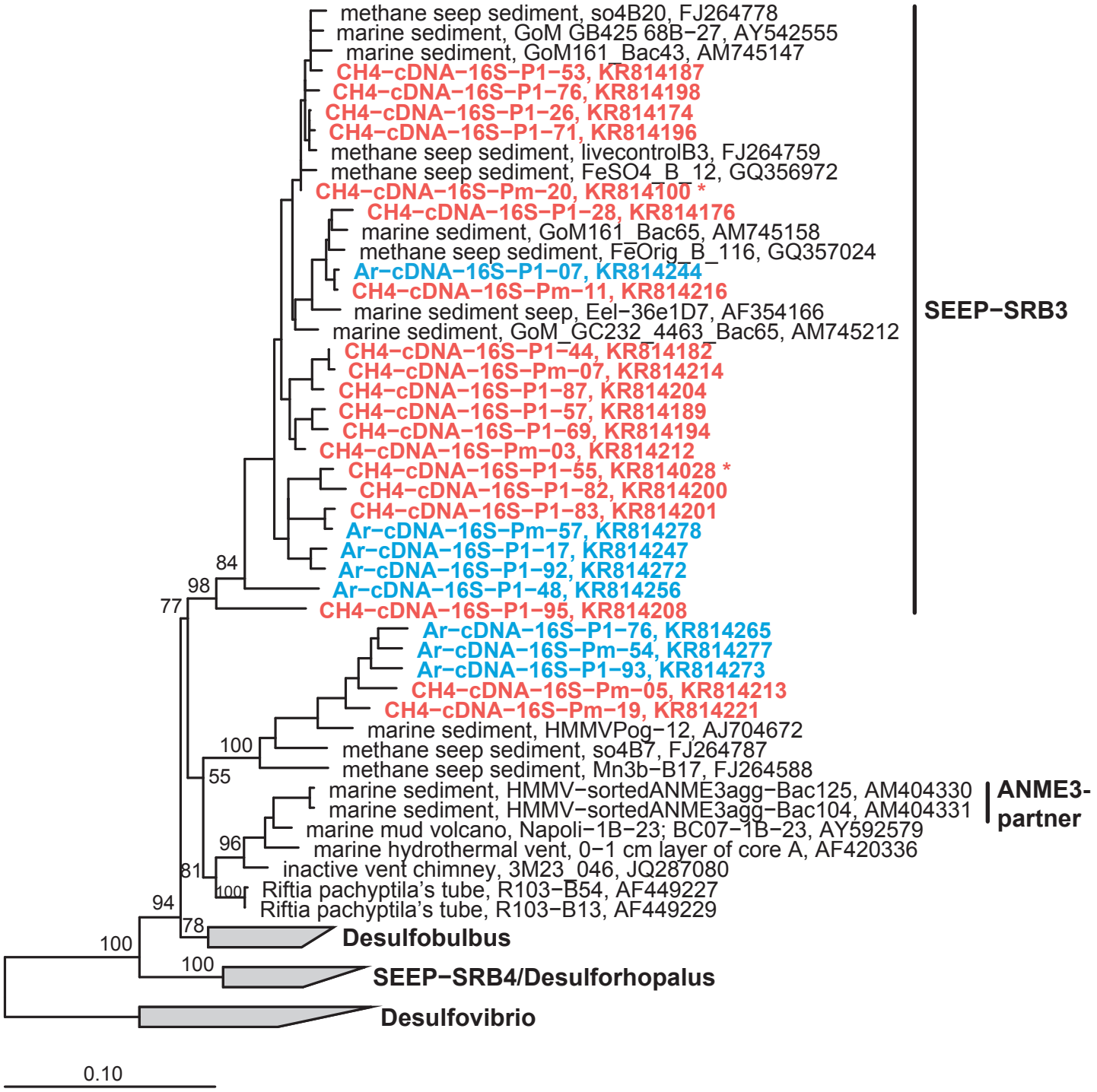
**SI Figure 4.**


methane seep sediment, so4B20, FJ264778
marine sediment, GoM GB425 68B−27, AY542555
marine sediment, GoM161_Bac43, AM745147
CH4−cDNA−16S−P1−53, KR814187
CH4−cDNA−16S−P1−76, KR814198
CH4−cDNA−16S−P1−26, KR814174
CH4−cDNA−16S−P1−71, KR814196
methane seep sediment, livecontrolB3, FJ264759
methane seep sediment, FeSO4_B_12, GQ356972
CH4−cDNA−16S−Pm−20, KR814100 *
CH4−cDNA−16S−P1−28, KR814176
marine sediment, GoM161_Bac65, AM745158
methane seep sediment, FeOrig_B_116, GQ357024
Ar−cDNA−16S−P1−07, KR814244
CH4−cDNA−16S−Pm−11, KR814216
marine sediment seep, Eel−36e1D7, AF354166
marine sediment, GoM_GC232_4463_Bac65, AM745212
CH4−cDNA−16S−P1−44, KR814182
CH4−cDNA−16S−Pm−07, KR814214
CH4−cDNA−16S−P1−87, KR814204
CH4−cDNA−16S−P1−57, KR814189
CH4−cDNA−16S−P1−69, KR814194
CH4−cDNA−16S−Pm−03, KR814212
CH4−cDNA−16S−P1−55, KR814028 *
CH4−cDNA−16S−P1−82, KR814200
CH4−cDNA−16S−P1−83, KR814201
Ar−cDNA−16S−Pm−57, KR814278
Ar−cDNA−16S−P1−17, KR814247
Ar−cDNA−16S−P1−92, KR814272
Ar−cDNA−16S−P1−48, KR814256
CH4−cDNA−16S−P1−95, KR814208
SEEP−SRB3
Ar−cDNA−16S−P1−76, KR814265
Ar−cDNA−16S−Pm−54, KR814277
Ar−cDNA−16S−P1−93, KR814273
CH4−cDNA−16S−Pm−05, KR814213
CH4−cDNA−16S−Pm−19, KR814221
marine sediment, HMMVPog−12, AJ704672
methane seep sediment, so4B7, FJ264787
methane seep sediment, Mn3b−B17, FJ264588
marine sediment, HMMV−sortedANME3agg−Bac125, AM404330
marine sediment, HMMV−sortedANME3agg−Bac104, AM404331
marine mud volcano, Napoli−1B−23; BC07−1B−23, AY592579
marine hydrothermal vent, 0−1 cm layer of core A, AF420336
inactive vent chimney, 3M23_046, JQ287080
Riftia pachyptila's tube, R103−B54, AF449227
Riftia pachyptila's tube, R103−B13, AF449229
ANME3-partner
Desulfobulbus
SEEP−SRB4/Desulforhopalus
Desulfovibrio
84
98
77
100
55
96
81
100
94
78
100
100
0.10