**Supplementary Files 1 candidate essential genes examined in this study**

|  |  |  |
| --- | --- | --- |
| **Gene accession no.** | **Size (bp)** | **Gene function** |
| A1S\_0137 | 627 | hypothetical |
| A1S\_1989 | 351 | hypothetical |
| A1S\_1990 | 285 | hypothetical |
| A1S\_2112 | 726 | hypothetical |
| A1S\_2249 | 651 | hypothetical |
| A1S\_2272 | 459 | hypothetical |
| A1S\_2440 | 735 | hypothetical |
| A1S\_2797 | 576 | hypothetical |
| A1S\_3014 | 351 | hypothetical |
| A1S\_3387 | 1290 | hypothetical |