

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	GTGTTTTCTGAGGATGATTATCGCTATATCAC	AGTTTTATTATCAAGTTGCTTTGAAGGT	840
Sbjct	2103871	GTGTTTTCTGAGGATGATTATCGCTATATCAC	CGTTTTATTATCAAGTTGCTTTGAAGGT	2103812
Query	1261	CCTCAAATTGAGTTTATAGGAACCTCAAAGATTG	ATGATTTACAGGTGAAAGCTAGTAGT	1320
Sbjct	2103391	CCTCAAATTGAGTTTATAGGAACCTCAAAGATTG	ATGATTTACAGGTGAAAGTTAGTAGT	2103332

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

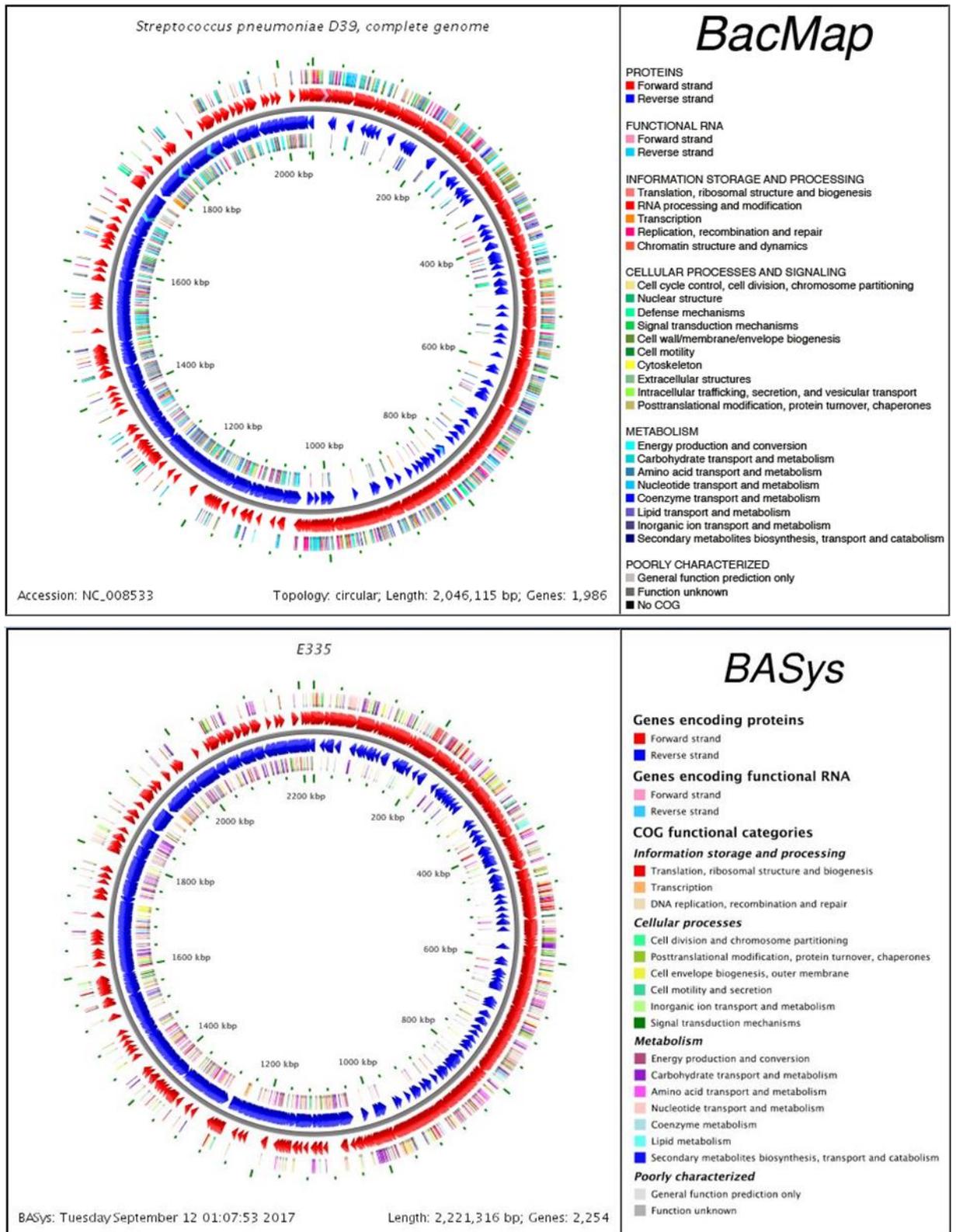


Figure S3. Genome maps of *S. pneumoniae* D39 generated by BacMap using GenBank accession #NC008533 (top panel) and E335 by BaSys using GenBank accession #CP026670 (bottom panel).