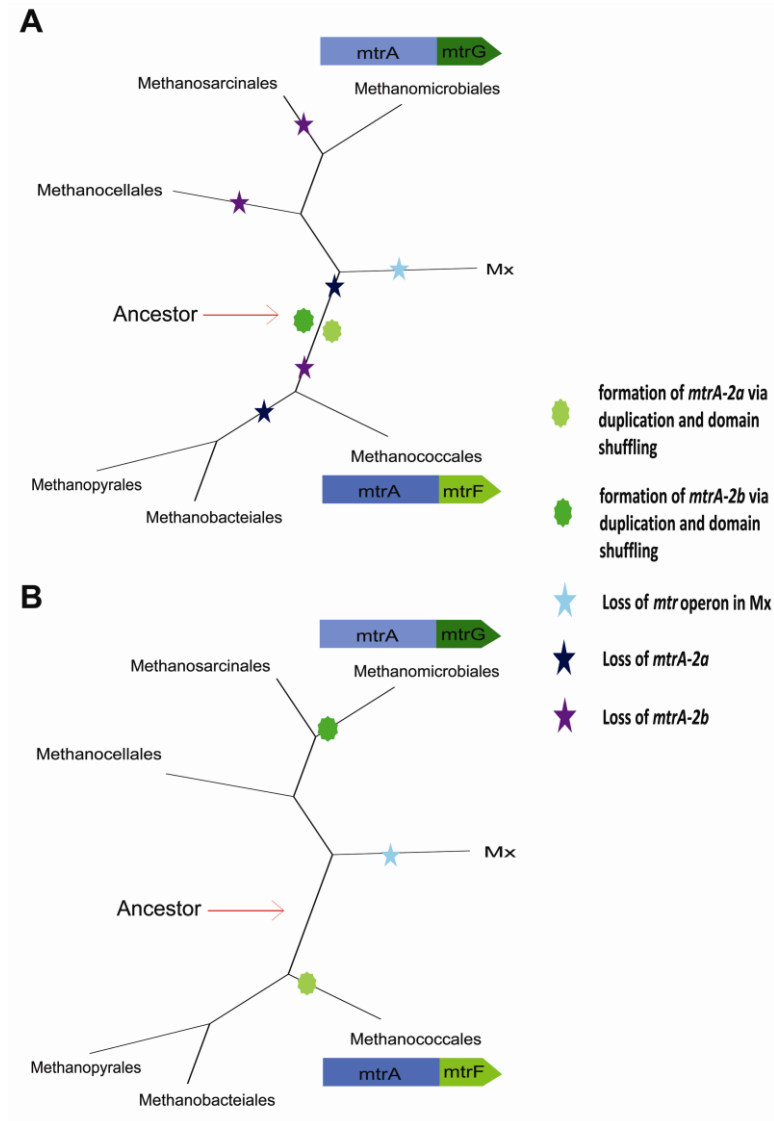


**Figure S1 (Related to Figure 1)**



**Figure S1 (Related to Figure 1).** Evolutionary scenarios of the convergent evolutionary pattern of *mtrA-2*. (A) Scenario I: *mtrA-2* originated in Methanomicrobiales and Methanococcales independently. (B) Scenario II: *mtrA-2* originated in the common ancestor of all methanogens followed by several gene loss events in different lineages for at least five times.