

Title: Supplementary Data 1.
Description: Comparison of various combinatorial cloning methodologies.

Title: Supplementary Data 2.
Description: Position effects of plant-derived regulators.

Title: Supplementary Data 3.
Description: List of COMPASS vectors.

Title: Supplementary Data 4.
Description: PCR fragments used for the cloning of parts into Entry vector X.

Title: Supplementary Data 5.
Description: Parts of genes assembled in Entry vector X.

Title: Supplementary Data 6.
Description: Parts of genes assembled in entry vectors.

Title: Supplementary Data 7.
Description: List of *Saccharomyces cerevisiae* strains used in this study.

Title: Supplementary Data 8.
Description: High-precision flow cytometry for growth analysis.

Title: Supplementary Data 9.
Description: Controllability of plant-derived regulators in COMPASS strains.

Title: Supplementary Data 10.
Description: HPLC results for control strains.

Title: Supplementary Data 11.
Description: Transcriptional output of the NLS-JUB1-EDLLAD-EDLLAD-derived ATF.

Title: Supplementary Data 12.
Description: Primers used for sequencing the library integrated into the genome.

Title: Supplementary Data 13.
Description: Diversity of β -ionone and NG production from a randomized ATF/BS library.

Title: Supplementary Data 14.
Description: Sequences of vectors used in this study.

Title: Supplementary Data 15.
Description: Sequences of primers used in this study.