

## Supplementary materials

Table S1. Description of the selected JIP test parameters.

ABS/RC	Absorption flux (of antenna chlorophylls) per reaction center (RC)
ETo/RC	Electron transport flux (further than $Q_A^-$ ) per RC
REo/RC	Electron flux reducing end electron acceptors at the PSI acceptor side per RC
TRo/RC	Trapping flux (leading to $Q_A$ reduction) per RC
$\phi_{Po}$	Maximum quantum yield of primary photochemistry (at $t = 0$ )
RC/ABS	Number of $Q_A$ -reducing RCs (i.e., active) per PSII antenna chlorophyll
$V_j$	Relative variable fluorescence at J step
$W_k$	Ratio of the K phase to the J phase
$PI_{ABS}$	Performance index (potential) for energy conservation from exciton to the reduction of intersystem electron acceptors
$PI_{total}$	Performance index (potential) for energy conservation from exciton to the reduction of PSI end acceptors