SUPPLEMENTARY FIGURES AND TABLES

To accompany the manuscript "Effects of surface water interactions with karst groundwater on microbial biomass, metabolism, and production"

Authors: Adrian Barry-Sosa[1], Madison K. Flint[2], Justin C. Ellena[1], Jonathan B. Martin[2], Brent C. Christner[1]

[1]Department of Microbiology and Cell Science, University of Florida, Gainesville, 32611, USA
[2]Department of Geological Sciences, University of Florida, Gainesville, 32611, USA

Date	**Samples collected (Location)**	**Hydrological stage (Discharge; gage height, if Applicable)***
6 Dec 2018	Cell Counts, YSI (GBS-1)	48.1 $m^3 s^{-1}$, 0.3 m (GBS-1)
8 Apr 2019	Cell Counts, YSI (LRS)	205.3 $m^3 s^{-1}$, 3.38 m (LRS)
17 Apr 2019	Cell Counts, YSI (HS, DE)	N.A. (HS, DE)
14 Jun 2019	Cell Counts, YSI (DE, MS)	N.A. (DE, MS)
15 Jun 2019	Cell Counts, YSI (BH)	N.A. (BH)
28 Jun 2019	Cell Counts, YSI (PKS)	~15.7 $m^3 s^{-1}$, gage heigh N.d. (PKS)
14 Aug 2019	Cell Counts, YSI (GBS-1, GBS-2, RS, RR)	40.5 $m^3 s^{-1}$, 0.3 m (GBS-1 and 2) 16.1 $m^3 s^{-1}$, 12.1 m (RS); 17.5 $m^3 s^{-1}$, 1.1 m (RR)
27 Feb 2020	Cell Counts, YSI (LRS)	188 $m^3 s^{-1}$, 2.9 m (LRS)
23 Jul 2020	Cell Counts (MB)	4.3 $m^3 s^{-1}$, 2.88 m (MB)
23 Oct 2020	YSI, ATP (DE, MS)	N.A. (DE, MS)
21 Nov 2020	YSI, ATP (PKS, LRS, MS, HS, DE)	N.d. (PKS) 103.9 $m^3 s^{-1}$, 1.9 m (LRS); N.A. (MS, HS, DE)
30 Jan 2021	Cell Counts, YSI, ATP (RS, RR)	3.2 $m^3 s^{-1}$, 11.2 m (RS); 5.9 $m^3 s^{-1}$, 0.7 m (RR)
28 Feb 2021	Cell Counts, YSI, ATP (MB)	-1.3 $m^3 s^{-1}$, 8.2 m (MB)
4 Mar 2021	YSI, ATP (HS)	N.A. (HS)
11 Mar 2021	YSI, ATP (RR)	27 $m^3 s^{-1}$, 1.5 m (RR)
10 Apr 2021	Cell Counts, YSI (DE)	N.A. (DE)
28 Jul 2021	YSI, Rad, Ox. incubation (DE, HS)	N.A. (DE, HS)
10 Aug 2021	YSI, ATP (PKS, CS)	N.A. (PKS), N.A. (CS)
25 Aug 2021	YSI, ATP (BH)	N.A. (BH)
13 Sept 2021	YSI, Ox. incubation (DE)	N.A. (DE)
28 Oct 2021	YSI, ATP (GBS-1, GBS-2, MB, PKS)	44.2 $m^3 s^{-1}$, 0.4 m (GBS-1 and 2) N.d. (PKS)
4 Nov 2021	YSI (DE, RS, RR); DIC (DE); Cell counts, Rad (RS, RR)	7.44 $m^3 s^{-1}$,11.5 m (RS); 15.71 $m^3 s^{-1}$, 1.1 m (RR); N.A. (DE)
1 Dec 2021	YSI, Ox. incubation (RS, RR)	7.9 $m^3 s^{-1}$, 11.6 m (RS); 14.9 $m^3 s^{-1}$, 1.1 m (RR)
26 Jan 2022	YSI, DIC (RS, RR, HS)	N.A. (HS); 6.6 $m^3 s^{-1}$, 11.5 m (RS); 8.9 $m^3 s^{-1}$, 0.9 (RR)
7 Mar 2022	YSI, Rad, Ox. incubation (MB)	4.30 $m^3 s^{-1}$, 2.85 m (MB)
31 Mar 2022	YSI, DIC, Ox. incubation (MB)	4.8 $m^3 s^{-1}$, 4.7 m (MB)
8 Apr 2022	YSI, DIC, Ox. incubation (RS)	37.9 $m^3 s^{-1}$, 12.9 m (RS)
21 Apr 2022	YSI, DIC, POC (DE, HS)	N.A. (DE, HS)
2 Jun 2022	YSI, DIC, POC (RS, RR)	4.6 $m^3 s^{-1}$, 11.3 m (RS); 11.1 $m^3 s^{-1}$ gage height N.d (RR)
12 Jul 2022	Cell counts, YSI, Rad, POC (MB)	3.09 $m^3 s^{-1}$, 2.7 m (MB)

22 Sep 2022	YSI, DIC, Rad, POC, Ox. incubation (RS)	37.66 m^3 s^{-1}, 12.8 m (RS)
27 Sep 2022	YSI, DIC, Rad, POC, Ox. incubation (RR)	28 m^3 s^{-1}, 1.5 m (RR)
1 Dec 2022	Cell Counts, YSI, DIC, Rad, Ox. incubation (MB)	3.14 m^3 $s^{-}1$, 2.45 m (MB)

Table S1. List of sampled dates, indicating the specific samples taken at each location. *Hydrological data for each location retrieved from the following USGS monitoring stations: GBS-1 and 2 02322500^{+}, LRS 02320500^{+}, MB 02319302, RR 02321958 and RS 02321898. For PKS, the SRWMD station 02320048 was used. Stations marked with $^{+}$ indicates that the monitoring station was not located at the sampling location, so the closest monitoring station at the nearby river was used instead. Underlined locations denote times when the flow was high (RR and RS) or samples collected during a reversal (MB and PKS). Acronyms: MB: Madison Blue Spring; PKS: Peacock Spring; LRS: Little River Spring; DE: Devil's Eye Spring; HS: Head Spring; BH: Blue Hole Spring; MS: Mission Spring; CS: Coffee Spring. GBS: Gilchrist Blue Springs; RS: Santa Fe River Sink; RR: Santa Fe River Rise. YSI: Measurements using the multiparameter YSI ProDSS probe; DIC: Samples for dissolved inorganic carbon consumption measurements; POC: Samples for measuring particulate organic carbon; Rad: Samples for radioisotopic incubations, Ox. Incubation: samples for oxygen production measurements; ATP: Samples for measuring ATP concentrations.

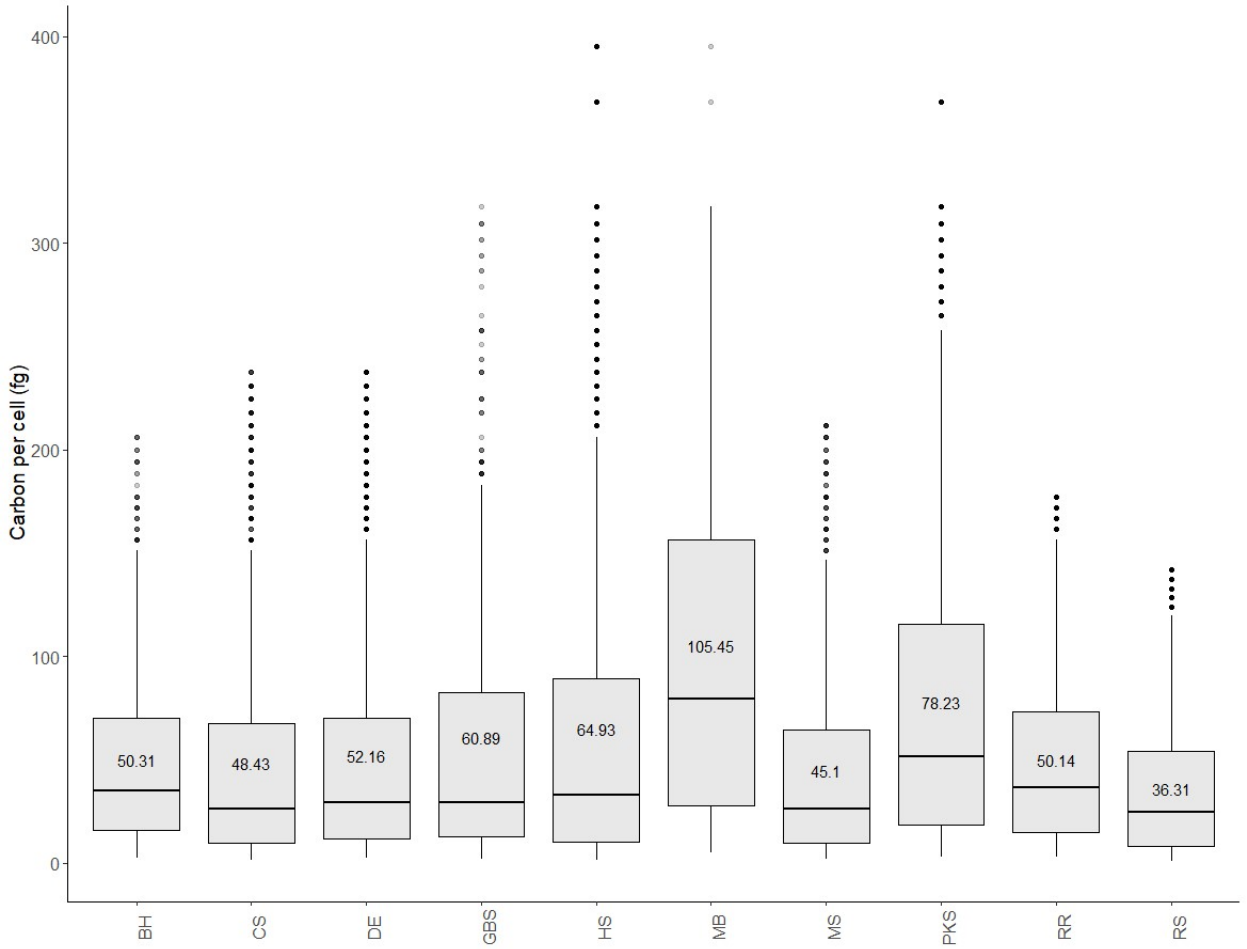


Figure S1. Cell Carbon per cell. Numbers within the box plot indicate the average values.

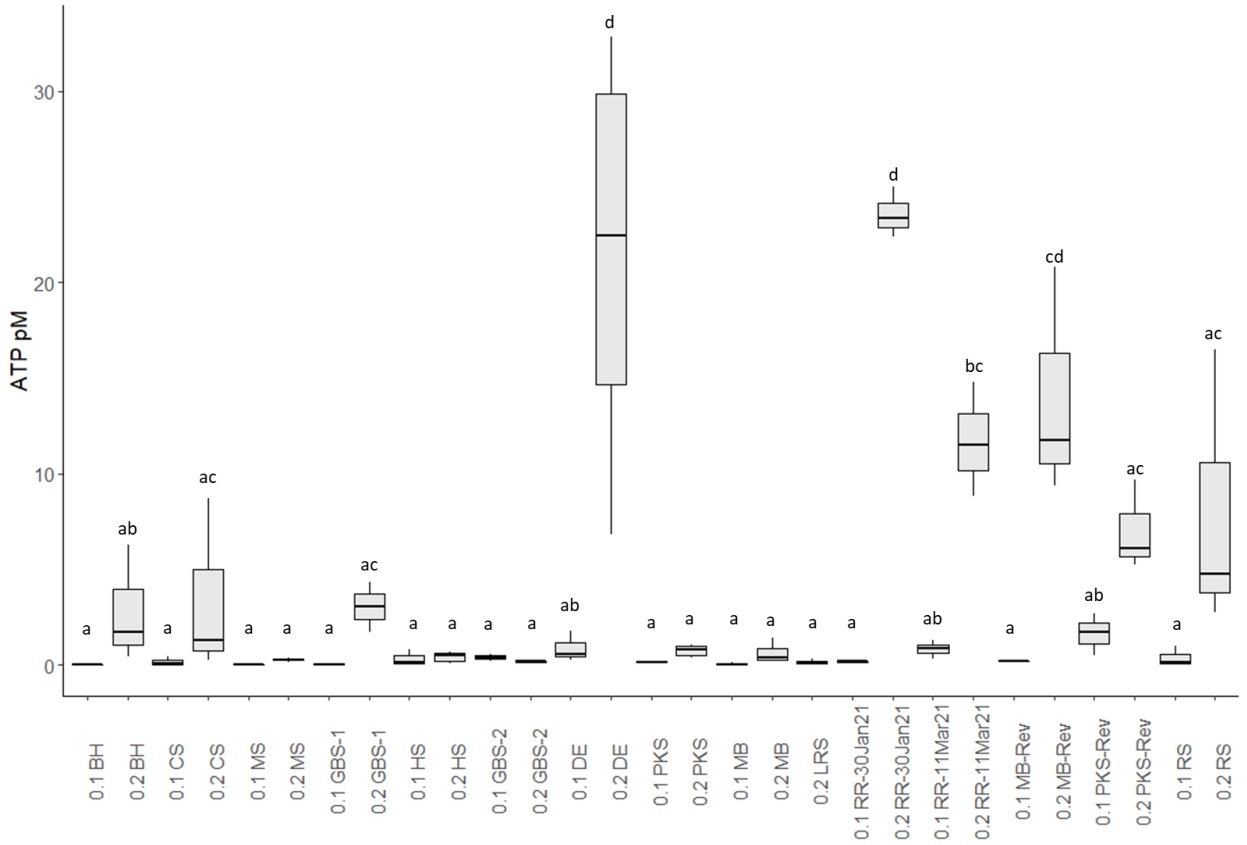
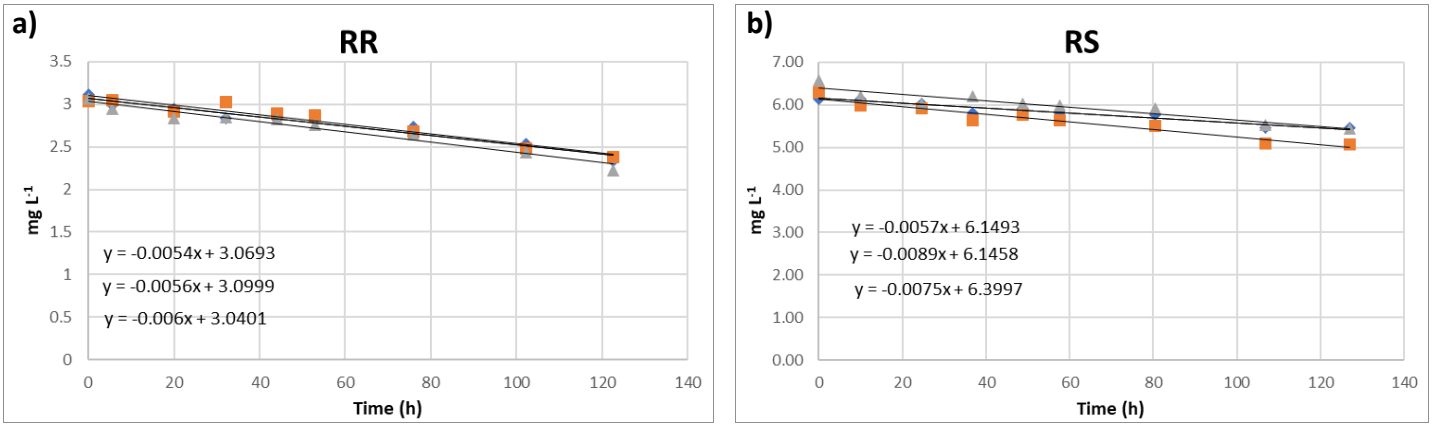
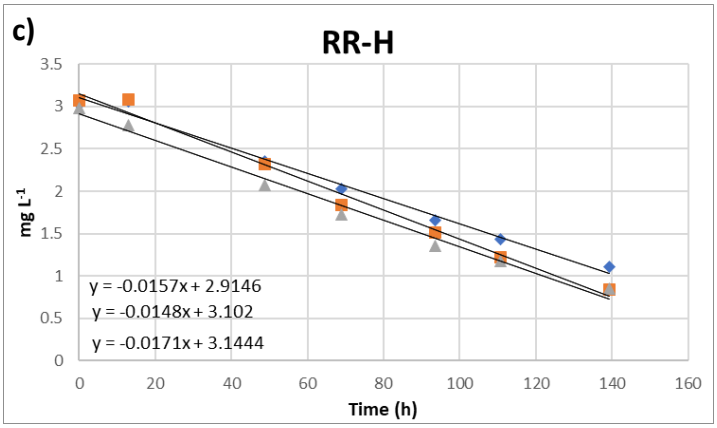
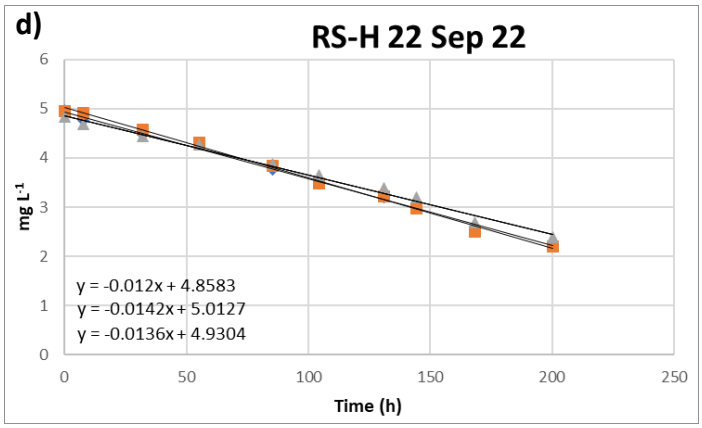
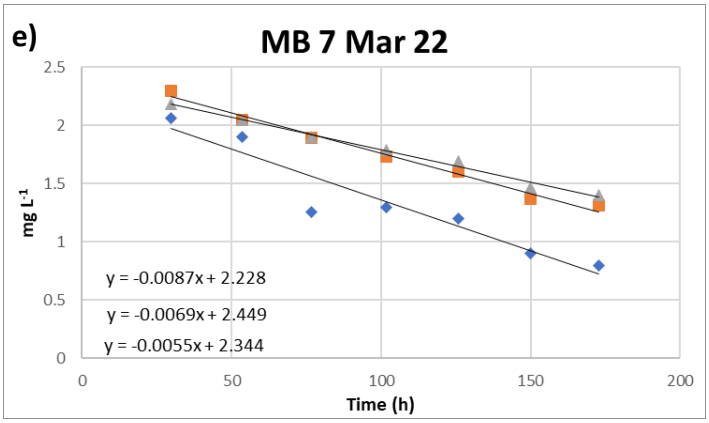


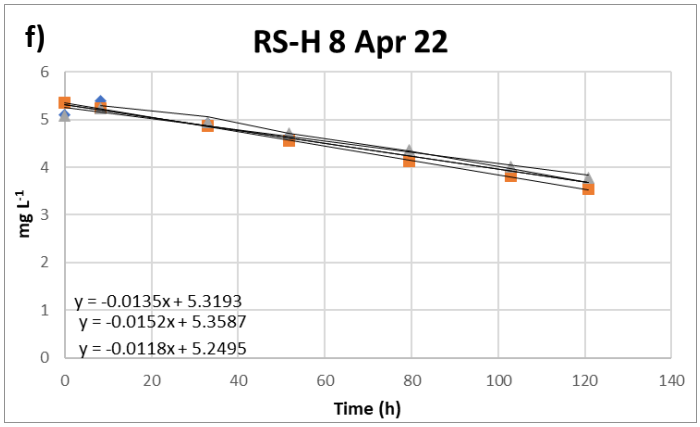
Figure S2. Bulk ATP concentration measured at each location in the 0.1 and 0.2 µm fraction.

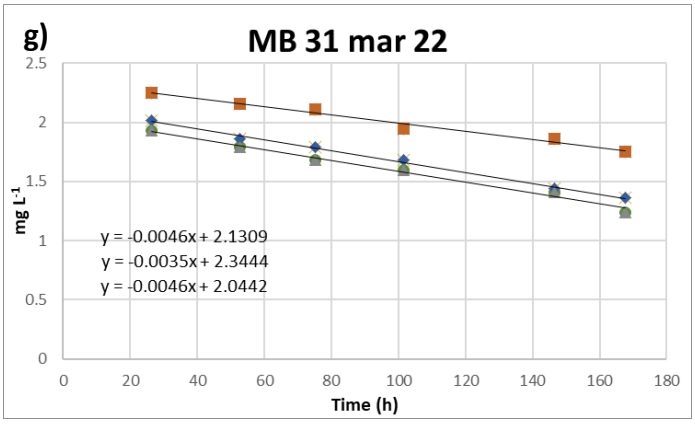


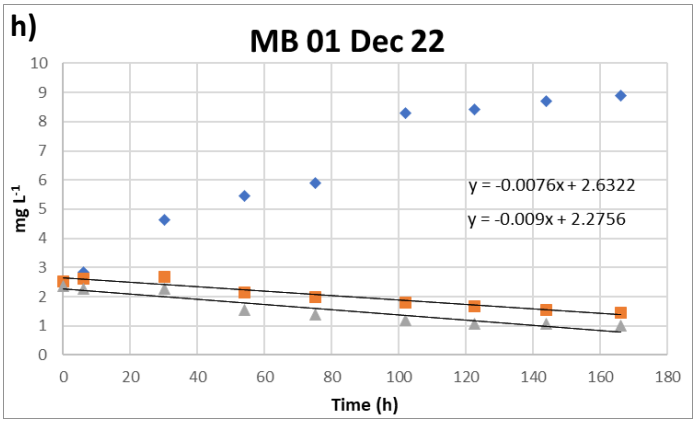

c)
RR-H
mg L-1
y = -0.0157x + 2.9146
y = -0.0148x + 3.102
y = -0.0171x + 3.1444
Time (h)


d)
RS-H 22 Sep 22
mg L-1
y = -0.012x + 4.8583
y = -0.0142x + 5.0127
y = -0.0136x + 4.9304
Time (h)


e)
MB 7 Mar 22
mg L-1
y = -0.0087x + 2.228
y = -0.0069x + 2.449
y = -0.0055x + 2.344
Time (h)


f)
RS-H 8 Apr 22
mg L-1
y = -0.0135x + 5.3193
y = -0.0152x + 5.3587
y = -0.0118x + 5.2495
Time (h)


g)
MB 31 mar 22
mg L-1
y = -0.0046x + 2.1309
y = -0.0035x + 2.3444
y = -0.0046x + 2.0442
Time (h)


h)
MB 01 Dec 22
mg L-1
y = -0.0076x + 2.6322
y = -0.009x + 2.2756
Time (h)

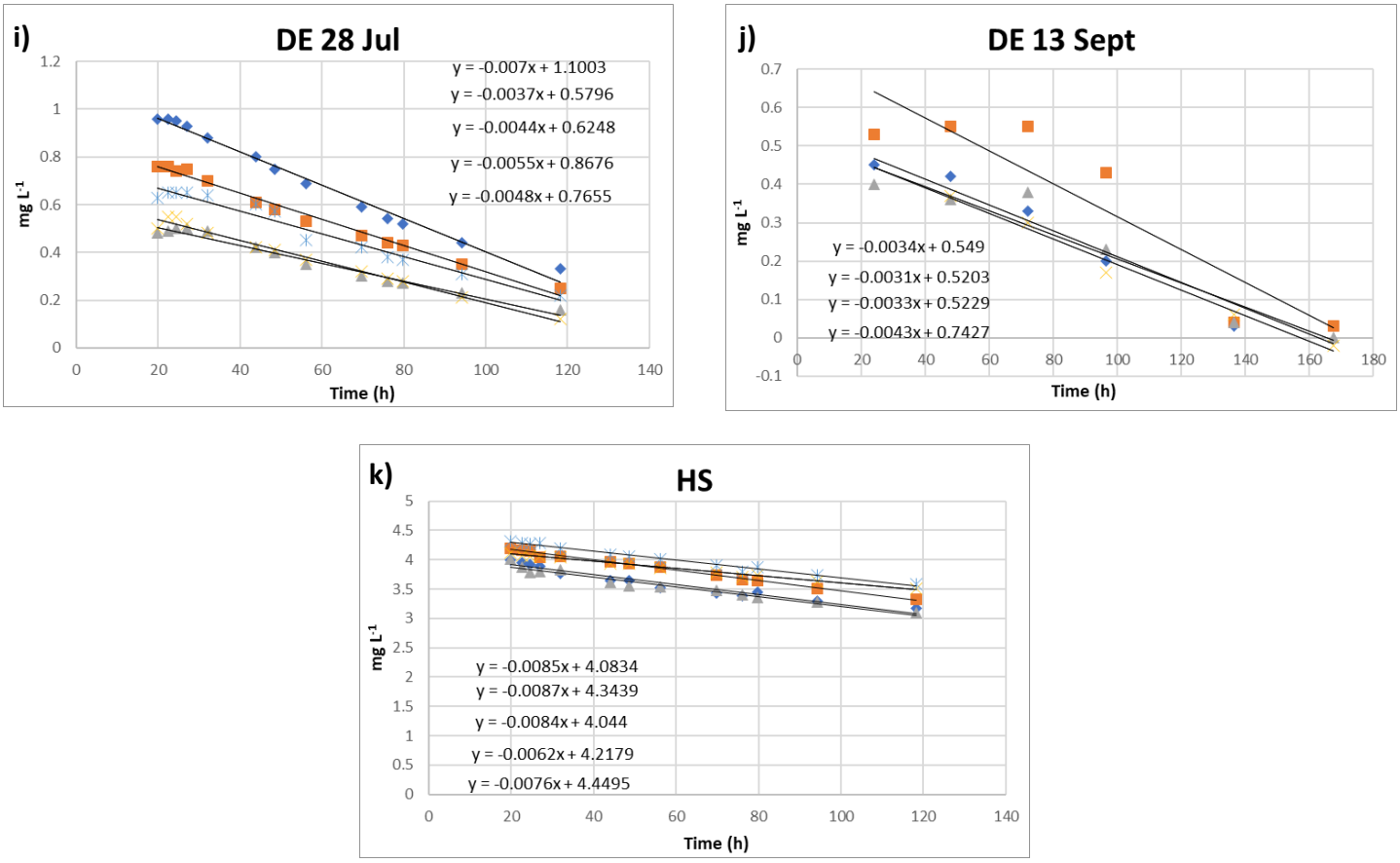
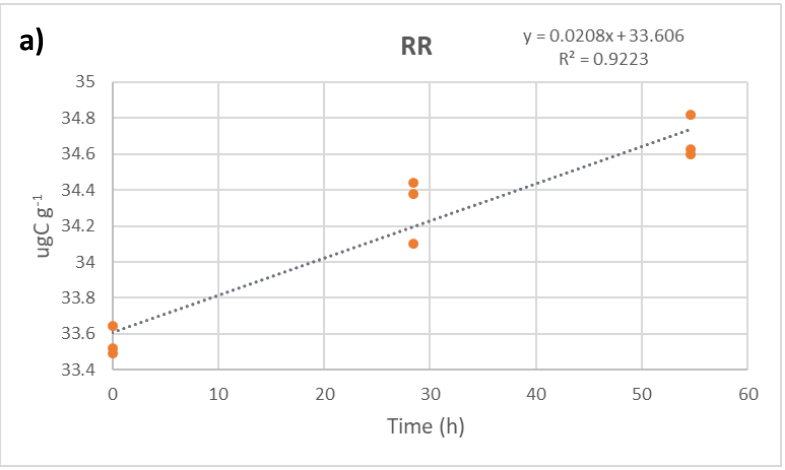
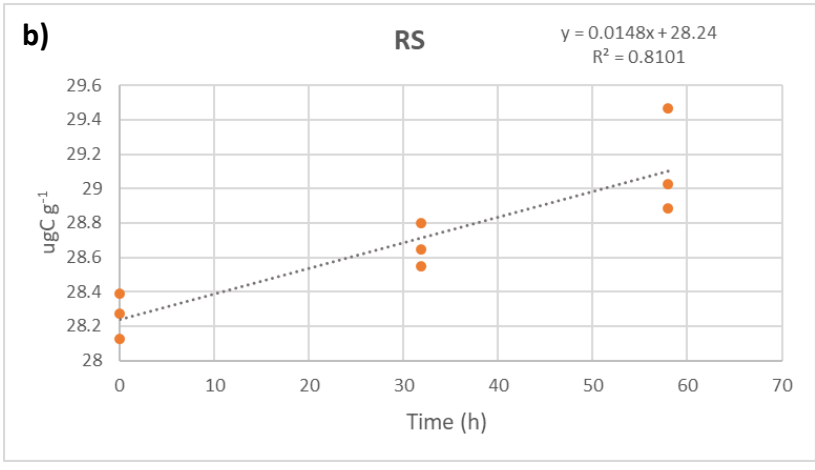
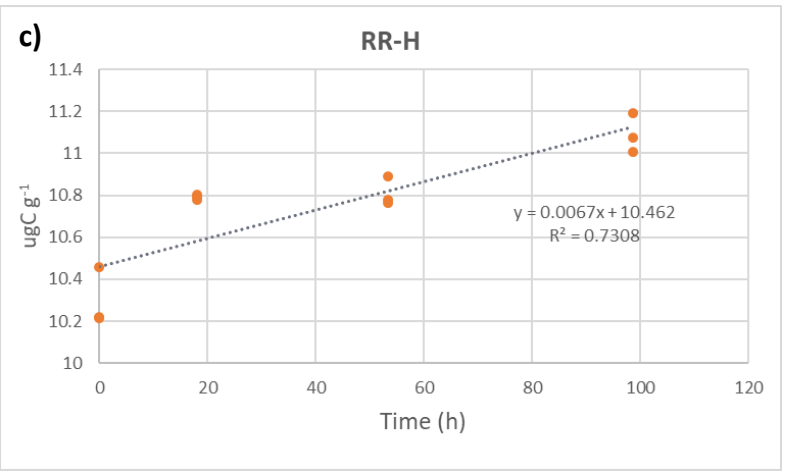
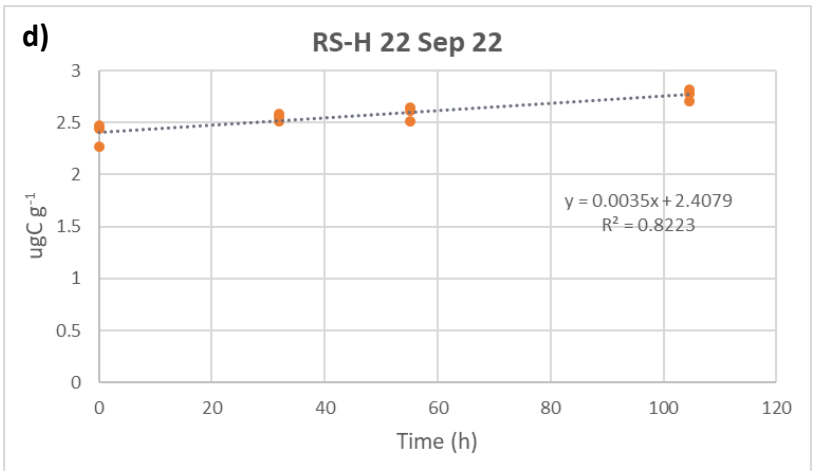


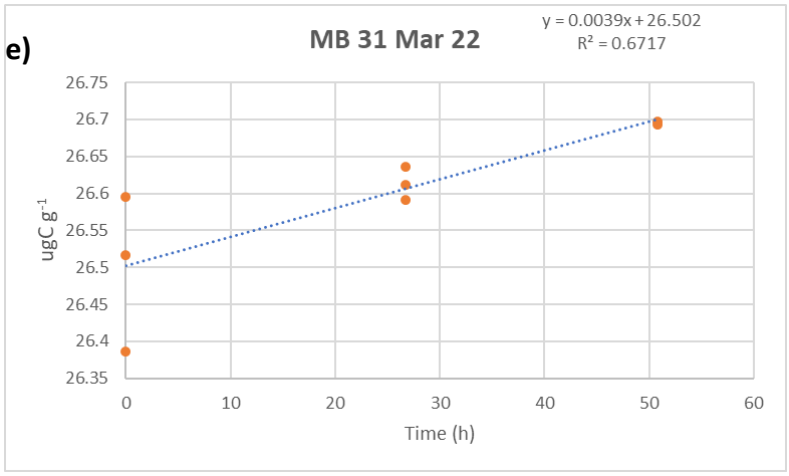
Figure S3. Individualized oxygen consumption rates (In mg of oxygen per liter).

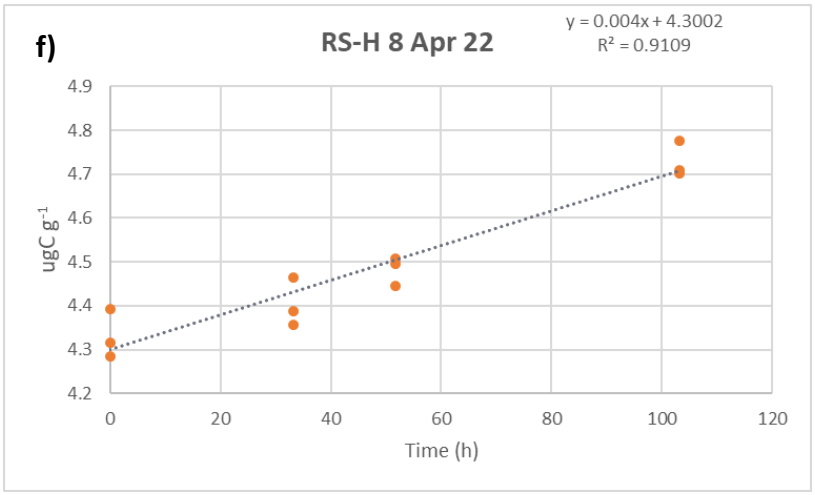


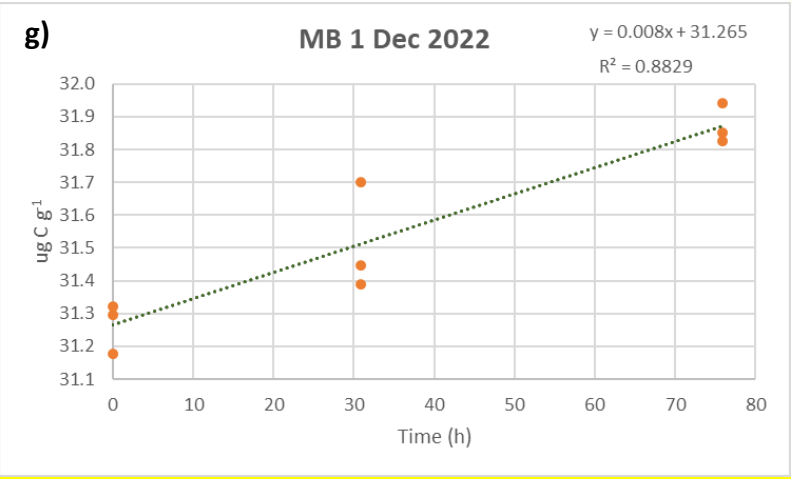


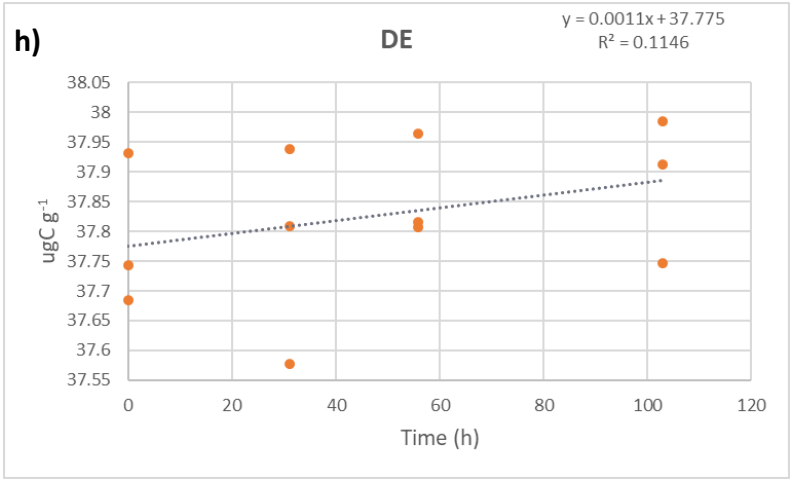

c)
RR-H
y = 0.0067x + 10.462
R² = 0.7308
ugC g-1
Time (h)


d)
RS-H 22 Sep 22
y = 0.0035x + 2.4079
R² = 0.8223
ugC g-1
Time (h)


e)
MB 31 Mar 22
y = 0.0039x + 26.502
R² = 0.6717
ugC g-1
Time (h)


f)
RS-H 8 Apr 22
y = 0.004x + 4.3002
R² = 0.9109
ugC g-1
Time (h)


g)
MB 1 Dec 2022
y = 0.008x + 31.265
R² = 0.8829
ug C g-1
Time (h)


h)
DE
y = 0.0011x + 37.775
R² = 0.1146
ugC g-1
Time (h)

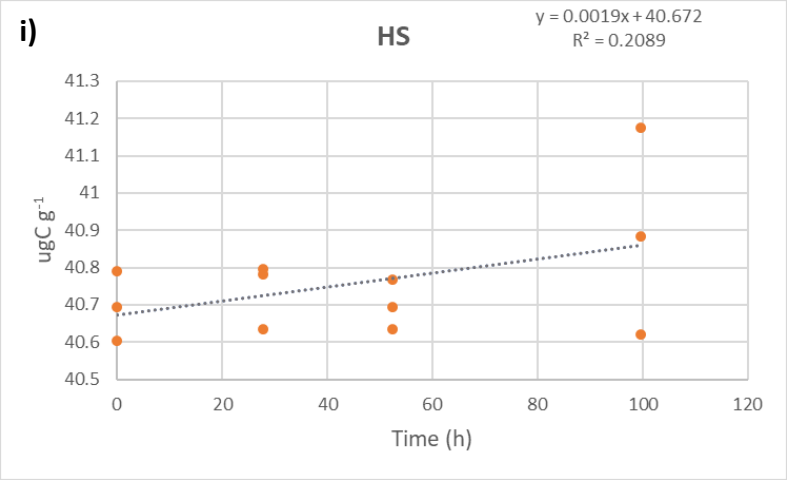


Figure S4. Individualized DIC production rates.

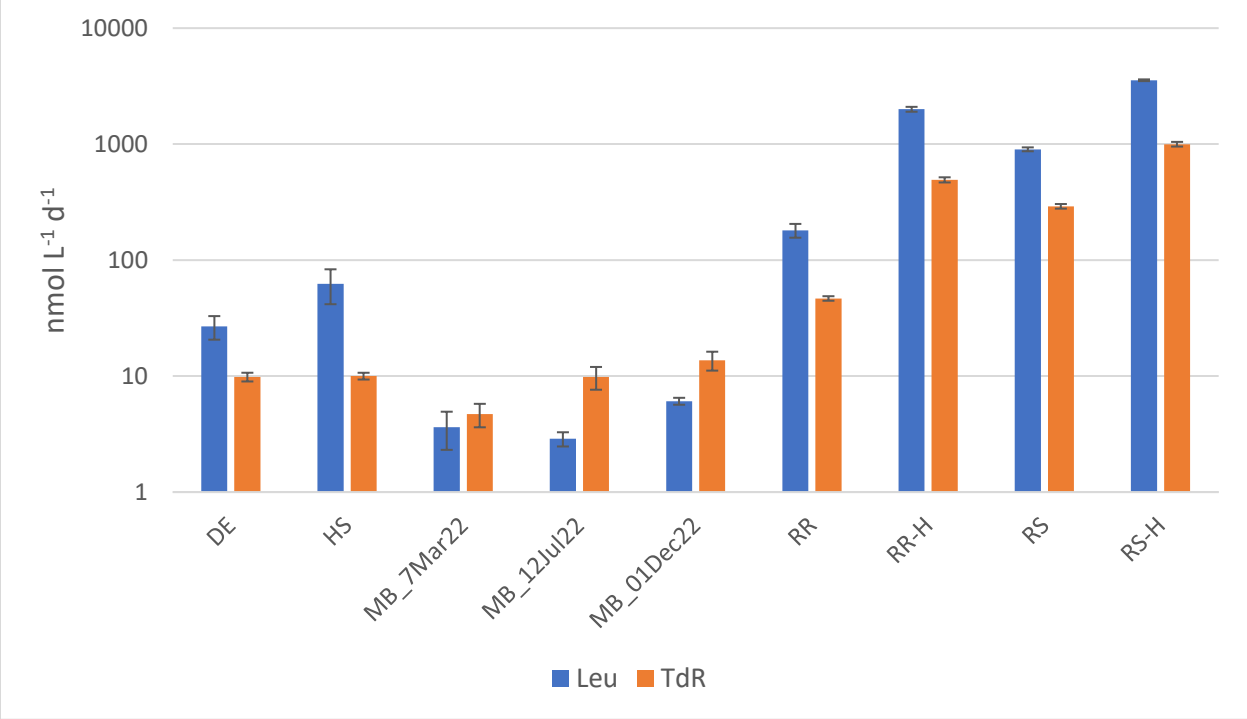


Figure S5. Bulk molar incorporation rates of ^{3}H-leucine and ^{3}H-thymidine. The H at sink-rise samples (RR and RS) indicates samples taken during high flow, to differentiate them from the others, taken at low flow.

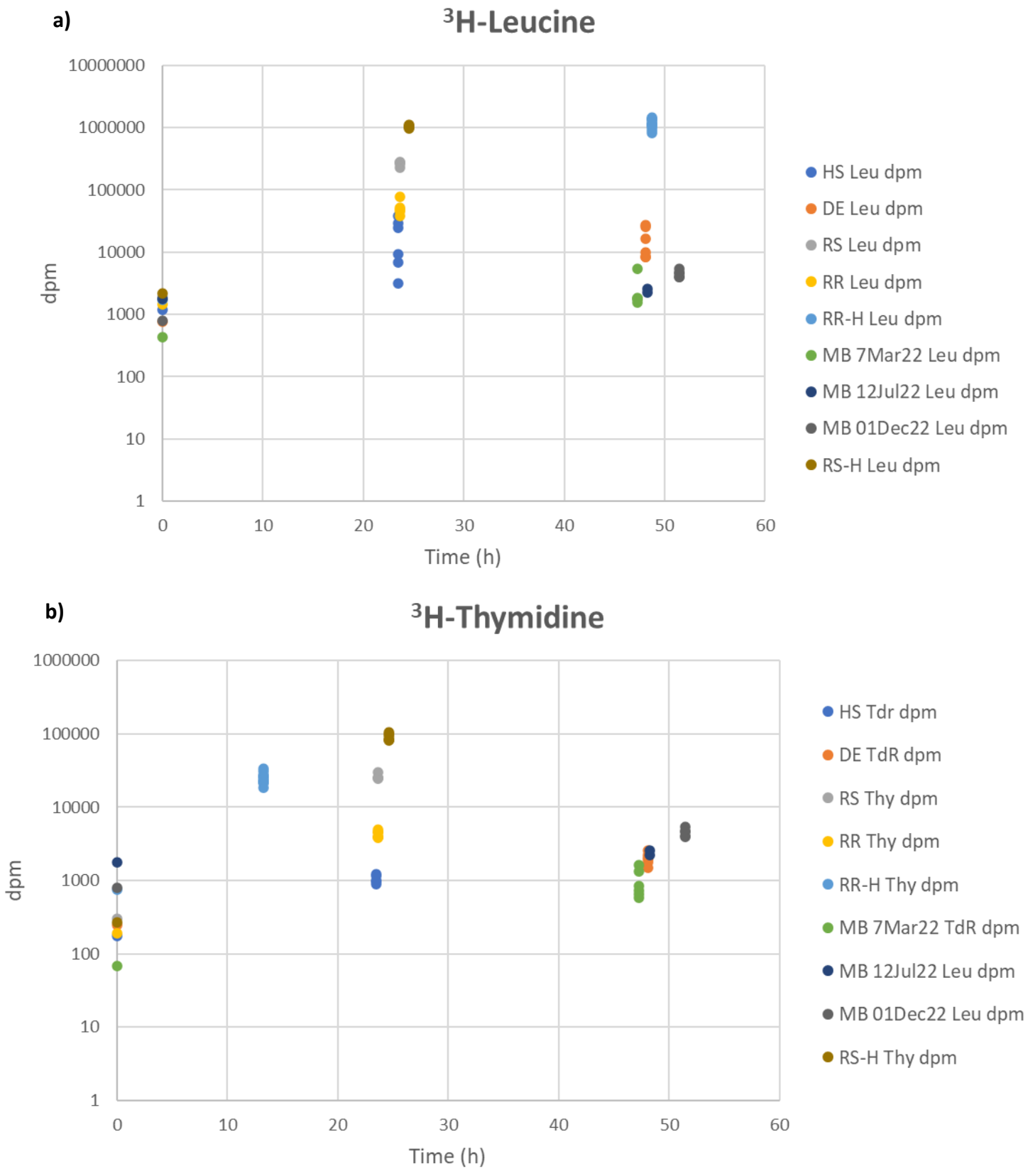


Figure S6. Radioisotopic incubation dpms over time for a) leucine and b) thymidine.

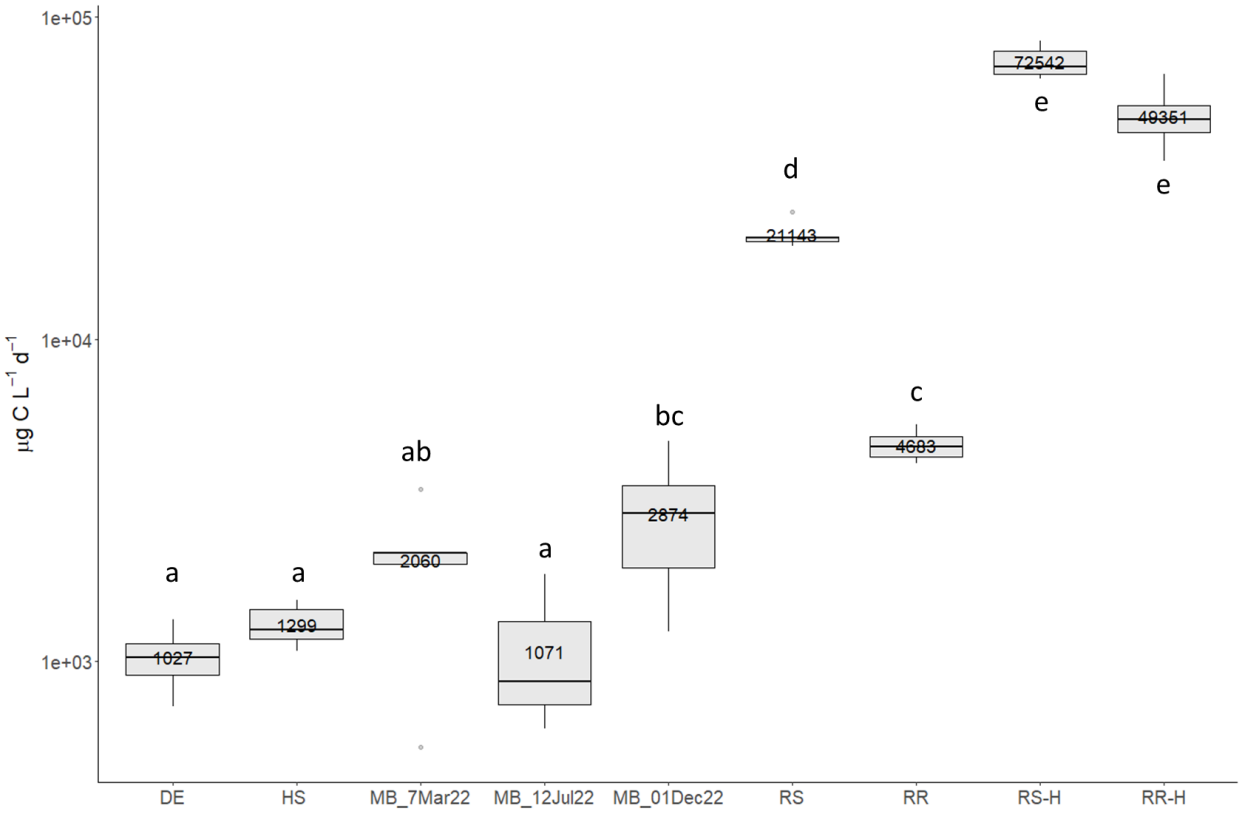


Figure S7. Rates of bulk carbon incorporation derived from ^{3}H-thymidine. Numbers within the box plot indicate the average values.