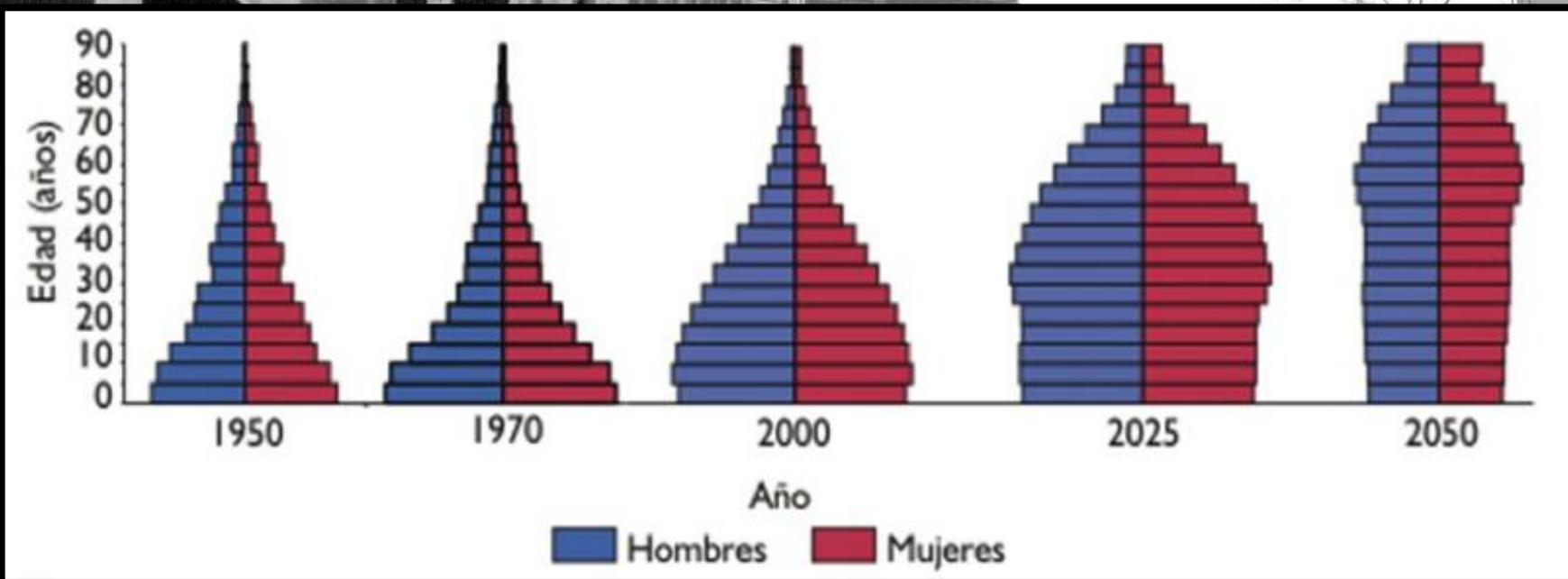


Genes, envejecimiento y longevidad

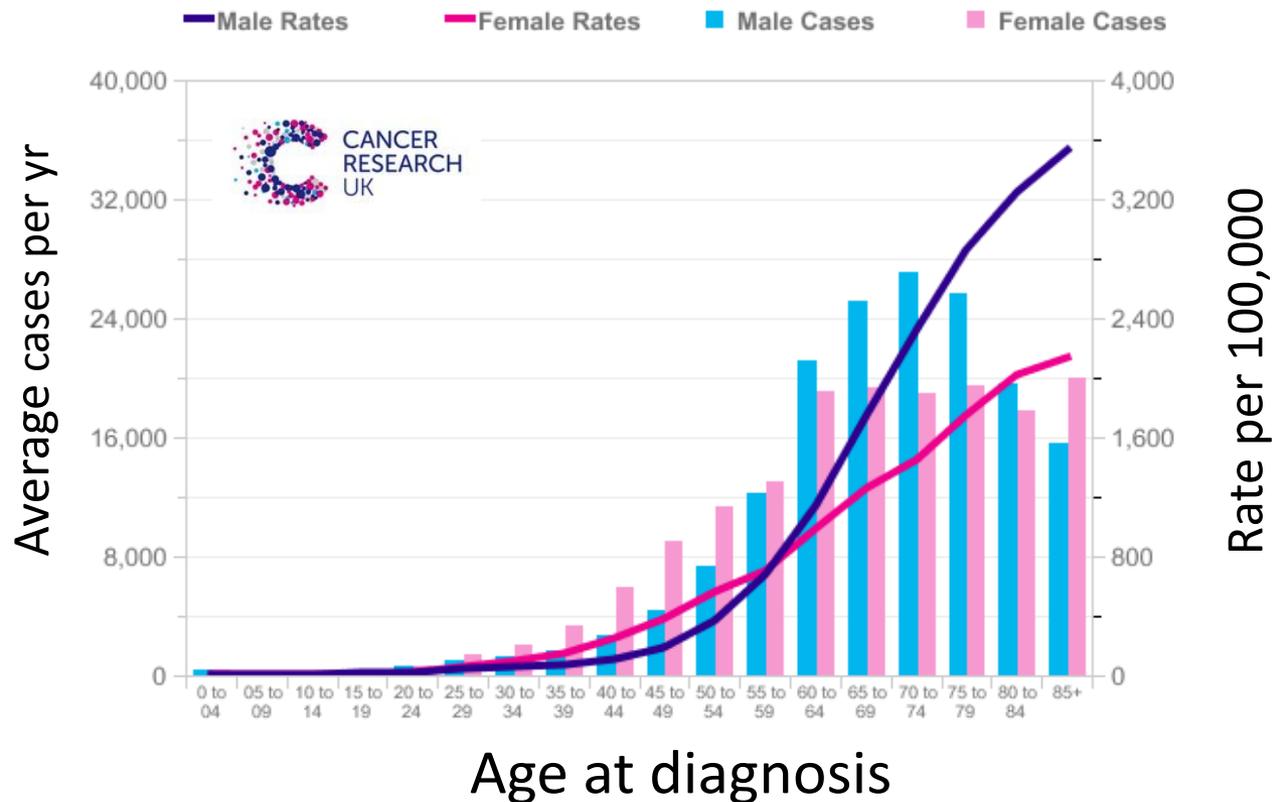
DR. ALEXANDER DE LUNA

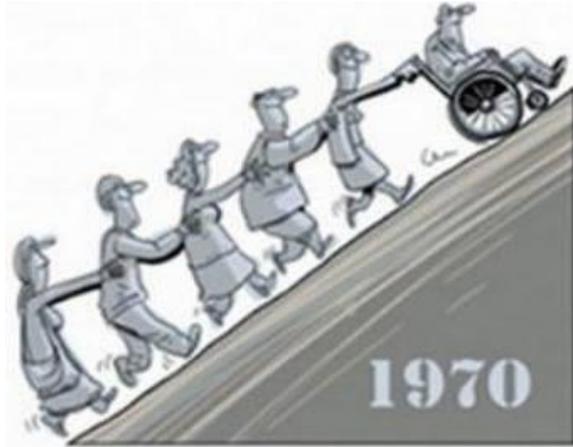
CINVESTAV – Langebio, Irapuato, México



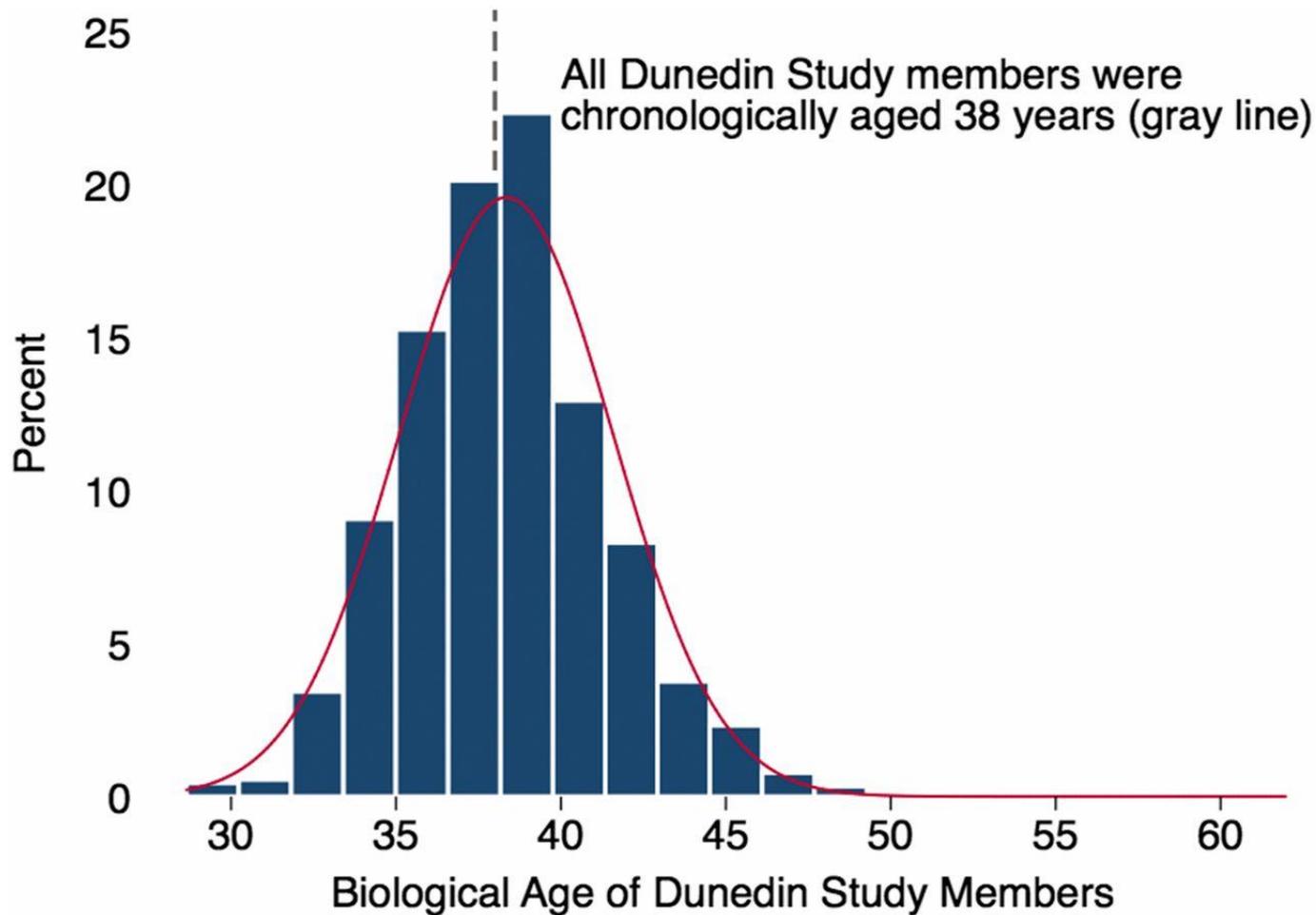
El envejecimiento es el principal factor de riesgo para el desarrollo de enfermedades crónicas

Cancer incidence by age: UK



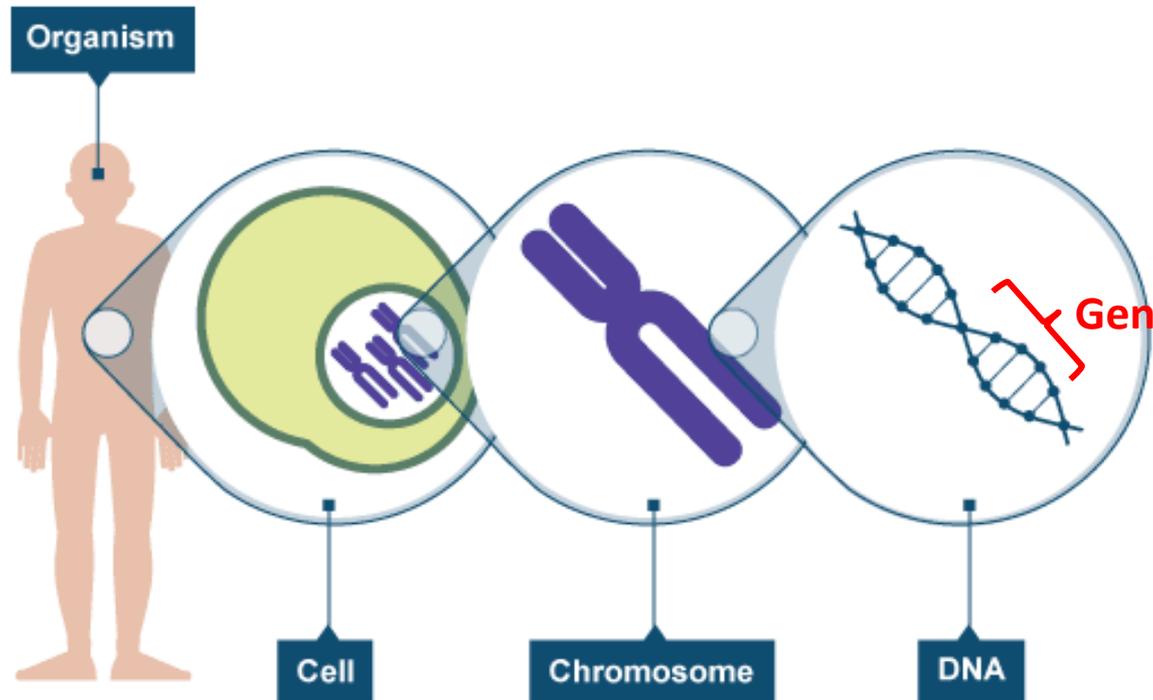


La **edad biológica** varía en individuos jóvenes que tienen la misma edad cronológica



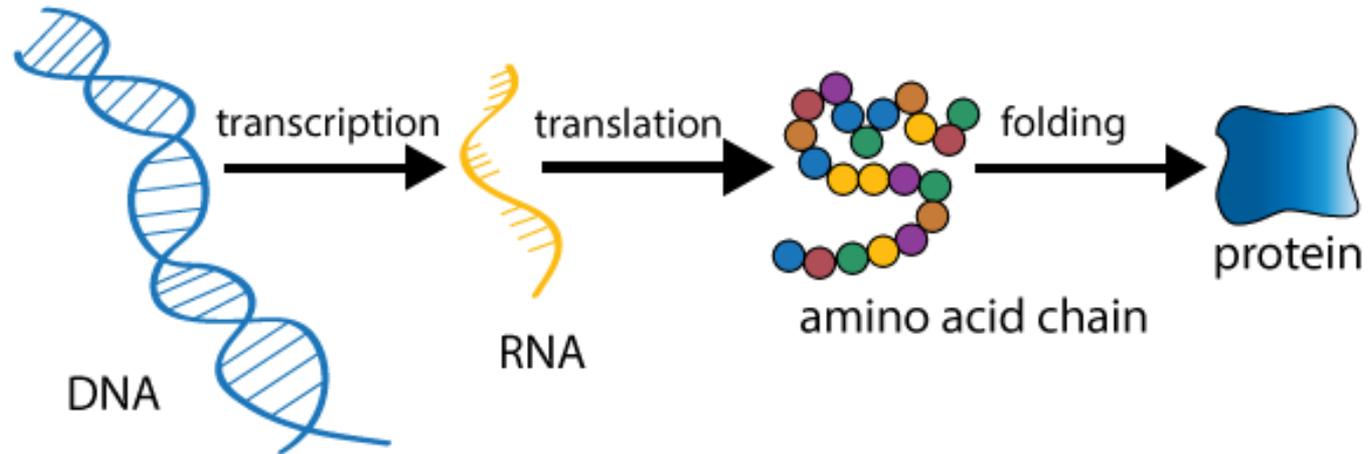
¿Existen genes que determinan la tasa de envejecimiento y la longevidad?

Los fenómenos biológicos están controlados por genes y sus interacciones



Genoma humano: ~20,000 genes

Los genes contienen la información para producir proteínas con funciones específicas

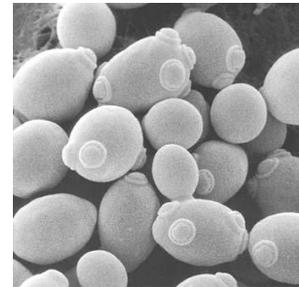
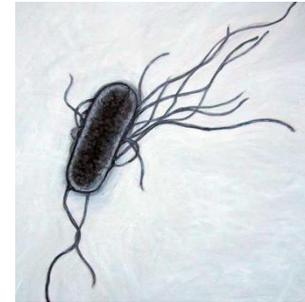
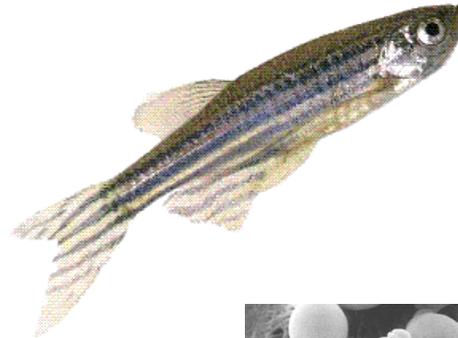


Genoma humano: ~20,000 genes





La investigación en genética se suele hacer trabajando con organismos modelo



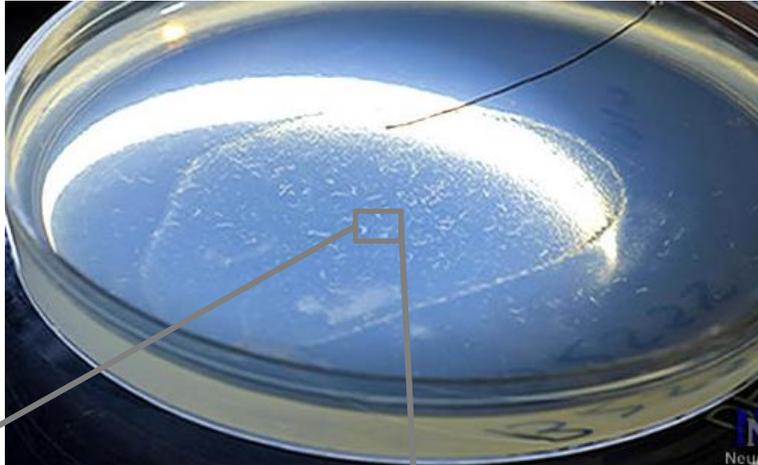


Ratón: 2-3 años

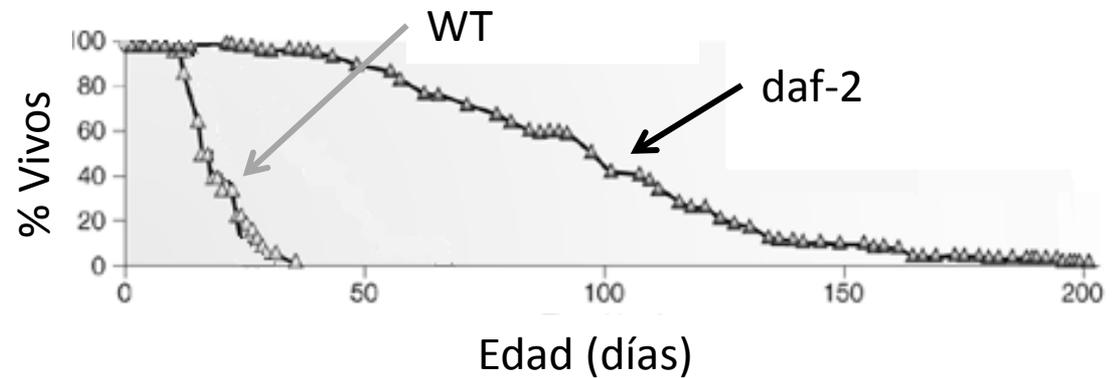


Rata topo: 25-30 años

La inactivación del gen DAF-2 alarga el tiempo de vida de los gusanos nemátodos

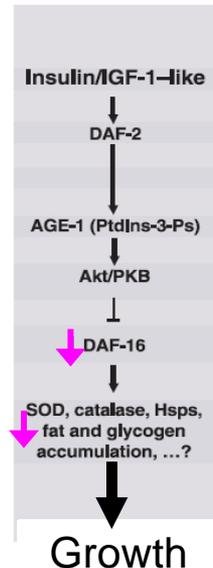
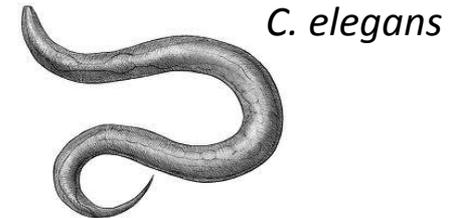
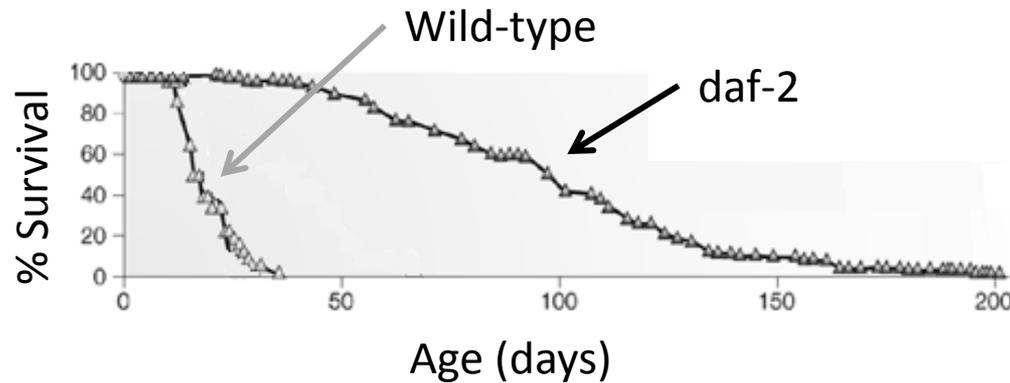


C. elegans



Kenyon et al. *Nature* 1993

El envejecimiento está regulado por procesos celulares conservados



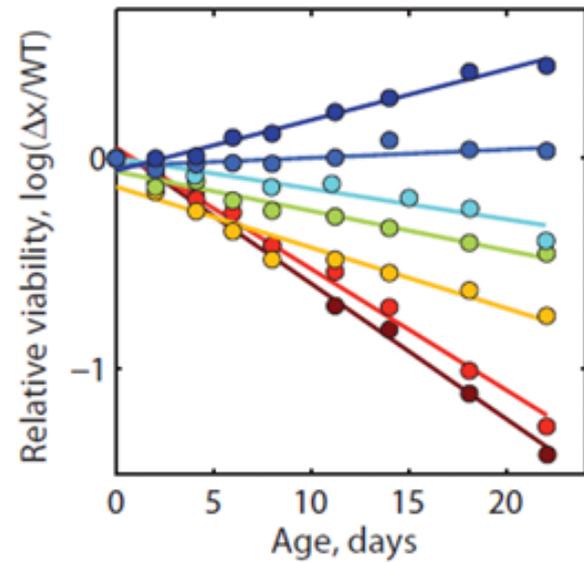
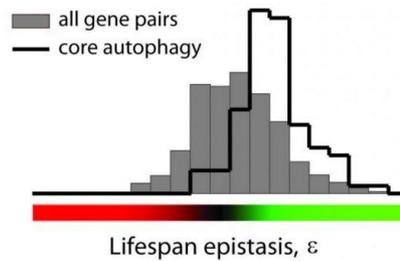
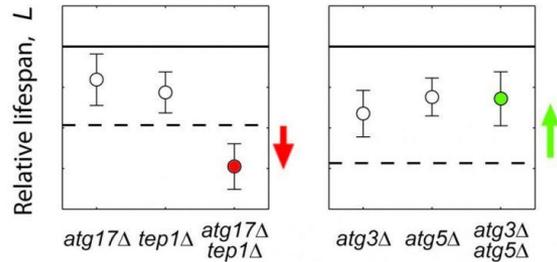
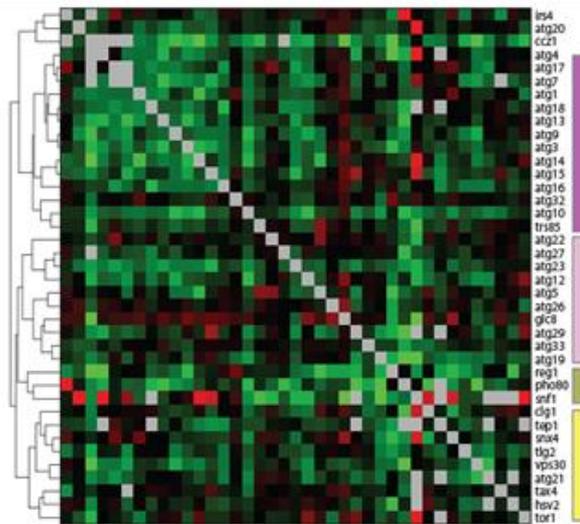
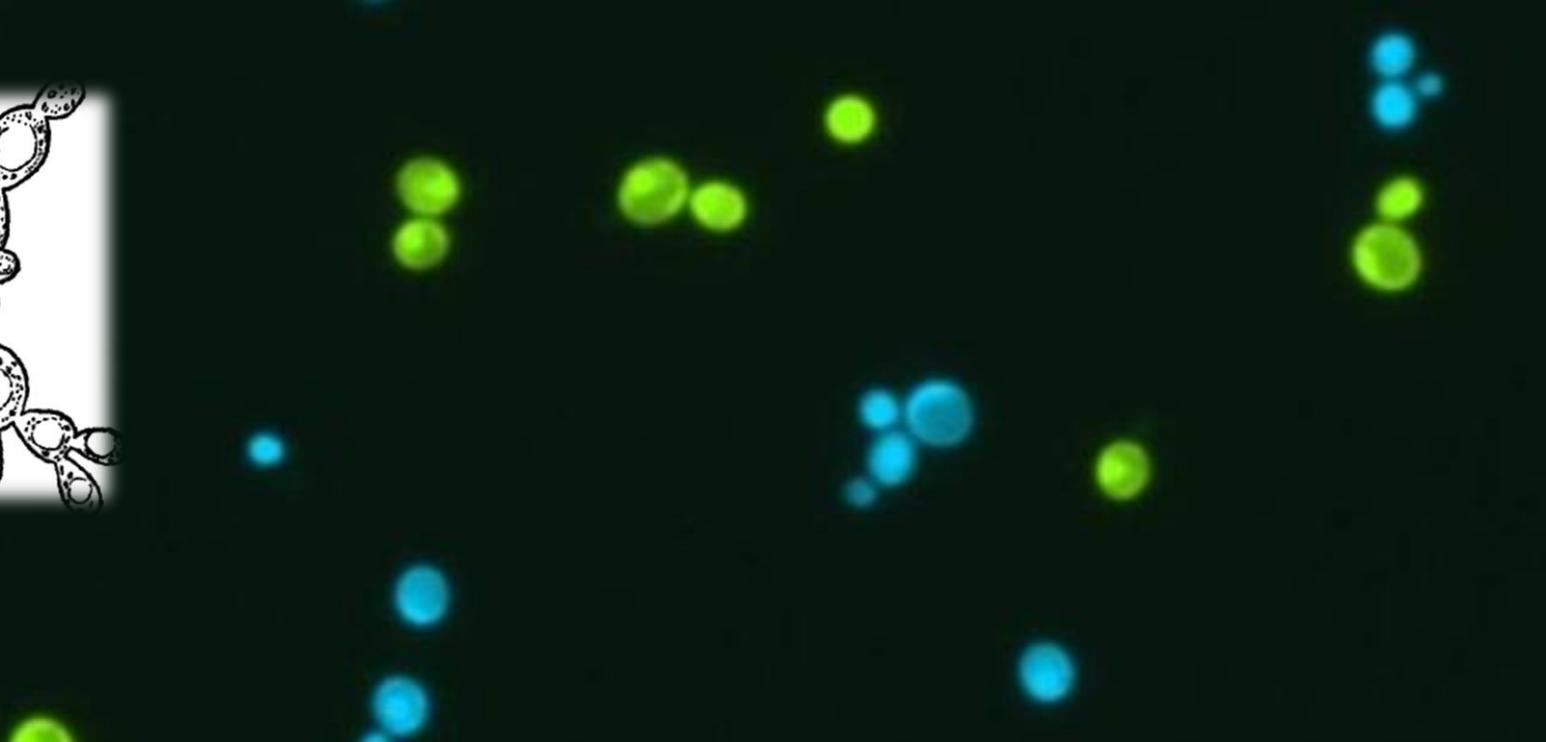
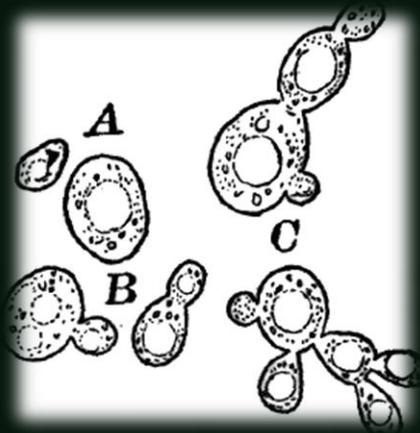
¿Cuáles son los genes que determinan la tasa de envejecimiento y la longevidad?



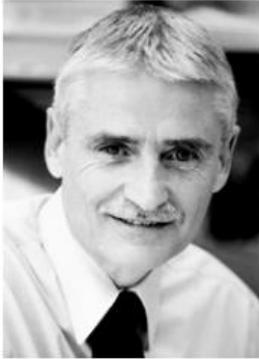


Image: M. Das Murtey & P. Ramasamy

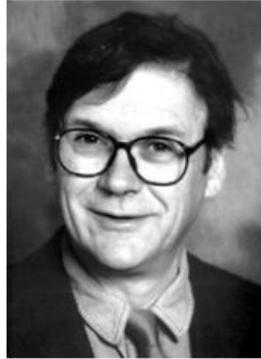




Nobel 2001 | Reguladores del ciclo celular



Leland H. Hartwell



Tim Hunt



Sir Paul M. Nurse



Nobel 2009 | Protección de cromosomas



Photo: U. Montan
Elizabeth H.
Blackburn



Photo: U. Montan
Carol W. Greider



Photo: U. Montan
Jack W. Szostak

Nobel 2013 | Transporte de vesículas



Photo: A. Mahmoud
James E. Rothman



Photo: A. Mahmoud
Randy W. Schekman

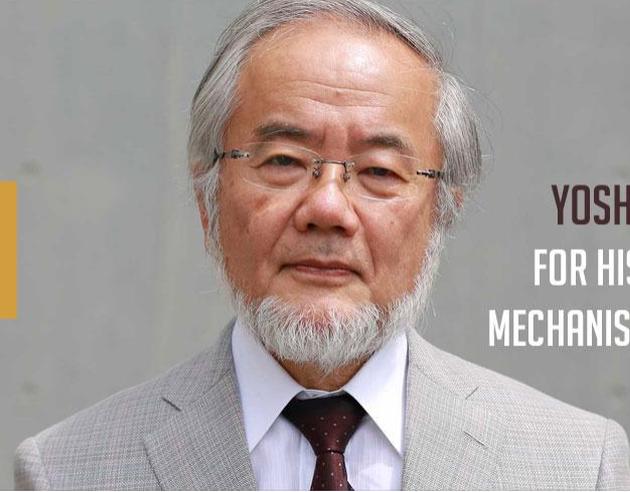


Photo: A. Mahmoud
Thomas C. Südhof

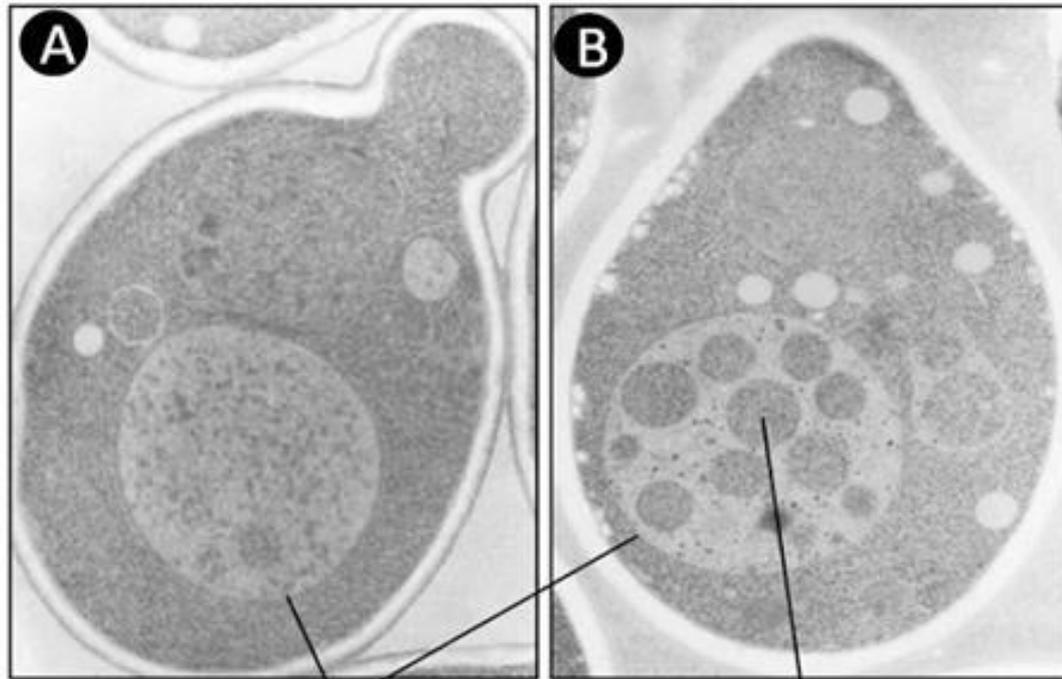




**THE 2016 NOBEL PRIZE IN
PHYSIOLOGY OR MEDICINE**

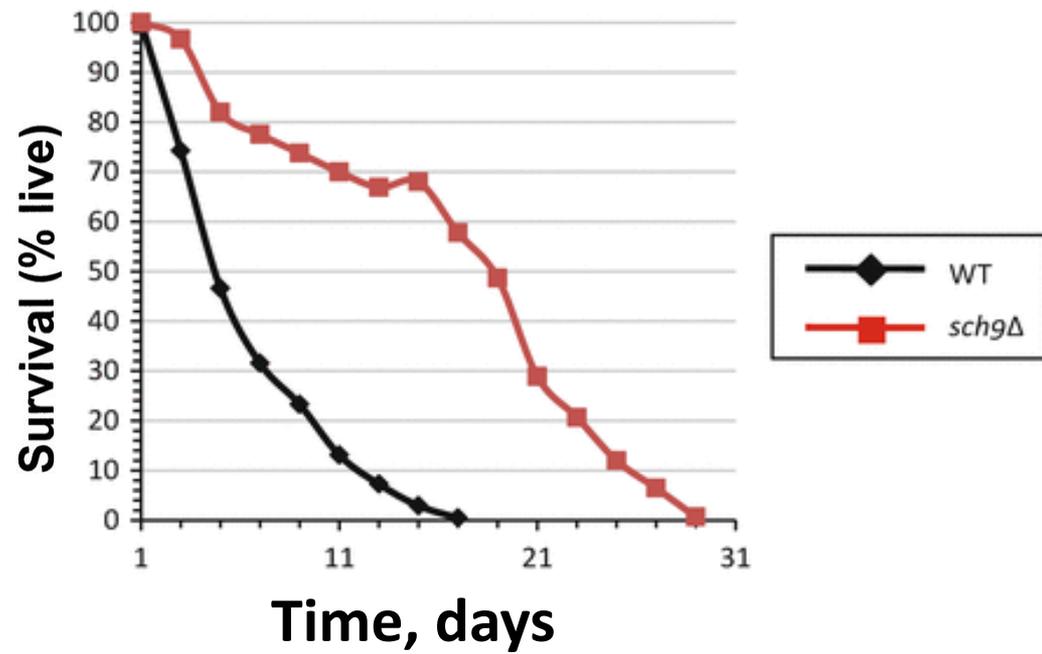
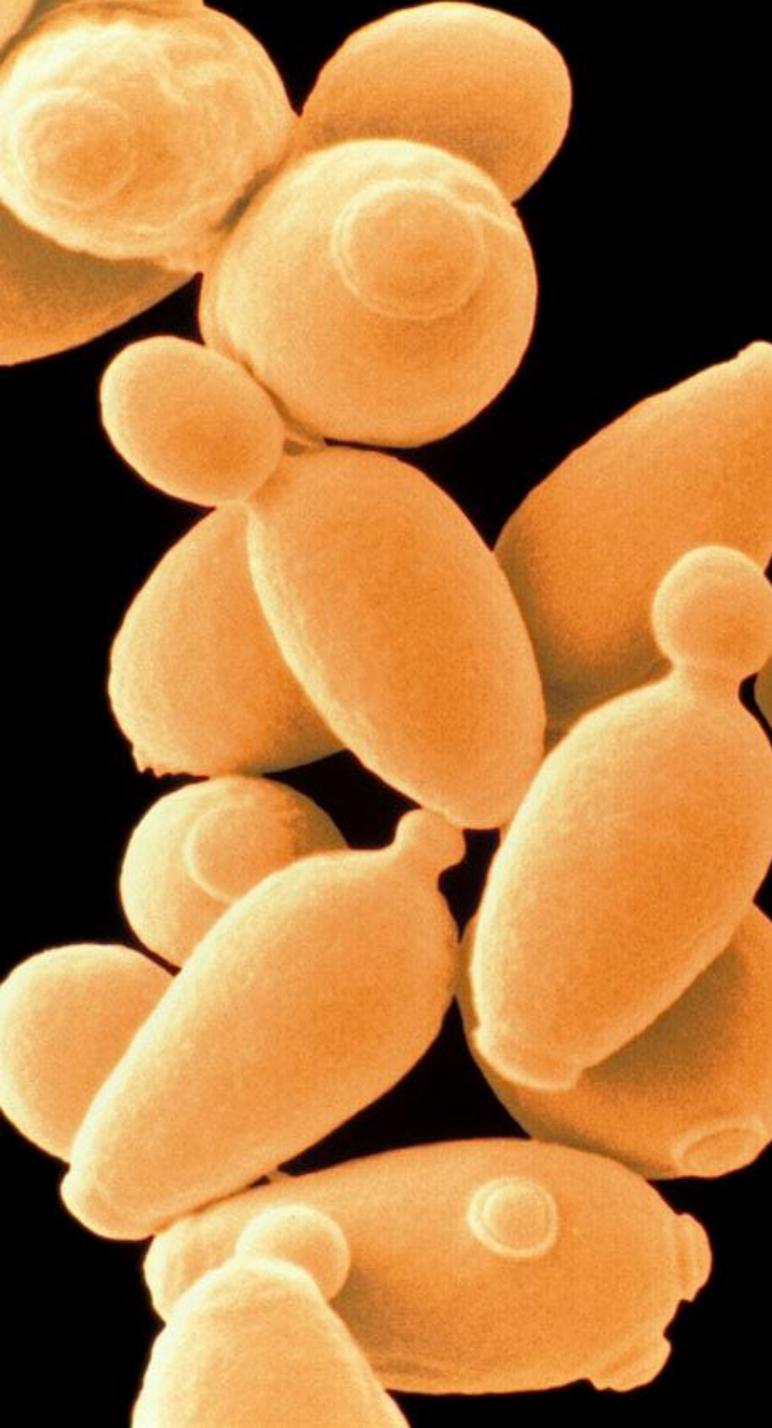


**YOSHINORI OHSUMI
FOR HIS DISCOVERIES OF
MECHANISMS FOR AUTOPHAGY**



Vacuole

Autophagosome





alexander.deluna@cinvestav.mx



Genetic Systems Mx @deluna_lab

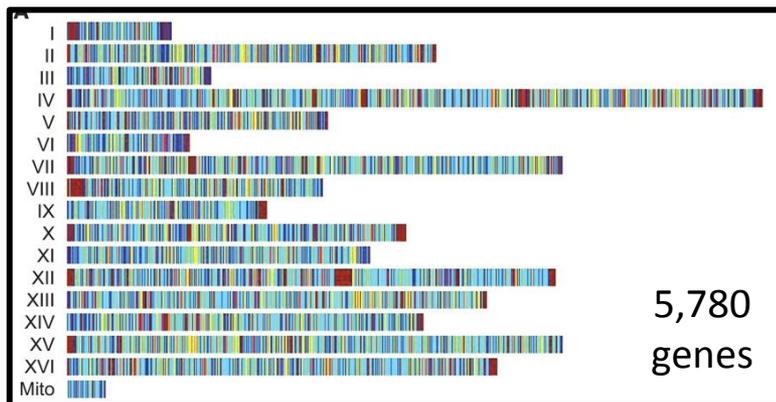
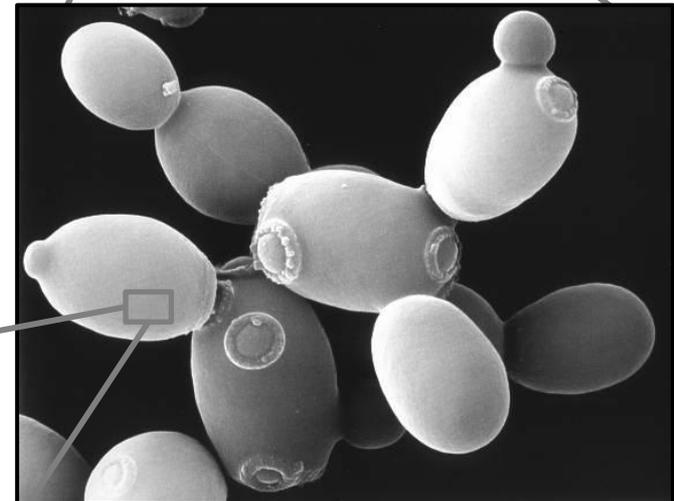
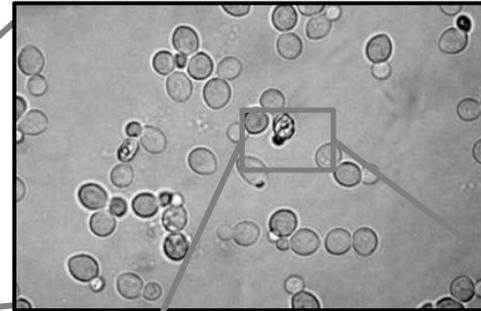


www.langebio.cinvestav.mx



LangebioMx @langebiomx

La levadura *S. cerevisiae* tiene casi 6,000 genes y la mayoría están conservados en los humanos

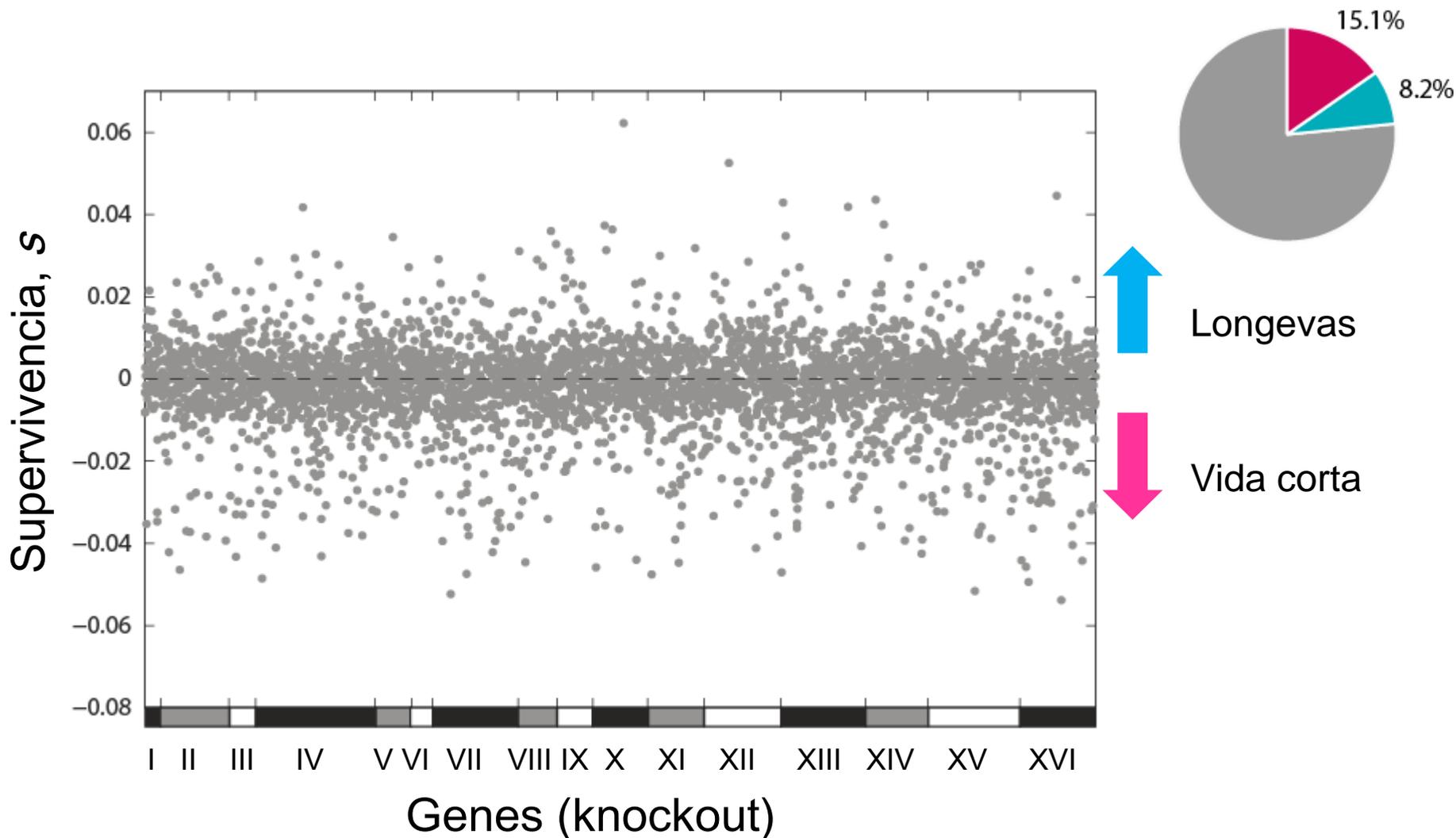


5,780
genes

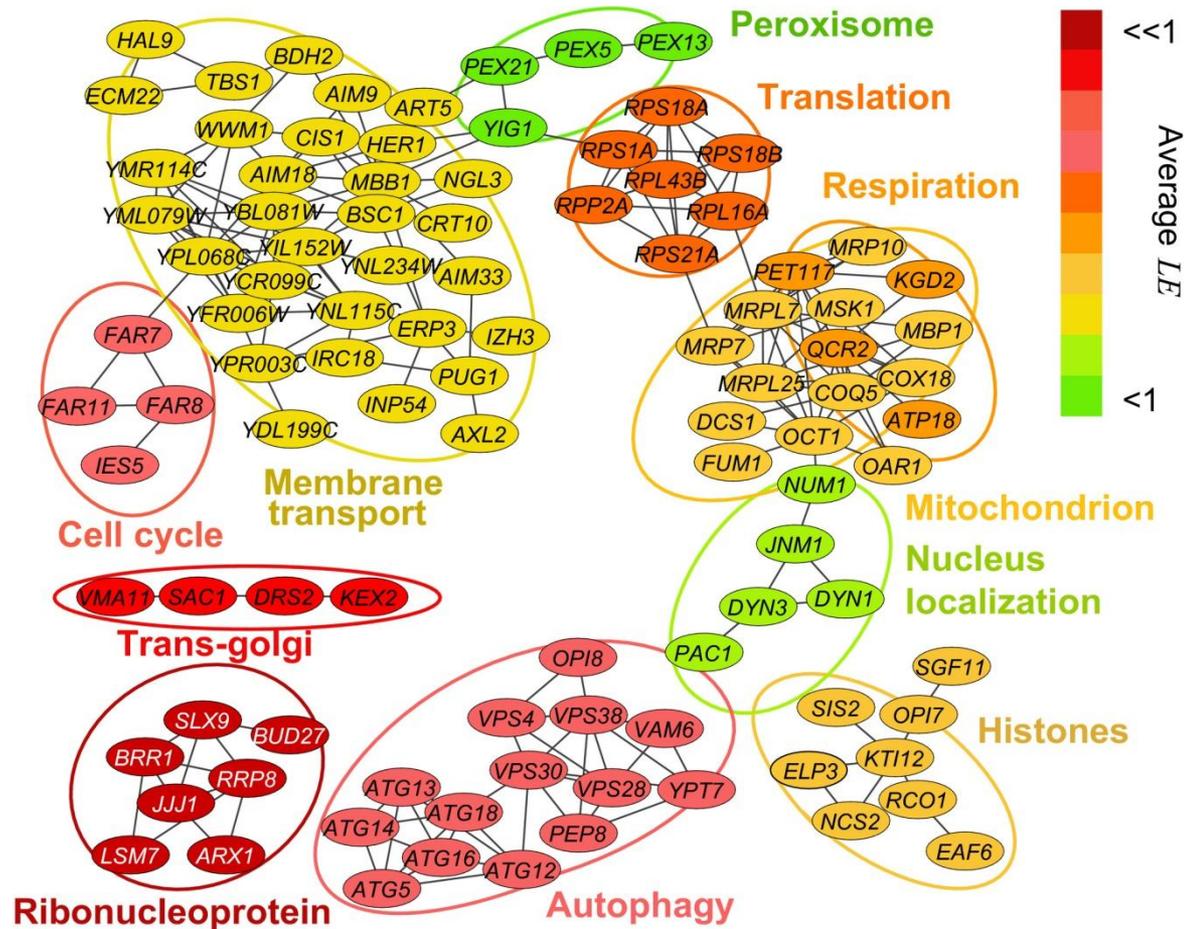
Desarrollamos un método para caracterizar de manera automática la longevidad de levaduras

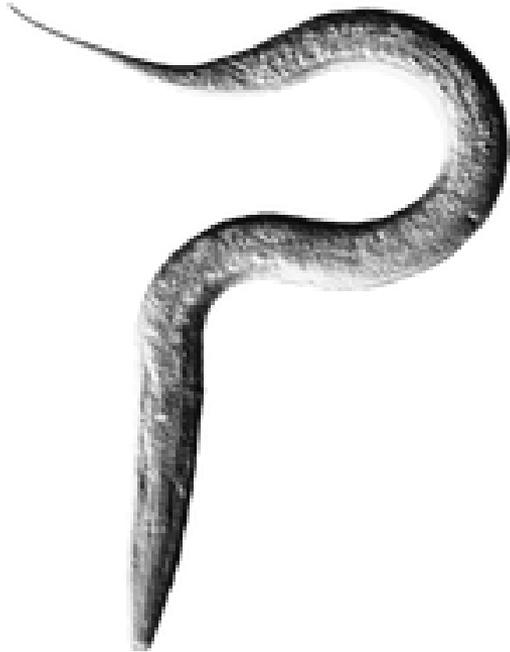
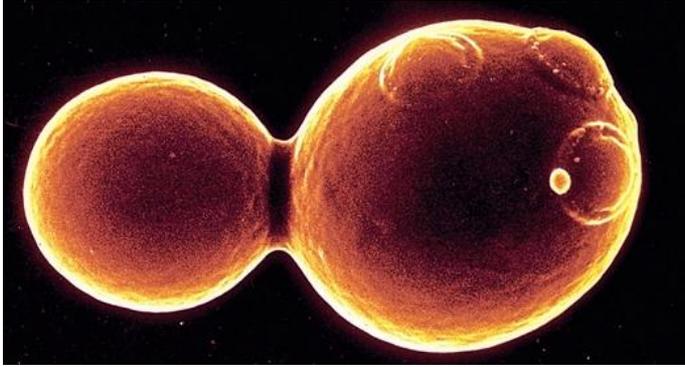


Logramos revelar la longevidad de las mutantes en todo el genoma de la levadura



Nuestros experimentos revelan cuáles son los procesos celulares que determinan la longevidad







Sergio E. Campos
J. Abraham Avelar-Rivas
Erika V. Cruz
Mauricio Campa
Michelle Munguía
Judith Ulloa
Porfirio Gallegos
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