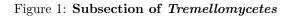
Supplementary Figure S1: Maximum Likelihood tree of fungal 18S rRNA gene sequences. The tree was rooted with sequences of eight species of the *Choanoflagellates*. Branch support was estimated with bootstrap method. Only support values  $\geq 50\,\%$  are indicated. Sequences derived from the KSMP-Kiel culture collection are printed in bold. Color code, contextual data: colored background of fungal taxa, habitat occurrence of fungal taxa; colored lines beside sequence full name, geographical origin of fungal taxa. Subcategories of the geographical origin displayed as letter to the right of the colored stripe. \*, wrong full name annotation of sequence.



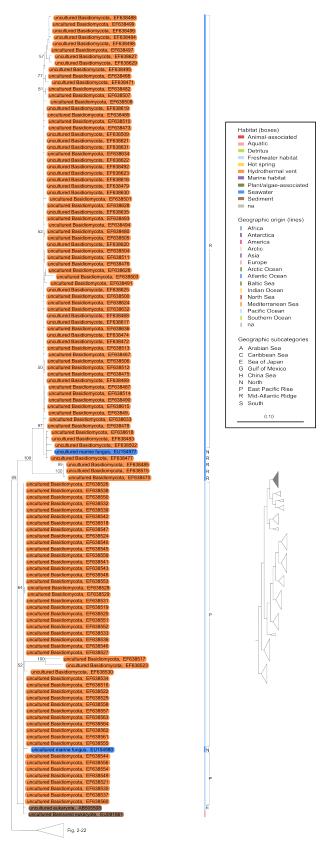
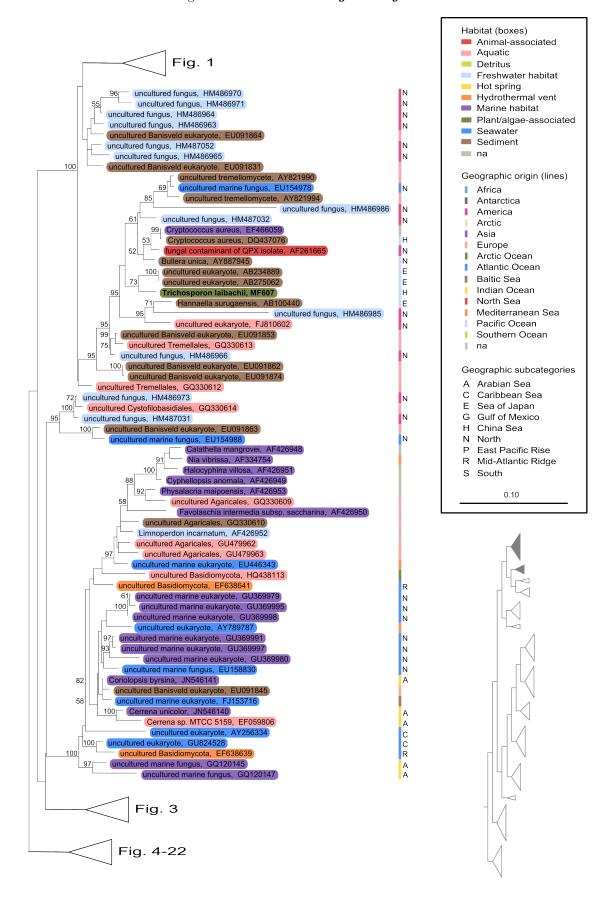
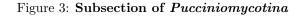
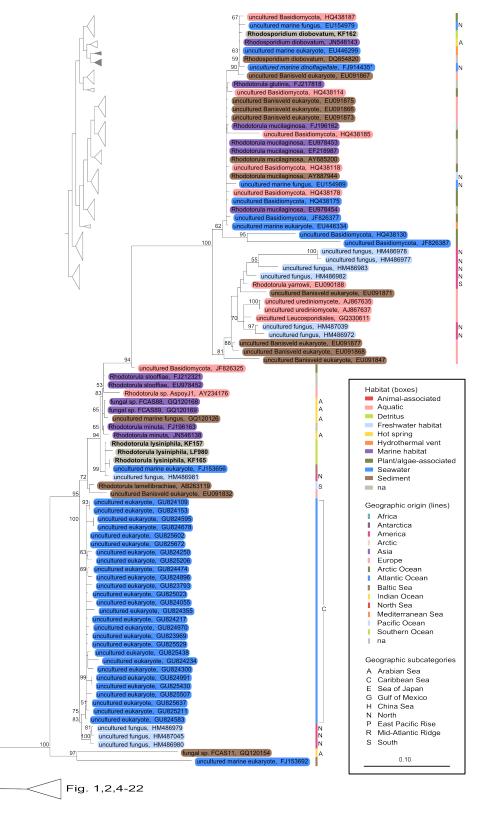
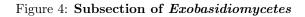


Figure 2: Subsection of Agaricomycotina









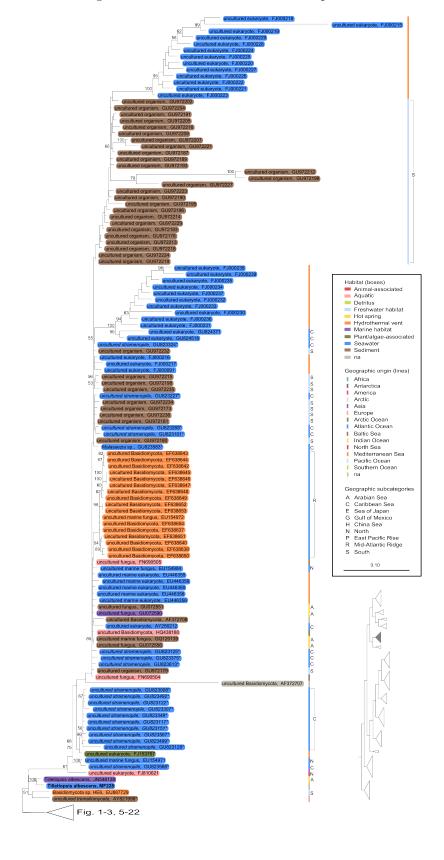


Figure 5: Subsection of *Ustilaginomycetes* 

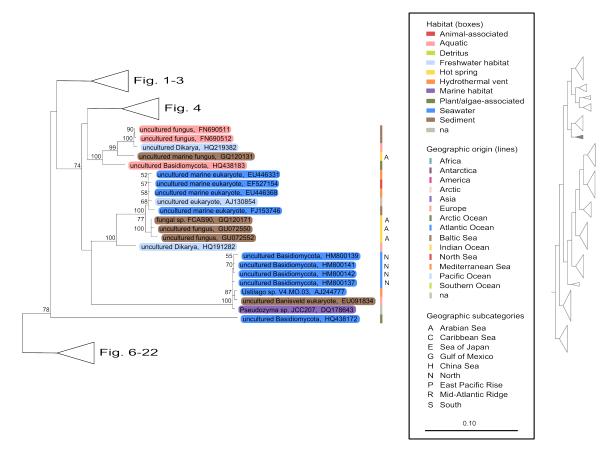


Figure 6: Subsection of Eurotiomycetes

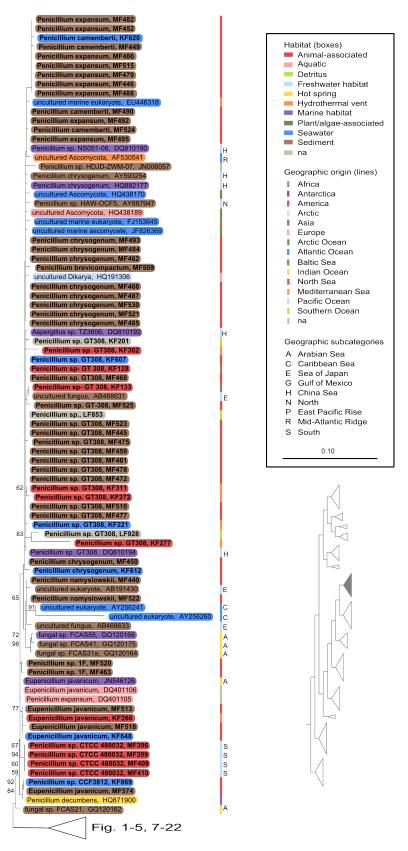


Figure 7: Subsection of Eurotiomycetes

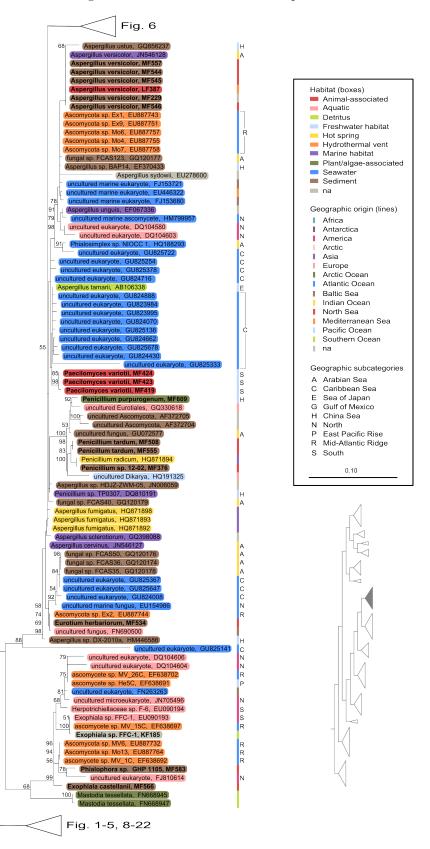


Figure 8: Subsection of Dothideomycetes

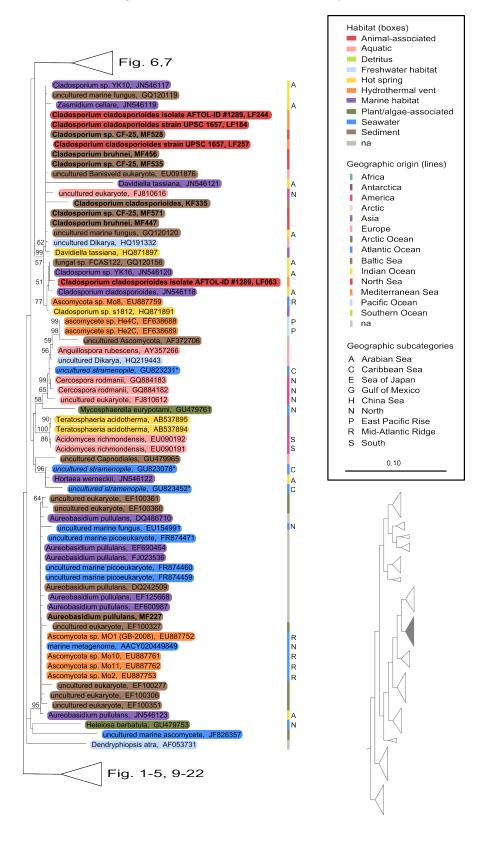


Figure 9: Subsection of *Dothideomycetes* 

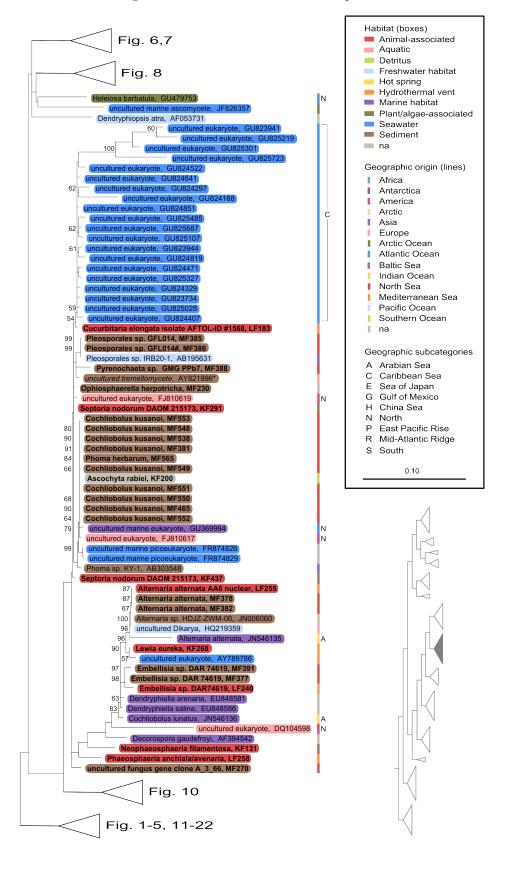
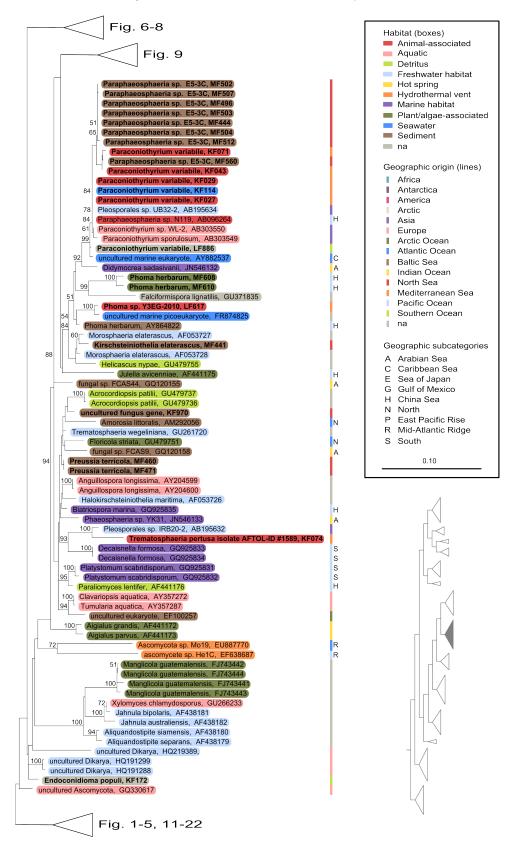


Figure 10: Subsection of *Dothideomycetes* 





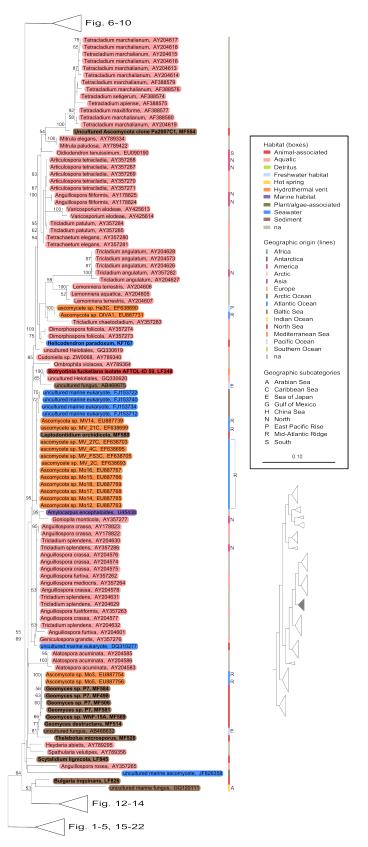


Figure 12: Subsection of Sordariomycetes

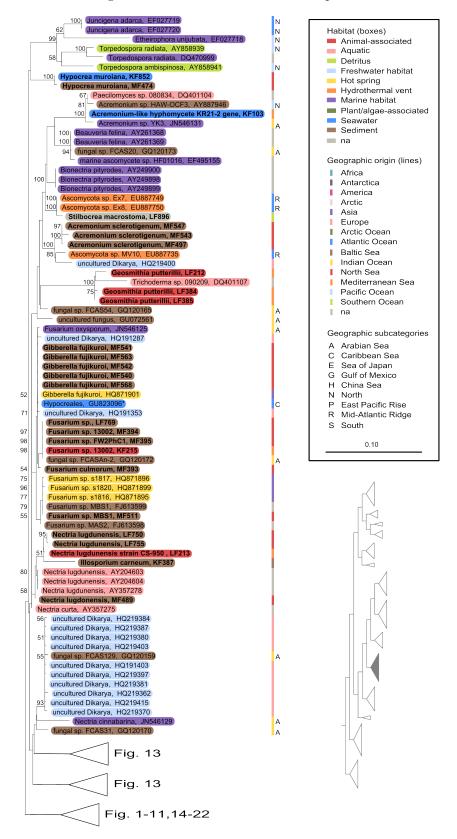
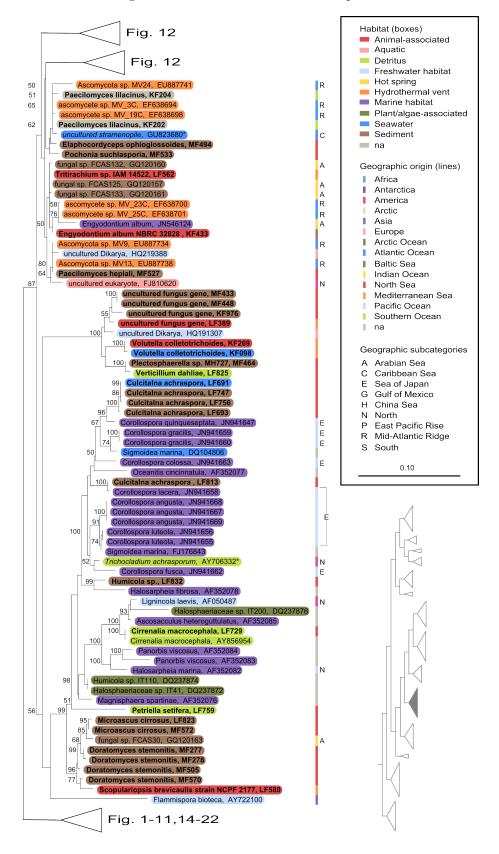
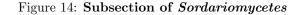
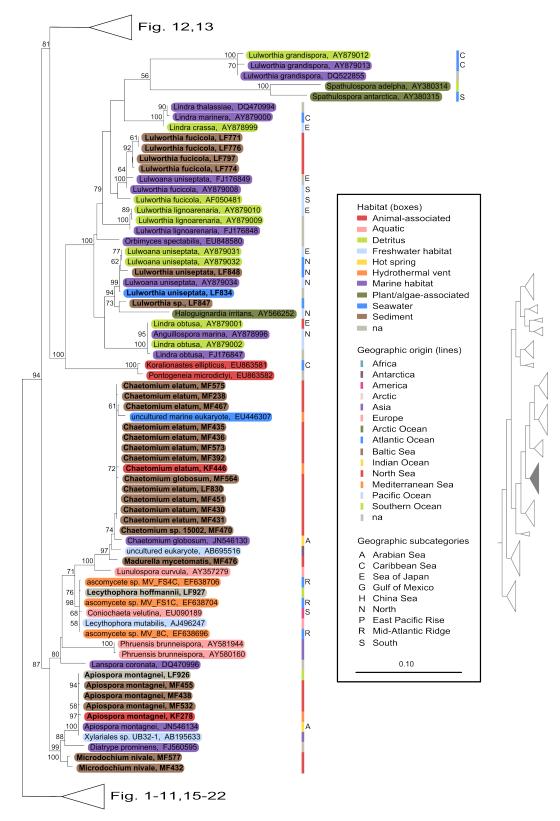


Figure 13: Subsection of Sordariomycetes







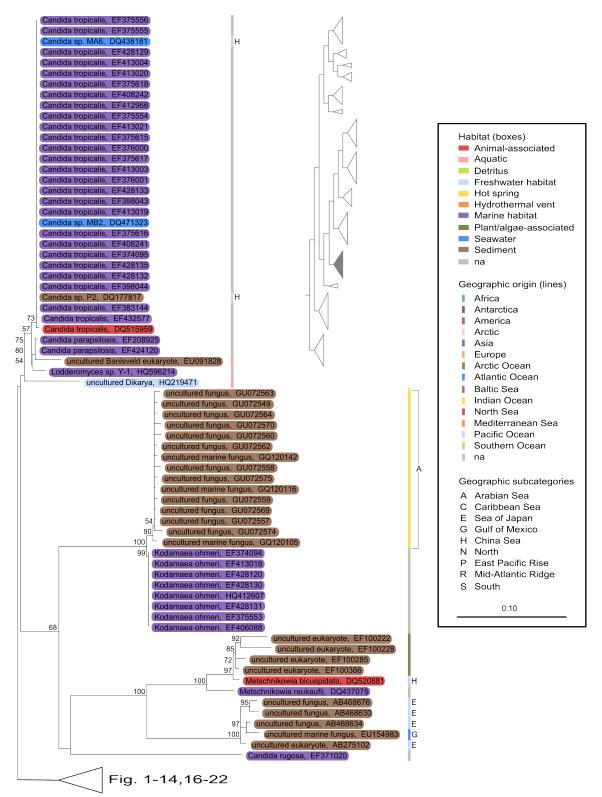
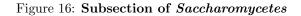


Figure 15: Subsection of Saccharomycetes



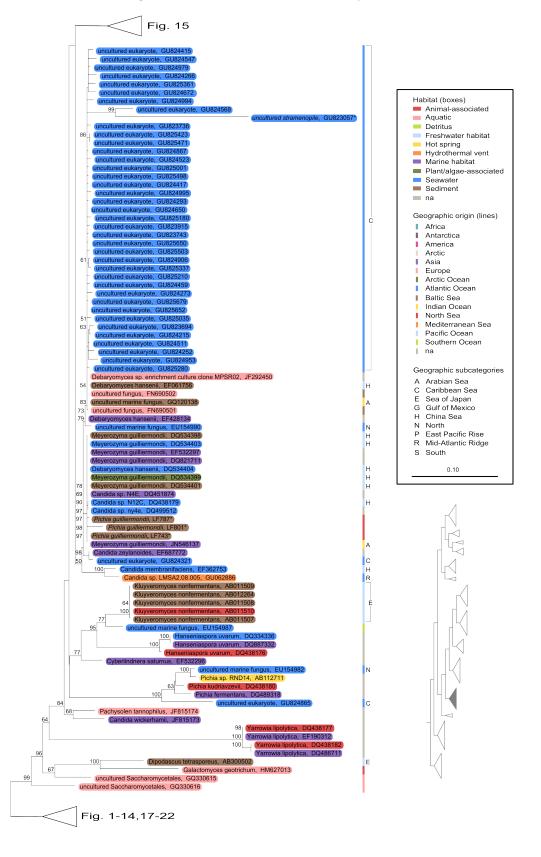


Figure 17: Subsection of Taphrinomycotina

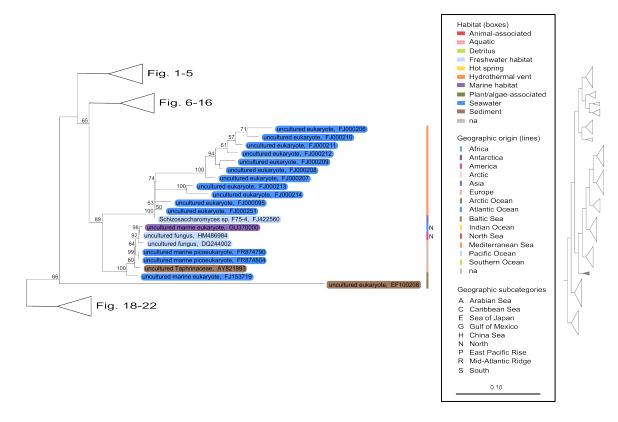


Figure 18: Subsection of Chytridiomycota

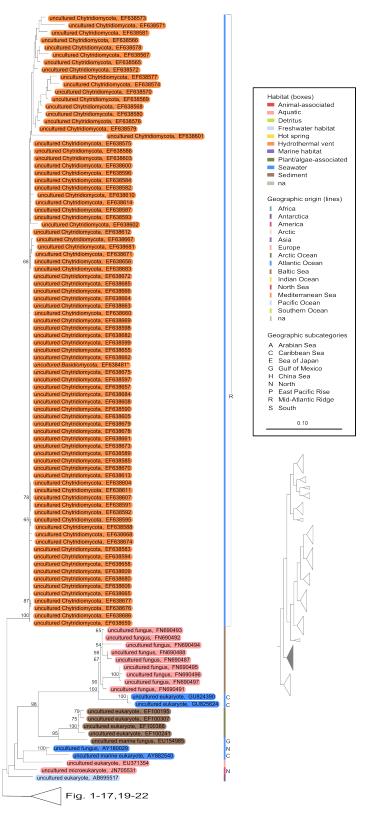
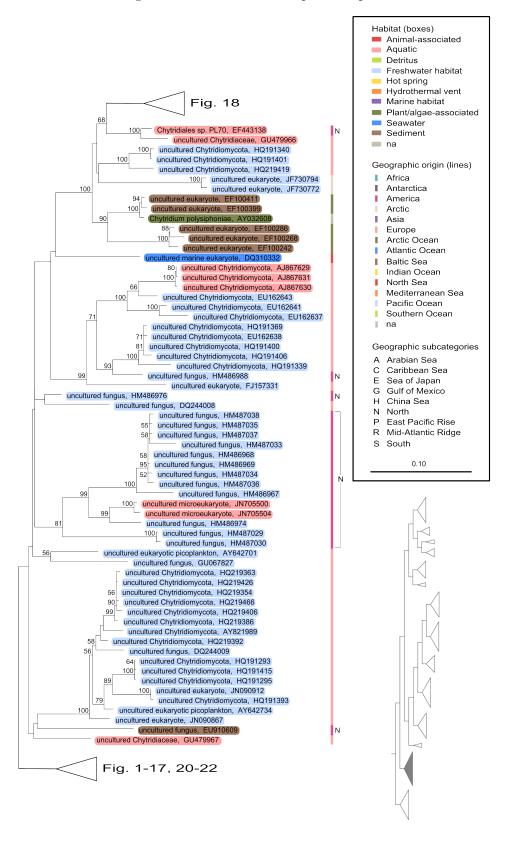
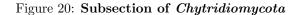


Figure 19: Subsection of Chytridiomycota





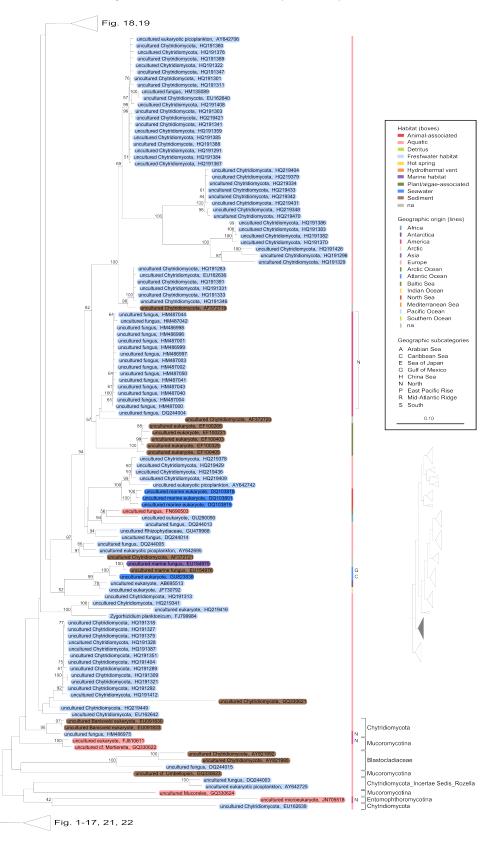


Figure 21: Subsection of basal fungal lineages

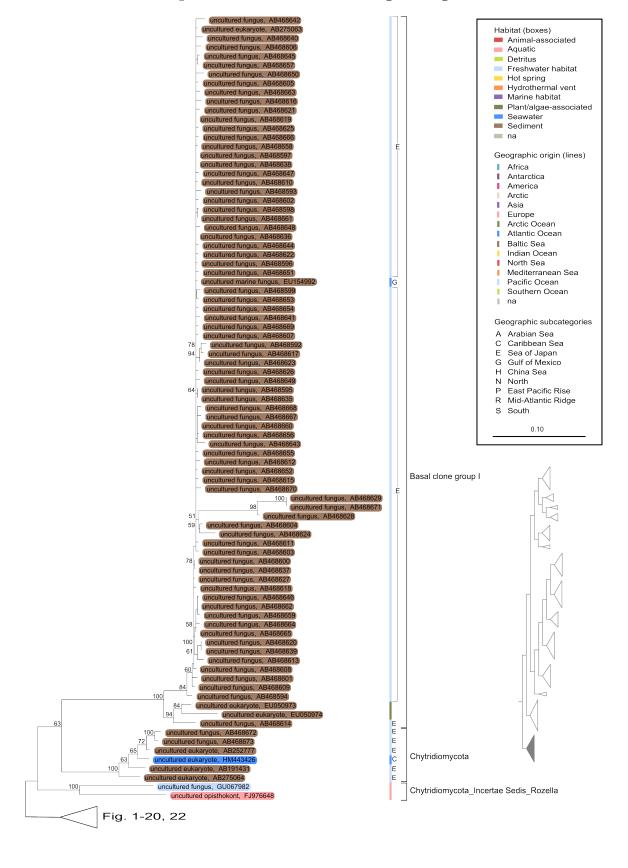


Fig. 1-20 Fig. 21 ncultured fungus. HM486994 ncultured fungus. HM486991 ncultured fungus. HM486989 cultured fungus. HM486993 uncultured fungus. HM486993 uncultured fungus. HM486990 uncultured fungus. HM486990 uncultured fungus. HM486990 Cryptomycota uncultured eukaryote, FJ810615 uncultured eukaryote, FJ810613 EU091827
uncultured fungus, DQ244018
uncultured fungus, DQ244016
uncultured fungus, DQ244017
uncultured eukaryotic picoplankton, AY642711
uncultured eukaryotic picoplankton, AY642731
uncultured eukaryotic picoplankton, AY642731
uncultured eukaryotic, AJ130857
tuted Banisyedi eukaryotic, EU091838) uncultured eukaryotic picoplankton, AY642700 uncultured fungus, EU162634 uncultured eukaryote, AB695461 collured fungus. DC244011

(Incollured suksnyots. AB252276

54 uncollured fungus, HM487008

50 uncultured fungus, HM487009

60 uncultured fungus, HM487009

55 uncultured fungus, HM487047

uncultured fungus, HM487041

uncultured fungus, HM487011

uncultured fungus, HM487011 Habitat (boxes)

Arimal-associated
Aquatic
Detritus
Freshwater habitat
Hot spring
Hydrothermal vent
Marine habitat
Seawater
Seawater
Sediment
na Habitat (boxes) LKM15 uncultured alveolate, uncultured eukaryote, AJ130850 uncultured fungus, HM487053 uncultured eukaryote, AB6954 uncultured eukaryote, AB695462 uncultured fungus, GU067928 uncultured fungus, GU067910 cultured fungus, GU067910 uncultured dukaryote, JN090865 uncultured dukaryote, H0191302 uncultured fungus, GU067917 Geographic origin (lines) eographic origin (lines
Africa
Antarctica
America
Arctic
Asia
Europe
Arctic Ocean
Atlantic Ocean
Baltic Sea
Indian Ocean
North Sea
Mediterranean Sea
Pacific Ocean
Southern Ocean
na uncultured eukaryote, GU067976 uncultured fungus, GU067912 uncultured eukaryote, FJ157335 uncultured eukaryote, JN090898 uncultured eukaryote, JN090889 Geographic subcategories Geographic subcatego
A Arabian Sea
C Caribbean Sea
E Sea of Japan
G Gulf of Mexico
H China Sea
N North
P East Pacific Rise
R Mid-Atlantic Ridge
S South Blastocladiomycota uncultured eukaryote, EF1
uncultured fungus, GU06
uncultured opisthokon
Nuclearia thermophila, AB433328 | Nuclearia thermophila, AB433328 | uncultured Nuclearidae, G0339607 | uncultured Nuclearidae, G0339607 | uncultured Nuclearidae, G0339607 | uncultured Nuclearidae, G0339607 | uncultured Nuclearidae, G0339608 | ss | Monosiga brevicolis, AF100940 | uncultured Nuclearidae, G0339608 | uncultured Nuclearidae, G0339607 | uncultured Nuclearidae, G0339608 | uncultured Nuclearidae, uncultured Nuclearid Nuclearia

Figure 22: Subsection of basal fungal lineages