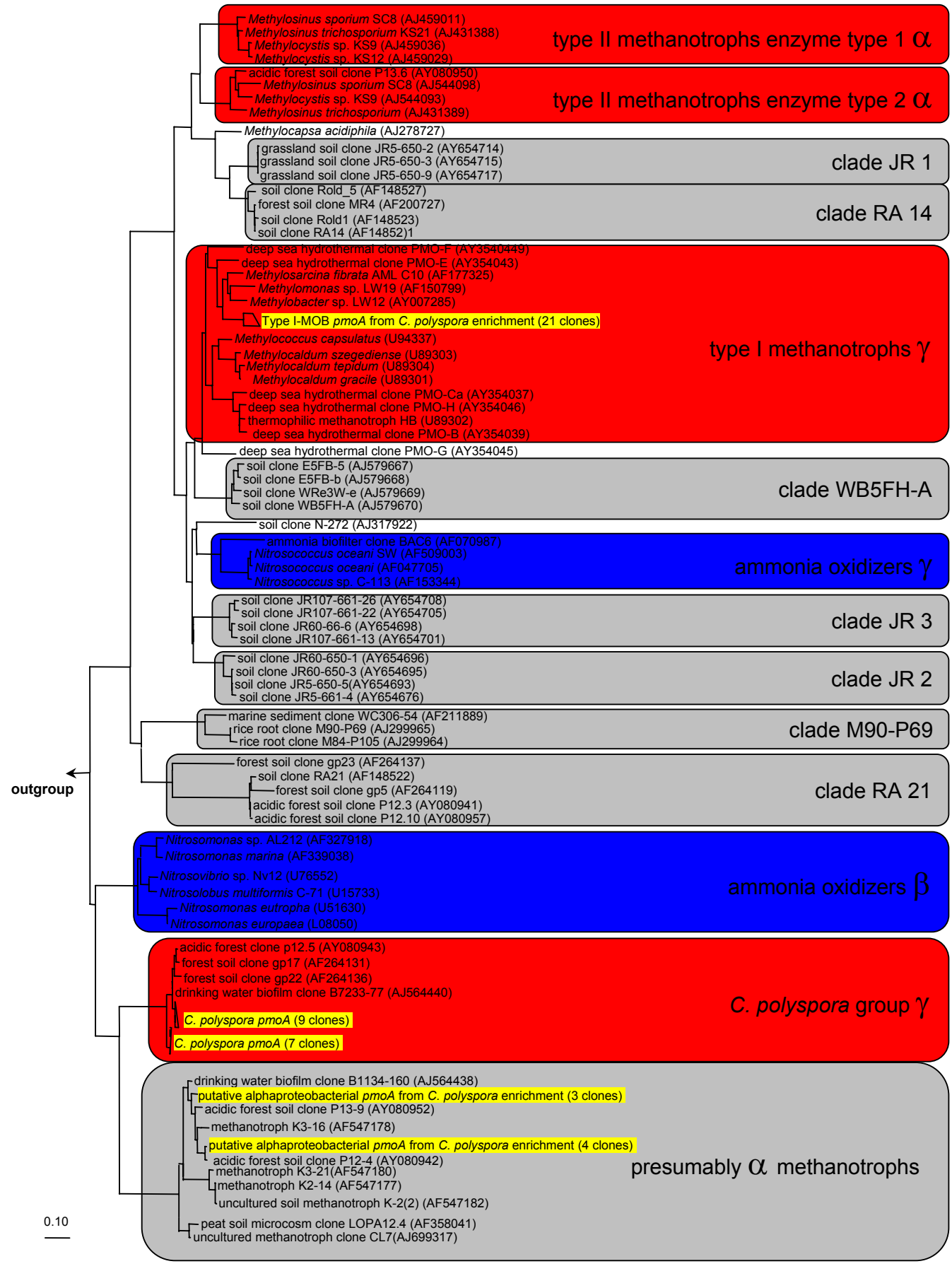
Methylosinus sporium SC8 (AJ459011)
Methylosinus trichosporium KS21 (AJ431388)
Methylocystis sp. KS9 (AJ459036)
Methylocystis sp. KS12 (AJ459029)
type II methanotrophs enzyme type 1 α
acidic forest soil clone P13.6 (AY080950)
Methylosinus sporium SC8 (AJ544098)
Methylocystis sp. KS9 (AJ544093)
Methylosinus trichosporium (AJ431389)
type II methanotrophs enzyme type 2 α
Methylocapsa acidiphila (AJ278727)
grassland soil clone JR5-650-2 (AY654714)
grassland soil clone JR5-650-3 (AY654715)
grassland soil clone JR5-650-9 (AY654717)
clade JR 1
soil clone Rold_5 (AF148527)
forest soil clone MR4 (AF200727)
soil clone Rold1 (AF148523)
soil clone RA14 (AF14852)1
clade RA 14
deep sea hydrothermal clone PMO-F (AY3540449)
deep sea hydrothermal clone PMO-E (AY354043)
Methylosarcina fibrata AML C10 (AF177325)
Methylomonas sp. LW19 (AF150799)
Methylobacter sp. LW12 (AY007285)
Type I-MOB pmoA from C. polyspora enrichment (21 clones)
Methylococcus capsulatus (U94337)
Methylocaldum szegediense (U89303)
Methylocaldum tepidum (U89304)
Methylocaldum gracile (U89301)
deep sea hydrothermal clone PMO-Ca (AY354037)
deep sea hydrothermal clone PMO-H (AY354046)
thermophilic methanotroph HB (U89302)
deep sea hydrothermal clone PMO-B (AY354039)
type I methanotrophs γ
deep sea hydrothermal clone PMO-G (AY354045)
soil clone E5FB-5 (AJ579667)
soil clone E5FB-b (AJ579668)
soil clone WRe3W-e (AJ579669)
soil clone WB5FH-A (AJ579670)
clade WB5FH-A
soil clone N-272 (AJ317922)
ammonia biofilter clone BAC6 (AF070987)
Nitrosococcus oceani SW (AF509003)
Nitrosococcus oceani (AF047705)
Nitrosococcus sp. C-113 (AF153344)
ammonia oxidizers γ
soil clone JR107-661-26 (AY654708)
soil clone JR107-661-22 (AY654705)
soil clone JR60-66-6 (AY654698)
soil clone JR107-661-13 (AY654701)
clade JR 3
soil clone JR60-650-1 (AY654696)
soil clone JR60-650-3 (AY654695)
soil clone JR5-650-5(AY654693)
soil clone JR5-661-4 (AY654676)
clade JR 2
marine sediment clone WC306-54 (AF211889)
rice root clone M90-P69 (AJ299965)
rice root clone M84-P105 (AJ299964)
clade M90-P69
outgroup
forest soil clone gp23 (AF264137)
soil clone RA21 (AF148522)
forest soil clone gp5 (AF264119)
acidic forest soil clone P12.3 (AY080941)
acidic forest soil clone P12.10 (AY080957)
clade RA 21
Nitrosomonas sp. AL212 (AF327918)
Nitrosomonas marina (AF339038)
Nitrosovibrio sp. Nv12 (U76552)
Nitrosolobus multiformis C-71 (U15733)
Nitrosomonas eutropha (U51630)
Nitrosomonas europaea (L08050)
ammonia oxidizers β
acidic forest clone p12.5 (AY080943)
forest soil clone gp17 (AF264131)
forest soil clone gp22 (AF264136)
drinking water biofilm clone B7233-77 (AJ564440)
C. polyspora pmoA (9 clones)
C. polyspora pmoA (7 clones)
C. polyspora group γ
drinking water biofilm clone B1134-160 (AJ564438)
putative alphaproteobacterial pmoA from C. polyspora enrichment (3 clones)
acidic forest soil clone P13-9 (AY080952)
methanotroph K3-16 (AF547178)
putative alphaproteobacterial pmoA from C. polyspora enrichment (4 clones)
acidic forest soil clone P12-4 (AY080942)
methanotroph K3-21(AF547180)
methanotroph K2-14 (AF547177)
uncultured soil methanotroph K-2(2) (AF547182)
peat soil microcosm clone LOPA12.4 (AF358041)
uncultured methanotroph clone CL7(AJ699317)
presumably α methanotrophs
0.10