

Supplementary Material

‘More light please: *Daphnia* benefit from light pollution by increased tolerance towards cyanobacterial chymotrypsin inhibitors’

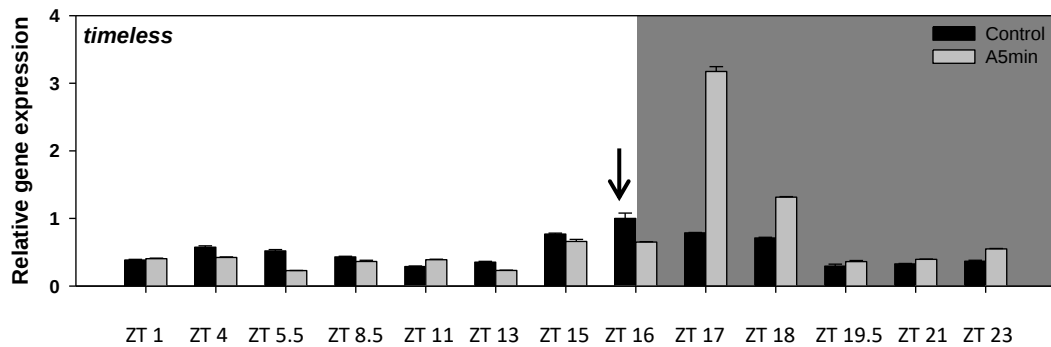
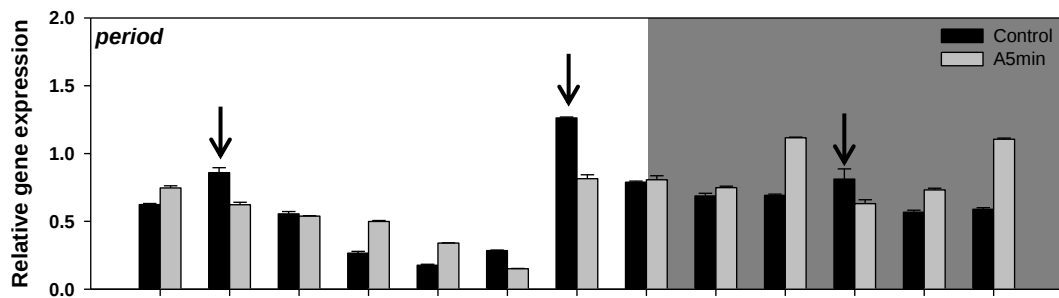
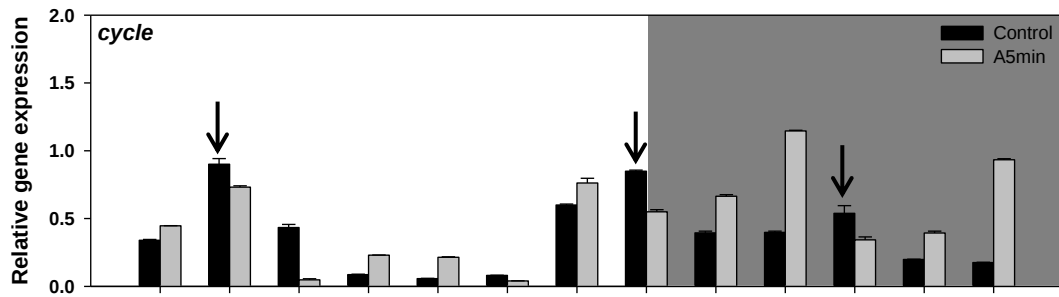
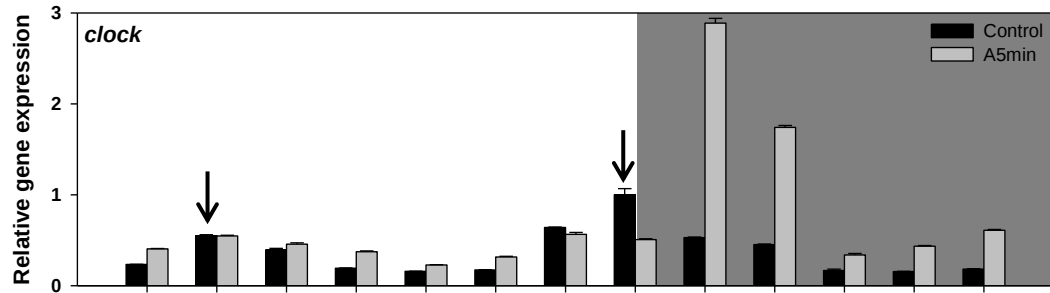
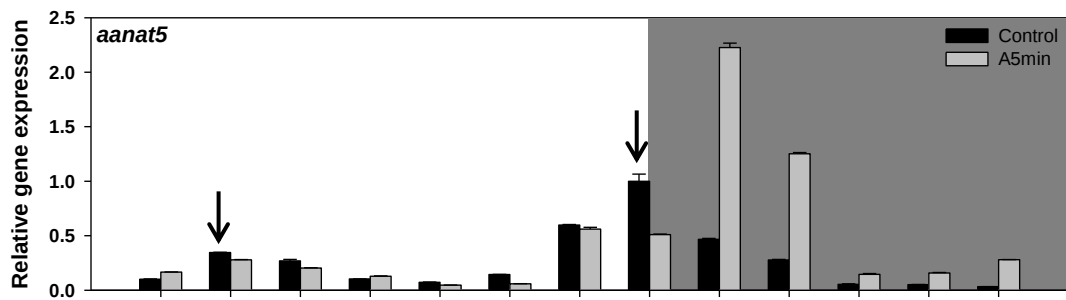
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Supplementary Figure 1

Gene expression of an enzyme of the melatonin synthesis pathway (*aanat5*) and four different clock genes (*clock*, *cycle*, *period* and *timeless*) over 24 h in a day-night cycle of 16:8 h (control) and in ALAN (A5min: 5min light every hour of the night; N = 3, MW + SD). Shaded area: night, white area: day. Arrows indicate the highest peaks of gene expression in the control treatment.

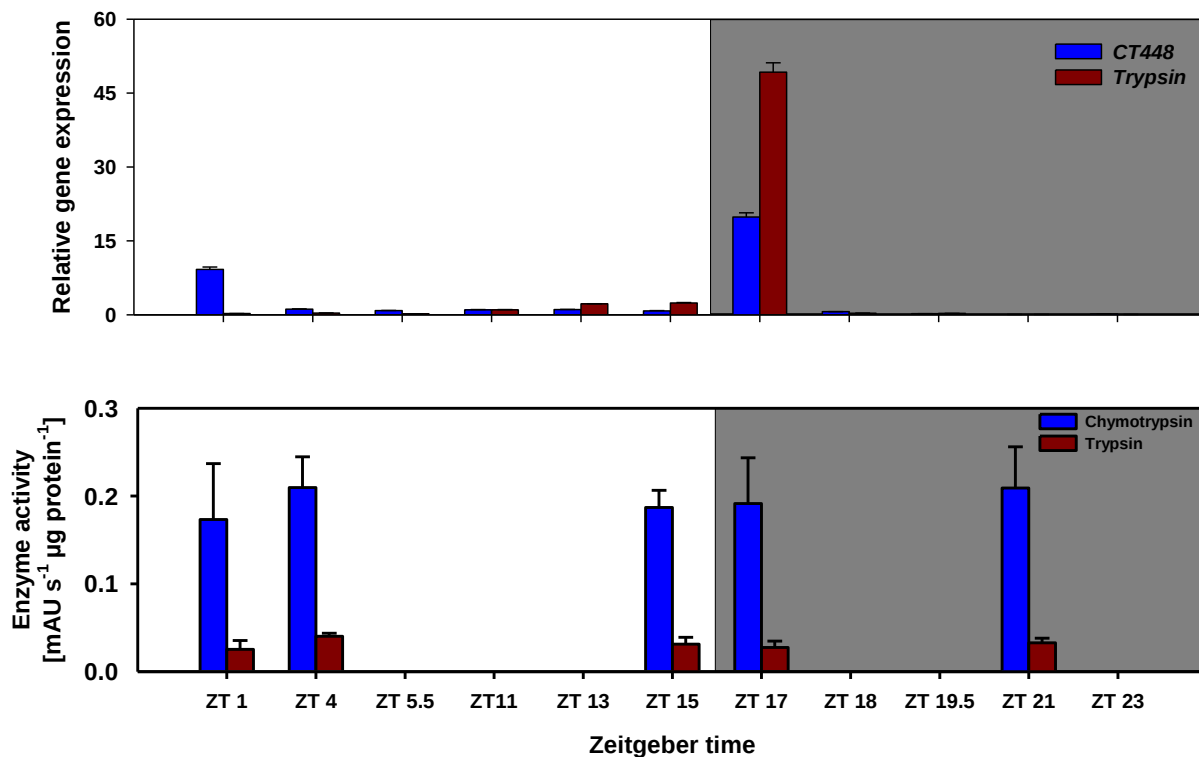
In the control light treatment, all genes showed the highest peak of gene expression one hour before (ZT 15) or at the switch from day to night (ZT 16) in *D. magna* clone CH-H-5. This is similar to findings for *D. magna* clone ‘Binnensee’ (Schwarzenberger *et al.* 2021); in this clone most genes showed peaks one hour after the beginning of the night = ZT 17). Except for *timeless*, all genes presented an additional gene expression peak four hours after the beginning of the day (ZT 4), which is a point in time that was not analysed in the time sequence of clone ‘Binnensee’ (Schwarzenberger *et al.* 2021). Therefore, *D. magna* shows a cyclic gene expression with two peaks over 24 h. Interestingly, the two highest gene expression peaks of *cycle* and *period* and the only gene expression peak of *aanat5*, *clock* and *timeless* were shifted to a later point in time and were measured during night.



Supplementary Figure 2

Upper panel: Gene expression of the chymotrypsin gene *CT448* and *trypsin* of *D. magna* clone ‘Binnensee’ over 24 h in a day-night cycle of 16:8 h (N = 3, MW + SD). Lower panel: Specific trypsin and chymotrypsin activity (N = 3, MW + SD) at five points in time over 24 h in a day-night cycle of 16:8 h. Shaded area: night, white area: day.

In clone ‘Binnensee’, both *CT448* and *trypsin* showed the highest gene expression peak one hour after the beginning of the night (and an additional smaller gene expression peak at ZT 1 for *CT448*). This is in line with findings for clock gene expression in the same clone (Schwarzenberger *et al.* 2021). Therefore, protease gene expression is most probably regulated by the circadian clock. Although both enzyme genes showed a cyclic gene expression, specific protease activity did not differ between different zeitgeber times (one-way ANOVA: chymotrypsin: $F_{4,10} = 267.28$; $p = 0.85$; trypsin: $F_{4,10} = 115.36$; $p = 0.082$).



Supplementary Table 1

Raw data of gene expression analyses. Delineated are the threshold cycle and relative gene expression of each replicate of each treatment at each zeitgeber time for eight different target genes.

Treatment	Zeitgeber Time	Target Name	Threshold cycle (CT)	Relative expression
Controle	ZT 15	AANAT 5	27.199	0.5919
Controle	ZT 15	AANAT 5	27.676	0.6022
Controle	ZT 15	AANAT 5	27.475	0.5979
Controle	ZT 16	AANAT 5	26.624	0.9699
Controle	ZT 16	AANAT 5	26.216	0.9551
Controle	ZT 16	AANAT 5	29.506	1.0750
Controle	ZT 17	AANAT 5	27.795	0.4647
Controle	ZT 17	AANAT 5	27.553	0.4606
Controle	ZT 17	AANAT 5	28.489	0.4763
Controle	ZT 18	AANAT 5	27.766	0.2716
Controle	ZT 18	AANAT 5	28.678	0.2806
Controle	ZT 18	AANAT 5	28.594	0.2797
Controle	ZT 19.5	AANAT 5	28.312	0.0551
Controle	ZT 19.5	AANAT 5	24.813	0.0483
Controle	ZT 19.5	AANAT 5	29.441	0.0573
Controle	ZT 21	AANAT 5	27.197	0.0511
Controle	ZT 21	AANAT 5	28.080	0.0528
Controle	ZT 21	AANAT 5	27.501	0.0517
Controle	ZT 23	AANAT 5	28.238	0.0323
Controle	ZT 23	AANAT 5	28.769	0.0329
Controle	ZT 23	AANAT 5	28.713	0.0329
Controle	ZT 1	AANAT 5	27.502	0.0985
Controle	ZT 1	AANAT 5	28.390	0.1016
Controle	ZT 1	AANAT 5	28.665	0.1026
Controle	ZT 4	AANAT 5	26.672	0.344
Controle	ZT 4	AANAT 5	26.614	0.343
Controle	ZT 4	AANAT 5	26.979	0.348
Controle	ZT 5.5	AANAT 5	27.856	0.279
Controle	ZT 5.5	AANAT 5	27.333	0.274
Controle	ZT 5.5	AANAT 5	25.399	0.255
Controle	ZT 8.5	AANAT 5	27.338	0.103
Controle	ZT 8.5	AANAT 5	27.398	0.104
Controle	ZT 8.5	AANAT 5	27.298	0.103
Controle	ZT 11	AANAT 5	27.661	0.0748
Controle	ZT 11	AANAT 5	26.821	0.0725
Controle	ZT 11	AANAT 5	26.126	0.0706

Controle	ZT 13	AANAT 5	26.599	0.1424
Controle	ZT 13	AANAT 5	26.656	0.1427
Controle	ZT 13	AANAT 5	27.220	0.1457
ALAN	ZT 15	AANAT 5	26.080	0.5467
ALAN	ZT 15	AANAT 5	26.660	0.5588
ALAN	ZT 15	AANAT 5	27.561	0.5777
ALAN	ZT 16	AANAT 5	28.734	0.5059
ALAN	ZT 16	AANAT 5	28.998	0.5106
ALAN	ZT 16	AANAT 5	29.244	0.5149
ALAN	ZT 17	AANAT 5	28.538	2.2474
ALAN	ZT 17	AANAT 5	28.606	2.2527
ALAN	ZT 17	AANAT 5	27.680	2.1798
ALAN	ZT 18	AANAT 5	28.256	1.2542
ALAN	ZT 18	AANAT 5	27.956	1.2409
ALAN	ZT 18	AANAT 5	28.412	1.2611
ALAN	ZT 19.5	AANAT 5	26.922	0.1403
ALAN	ZT 19.5	AANAT 5	26.961	0.1405
ALAN	ZT 19.5	AANAT 5	29.504	0.1538
ALAN	ZT 21	AANAT 5	29.134	0.1631
ALAN	ZT 21	AANAT 5	27.359	0.1532
ALAN	ZT 21	AANAT 5	28.150	0.1576
ALAN	ZT 23	AANAT 5	28.047	0.2798
ALAN	ZT 23	AANAT 5	28.086	0.2802
ALAN	ZT 23	AANAT 5	28.239	0.2817
ALAN	ZT 1	AANAT 5	28.846	0.1666
ALAN	ZT 1	AANAT 5	28.883	0.1669
ALAN	ZT 1	AANAT 5	28.512	0.1647
ALAN	ZT 4	AANAT 5	27.805	0.2793
ALAN	ZT 4	AANAT 5	27.982	0.2811
ALAN	ZT 4	AANAT 5	27.364	0.2748
ALAN	ZT 5.5	AANAT 5	27.813	0.2054
ALAN	ZT 5.5	AANAT 5	27.552	0.2035
ALAN	ZT 5.5	AANAT 5	27.200	0.2009
ALAN	ZT 8.5	AANAT 5	27.367	0.1248
ALAN	ZT 8.5	AANAT 5	28.727	0.1310
ALAN	ZT 8.5	AANAT 5	28.217	0.1287
ALAN	ZT 11	AANAT 5	28.983	0.0477
ALAN	ZT 11	AANAT 5	27.741	0.0457
ALAN	ZT 11	AANAT 5	27.928	0.0460
ALAN	ZT 13	AANAT 5	28.100	0.0599
ALAN	ZT 13	AANAT 5	28.038	0.0598
ALAN	ZT 13	AANAT 5	27.125	0.0579
Controle	ZT 15	clock	29.329	0.6429

Controle	ZT 15	clock	29.275	0.6417
Controle	ZT 15	clock	28.917	0.6339
Controle	ZT 16	clock	28.159	0.9620
Controle	ZT 16	clock	28.089	0.9596
Controle	ZT 16	clock	31.563	1.0783
Controle	ZT 17	clock	29.229	0.5222
Controle	ZT 17	clock	29.729	0.5311
Controle	ZT 17	clock	29.809	0.5325
Controle	ZT 18	clock	28.968	0.4439
Controle	ZT 18	clock	29.669	0.4547
Controle	ZT 18	clock	29.756	0.4560
Controle	ZT 19.5	clock	27.774	0.1668
Controle	ZT 19.5	clock	25.038	0.1503
Controle	ZT 19.5	clock	30.315	0.1820
Controle	ZT 21	clock	28.177	0.1573
Controle	ZT 21	clock	27.425	0.1531
Controle	ZT 21	clock	27.893	0.1558
Controle	ZT 23	clock	27.372	0.1783
Controle	ZT 23	clock	28.681	0.1869
Controle	ZT 23	clock	27.706	0.1805
Controle	ZT 1	clock	28.984	0.2348
Controle	ZT 1	clock	28.621	0.2319
Controle	ZT 1	clock	28.788	0.2333
Controle	ZT 4	clock	28.438	0.562
Controle	ZT 4	clock	27.624	0.546
Controle	ZT 4	clock	27.223	0.538
Controle	ZT 5.5	clock	28.455	0.401
Controle	ZT 5.5	clock	28.751	0.405
Controle	ZT 5.5	clock	26.755	0.377
Controle	ZT 8.5	clock	28.478	0.194
Controle	ZT 8.5	clock	28.266	0.193
Controle	ZT 8.5	clock	27.641	0.188
Controle	ZT 11	clock	27.664	0.1598
Controle	ZT 11	clock	27.436	0.1585
Controle	ZT 11	clock	27.158	0.1569
Controle	ZT 13	clock	27.863	0.1711
Controle	ZT 13	clock	28.046	0.1722
Controle	ZT 13	clock	28.772	0.1767
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ALAN	ZT 16	clock	30.275	0.5010
ALAN	ZT 16	clock	31.202	0.5164
ALAN	ZT 17	clock	30.043	2.9429
ALAN	ZT 17	clock	29.428	2.8827
ALAN	ZT 17	clock	28.972	2.8380
ALAN	ZT 18	clock	29.017	1.7300
ALAN	ZT 18	clock	28.966	1.7269
ALAN	ZT 18	clock	29.600	1.7647
ALAN	ZT 19.5	clock	27.131	0.3261
ALAN	ZT 19.5	clock	27.373	0.3290
ALAN	ZT 19.5	clock	29.613	0.3559
ALAN	ZT 21	clock	28.769	0.4417
ALAN	ZT 21	clock	27.687	0.4251
ALAN	ZT 21	clock	28.203	0.4330
ALAN	ZT 23	clock	28.007	0.5994
ALAN	ZT 23	clock	28.822	0.6168
ALAN	ZT 23	clock	28.571	0.6115
ALAN	ZT 1	clock	28.536	0.3983
ALAN	ZT 1	clock	29.212	0.4077
ALAN	ZT 1	clock	29.032	0.4052
ALAN	ZT 4	clock	28.486	0.5514
ALAN	ZT 4	clock	28.427	0.5503
ALAN	ZT 4	clock	27.706	0.5363
ALAN	ZT 5.5	clock	28.746	0.4722
ALAN	ZT 5.5	clock	27.500	0.4517
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ALAN	ZT 8.5	clock	28.696	0.3824
ALAN	ZT 8.5	clock	27.213	0.3626
ALAN	ZT 11	clock	27.730	0.2309
ALAN	ZT 11	clock	27.441	0.2285
ALAN	ZT 11	clock	26.830	0.2234
ALAN	ZT 13	clock	27.315	0.3218
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Controle	ZT 15	tim	28.206	0.7815
Controle	ZT 15	tim	27.805	0.7704
Controle	ZT 15	tim	27.154	0.7524
Controle	ZT 16	tim	27.208	0.9689
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Controle	ZT 16	tim	30.614	1.0902
Controle	ZT 17	tim	27.616	0.7807
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Controle	ZT 17	tim	28.007	0.7917
Controle	ZT 18	tim	27.245	0.7012
Controle	ZT 18	tim	27.623	0.7110
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Controle	ZT 19.5	tim	25.498	0.2910
Controle	ZT 19.5	tim	23.230	0.2651
Controle	ZT 19.5	tim	28.380	0.3239
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Controle	ZT 21	tim	25.044	0.3210
Controle	ZT 21	tim	25.966	0.3328
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Controle	ZT 23	tim	26.684	0.3816
Controle	ZT 23	tim	25.129	0.3594
Controle	ZT 1	tim	27.599	0.3951
Controle	ZT 1	tim	26.207	0.3751
Controle	ZT 1	tim	26.858	0.3845
Controle	ZT 4	tim	27.444	0.597
Controle	ZT 4	tim	26.185	0.570
Controle	ZT 4	tim	25.647	0.558
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Controle	ZT 5.5	tim	27.203	0.536
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Controle	ZT 8.5	tim	25.941	0.434
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ALAN	ZT 15	tim	27.961	0.68654
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ALAN	ZT 18	tim	27.711	1.30856
ALAN	ZT 18	tim	27.808	1.31316

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Controle	ZT 16	Cry2	27.609	1.219
Controle	ZT 16	Cry2	27.132	1.198
Controle	ZT 16	Cry2	27.322	1.207
Controle	ZT 17	Cry2	28.899	0.710
Controle	ZT 17	Cry2	27.443	0.675
Controle	ZT 17	Cry2	29.461	0.724
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Controle	ZT 19.5	Cry2	24.571	1.031
Controle	ZT 19.5	Cry2	30.401	1.275
Controle	ZT 21	Cry2	26.042	0.891
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Controle	ZT 21	Cry2	24.940	0.853

Controle	ZT 23	Cry2	26.494	0.757
Controle	ZT 23	Cry2	26.129	0.746
Controle	ZT 23	Cry2	27.149	0.775
Controle	ZT 1	Cry2	27.621	1.086
Controle	ZT 1	Cry2	26.289	1.034
Controle	ZT 1	Cry2	26.843	1.056
Controle	ZT 4	Cry2	27.014	1.633
Controle	ZT 4	Cry2	25.554	1.544
Controle	ZT 4	Cry2	26.951	1.629
Controle	ZT 5.5	Cry2	26.605	1.225
Controle	ZT 5.5	Cry2	26.683	1.229
Controle	ZT 5.5	Cry2	25.253	1.163
Controle	ZT 8.5	Cry2	25.959	0.491
Controle	ZT 8.5	Cry2	NA	
Controle	ZT 8.5	Cry2	24.100	0.456
Controle	ZT 11	Cry2	25.975	0.268
Controle	ZT 11	Cry2	25.709	0.265
Controle	ZT 11	Cry2	24.038	0.248
Controle	ZT 13	Cry2	25.662	0.277
Controle	ZT 13	Cry2	26.322	0.285
Controle	ZT 13	Cry2	26.116	0.282
Controle	ZT 15	Cry2	28.295	0.989
Controle	ZT 15	Cry2	28.929	1.011
Controle	ZT 15	Cry2	NA	
ALAN	ZT 16	Cry2	29.272	0.764
ALAN	ZT 16	Cry2	29.881	0.780
ALAN	ZT 16	Cry2	31.045	0.811
ALAN	ZT 17	Cry2	28.665	0.797
ALAN	ZT 17	Cry2	29.178	0.811
ALAN	ZT 17	Cry2	29.786	0.828
ALAN	ZT 18	Cry2	NA	
ALAN	ZT 18	Cry2	27.958	1.317
ALAN	ZT 18	Cry2	28.753	1.355
ALAN	ZT 19.5	Cry2	25.791	0.783
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ALAN	ZT 19.5	Cry2	28.367	0.861
ALAN	ZT 21	Cry2	27.668	0.966
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ALAN	ZT 21	Cry2	26.884	0.939
ALAN	ZT 23	Cry2	28.297	1.208
ALAN	ZT 23	Cry2	27.633	1.179
ALAN	ZT 23	Cry2	27.487	1.173

ALAN	ZT 1	Cry2	26.915	0.939
ALAN	ZT 1	Cry2	28.377	0.990
ALAN	ZT 1	Cry2	28.988	1.011
ALAN	ZT 4	Cry2	26.848	0.869
ALAN	ZT 4	Cry2	27.230	0.882
ALAN	ZT 4	Cry2	26.978	0.873
ALAN	ZT 5.5	Cry2	26.580	1.053
ALAN	ZT 5.5	Cry2	26.677	1.057
ALAN	ZT 5.5	Cry2	26.871	1.065
ALAN	ZT 8.5	Cry2	26.439	0.743
ALAN	ZT 8.5	Cry2	26.483	0.745
ALAN	ZT 8.5	Cry2	25.852	0.727
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ALAN	ZT 15	Cry2	29.352	1.038
Controle	ZT 16	cyc	25.646	0.843
Controle	ZT 16	cyc	26.100	0.858
Controle	ZT 16	cyc	25.727	0.846
Controle	ZT 17	cyc	27.952	0.402
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Controle	ZT 19.5	cyc	26.922	0.539
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Controle	ZT 19.5	cyc	29.677	0.594
Controle	ZT 21	cyc	26.979	0.200
Controle	ZT 21	cyc	26.438	0.196
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Controle	ZT 23	cyc	27.766	0.177
Controle	ZT 23	cyc	27.056	0.173
Controle	ZT 23	cyc	27.591	0.176
Controle	ZT 1	cyc	26.987	0.334
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Controle	ZT 1	cyc	27.764	0.343
Controle	ZT 4	cyc	27.335	0.937

Controle	ZT 4	cyc	24.942	0.855
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Controle	ZT 5.5	cyc	27.881	0.455
Controle	ZT 5.5	cyc	26.728	0.436
Controle	ZT 5.5	cyc	25.162	0.411
Controle	ZT 8.5	cyc	27.025	0.089
Controle	ZT 8.5	cyc	NA	
Controle	ZT 8.5	cyc	25.791	0.085
Controle	ZT 11	cyc	27.417	0.059
Controle	ZT 11	cyc	26.086	0.056
Controle	ZT 11	cyc	25.597	0.055
Controle	ZT 13	cyc	26.923	0.081
Controle	ZT 13	cyc	26.359	0.080
Controle	ZT 13	cyc	26.991	0.082
Controle	ZT 15	cyc	26.301	0.990
Controle	ZT 15	cyc	26.845	1.010
Controle	ZT 15	cyc	NA	
ALAN	ZT 0	cyc	27.726	0.533
ALAN	ZT 0	cyc	28.457	0.547
ALAN	ZT 0	cyc	29.443	0.566
ALAN	ZT 1	cyc	26.944	0.652
ALAN	ZT 1	cyc	27.526	0.666
ALAN	ZT 1	cyc	27.911	0.675
ALAN	ZT 2	cyc	26.653	1.151
ALAN	ZT 2	cyc	26.425	1.141
ALAN	ZT 2	cyc	26.535	1.146
ALAN	ZT 3.5	cyc	25.840	0.332
ALAN	ZT 3.5	cyc	25.590	0.329
ALAN	ZT 3.5	cyc	28.543	0.367
ALAN	ZT 5	cyc	28.219	0.407
ALAN	ZT 5	cyc	26.383	0.380
ALAN	ZT 5	cyc	27.361	0.394
ALAN	ZT 7	cyc	27.105	0.940
ALAN	ZT 7	cyc	26.675	0.925
ALAN	ZT 7	cyc	26.976	0.935
ALAN	ZT 9	cyc	27.949	0.446
ALAN	ZT 9	cyc	27.945	0.446
ALAN	ZT 9	cyc	28.089	0.448
ALAN	ZT 12	cyc	26.319	0.734
ALAN	ZT 12	cyc	26.511	0.740
ALAN	ZT 12	cyc	25.810	0.720
ALAN	ZT 13.5	cyc	35.843	0.057

ALAN	ZT 13.5	cyc	27.206	0.043
ALAN	ZT 13.5	cyc	27.297	0.043
ALAN	ZT 16.5	cyc	26.934	0.231
ALAN	ZT 16.5	cyc	26.944	0.231
ALAN	ZT 16.5	cyc	26.746	0.229
ALAN	ZT 19	cyc	26.648	0.218
ALAN	ZT 19	cyc	25.737	0.211
ALAN	ZT 19	cyc	25.979	0.213
ALAN	ZT 21	cyc	27.129	0.041
ALAN	ZT 21	cyc	26.975	0.040
ALAN	ZT 21	cyc	26.488	0.040
Controle	ZT 16	period	27.267	0.798
Controle	ZT 16	period	26.788	0.784
Controle	ZT 16	period	26.800	0.785
Controle	ZT 17	period	27.689	0.689
Controle	ZT 17	period	26.771	0.666
Controle	ZT 17	period	28.390	0.706
Controle	ZT 18	period	27.617	0.693
Controle	ZT 18	period	27.204	0.683
Controle	ZT 18	period	27.927	0.701
Controle	ZT 19.5	period	25.984	0.792
Controle	ZT 19.5	period	24.611	0.750
Controle	ZT 19.5	period	29.371	0.895
Controle	ZT 21	period	25.813	0.574
Controle	ZT 21	period	26.004	0.578
Controle	ZT 21	period	24.759	0.551
Controle	ZT 23	period	25.711	0.581
Controle	ZT 23	period	25.869	0.584
Controle	ZT 23	period	26.662	0.602
Controle	ZT 1	period	27.034	0.631
Controle	ZT 1	period	26.343	0.615
Controle	ZT 1	period	26.751	0.625
Controle	ZT 4	period	NA	
Controle	ZT 4	period	25.648	0.834
Controle	ZT 4	period	27.218	0.885
Controle	ZT 5.5	period	26.942	0.568
Controle	ZT 5.5	period	26.634	0.562
Controle	ZT 5.5	period	25.406	0.536
Controle	ZT 8.5	period	26.901	0.274
Controle	ZT 8.5	period	NA	
Controle	ZT 8.5	period	25.150	0.257
Controle	ZT 11	period	26.461	0.180
Controle	ZT 11	period	26.672	0.181

Controle	ZT 11	period	24.768	0.168
Controle	ZT 13	period	25.863	0.281
Controle	ZT 13	period	26.490	0.288
Controle	ZT 13	period	26.181	0.285
Controle	ZT 15	period	27.389	0.993
Controle	ZT 15	period	27.799	1.007
Controle	ZT 15	period	NA	
ALAN	ZT 16	period	28.137	0.783
ALAN	ZT 16	period	28.702	0.798
ALAN	ZT 16	period	30.185	0.840
ALAN	ZT 17	period	27.824	0.735
ALAN	ZT 17	period	28.451	0.752
ALAN	ZT 17	period	28.657	0.757
ALAN	ZT 18	period	27.739	1.122
ALAN	ZT 18	period	27.576	1.115
ALAN	ZT 18	period	27.479	1.111
ALAN	ZT 19.5	period	25.779	0.622
ALAN	ZT 19.5	period	25.150	0.607
ALAN	ZT 19.5	period	27.481	0.663
ALAN	ZT 21	period	27.265	0.745
ALAN	ZT 21	period	26.740	0.730
ALAN	ZT 21	period	26.347	0.720
ALAN	ZT 23	period	27.289	1.116
ALAN	ZT 23	period	26.893	1.100
ALAN	ZT 23	period	26.914	1.101
ALAN	ZT 1	period	26.940	0.728
ALAN	ZT 1	period	27.970	0.756
ALAN	ZT 1	period	27.923	0.754
ALAN	ZT 4	period	26.796	0.629
ALAN	ZT 4	period	27.126	0.636
ALAN	ZT 4	period	25.690	0.603
ALAN	ZT 5.5	period	26.692	0.538
ALAN	ZT 5.5	period	26.591	0.536
ALAN	ZT 5.5	period	26.854	0.541
ALAN	ZT 8.5	period	26.117	0.504
ALAN	ZT 8.5	period	25.979	0.501
ALAN	ZT 8.5	period	25.459	0.491
ALAN	ZT 11	period	25.704	0.341
ALAN	ZT 11	period	25.363	0.337
ALAN	ZT 11	period	25.572	0.340
ALAN	ZT 13	period	25.945	0.150
ALAN	ZT 13	period	26.443	0.153

ALAN	ZT 13	period	26.174	0.151
ALAN	ZT 15	period	26.150	0.790
ALAN	ZT 15	period	26.828	0.810
ALAN	ZT 15	period	27.975	0.845
Controle	ZT 1	CT448	27.722	1.0192
Controle	ZT 1	CT448	26.995	0.9925
Controle	ZT 1	CT448	28.945	1.0642
Controle	ZT 16	CT448	29.950	0.9724
Controle	ZT 16	CT448	30.703	0.9969
Controle	ZT 16	CT448	31.745	1.0307
Controle	ZT 15	CT448	29.478	0.0078
Controle	ZT 15	CT448	29.851	0.0079
Controle	ZT 15	CT448	29.925	0.0079
Controle	ZT 17	CT448	30.058	2.8753
Controle	ZT 17	CT448	29.745	2.8454
Controle	ZT 17	CT448	30.022	2.8719
Controle	ZT 18	CT448	31.674	0.6879
Controle	ZT 18	CT448	31.798	0.6906
Controle	ZT 18	CT448	30.974	0.6727
Controle	ZT 19.5	CT448	30.918	0.8485
Controle	ZT 19.5	CT448	30.741	0.8436
Controle	ZT 19.5	CT448	29.992	0.8230
Controle	ZT 21	CT448	29.805	0.4928
Controle	ZT 21	CT448	29.003	0.4795
Controle	ZT 21	CT448	32.093	0.5306
Controle	ZT 23	CT448	28.737	0.1803
Controle	ZT 23	CT448	29.579	0.1856
Controle	ZT 23	CT448	29.945	0.1879
Controle	ZT 4	CT448	30.767	0.6102
Controle	ZT 4	CT448	29.550	0.5861
Controle	ZT 4	CT448	30.163	0.5982
Controle	ZT 5.5	CT448	29.214	0.4008
Controle	ZT 5.5	CT448	29.431	0.4038
Controle	ZT 5.5	CT448	29.743	0.4081
Controle	ZT 8.5	CT448	29.079	0.1933
Controle	ZT 8.5	CT448	28.243	0.1877
Controle	ZT 8.5	CT448	30.432	0.2022
Controle	ZT 11	CT448	30.058	0.1488
Controle	ZT 11	CT448	29.284	0.1450
Controle	ZT 11	CT448	28.328	0.1402
Controle	ZT 13	CT448	28.768	0.3236
Controle	ZT 13	CT448	27.045	0.3042
Controle	ZT 13	CT448	28.798	0.3240

ALAN	ZT 17	CT448	30.901	0.9938
ALAN	ZT 17	CT448	31.102	1.0002
ALAN	ZT 17	CT448	31.071	0.9992
ALAN	ZT 18	CT448	32.082	0.9842
ALAN	ZT 18	CT448	31.534	0.9674
ALAN	ZT 18	CT448	31.554	0.9680
ALAN	ZT 19.5	CT448	31.728	1.5780
ALAN	ZT 19.5	CT448	31.590	1.5711
ALAN	ZT 19.5	CT448	30.894	1.5365
ALAN	ZT 16	CT448	30.626	0.1745
ALAN	ZT 16	CT448	28.934	0.1649
ALAN	ZT 16	CT448	28.787	0.1640
ALAN	ZT 21	CT448	31.650	0.3675
ALAN	ZT 21	CT448	28.890	0.3354
ALAN	ZT 21	CT448	30.709	0.3566
ALAN	ZT 23	CT448	29.461	0.3397
ALAN	ZT 23	CT448	31.985	0.3688
ALAN	ZT 23	CT448	30.251	0.3488
ALAN	ZT 15	CT448	29.769	0.0060
ALAN	ZT 15	CT448	30.777	0.0062
ALAN	ZT 15	CT448	32.884	0.0066
ALAN	ZT 1	CT448	29.571	0.4826
ALAN	ZT 1	CT448	29.941	0.4886
ALAN	ZT 1	CT448	30.330	0.4950
ALAN	ZT 4	CT448	30.965	0.4220
ALAN	ZT 4	CT448	29.889	0.4074
ALAN	ZT 4	CT448	30.623	0.4174
ALAN	ZT 5.5	CT448	30.160	0.1838
ALAN	ZT 5.5	CT448	29.812	0.1817
ALAN	ZT 5.5	CT448	30.882	0.1882
ALAN	ZT 8.5	CT448	28.418	0.2118
ALAN	ZT 8.5	CT448	30.344	0.2262
ALAN	ZT 8.5	CT448	29.578	0.2205
ALAN	ZT 11	CT448	29.355	0.1324
ALAN	ZT 11	CT448	29.349	0.1324
ALAN	ZT 11	CT448	29.114	0.1313
ALAN	ZT 13	CT448	29.600	0.0888
ALAN	ZT 13	CT448	28.461	0.0854
ALAN	ZT 13	CT448	28.946	0.0868
Controle	ZT 23	Trypsin	30.144	0.9944
Controle	ZT 23	Trypsin	30.207	0.9964
Controle	ZT 23	Trypsin	30.593	1.0092

Controle	ZT0	Trypsin	29.695	1.3578
Controle	ZT0	Trypsin	29.752	1.3604
Controle	ZT0	Trypsin	31.075	1.4209
Controle	ZT1	Trypsin	29.377	0.4772
Controle	ZT1	Trypsin	31.361	0.5094
Controle	ZT1	Trypsin	31.103	0.5052
Controle	ZT2	Trypsin	30.184	0.5158
Controle	ZT2	Trypsin	30.454	0.5204
Controle	ZT2	Trypsin	29.593	0.5057
Controle	ZT3,5	Trypsin	30.227	0.1496
Controle	ZT3,5	Trypsin	30.946	0.1532
Controle	ZT3,5	Trypsin	32.884	0.1628
Controle	ZT5	Trypsin	28.966	0.1017
Controle	ZT5	Trypsin	30.701	0.1078
Controle	ZT5	Trypsin	28.080	0.0986
Controle	ZT7	Trypsin	29.928	0.0466
Controle	ZT7	Trypsin	30.227	0.0471
Controle	ZT7	Trypsin	31.408	0.0489
Controle	ZT9	Trypsin	27.372	0.2908
Controle	ZT9	Trypsin	28.739	0.3053
Controle	ZT9	Trypsin	28.886	0.3069
Controle	ZT 12	Trypsin	30.666	0.4822
Controle	ZT 12	Trypsin	28.725	0.4517
Controle	ZT 12	Trypsin	30.492	0.4795
Controle	ZT 13.5	Trypsin	29.447	0.5183
Controle	ZT 13.5	Trypsin	27.926	0.4915
Controle	ZT 13.5	Trypsin	27.195	0.4787
Controle	ZT 16,5	Trypsin	28.422	0.1572
Controle	ZT 16,5	Trypsin	28.927	0.1600
Controle	ZT 16,5	Trypsin	30.319	0.1677
Controle	ZT 19	Trypsin	27.618	0.2647
Controle	ZT 19	Trypsin	28.034	0.2686
Controle	ZT 19	Trypsin	27.553	0.2640
Controle	ZT 21	Trypsin	28.095	0.1996
Controle	ZT 21	Trypsin	27.492	0.1954
Controle	ZT 21	Trypsin	28.219	0.2005
ALAN	ZT 23	Trypsin	27.934	1.0031
ALAN	ZT 23	Trypsin	27.820	0.9990
ALAN	ZT 23	Trypsin	27.789	0.9979
ALAN	ZT0	Trypsin	27.538	0.7139
ALAN	ZT0	Trypsin	28.792	0.7464
ALAN	ZT0	Trypsin	28.475	0.7382
ALAN	ZT1	Trypsin	29.127	0.8690

ALAN	ZT1	Trypsin	27.315	0.8149
ALAN	ZT1	Trypsin	29.594	0.8829
ALAN	ZT2	Trypsin	29.185	0.9963
ALAN	ZT2	Trypsin	29.703	1.0140
ALAN	ZT2	Trypsin	28.860	0.9852
ALAN	ZT3,5	Trypsin	34.750	0.0721
ALAN	ZT3,5	Trypsin	25.763	0.0534
ALAN	ZT3,5	Trypsin	27.734	0.0575
ALAN	ZT5	Trypsin	28.048	0.2461
ALAN	ZT5	Trypsin	28.910	0.2536
ALAN	ZT5	Trypsin	26.670	0.2340
ALAN	ZT7	Trypsin	26.496	0.4383
ALAN	ZT7	Trypsin	26.993	0.4465
ALAN	ZT7	Trypsin	28.503	0.4715
ALAN	ZT9	Trypsin	29.143	0.1016
ALAN	ZT9	Trypsin	28.728	0.1002
ALAN	ZT9	Trypsin	30.110	0.1050
ALAN	ZT 12	Trypsin	29.953	0.2603
ALAN	ZT 12	Trypsin	28.965	0.2517
ALAN	ZT 12	Trypsin	30.372	0.2639
ALAN	ZT 13.5	Trypsin	30.065	0.0845
ALAN	ZT 13.5	Trypsin	29.601	0.0832
ALAN	ZT 13.5	Trypsin	30.407	0.0854
ALAN	ZT 16,5	Trypsin	29.498	0.1523
ALAN	ZT 16,5	Trypsin	26.741	0.1381
ALAN	ZT 16,5	Trypsin	29.115	0.1504
ALAN	ZT 19	Trypsin	30.578	0.0274
ALAN	ZT 19	Trypsin	29.776	0.0267
ALAN	ZT 19	Trypsin	29.241	0.0262
ALAN	ZT 21	Trypsin	28.137	0.1607
ALAN	ZT 21	Trypsin	26.849	0.1533
ALAN	ZT 21	Trypsin	25.999	0.1485

Supplementary Table 2

Raw data of activity of two different types of proteases (chymotrypsin and trypsin) over time.

Protease	Treatment	Zeitgeber Time	Activity [mAU/ s/ µg protein]
Chymotrypsin	Contr	ZT 15	0.01006711
	Contr	ZT 15	0.010166
	Contr	ZT 15	0.0071229
	Contr	ZT 16	0.01107858
	Contr	ZT 16	0.01056865
	Contr	ZT 16	0.01169624
	Contr	ZT 17	0.01184764
	Contr	ZT 17	0.01301333
	Contr	ZT 17	0.01299798
	Contr	ZT 20	0.01034574
	Contr	ZT 20	0.00903092
	Contr	ZT 20	0.01117097
	ALAN	ZT 15	0.01535707
	ALAN	ZT 15	0.01336508
	ALAN	ZT 15	0.01739023
	ALAN	ZT 16	0.01503861
	ALAN	ZT 16	0.01232817
	ALAN	ZT 16	0.01621517
	ALAN	ZT 17	0.01241952
	ALAN	ZT 17	0.02316434
	ALAN	ZT 17	0.01840462
	ALAN	ZT 20	0.01408379
	ALAN	ZT 20	0.01450769
	ALAN	ZT 20	0.02056967

Trypsin	Contr	ZT 15	0.00774797
	Contr	ZT 15	0.00821306
	Contr	ZT 15	0.00677426
	Contr	ZT 16	0.00919814
	Contr	ZT 16	0.00838548
	Contr	ZT 16	0.00602572
	Contr	ZT 17	0.00852878
	Contr	ZT 17	0.00806703
	Contr	ZT 17	0.0099329
	Contr	ZT 20	0.00867645
	Contr	ZT 20	0.00785586
	Contr	ZT 20	0.00662812

ALAN	ZT 15	0.00667613
ALAN	ZT 15	0.00632989
ALAN	ZT 15	0.00631351
ALAN	ZT 16	0.00663565
ALAN	ZT 16	0.0051255
ALAN	ZT 16	0.00710079
ALAN	ZT 17	0.00690706
ALAN	ZT 17	0.0093473
ALAN	ZT 17	0.00769169
ALAN	ZT 20	0.00677134
ALAN	ZT 20	0.00457954
ALAN	ZT 20	0.00965859

Supplementary Table 3:

Juvenile somatic growth rates of two *Daphnia magna* clones in two different light treatments with different food.

Daphnia clone	Light treatment	Food treatment	Growth rate [d ⁻¹]
CH-H-5	Control	Scenedesmus	0.541
	Control	Scenedesmus	0.588
	Control	Scenedesmus	0.558
	Control	PCC7806 Mut	0.533
	Control	PCC7806 Mut	0.527
	Control	PCC7806 Mut	0.518
	Control	BM 25	0.459
	Control	BM 25	0.464
	Control	BM 25	0.480
	ALAN	Scenedesmus	0.568
	ALAN	Scenedesmus	0.553
	ALAN	Scenedesmus	0.588
	ALAN	PCC7806 Mut	0.519
	ALAN	PCC7806 Mut	0.522
	ALAN	PCC7806 Mut	0.552
	ALAN	BM 25	0.553
	ALAN	BM 25	0.507
	ALAN	BM 25	0.528
FR-LR 6-1	Control	Scenedesmus	0.378
	Control	Scenedesmus	0.402
	Control	Scenedesmus	0.396
	Control	BM 25	0.322
	Control	BM 25	0.333
	Control	BM 25	0.328
	ALAN	Scenedesmus	0.390
	ALAN	Scenedesmus	0.437
	ALAN	Scenedesmus	0.413
	ALAN	BM 25	0.372
	ALAN	BM 25	0.397
	ALAN	BM 25	0.373

References

Schwarzenberger A., Handke N.H., Romer T. & Wacker A. (2021). Geographic clines in *Daphnia magna*'s circadian clock gene expression: Local adaptation to photoperiod. *Zoology*, 125856.