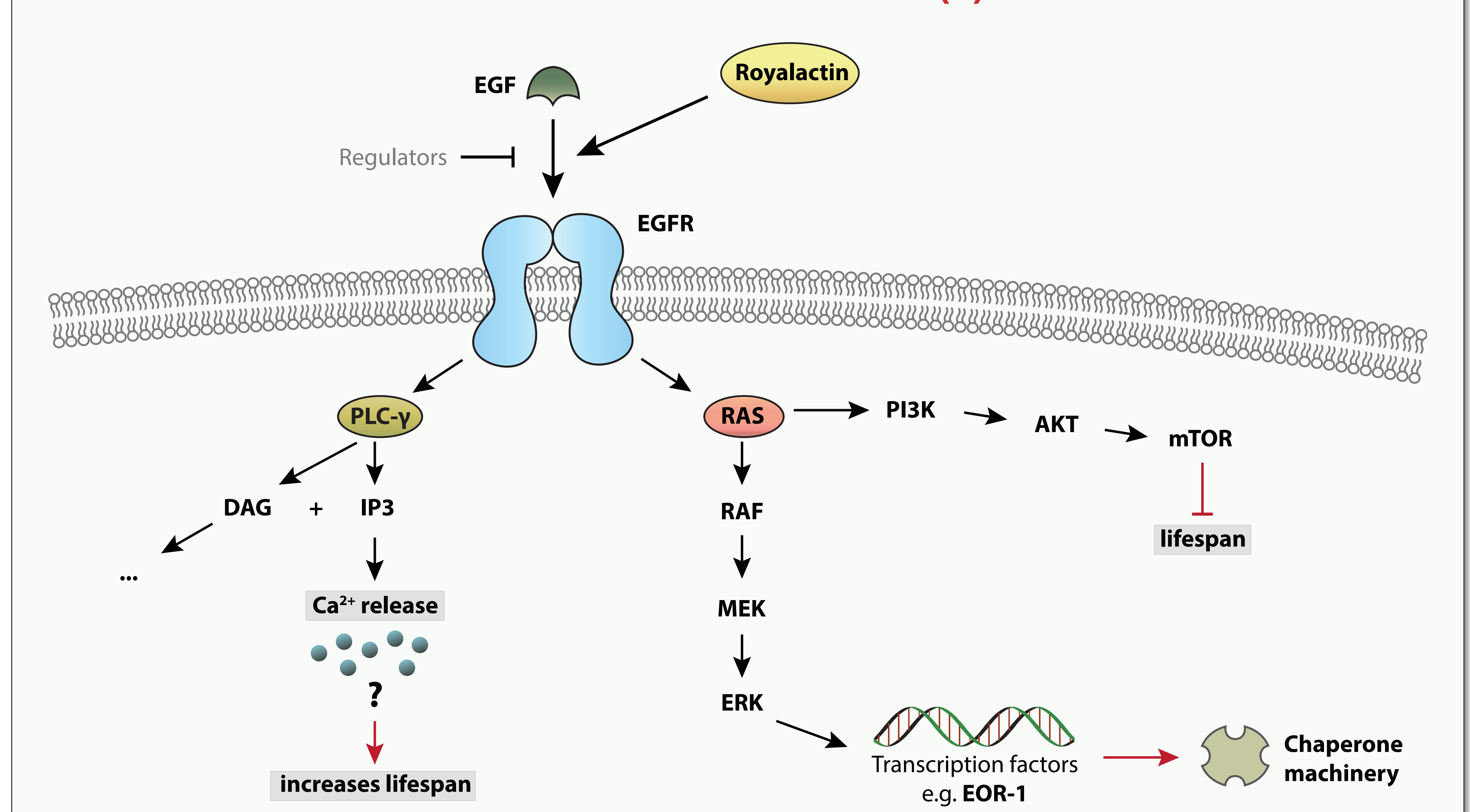


## Highlights



- Royalactin, a royal jelly glycoprotein, extends mean lifespan by 20-34%
- The epidermal growth factor LIN-3 and its receptor LET-23 are essential
- Royalactin enhances locomotion in early to mid-adulthood

## Possible mechanism(s)



### Acknowledgements

Special thanks to the KU Leuven and the Agency for Innovation by Science and Technology in Flanders (IWT) for supporting this work. I would also like to thank Alex Wild for providing his photographs free-of-charge, and everyone else that helped create this poster. The illustration above is based on Rajalingam and Dikic (2011).

