

**Table S1. *R. etli* genes involved in trehalose and glutamate metabolism**

| gene                               | Protein                                                      | chromosome  | plasmid a   | plasmid c   | plasmid e   | plasmid f   |
|------------------------------------|--------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Trehalose synthesis</b>         |                                                              |             |             |             |             |             |
| <i>otsA</i>                        | trehalose 6-phosphate synthase                               | RHE_CH00476 | RHE_PA00087 |             |             |             |
| <i>otsB</i>                        | trehalose-6-phosphate phosphatase                            |             |             | RHE_PC00228 |             |             |
| <i>treS</i>                        | trehalose synthase                                           | RHE_CH02260 |             |             |             | RHE_PF00276 |
| <i>treZ</i>                        | maltooligosyl-trehalose trehalohydrolase                     | RHE_CH03279 |             |             |             | RHE_PF00263 |
| <i>treY</i>                        | maltooligosyl-trehalose synthase                             |             |             |             | RHE_PE00008 |             |
| <b>Trehalose/maltose uptake</b>    |                                                              |             |             |             |             |             |
| <i>thuE</i>                        | trehalose/maltose ABC transporter, sugar-binding protein     |             |             |             |             | RHE_PF00210 |
| <i>thuF</i>                        | trehalose/maltose ABC transporter, permease protein          |             |             |             |             | RHE_PF00209 |
| <i>thuG</i>                        | trehalose/maltose ABC transporter, permease protein          |             |             |             |             | RHE_PF00208 |
| <i>thuK</i>                        | trehalose/maltose ABC transporter, ATP-binding protein       |             |             |             |             | RHE_PF00207 |
| <i>aglE</i>                        | alpha-glucoside ABC transporter, substrate-binding protein   | RHE_CH00696 |             |             |             |             |
| <i>aglF</i>                        | alpha-glucoside ABC transporter, permease protein            | RHE_CH00697 |             |             |             |             |
| <i>aglG</i>                        | alpha-glucoside ABC transporter, permease protein            | RHE_CH00698 |             |             |             |             |
| <i>aglK</i>                        | alpha-glucoside ABC transporter, ATP-binding protein         | RHE_CH00700 |             |             |             |             |
| <b>Trehalose degradation</b>       |                                                              |             |             |             |             |             |
| <i>thuA</i>                        |                                                              | RHE_CH03256 |             |             |             | RHE_PF00206 |
| <i>thuB</i>                        |                                                              | RHE_CH03255 |             |             |             | RHE_PF00205 |
| <i>treC1</i>                       |                                                              | RHE_CH03095 |             |             |             |             |
| <i>treC2 (aglA)</i>                |                                                              | RHE_CH00699 |             |             |             |             |
| <i>treC3 (molL)</i>                |                                                              | RHE_CH03282 |             |             |             |             |
| <b>Mannitol/glucose metabolism</b> |                                                              |             |             |             |             |             |
| <i>smoE</i>                        | sorbitol/mannitol ABC transporter, substrate-binding protein | RHE_CH03682 |             | RHE_PC00219 |             |             |
| <i>smoF</i>                        | sorbitol/mannitol ABC transporter, permease protein          | RHE_CH03681 |             |             |             |             |
| <i>smoG</i>                        | sorbitol/mannitol ABC transporter, permease protein          | RHE_CH03680 |             |             |             |             |
| <i>smoK</i>                        | sorbitol/mannitol ABC transporter, ATP-binding protein       | RHE_CH03679 |             |             |             |             |
| <i>mtlK</i>                        | mannitol 2-dehydrogenase                                     | RHE_CH03678 |             |             |             |             |
| <i>xylA</i>                        | xylose isomerase                                             | RHE_CH03648 |             |             |             |             |
| <i>frk</i>                         | fuctokinase                                                  | RHE_CH00475 |             |             |             |             |
| <i>glk</i>                         | glucokinase                                                  | RHE_CH00172 |             |             |             |             |
| <i>pgi</i>                         | glucose-6-phosphate isomerase                                | RHE_CH00477 |             |             |             |             |
| <i>pgm</i>                         | phosphoglucomutase                                           | RHE_CH03597 |             |             |             |             |
| <b>Glutamate metabolism</b>        |                                                              |             |             |             |             |             |
| <i>glmS1</i>                       | glucosamine-6-phosphate synthase                             | RHE_CH02091 |             |             |             |             |
| <i>glmS1</i>                       | glucosamine-6-phosphate synthase                             | RHE_CH04036 |             |             |             |             |