

Individuality in Bacteria: beyond nature and nurture

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eawag
aquatic research ooo

Molecular Microbial Ecology



Nikki
Freed



Olin
Silander



Nela
Nikolic



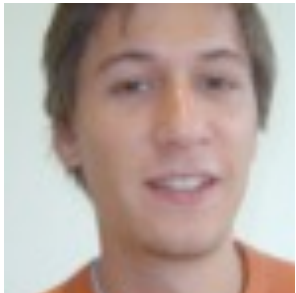
Tobi
Bergmiller



Dave
Johnson



Colette
Bigosch



Markus
Arnoldini



Teresa
Colangelo



Felix
Goldschmidt



Rolf
Kümmerli

Main collaborators

Biocenter Basel



Urs
Jenal



Alex
Boehm

UBC



Michael
Doebeli

ETHZ



Wolf-Dietrich
Hardt



Bärbel
Stecher

Imperial



Rob
Beardmore

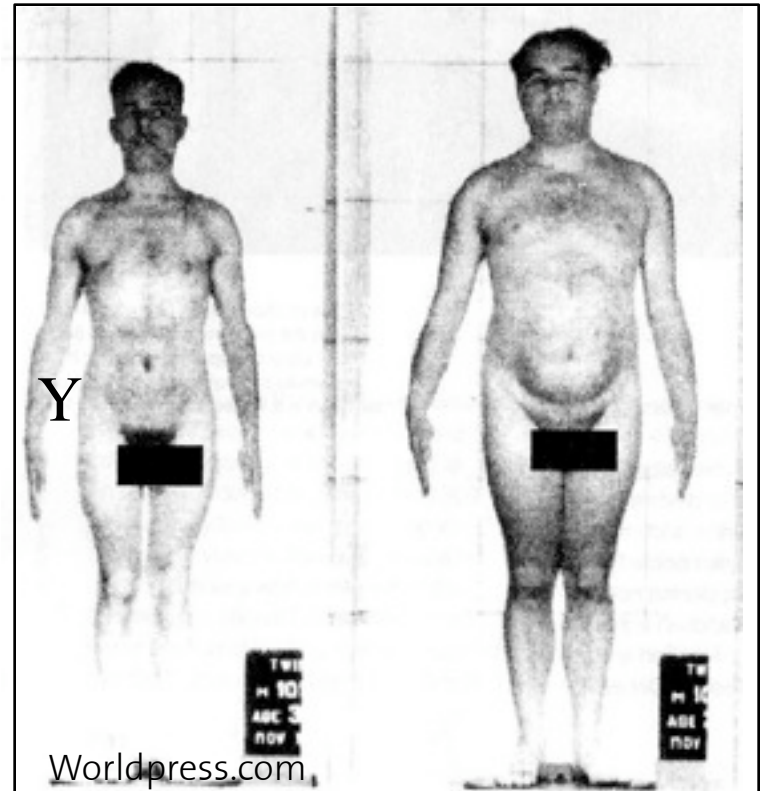


Rafael
Pena-Miller

Who are we?



Genes are
important

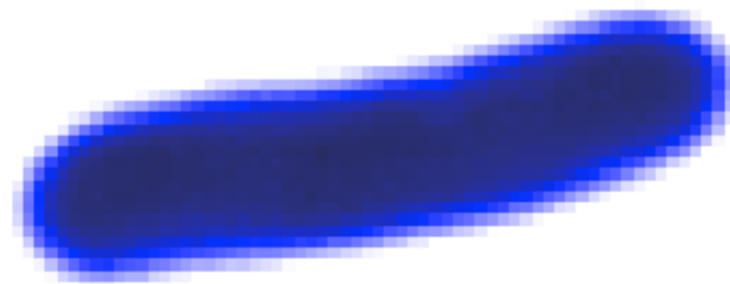


The environment
is important

Beyond genes and environment

Beyond genes and environment

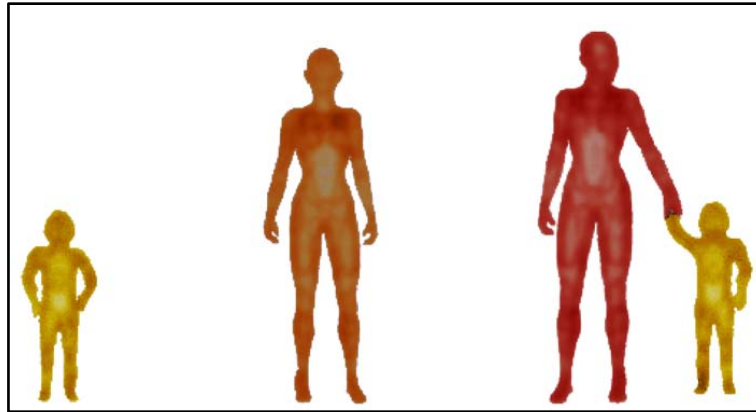
Aging

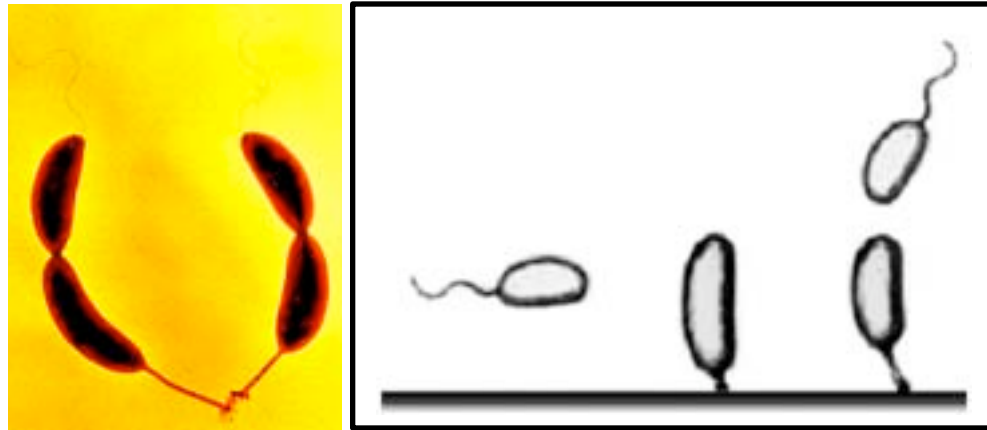
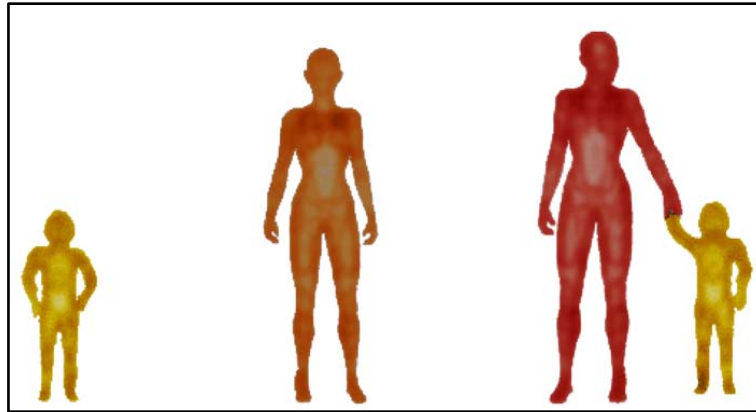


Random decisions

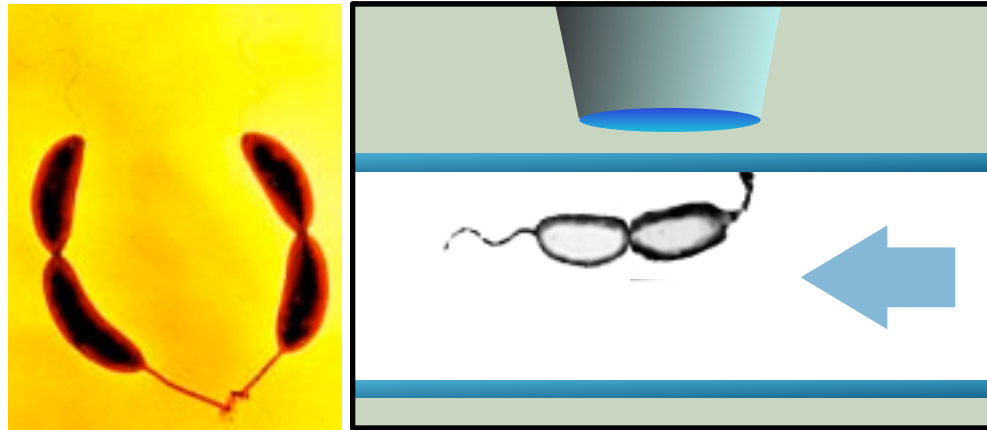
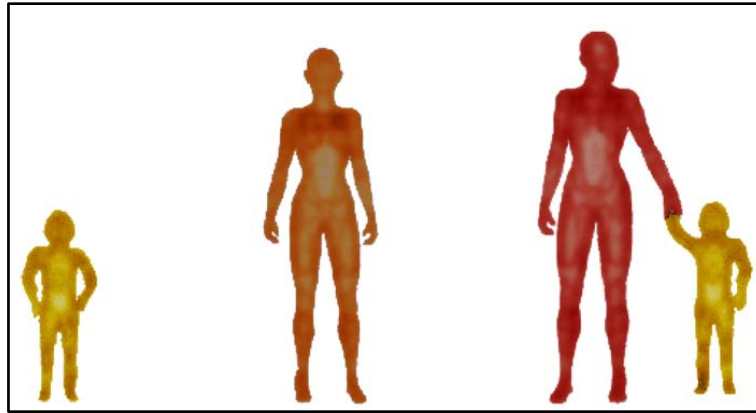
Individuality in bacteria

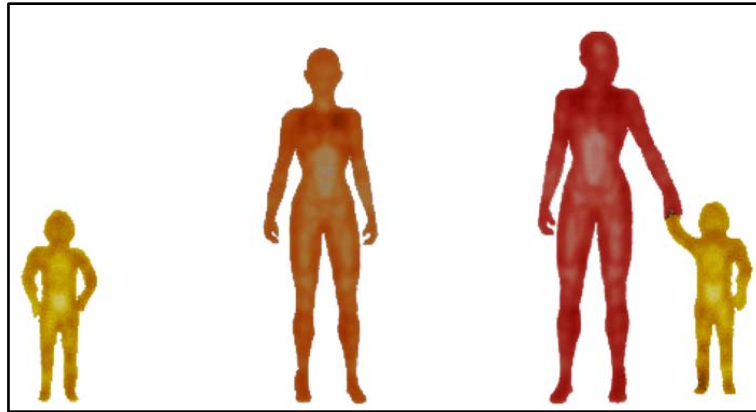
Aging

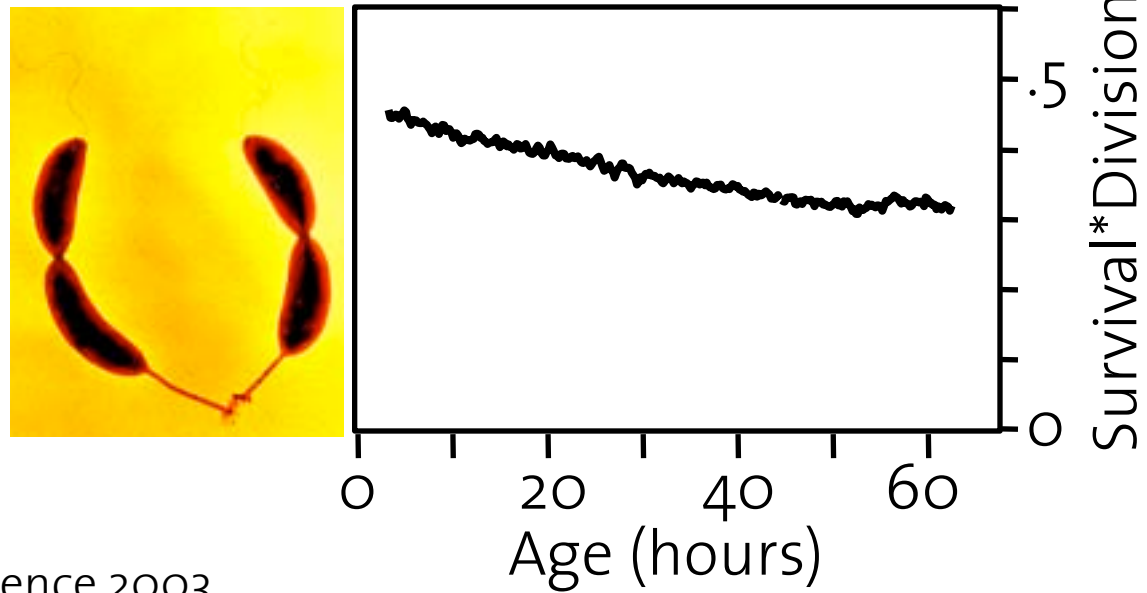
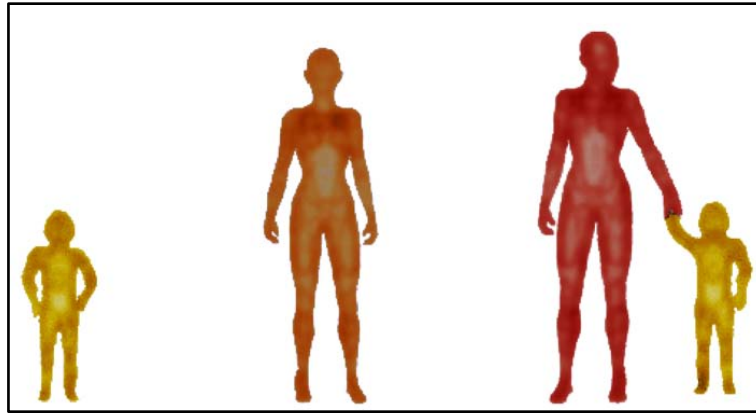


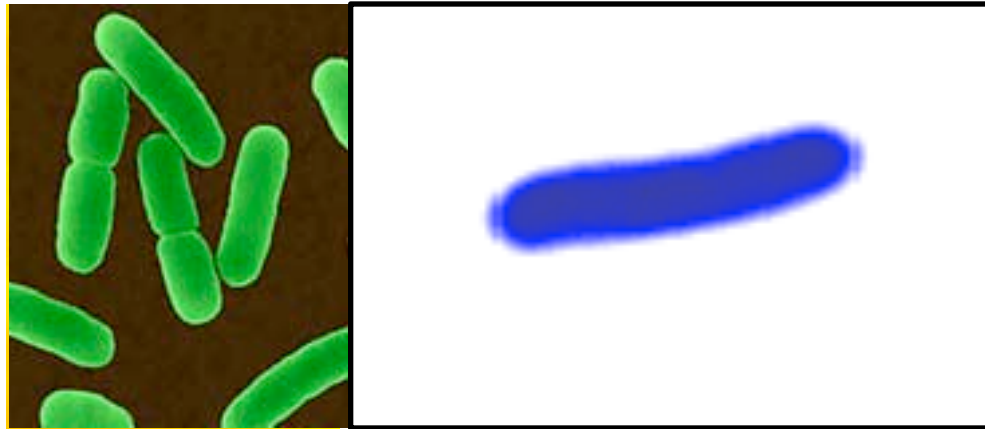
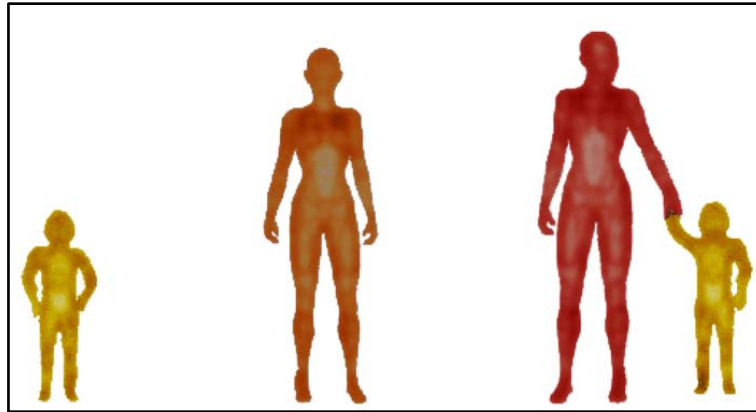


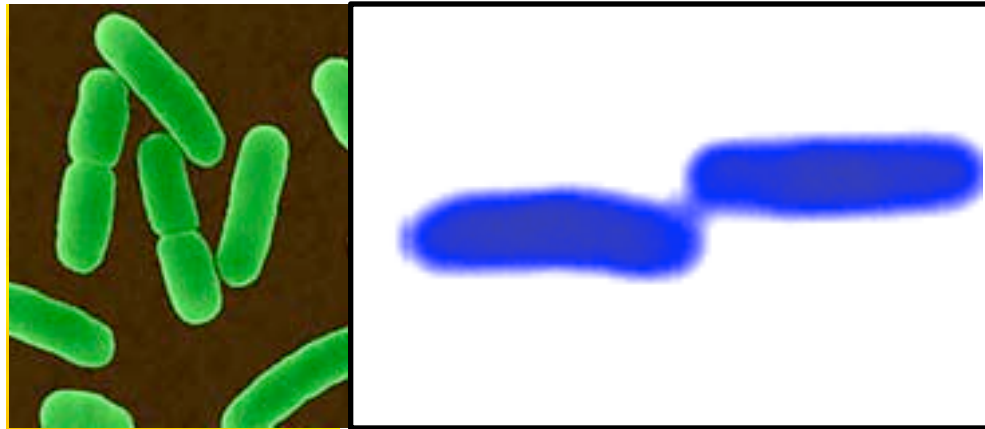
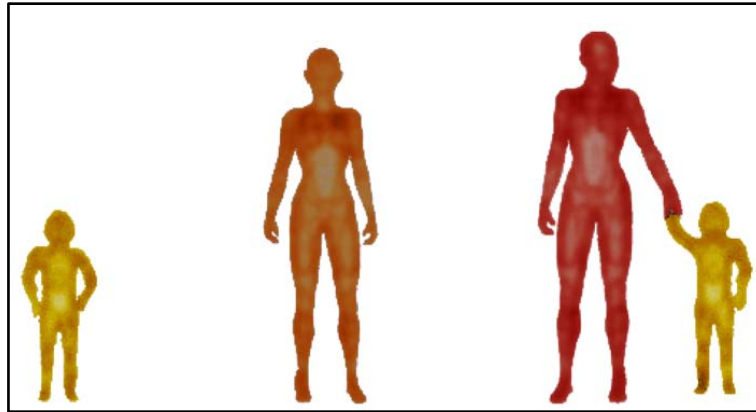
Caulobacter crescentus

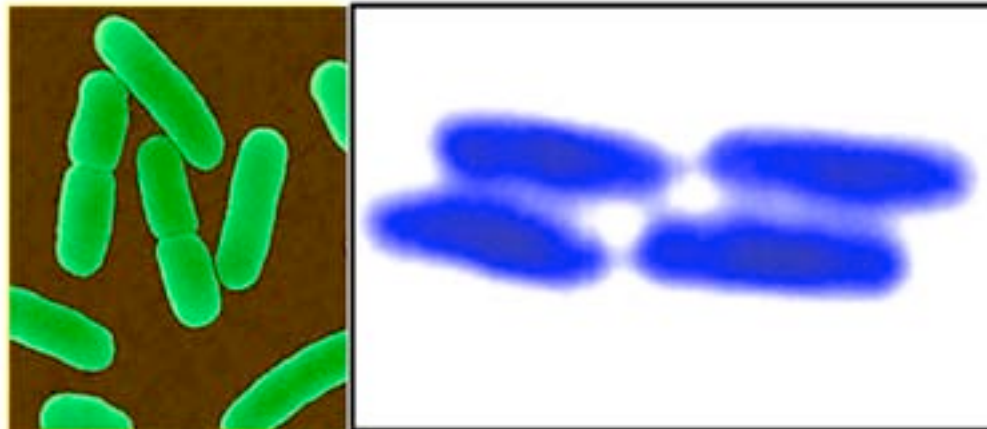
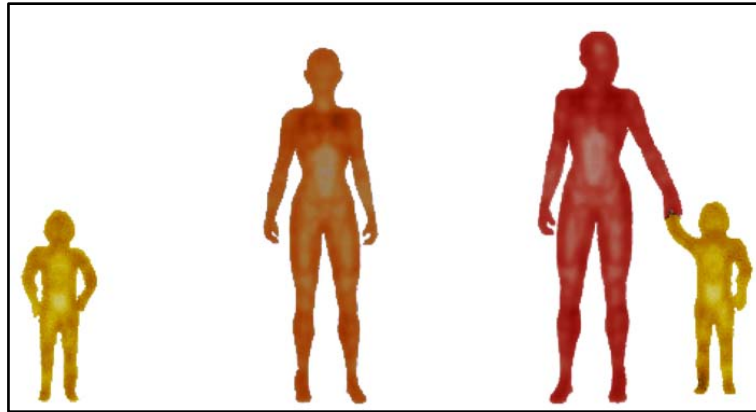


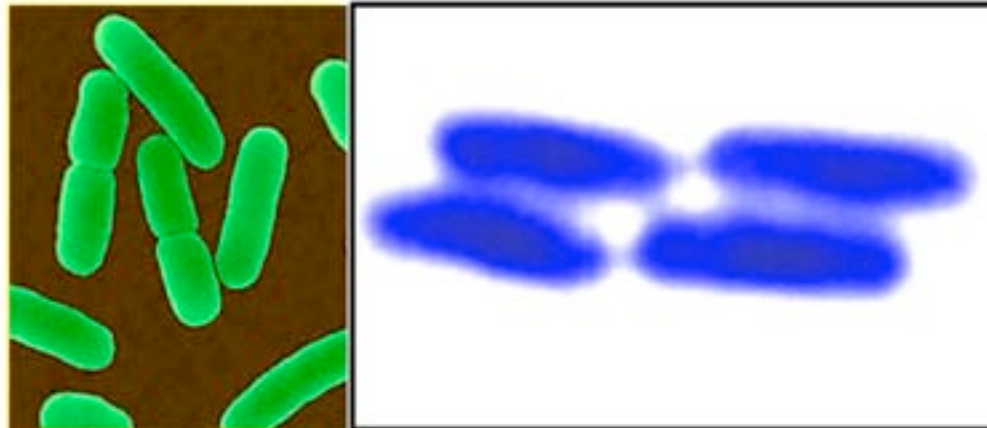
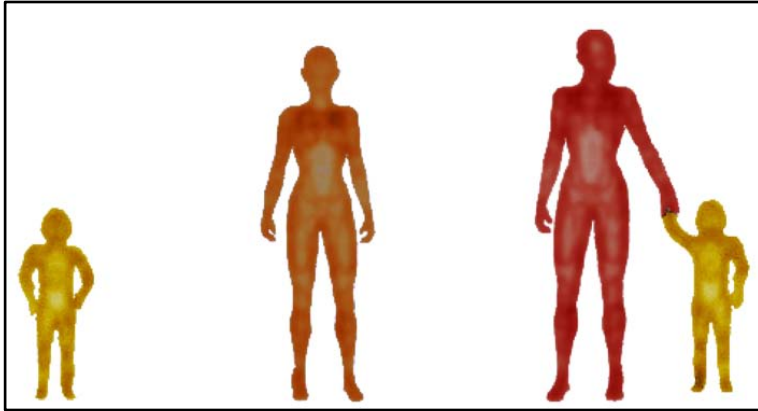


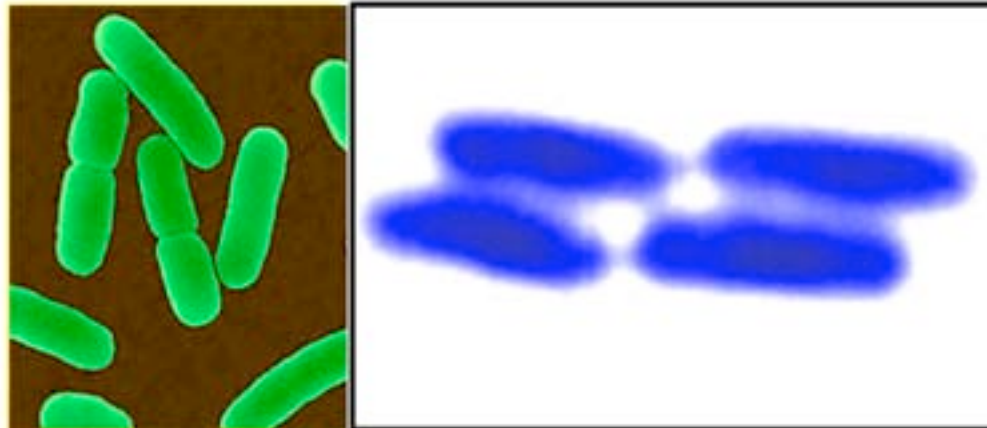
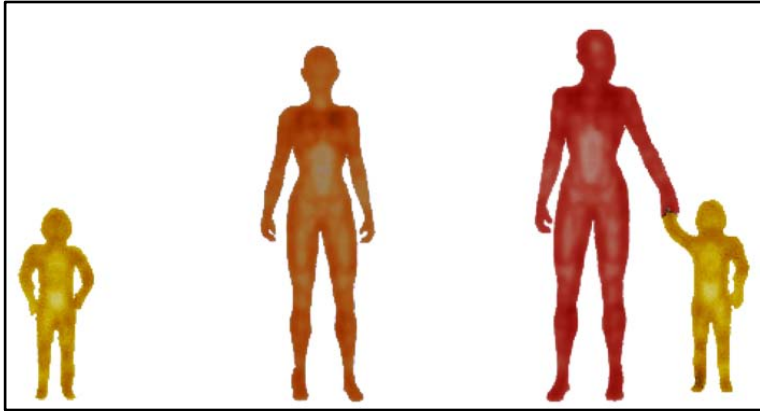




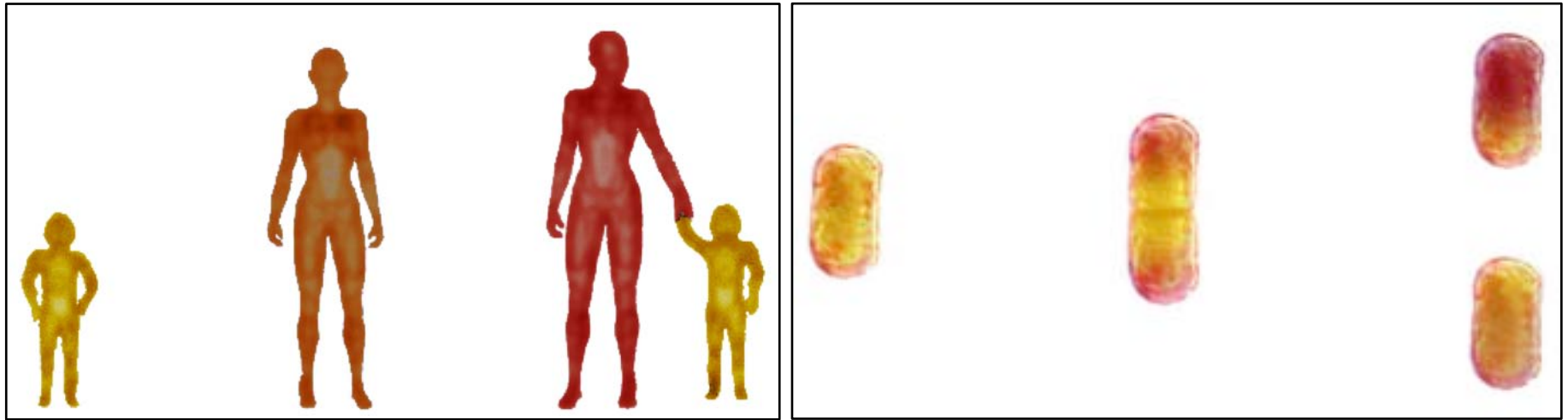


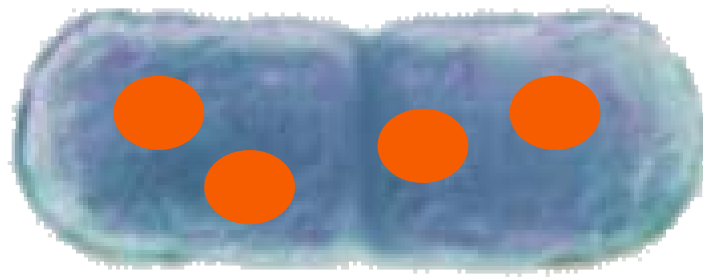
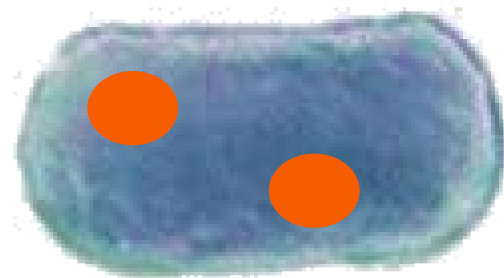
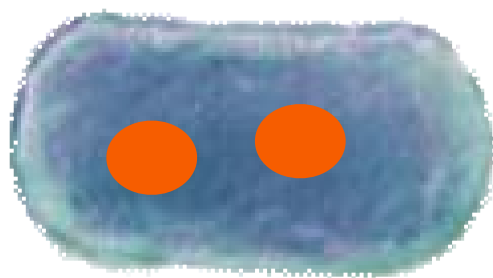


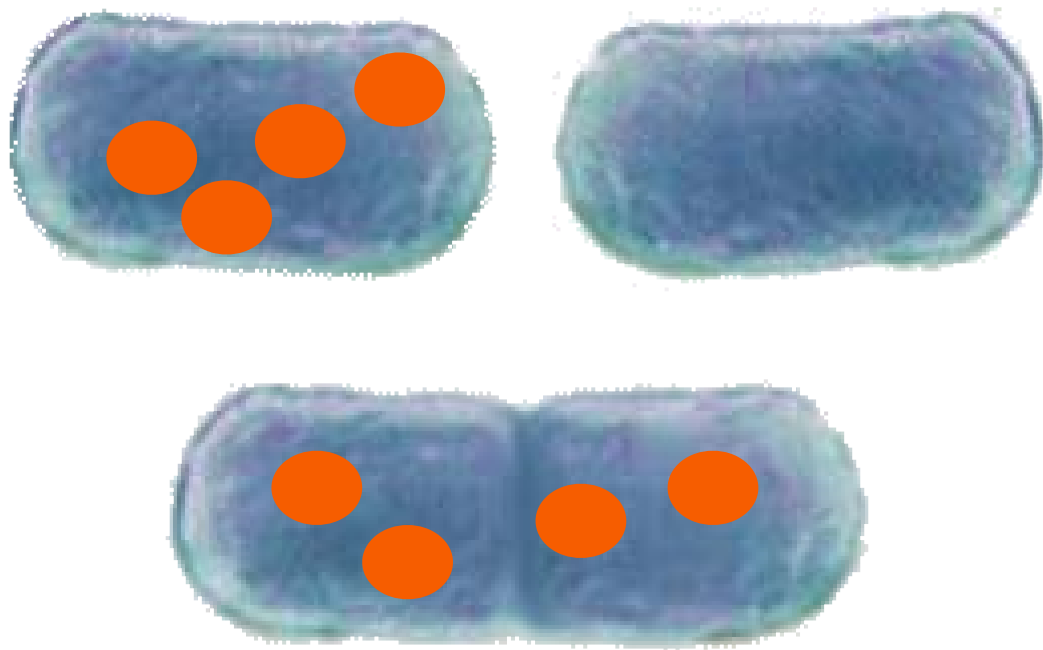


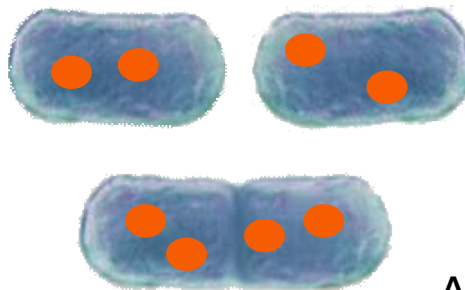
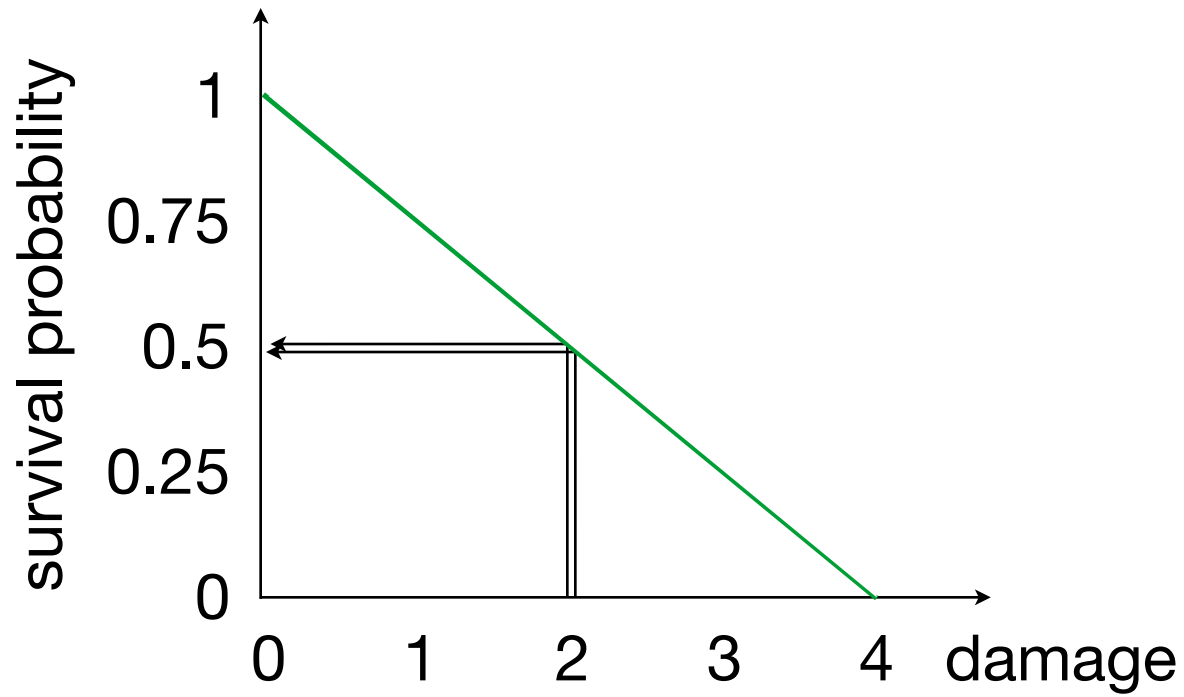


Aging is asymmetry

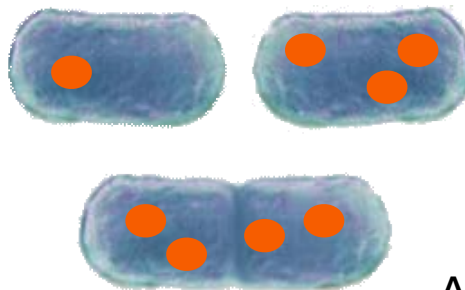
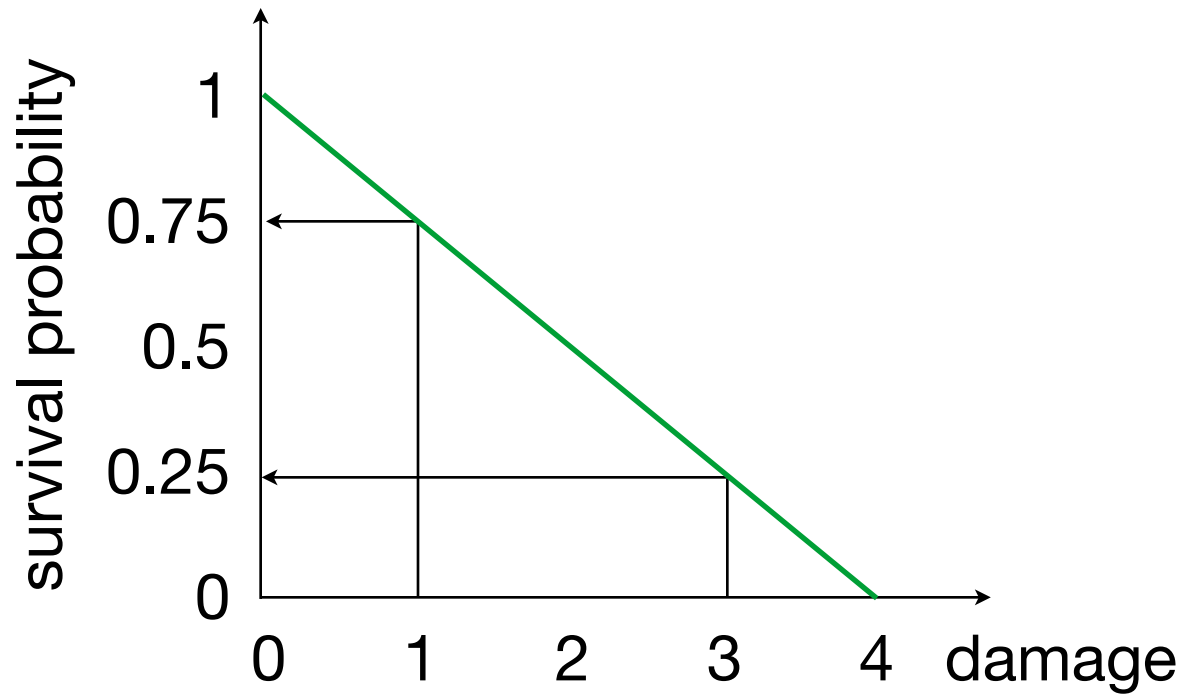




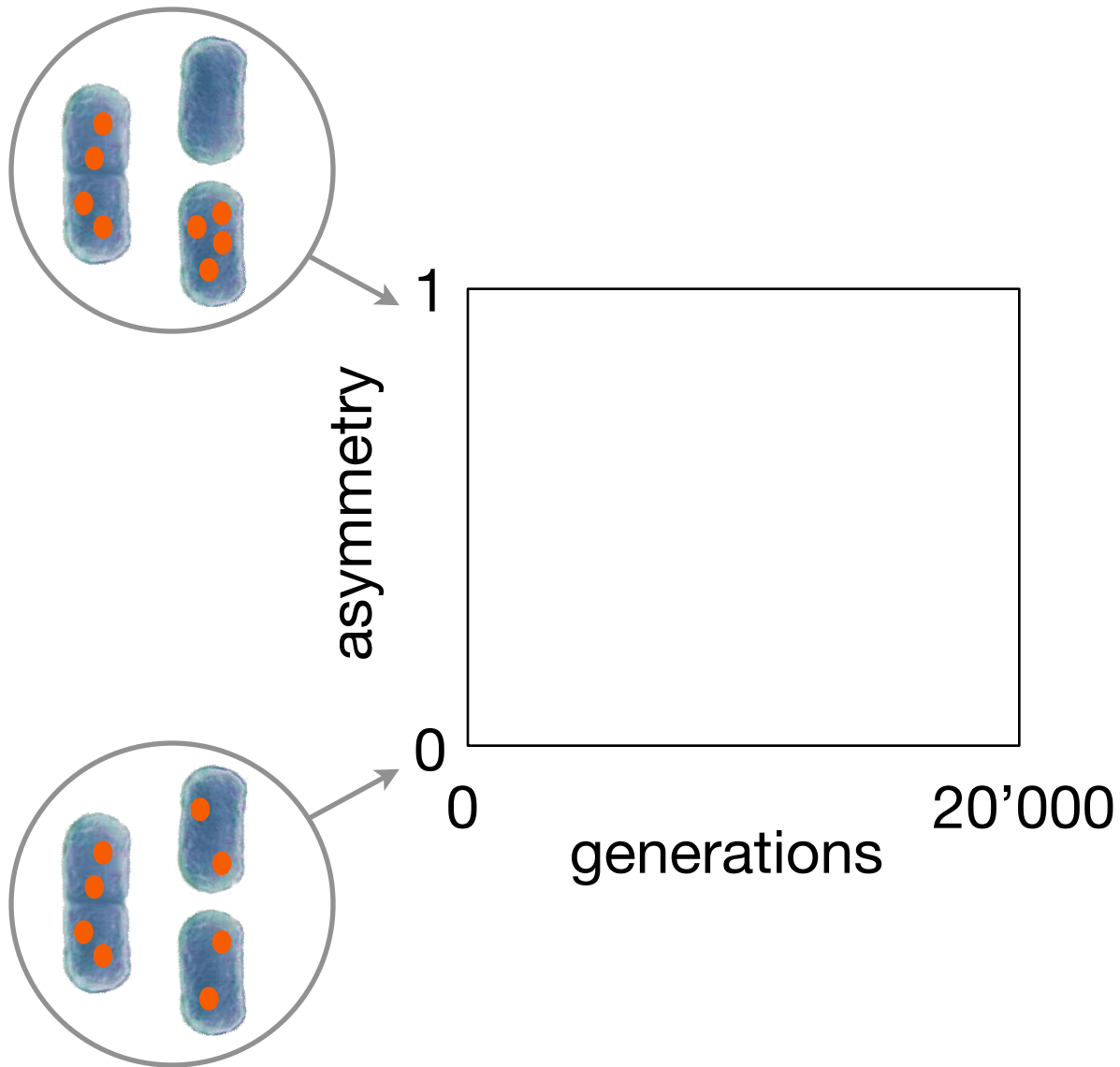


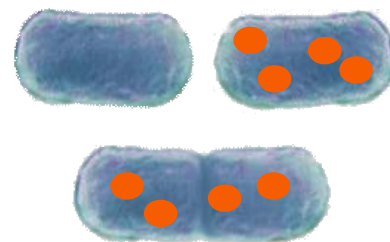
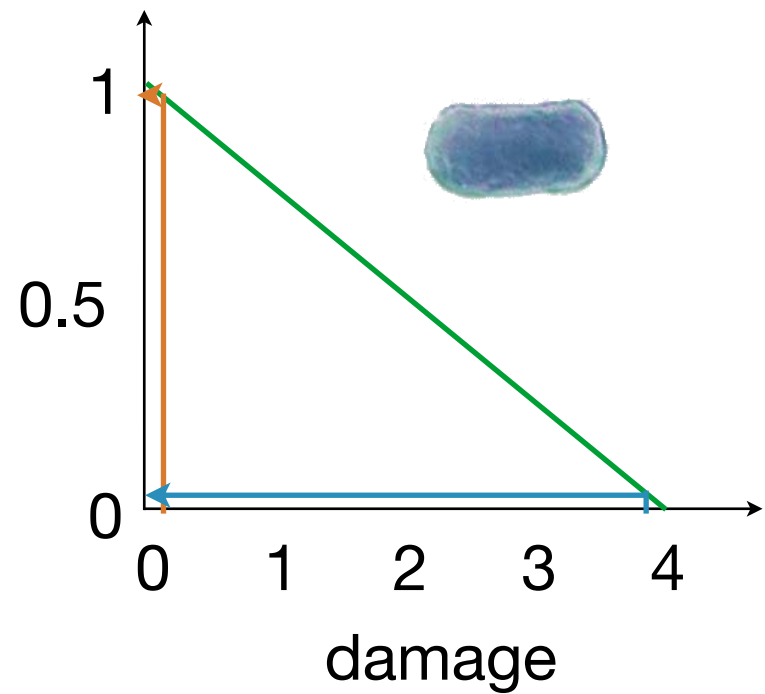
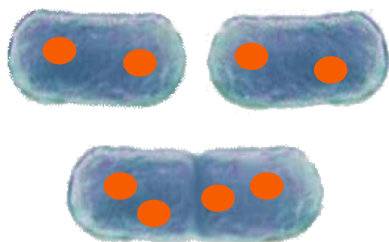
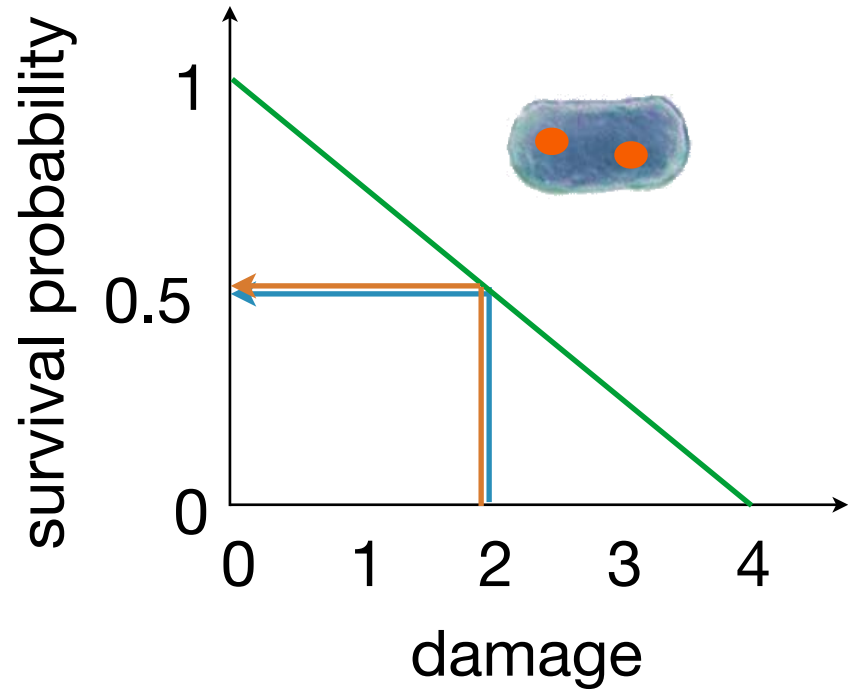


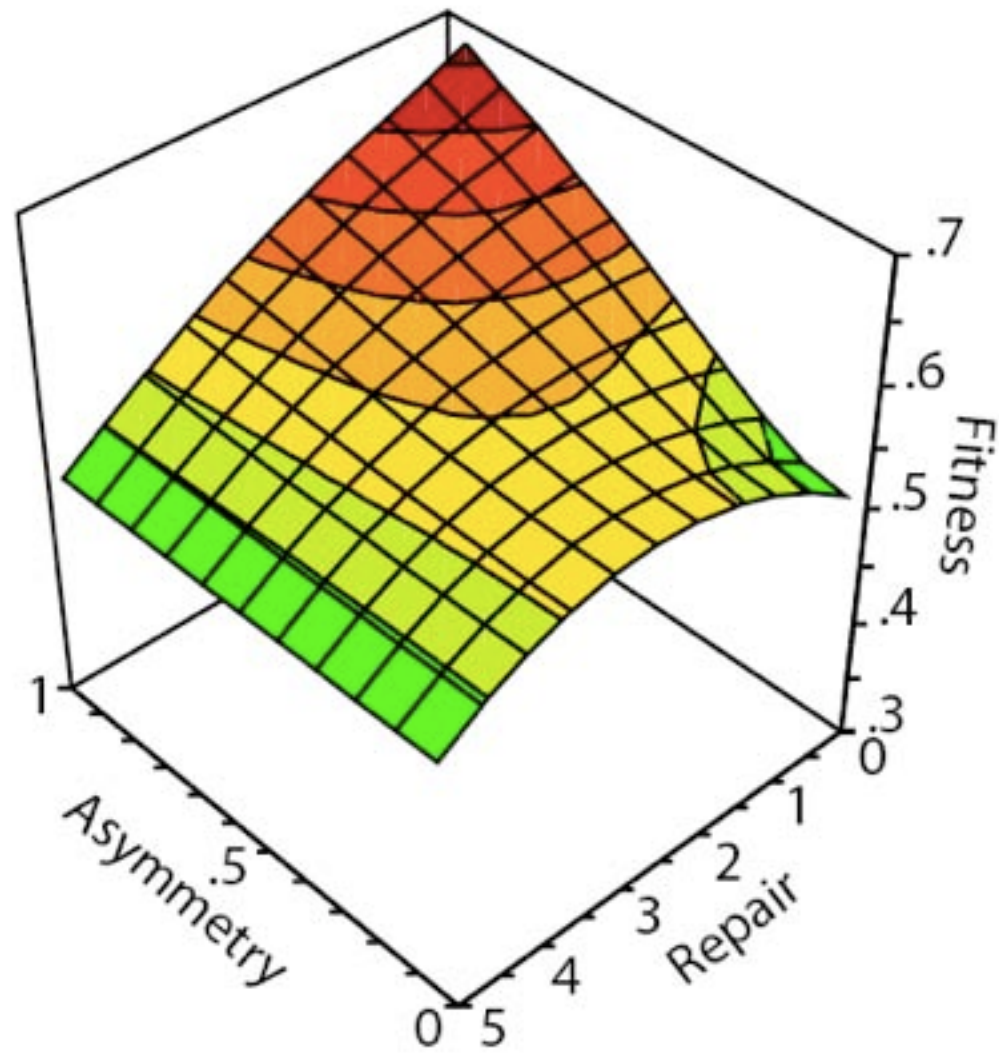
Ackermann *et al.* Aging Cell 2007



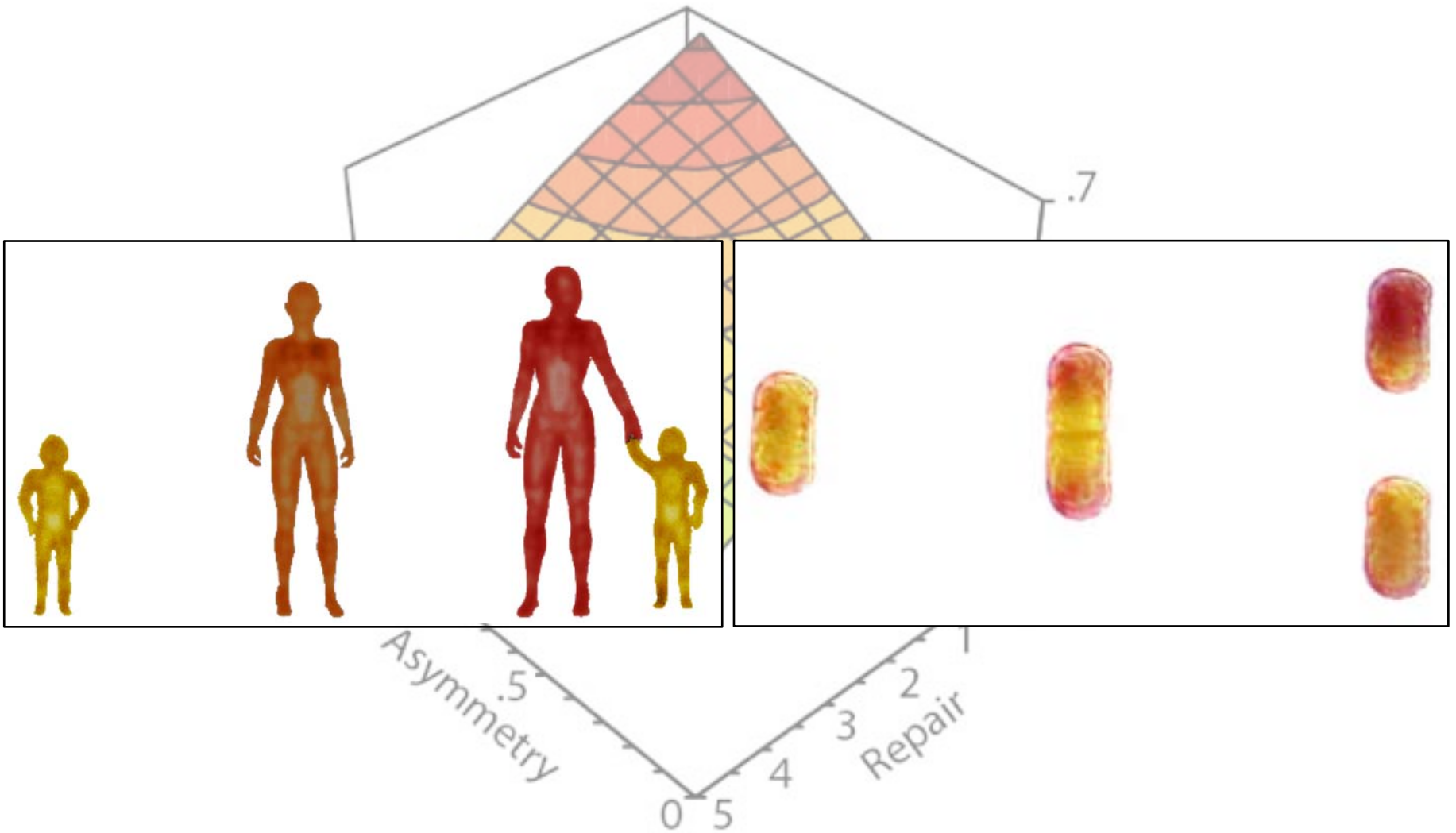
Ackermann *et al.* Aging Cell 2007



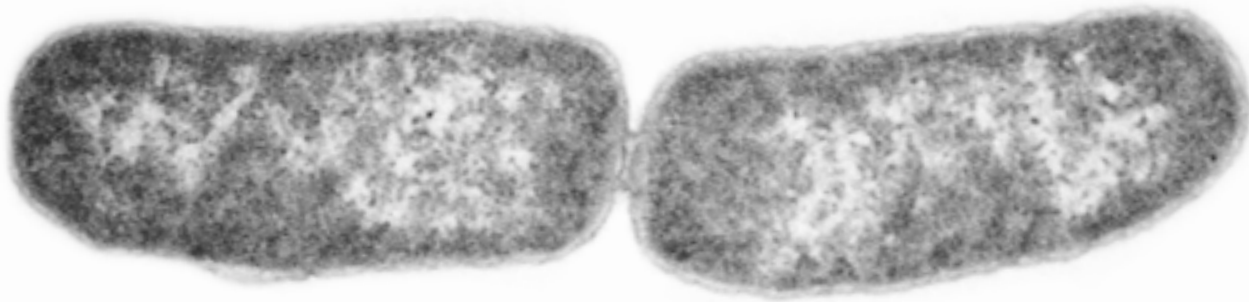




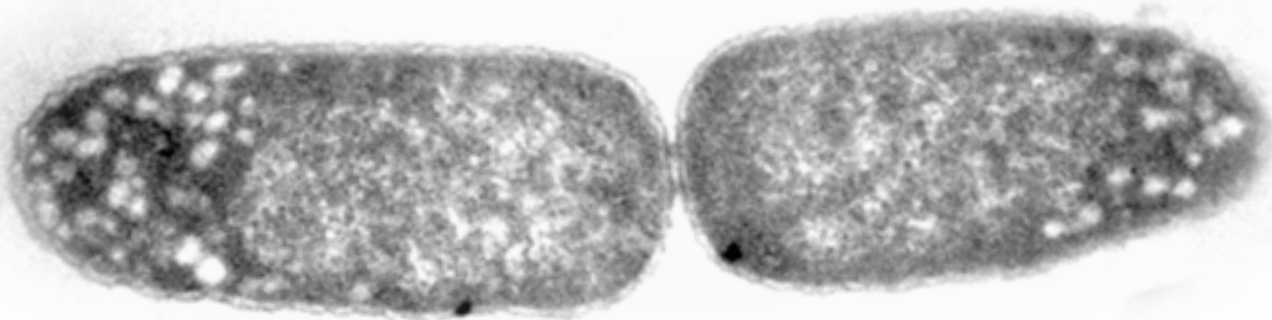
Ackermann *et al.* Aging Cell 07

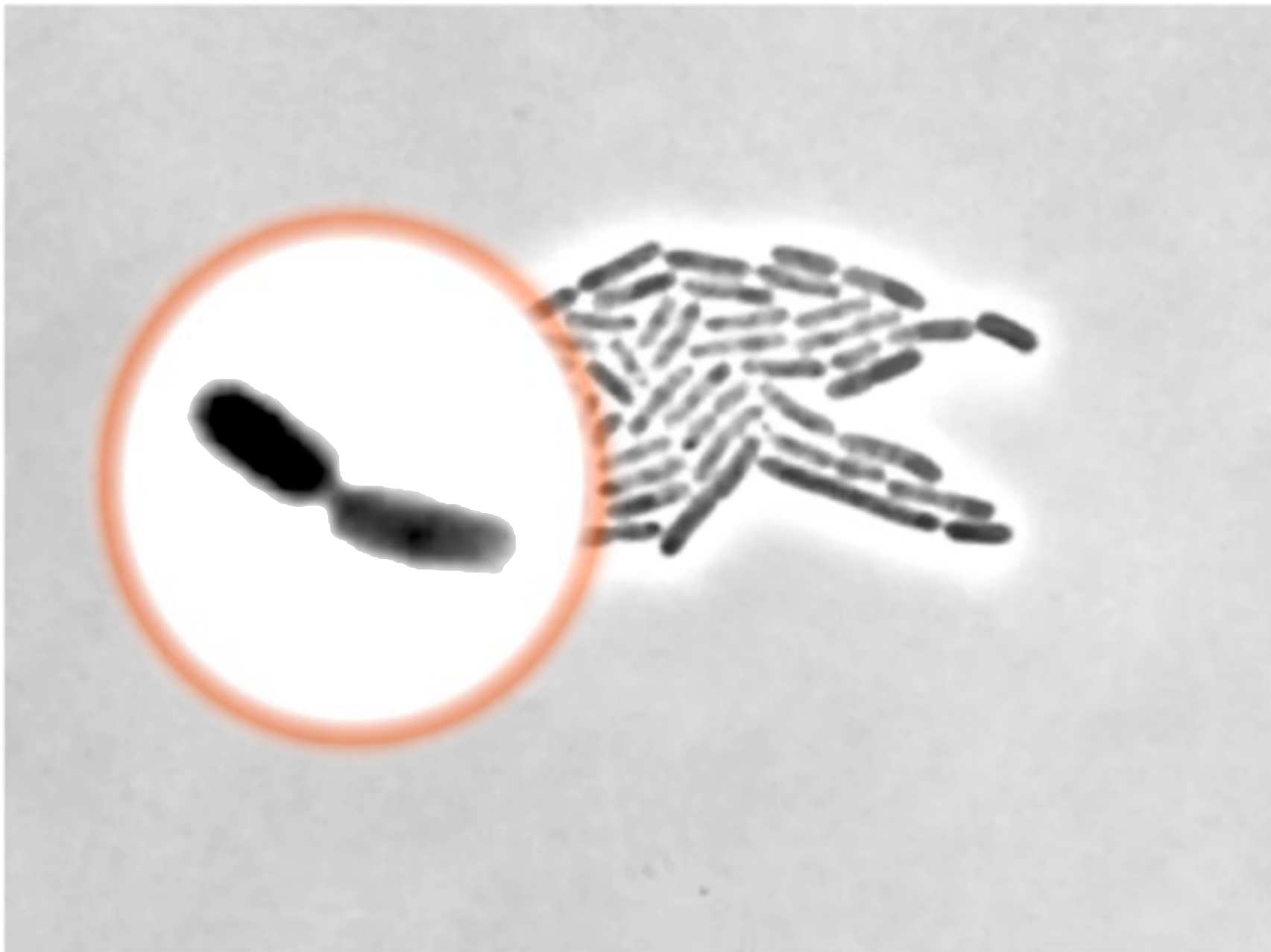


normal *E. coli*



E. coli that eat too much

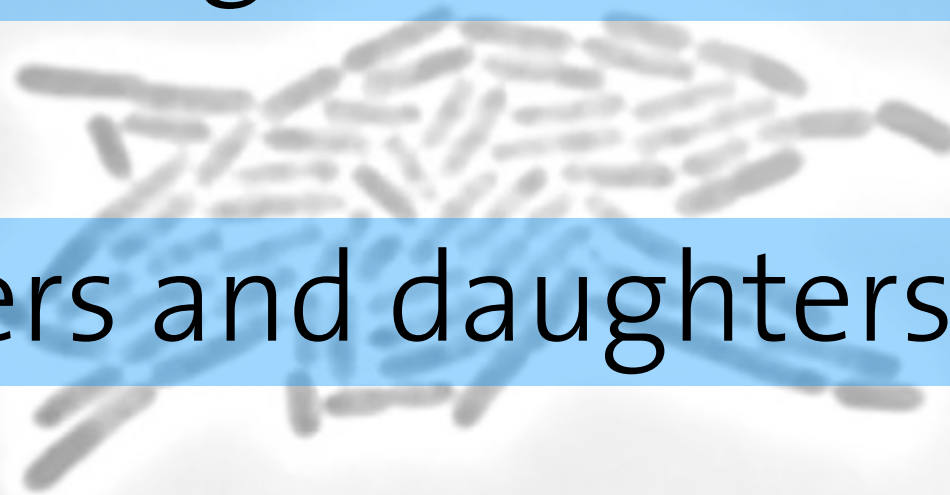




bacteria age

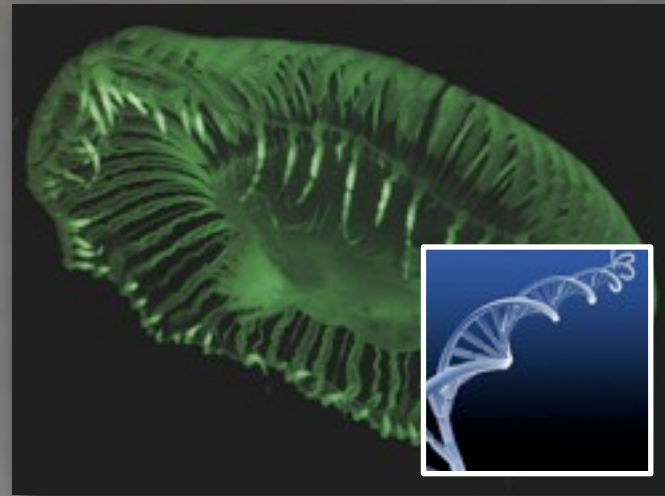
mothers and daughters

age-structured populations

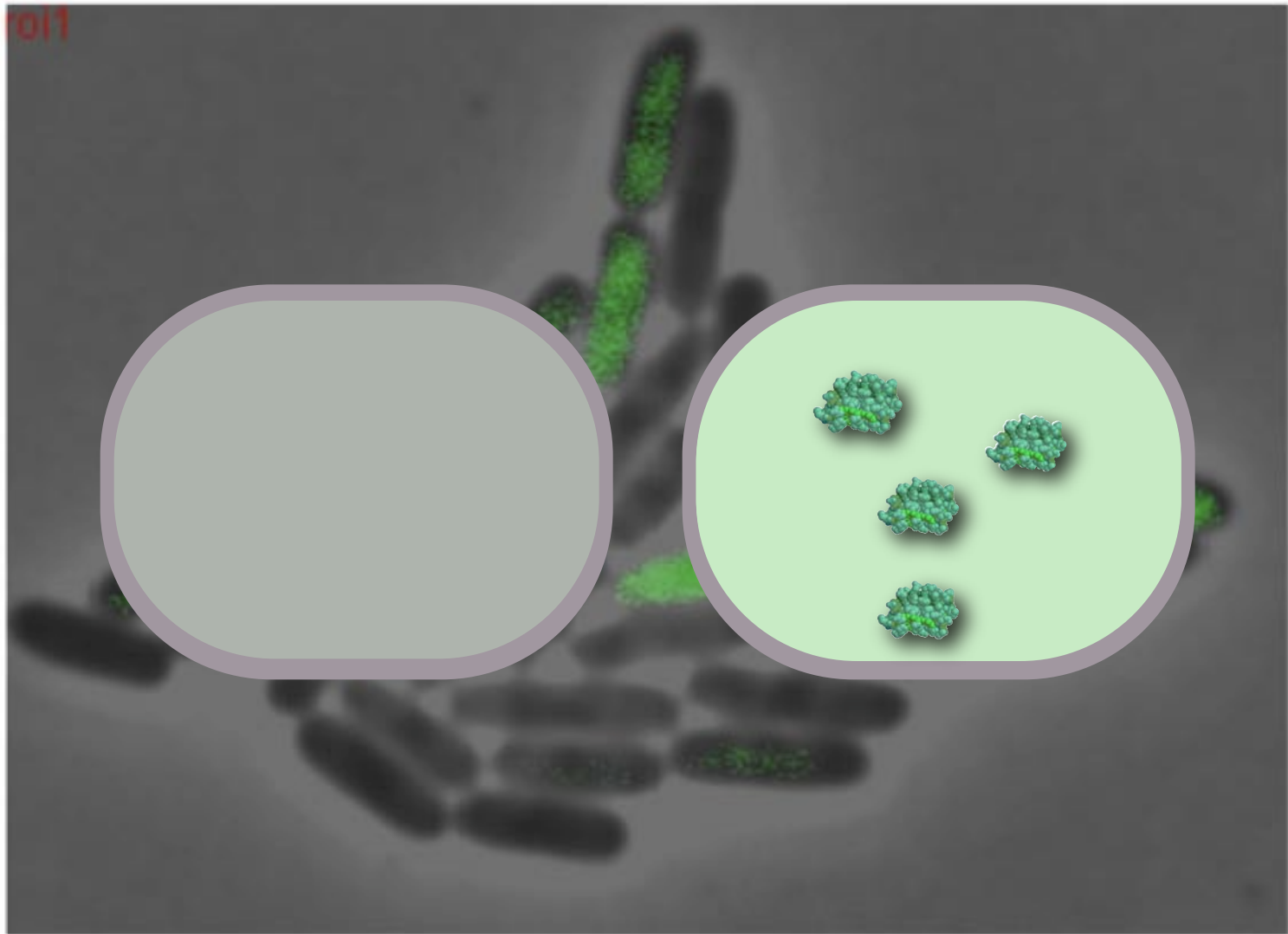


Random decisions

10/11



roil



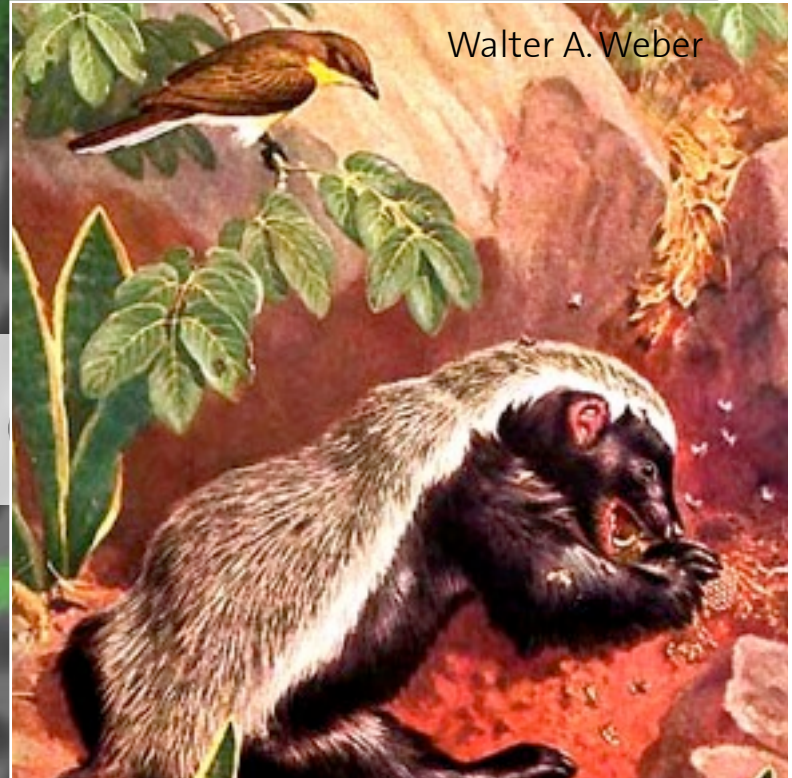
roll

bleacherreport



bet hedging

Walter A. Weber



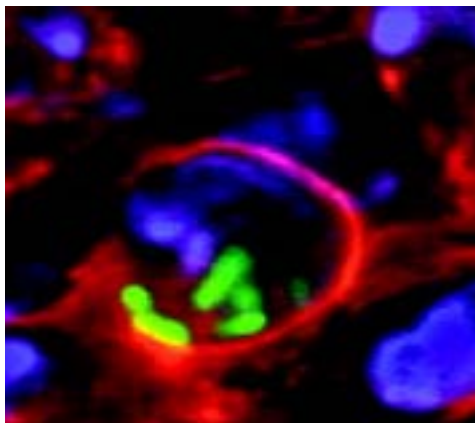
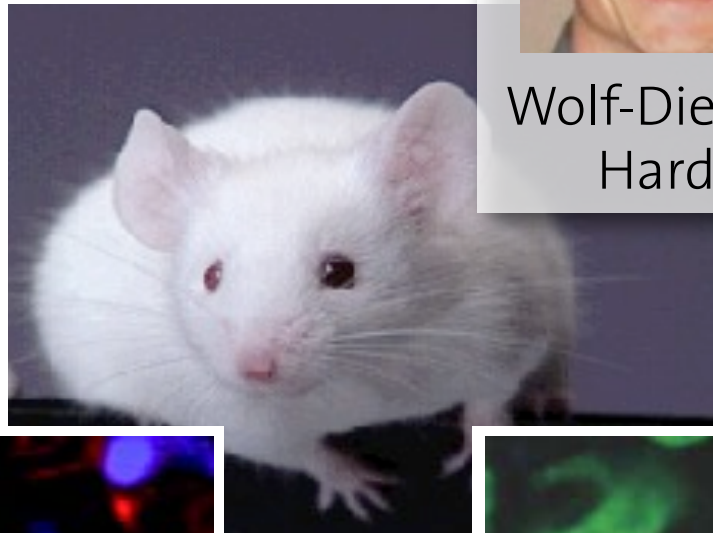
division of labor



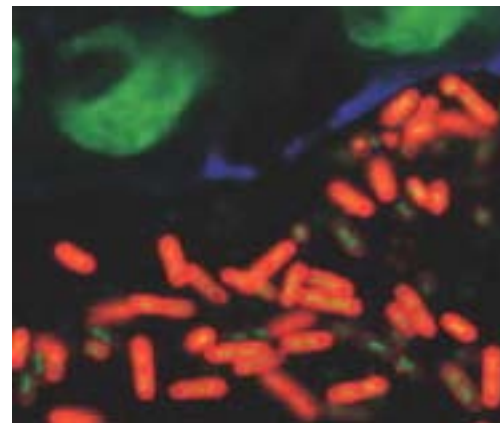
Wolf-Dietrich
Hardt



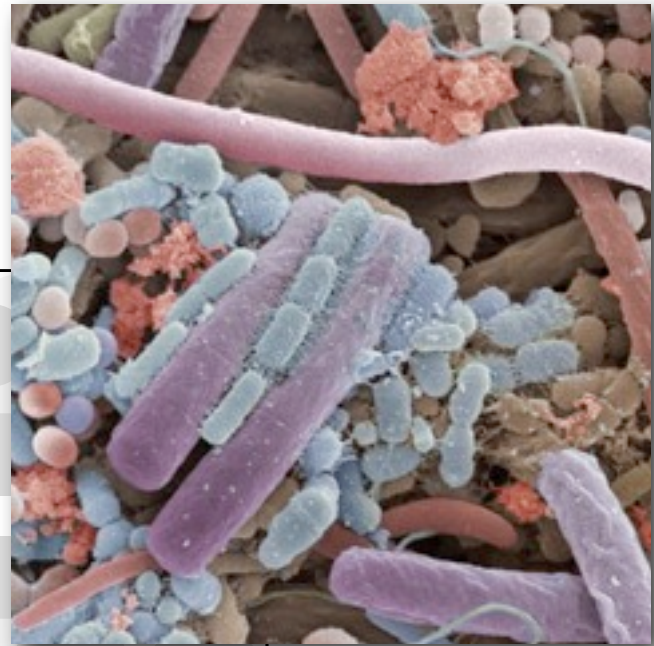
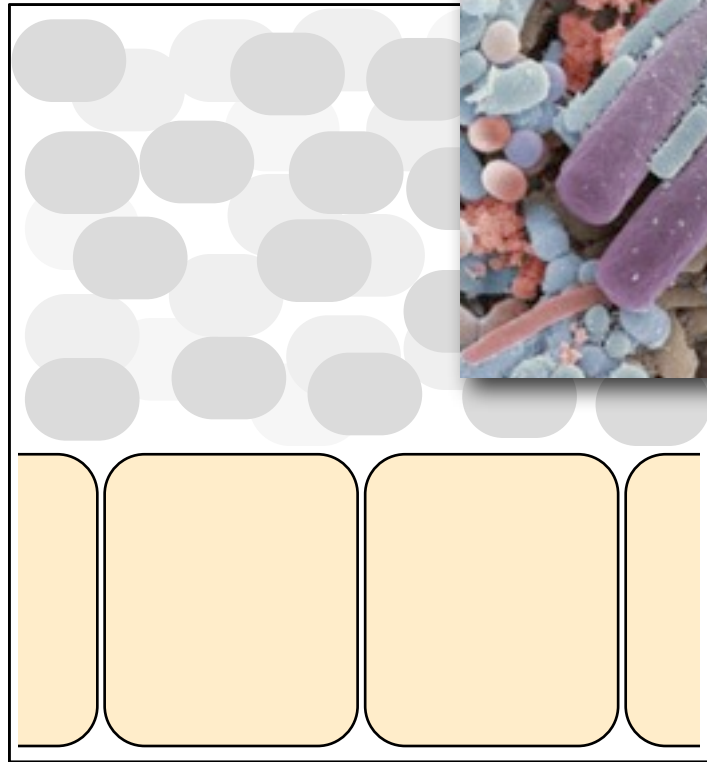
Bärbel
Stecher



Hapfelmeier et al. 2005

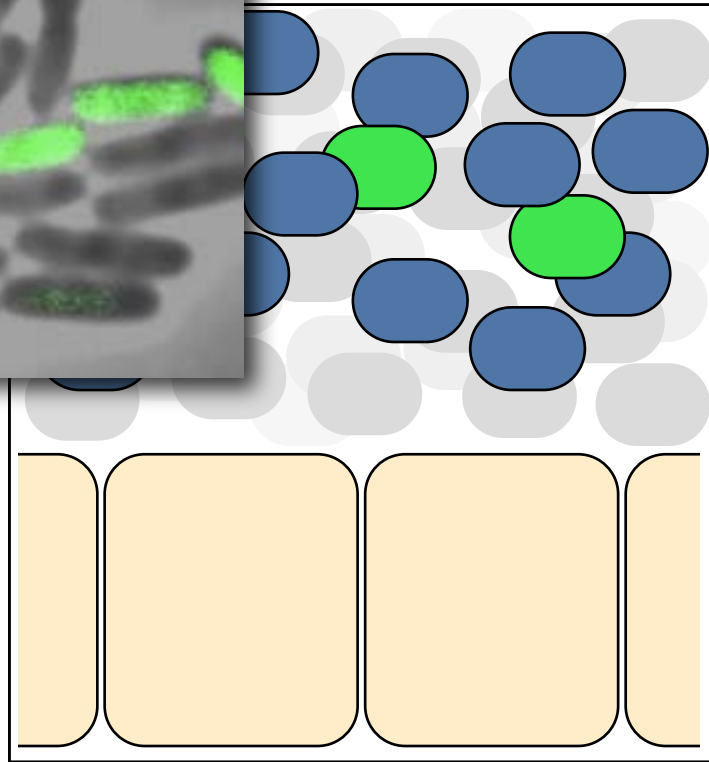
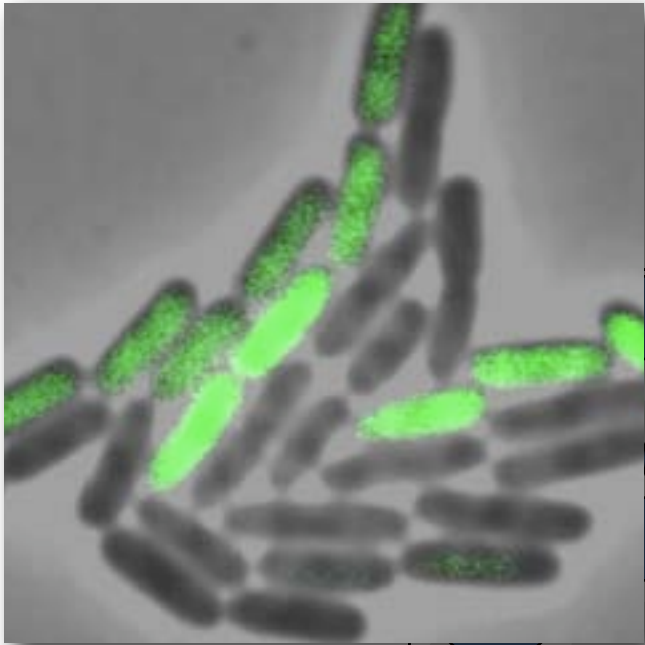


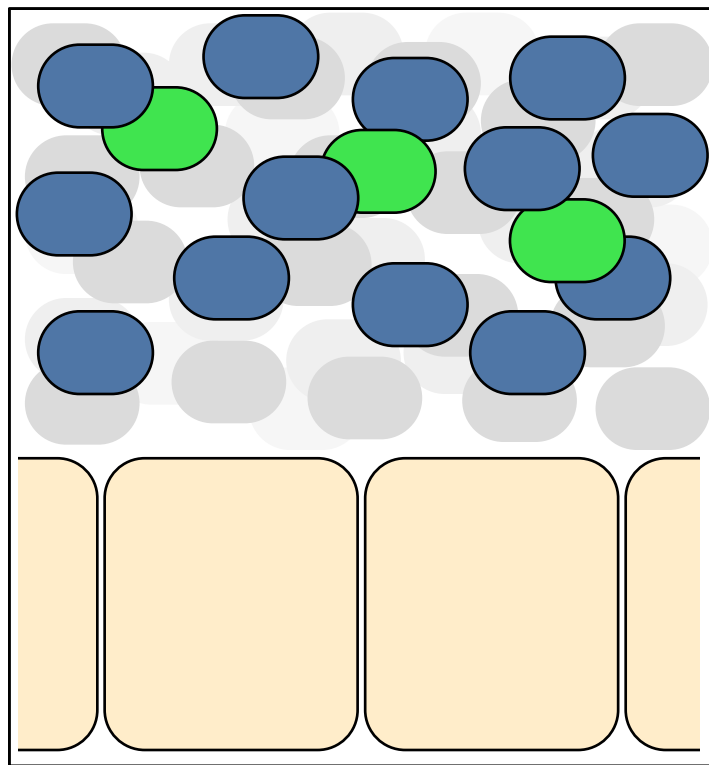
Stecher et al. 2007

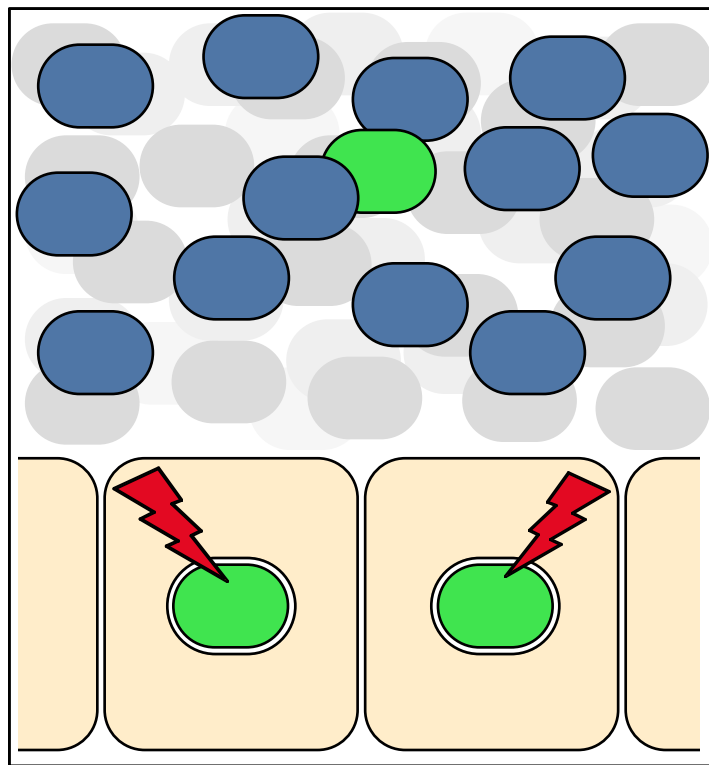


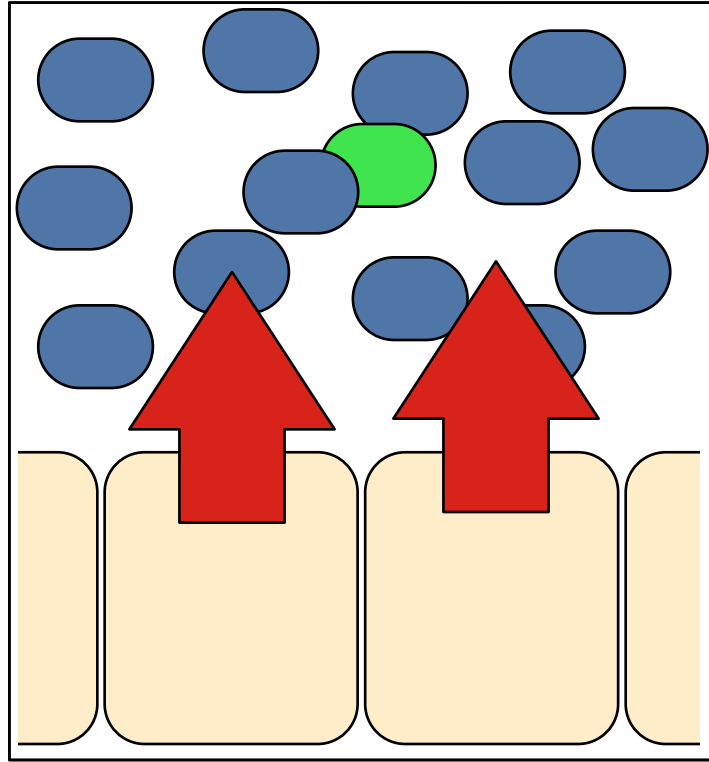
Nature.com

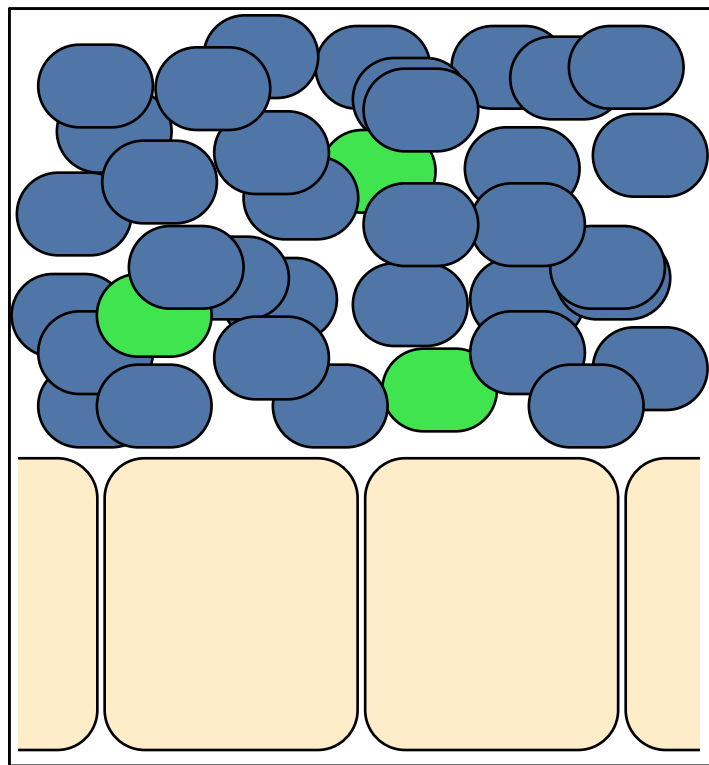
Ackermann *et al.* Nature 2008



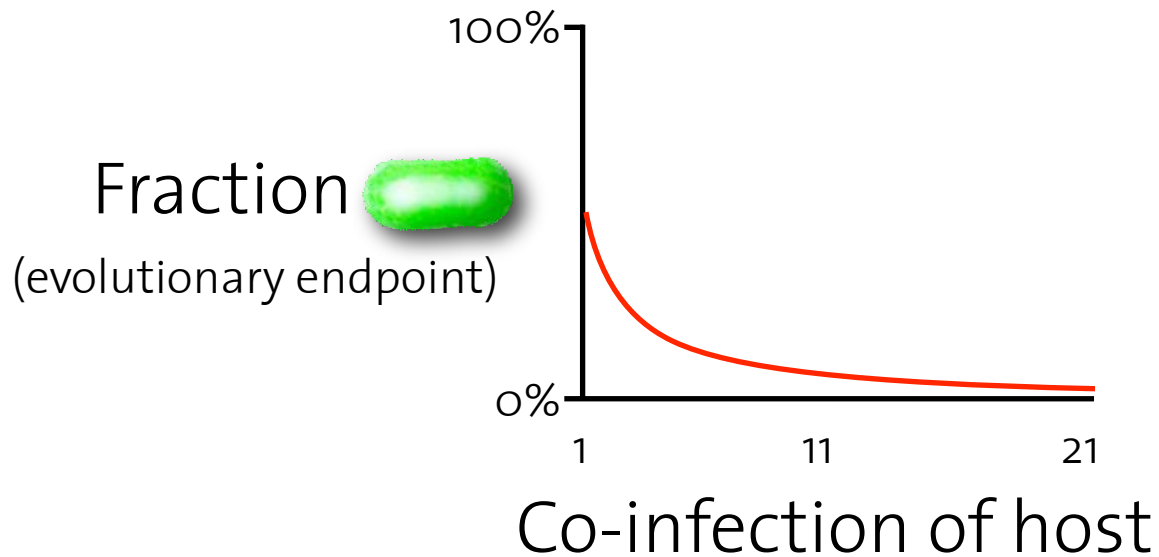








Mathematical Model



A hidden complexity

