

Supplementary Information

Mg²⁺ limitation leads to a decrease in chlorophyll, resulting in an unbalanced photosynthetic apparatus in the cyanobacterium *Synechocystis* sp. PCC6803

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Table. 1: Modified BG11 used in the measurements.

standard BG-FPC (100x)			BG-FPC (100x) without MgSO ₄		
Substance	g	mmol/L	Substance	g	mmol/L
NaNO ₃	149.58	1.76			
Citric acid	0.66	3.44			
CaCl ₂ x2H ₂ O	3.6	24.49			
MgSO ₄	7.49	30.39	Na ₂ SO ₄	4.32	30.41
NaEDTA pH 8	1.12 mL (250 mM)	0.28			
Add 1 L of ultrapure H ₂ O and filter sterile					
Trace minerals	g	mmol/L			
H ₃ BO ₃	1.43	46.26			
MnCl ₂ x4H ₂ O	0.905	9.15			
Na ₂ MoO ₄ x2H ₂ O	0.111	0.92			
Co(NO ₃)2x6H ₂ O	0.195	1.34			
CuSO ₄ x5H ₂ O	0.04	0.32			
Add 0.5 L of ultrapure H ₂ O and filter sterile					
preparation of 1 L BG11					
Substance	mL				
Autoclaved ultrapure H ₂ O	981				
BG-FPC (100x)	10				
1M HEPES-KOH pH 8.2	5				
Trace minerals	1				
6 mg/ml Ammonium ferric citrate in ultrapure H ₂ O	1				
190 mM Na ₂ CO ₃ in ultrapure H ₂ O	1				
175 mM K ₂ HPO ₄ in ultrapure H ₂ O	1				

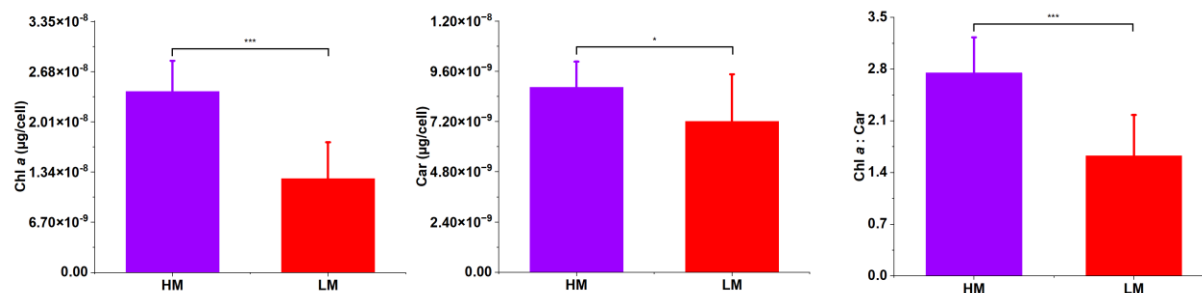


Fig. 1 The cellular Chl *a* and Car content

Cellular Chl *a* and Car contents as determined using methanolic extracts revealed a reduced amount of Chl *a* per cell (A), only minor changes in the amount of Car per cell (B), and thus a lower Chl *a*-to-Car ratio (C). Error bars represent means $\pm$ SD (N = 7–13).

Significant differences (according to Student's t-test) are indicated as: * $p < 0.05$ and *** $p < 0.001$.

wt HM

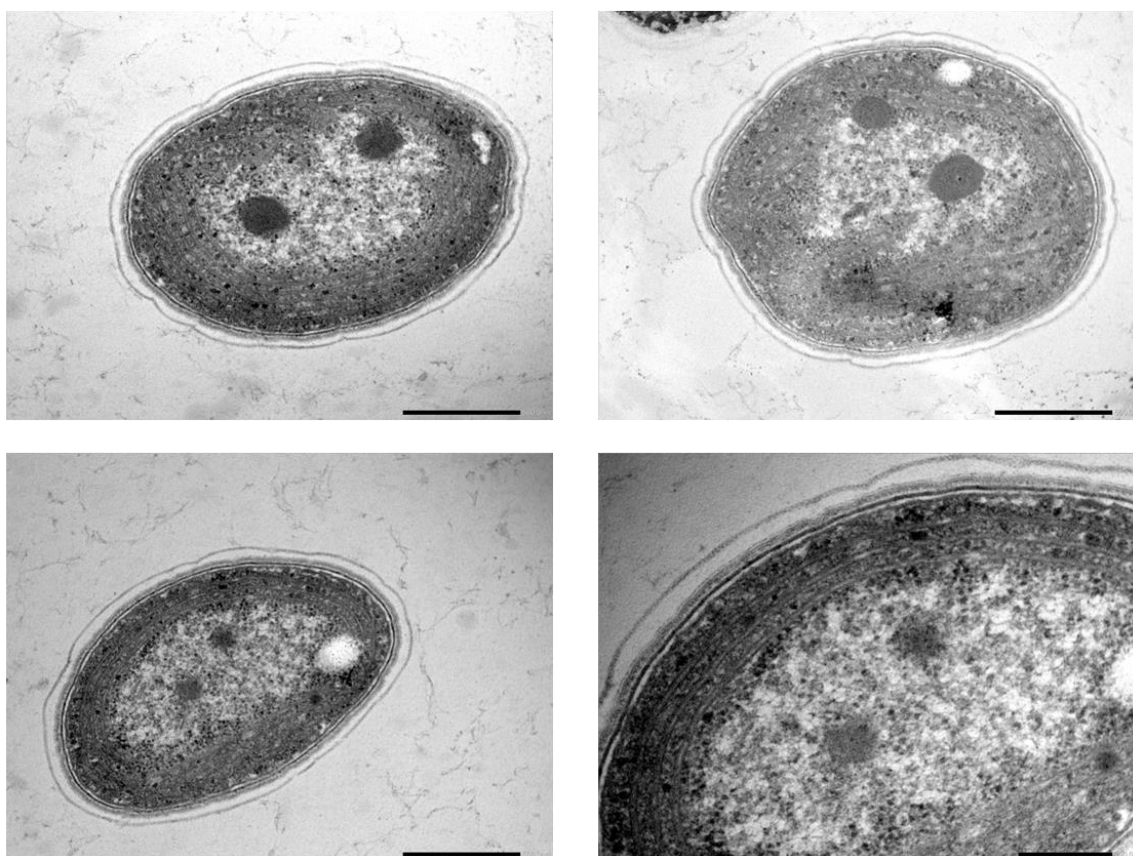


Fig. 2 EM images of *Synechocystis* cells grown under HM conditions. Scale bars = 500 nm.

wt LM

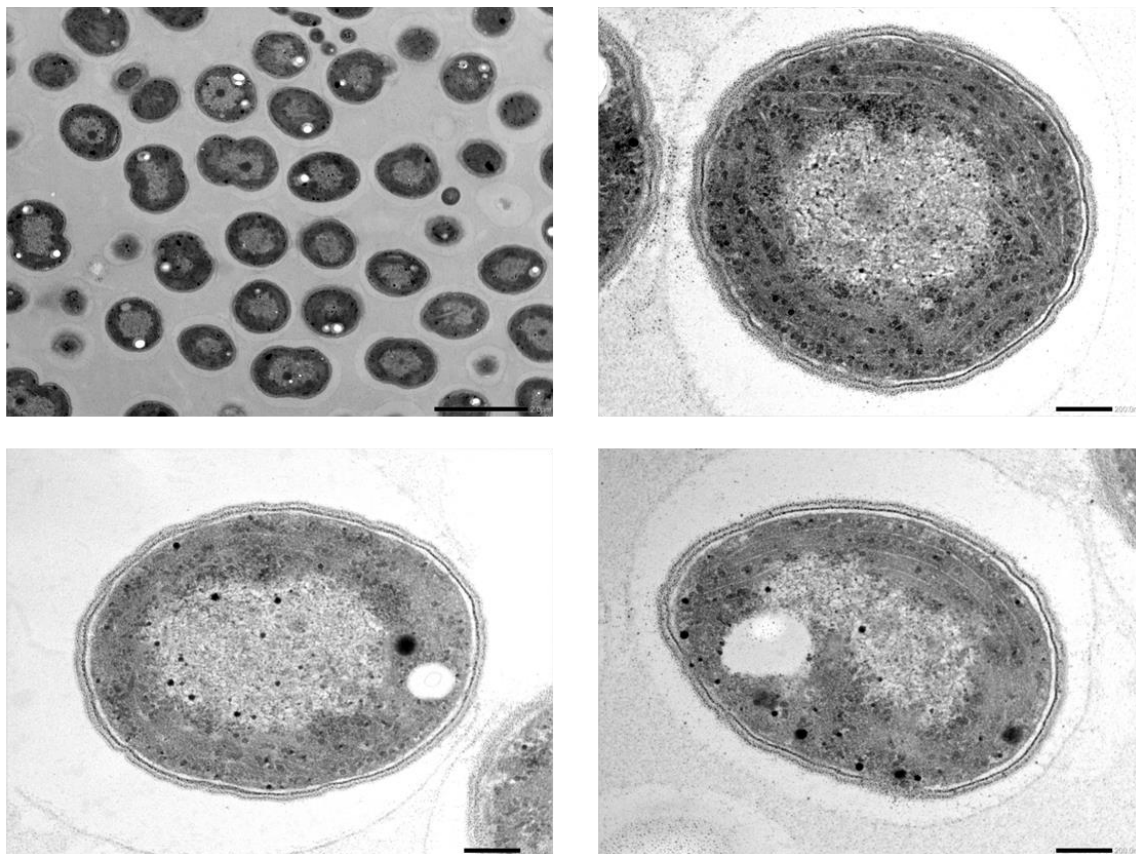


Fig. 3 EM images of *Synechocystis* cells grown under LM conditions showing an extended EPS layer
From the overview it can be seen that all cells have an extensive EPS layer. Scale bars = 200 nm, except upper left (2 μ m).

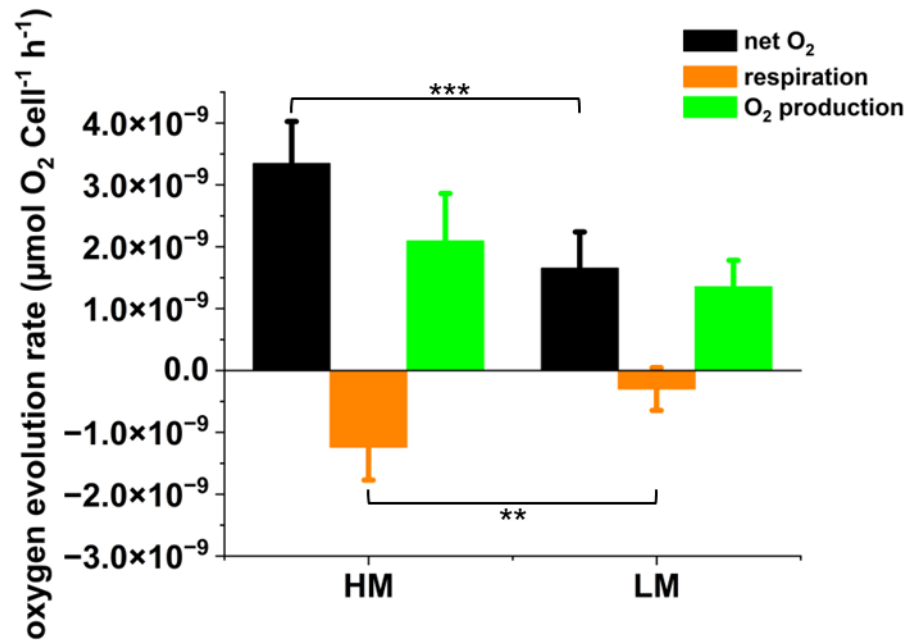


Fig. 4 O₂ consumption and evolution rates of HM and LM grown *Synechocystis*

Net O₂ production (black), O₂ consumption (orange), and O₂ evolution (green) per cell are shown for HM and LM grown cultures. Error bars represent means ± SD (N=5 (HM) or N= 7 (LM)). Significant differences (according to Student's t-test) are indicated as: ** p < 0.01 and *** p < 0.001.