Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplementary Information

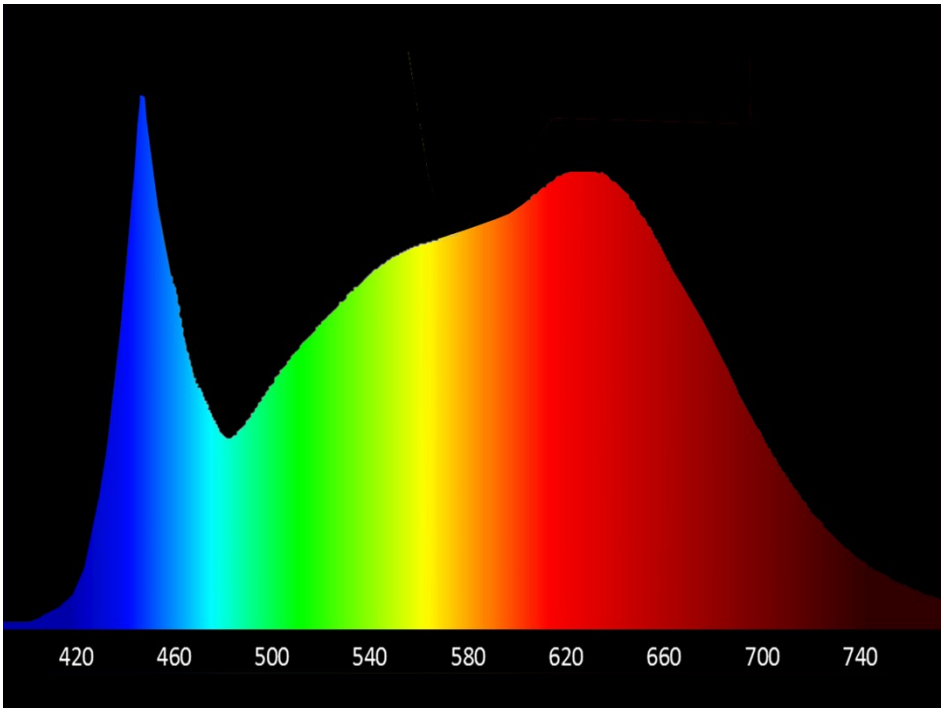

Figure S1. *Spectrum of the 45W LED-light lamps used for the growth experiment of the control PBR batch cultures.*

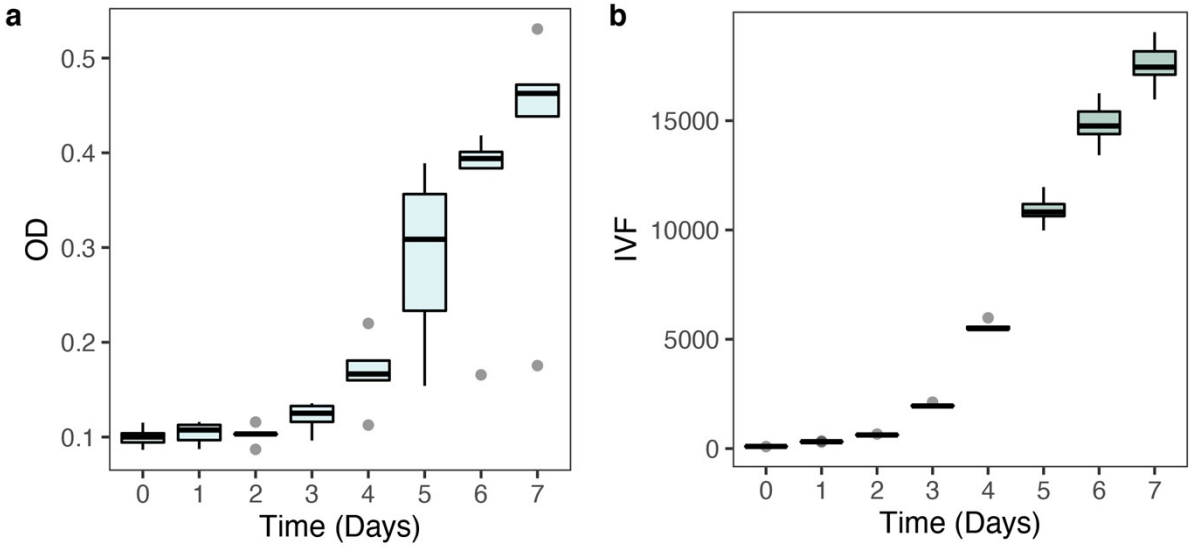

Figure S2. *Box-plot representation of the within-well variability over a 7-days' time period. Results presented here are measurements from one randomly chosen well (B6) used as an example. Both optical density (A) and in vivo chl a fluorescence (B) were measured by using the multiple reads per well option where 5 different measurements points were performed for each well. The five measurements are represented by the filled circles.*

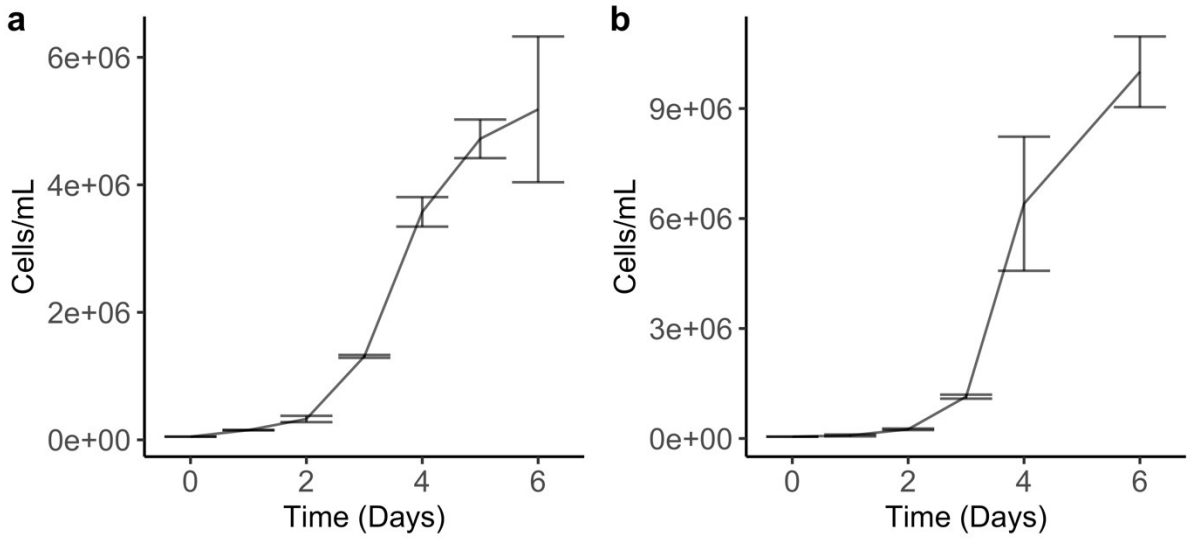

Figure S3. *Growth curves of control cultures of P. tricornutum acclimated to low light (~ 20 µmol photons m^{-2} s^{-1}) (a) and high light (~ 200 µmol photons m^{-2} s^{-1}) (b) at 16 °C ± 1. Growth measurements were done by cell counting by using the BD Accuri C6 Flow Cytometer (BD Bioscience) every 24h for 7 consecutive days (including day 0). Results are presented as a mean of three biological replicates ±SD.*

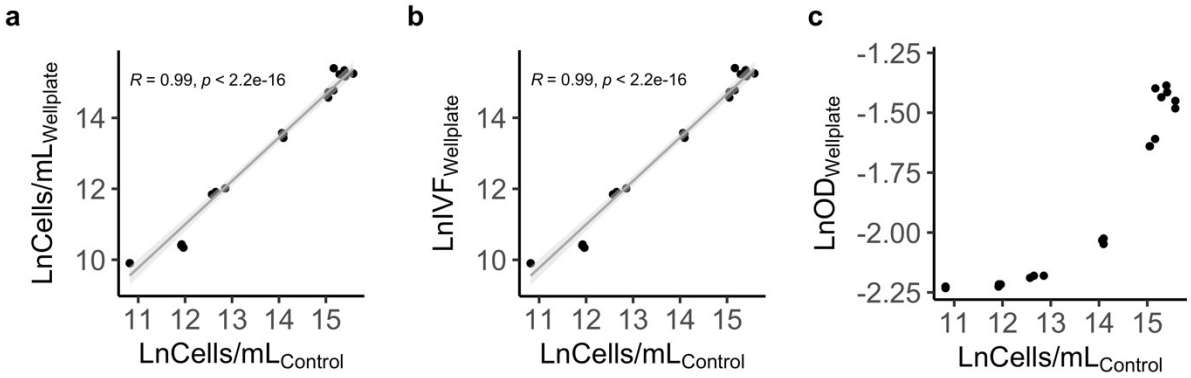

Figure S4. *Scatter plot and best-fitting regression line illustrating the relationships between growth measurements performed in the well plate setting versus the control (Batch culture: 125 mL). (a) Cell count/$mL_{Control}$ vs. Cell count/$mL_{Wellplate}$; (b) Cell count/$mL_{Control}$ vs. $IVF_{Wellplate}$;(c) Cell count/$mL_{Control}$ vs. $OD_{Wellplate}$, Regression line is only drawn for (a) and (b). Grey surrounding area: 95% confidence belt for the fitted line.*

Table S1. *Table summarizing the specific growth rate (μ, d^{-1}) estimates based on the measurement performed. Results are presented for the quantification methods performed in the 96 well plate versus: control (a): represented by a standard batch PBR illuminated with the Nanocosm LED-light board and control (b): batch PBR illuminated with another LED light source (spectrum Figure S1). Values presented are from calculation performed between day 2 and 3 when growth is known to be highest.*

Light source	**Nanocosm**			**Nanocosm**	**algae growth room**
Culturing method	**96 well plate**			**Batch PBR**	**Batch PBR**
Biomass quantification method	**Cell count**	**IVF**	**OD**	**cell count**	**Cell count**
Specific growth rate (μ, d^{-1}) $\ln(x_t/x_{t-1})$	1.56 d^{-1}	1.45 d^{-1}	0.14 d^{-1}	0.97 d^{-1}	1.52 d^{-1}