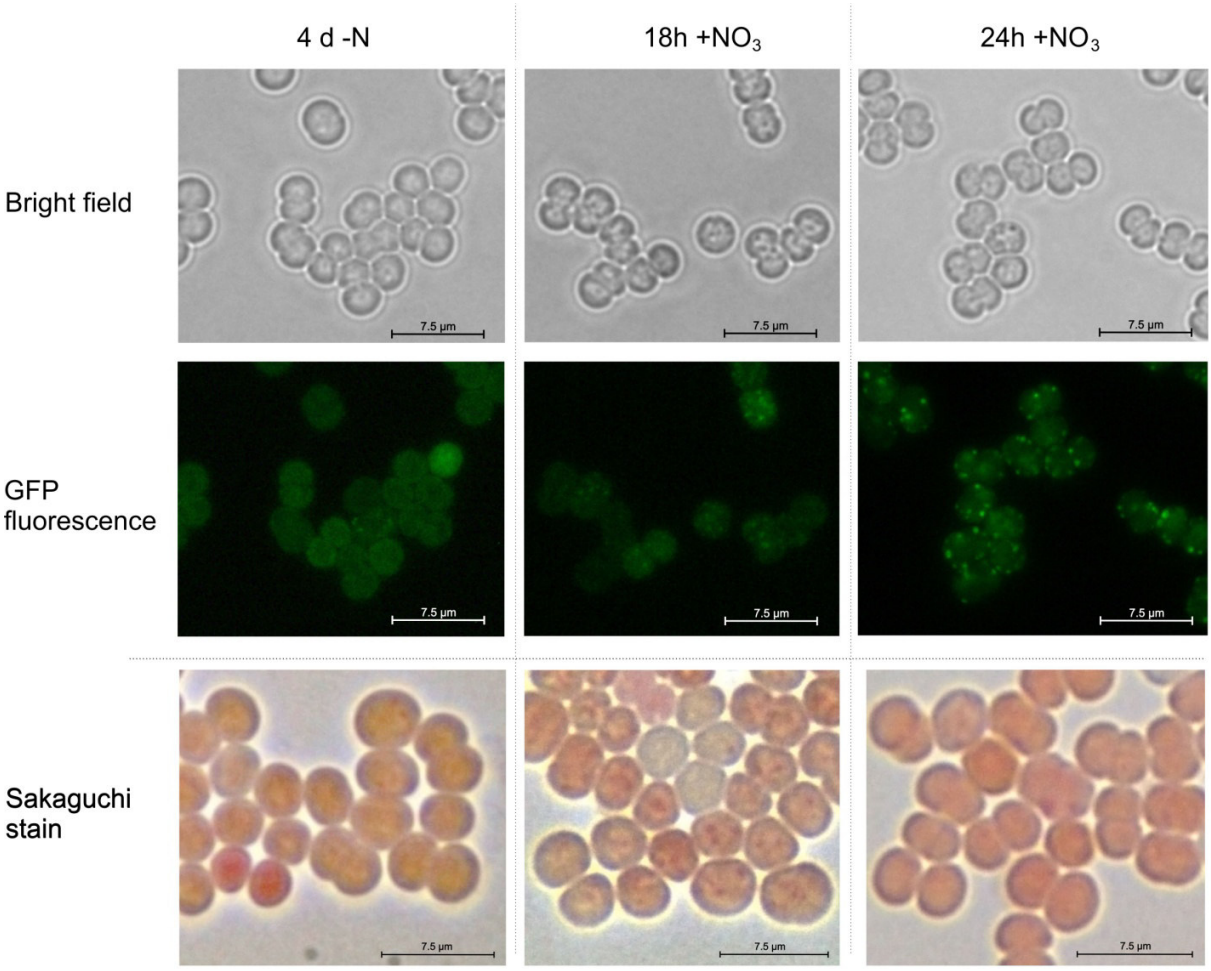

Fig. S1. *Synechocystis* sp. cells after 4 days of nitrogen starvation and during resuscitation. Cells were resuscitated by adding 17.3 mM nitrate. Photos were taken 0, 18 and 24 h after the addition of nitrogen. Bright-field images and the associated GFP fluorescence images showing the localization of CphA-eGFP are shown. The Sakaguchi reaction was used to specifically stain the cyanophycin granules in cells at the same time points.

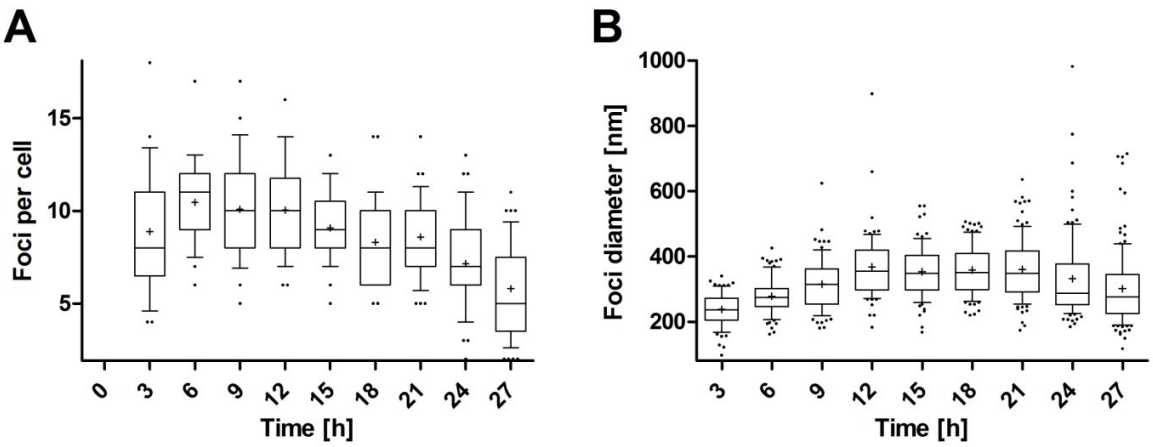

Fig. S2. Number of CphA-eGFP foci and foci diameter during 27 h of resuscitation of *Synechocystis* sp. cultures nitrogen starved for 4 days. Cells were resuscitated by adding 17.3 mM nitrate to the starved cultures. (A) Number of CphA-eGFP foci per cell (n = 25–50 cells per time point). (B) Diameter of foci in nm (n = ≥70 foci per time point). Values are the means of three biological replicates. Whiskers range from 10% to 90% of the values. +, arithmetic mean; dots, outliers.

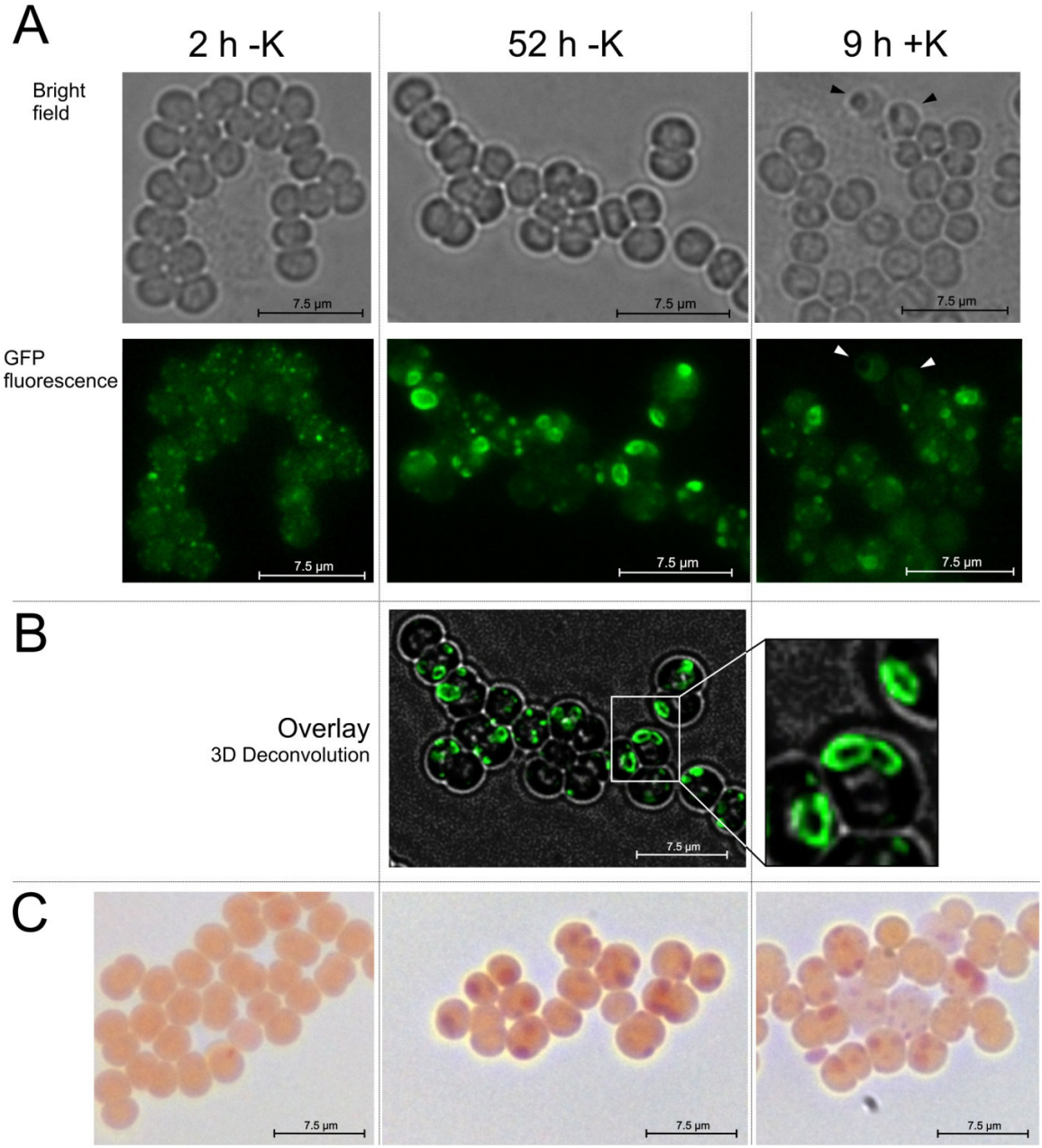

Fig. S3. Microscopy images of *Synechocystis* sp. during potassium starvation and regeneration. Potassium starvation, which leads to growth arrest and cyanophycin accumulation, was induced by transferring exponentially growing cells to BG-11 medium lacking potassium. To regenerate starved cultures, cells were washed and resuspended in BG-11 medium containing potassium. Images were taken 2 h and 52 h after induction of starvation and 9 h after potassium was provided. (A) Bright-field images and GFP-fluorescence images showing CphA-eGFP

22 localization of the same cells. White and black arrows point to cells without CphA-eGFP
23 localization on the cyanophycin granule surface. (B) 3-D deconvolution overlay of GFP
24 fluorescence and bright-field images after 52 h of potassium depletion. The enlarged area shows
25 the localization of CphA on the granule surface, which forms a halo-like structure. (C) Cells
26 stained with the arginine-specific Sakaguchi stain at the same time points. Cyanophycin granules
27 appear as dark red dots in the cell.

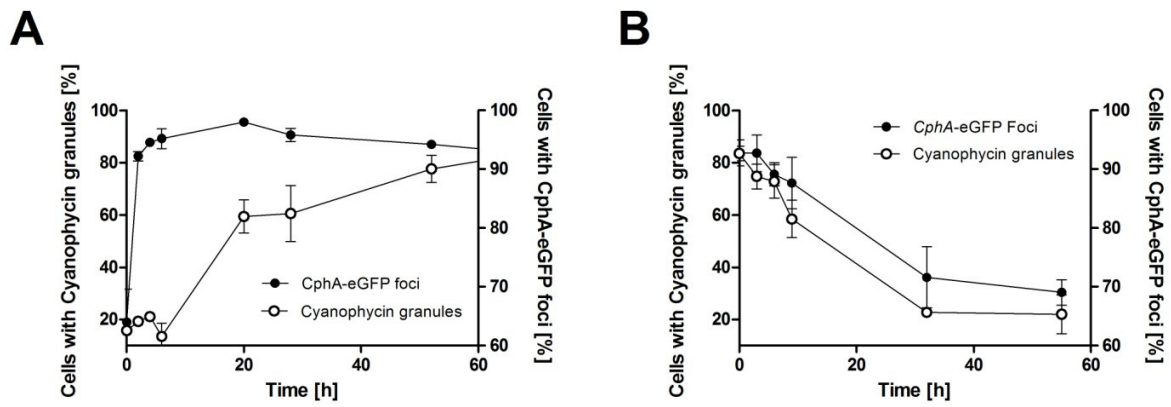

Fig. S4 (A) Percentage of cells with visible CphA-eGFP foci (n = ≥120 cells per time point; filled circles) and cyanophycin granules (n = ≥80 cells per time point; open circles) during potassium starvation and (B) during regeneration from potassium starvation. Potassium starvation was induced by transferring exponentially growing cells to BG-11 medium lacking potassium. For regeneration, the starved cells were washed and resuspended in BG-11 medium containing potassium. Results shown are means of three biological replicates.

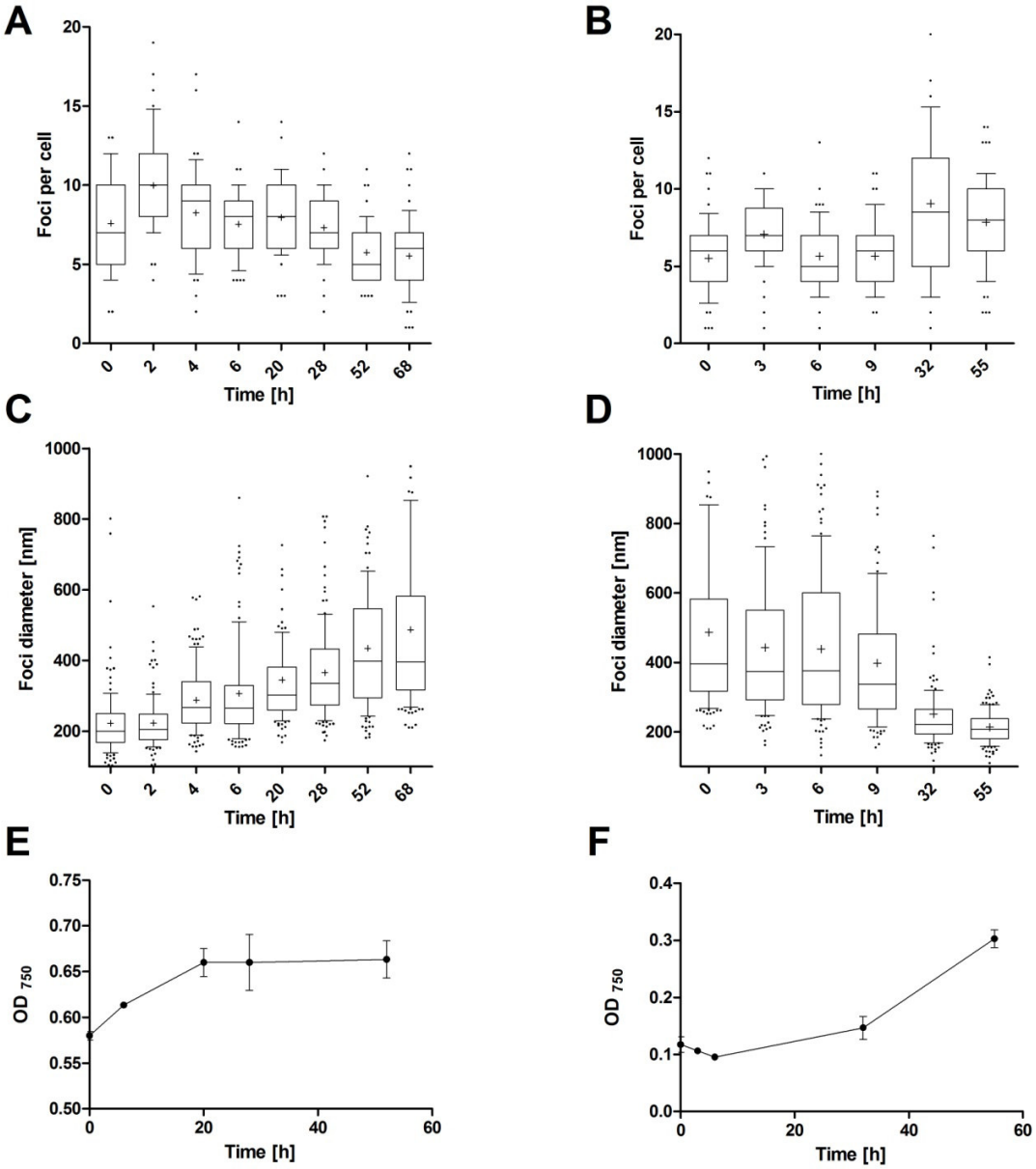

Fig. S5. Number of CphA-eGFP foci per cell and foci diameter during potassium starvation and regeneration. Exponentially growing *Synechocystis* sp. cells were starved by washing and resuspension in BG-11 medium lacking potassium. Regeneration was induced by washing starved cells and resuspension in BG-11 medium containing potassium. Cyanophycin accumulated during potassium depletion and degraded during regeneration. (A) Number of

CphA-eGFP foci per cell (n = ≥40 cells per time point) during potassium starvation and (B) during resuscitation from potassium starvation. (C) Diameter of foci in nm (n = ≥110 foci per time point) during potassium starvation and (D) during resuscitation from potassium starvation. Whiskers range from 10% to 90% of the values; +, arithmetic mean; black dots, outliers. (E) Growth curve of *Synechocystis* sp. during potassium starvation and (F) during resuscitation. All measurements are means of three biological replicates.

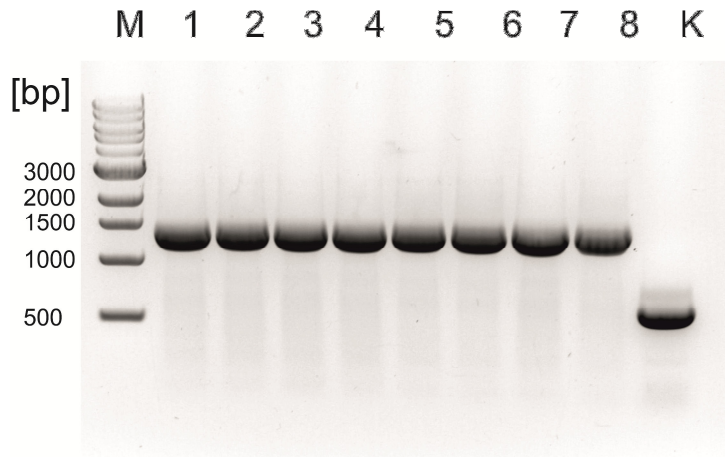

Fig. S6. Screening for the complete replacement of all genomic copies of *slr2002* (*cphA*) with the kanamycin resistance cassette by PCR. Isolated genomic DNA of *Synechocystis* sp. wild-type (K) and eight putative Δ*cphA* clones (1–8) were used as template. In a three-primer approach (primers seg_for, kan_for, and down_rev), the wild-type *slr2002* yields a band of around 550 bp (K) and the knockout construct yields a band of around 1300 bp. In clones 1–8, no wild-type background band was observed. Clone 8 was used in the following studies.