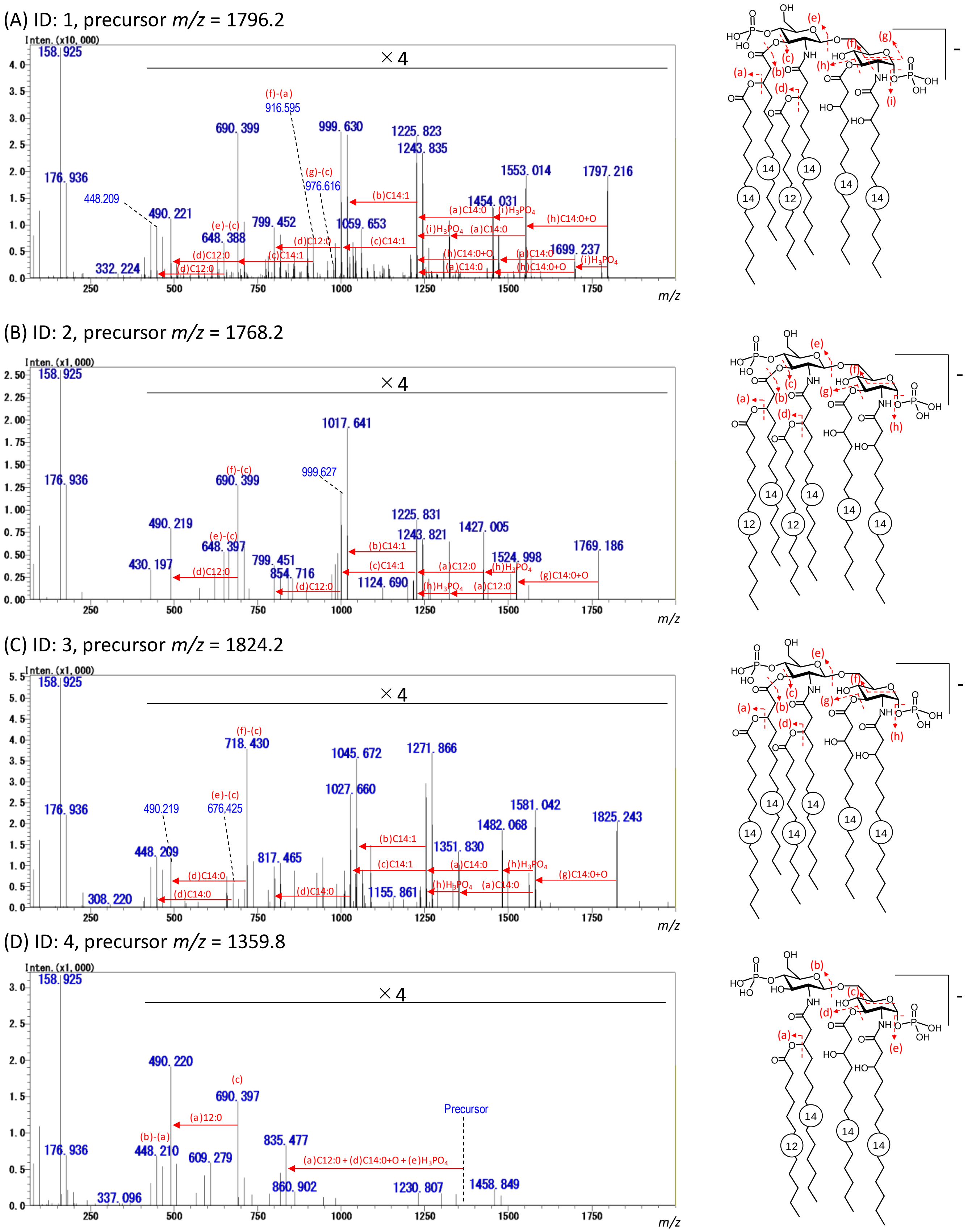


Figure S1. MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

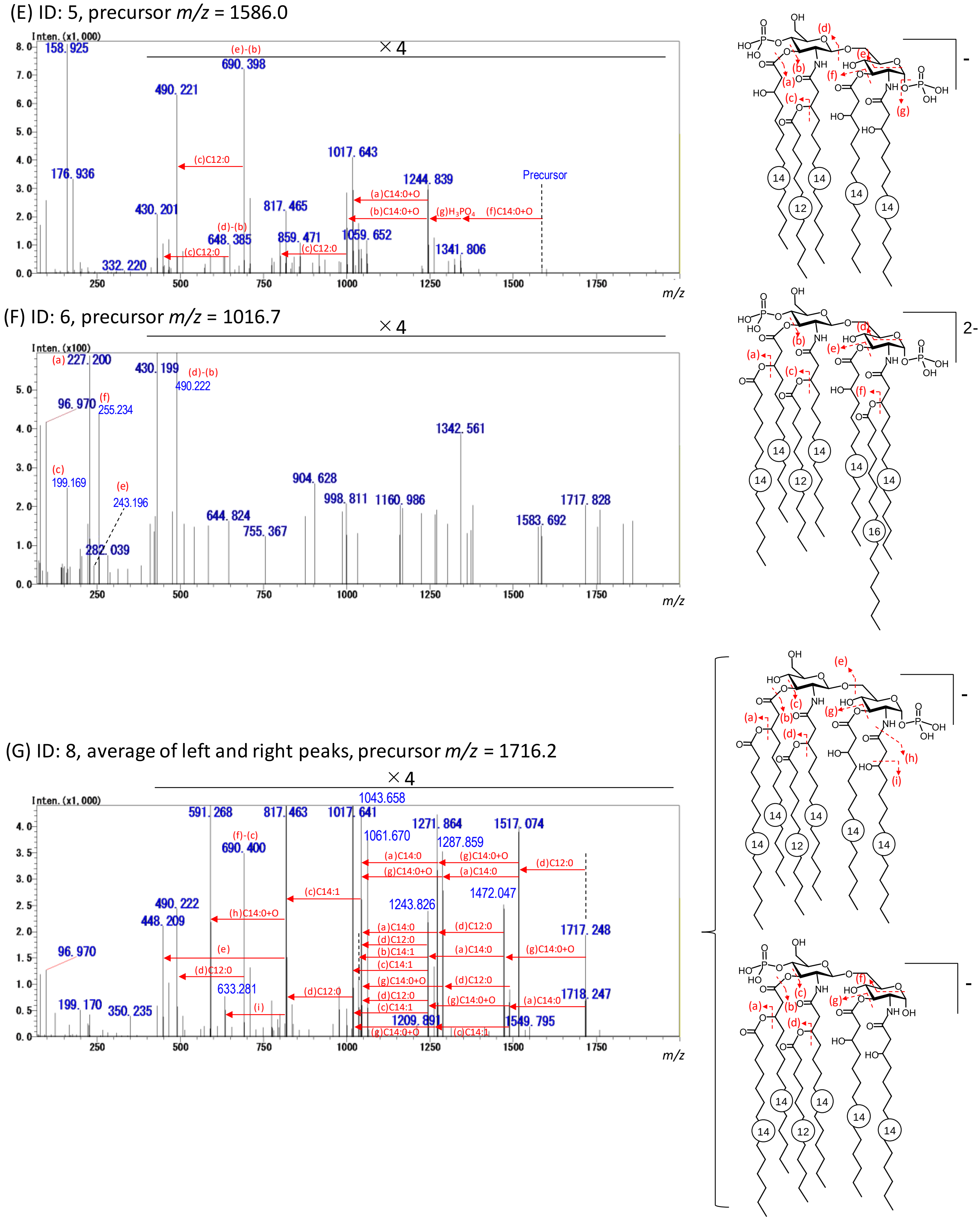
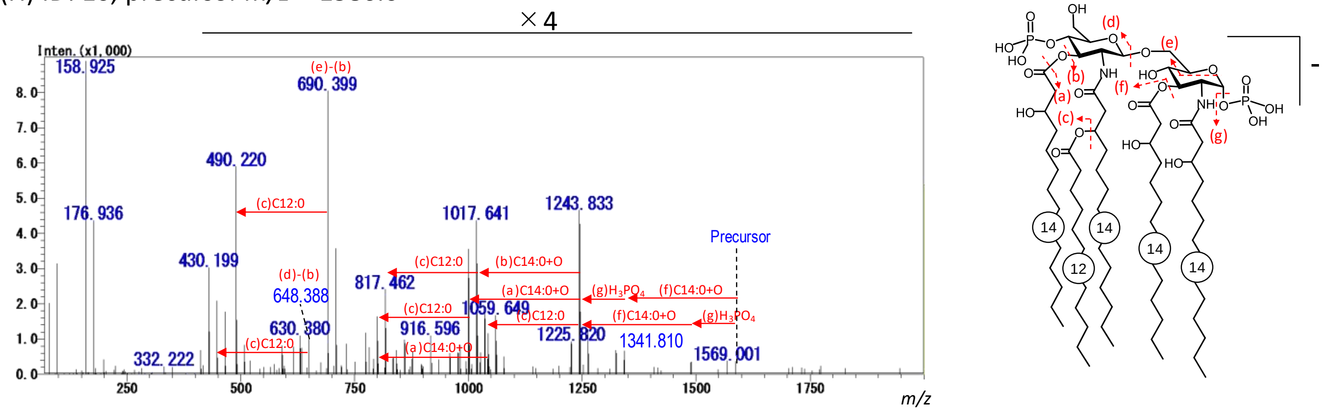
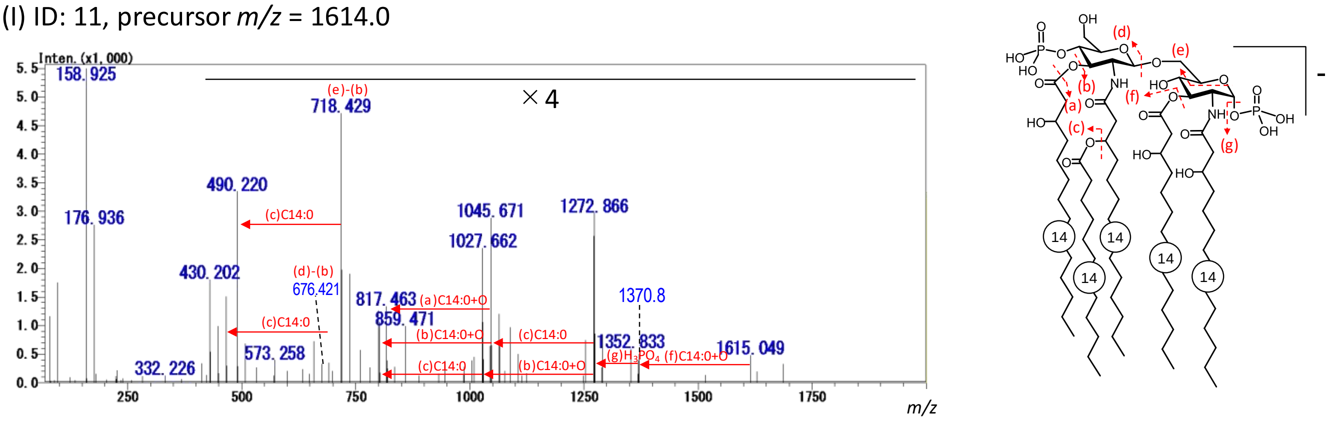


Figure S1. (Continued) MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

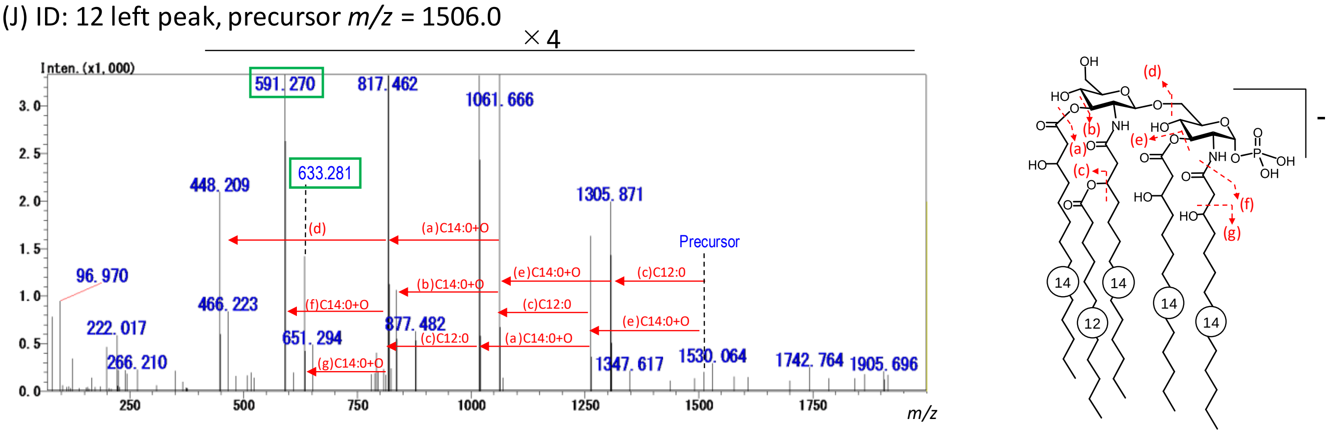
(H) ID: 10, precursor *m/z* = 1586.0



(I) ID: 11, precursor *m/z* = 1614.0



(J) ID: 12 left peak, precursor *m/z* = 1506.0



(K) ID: 12 right peak, precursor *m/z* = 1506.0

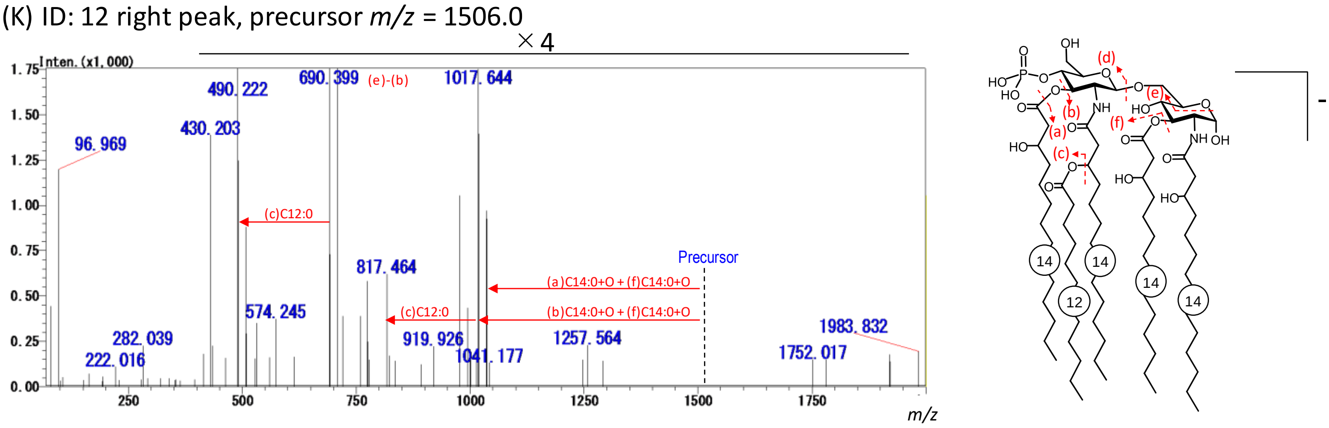


Figure S1. (Continued) MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

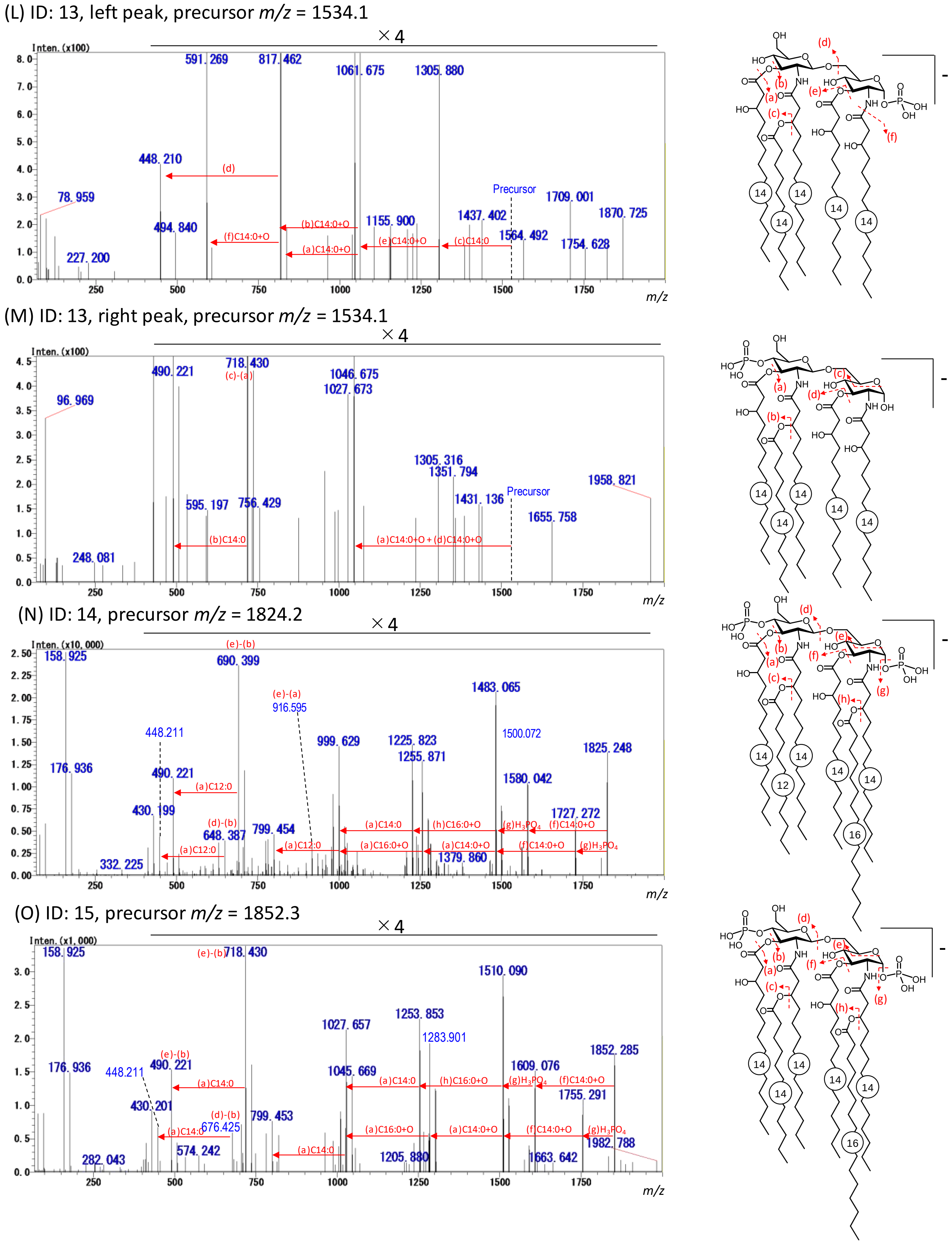


Figure S1. (Continued) MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

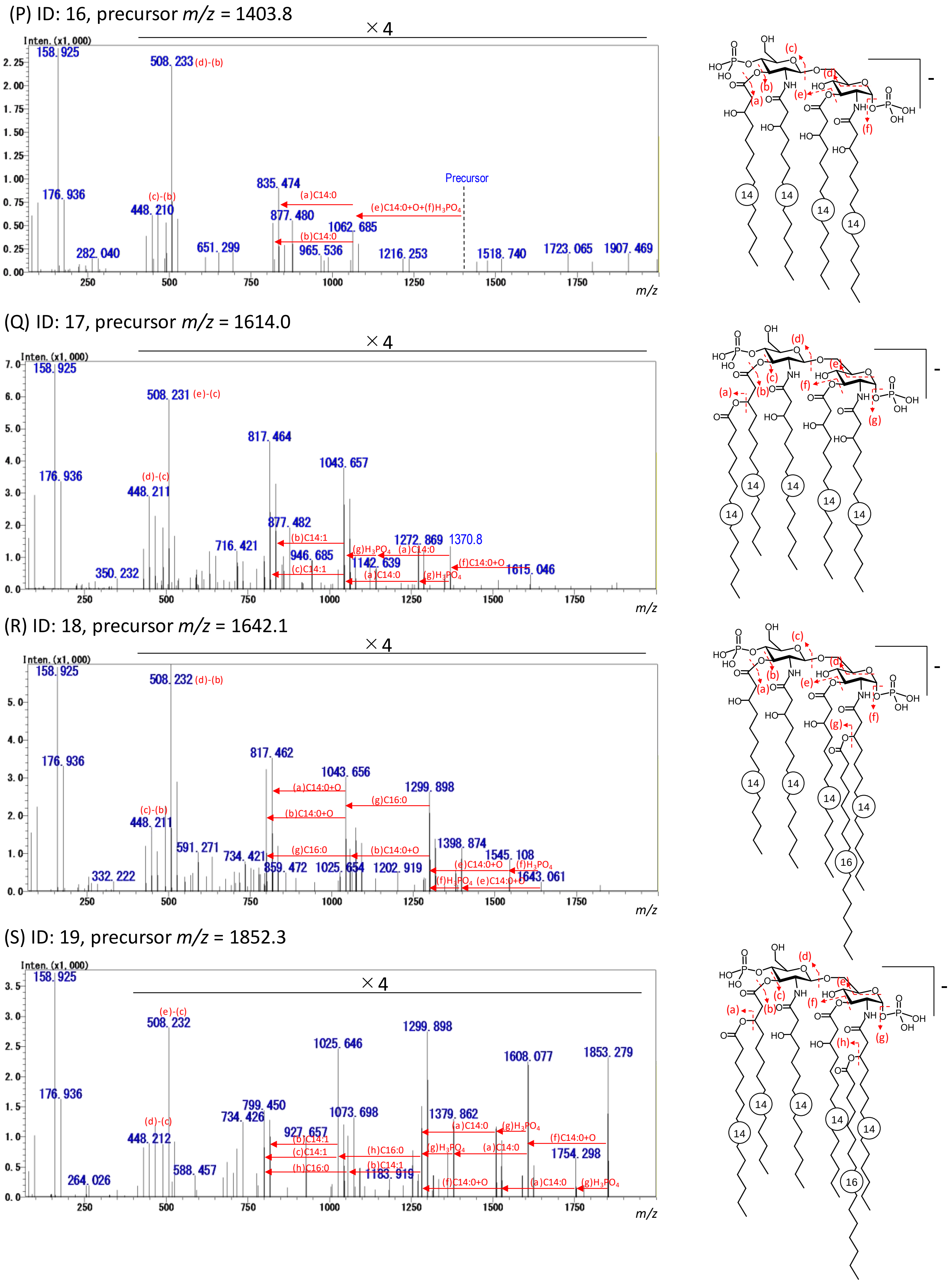


Figure S1. (Continued) MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

(T) ID: 20, precursor *m/z* = 1850.3

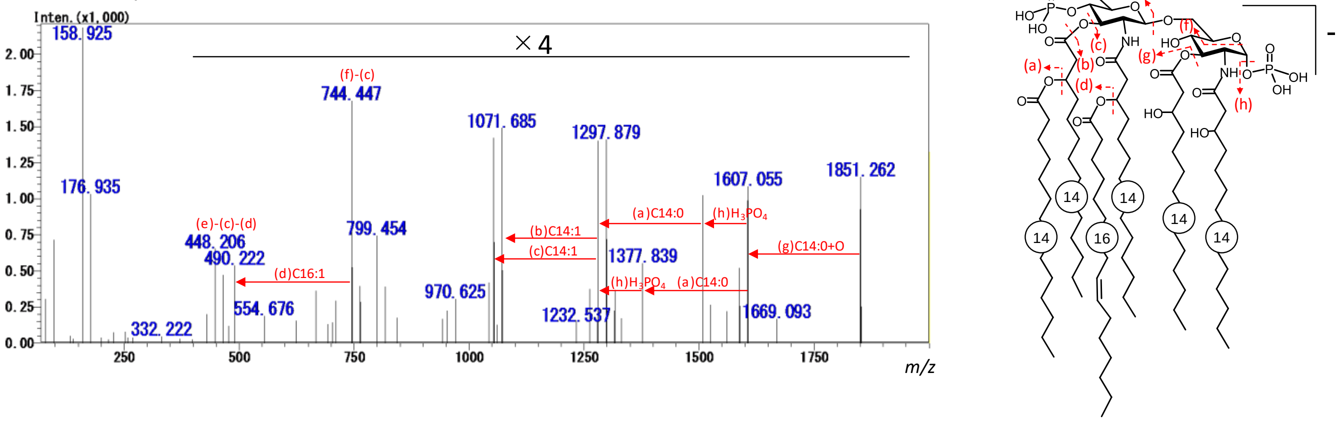
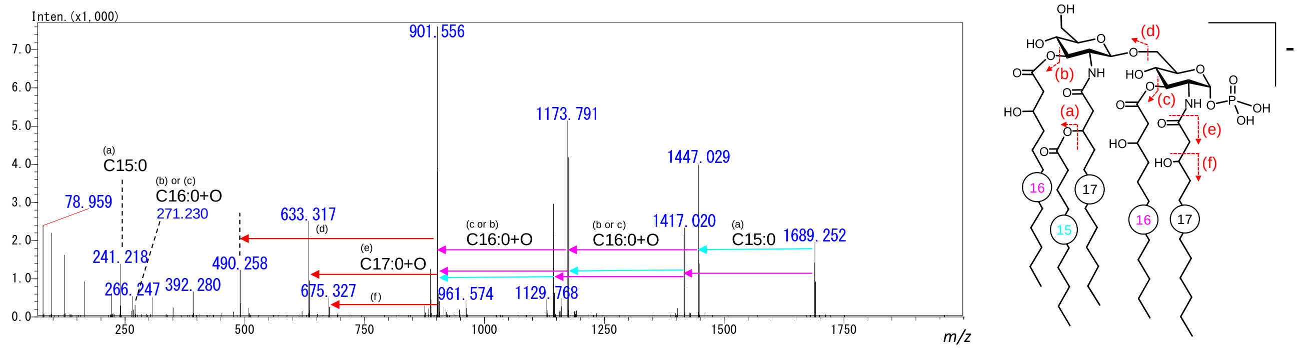
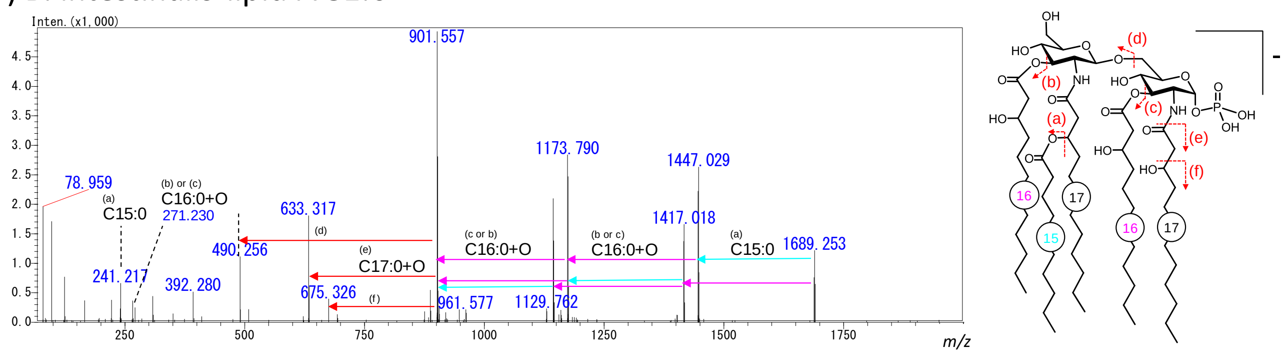


Figure S1. (Continued) MS/MS spectra of diverse molecular species present in *E. coli* lipid A.

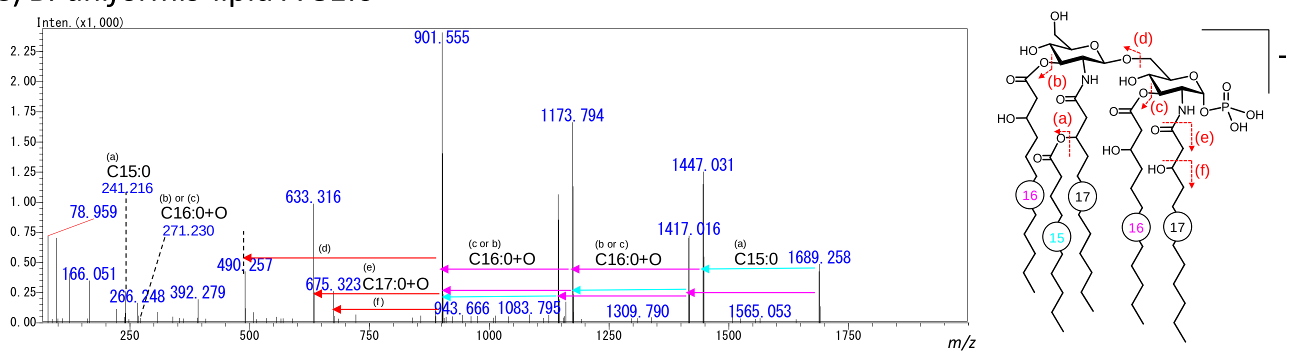
(A) *B. thetaiotaomicron* lipid A 81:0



(B) *B. intestinalis* lipid A 81:0



(C) *B. uniformis* lipid A 81:0



(D) *P. johnsonii* lipid A 81:0

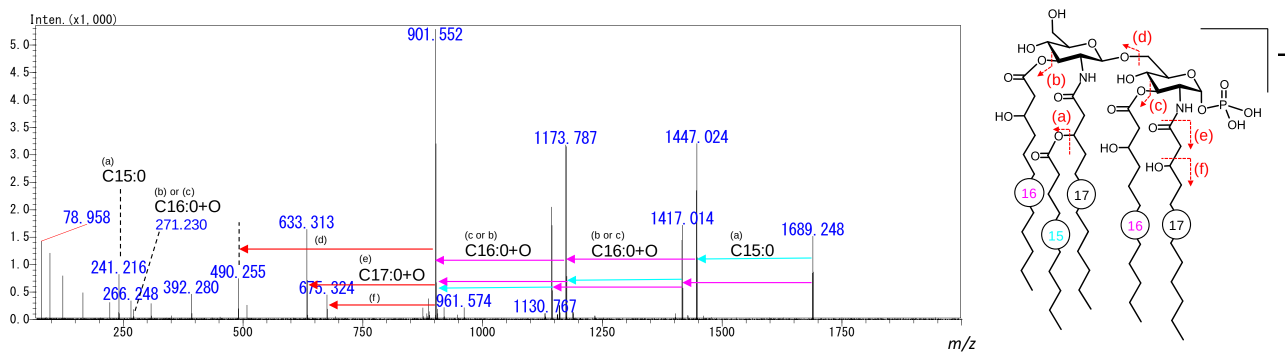
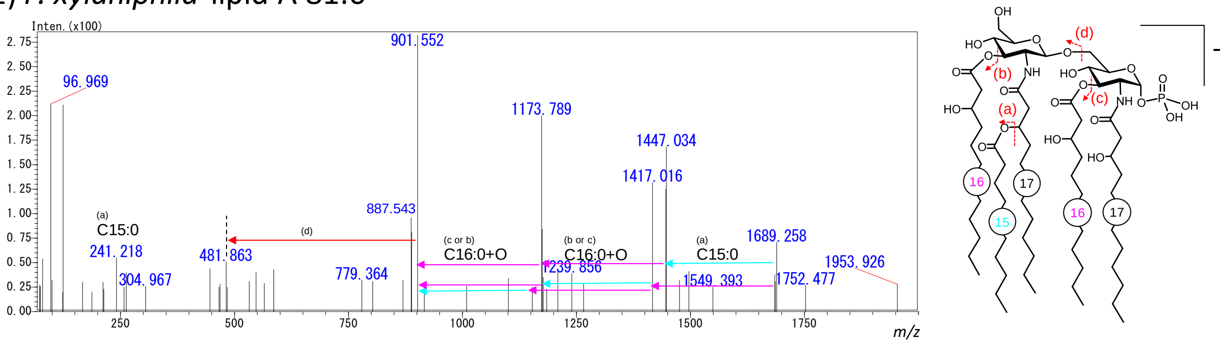
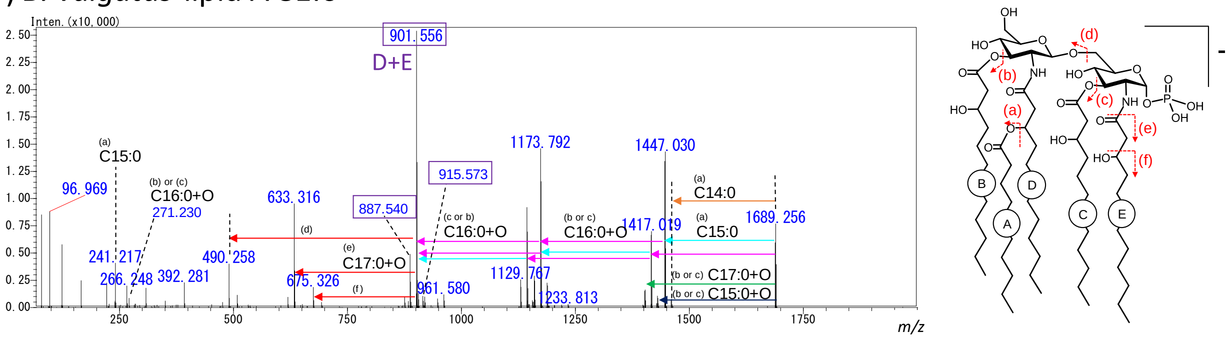


Figure S2. MS/MS spectra of lipid A 81:0 from Bacteroidetes strains.

(E) *P. xylaniphila* lipid A 81:0

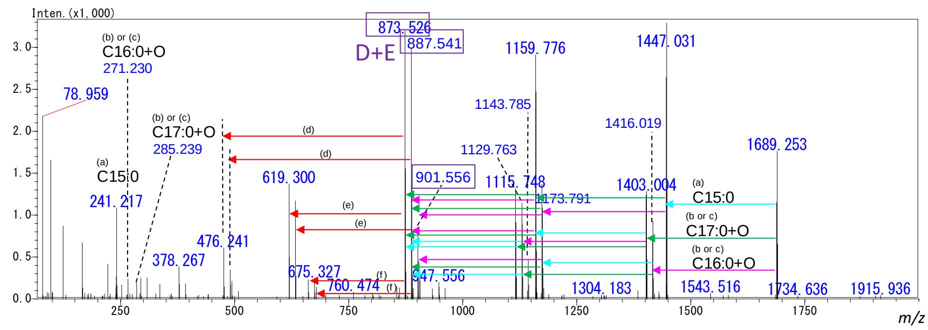


(F) *B. vulgatus* lipid A 81:0



A = 14 or 15
D, E = 16 or 17 (D+E = 33, 34 or 35)
B, C = 15, 16 or 17 (B+C = 81–A–D–E)

(G) *O. laneus* lipid A 81:0



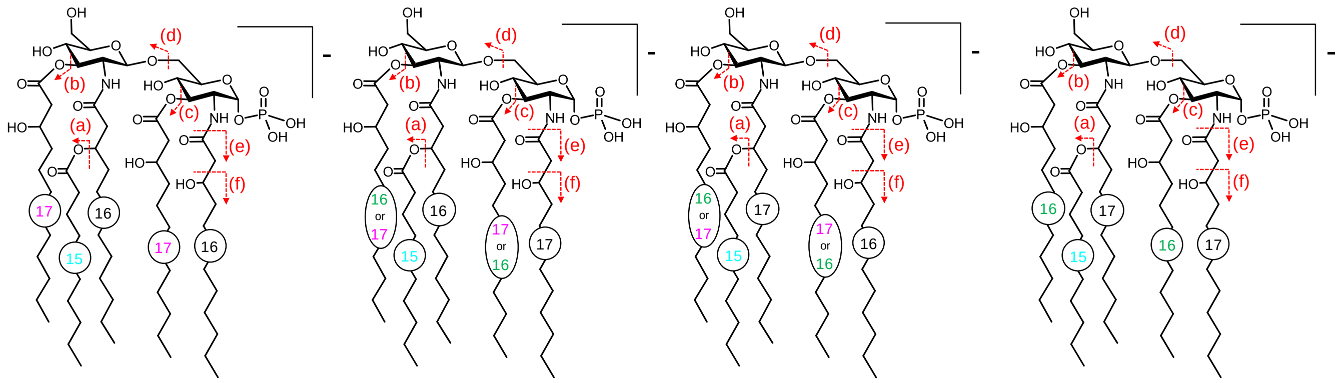
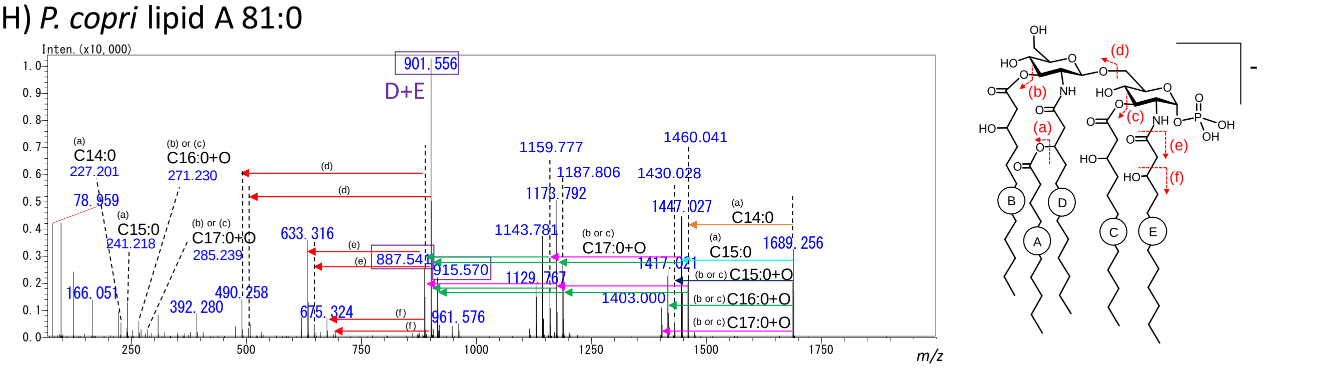


Figure S2. (Continued) MS/MS spectra of lipid A 81:0 from Bacteroidetes strains.

(H) *P. copri* lipid A 81:0



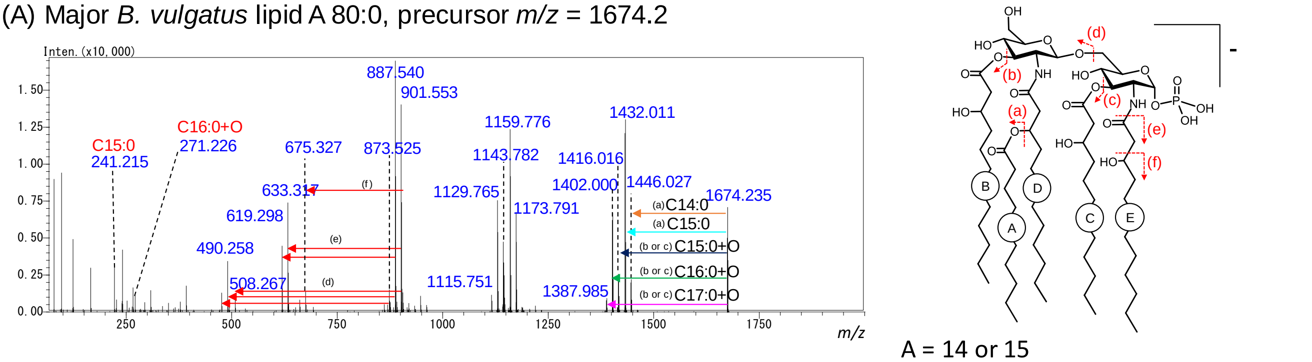
A = 14 or 15

D, E = 16 or 17 (D+E = 33, 34 or 35)

B, C = 15, 16 or 17 (B+C = 81–A–D–E)

Figure S2. (Continued) MS/MS spectra of lipid A 81:0 from Bacteroidetes strains.

(A) Major *B. vulgatus* lipid A 80:0, precursor *m/z* = 1674.2

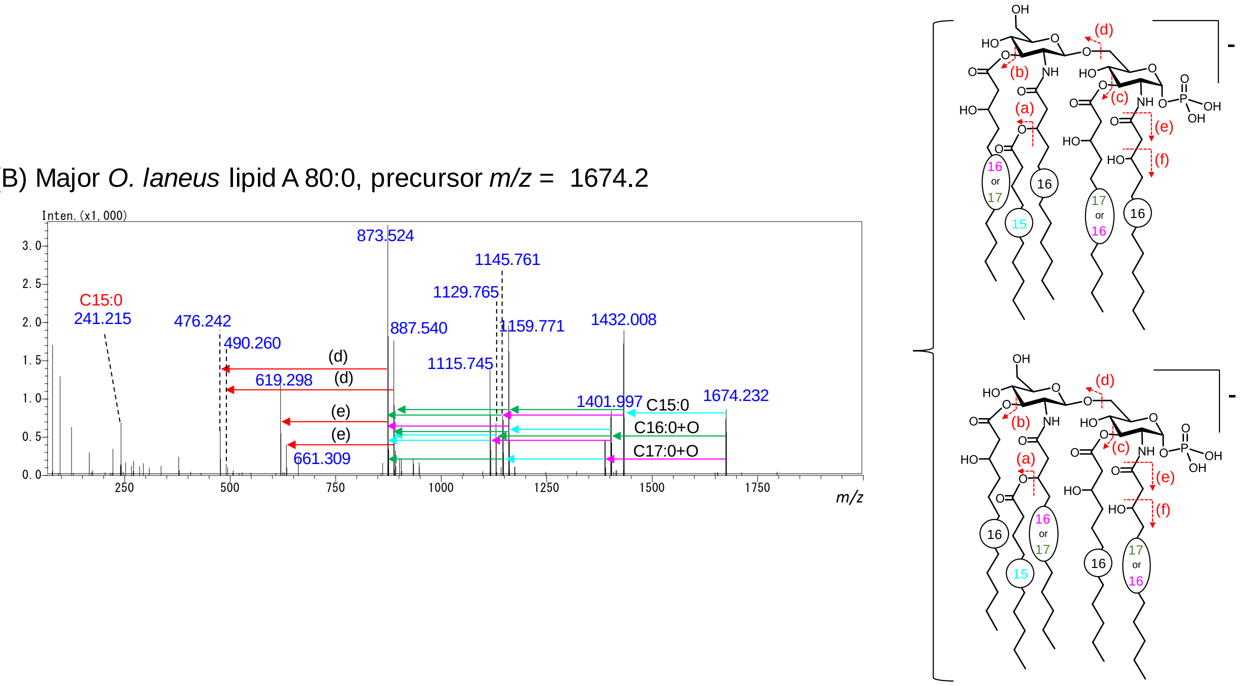


A = 14 or 15

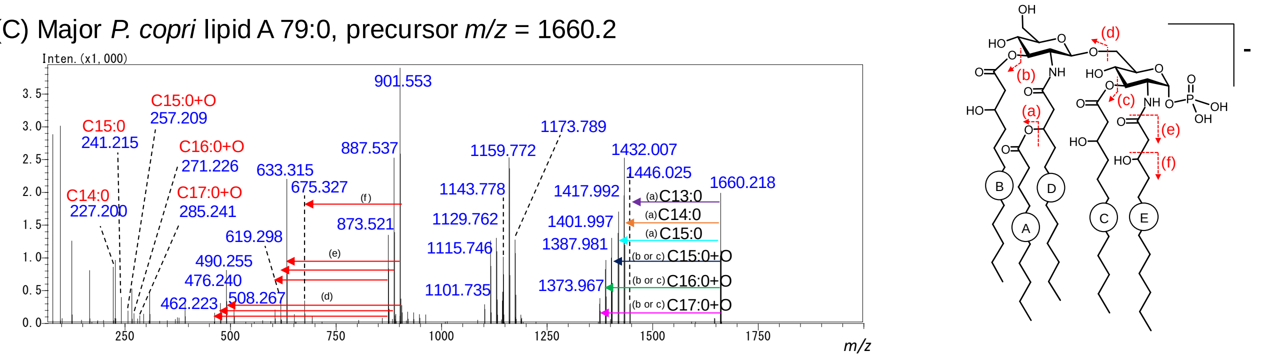
D, E = 16 or 17 (D+E = 33, 34 or 35)

B, C = 15, 16 or 17 (B+C = 81–A–D–E)

(B) Major *O. laneus* lipid A 80:0, precursor *m/z* = 1674.2



(C) Major *P. copri* lipid A 79:0, precursor *m/z* = 1660.2



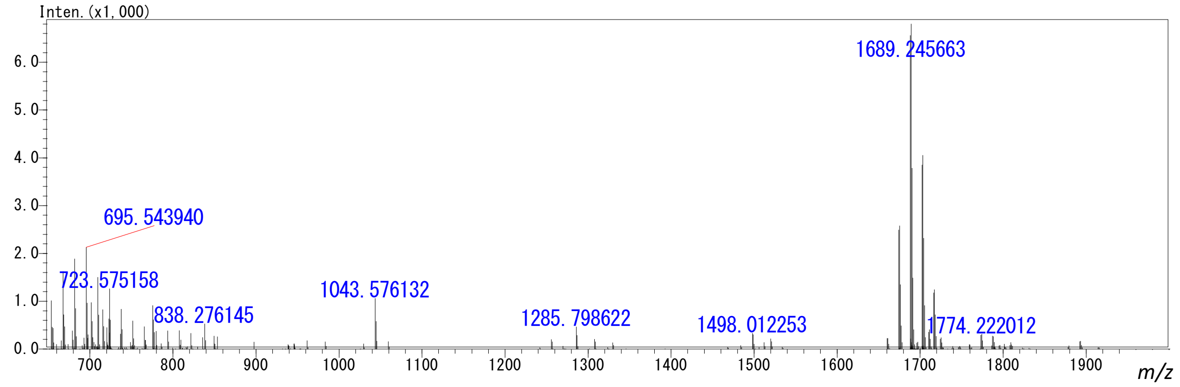
A = 13, 14 or 15

D, E = 16 or 17 (D+E = 32, 33, or 34)

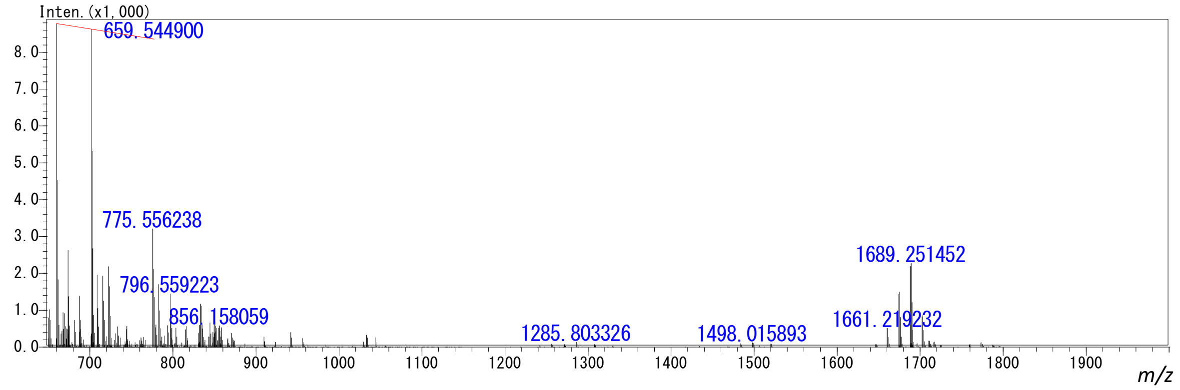
B, C = 15, 16 or 17 (B+C = 81–A–D–E)

Figure S3. MS/MS spectra of dominant lipid A species in each Bacteroidetes strain.

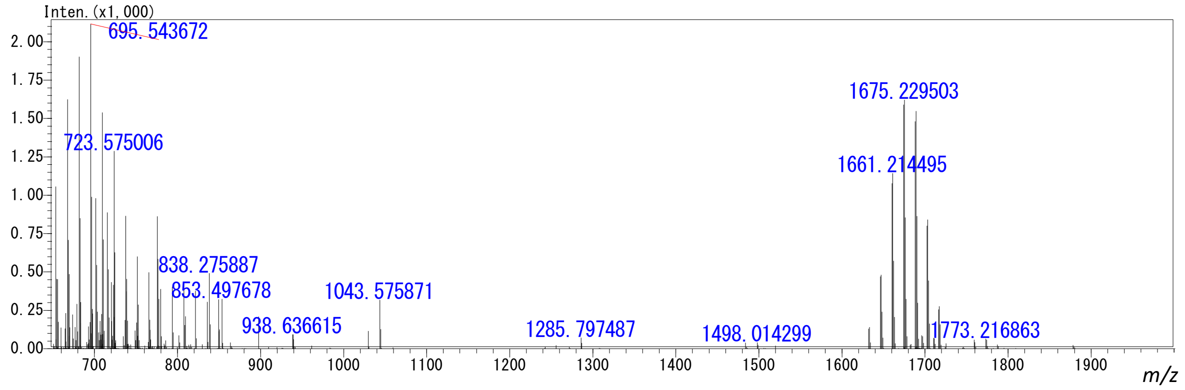
(A) *B. fragilis*



(B) *B. thetaiotaomicron*



(C) *B. vulgatus*



(D) *B. intestinalis*

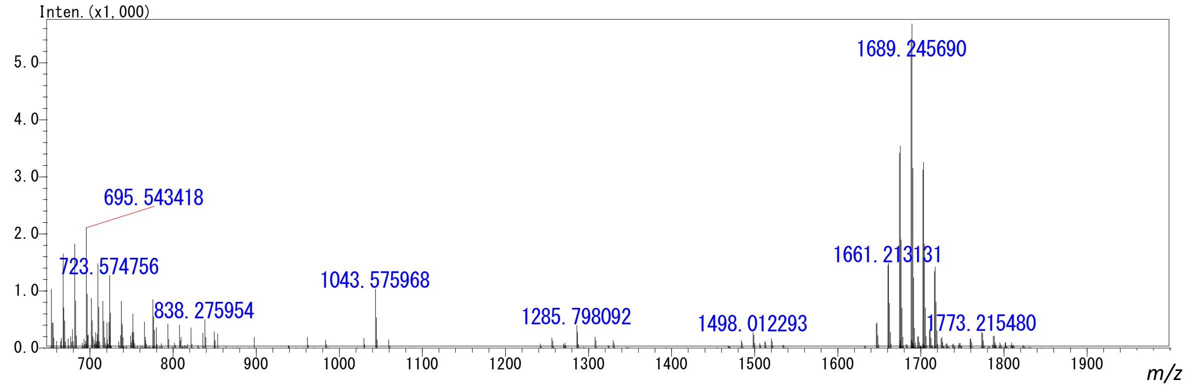
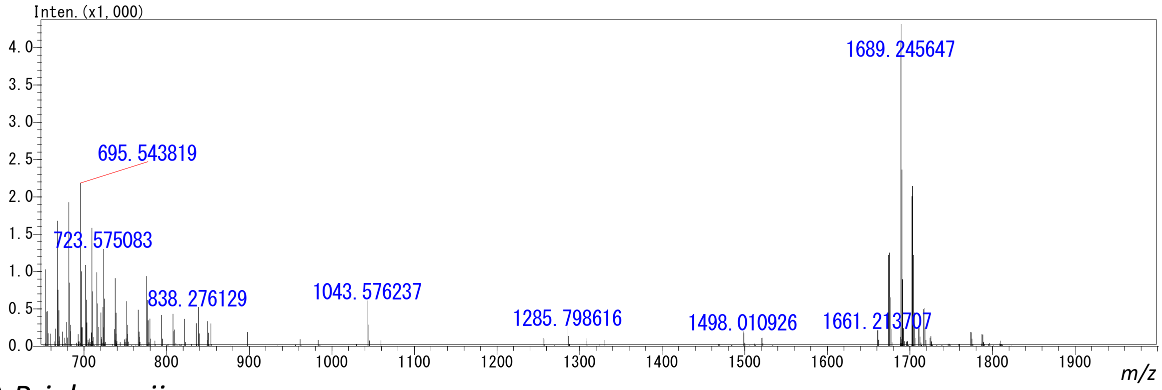
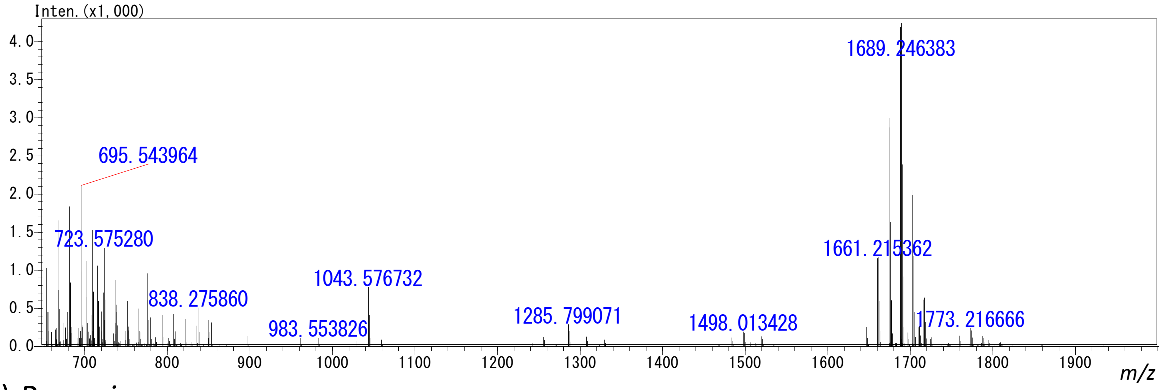


Figure S4. MS1 spectra of lipid A extracts in each Bacteroidetes strain. Average MS1 spectra of RT=10–12 min were presented.

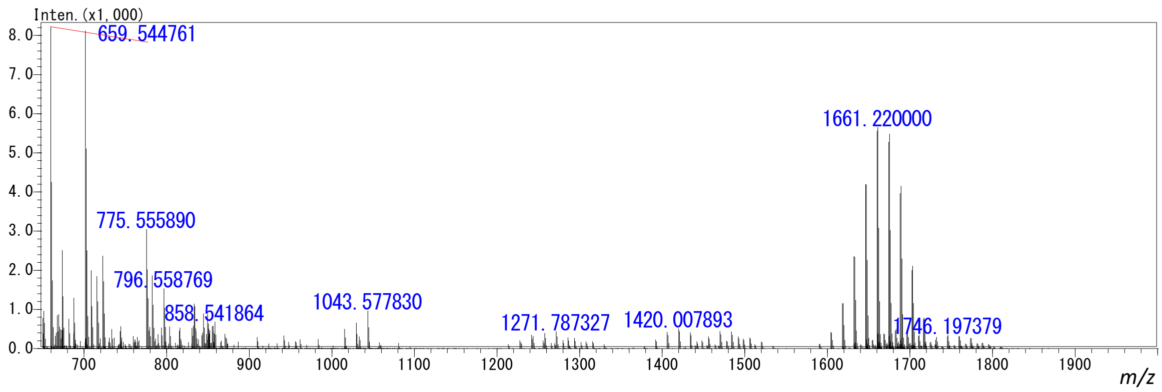
(E) *B. uniformis*



(F) *P. johnsonii*



(G) *P. copri*



(H) *P. xylaniphila*

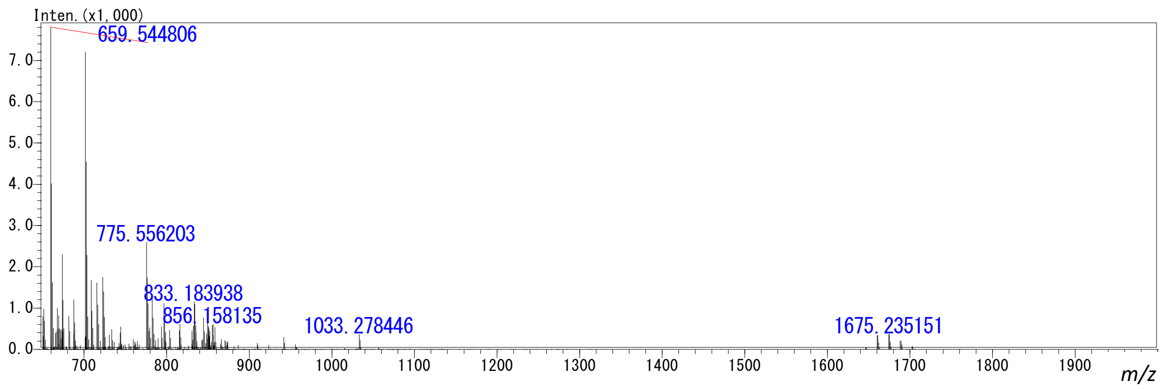


Figure S4. (Continued) MS1 spectra of lipid A extracts in each Bacteroidetes strain. Average MS1 spectra of RT=10–12 min were presented.

(I) *O. laneus*

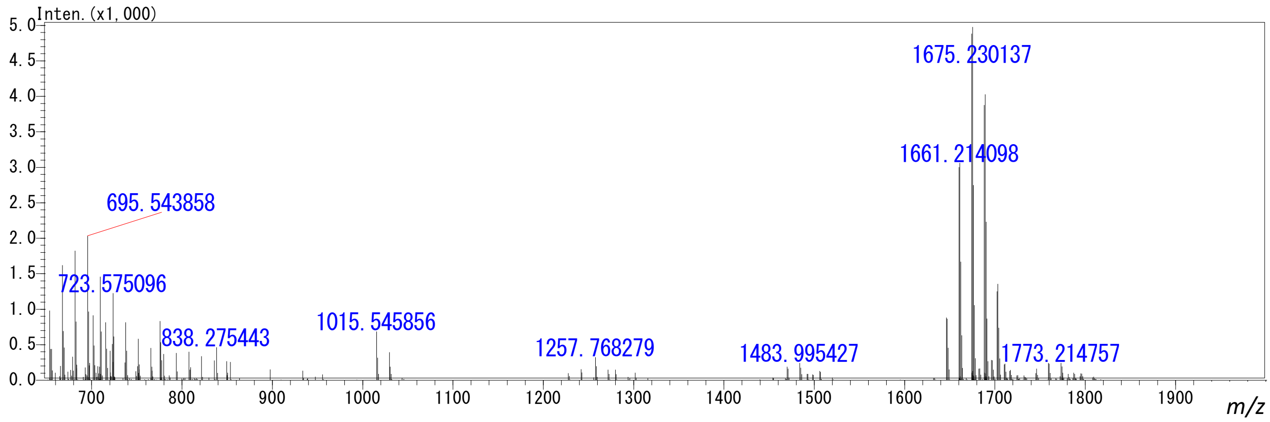


Figure S4. (Continued) MS1 spectra of lipid A extracts in each Bacteroidetes strain. Average MS1 spectra of RT=10–12 min were presented.