

Supplementary Table S1. Two-Way ANOVA tests without replication related to *P. calliantha* cell concentration experiments.

IRRADIANCE						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	15000	5000	0		
time2	3	91234,67	30411,56	7,38E+07		
time3	3	167525,67	55841,89	6,11E+08		
time4	3	274882	91627,33	1,12E+09		
Control	4	207245	51811,25	2,77E+09		
High	4	217295,67	54323,92	1,57E+09		
Low	4	124101,67	31025,42	5,32E+08		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,23E+10	3	4,10E+09	10,69	0,01	4,76
Columns	1,31E+09	2	6,54E+08	1,70	0,26	5,14
Error	2,30E+09	6	3,84E+08			
Total	1,59E+10	11				

TEMPERATURE						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	15000	5000	0		
time2	3	74345	24781,67	4,99E+07		
time3	3	159121	53040,33	3,55E+08		
time4	3	267410,33	89136,78	8,16E+08		
Control	4	189813	47453,25	2,20E+09		
High	4	209118	52279,5	1,76E+09		
Low	4	116945,33	29236,33	4,70E+08		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,20E+10	3	4,01E+09	19,08	1,80E-03	4,76
Columns	1,18E+09	2	5,91E+08	2,81	0,14	5,14
Error	1,26E+09	6	2,10E+08			
Total	1,45E+10	11				

SALINITY						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	6000	2000	0		
time2	3	30998,33	10332,78	1,98E+07		
time3	3	51930,33	17310,11	2,80E+07		
time4	3	100208	33402,67	5,23E+08		
Control	4	100430	25107,5	6,06E+08		
High	4	40992,33	10248,08	4,49E+07		
Low	4	47714,33	11928,58	8,55E+07		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,60E+09	3	5,32E+08	5,22	0,04	4,76
Columns	5,30E+08	2	2,65E+08	2,60	0,15	5,14
Error	6,12E+08	6	1,02E+08			
Total	2,74E+09	11				

NUTRIENT DEPLETION						
SUMMARY	Counts	Sum	Average	Variance		
time1	4	20000	5000	0		
time2	4	79882	19970,5	1,36E+06		
time3	4	148783,33	37195,83	7,19E+07		
time4	4	318663	79665,75	1,15E+09		
Control	4	145863	36465,75	1,08E+09		
Nitrogen	4	165130	41282,5	1,89E+09		
Phosphorus	4	174671,33	43667,83	1,86E+09		
Silica	4	81664	20416	1,34E+08		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,25E+10	3	4,17E+09	15,88	6,13E-04	3,86
Columns	1,31E+09	3	4,38E+08	1,67	0,24	3,86
Error	2,36E+09	9	2,62E+08			
Total	1,62E+10	15				

Supplementary Table S2. Two-Way ANOVA tests without replication related to *P. multistriata* cell concentration experiments.

IRRADIANCE						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	15000	5000	0		
time2	3	95411,67	31803,89	3,36E+08		
time3	3	352217,67	117405,89	5,66E+09		
time4	3	491356	163785,33	1,30E+10		
Control	4	548565,67	137141,42	1,81E+10		
High	4	245815,67	61453,92	2,42E+09		
Low	4	159604	39901	1,53E+09		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	4,91E+10	3	1,64E+10	5,71	0,03	4,76
Columns	2,09E+10	2	1,04E+10	3,64	0,09	5,14
Error	1,72E+10	6	2,86E+09			
Total	8,71E+10	11				

TEMPERATURE						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	15000	5000	0		
time2	3	51175,67	17058,56	5,39E+07		
time3	3	264397,67	88132,56	1,94E+09		
time4	3	362258,67	120752,89	2,03E+09		
Control	4	275281,67	68820,42	4,94E+09		
High	4	294872,67	73718,17	4,76E+09		
Low	4	122677,67	30669,42	8,44E+08		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	2,80E+10	3	9,33E+09	15,48	3,13E-03	4,76
Columns	4,44E+09	2	2,22E+09	3,69	0,09	5,14
Error	3,62E+09	6	6,03E+08			
Total	3,61E+10	11				

SALINITY						
SUMMARY	Counts	Sum	Average	Variance		
time1	3	6000	2000	0		
time2	3	9527,33	3175,78	848016,7		
time3	3	14617,33	4872,44	1,46E+07		
time4	3	75310,67	25103,56	1,40E+09		
Control	4	82304	20576	1,01E+09		
High	4	16649,67	4162,42	2,92E+06		
Low	4	6501,67	1625,42	383990,25		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,08E+09	3	3,59E+08	1,09	0,42	4,76
Columns	8,47E+08	2	4,23E+08	1,28	0,34	5,14
Error	1,98E+09	6	3,30E+08			
Total	3,90E+09	11				

NUTRIENT DEPLETION						
SUMMARY	Counts	Sum	Average	Variance		
time1	4	20000	5000	0		
time2	4	37197	9299,25	95757,14		
time3	4	55013,67	13753,42	7,62E+06		
time4	4	50249,67	12562,42	6,97E+06		
Control	4	47614,67	11903,67	3,38E+07		
Nitrogen	4	38412,33	9603,08	1,24E+07		
Phosphorus	4	41316,33	10329,08	1,63E+07		
Silica	4	35117	8779,25	6,52E+06		
ANOVA						
Source of variation	SS	gdl	MS	F	P-value	F crit
Rows	1,84E+08	3	6,14E+07	24,11	1,23E-04	3,86
Columns	2,11E+07	3	7,05E+06	2,77	0,10	3,86
Error	2,29E+07	9	2,55E+06			
Total	2,28E+08	15				

Supplementary Table S3. Fluorescence values expressed as relative fluorescence intensity in arbitrary units (AU) related to the irradiance stress experiments. Measurement times are 0, 24, 48 and 72 hours (T0, T1, T2 and T3, respectively) for both *P. calliantha* and *P. multistriata* species (Pc and Pm, respectively). Standard deviations for each fluorescence value are also shown.

	Control		Low irradiance		High irradiance	
Time	Pc	Pm	Pc	Pm	Pc	Pm
T0	146.67 ± 50.33	206.67 ± 83.27	146.67 ± 50.33	246.67 ± 83.27	146.67 ± 50.33	206.67 ± 83.27
T1	393.33 ± 80.2	746.67 ± 655.16	246.67 ± 141.89	586.67 ± 300.89	220.00 ± 121.24	390.00 ± 147.30
T2	766.67 ± 450.92	2766.67 ± 873.69	460.00 ± 314.32	1000.00 ± 500.00	550.00 ± 427.20	516.67 ± 317.54
T3	1346.67 ± 741.98	4533.33 ± 642.91	900.00 ± 556.78	1600.00 ± 854.40	583.33 ± 292.97	670.00 ± 345.98

Supplementary Table S4. Fluorescence values expressed as relative fluorescence intensity in arbitrary units (AU) related to the temperature stress experiments. Measurement times are 0, 24, 48 and 72 hours (T0, T1, T2 and T3, respectively) for both *P. calliantha* and *P. multistriata* species (Pc and Pm, respectively). Standard deviations for each fluorescence value are also shown.

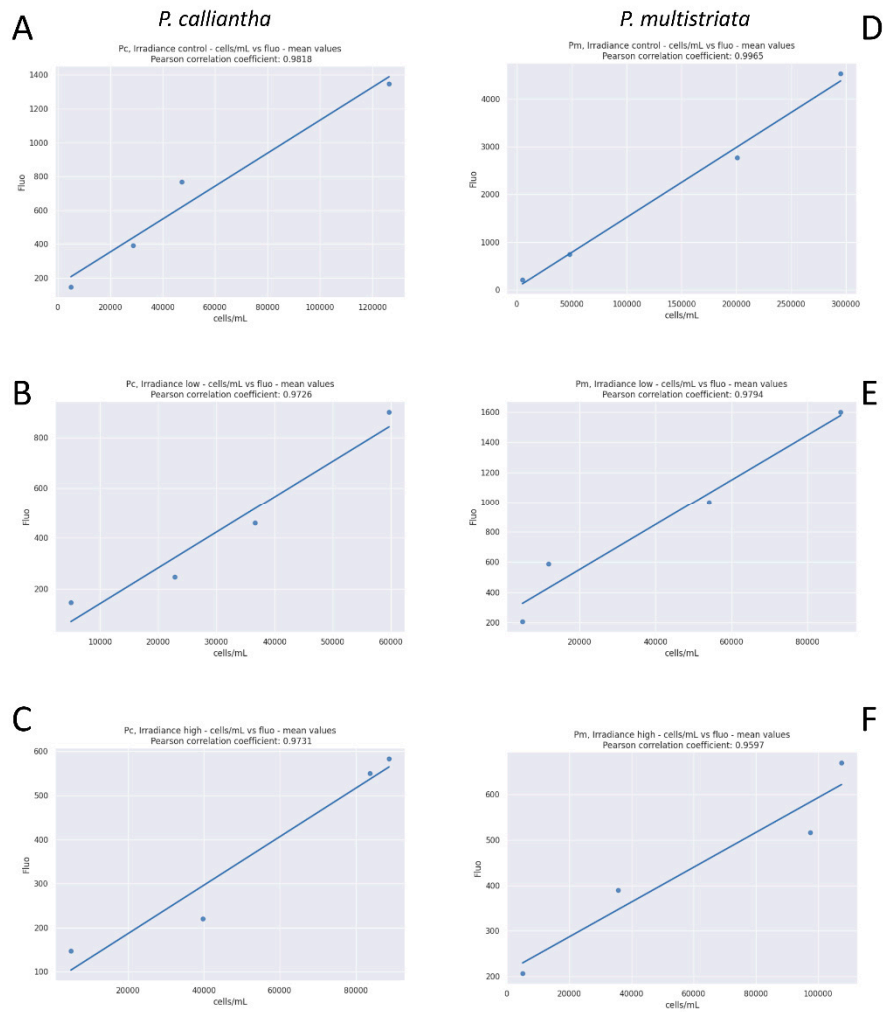
	Control		Low temperature		High temperature	
Time	Pc	Pm	Pc	Pm	Pc	Pm
T0	93.33 ± 20.82	180.00 ± 78.10	93.33 ± 20.82	180.00 ± 78.1	93.33 ± 20.82	180.00 ± 78.1
T1	203.33 ± 64.29	700.00 ± 360.56	153.33 ± 85.05	443.33 ± 191.4	216.67 ± 80.83	740.00 ± 294.62
T2	570.00 ± 345.98	2133.33 ± 750.56	410.00 ± 343.95	1266.67 ± 351.19	1100.00 ± 264.58	2733.33 ± 642.91
T3	1333.33 ± 802.08	3966.67 ± 503.32	910.00 ± 947.79	2366.67 ± 472.58	1100.00 ± 100.00	3066.67 ± 1504.44

Supplementary Table S5. Fluorescence values expressed as relative fluorescence intensity in arbitrary units (AU) related to the salinity stress experiments. Measurement times are 0, 24, 48 and 72 hours (T0, T1, T2 and T3, respectively) for both *P. calliantha* and *P. multistriata* species (Pc and Pm, respectively). Standard deviations for each fluorescence value are also shown.

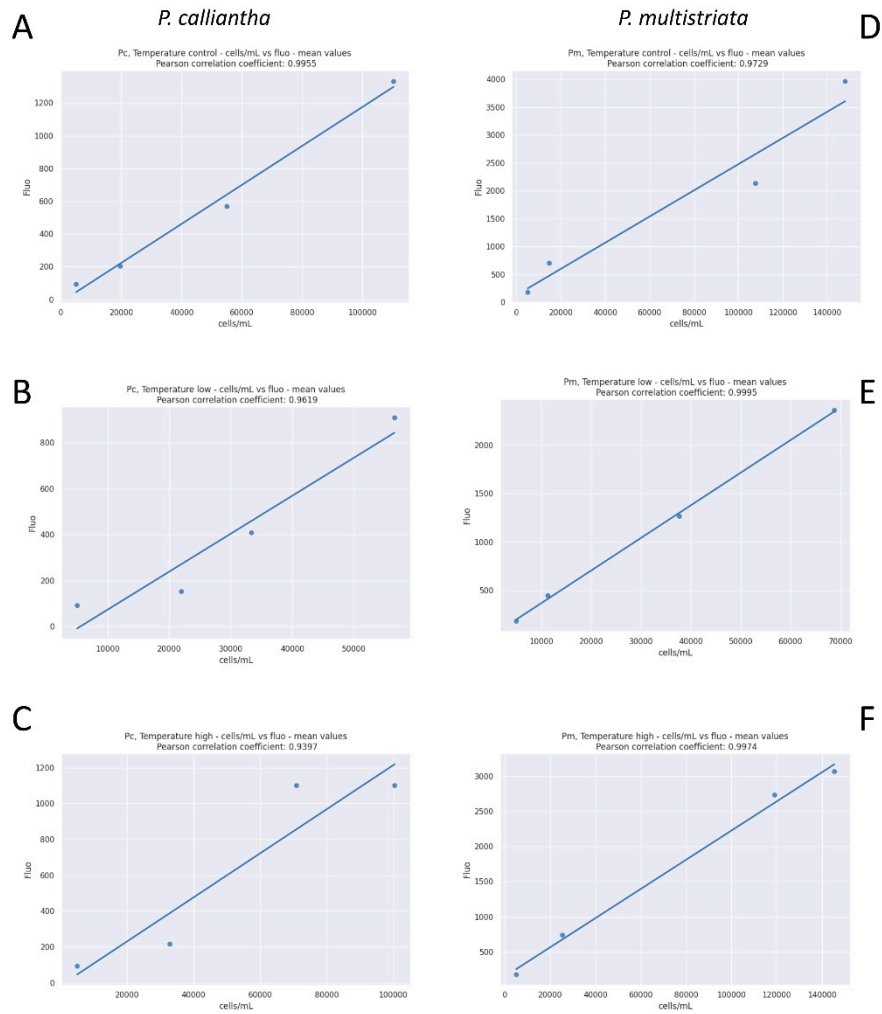
	Control		Low salinity		High salinity	
Time	Pc	Pm	Pc	Pm	Pc	Pm
T0	50.00 ± 0.00	50.00 ± 0.00	30.00 ± 20.00	13.33 ± 5.77	31.67 ± 12.58	33.33 ± 5.77
T1	116.67 ± 40.41	156.67 ± 56.86	46.67 ± 46.19	13.33 ± 5.77	56.67 ± 37.86	31.67 ± 12.58
T2	263.33 ± 98.15	533.33 ± 152.75	106.67 ± 167.43	10.00 ± 0.00	90.00 ± 96.44	53.33 ± 58.59
T3	826.67 ± 473.43	1800.00 ± 866.03	340.00 ± 571.58	10.00 ± 0.00	226.67 ± 240.07	203.33 ± 260.83

Supplementary Table S6. Fluorescence values expressed as relative fluorescence intensity in arbitrary units (AU) related to the nutrient depletion stress experiments. Measurement times are 0, 24, 48 and 72 hours (T0, T1, T2 and T3, respectively) for both *P. calliantha* and *P. multistriata* species (Pc and Pm, respectively). Standard deviations for each fluorescence value are also shown.

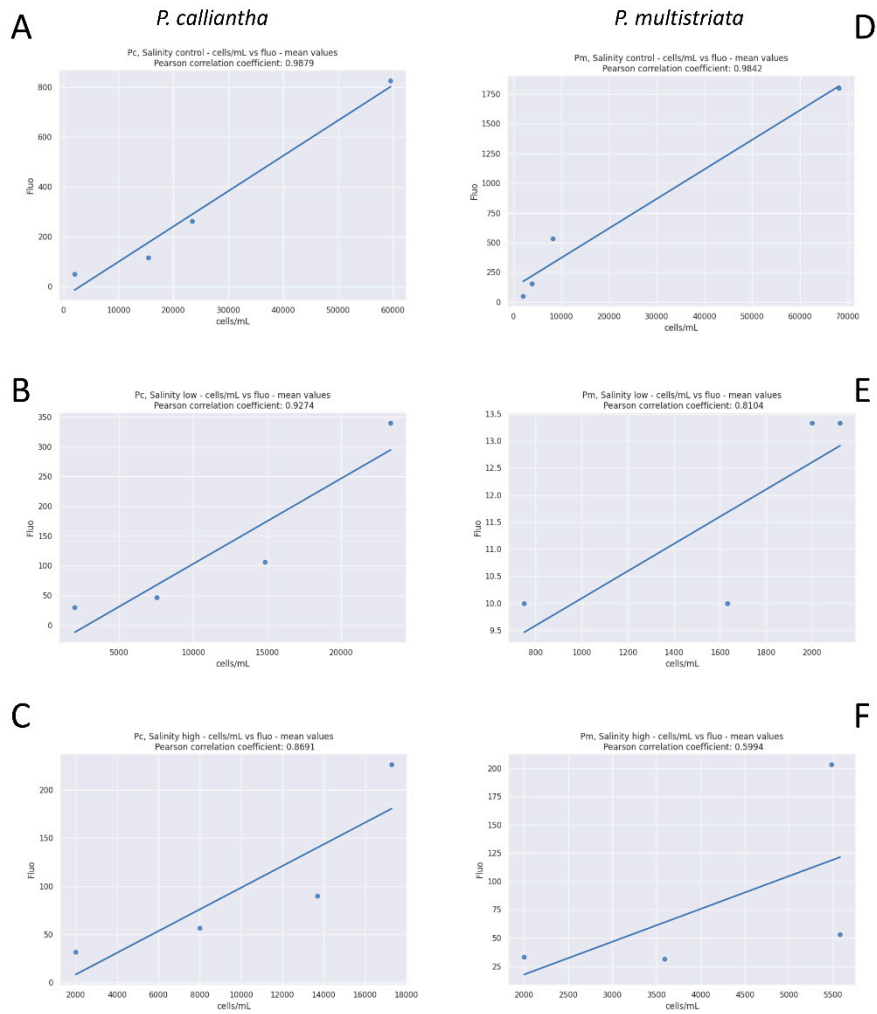
	Control		Nitrogen		Phosphorous		Silicon	
Time	Pc	Pm	Pc	Pm	Pc	Pm	Pc	Pm
T0	146.67 ± 50.33	206.67 ± 83.27	146.67 ± 50.33	206.67 ± 83.27	146.67 ± 50.33	206.67 ± 83.27	146.67 ± 50.33	206.67 ± 83.27
T1	190.00 ± 36.06	130.00 ± 36.06	190.00 ± 36.06	140.00 ± 36.06	186.67 ± 41.63	143.33 ± 45.09	173.33 ± 46.19	146.67 ± 50.33
T2	396.67 ± 105.04	183.33 ± 40.41	403.33 ± 100.17	220.00 ± 80.00	440.00 ± 144.22	246.67 ± 128.97	330.00 ± 151.33	206.67 ± 102.63
T3	1000.00 ± 360.56	533.33 ± 407.23	1033.33 ± 57.74	466.67 ± 305.51	1200.00 ± 300.00	546.67 ± 405.13	316.67 ± 90.74	340.00 ± 147.30



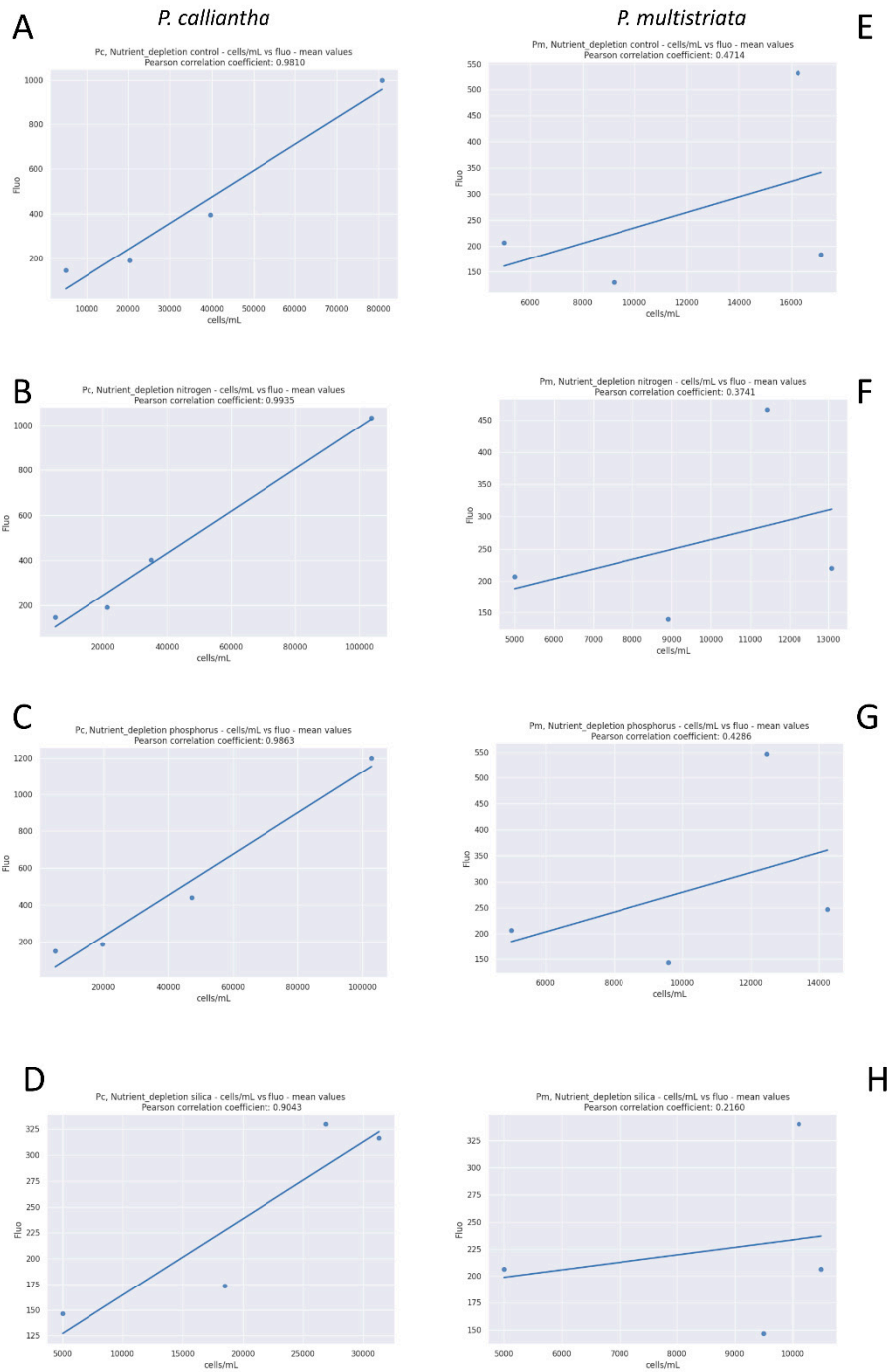
Supplementary Figure S1. Scatter plots and related regression lines of cells/mL versus fluorescence values in irradiance stress experiments in *P. calliantha* (A, B, C) and *P. multistriata* (D, E, F), in control (A, D), low (B, E) and high (C, F) irradiance stress condition. An irradiance of 100, 45 and 350 $\mu\text{mol m}^{-2}\text{s}^{-1}$ was applied for the control, low and high treatments, respectively.



Supplementary Figure S2. Scatter plots and related regression lines of cells/mL versus fluorescence values in temperature stress experiments in *P. calliantha* (A, B, C) and *P. multistriata* (D, E, F), in control (A, D), low (B, E) and high (C, F) temperature stress condition. A temperature for the control, low and high treatments was setted at 20, 12 and 28 °C, respectively.



Supplementary Figure S3. Scatter plots and related regression lines of cells/mL versus fluorescence values in salinity stress experiments in *P. calliantha* (A, B, C) and *P. multistriata* (D, E, F), in control (A, D), low (B, E) and high (C, F) salinity stress condition. Salinity effect was evaluated by setting control, low and high salinity at 36, 34 and 38 PSU, respectively.



Supplementary Figure S4. Scatter plots and related regression lines of cells/mL versus fluorescence values in nutrient depletion stress experiments in *P. calliantha* (A, B, C, D) and *P. multistriata* (E, F, G, H), in control (A, E), nitrogen (B, F), phosphorous (C, G) and silica (D, H) depletion condition. Nutrient depletion was evaluated by using cells cultured in f/2 medium as control condition, and comparing it to those maintained in media deprived of NaNO_3 , K_2HPO_4 or Na_2SiO_3 .