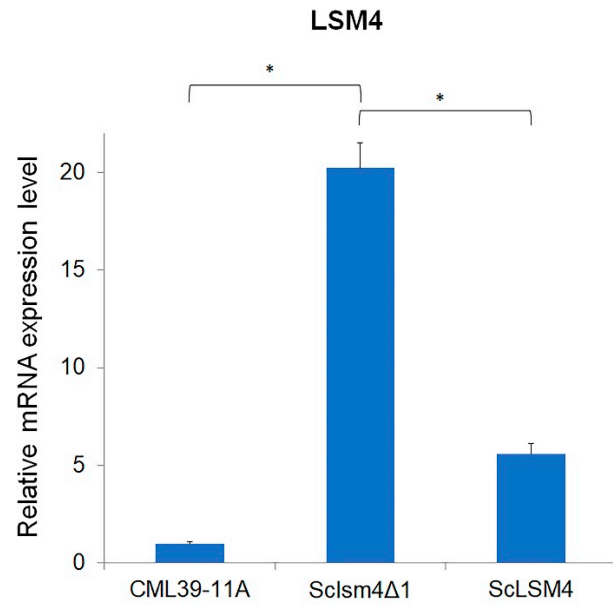


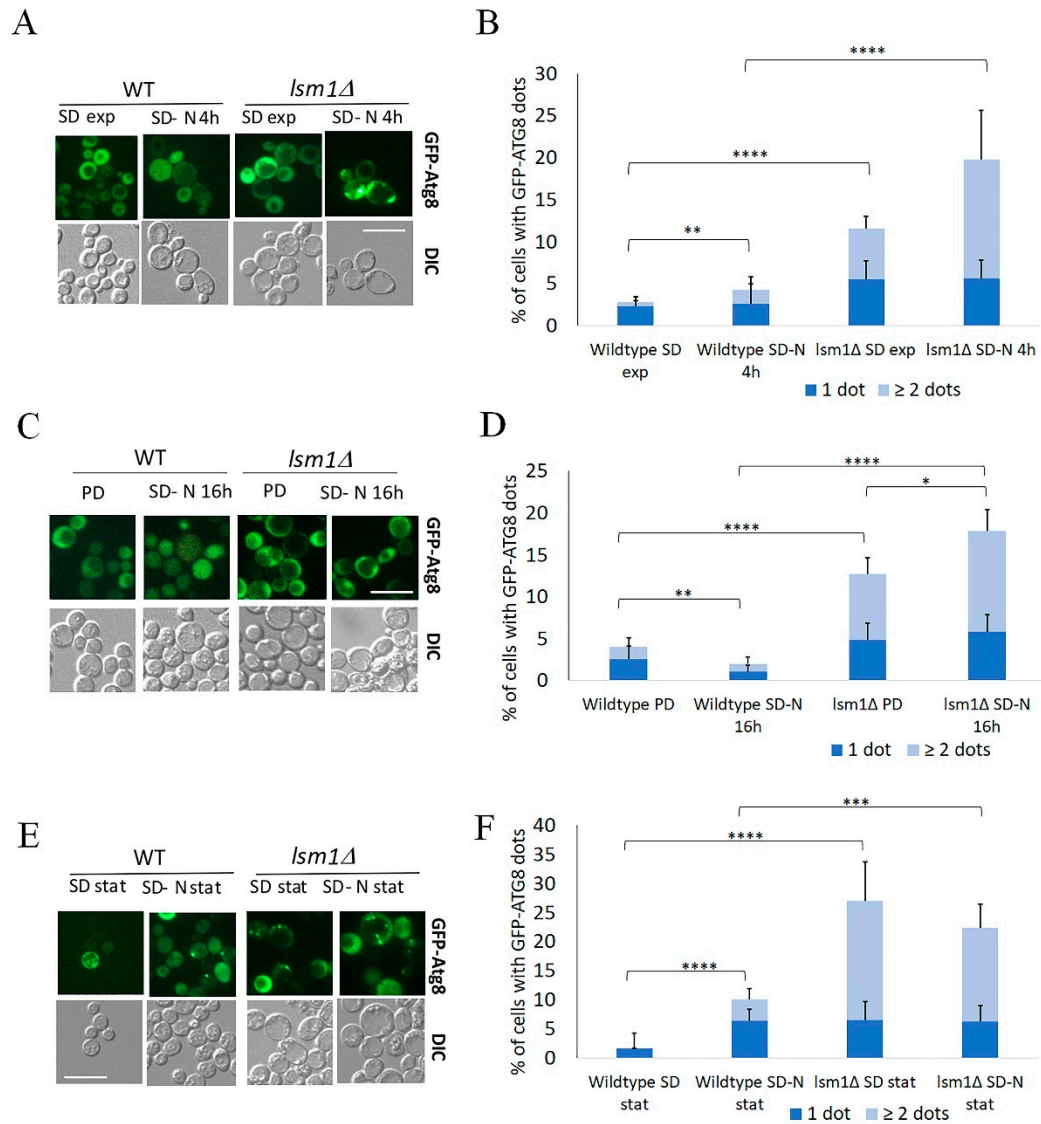
**Figure S1.** Growth curves relative to MCY4/*ScISM4Δ1*, MCY4/*ScLSM4*, and the wild-type strain CML39-11A. Strains were exponentially growing in YPD medium, and OD<sub>600</sub> values were taken every two hours. Error bars represent the standard deviation of three independent biological replicates.

**Table S1.** Growth rate ( $\mu$ ) of the strains of interest.

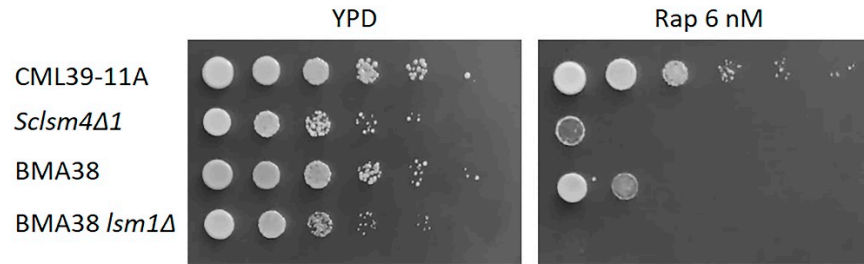
Strain	Growth rate ( $\mu$ )
CML39-11A	0,375520
<i>ScISM4Δ1</i>	0,270481
<i>ScLSM4</i>	0,326280



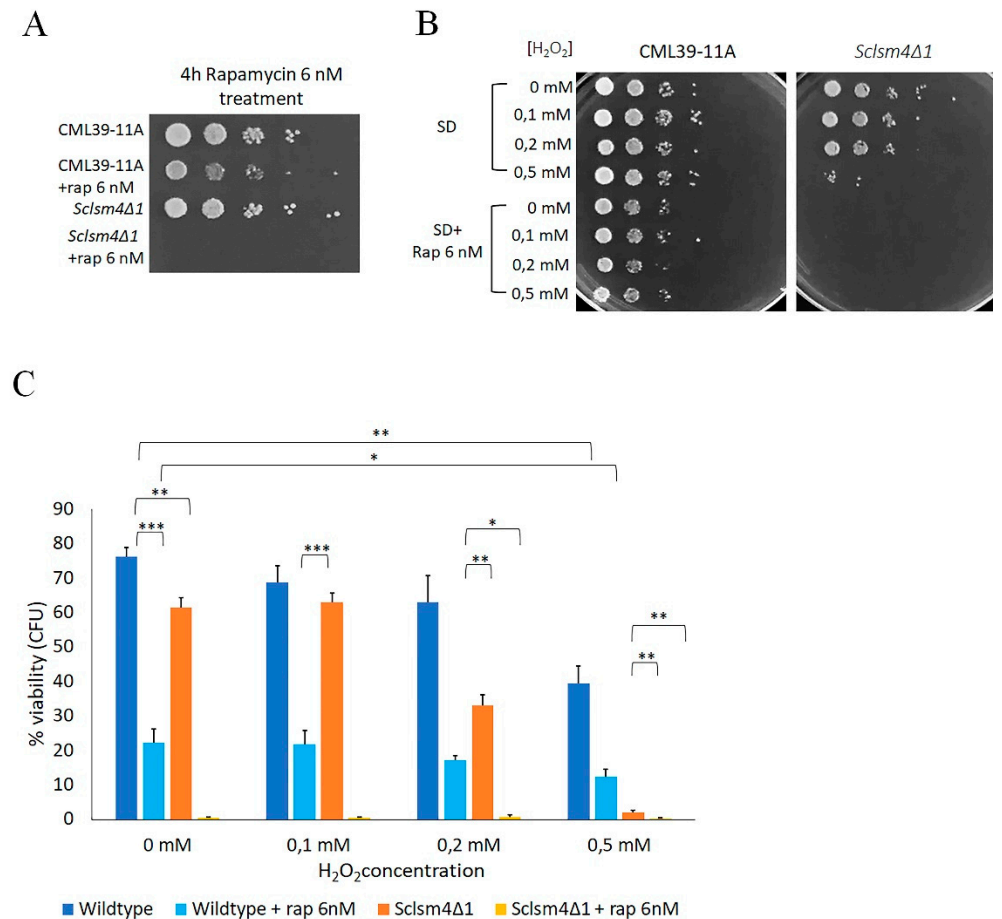
**Figure S2.** Expression ratio of the *LSM4* gene in the mutant strains MCY4/*ScISM4Δ1*, MCY4/*ScLSM4* compared to the wild-type strain CML39-11A. RNA was extracted from exponentially growing cells in YPD medium, and the housekeeping gene *TDH3* was used as the calibrator. The mean of the fold change (expressed as  $2^{-\Delta\Delta C_t}$ ) of two biological replicates was plotted. Error bars represent the standard deviation. \*p-value<0.05.



**Figure S3.** *Lsm1Δ* mutant shows defects in autophagy-related structures transport to the vacuole, as indicated by a higher percentage of GFP-ATG8 dots in the cytoplasm during nitrogen starvation and CLS. Wild-type BMA38 and mutant *lsm1Δ* cells expressing the fusion protein GFP-ATG8 were observed at the fluorescence microscope during the exponential phase in both SD and SD-N medium for 4 hours (A), during the post-diauxic phase (PD) and in SD-N for 16 hours (C) and after 3 days of growth in SD (SD stat) or SD-N (SD-N stat) (E). GFP-Atg8 dots per cell were quantified from three biological replicates ( $n \geq 300$  cells), and the mean of cells containing one or  $\geq 2$  dots was plotted in (B), (D), and (F). Error bars represent standard deviation. \*p-value<0.05 \*\*p-value<0.01 \*\*\*p-value<0.001 \*\*\*\*p-value<0.0001



**Figure S4.** *Lsm1Δ* mutant shows high sensitivity to rapamycin at 6 nM, as demonstrated for the *Scism4Δ1* mutant. 10-fold dilution of MCY4 expressing the *Scism4Δ1* mutant, the *lsm1Δ* mutant, and their wild types (CML39-11A and BMA38) were spotted on YPD solid media containing 6 nM rapamycin and incubated at 28°C for 3 days. YPD was used as a growth control.



**Figure S5.** Treatment with a low dose of rapamycin does not protect the cells from oxidative stress. Cell viability of the CML39-11A (wild type) and *Scism4Δ1* mutant was measured after exposure to H<sub>2</sub>O<sub>2</sub> at the indicated concentrations for 4 hours. 6 nM rapamycin was added 4 hour prior to exposure to H<sub>2</sub>O<sub>2</sub>. (A) 10-fold dilutions were spotted on complete solid media YPD after 4 hours of incubation in SD and SD + rapamycin 6 nM, and plates were incubated at 28°C for 3 days. (B) Treated and untreated

samples with rapamycin 6 nM were spotted in 10-fold dilution on complete solid media YPD after 4 hours of incubation with the indicated concentration of H<sub>2</sub>O<sub>2</sub>, and plates were incubated at 28°C for 3 days. (C) Cell viability was calculated as the percentage of microcolony forming cells. Data are represented as the mean of three independent experiments  $\pm$  standard deviation. \*p-value <0.05, \*\*p-value <0.01\*\*\*p-value<0.001.