

# FIG S1

1 ATAAGTAAGCGCCGCTGATTACCGCACCCGATTATGGGAAGGTATCAACTGGTGGCGAGTGTAAAGAT 7  
71 TGCGCAACTGCACCATCTTTATGCTGTAAAGGGTTATTGACTTAAGGGTCTTTATGTGTGCGTAGATAG 140  
141 TTGTTTTTAAATGATTTTTTTTTTGTAAACGAACGTACCCTACCTAGTTAAAAACGGCGCAATCTTTTTT 210  
211 TTTTACTCCTTTATTTTTTTTTTTGTACTTCCACGTTTTTCGTAAGACGCATTTCTCCTCTATTTTTCTAT 280  
281 TATTATTATTATTTTTTACCCTAACCTTGTGGGAGCGTAGATAGCTATTTGGTTGATTTAAGACGCAT 350  
351 TAGCGTTTTCTCATATATATTTTTTATTGGGCCAGATGATCTGTTATTGTGCGCTTTGGGCACACCACC 420  
421 AGTACCCTCGAGGGGAGTGCAAATCTTCTCAACTTTTCTACACTTAACCATTCCCACTTTTTTCTGACC 490  
491 TTGCATTTTTCAGTGAAAGCTTCTAGatgaaaaacaagtccagcaagcaggttcttttggcccttcaggg 560  
1 M K N K S S K Q V L L P L Q G 15  
561 gaacatcttccatccgctgaatcgcaagccccggctcactgatgacaactgaggaaggactcgcaac 630  
16 N I S P S A E S P R P G S L M T T E G R T R N 38  
631 tacaaggacctataaataggacagtgttctcattgatcatggcgtacttctttcttgactcgtttcca 700  
39 Y K D L I N R T V F S L I M A Y F F L G L **V S I** 62  
701 ttggtgcagaagccattatcttccctcctatcatcattttgtgcttgatgtttcatgaagtcagcaggat 770  
63 **G A E A I I F L L I I I L C L M F** H E V S R I 85  
771 caatcaacgggagagaaagaacaagcagctgccatcagtttccataatgaaagatggtttctttgact 840  
86 N Q R E R K N K Q L **F S V F I N K V W F L C T** 108  
841 actatgttttccatgacagcgtatagcatacgtgacccttggtagcaacataccaggcgctatgaggt 910  
109 **T M F S N T A** Y S I R D P L V A T Y P G A M R Y 132  
911 attacaggaatgcctggatgatcgcatcttggttttccactcgttgggatgggtgggttttggctgtcgct 980  
133 Y R N A **W M I A F G F P L V G M V G F V L S I** 155  
981 tcgcaaggggatgtatcgctaccagttcatgcaactcgcggcgattgtaatgactctgttgatgtcact 1050  
156 **K G M Y R Y Q F N Q L A A I V M T L L Y V T** 178  
1051 gctcaagggtagcggcaaatatcaaatgtaatgcgaggaatgctttggttcgttcttccaataagttgtg 1120  
179 **A Q G Y A Q I S N V M R G M L W F V L P I S C V** 202  
1121 ttataacaatgacacctgggcatatatttttgtaaacttttgggagaacgaagttgctggccctctc 1190  
203 **I N N D T** W A Y I F G K L F G R T K L L A L S 225  
1191 tccccaaaagactgtggagggcttctggtgggcttctggttttaccatcatatggtctttttggttcgcc 1260  
226 P K K T V E G F **V G A F V F T I I W S F W F A** 248  
1261 ggattcctcagctatcttccccacatgtactgcgctaaaactgacttccactcagcattccactgtgaga 1330  
249 **G F L S** Y F P H M Y C A K T D F H S A F H C E K 272  
1331 aggatcctctatttgtaaagcgagatgtccccatgctcgtttgtgcaagcgttgactttcaacaggtt 1400  
273 D P L F V K R D V P M P A F V Q A L T F N R L 295  
1401 gacaaccatcaggtgcccaggggtgcagcaacatgcacttgtttttgctgcgttcgcatcccttattgcy 1470  
296 T T I R C A R V Q Q **H A L V F A A F A S L I A** 318  
1471 ccatttgggtgggttttccgcccagcgactgaaacgagcattttaaagatgaaagattttggtgacctgatac 1540  
319 **P F G C F F A** **S G L K R A F K M K D F G D L I P** 342  
1541 ccggacacgggggaataacagaccggatggactgccaagcagcagcaggtttttcacctgggtgactt 1610  
343 **G H G G I T D R M D** C Q G I M G F F T W V Y L 365  
1611 acagtcatacgtttaccgtgatgagaattgccttcatggcagcagcagcagcagcagcagcagcagcagc 1680  
366 Q S Y V Y R D E N C P S W H T I S S C A L Q L 388  
1681 cccgaggagcaacggcggttcaactattgtcgactcttaaataggtctctcacagaatagTCCATGTTGGAAG 1750  
389 P E E Q R R S L L S T L N R S L T E \* 406  
1751 GGCACGAGTAATAAACGGAGCACGGCGACCTGTCATGGTTAGCGTTTAGAATTGCTGCGAGCGAGCATG 1820  
1821 TTACCATAGTTGTAAGAAGCTGCTACCTGTATTGGTCTTTGCCGTTATATCGTATGCATTTGTATACACC 1890  
1891 ATTGTTTTCAAGGGCGCCGCTTACT 1916

FIG S2A

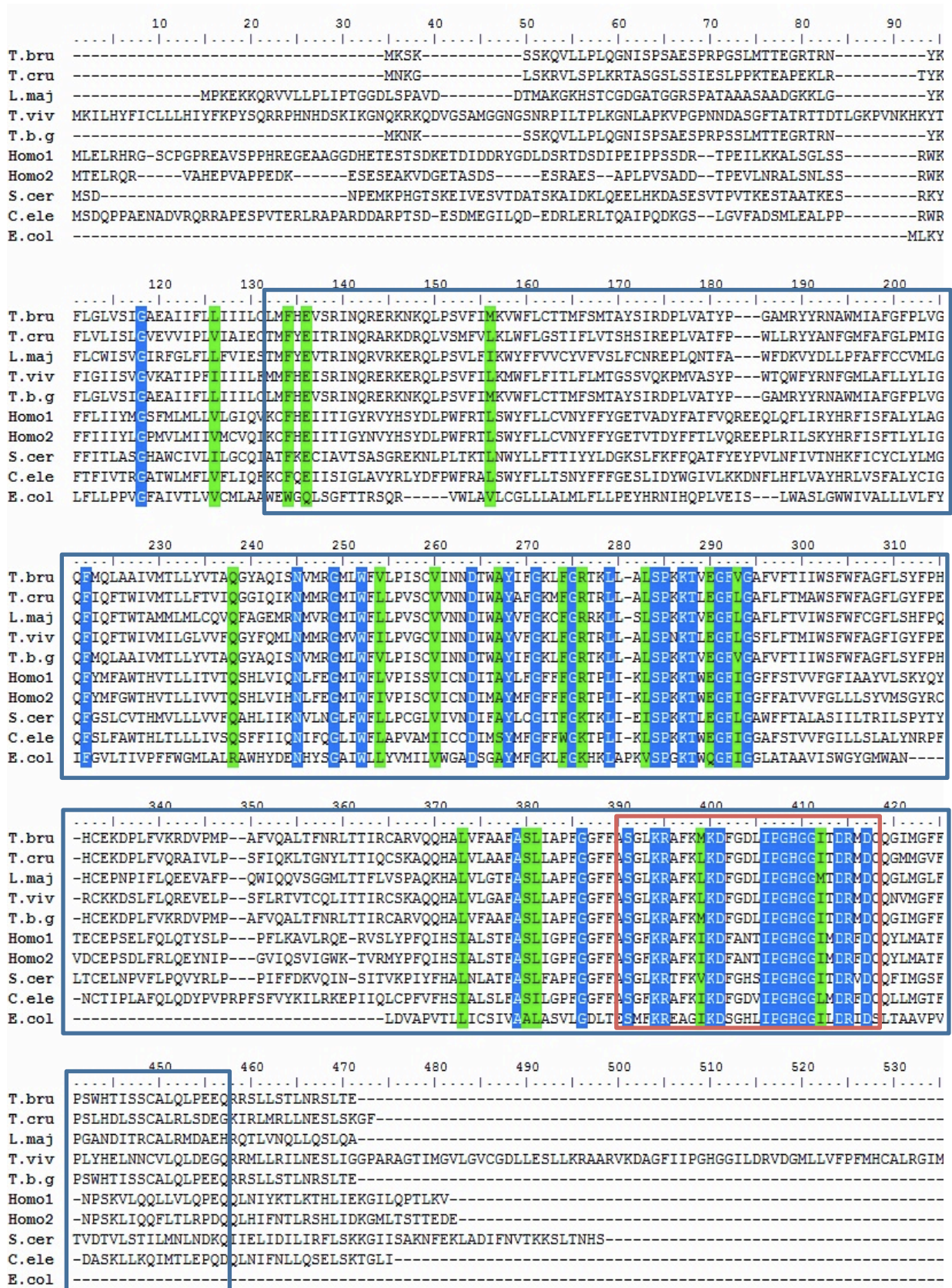


FIG 2B

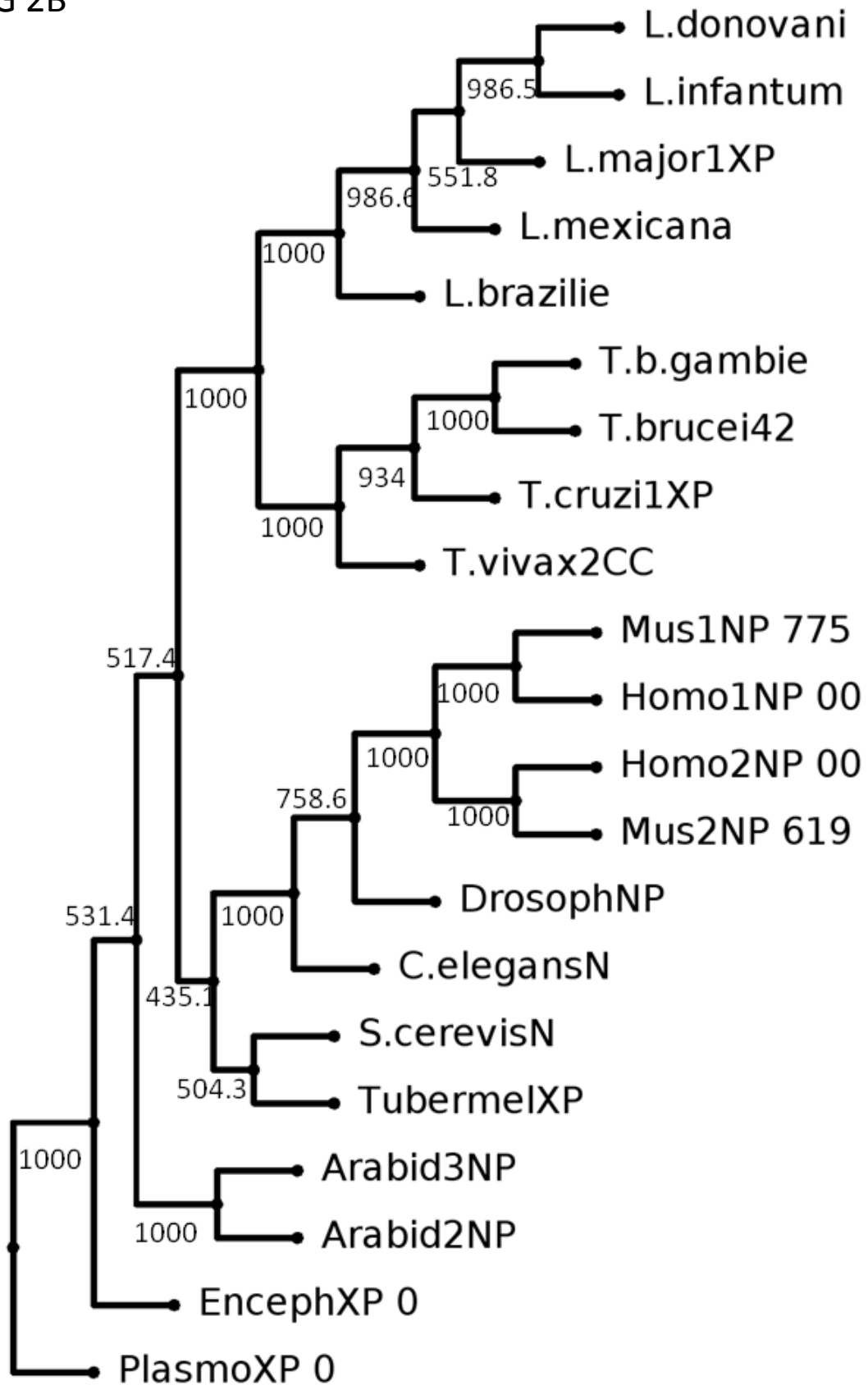


FIG S3A

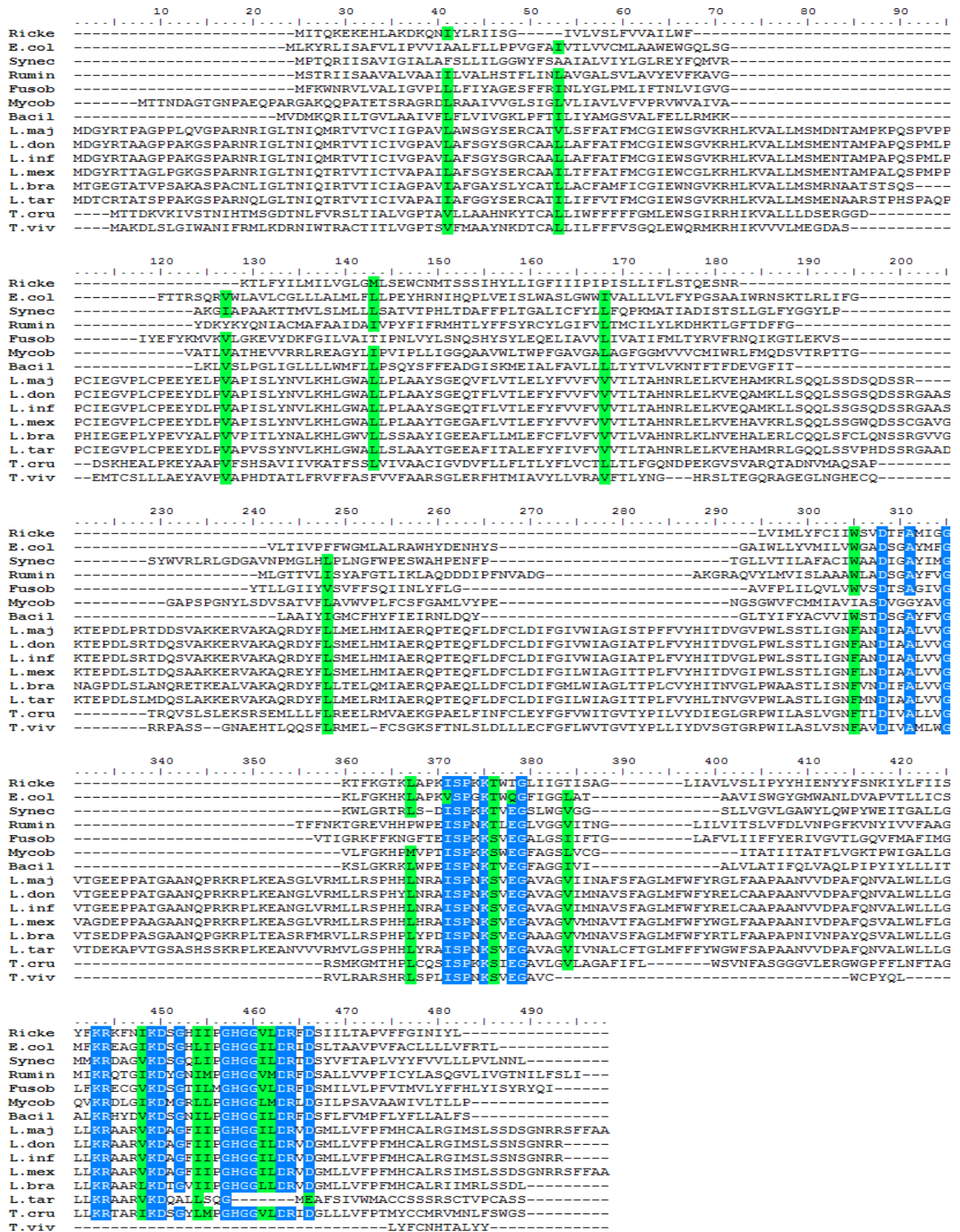


FIG S3B

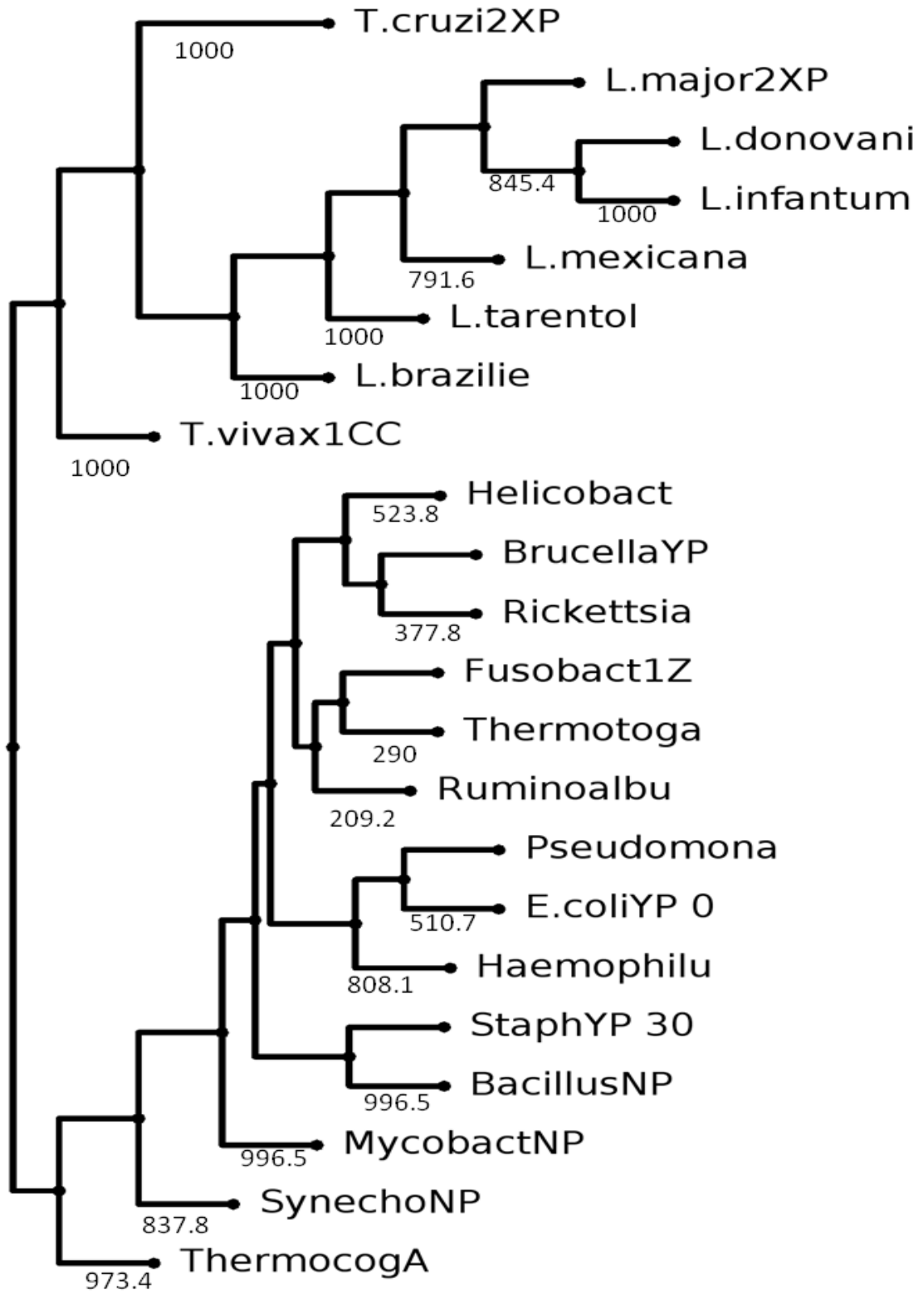


FIG S4

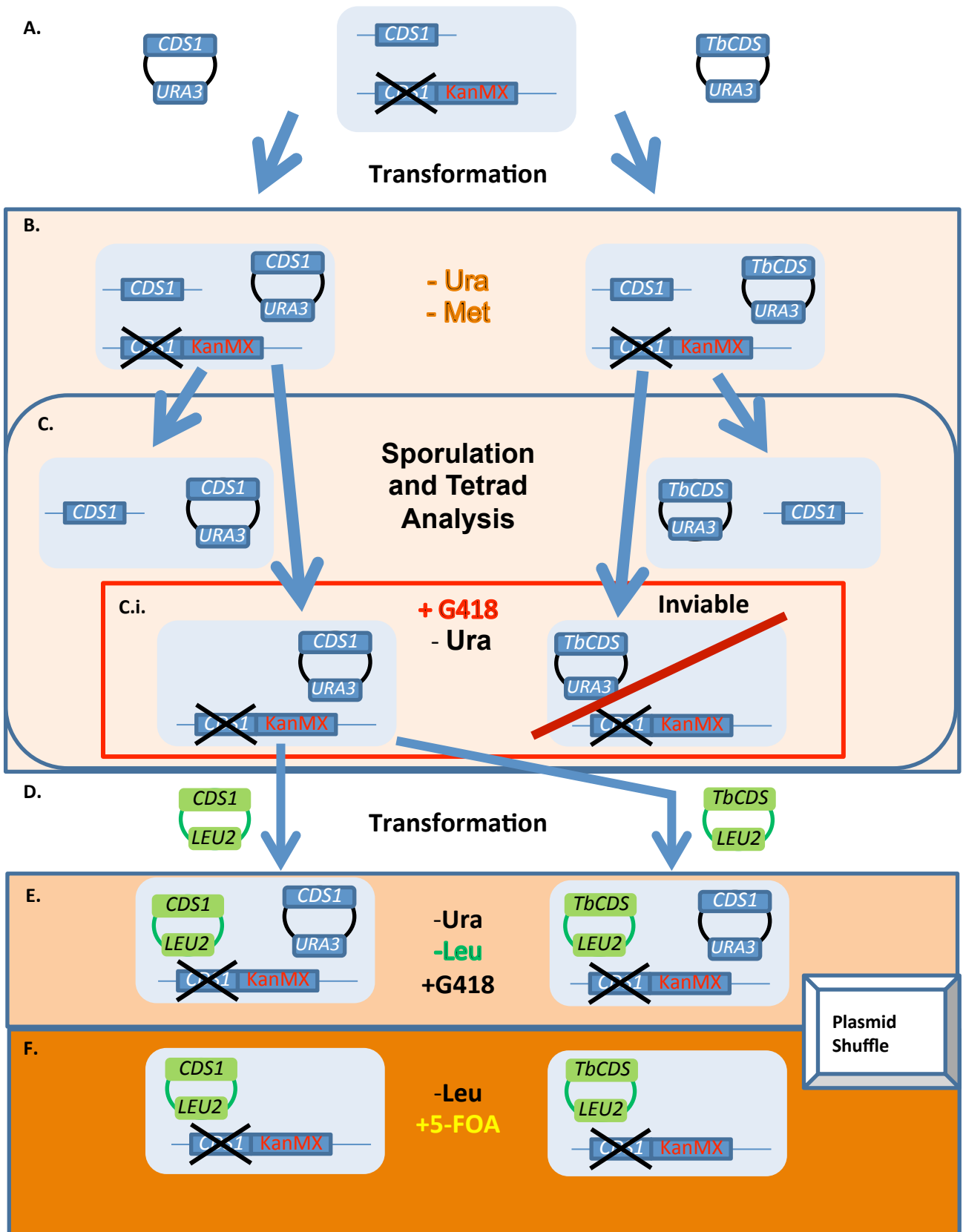
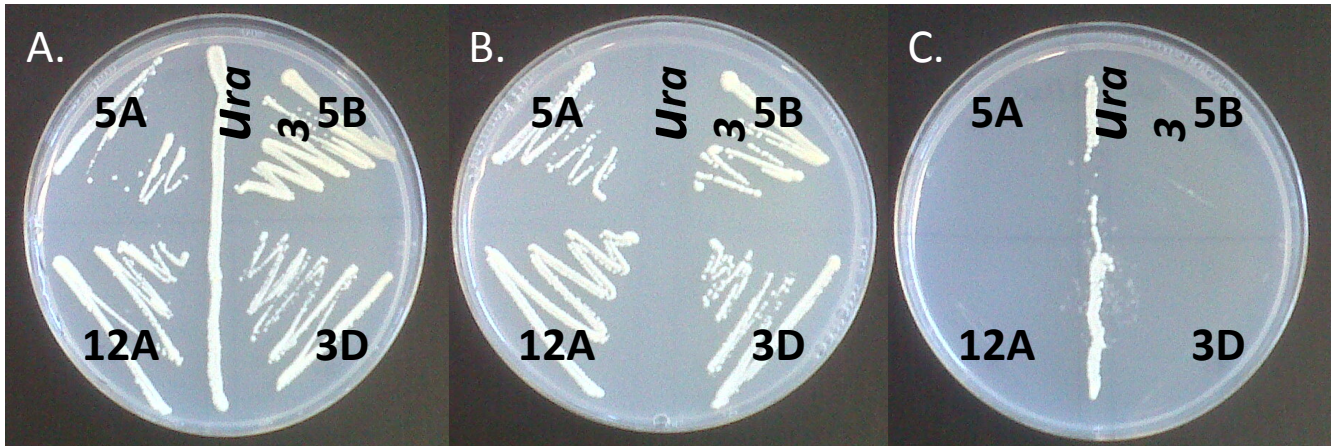


FIG S5



**FIG S6**

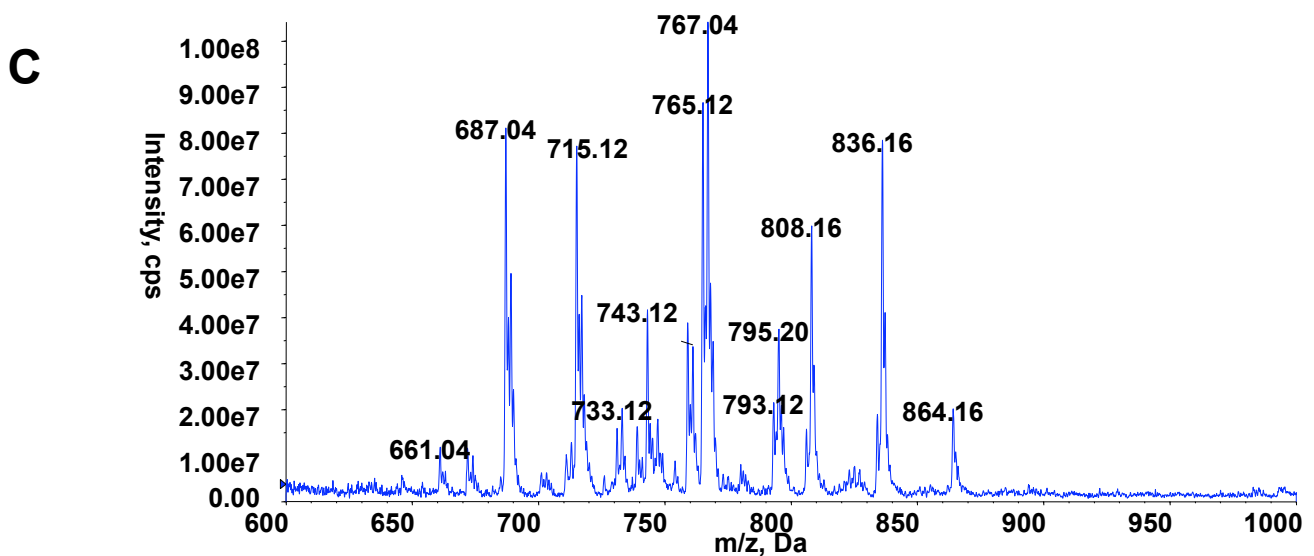
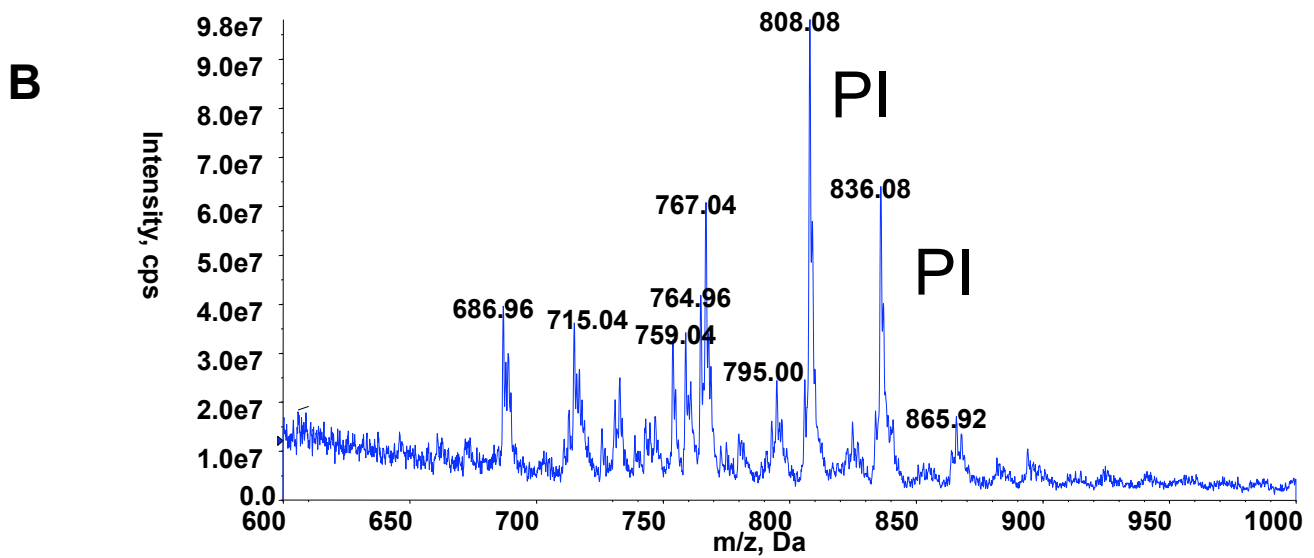
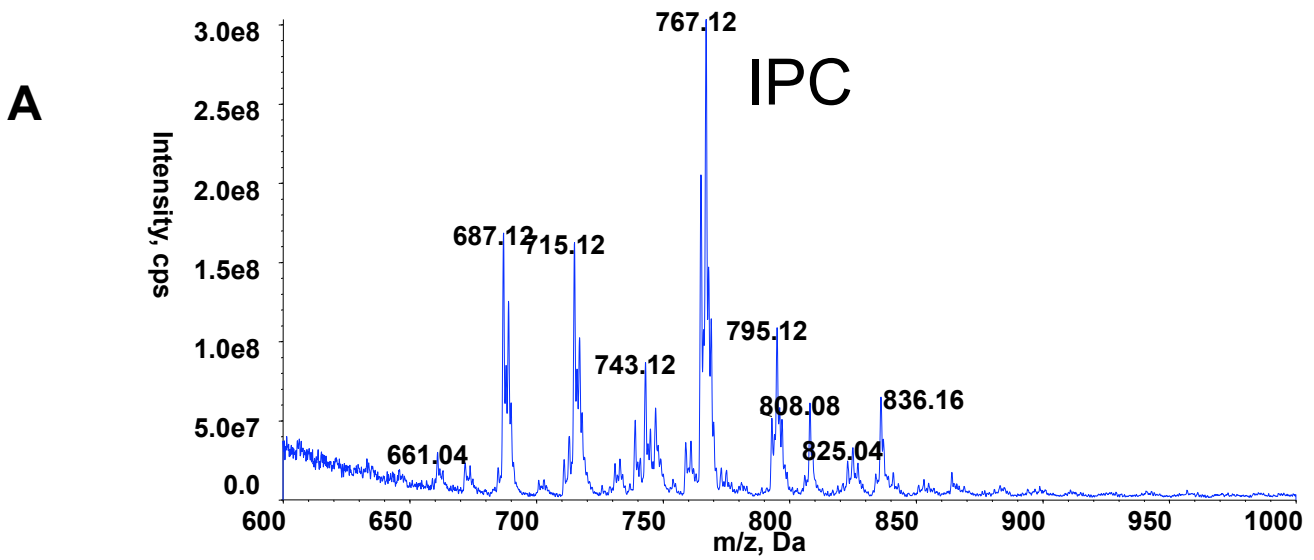




FIG S7

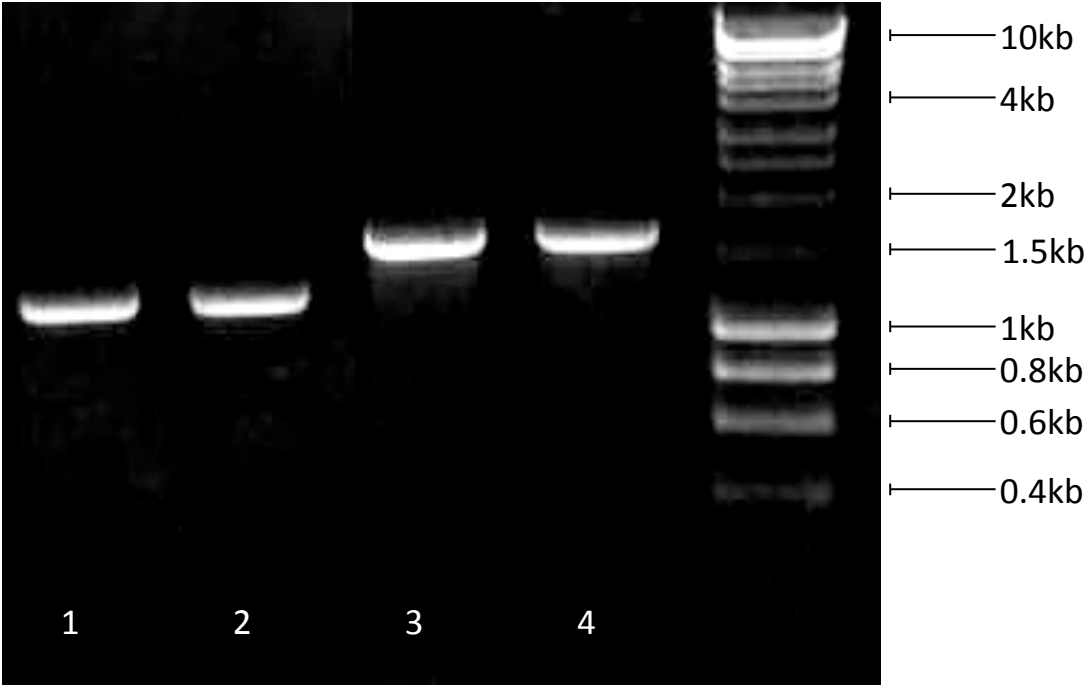
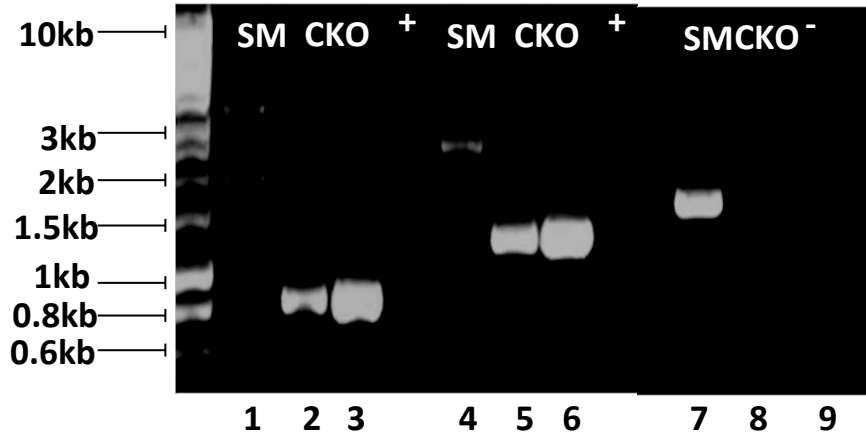


FIG S8

A



B

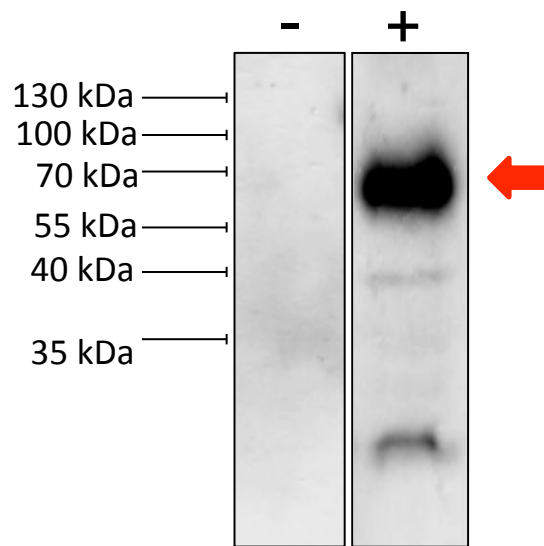
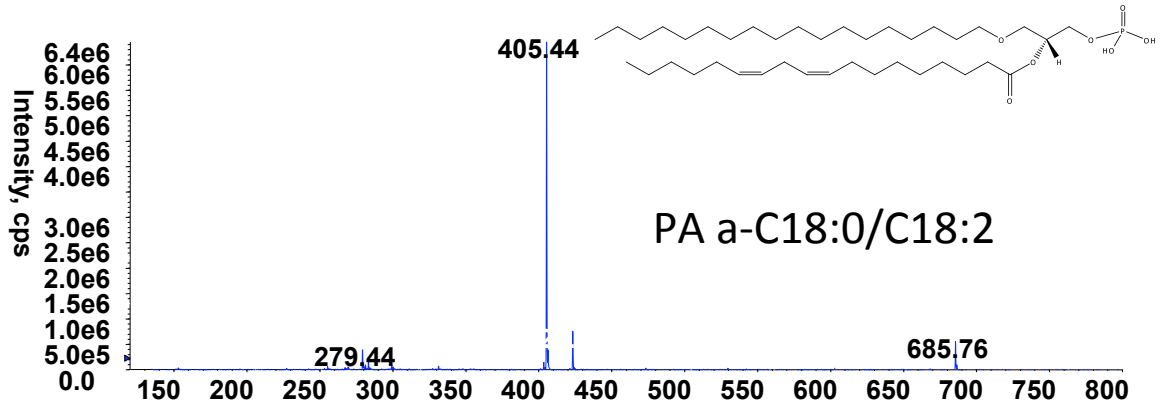
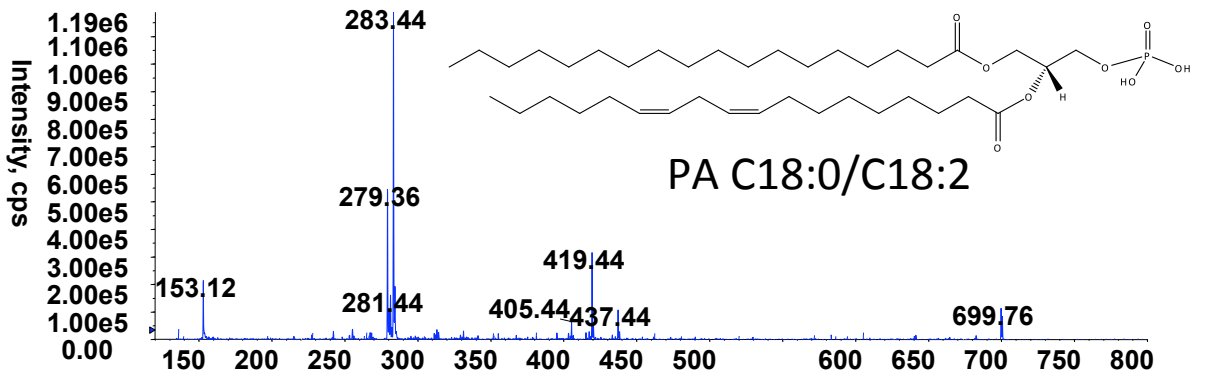


FIG S9

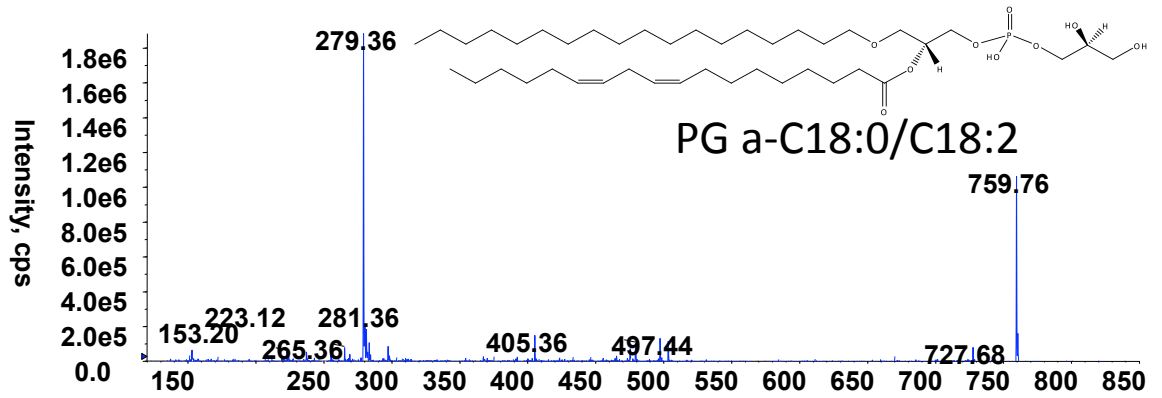
A



B



C



D

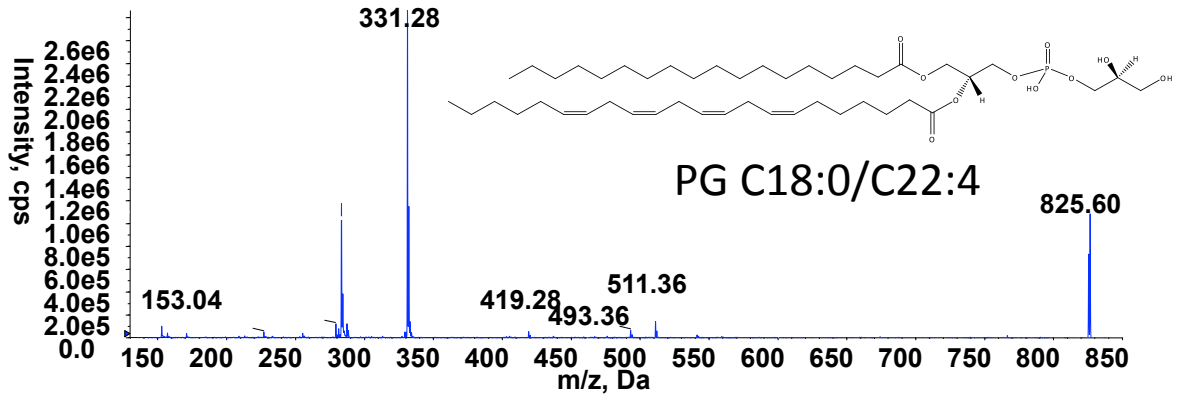
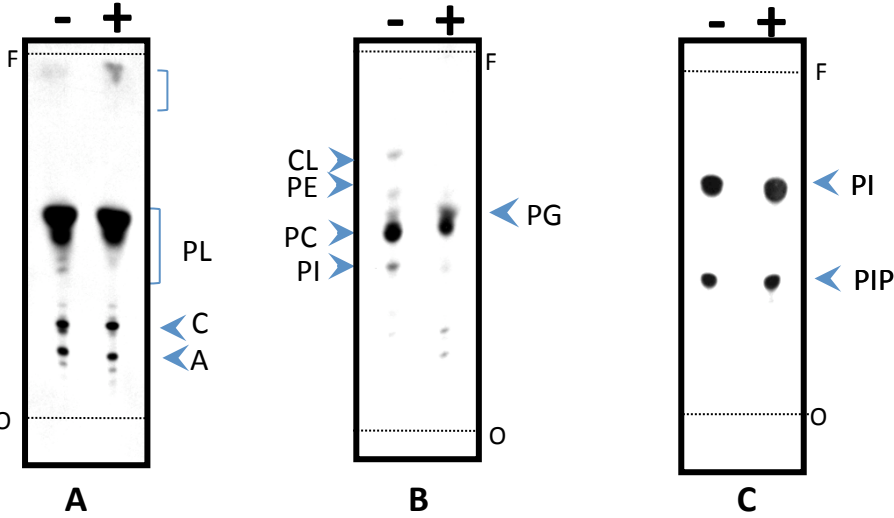


FIG S10



**Table S1.** Tetrad dissection of *MATa/MATa his3Δ1/his3Δ1 leu2Δ0/leu2Δ0 lys2Δ0/LYS2 MET15/met15Δ0 ura3Δ0/ura3Δ0 [pRS425-MET25-ScCDS1]*

|     | YPAD | -Met | -Ura | 5-FOA | G418 |     | YPAD | -Met | -Ura | 5-FOA | G418 |
|-----|------|------|------|-------|------|-----|------|------|------|-------|------|
| 2A  | ✓    | (✓)  | ✗    | ✓     | ✗    | 12A | ✓    | ✓    | ✓    | ✗     | ✓    |
| 2B  | ✓    | (✓)  | ✗    | ✓     | ✗    | 12B | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 2C  | -    |      |      |       |      | 12C | ✓    | (✓)  | ✓    | ✗     | ✓    |
| 2D  | -    |      |      |       |      | 12D | ✓    | ✓    | ✓    | ✓     | ✗    |
| 3A  | -    |      |      |       |      | 13A | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 3B  | -    |      |      |       |      | 13B | ✓    | ✓    | ✗    | ✓     | ✗    |
| 3C  | ✓    | ✓    | ✓    | ✓     | ✗    | 13C | -    |      |      |       |      |
| 3D  | ✓    | ✓    | ✓    | ✗     | ✓    | 13D | -    |      |      |       |      |
| 4A  | -    |      |      |       |      | 14A | ✓    | ✓    | ✗    | (✗)   | ✗    |
| 4B  | -    |      |      |       |      | 14B | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 4C  | ✓    | (✓)  | ✗    | ✓     | ✗    | 14C | ✓    | (✓)  | ✓    | ✗     | ✓    |
| 4D  | ✓    | (✓)  | ✗    | ✓     | ✗    | 14D | ✓    | ✓    | ✓    | ✗     | ✓    |
| 5A  | ✓    | ✓    | ✓    | ✗     | ✓    | 15A | ✓    | (✓)  | ✗    | (✗)   | ✗    |
| 5B  | ✓    | ✓    | ✓    | ✗     | ✓    | 15B | ✓    | (✓)  | ✓    | ✗     | ✓    |
| 5C  | ✓    | (✓)  | ✗    | ✓     | ✗    | 15C | ✓    | ✓    | ✗    | ✓     | ✗    |
| 5D  | ✓    | (✓)  | ✗    | ✓     | ✗    | 15D | ✓    | ✓    | ✓    | (✗)   | ✓    |
| 6A  | -    |      |      |       |      | 16A | ✓    | ✓    | ✓    | ✓     | ✗    |
| 6B  | ✓    | (✓)  | ✗    | ✓     | ✗    | 16B | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 6C  | ✓    | (✓)  | ✓    | ✗     | ✓    | 16C | ✓    | (✓)  | ✓    | ✗     | ✓    |
| 6D  | -    |      |      |       |      | 16D | -    |      |      |       |      |
| 7A  | -    |      |      |       |      | 17A | ✓    | (✓)  | ✗    | (✓)   | ✗    |
| 7B  | ✓    | (✓)  | ✗    | ✓     | ✗    | 17B | -    |      |      |       |      |
| 7C  | ✓    | ✓    | ✗    | ✓     | ✗    | 17C | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 7D  | -    |      |      |       |      | 17D | -    |      |      |       |      |
| 8A  | -    |      |      |       |      | 18A | ✓    | ✓    | ✗    | ✓     | ✗    |
| 8B  | ✓    | (✓)  | ✓    | ✗     | ✓    | 18B | -    |      |      |       |      |
| 8C  | ✓    | ✓    | (✗)  | ✓     | ✗    | 18C | -    |      |      |       |      |
| 8D  | ✓    | (✓)  | ✓    | ✗     | ✓    | 18D | ✓    | ✓    | ✗    | ✓     | ✗    |
| 9A  | -    |      |      |       |      | 19A | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 9B  | ✓    | ✓    | ✓    | ✗     | ✓    | 19B |      |      |      |       |      |
| 9C  | ✓    | (✓)  | ✗    | ✓     | ✗    | 19C | ✓    | ✓    | ✗    | ✓     | ✗    |
| 9D  | ✓    | ✓    | (✓)  | ✓     | ✗    | 19D | -    |      |      |       |      |
| 10A | ✓    | (✓)  | ✗    | ✓     | ✗    | 20A | -    |      |      |       |      |
| 10B | -    |      |      |       |      | 20B | -    |      |      |       |      |
| 10C | ✓    | ✓    | ✓    | ✓     | ✗    | 20C | -    | -    |      |       |      |
| 10D | ✓    | (✓)  | ✓    | ✗     | ✓    | 20D | -    |      |      |       |      |

“-” in the YPAD column indicates that the spore failed to germinate. : ✓, growth; ✗, no growth; (✓), weak growth; (✗), inconclusive. Yellow highlights indicate G418-resistant spores (i.e. have *cds1::KanMX*) that grew on -Ura plates (have the plasmid) but failed to grow on 5-FOA (required the plasmid for viability). Green highlights indicate strains that were G418 sensitive (i.e. *CDS1* wild-type), grew on -Ura plates (have the plasmid) and grew on 5-FOA (remained viable after plasmid loss).

**Table S2.** Tetrad dissection of *MATa/MATa his3Δ1/his3Δ1 leu2Δ0/leu2Δ0 lys2Δ0/LYS2 MET15/met15Δ0 ura3Δ0/ura3Δ0 [pRS425-MET25-TbCDS]*

|     | YPAD | -Met | -Ura | 5-FOA | G418 |     | YPAD | -Met | -Ura | 5-FOA | G418 |
|-----|------|------|------|-------|------|-----|------|------|------|-------|------|
| 2A  | -    |      |      |       |      | 12A | -    |      |      |       |      |
| 2B  | -    |      |      |       |      | 12B | -    |      |      |       |      |
| 2C  | ✓    | (✓)  | ✓    | ✓     | ✗    | 12C | ✓    | ✓    | ✗    | ✓     | (✗)  |
| 2D  | ✓    | (✓)  | ✓    | ✓     | ✗    | 12D | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 3A  | -    |      |      |       |      | 13A | -    |      |      |       |      |
| 3B  | ✓    | ✓    | ✓    | ✓     | ✗    | 13B | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 3C  | ✓    | (✓)  | ✓    | ✓     | ✗    | 13C | -    |      |      |       |      |
| 3D  | -    |      |      |       |      | 13D | ✓    | ✓    | ✗    | ✓     | ✗    |
| 4A  | ✓    | ✓    | ✓    | ✓     | ✗    | 14A | ✓    | ✓    | ✓    | (✓)   | ✗    |
| 4B  | ✓    | (✓)  | ✓    | ✓     | ✗    | 14B | -    |      |      |       |      |
| 4C  | -    |      |      |       |      | 14C | ✓    | (✓)  | ✓    | ✓     | ✗    |
| 4D  | ✓    | ✓    | ✗    | ✓     | ✓    | 14D | -    |      |      |       |      |
| 5A  | ✓    | ✓    | ✗    | ✓     | ✗    | 15A | -    |      |      |       |      |
| 5B  | -    |      |      |       |      | 15B | ✓    | (✓)  | ✓    | ✓     | ✗    |
| 5C  | -    |      |      |       |      | 15C | -    |      |      |       |      |
| 5D  | -    |      |      |       |      | 15D | -    |      |      |       |      |
| 6A  | ✓    | (✓)  | ✗    | ✓     | ✗    | 16A | ✓    | ✓    | ✗    | ✓     | ✓    |
| 6B  | ✓    | ✓    | ✗    | ✓     | ✗    | 16B | ✓    | (✓)  | ✓    | ✓     | ✗    |
| 6C  | -    |      |      |       |      | 16C | -    |      |      |       |      |
| 6D  | -    |      |      |       |      | 16D | ✓    | ✓    | ✓    | ✓     | ✗    |
| 7A  | ✓    | (✓)  | ✗    | ✓     | ✗    | 17A | ✓    | (✓)  | ✓    | ✓     | ✗    |
| 7B  | ✓    | (✓)  | ✗    | ✓     | ✗    | 17B | -    |      |      |       |      |
| 7C  | -    |      |      |       |      | 17C | ✓    | ✓    | ✓    | ✓     | ✗    |
| 7D  | -    |      |      |       |      | 17D | -    |      |      |       |      |
| 8A  | ✓    | (✓)  | ✗    | ✓     | ✗    | 18A | -    |      |      |       |      |
| 8B  | ✓    | ✓    | ✗    | ✓     | ✗    | 18B | -    |      |      |       |      |
| 8C  | -    |      |      |       |      | 18C | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 8D  | -    |      |      |       |      | 18D | ✓    | ✓    | ✗    | ✓     | ✗    |
| 9A  | -    |      |      |       |      | 19A | ✓    | ✓    | ✗    | ✓     | ✗    |
| 9B  | -    |      |      |       |      | 19B | -    |      |      |       |      |
| 9C  | ✓    | ✓    | ✓    | ✓     | (✗)  | 19C | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 9D  | -    |      |      |       |      | 19D | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 10A | ✓    | ✓    | (✓)  | ✓     | ✗    | 20A | ✓    | (✓)  | ✗    | ✓     | ✗    |
| 10B | -    |      |      |       |      | 20B | -    |      |      |       |      |
| 10C | ✓    | (✓)  | (✓)  | ✓     | ✗    | 20C | ✓    | ✓    | ✗    | ✓     | (✗)  |
| 10D | -    |      |      |       |      | 20D | -    |      |      |       |      |

“-” in the YPAD column indicates that the spore failed to germinate. : ✓, growth; ✗, no growth; (✓), weak growth; (✗), inconclusive. Green highlights indicate strains that were G418 sensitive (i.e. *CDS1* wild-type), grew on -Ura plates (have the plasmid) and grew on 5-FOA (remained viable after plasmid loss).