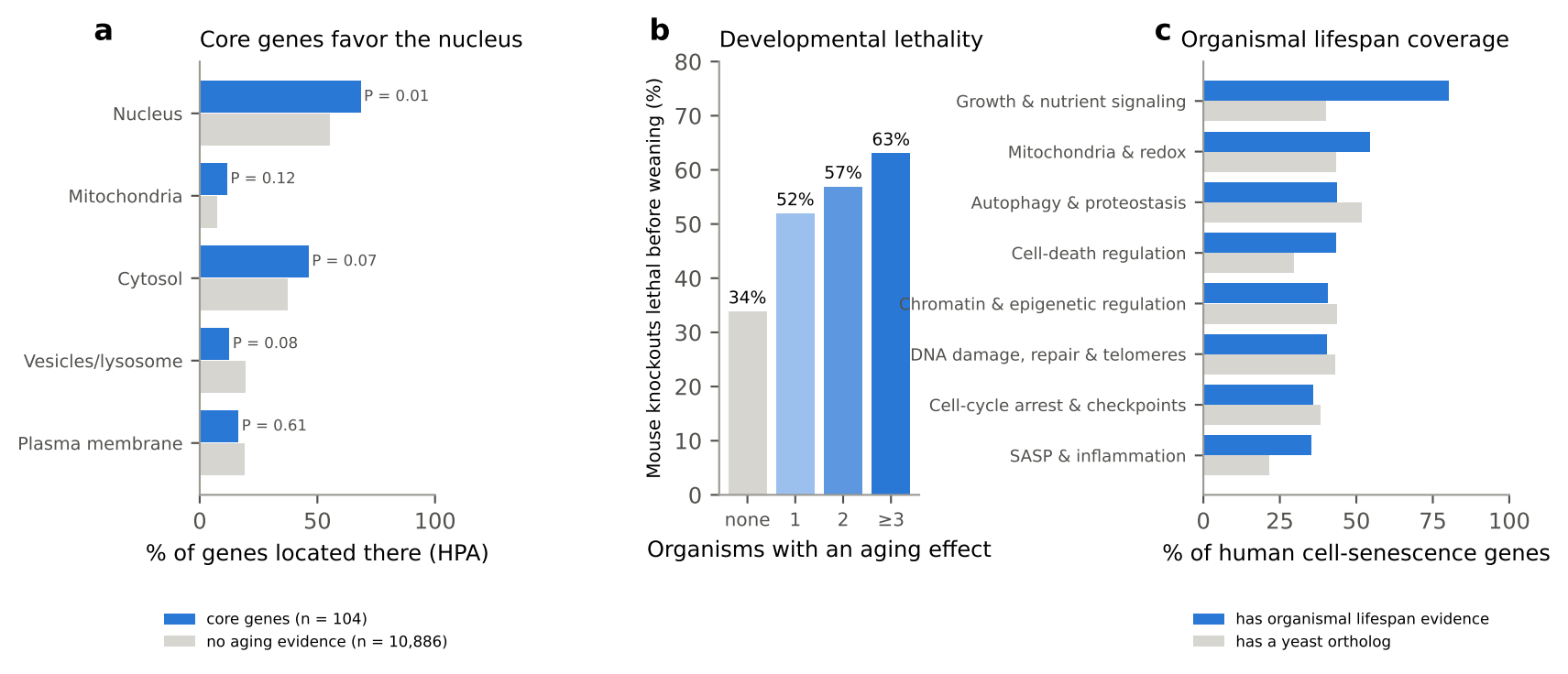

a
Core genes favor the nucleus
Nucleus
Mitochondria
Cytosol
Vesicles/lysosome
Plasma membrane
P = 0.01
P = 0.12
P = 0.07
P = 0.08
P = 0.61
0
50
100
% of genes located there (HPA)
core genes (n = 104)
no aging evidence (n = 10,886)
b
Developmental lethality
Mouse knockouts lethal before weaning (%)
0
10
20
30
40
50
60
70
80
34%
52%
57%
63%
none
1
2
≥3
Organisms with an aging effect
c
Organismal lifespan coverage
Growth & nutrient signaling
Mitochondria & redox
Autophagy & proteostasis
Cell-death regulation
Chromatin & epigenetic regulation
DNA damage, repair & telomeres
Cell-cycle arrest & checkpoints
SASP & inflammation
0
25
50
75
100
% of human cell-senescence genes
has organismal lifespan evidence
has a yeast ortholog