

Figure S1. The *ula* operon in *S. pneumoniae* as determined by Afzal et al. [29]. Gene identifier numbers are for strain D39. *Spd_1846* was identified as having reduced fitness in vitreous humor.

Query 481	AGTGAGTTGCTGGAATCCTCCATAGGGATTTGGGA	TTTGGATTATGTTTTATCCAGTTGG
540		
Sbjct 2104171	AGTGAGTTGCTGGAATCCTCCATAGGGATTTGGG	TTTGGATTATGTTTTATCCAGTTGG
2104112		
Query 601	CAACTAGTACCTATTGTTAATCAATTAAAAGTTT	GCCTTTTCGGTTTAGTATTCATTCTG
660		
Sbjct 2104051	CAGCTAGTACCTATTGTTAATCAATTAAAAGTTT	ACCTTTTCGGTTTAGTATTCATTCTG
2103992		
Query 781	GTGTTTTCTGAGGATGATTATCGCTATATCACAG	TTTTATTATCAAGTTGCTTTGAAGGT
840		
Sbjct 2103871	GTGTTTTCTGAGGATGATTATCGCTATATCAC	CGTTTTATTATCAAGTTGCTTTGAAGGT
2103812		
Query 1261	CCTCAAATTGAGTTTATAGGAACCTCAAAGATTGATGATT	TACAGGTGAAAGCTAGTAGT
1320		
Sbjct 2103391	CCTCAAATTGAGTTTATAGGAACCTCAAAGATTGATGATT	TACAGGTGAAAGTTAGTAGT
2103332		

Figure S2. Nucleotide differences between D39 and E335 in *ulaR2*. D39 is the Query line and E335 is the Subject.

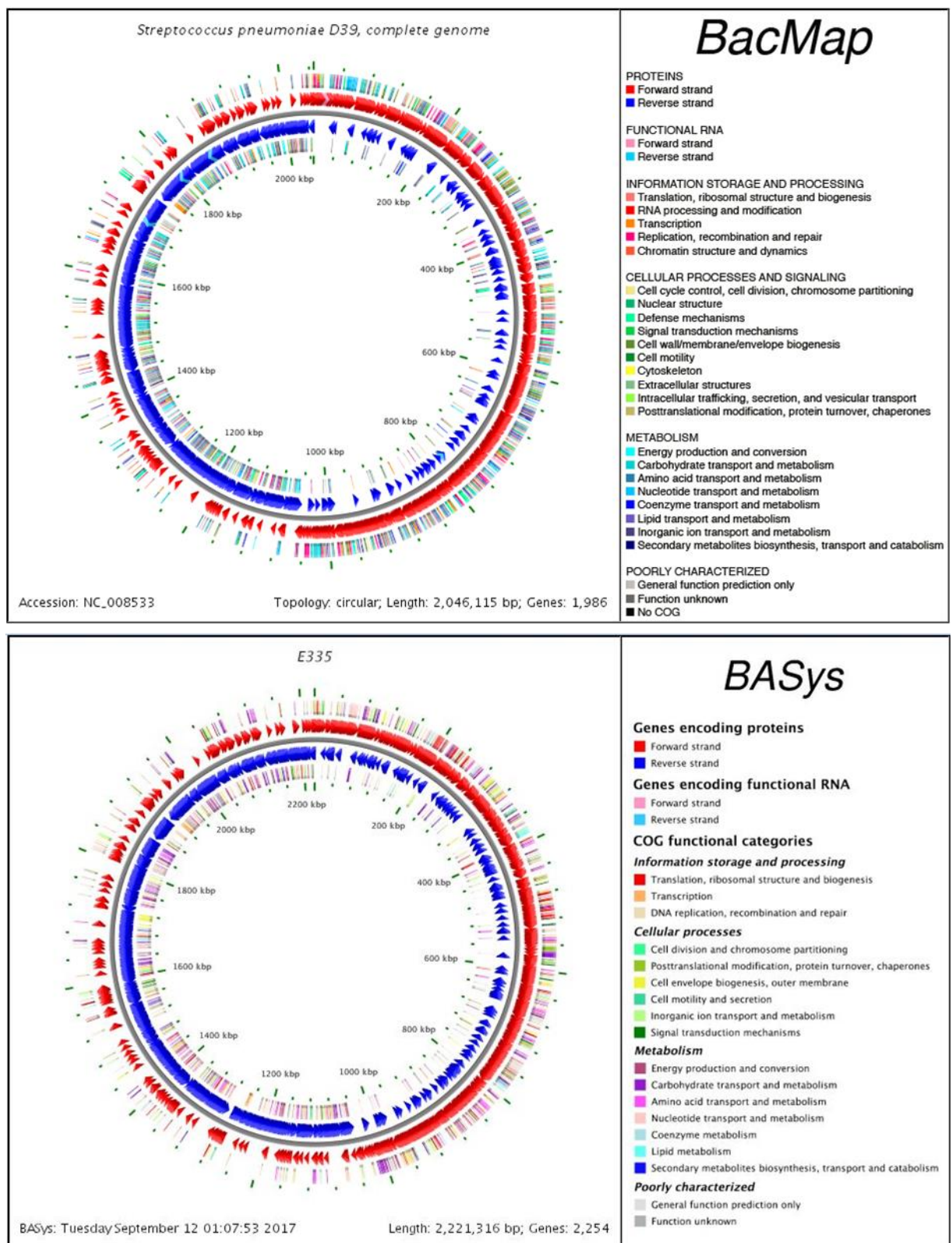


Figure S3. Genome maps of *S. pneumoniae* D39 generated by BacMap using GenBank accession #NC008533 (top panel) and E335 by BaSys using GenBank accession #CP026670 (bottom panel).