Electronic Supplementary Material (ESI) for Analytical Methods.

Table S1: Metadata of the 98 Plastic debris samples collected in the North Sea, coastal and open Atlantic Ocean, and open Pacific Ocean. The order of the metadata corresponds to the order of the samples shown in Figs. 4-6. The sample ID's listed below correspond to the sample ID's in the VAMPS "Plastiphere" portal. PE = Polyethylene, PP = Polypropylene, HDPE = High Density Polyethylene.

Sample order	Sample ID	sampling date (year-month-day)	Lati-tude	Longi-tude	Poly-mer Type	experimental factor	Samp-ling depth [m]	Salinity	Tem-pera-ture [°C]	Sequencing method	Target gene
North Sea											
1	LAZ_DET_Bv3v4_MPL1	2014-3-5	51.16	2.71	PE	free floating plastic	8.5	33.5	8	Illumina Miseq 2x 300bp	16S rRNA v3v4
2	LAZ_DET_Bv3v4_MPL11	2014-8-28	51.16	2.71	PE	free floating plastic	7.2	33.6	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
3	LAZ_DET_Bv3v4_MPL8	2014-3-5	51.16	2.71	PE	free floating plastic	6.5	33.5	8	Illumina Miseq 2x 300bp	16S rRNA v3v4
4	LAZ_DET_Bv342_MPL9	2014-3-5	51.16	2.71	PE	free floating plastic	6.5	33.5	8	Illumina Miseq 2x 300bp	16S rRNA v3v4
5	LAZ_DET_Bv3v4_MPL13	2014-3-6	51.33	3.13	PE	free floating plastic	6.5	30.5	7.5	Illumina Miseq 2x 300bp	16S rRNA v3v4
6	LAZ_DET_Bv3v4_MPL14	2014-8-29	51.33	3.13	PE	free floating plastic	6.7	31.2	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
7	LAZ_DET_Bv3v4_MPL15	2014-8-29	51.33	3.13	PE	free floating plastic	6.7	31.2	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
8	LAZ_DET_Bv3v4_MPL16	2014-8-29	51.33	3.13	PE	free floating plastic	6.7	31.2	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
9	LAZ_DET_Bv3v4_MPL17	2014-8-29	51.33	3.13	PE	free floating plastic	6.7	31.2	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
10	LAZ_DET_Bv3v4_MPL18	2014-8-29	51.33	3.13	PE	free floating plastic	6.7	31.2	17.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
11	LAZ_DET_Bv3v4_MPL19	2014-8-29	51.45	3.24	PE	free floating plastic	6.5	31.2	18.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
12	LAZ_DET_Bv3v4_MPL20	2014-8-29	51.45	3.24	PE	free floating plastic	6.5	31.2	18.7	Illumina Miseq 2x 300bp	16S rRNA v3v4
13	LAZ_DET_Bv3v4_MPL21	2014-9-1	51.45	2.61	PP	free floating plastic	31.3	34.6	18.1	Illumina Miseq 2x 300bp	16S rRNA v3v4
14	LAZ_DET_Bv3v4_MPL22	2014-9-1	51.45	2.61	PE	free floating plastic	31.3	34.6	18.1	Illumina Miseq 2x 300bp	16S rRNA v3v4
15	LAZ_DET_Bv3v4_MPL3	2014-3-5	51.22	2.86	PE	free floating plastic	8.5	33.5	7.8	Illumina Miseq 2x 300bp	16S rRNA v3v4
16	LAZ_DET_Bv3v4_MPL4	2014-9-1	51.22	2.86	PE	free floating plastic	8.5	33.8	17.8	Illumina Miseq 2x 300bp	16S rRNA v3v4
17	LAZ_DET_Bv3v4_MPL5	2014-9-1	51.22	2.86	PE	free floating plastic	8.5	33.8	17.8	Illumina Miseq 2x 300bp	16S rRNA v3v4
18	LAZ_DET_Bv3v4_MPL6	2014-9-1	51.22	2.86	PE	free floating plastic	8.5	33.8	17.8	Illumina Miseq 2x 300bp	16S rRNA v3v4
19	LAZ_DET_Bv3v4_MPL7	2014-9-1	51.22	2.86	PE	free floating plastic	8.5	33.8	17.8	Illumina Miseq 2x 300bp	16S rRNA v3v4
Coastal Atlantic Ocean											
20	LAZ_SEA_Bv6-WHD_0016_2013_07_17_Bv6	2013-7-17	41.53	-70.67	HDPE	incubation	0.5	30	23.8	Illumina HiSeq	16S rRNA v6
21	LAZ_SEA_Bv6-WHD_0017_2013_07_17_Bv7	2013-7-17	41.53	-70.67	HDPE	incubation	0.5	30	23.8	Illumina HiSeq	16S rRNA v6
22	LAZ_SEA_Bv6-WHD_0018_2013_07_17_Bv8	2013-7-17	41.53	-70.67	HDPE	incubation	0.5	30	23.8	Illumina HiSeq	16S rRNA v6

Sample order	Sample ID	sampling date (year-month-day)	Latitude	Longitude	Polymer Type	experimental factor	Sampling depth [m]	Salinity	Temperature [°C]	Sequencing method	Target gene
Coastal Atlantic Ocean											
23	LAZ_SEA_Bv6-WHD_0028_2013_07_24_Bv9	2013-7-24	41.53	-70.67	HDPE	incubation	0.5	30	24	Illumina HiSeq	16S rRNA v6
24	LAZ_SEA_Bv6-WHD_0029_2013_07_24_Bv10	2013-7-24	41.53	-70.67	HDPE	incubation	0.5	30	24	Illumina HiSeq	16S rRNA v6
25	LAZ_SEA_Bv6-WHD_0040_2013_07_31_Bv11	2013-7-31	41.53	-70.67	HDPE	incubation	0.5	30.4	23.5	Illumina HiSeq	16S rRNA v6
26	LAZ_SEA_Bv6-WHD_0041_2013_07_31_Bv12	2013-7-31	41.53	-70.67	HDPE	incubation	0.5	30.4	23.5	Illumina HiSeq	16S rRNA v6
27	LAZ_SEA_Bv6-WHD_0052_2013_08_07_Bv13	2013-8-7	41.53	-70.67	HDPE	incubation	0.5	29.3	22.9	Illumina HiSeq	16S rRNA v6
28	LAZ_SEA_Bv6-WHD_0053_2013_08_07_Bv16	2013-8-7	41.53	-70.67	HDPE	incubation	0.5	29.3	22.9	Illumina HiSeq	16S rRNA v6
29	LAZ_SEA_Bv6-WHD_0054_2013_08_07_Bv14	2013-8-7	41.53	-70.67	HDPE	incubation	0.5	29.3	22.9	Illumina HiSeq	16S rRNA v6
30	LAZ_SEA_Bv6-WHD_0065_2013_09_06_Bv16	2013-9-6	41.53	-70.67	HDPE	incubation	0.5	29.6	21.5	Illumina HiSeq	16S rRNA v6
31	LAZ_SEA_Bv6-WHD_0066_2013_09_06_Bv15	2013-9-6	41.53	-70.67	HDPE	incubation	0.5	29.6	21.5	Illumina HiSeq	16S rRNA v6
32	LAZ_SEA_Bv6-WHD_0076_2013_10_02_Bv16	2013-10-2	41.53	-70.67	HDPE	incubation	0.5	29	18.7	Illumina HiSeq	16S rRNA v6
33	LAZ_SEA_Bv6-WHD_0088_2013_11_06_Bv17	2013-11-6	41.53	-70.67	HDPE	incubation	0.5	29.7	12.9	Illumina HiSeq	16S rRNA v6
Open Atlantic Ocean											
34	LAZ_SEA_Bv6-SEA_0029_20120518_Bv6	2012-5-18	21.52	-64.89	HDPE	free floating microplastic	0	36.4	25.8	Illumina HiSeq	16S rRNA v6
35	LAZ_SEA_Bv6-SEA_0035_20120519_Bv6	2012-5-19	22	-65.18	HDPE	free floating microplastic	0	36	25.9	Illumina HiSeq	16S rRNA v6
36	LAZ_SEA_Bv6-SEA_0036_20120519_Bv6	2012-5-19	22	-65.18	HDPE	free floating microplastic	0	36	25.9	Illumina HiSeq	16S rRNA v6
37	LAZ_SEA_Bv6-SEA_0042_20120520_Bv6	2012-5-20	23	-65.08	HDPE	free floating microplastic	0	36	26	Illumina HiSeq	16S rRNA v6

Sample order	Sample ID	sampling date (year-month-day)	Latitude	Longitude	Polymer Type	experimental factor	Sampling depth [m]	Salinity	Temperature [°C]	Sequencing method	Target gene
Open Atlantic Ocean											
38	LAZ_SEA_Bv6-SEA_0049_20120521_Bv6	2012-5-21	25	-64.58	HDPE	free floating microplastic	0	36.07	26.2	Illumina HiSeq	16S rRNA v6
39	LAZ_SEA_Bv6-SEA_0063_20120523_Bv6	2012-5-23	27	-63.57	HDPE	free floating microplastic	0	36.5	24.5	Illumina HiSeq	16S rRNA v6
40	LAZ_SEA_Bv6-SEA_0064_20120523_Bv6	2012-5-23	27	-63.57	HDPE	free floating microplastic	0	36.5	24.5	Illumina HiSeq	16S rRNA v6
41	LAZ_SEA_Bv6-SEA_0094_20120527_Bv6	2012-5-27	31.65	-64.26	HDPE	free floating microplastic	0	36.4	22.7	Illumina HiSeq	16S rRNA v6
42	LAZ_SEA_Bv6-SEA_0095_20120527_Bv6	2012-5-27	31.65	-64.26	HDPE	free floating microplastic	0	36.4	22.7	Illumina HiSeq	16S rRNA v6
43	LAZ_SEA_Bv6-SEA_0107_20120607_Bv6	2012-6-7	35.55	-65.66	HDPE	free floating microplastic	0	36.52	22.4	Illumina HiSeq	16S rRNA v6
44	LAZ_SEA_Bv6-SEA_0108_20120607_Bv6	2012-6-7	35.55	-65.66	HDPE	free floating microplastic	0	36.52	22.4	Illumina HiSeq	16S rRNA v6
45	LAZ_SEA_Bv6-SEA_0122_20120608_Bv6	2012-6-8	36.34	-68.01	HDPE	free floating microplastic	0	36.46	22.7	Illumina HiSeq	16S rRNA v6
46	LAZ_SEA_Bv6-SEA_0128_20120609_Bv6	2012-6-9	37.43	-68.01	HDPE	free floating microplastic	0	36.34	23.2	Illumina HiSeq	16S rRNA v6
47	LAZ_SEA_Bv6-SEA_0136_20120610_Bv6	2012-6-10	39.14	-67.83	HDPE	free floating microplastic	0	34.18	18.9	Illumina HiSeq	16S rRNA v6
48	LAZ_SEA_Bv6-SEA_0137_20120610_Bv6	2012-6-10	39.14	-67.83	HDPE	free floating microplastic	0	34.18	18.9	Illumina HiSeq	16S rRNA v6
49	LAZ_SEA_Bv6-SEA_0142_20120611_Bv6	2012-6-11	39.98	-68.88	HDPE	free floating microplastic	0	33.76	16.6	Illumina HiSeq	16S rRNA v6
50	LAZ_SEA_Bv6-SEA_0358_5_14_2013_Bv6	2013-5-14	17.75	-64.70	PE	free floating plastic	0	36.2	29.6	Illumina HiSeq	16S rRNA v6
51	LAZ_SEA_Bv6-SEA_0365_2013516_Bv6	2013-5-16	17.98	-64.57	PE	free floating microplastic	0	36.43	27.8	Illumina HiSeq	16S rRNA v6
52	LAZ_SEA_Bv6-SEA_0380_5_19_2013_Bv6	2013-5-19	22.87	-64.47	PE	free floating microplastic	0	36.25	26.8	Illumina HiSeq	16S rRNA v6
53	LAZ_SEA_Bv6-SEA_0435_5_26_2013_Bv6	2013-5-26	32.11	-64.36	PE	free floating microplastic	0	36.73	22.6	Illumina HiSeq	16S rRNA v6

Sample order	Sample ID	sampling date (year-month-day)	Latitude	Longitude	Polymer Type	experimental factor	Sampling depth [m]	Salinity	Temperature [°C]	Sequencing method	Target gene
Open Atlantic Ocean											
54	LAZ_SEA_Bv6-SEA_0439_5_26_2013_Bv6	2013-5-26	32.09	-64.46	PE	incubation	0	36.73	22.8	Illumina HiSeq	16S rRNA v6
55	LAZ_SEA_Bv6-SEA_0440_5_26_2013_Bv6	2013-5-26	32.09	-64.46	PE	incubation	0	36.73	22.8	Illumina HiSeq	16S rRNA v6
56	LAZ_SEA_Bv6-SEA_0449_6_02_2013_Bv6	2013-6-2	32.38	-64.68	PE	free floating macroplastic	0	NAN	NAN	Illumina HiSeq	16S rRNA v6
57	LAZ_SEA_Bv6-SEA_0450_6_02_2013_Bv6	2013-6-2	32.38	-64.68	PE	free floating macroplastic	0	NAN	NAN	Illumina HiSeq	16S rRNA v6
58	LAZ_SEA_Bv6-SEA_0462_6_05_2013_Bv6	2013-6-5	33.87	-65.94	PE	free floating microplastic	0	36.69	23.3	Illumina HiSeq	16S rRNA v6
59	LAZ_SEA_Bv6-SEA_0477_6_07_2013_Bv6	2013-6-7	35.70	-65.91	PE	incubation	0	36.3	23.5	Illumina HiSeq	16S rRNA v6
60	LAZ_SEA_Bv6-SEA_0478_6_07_2013_Bv6	2013-6-7	35.70	-65.91	PE	incubation	0	36.3	23.5	Illumina HiSeq	16S rRNA v6
61	LAZ_SEA_Bv6-SEA_0485_6_07_2013_Bv6	2013-6-16	41.38	-70.88	HDPE	incubation	0	31.86	16.7	Illumina HiSeq	16S rRNA v6
62	LAZ_SEA_Bv6-SEA_0486_6_07_2013_Bv6	2013-6-16	41.38	-70.88	HDPE	incubation	0	31.86	16.7	Illumina HiSeq	16S rRNA v6
63	LAZ_SEA_Bv6-SEA_0487_6_07_2013_Bv6	2013-6-16	41.38	-70.88	PS	incubation	0	31.86	16.7	Illumina HiSeq	16S rRNA v6
64	LAZ_SEA_Bv6-SEA_0528_201367_Bv6	2013-6-7	35.58	-66.13	HDPE	incubation	0	36.5	22.3	Illumina HiSeq	16S rRNA v6
65	LAZ_SEA_Bv6-SEA_0529_201367_Bv6	2013-6-7	35.58	-66.13	LDPE	incubation	0	36.5	22.3	Illumina HiSeq	16S rRNA v6
66	LAZ_SEA_Bv6-SEA_0530_201367_Bv6	2013-6-7	35.58	-66.13	LDPE	incubation	0	36.5	22.3	Illumina HiSeq	16S rRNA v6
67	LAZ_SEA_Bv6-SEA_0537_2013527_Bv6	2013-5-27	32.04	-64.48	HDPE	incubation	0	36.3	22.7	Illumina HiSeq	16S rRNA v6
68	LAZ_SEA_Bv6-SEA_0539_2013521_Bv6	2013-5-21	25.26	-64.46	HDPE	incubation	0	36	25.7	Illumina HiSeq	16S rRNA v6
69	LAZ_SEA_Bv6-SEA_0540_2013521_Bv6	2013-5-21	25.26	-64.46	HDPE	incubation	0	36	25.7	Illumina HiSeq	16S rRNA v6

Sample order	Sample ID	sampling date (year-month-day)	Latitude	Longitude	Polymer Type	experimental factor	Sampling depth [m]	Salinity	Temperature [°C]	Sequencing method	Target gene
Open Atlantic Ocean											
70	LAZ_SEA_Bv6v4--SEA_0002_2010_07_07_Bv6v4	2010-6-21	31.63	-41.42	PE	free floating microplastic	0	36.91	24.6	Illumina HiSeq	16S rTNA V6-V4
71	LAZ_SEA_Bv6v4--SEA_0008_2012_05_20_Bv6v5	2012-5-20	23.29	-65.08	PE	free floating microplastic	0	36.01	26	Illumina HiSeq	16S rTNA V6-V4
72	LAZ_SEA_Bv6v4--SEA_0011_2012_05_22_Bv6v5	2012-5-22	26.08	-64.20	PE	free floating microplastic	0	36.07	26	Illumina HiSeq	16S rTNA V6-V4
Open Pacific Ocean											
73	LAZ_SEA_Bv6-SEA_0173_20121006_Bv6	2012-10-6	31.81	-121.57	PE	free floating microplastic	0	33.19	18.3	Illumina HiSeq	16S rRNA v6
74	LAZ_SEA_Bv6-SEA_0178_20121008_Bv6	2012-10-9	33.02	-125.58	PE	free floating microplastic	0	33.17	18.9	Illumina HiSeq	16S rRNA v6
75	LAZ_SEA_Bv6-SEA_0208_20121013_Bv6	2012-10-13	33.48	-132.45	PE	free floating microplastic	0	33.5	21.2	Illumina HiSeq	16S rRNA v6
76	LAZ_SEA_Bv6-SEA_0209_20121013_Bv6	2012-10-13	33.48	-132.45	PE	free floating microplastic	0	33.5	21.2	Illumina HiSeq	16S rRNA v6
77	LAZ_SEA_Bv6-SEA_0219_20121014_Bv6	2012-10-14	33.70	-133.46	PE	free floating microplastic	0	33.32	20.9	Illumina HiSeq	16S rRNA v6
78	LAZ_SEA_Bv6-SEA_0236_20121016_Bv6	2012-10-16	33.56	-135.43	PE	free floating microplastic	0	33.74	21.7	Illumina HiSeq	16S rRNA v6
79	LAZ_SEA_Bv6-SEA_0239_20121017_Bv6	2012-10-17	33.26	-136.21	PE	free floating microplastic	0	34.39	22.1	Illumina HiSeq	16S rRNA v6
80	LAZ_SEA_Bv6-SEA_0243_20121018_Bv6	2012-10-18	32.90	-137.23	PE	free floating microplastic	0	34.67	22.2	Illumina HiSeq	16S rRNA v6
81	LAZ_SEA_Bv6-SEA_0244_20121018_Bv6	2012-10-18	32.90	-137.23	PE	free floating microplastic	0	34.67	22.2	Illumina HiSeq	16S rRNA v6
82	LAZ_SEA_Bv6-SEA_0249_20121019_Bv6	2012-10-19	32.26	-138.57	PE	free floating microplastic	0	34.9	23	Illumina HiSeq	16S rRNA v6
83	LAZ_SEA_Bv6-SEA_0253_20121020_Bv6	2012-10-20	32.05	-139.10	PE	free floating microplastic	0	34.87	23.2	Illumina HiSeq	16S rRNA v6
84	LAZ_SEA_Bv6-SEA_0254_20121020_Bv6	2012-10-20	32.05	-139.10	PE	free floating microplastic	0	34.87	23.2	Illumina HiSeq	16S rRNA v6

Sample order	Sample ID	sampling date (year-month-day)	Latitude	Longitude	Polymer Type	experimental factor	Sampling depth [m]	Salinity	Temperature [°C]	Sequencing method	Target gene
Open Pacific Ocean											
85	LAZ_SEA_Bv6-SEA_0268_20121022_Bv6	2012-10-22	31.91	-139.58	PE	free floating microplastic	0	34.8	23.1	Illumina HiSeq	16S rRNA v6
86	LAZ_SEA_Bv6-SEA_0273_20121023_Bv6	2012-10-23	30.26	-140.68	PE	free floating microplastic	0	35.04	23.2	Illumina HiSeq	16S rRNA v6
87	LAZ_SEA_Bv6-SEA_0291_2012_10_25_Bv6	2012-10-25	30.02	-142.31	PE	free floating microplastic	0	35	23.3	Illumina HiSeq	16S rRNA v6
88	LAZ_SEA_Bv6-SEA_0292_2012_10_25_Bv6	2012-10-25	30.02	-142.31	PE	free floating microplastic	0	35	23.3	Illumina HiSeq	16S rRNA v6
89	LAZ_SEA_Bv6-SEA_0295_20121026_Bv6	2012-10-26	30.03	-143.97	PE	free floating microplastic	0	35.4	23.7	Illumina HiSeq	16S rRNA v6
90	LAZ_SEA_Bv6-SEA_0296_20121026_Bv6	2012-10-26	30.03	-143.97	PE	free floating microplastic	0	35.4	23.7	Illumina HiSeq	16S rRNA v6
91	LAZ_SEA_Bv6-SEA_0302_2012_10_27_Bv6	2012-10-27	30.07	-145.06	PE	free floating microplastic	0	35.41	24.1	Illumina HiSeq	16S rRNA v6
92	LAZ_SEA_Bv6-SEA_0306_20121028_Bv6	2012-10-28	30.42	-145.75	PE	free floating microplastic	0	35.4	24.2	Illumina HiSeq	16S rRNA v6
93	LAZ_SEA_Bv6-SEA_0307_2012_10_28_Bv6	2012-10-28	30.42	-145.75	PE	free floating microplastic	0	35.4	24.2	Illumina HiSeq	16S rRNA v6
94	LAZ_SEA_Bv6-SEA_0318_2012_10_29_Bv6	2012-10-29	29.89	-145.79	PE	free floating microplastic	0	35.4	24.2	Illumina HiSeq	16S rRNA v6
95	LAZ_SEA_Bv6-SEA_0334_2012_11_01_Bv6	2012-11-1	25.30	-147.62	PE	free floating microplastic	0	35.57	25	Illumina HiSeq	16S rRNA v6
96	LAZ_SEA_Bv6-SEA_0341_20121102_Bv6	2012-11-2	23.91	-149.11	PE	free floating microplastic	0	35.32	25.6	Illumina HiSeq	16S rRNA v6
97	LAZ_SEA_Bv6-SEA_0345_20121103_Bv6	2012-11-3	22.52	-150.02	PE	free floating microplastic	0	35.34	25.2	Illumina HiSeq	16S rRNA v6
98	LAZ_SEA_Bv6-SEA_0350_20121104_Bv6	2012-11-4	21.39	-152.02	PE	free floating microplastic	0	35.09	25.7	Illumina HiSeq	16S rRNA v6

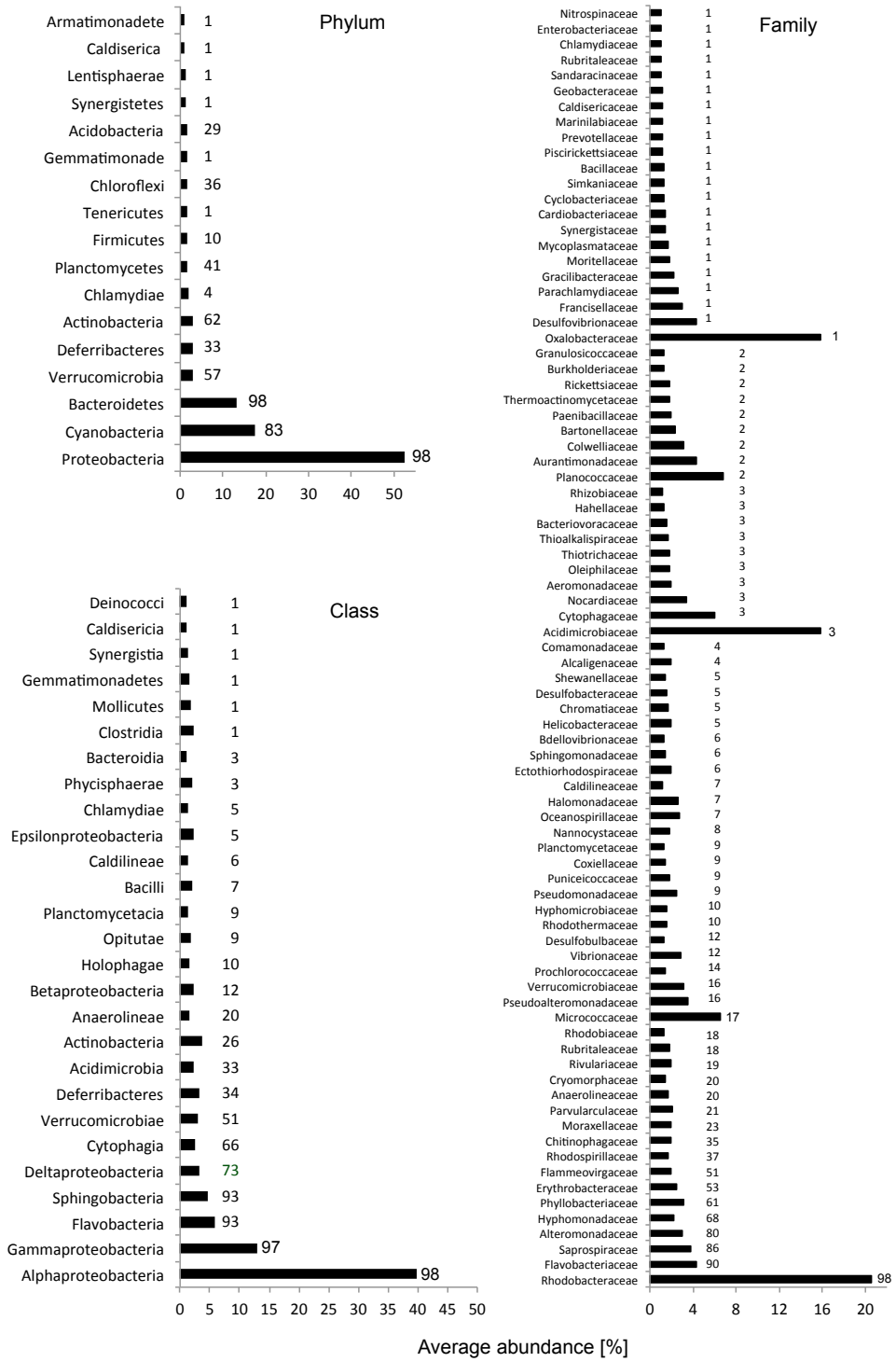

Fig. S1 Overview of all phyla, classes and families identified as colonizers on the PD samples investigated in this study. Numbers adjacent to the bars represent the numbers of samples of the 98 examined that included these taxa. Only taxa that contributed ≥1% relative abundance are shown.