The biological contributions to biological ion exchange

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1. Supplementary Information

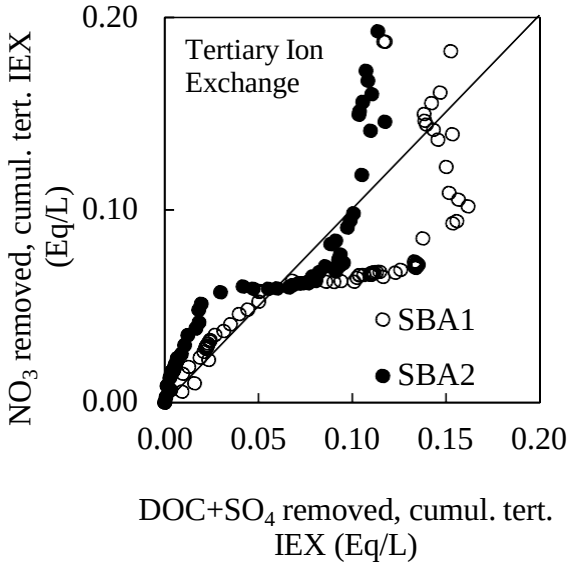

Figure S1. Following secondary IEX exhaustion, DOC removal continued, as could be hypothesized for a tertiary IEX mechanism, but there was also nitrate removal observed.

Table S1. Paired *t*-test showing statistical difference in percent DOC removal between pairings of BIEX_Exhausted, BIEX_SecIEX and BAC columns.

	BIEX_Exhausted vs. BIEX_SecIEX	BIEX_Exhausted vs. BAC	BIEX_SecIEX vs. BAC
Mean diff. in percent DOC removal	0.39	0.044	0.42
n	74	74	77
std dev	0.135	0.102	0.148
std error	0.0157	0.0119	0.0169
alpha	0.001	0.001	0.001
t-value	24.6	3.73	24.9
t-critical	3.43	3.43	3.42
difference?	TRUE	TRUE	TRUE

Table S2. Cellular ATP concentrations for influent and treated effluent waters. Duplicate BIEX_Exhausted filters were tested twice monthly from their start. Values shown are mean of duplicate cATP tests for each filter.

Date	BV from start	BIEX1	BIEX2	Influent_BIEX1	Influent_BIEX2
17-Jun-19	0	246	158	75	159

19-Jul-19	3050	84	97	136	149
2-Aug-19	5200	84	103	138	100
12-Aug-19	6400	104	76	120	94
3-Sep-19	7200	89	40	61	39
13-Sep-19	8800	137	162	70	66
23-Sep-19	9800	196	79	164	71
8-Oct-19	10400	99	84	52	85
17-Oct-19	11600	173	0	162	229
29-Oct-19	12200	184	94	196	232
12-Nov-19	13100	74	60	114	84
19-Nov-19	14200	47	31	98	167
2-Dec-19	14600	36	37	246	382
10-Dec-19	15500	93	59	484	417
16-Jan-20	16100	339	204	292	345
17-Jan-20	16852	304	413	157	129
18-Jan-20	16927	301	277	467	664
20-Jan-20	17000	317	250	218	189

Table S3. Shannon diversity and Chao1 richness parameters for filter ASV reads.

Sample_names	Filters	sample_date	Shannon	Chao1	ACE
17-BAC1-Feb4	BAC1	2020-02-04	1.99	8	8
47-BAC1-Jan4	BAC1	2020-01-04	2.95	30	30
13-BAC1-Aug27	BAC1	2020-08-27	3.56	56	56
1-BAC1-May10	BAC1	2020-05-10	4.00	104	104
73-BAC2-Aug27	BAC2	2020-08-27	1.71	6	6
18-BAC2-Feb4	BAC2	2020-02-04	2.37	14	14
30-BAC2-Nov5	BAC2	2020-11-05	2.99	27	27
2-BAC2-May10	BAC2	2020-05-10	3.74	74	74
3-BIEX1-May10	BIEX1	2020-05-10	4.27	253	253
37-BIEX1-Oct2	BIEX1	2020-10-02	4.68	344	344
31-BIEX1-Nov5	BIEX1	2020-11-05	4.67	397	397
49-BIEX1-Jan4	BIEX1	2020-01-04	3.49	435	435
76-BIEX2-Feb4	BIEX2	2020-02-04	2.90	58	58
77-BIEX1-Mar4	BIEX1	2020-03-04	2.68	37	37
78-BIEX2-Mar4	BIEX2	2020-03-04	2.29	40	40
50-BIEX2-Jan4	BIEX2	2020-01-04	4.21	443	443
38-BIEX2-Oct2	BIEX2	2020-10-02	3.70	288	288
32-BIEX2-Nov5	BIEX2	2020-11-05	4.61	404	404

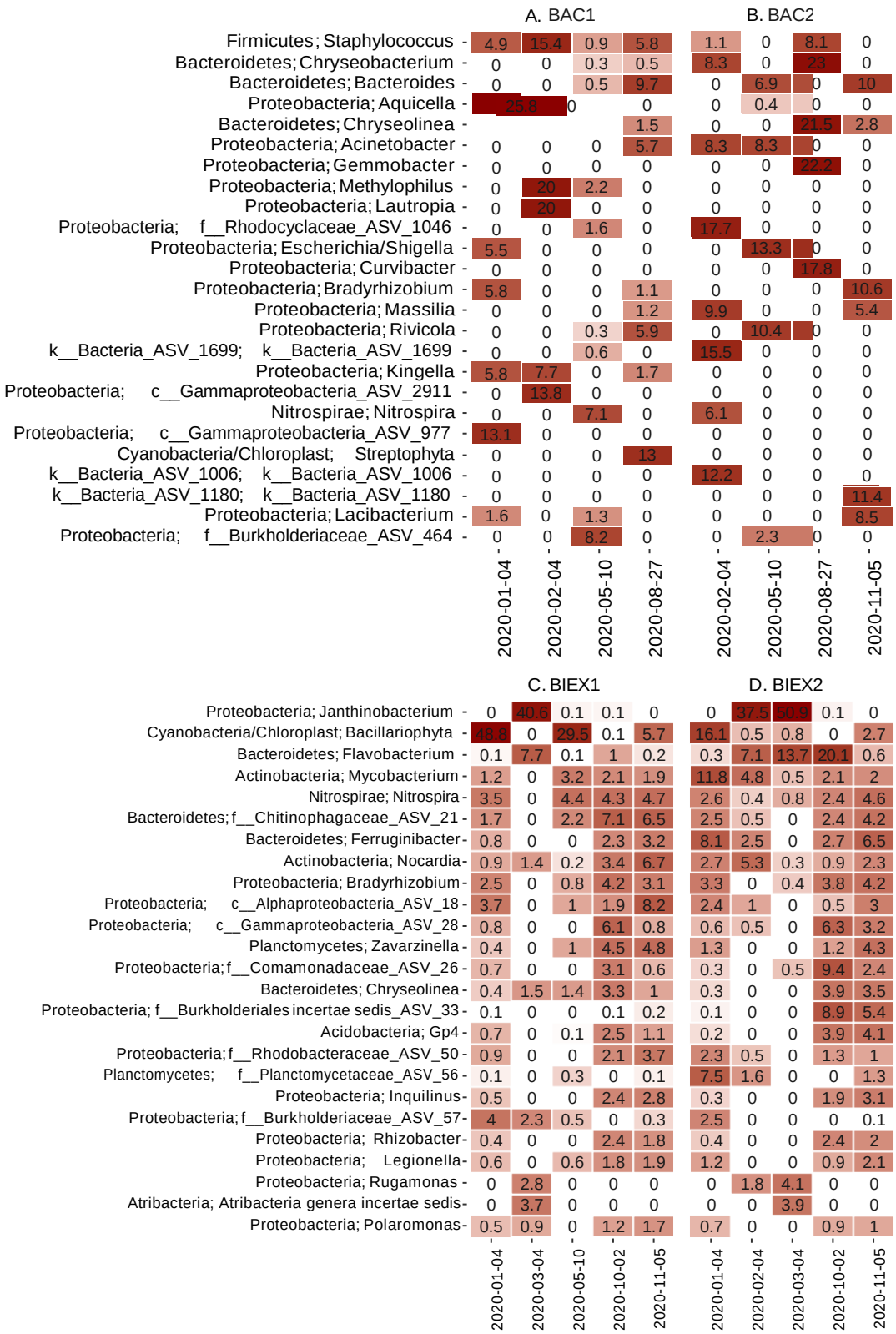

Figure S2. Top 25 taxa for duplicate BAC and BIEX_Exhausted filters including *Janthinobacterium*, which was omitted from manuscript Fig. 5. Darker colour indicates a higher percent abundance. Arranged sequentially left to right.