

Table S1. Differentially expressed genes

| <i>Δnpn vs . npn</i> <sup>++</sup> |       |        |       |        |     | <i>hPNP vs . npn</i> <sup>++</sup> |       |        |       |        |     | <i>hPNP vs . Δnpn</i> <sup>*</sup> |       |        |       |        |     |
|------------------------------------|-------|--------|-------|--------|-----|------------------------------------|-------|--------|-------|--------|-----|------------------------------------|-------|--------|-------|--------|-----|
| Gene                               | logFC | logCPM | F     | PValue | FDR | Gene                               | logFC | logCPM | F     | PValue | FDR | Gene                               | logFC | logCPM | F     | PValue | FDR |
| <i>aceB</i>                        | -1.5  | 5.5    | 33.6  | 0.0    | 0.0 | <i>abgA</i>                        | -1.8  | 3.2    | 38.7  | 0.0    | 0.0 | <i>aceE</i>                        | 1.3   | 10.8   | 36.1  | 0.0    | 0.0 |
| <i>acnA</i>                        | -1.2  | 8.1    | 23.0  | 0.0    | 0.0 | <i>aceA</i>                        | -2.0  | 5.3    | 27.7  | 0.0    | 0.0 | <i>aceF</i>                        | 1.6   | 10.1   | 67.9  | 0.0    | 0.0 |
| <i>acnB</i>                        | -1.6  | 11.3   | 34.2  | 0.0    | 0.0 | <i>aceB</i>                        | -1.5  | 5.5    | 35.3  | 0.0    | 0.0 | <i>agp</i>                         | -1.3  | 7.7    | 34.6  | 0.0    | 0.0 |
| <i>acpS</i>                        | -1.2  | 5.7    | 113.6 | 0.0    | 0.0 | <i>aceE</i>                        | 1.3   | 10.8   | 32.2  | 0.0    | 0.0 | <i>alx</i>                         | 1.0   | 3.8    | 36.7  | 0.0    | 0.0 |
| <i>acs</i>                         | -2.6  | 8.3    | 45.2  | 0.0    | 0.0 | <i>aceF</i>                        | 1.1   | 10.1   | 31.3  | 0.0    | 0.0 | <i>aphA</i>                        | -1.8  | 8.7    | 43.2  | 0.0    | 0.0 |
| <i>actP</i>                        | -2.2  | 6.1    | 55.8  | 0.0    | 0.0 | <i>acnA</i>                        | -1.0  | 8.1    | 17.6  | 0.0    | 0.0 | <i>araF</i>                        | -1.0  | 4.2    | 31.1  | 0.0    | 0.0 |
| <i>adhE</i>                        | -1.0  | 9.1    | 35.9  | 0.0    | 0.0 | <i>acnB</i>                        | -1.6  | 11.3   | 33.3  | 0.0    | 0.0 | <i>ariR</i>                        | 2.1   | 3.4    | 49.8  | 0.0    | 0.0 |
| <i>agaV</i>                        | -1.2  | 3.1    | 38.4  | 0.0    | 0.0 | <i>acpS</i>                        | -1.4  | 5.7    | 144.9 | 0.0    | 0.0 | <i>asnA</i>                        | 1.3   | 7.4    | 61.1  | 0.0    | 0.0 |
| <i>ais</i>                         | 1.0   | 4.2    | 36.9  | 0.0    | 0.0 | <i>acrE</i>                        | 1.0   | 2.6    | 22.5  | 0.0    | 0.0 | <i>aspA</i>                        | -1.7  | 12.8   | 91.0  | 0.0    | 0.0 |
| <i>aldA</i>                        | -3.3  | 8.3    | 68.8  | 0.0    | 0.0 | <i>acs</i>                         | -3.4  | 8.3    | 74.8  | 0.0    | 0.0 | <i>atoC</i>                        | -1.1  | 5.3    | 40.9  | 0.0    | 0.0 |
| <i>alsA</i>                        | -2.0  | 4.9    | 57.3  | 0.0    | 0.0 | <i>actP</i>                        | -2.4  | 6.1    | 68.8  | 0.0    | 0.0 | <i>bamE</i>                        | 1.0   | 8.3    | 70.4  | 0.0    | 0.0 |
| <i>alsB</i>                        | -2.3  | 5.6    | 46.4  | 0.0    | 0.0 | <i>adeQ</i>                        | -1.4  | 4.0    | 99.5  | 0.0    | 0.0 | <i>bdm</i>                         | 2.7   | 1.1    | 75.9  | 0.0    | 0.0 |
| <i>alsC</i>                        | -2.6  | 3.9    | 53.3  | 0.0    | 0.0 | <i>adhE</i>                        | -1.2  | 9.1    | 44.1  | 0.0    | 0.0 | <i>betI</i>                        | 1.6   | 6.4    | 23.9  | 0.0    | 0.0 |
| <i>alsE</i>                        | -2.4  | 4.7    | 34.0  | 0.0    | 0.0 | <i>agaV</i>                        | -2.2  | 3.1    | 112.1 | 0.0    | 0.0 | <i>betT</i>                        | 1.0   | 6.3    | 27.7  | 0.0    | 0.0 |
| <i>alsK</i>                        | -1.7  | 4.7    | 52.4  | 0.0    | 0.0 | <i>agp</i>                         | -2.1  | 7.7    | 90.0  | 0.0    | 0.0 | <i>bfd</i>                         | -1.1  | 5.9    | 40.4  | 0.0    | 0.0 |
| <i>alsR</i>                        | -1.2  | 7.4    | 36.2  | 0.0    | 0.0 | <i>ais</i>                         | 1.8   | 4.2    | 113.6 | 0.0    | 0.0 | <i>bglJ</i>                        | -1.4  | 4.4    | 44.6  | 0.0    | 0.0 |
| <i>ansP</i>                        | 1.1   | 5.3    | 44.1  | 0.0    | 0.0 | <i>aldA</i>                        | -3.5  | 8.3    | 78.0  | 0.0    | 0.0 | <i>bhsA</i>                        | 2.0   | 4.1    | 105.4 | 0.0    | 0.0 |
| <i>arcA</i>                        | -1.1  | 9.3    | 36.3  | 0.0    | 0.0 | <i>aldB</i>                        | -1.9  | 5.1    | 94.7  | 0.0    | 0.0 | <i>bsmA</i>                        | -1.5  | 9.4    | 148.2 | 0.0    | 0.0 |
| <i>argT</i>                        | -2.3  | 6.3    | 72.4  | 0.0    | 0.0 | <i>alsA</i>                        | -2.6  | 4.9    | 86.3  | 0.0    | 0.0 | <i>chiP</i>                        | -1.9  | 6.4    | 73.4  | 0.0    | 0.0 |
| <i>ariR</i>                        | -3.1  | 3.4    | 103.4 | 0.0    | 0.0 | <i>alsB</i>                        | -3.8  | 5.6    | 102.7 | 0.0    | 0.0 | <i>cho</i>                         | 1.5   | 5.4    | 132.7 | 0.0    | 0.0 |
| <i>arnA</i>                        | 1.3   | 6.2    | 119.9 | 0.0    | 0.0 | <i>alsC</i>                        | -3.7  | 3.9    | 93.0  | 0.0    | 0.0 | <i>cirA</i>                        | -1.7  | 7.0    | 24.6  | 0.0    | 0.0 |
| <i>arnB</i>                        | 1.3   | 6.2    | 71.6  | 0.0    | 0.0 | <i>alsE</i>                        | -3.6  | 4.7    | 68.5  | 0.0    | 0.0 | <i>cpxP</i>                        | 1.9   | 6.7    | 262.1 | 0.0    | 0.0 |
| <i>arnC</i>                        | 1.4   | 5.5    | 99.4  | 0.0    | 0.0 | <i>alsK</i>                        | -2.1  | 4.7    | 74.6  | 0.0    | 0.0 | <i>cpxQ</i>                        | 2.2   | 3.8    | 120.7 | 0.0    | 0.0 |
| <i>arnD</i>                        | 1.2   | 4.6    | 109.0 | 0.0    | 0.0 | <i>alsR</i>                        | -2.1  | 7.4    | 101.8 | 0.0    | 0.0 | <i>degP</i>                        | 2.3   | 9.5    | 56.9  | 0.0    | 0.0 |
| <i>arnE</i>                        | 1.1   | 4.1    | 57.2  | 0.0    | 0.0 | <i>ansP</i>                        | 1.0   | 5.3    | 43.6  | 0.0    | 0.0 | <i>dhaM</i>                        | -1.1  | 8.9    | 29.4  | 0.0    | 0.0 |
| <i>arnT</i>                        | 1.4   | 5.0    | 159.6 | 0.0    | 0.0 | <i>aphA</i>                        | -2.8  | 8.7    | 93.8  | 0.0    | 0.0 | <i>dicB</i>                        | 1.8   | -0.1   | 28.1  | 0.0    | 0.0 |
| <i>aroF</i>                        | -1.1  | 6.8    | 151.3 | 0.0    | 0.0 | <i>araB</i>                        | -1.0  | 3.9    | 24.7  | 0.0    | 0.0 | <i>dinB</i>                        | 1.7   | 5.6    | 199.1 | 0.0    | 0.0 |
| <i>asnU</i>                        | 1.1   | 1.5    | 37.6  | 0.0    | 0.0 | <i>araC</i>                        | -1.1  | 6.9    | 26.4  | 0.0    | 0.0 | <i>dinD</i>                        | 1.2   | 4.9    | 76.0  | 0.0    | 0.0 |
| <i>aspT</i>                        | 1.3   | 5.3    | 73.2  | 0.0    | 0.0 | <i>araD</i>                        | -1.2  | 2.0    | 25.5  | 0.0    | 0.0 | <i>dinF</i>                        | 1.1   | 6.0    | 120.7 | 0.0    | 0.0 |
| <i>aspU</i>                        | 1.4   | 2.0    | 28.7  | 0.0    | 0.0 | <i>araF</i>                        | -1.6  | 4.2    | 73.8  | 0.0    | 0.0 | <i>dinI</i>                        | 3.7   | 6.4    | 279.0 | 0.0    | 0.0 |
| <i>astA</i>                        | -3.5  | 4.6    | 57.2  | 0.0    | 0.0 | <i>argT</i>                        | -1.6  | 6.3    | 38.6  | 0.0    | 0.0 | <i>dinQ</i>                        | 1.4   | 6.2    | 66.6  | 0.0    | 0.0 |
| <i>astB</i>                        | -3.0  | 4.9    | 47.2  | 0.0    | 0.0 | <i>arnA</i>                        | 1.4   | 6.2    | 155.5 | 0.0    | 0.0 | <i>dmlR</i>                        | -1.3  | 6.1    | 36.4  | 0.0    | 0.0 |
| <i>astC</i>                        | -4.0  | 4.8    | 58.4  | 0.0    | 0.0 | <i>arnB</i>                        | 2.0   | 6.2    | 169.3 | 0.0    | 0.0 | <i>dppA</i>                        | -1.8  | 12.4   | 31.6  | 0.0    | 0.0 |
| <i>astD</i>                        | -3.3  | 5.1    | 60.0  | 0.0    | 0.0 | <i>arnC</i>                        | 1.8   | 5.5    | 159.3 | 0.0    | 0.0 | <i>dppB</i>                        | -1.7  | 9.5    | 36.6  | 0.0    | 0.0 |
| <i>astE</i>                        | -3.1  | 4.1    | 91.3  | 0.0    | 0.0 | <i>arnD</i>                        | 1.5   | 4.6    | 155.0 | 0.0    | 0.0 | <i>dppC</i>                        | -1.6  | 8.9    | 34.3  | 0.0    | 0.0 |
| <i>atpC</i>                        | -1.1  | 9.9    | 54.0  | 0.0    | 0.0 | <i>arnT</i>                        | 1.4   | 5.0    | 159.0 | 0.0    | 0.0 | <i>dppD</i>                        | -1.7  | 9.4    | 45.0  | 0.0    | 0.0 |
| <i>azoR</i>                        | -1.1  | 5.2    | 34.2  | 0.0    | 0.0 | <i>aspA</i>                        | -1.5  | 12.8   | 69.3  | 0.0    | 0.0 | <i>dppF</i>                        | -1.8  | 9.3    | 39.9  | 0.0    | 0.0 |
| <i>bamD</i>                        | -1.4  | 9.3    | 195.9 | 0.0    | 0.0 | <i>aspT</i>                        | 1.0   | 5.3    | 45.8  | 0.0    | 0.0 | <i>entA</i>                        | -1.0  | 4.5    | 39.2  | 0.0    | 0.0 |
| <i>bamE</i>                        | -1.3  | 8.3    | 117.5 | 0.0    | 0.0 | <i>aspU</i>                        | 1.5   | 2.0    | 31.2  | 0.0    | 0.0 | <i>entB</i>                        | -1.2  | 4.9    | 26.4  | 0.0    | 0.0 |
| <i>betA</i>                        | -2.2  | 6.5    | 45.3  | 0.0    | 0.0 | <i>asr</i>                         | 1.4   | 1.6    | 36.5  | 0.0    | 0.0 | <i>entC</i>                        | -1.3  | 5.3    | 36.3  | 0.0    | 0.0 |
| <i>betB</i>                        | -2.2  | 7.1    | 46.0  | 0.0    | 0.0 | <i>astA</i>                        | -3.3  | 4.6    | 52.7  | 0.0    | 0.0 | <i>entE</i>                        | -1.4  | 5.2    | 64.6  | 0.0    | 0.0 |
| <i>betI</i>                        | -1.9  | 6.4    | 34.3  | 0.0    | 0.0 | <i>astB</i>                        | -3.0  | 4.9    | 47.2  | 0.0    | 0.0 | <i>entH</i>                        | -1.1  | 3.4    | 26.2  | 0.0    | 0.0 |
| <i>betT</i>                        | -1.6  | 6.3    | 67.2  | 0.0    | 0.0 | <i>astC</i>                        | -3.6  | 4.8    | 49.6  | 0.0    | 0.0 | <i>fepA</i>                        | -1.3  | 5.9    | 96.2  | 0.0    | 0.0 |
| <i>bglJ</i>                        | 1.4   | 4.4    | 47.5  | 0.0    | 0.0 | <i>astD</i>                        | -3.3  | 5.1    | 60.1  | 0.0    | 0.0 | <i>fepC</i>                        | -1.1  | 5.3    | 30.9  | 0.0    | 0.0 |
| <i>bsmA</i>                        | 1.5   | 9.4    | 142.8 | 0.0    | 0.0 | <i>astE</i>                        | -3.2  | 4.1    | 99.3  | 0.0    | 0.0 | <i>fes</i>                         | -1.4  | 5.4    | 117.1 | 0.0    | 0.0 |

|             |      |      |       |     |     |             |      |      |       |     |     |             |      |      |       |     |     |
|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>btsT</i> | -4.3 | 7.5  | 115.6 | 0.0 | 0.0 | <i>atoA</i> | -1.2 | 7.3  | 57.1  | 0.0 | 0.0 | <i>fhuA</i> | -1.4 | 9.3  | 69.6  | 0.0 | 0.0 |
| <i>chiP</i> | 1.4  | 6.4  | 43.2  | 0.0 | 0.0 | <i>atoB</i> | -1.2 | 7.7  | 76.6  | 0.0 | 0.0 | <i>fhuB</i> | -1.0 | 6.7  | 34.7  | 0.0 | 0.0 |
| <i>chiQ</i> | 1.4  | 3.6  | 40.8  | 0.0 | 0.0 | <i>atoC</i> | -1.6 | 5.3  | 86.8  | 0.0 | 0.0 | <i>fhuC</i> | -1.2 | 6.2  | 60.3  | 0.0 | 0.0 |
| <i>cirA</i> | 2.9  | 7.0  | 65.6  | 0.0 | 0.0 | <i>atoD</i> | -1.0 | 8.2  | 42.7  | 0.0 | 0.0 | <i>fhuD</i> | -1.2 | 5.5  | 41.9  | 0.0 | 0.0 |
| <i>citC</i> | 1.4  | 2.0  | 36.7  | 0.0 | 0.0 | <i>atoE</i> | -1.2 | 7.6  | 62.6  | 0.0 | 0.0 | <i>fhuF</i> | -1.3 | 7.3  | 136.9 | 0.0 | 0.0 |
| <i>clpA</i> | -1.2 | 9.4  | 34.0  | 0.0 | 0.0 | <i>atoS</i> | -1.1 | 5.5  | 18.7  | 0.0 | 0.0 | <i>focA</i> | -1.2 | 8.0  | 98.9  | 0.0 | 0.0 |
| <i>clpB</i> | -2.5 | 11.0 | 20.7  | 0.0 | 0.0 | <i>azoR</i> | -1.2 | 5.2  | 40.2  | 0.0 | 0.0 | <i>frdA</i> | -1.2 | 9.2  | 71.8  | 0.0 | 0.0 |
| <i>cnoX</i> | -1.6 | 7.9  | 28.0  | 0.0 | 0.0 | <i>azuC</i> | 2.5  | -0.3 | 22.6  | 0.0 | 0.0 | <i>frdB</i> | -1.2 | 7.4  | 80.7  | 0.0 | 0.0 |
| <i>cpxQ</i> | 1.1  | 3.8  | 23.3  | 0.0 | 0.0 | <i>bamD</i> | -1.1 | 9.3  | 112.2 | 0.0 | 0.0 | <i>frdC</i> | -1.3 | 6.7  | 94.4  | 0.0 | 0.0 |
| <i>crfC</i> | -1.1 | 4.1  | 61.4  | 0.0 | 0.0 | <i>bdm</i>  | 2.7  | 1.1  | 68.8  | 0.0 | 0.0 | <i>frdD</i> | -1.2 | 7.1  | 68.1  | 0.0 | 0.0 |
| <i>csgD</i> | 1.6  | 1.2  | 27.8  | 0.0 | 0.0 | <i>betA</i> | -1.4 | 6.5  | 18.9  | 0.0 | 0.0 | <i>fnA</i>  | 1.3  | 6.6  | 68.6  | 0.0 | 0.0 |
| <i>csiD</i> | -1.5 | 3.1  | 74.4  | 0.0 | 0.0 | <i>bglH</i> | 1.3  | 2.9  | 19.2  | 0.0 | 0.0 | <i>fucA</i> | -1.4 | 4.6  | 58.2  | 0.0 | 0.0 |
| <i>csiE</i> | -1.5 | 7.9  | 39.4  | 0.0 | 0.0 | <i>bhsA</i> | 2.5  | 4.1  | 142.3 | 0.0 | 0.0 | <i>fucI</i> | -1.5 | 6.3  | 119.0 | 0.0 | 0.0 |
| <i>csiR</i> | -1.2 | 6.5  | 61.7  | 0.0 | 0.0 | <i>bipA</i> | 1.3  | 9.7  | 23.6  | 0.0 | 0.0 | <i>fucO</i> | -1.5 | 8.0  | 96.7  | 0.0 | 0.0 |
| <i>csrB</i> | 1.6  | 4.3  | 76.5  | 0.0 | 0.0 | <i>blr</i>  | 1.3  | 5.0  | 30.1  | 0.0 | 0.0 | <i>fucP</i> | -1.6 | 4.8  | 85.7  | 0.0 | 0.0 |
| <i>cvpA</i> | 1.1  | 6.8  | 48.4  | 0.0 | 0.0 | <i>bssR</i> | 1.3  | 2.3  | 37.5  | 0.0 | 0.0 | <i>galE</i> | -1.7 | 8.3  | 61.0  | 0.0 | 0.0 |
| <i>cycA</i> | -1.5 | 8.3  | 72.5  | 0.0 | 0.0 | <i>bssS</i> | 1.4  | 7.1  | 105.9 | 0.0 | 0.0 | <i>galK</i> | -1.4 | 8.1  | 100.8 | 0.0 | 0.0 |
| <i>cydA</i> | 1.4  | 10.4 | 38.9  | 0.0 | 0.0 | <i>btsT</i> | -4.1 | 7.5  | 110.1 | 0.0 | 0.0 | <i>galP</i> | -1.4 | 7.5  | 31.3  | 0.0 | 0.0 |
| <i>cydB</i> | 1.3  | 9.7  | 26.8  | 0.0 | 0.0 | <i>btuB</i> | -1.0 | 8.4  | 87.6  | 0.0 | 0.0 | <i>galS</i> | -1.8 | 7.8  | 137.6 | 0.0 | 0.0 |
| <i>cydX</i> | 1.3  | 7.4  | 25.3  | 0.0 | 0.0 | <i>cbl</i>  | 1.0  | 3.4  | 34.5  | 0.0 | 0.0 | <i>galT</i> | -1.6 | 7.7  | 72.2  | 0.0 | 0.0 |
| <i>cyoA</i> | -2.4 | 11.1 | 61.3  | 0.0 | 0.0 | <i>cbrB</i> | 1.0  | 5.3  | 28.4  | 0.0 | 0.0 | <i>glpA</i> | -3.2 | 9.1  | 153.4 | 0.0 | 0.0 |
| <i>cyoB</i> | -2.1 | 11.0 | 27.2  | 0.0 | 0.0 | <i>cbrC</i> | 1.1  | 5.0  | 68.5  | 0.0 | 0.0 | <i>glpB</i> | -3.2 | 8.9  | 284.0 | 0.0 | 0.0 |
| <i>cyoC</i> | -1.9 | 9.5  | 18.4  | 0.0 | 0.0 | <i>cdd</i>  | -1.0 | 9.7  | 26.9  | 0.0 | 0.0 | <i>glpC</i> | -3.1 | 8.6  | 320.0 | 0.0 | 0.0 |
| <i>cyoD</i> | -1.9 | 9.4  | 18.5  | 0.0 | 0.0 | <i>cdgI</i> | 1.9  | 2.0  | 35.9  | 0.0 | 0.0 | <i>glpD</i> | -1.2 | 11.8 | 34.3  | 0.0 | 0.0 |
| <i>cyoE</i> | -1.7 | 9.9  | 21.0  | 0.0 | 0.0 | <i>cho</i>  | 1.9  | 5.4  | 204.7 | 0.0 | 0.0 | <i>glpF</i> | -1.4 | 11.3 | 28.3  | 0.0 | 0.0 |
| <i>cysK</i> | -1.1 | 7.7  | 40.9  | 0.0 | 0.0 | <i>citC</i> | 1.5  | 2.0  | 44.3  | 0.0 | 0.0 | <i>glpK</i> | -1.7 | 12.5 | 28.8  | 0.0 | 0.0 |
| <i>dadA</i> | -2.9 | 9.8  | 19.2  | 0.0 | 0.0 | <i>clpB</i> | -2.8 | 11.0 | 26.2  | 0.0 | 0.0 | <i>glpQ</i> | -2.6 | 12.6 | 332.6 | 0.0 | 0.0 |
| <i>dadX</i> | -2.6 | 9.1  | 17.7  | 0.0 | 0.0 | <i>cnoX</i> | -1.8 | 7.9  | 33.6  | 0.0 | 0.0 | <i>glpT</i> | -2.6 | 12.7 | 264.3 | 0.0 | 0.0 |
| <i>dapD</i> | -1.2 | 8.4  | 42.3  | 0.0 | 0.0 | <i>cnu</i>  | 1.0  | 4.6  | 16.6  | 0.0 | 0.0 | <i>glpX</i> | -1.3 | 7.9  | 41.6  | 0.0 | 0.0 |
| <i>dauA</i> | 1.3  | 7.8  | 146.6 | 0.0 | 0.0 | <i>cpdB</i> | -1.5 | 8.7  | 121.5 | 0.0 | 0.0 | <i>gutM</i> | -1.4 | 4.7  | 135.1 | 0.0 | 0.0 |
| <i>dctA</i> | -1.6 | 10.9 | 40.9  | 0.0 | 0.0 | <i>cpxP</i> | 2.4  | 6.7  | 377.7 | 0.0 | 0.0 | <i>hscC</i> | -1.2 | 5.6  | 95.0  | 0.0 | 0.0 |
| <i>dcuA</i> | 1.5  | 10.6 | 82.8  | 0.0 | 0.0 | <i>cpxQ</i> | 3.3  | 3.8  | 221.5 | 0.0 | 0.0 | <i>ivy</i>  | 1.5  | 6.5  | 73.2  | 0.0 | 0.0 |
| <i>ddpA</i> | -1.1 | 3.7  | 35.9  | 0.0 | 0.0 | <i>csgC</i> | 1.5  | 1.5  | 20.4  | 0.0 | 0.0 | <i>lamB</i> | -1.2 | 11.3 | 62.3  | 0.0 | 0.0 |
| <i>ddpX</i> | -1.3 | 2.4  | 18.5  | 0.0 | 0.0 | <i>csgD</i> | 2.0  | 1.2  | 47.8  | 0.0 | 0.0 | <i>ldtC</i> | 1.1  | 4.2  | 29.8  | 0.0 | 0.0 |
| <i>deaD</i> | 2.1  | 8.5  | 48.6  | 0.0 | 0.0 | <i>csgE</i> | 2.3  | 0.1  | 25.9  | 0.0 | 0.0 | <i>lexA</i> | 1.6  | 8.6  | 143.6 | 0.0 | 0.0 |
| <i>deoA</i> | -1.2 | 8.7  | 67.2  | 0.0 | 0.0 | <i>csiD</i> | -1.3 | 3.1  | 59.0  | 0.0 | 0.0 | <i>malK</i> | -1.0 | 10.3 | 54.1  | 0.0 | 0.0 |
| <i>deoB</i> | -1.0 | 9.5  | 67.4  | 0.0 | 0.0 | <i>csiE</i> | -2.2 | 7.9  | 78.4  | 0.0 | 0.0 | <i>malM</i> | -1.5 | 9.2  | 118.0 | 0.0 | 0.0 |
| <i>deoC</i> | -1.2 | 8.5  | 30.0  | 0.0 | 0.0 | <i>cspC</i> | -1.2 | 6.4  | 24.9  | 0.0 | 0.0 | <i>melR</i> | -1.4 | 7.0  | 34.9  | 0.0 | 0.0 |
| <i>dgcT</i> | 1.5  | 7.0  | 42.1  | 0.0 | 0.0 | <i>cspD</i> | -1.1 | 9.4  | 37.2  | 0.0 | 0.0 | <i>mglA</i> | -1.9 | 10.1 | 64.1  | 0.0 | 0.0 |
| <i>dgcZ</i> | 1.1  | 6.9  | 51.5  | 0.0 | 0.0 | <i>cspI</i> | 3.1  | 2.3  | 54.6  | 0.0 | 0.0 | <i>mglB</i> | -1.4 | 11.4 | 41.1  | 0.0 | 0.0 |
| <i>dgoR</i> | -1.1 | 5.3  | 26.8  | 0.0 | 0.0 | <i>csrB</i> | 1.0  | 4.3  | 30.6  | 0.0 | 0.0 | <i>mglC</i> | -1.9 | 9.1  | 51.7  | 0.0 | 0.0 |
| <i>dhaK</i> | -3.6 | 8.2  | 50.1  | 0.0 | 0.0 | <i>cstA</i> | -1.8 | 8.1  | 34.3  | 0.0 | 0.0 | <i>micL</i> | 1.7  | 3.9  | 134.6 | 0.0 | 0.0 |
| <i>dhaL</i> | -3.4 | 7.4  | 64.7  | 0.0 | 0.0 | <i>curA</i> | -1.6 | 6.1  | 79.2  | 0.0 | 0.0 | <i>mliC</i> | 1.3  | 4.2  | 48.9  | 0.0 | 0.0 |
| <i>dhaM</i> | -2.3 | 8.9  | 117.0 | 0.0 | 0.0 | <i>cvpA</i> | 1.4  | 6.8  | 74.9  | 0.0 | 0.0 | <i>mocA</i> | -1.3 | 5.3  | 22.5  | 0.0 | 0.0 |
| <i>dmlA</i> | 3.8  | 7.4  | 276.0 | 0.0 | 0.0 | <i>cyaR</i> | 1.4  | 2.7  | 17.2  | 0.0 | 0.0 | <i>mqsA</i> | 1.5  | 7.0  | 117.1 | 0.0 | 0.0 |
| <i>dnaG</i> | 1.1  | 8.8  | 20.4  | 0.0 | 0.0 | <i>cycA</i> | -1.3 | 8.3  | 52.4  | 0.0 | 0.0 | <i>mqsR</i> | 1.4  | 6.6  | 68.3  | 0.0 | 0.0 |
| <i>dppB</i> | -1.4 | 9.5  | 24.3  | 0.0 | 0.0 | <i>cyoA</i> | -1.3 | 11.1 | 19.5  | 0.0 | 0.0 | <i>mscS</i> | 1.2  | 7.3  | 78.1  | 0.0 | 0.0 |
| <i>dppC</i> | -1.2 | 8.9  | 21.5  | 0.0 | 0.0 | <i>cytR</i> | -1.4 | 8.7  | 182.4 | 0.0 | 0.0 | <i>nagB</i> | -1.1 | 8.1  | 27.3  | 0.0 | 0.0 |
| <i>dsdA</i> | -1.7 | 5.6  | 34.8  | 0.0 | 0.0 | <i>dacD</i> | 1.1  | 4.5  | 30.1  | 0.0 | 0.0 | <i>nanA</i> | -1.8 | 10.2 | 38.8  | 0.0 | 0.0 |

|             |      |      |       |     |     |             |      |      |       |     |     |             |      |      |       |     |     |
|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>dsdX</i> | -1.9 | 4.4  | 36.8  | 0.0 | 0.0 | <i>dadA</i> | -2.5 | 9.8  | 14.7  | 0.0 | 0.0 | <i>nanE</i> | -1.8 | 7.5  | 38.6  | 0.0 | 0.0 |
| <i>dusB</i> | 1.5  | 9.1  | 18.0  | 0.0 | 0.0 | <i>dadX</i> | -2.7 | 9.1  | 18.8  | 0.0 | 0.0 | <i>nanK</i> | -1.6 | 7.7  | 45.4  | 0.0 | 0.0 |
| <i>ebgA</i> | -1.1 | 5.2  | 109.2 | 0.0 | 0.0 | <i>dapD</i> | -1.3 | 8.4  | 49.3  | 0.0 | 0.0 | <i>nanT</i> | -1.9 | 8.7  | 43.1  | 0.0 | 0.0 |
| <i>ebgC</i> | -1.5 | 2.2  | 63.1  | 0.0 | 0.0 | <i>dauA</i> | 1.4  | 7.8  | 165.4 | 0.0 | 0.0 | <i>narW</i> | -1.1 | 2.5  | 26.8  | 0.0 | 0.0 |
| <i>entA</i> | 1.8  | 4.5  | 107.7 | 0.0 | 0.0 | <i>dctA</i> | -2.1 | 10.9 | 65.0  | 0.0 | 0.0 | <i>narY</i> | -1.0 | 3.7  | 49.7  | 0.0 | 0.0 |
| <i>entB</i> | 2.0  | 4.9  | 73.6  | 0.0 | 0.0 | <i>ddpA</i> | -1.8 | 3.7  | 83.8  | 0.0 | 0.0 | <i>narZ</i> | -1.0 | 5.5  | 62.4  | 0.0 | 0.0 |
| <i>entC</i> | 2.3  | 5.3  | 96.6  | 0.0 | 0.0 | <i>ddpB</i> | -1.0 | 2.5  | 19.7  | 0.0 | 0.0 | <i>nupG</i> | -1.6 | 8.6  | 92.3  | 0.0 | 0.0 |
| <i>entD</i> | 1.2  | 3.1  | 47.4  | 0.0 | 0.0 | <i>ddpX</i> | -1.5 | 2.4  | 24.1  | 0.0 | 0.0 | <i>ompF</i> | -2.0 | 12.2 | 115.6 | 0.0 | 0.0 |
| <i>entE</i> | 2.3  | 5.2  | 161.9 | 0.0 | 0.0 | <i>deaD</i> | 2.4  | 8.5  | 61.2  | 0.0 | 0.0 | <i>oppA</i> | -1.2 | 10.0 | 28.3  | 0.0 | 0.0 |
| <i>entF</i> | 1.5  | 6.3  | 69.5  | 0.0 | 0.0 | <i>degP</i> | 1.2  | 9.5  | 16.6  | 0.0 | 0.0 | <i>oppC</i> | -1.2 | 7.3  | 36.7  | 0.0 | 0.0 |
| <i>entH</i> | 1.7  | 3.4  | 54.7  | 0.0 | 0.0 | <i>deoA</i> | -1.6 | 8.7  | 107.6 | 0.0 | 0.0 | <i>oppD</i> | -1.3 | 7.4  | 27.4  | 0.0 | 0.0 |
| <i>entS</i> | 1.8  | 5.2  | 38.9  | 0.0 | 0.0 | <i>deoB</i> | -1.1 | 9.5  | 83.2  | 0.0 | 0.0 | <i>osmB</i> | 2.2  | 5.4  | 144.6 | 0.0 | 0.0 |
| <i>eutG</i> | 1.2  | 1.6  | 19.7  | 0.0 | 0.0 | <i>deoC</i> | -1.6 | 8.5  | 51.8  | 0.0 | 0.0 | <i>osmY</i> | 1.4  | 8.4  | 41.1  | 0.0 | 0.0 |
| <i>fadA</i> | -2.1 | 6.3  | 85.2  | 0.0 | 0.0 | <i>deoD</i> | -1.1 | 9.7  | 49.0  | 0.0 | 0.0 | <i>patZ</i> | -1.1 | 8.5  | 66.6  | 0.0 | 0.0 |
| <i>fadB</i> | -3.5 | 7.2  | 93.6  | 0.0 | 0.0 | <i>dgcT</i> | 1.2  | 7.0  | 29.7  | 0.0 | 0.0 | <i>pepE</i> | -1.4 | 7.4  | 65.4  | 0.0 | 0.0 |
| <i>fadD</i> | -1.6 | 8.4  | 174.1 | 0.0 | 0.0 | <i>dgcZ</i> | 1.9  | 6.9  | 140.7 | 0.0 | 0.0 | <i>pnp</i>  | -3.9 | 9.6  | 640.7 | 0.0 | 0.0 |
| <i>fadE</i> | -1.9 | 6.3  | 102.3 | 0.0 | 0.0 | <i>dgoD</i> | -1.3 | 3.7  | 78.6  | 0.0 | 0.0 | <i>psiE</i> | 1.8  | 2.6  | 107.2 | 0.0 | 0.0 |
| <i>fadH</i> | -1.9 | 5.7  | 65.0  | 0.0 | 0.0 | <i>dgoK</i> | -1.1 | 4.1  | 38.1  | 0.0 | 0.0 | <i>pspA</i> | 1.2  | 6.4  | 59.9  | 0.0 | 0.0 |
| <i>fadI</i> | -2.5 | 6.1  | 61.0  | 0.0 | 0.0 | <i>dgoR</i> | -1.4 | 5.3  | 47.3  | 0.0 | 0.0 | <i>pspB</i> | 1.1  | 4.4  | 68.2  | 0.0 | 0.0 |
| <i>fadJ</i> | -1.6 | 7.2  | 56.4  | 0.0 | 0.0 | <i>dhaK</i> | -4.1 | 8.2  | 62.8  | 0.0 | 0.0 | <i>pspD</i> | 1.1  | 3.1  | 26.9  | 0.0 | 0.0 |
| <i>fadK</i> | 1.4  | 6.1  | 90.9  | 0.0 | 0.0 | <i>dhaL</i> | -4.1 | 7.4  | 89.8  | 0.0 | 0.0 | <i>pspG</i> | 1.8  | 2.3  | 56.0  | 0.0 | 0.0 |
| <i>fbaA</i> | -1.3 | 10.1 | 76.8  | 0.0 | 0.0 | <i>dhaM</i> | -3.4 | 8.9  | 234.4 | 0.0 | 0.0 | <i>psuG</i> | -1.2 | 3.9  | 37.7  | 0.0 | 0.0 |
| <i>fdoG</i> | -1.7 | 11.2 | 43.9  | 0.0 | 0.0 | <i>dinB</i> | 2.1  | 5.6  | 280.1 | 0.0 | 0.0 | <i>ptsG</i> | 1.1  | 8.5  | 57.9  | 0.0 | 0.0 |
| <i>fdoH</i> | -1.7 | 9.4  | 47.9  | 0.0 | 0.0 | <i>dinD</i> | 1.6  | 4.9  | 129.3 | 0.0 | 0.0 | <i>recA</i> | 3.2  | 10.3 | 395.7 | 0.0 | 0.0 |
| <i>fdoI</i> | -1.6 | 8.7  | 79.2  | 0.0 | 0.0 | <i>dinF</i> | 1.5  | 6.0  | 198.5 | 0.0 | 0.0 | <i>recN</i> | 3.6  | 8.2  | 773.7 | 0.0 | 0.0 |
| <i>feoA</i> | 1.3  | 6.0  | 77.8  | 0.0 | 0.0 | <i>dinG</i> | 1.1  | 6.5  | 131.6 | 0.0 | 0.0 | <i>recX</i> | 2.1  | 4.0  | 133.3 | 0.0 | 0.0 |
| <i>feoB</i> | 1.1  | 8.2  | 60.9  | 0.0 | 0.0 | <i>dinI</i> | 3.7  | 6.4  | 279.6 | 0.0 | 0.0 | <i>rhaR</i> | -1.1 | 5.3  | 53.6  | 0.0 | 0.0 |
| <i>fepA</i> | 1.9  | 5.9  | 187.0 | 0.0 | 0.0 | <i>dinQ</i> | 1.4  | 6.2  | 59.9  | 0.0 | 0.0 | <i>ribB</i> | -2.1 | 9.2  | 143.5 | 0.0 | 0.0 |
| <i>fepB</i> | 1.2  | 5.3  | 30.3  | 0.0 | 0.0 | <i>dmlA</i> | 3.2  | 7.4  | 199.6 | 0.0 | 0.0 | <i>rihA</i> | -1.5 | 9.0  | 88.4  | 0.0 | 0.0 |
| <i>fepC</i> | 1.1  | 5.3  | 31.5  | 0.0 | 0.0 | <i>dmlR</i> | -1.9 | 6.1  | 78.2  | 0.0 | 0.0 | <i>rihC</i> | -1.2 | 7.3  | 61.1  | 0.0 | 0.0 |
| <i>fepD</i> | 1.7  | 5.8  | 217.3 | 0.0 | 0.0 | <i>dnaG</i> | 1.2  | 8.8  | 23.4  | 0.0 | 0.0 | <i>rpoE</i> | 1.8  | 9.5  | 137.1 | 0.0 | 0.0 |
| <i>fepE</i> | 1.4  | 3.4  | 23.4  | 0.0 | 0.0 | <i>dppA</i> | -2.9 | 12.4 | 74.0  | 0.0 | 0.0 | <i>rseA</i> | 1.7  | 9.3  | 139.7 | 0.0 | 0.0 |
| <i>fepG</i> | 1.3  | 5.2  | 70.8  | 0.0 | 0.0 | <i>dppB</i> | -3.1 | 9.5  | 107.9 | 0.0 | 0.0 | <i>rseB</i> | 1.1  | 8.5  | 106.4 | 0.0 | 0.0 |
| <i>fes</i>  | 2.2  | 5.4  | 257.6 | 0.0 | 0.0 | <i>dppC</i> | -2.8 | 8.9  | 100.3 | 0.0 | 0.0 | <i>rseD</i> | 1.5  | 7.1  | 112.4 | 0.0 | 0.0 |
| <i>ffh</i>  | -1.0 | 9.1  | 81.2  | 0.0 | 0.0 | <i>dppD</i> | -2.6 | 9.4  | 94.6  | 0.0 | 0.0 | <i>ruvA</i> | 1.1  | 6.6  | 106.0 | 0.0 | 0.0 |
| <i>ffs</i>  | 1.6  | 2.8  | 30.8  | 0.0 | 0.0 | <i>dppF</i> | -2.5 | 9.3  | 76.5  | 0.0 | 0.0 | <i>sbmA</i> | 1.1  | 6.2  | 139.1 | 0.0 | 0.0 |
| <i>fhuA</i> | 1.4  | 9.3  | 74.7  | 0.0 | 0.0 | <i>dsdA</i> | -1.6 | 5.6  | 31.3  | 0.0 | 0.0 | <i>sbmC</i> | 2.0  | 6.4  | 167.6 | 0.0 | 0.0 |
| <i>fhuB</i> | 1.6  | 6.7  | 77.7  | 0.0 | 0.0 | <i>dsdX</i> | -1.5 | 4.4  | 23.5  | 0.0 | 0.0 | <i>sfmC</i> | 2.0  | 1.6  | 22.7  | 0.0 | 0.0 |
| <i>fhuC</i> | 1.5  | 6.2  | 90.9  | 0.0 | 0.0 | <i>dtpB</i> | -1.9 | 8.8  | 76.1  | 0.0 | 0.0 | <i>sgbU</i> | -1.8 | 2.1  | 93.4  | 0.0 | 0.0 |
| <i>fhuD</i> | 1.2  | 5.5  | 41.1  | 0.0 | 0.0 | <i>dtpD</i> | 1.0  | 5.9  | 35.2  | 0.0 | 0.0 | <i>soxS</i> | 2.2  | 5.8  | 103.9 | 0.0 | 0.0 |
| <i>fhuE</i> | 1.4  | 5.3  | 108.7 | 0.0 | 0.0 | <i>dusB</i> | 2.0  | 9.1  | 33.7  | 0.0 | 0.0 | <i>spy</i>  | 2.4  | 5.5  | 353.2 | 0.0 | 0.0 |
| <i>fhuF</i> | 1.1  | 7.3  | 89.9  | 0.0 | 0.0 | <i>ebgA</i> | -1.5 | 5.2  | 182.7 | 0.0 | 0.0 | <i>sraG</i> | -1.8 | 8.0  | 150.6 | 0.0 | 0.0 |
| <i>flgB</i> | -2.2 | 0.6  | 27.2  | 0.0 | 0.0 | <i>ebgC</i> | -2.1 | 2.2  | 112.2 | 0.0 | 0.0 | <i>srlA</i> | -1.5 | 7.7  | 43.4  | 0.0 | 0.0 |
| <i>flgD</i> | -1.8 | 2.2  | 92.6  | 0.0 | 0.0 | <i>efeO</i> | -1.1 | 8.1  | 51.4  | 0.0 | 0.0 | <i>srlB</i> | -1.4 | 5.9  | 52.8  | 0.0 | 0.0 |
| <i>flgE</i> | -1.8 | 3.4  | 211.0 | 0.0 | 0.0 | <i>emrY</i> | 1.1  | 2.6  | 49.0  | 0.0 | 0.0 | <i>srlD</i> | -1.3 | 7.9  | 53.0  | 0.0 | 0.0 |
| <i>flgF</i> | -1.1 | 2.5  | 38.1  | 0.0 | 0.0 | <i>eno</i>  | -1.0 | 10.9 | 53.2  | 0.0 | 0.0 | <i>srlE</i> | -1.6 | 7.5  | 110.0 | 0.0 | 0.0 |
| <i>flgG</i> | -1.7 | 2.4  | 78.7  | 0.0 | 0.0 | <i>eptA</i> | 1.1  | 5.9  | 53.6  | 0.0 | 0.0 | <i>srlR</i> | -1.0 | 6.7  | 132.1 | 0.0 | 0.0 |
| <i>fliH</i> | -1.2 | 1.4  | 24.9  | 0.0 | 0.0 | <i>eutG</i> | 1.2  | 1.6  | 22.4  | 0.0 | 0.0 | <i>sulA</i> | 3.9  | 8.4  | 761.5 | 0.0 | 0.0 |
| <i>fliI</i> | -1.1 | 1.9  | 23.3  | 0.0 | 0.0 | <i>fadA</i> | -2.1 | 6.3  | 87.4  | 0.0 | 0.0 | <i>tdcA</i> | -4.9 | 8.4  | 834.6 | 0.0 | 0.0 |

|             |      |      |       |     |     |             |      |      |       |     |     |             |      |      |       |     |     |
|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>ftnA</i> | -1.7 | 6.6  | 109.9 | 0.0 | 0.0 | <i>fadB</i> | -2.8 | 7.2  | 65.9  | 0.0 | 0.0 | <i>tdcB</i> | -5.0 | 6.4  | 913.1 | 0.0 | 0.0 |
| <i>ftp</i>  | 1.4  | 5.6  | 35.8  | 0.0 | 0.0 | <i>fadE</i> | -1.1 | 6.3  | 34.4  | 0.0 | 0.0 | <i>tdcC</i> | -3.0 | 6.4  | 158.5 | 0.0 | 0.0 |
| <i>fumA</i> | -1.8 | 9.9  | 43.9  | 0.0 | 0.0 | <i>fadH</i> | -2.1 | 5.7  | 77.8  | 0.0 | 0.0 | <i>tdcD</i> | -3.9 | 5.8  | 131.8 | 0.0 | 0.0 |
| <i>fumC</i> | -1.8 | 6.2  | 36.1  | 0.0 | 0.0 | <i>fadI</i> | -2.4 | 6.1  | 53.4  | 0.0 | 0.0 | <i>tdcE</i> | -3.4 | 6.5  | 87.8  | 0.0 | 0.0 |
| <i>gadW</i> | -1.1 | 4.4  | 88.0  | 0.0 | 0.0 | <i>fadJ</i> | -2.2 | 7.2  | 99.5  | 0.0 | 0.0 | <i>tdcF</i> | -3.1 | 3.7  | 90.9  | 0.0 | 0.0 |
| <i>gadY</i> | -1.2 | 3.0  | 34.5  | 0.0 | 0.0 | <i>fadK</i> | 1.3  | 6.1  | 85.2  | 0.0 | 0.0 | <i>tdcG</i> | -2.5 | 4.6  | 45.2  | 0.0 | 0.0 |
| <i>galS</i> | -1.4 | 7.8  | 87.6  | 0.0 | 0.0 | <i>fbaA</i> | -1.6 | 10.1 | 119.0 | 0.0 | 0.0 | <i>tisB</i> | 5.4  | 8.1  | 738.0 | 0.0 | 0.0 |
| <i>gapA</i> | -1.2 | 11.8 | 40.8  | 0.0 | 0.0 | <i>fcl</i>  | 1.3  | 1.6  | 16.5  | 0.0 | 0.0 | <i>tnaA</i> | -5.2 | 12.6 | 266.1 | 0.0 | 0.0 |
| <i>gcd</i>  | -1.0 | 7.0  | 20.3  | 0.0 | 0.0 | <i>fdhE</i> | -1.3 | 8.3  | 87.8  | 0.0 | 0.0 | <i>tnaB</i> | -5.0 | 9.4  | 190.7 | 0.0 | 0.0 |
| <i>ghrB</i> | -1.5 | 7.2  | 132.6 | 0.0 | 0.0 | <i>fdoG</i> | -1.8 | 11.2 | 49.1  | 0.0 | 0.0 | <i>tnaC</i> | -5.4 | 9.5  | 175.0 | 0.0 | 0.0 |
| <i>ghxP</i> | 1.3  | 5.9  | 23.5  | 0.0 | 0.0 | <i>fdoH</i> | -2.2 | 9.4  | 72.7  | 0.0 | 0.0 | <i>torY</i> | 1.3  | 2.7  | 32.9  | 0.0 | 0.0 |
| <i>glcC</i> | -1.9 | 6.4  | 71.5  | 0.0 | 0.0 | <i>fdol</i> | -2.1 | 8.7  | 129.5 | 0.0 | 0.0 | <i>trxC</i> | 1.0  | 6.2  | 44.3  | 0.0 | 0.0 |
| <i>glmY</i> | 1.6  | 4.2  | 23.2  | 0.0 | 0.0 | <i>ffh</i>  | -1.0 | 9.1  | 81.6  | 0.0 | 0.0 | <i>tsgA</i> | 2.2  | 5.7  | 101.5 | 0.0 | 0.0 |
| <i>glmZ</i> | 1.2  | 7.1  | 22.2  | 0.0 | 0.0 | <i>fis</i>  | 1.9  | 8.1  | 27.2  | 0.0 | 0.0 | <i>tsx</i>  | -1.3 | 11.1 | 94.4  | 0.0 | 0.0 |
| <i>glnU</i> | 1.5  | 10.0 | 20.6  | 0.0 | 0.0 | <i>flgB</i> | -2.0 | 0.6  | 23.6  | 0.0 | 0.0 | <i>ucpA</i> | -1.0 | 9.8  | 48.6  | 0.0 | 0.0 |
| <i>glnW</i> | 1.6  | 10.1 | 24.8  | 0.0 | 0.0 | <i>flgD</i> | -1.9 | 2.2  | 104.2 | 0.0 | 0.0 | <i>uhpT</i> | 2.8  | 6.2  | 306.4 | 0.0 | 0.0 |
| <i>glpD</i> | -1.2 | 11.8 | 33.8  | 0.0 | 0.0 | <i>flgE</i> | -1.2 | 3.4  | 113.1 | 0.0 | 0.0 | <i>umuC</i> | 2.8  | 6.1  | 288.3 | 0.0 | 0.0 |
| <i>glpF</i> | -1.5 | 11.3 | 33.2  | 0.0 | 0.0 | <i>flgF</i> | -1.1 | 2.5  | 37.7  | 0.0 | 0.0 | <i>umuD</i> | 4.3  | 5.2  | 742.0 | 0.0 | 0.0 |
| <i>glpK</i> | -1.6 | 12.5 | 25.5  | 0.0 | 0.0 | <i>flgG</i> | -1.4 | 2.4  | 60.3  | 0.0 | 0.0 | <i>uvrA</i> | 1.2  | 8.4  | 129.7 | 0.0 | 0.0 |
| <i>gltA</i> | -2.9 | 11.0 | 36.9  | 0.0 | 0.0 | <i>fliE</i> | 1.2  | 1.0  | 16.3  | 0.0 | 0.0 | <i>uxaB</i> | 1.3  | 4.9  | 118.9 | 0.0 | 0.0 |
| <i>gltI</i> | -2.8 | 9.3  | 36.2  | 0.0 | 0.0 | <i>fliF</i> | -1.0 | 2.3  | 31.7  | 0.0 | 0.0 | <i>uxuB</i> | -1.2 | 7.1  | 57.3  | 0.0 | 0.0 |
| <i>gltJ</i> | -2.0 | 6.8  | 26.3  | 0.0 | 0.0 | <i>fliR</i> | 1.2  | 2.3  | 37.2  | 0.0 | 0.0 | <i>wcaE</i> | 2.5  | 0.0  | 46.2  | 0.0 | 0.0 |
| <i>gltK</i> | -1.9 | 6.5  | 31.1  | 0.0 | 0.0 | <i>frwB</i> | -1.2 | 2.3  | 66.8  | 0.0 | 0.0 | <i>xdhC</i> | -1.2 | 4.1  | 24.7  | 0.0 | 0.0 |
| <i>gltL</i> | -1.7 | 7.4  | 19.3  | 0.0 | 0.0 | <i>frwC</i> | -1.3 | 3.0  | 60.4  | 0.0 | 0.0 | <i>yafP</i> | 1.4  | 3.6  | 109.4 | 0.0 | 0.0 |
| <i>glyV</i> | 2.2  | 8.8  | 22.5  | 0.0 | 0.0 | <i>ftnB</i> | 1.2  | 7.8  | 69.9  | 0.0 | 0.0 | <i>yaiY</i> | 1.2  | 3.8  | 106.8 | 0.0 | 0.0 |
| <i>glyX</i> | 2.1  | 8.5  | 24.6  | 0.0 | 0.0 | <i>ftp</i>  | 1.2  | 5.6  | 26.2  | 0.0 | 0.0 | <i>yajI</i> | 1.0  | 4.1  | 88.9  | 0.0 | 0.0 |
| <i>glyY</i> | 2.4  | 8.7  | 28.0  | 0.0 | 0.0 | <i>fucA</i> | -1.3 | 4.6  | 51.6  | 0.0 | 0.0 | <i>ybdZ</i> | -1.3 | 2.6  | 24.4  | 0.0 | 0.0 |
| <i>gpmM</i> | -1.1 | 6.7  | 69.2  | 0.0 | 0.0 | <i>fucI</i> | -1.7 | 6.3  | 151.6 | 0.0 | 0.0 | <i>ybgS</i> | 1.3  | 4.2  | 108.8 | 0.0 | 0.0 |
| <i>groL</i> | -1.8 | 12.3 | 16.2  | 0.0 | 0.0 | <i>fucK</i> | -1.3 | 5.8  | 126.9 | 0.0 | 0.0 | <i>ybiV</i> | 1.1  | 5.2  | 61.0  | 0.0 | 0.0 |
| <i>groS</i> | -2.0 | 10.6 | 19.3  | 0.0 | 0.0 | <i>fucO</i> | -1.3 | 8.0  | 71.4  | 0.0 | 0.0 | <i>ycaM</i> | -1.3 | 7.4  | 44.9  | 0.0 | 0.0 |
| <i>grpE</i> | -2.3 | 10.6 | 56.3  | 0.0 | 0.0 | <i>fucP</i> | -1.3 | 4.8  | 51.7  | 0.0 | 0.0 | <i>ycfJ</i> | 1.8  | 4.9  | 249.6 | 0.0 | 0.0 |
| <i>grxA</i> | 1.2  | 2.8  | 23.8  | 0.0 | 0.0 | <i>fucR</i> | -1.4 | 6.6  | 85.8  | 0.0 | 0.0 | <i>ycgZ</i> | 2.0  | 3.5  | 51.1  | 0.0 | 0.0 |
| <i>grxB</i> | -1.0 | 6.1  | 16.6  | 0.0 | 0.0 | <i>fumA</i> | -2.5 | 9.9  | 81.4  | 0.0 | 0.0 | <i>ycjM</i> | -1.0 | 4.2  | 43.8  | 0.0 | 0.0 |
| <i>gshA</i> | -1.3 | 8.9  | 146.0 | 0.0 | 0.0 | <i>fumC</i> | -1.8 | 6.2  | 36.6  | 0.0 | 0.0 | <i>ycjN</i> | -1.2 | 3.4  | 37.4  | 0.0 | 0.0 |
| <i>gspJ</i> | 1.0  | 2.9  | 31.4  | 0.0 | 0.0 | <i>gadE</i> | -1.4 | 2.3  | 16.4  | 0.0 | 0.0 | <i>ydcH</i> | -1.4 | 6.3  | 26.0  | 0.0 | 0.0 |
| <i>gstB</i> | -1.2 | 6.8  | 102.6 | 0.0 | 0.0 | <i>galE</i> | -2.4 | 8.3  | 118.7 | 0.0 | 0.0 | <i>ydcS</i> | -1.4 | 5.9  | 34.6  | 0.0 | 0.0 |
| <i>hcaR</i> | -2.3 | 6.8  | 60.5  | 0.0 | 0.0 | <i>galK</i> | -1.6 | 8.1  | 147.2 | 0.0 | 0.0 | <i>ydcT</i> | -1.4 | 4.7  | 46.6  | 0.0 | 0.0 |
| <i>hdeA</i> | -1.6 | 5.5  | 55.4  | 0.0 | 0.0 | <i>galP</i> | -2.1 | 7.5  | 71.4  | 0.0 | 0.0 | <i>ydcV</i> | -1.5 | 4.2  | 43.6  | 0.0 | 0.0 |
| <i>hdeB</i> | -2.2 | 3.7  | 66.3  | 0.0 | 0.0 | <i>galS</i> | -3.2 | 7.8  | 395.2 | 0.0 | 0.0 | <i>yddA</i> | -1.6 | 4.7  | 37.7  | 0.0 | 0.0 |
| <i>hdeD</i> | -1.5 | 3.6  | 52.1  | 0.0 | 0.0 | <i>galT</i> | -2.1 | 7.7  | 123.2 | 0.0 | 0.0 | <i>yddB</i> | -1.3 | 5.2  | 40.1  | 0.0 | 0.0 |
| <i>hisC</i> | -1.2 | 4.7  | 23.2  | 0.0 | 0.0 | <i>gapA</i> | -1.4 | 11.8 | 60.9  | 0.0 | 0.0 | <i>ydeN</i> | -1.2 | 7.2  | 46.8  | 0.0 | 0.0 |
| <i>hisG</i> | -1.2 | 5.1  | 22.8  | 0.0 | 0.0 | <i>ghrB</i> | -1.4 | 7.2  | 110.5 | 0.0 | 0.0 | <i>ydeP</i> | 1.0  | 3.9  | 52.7  | 0.0 | 0.0 |
| <i>hisJ</i> | -1.2 | 6.5  | 55.1  | 0.0 | 0.0 | <i>ghxP</i> | 1.7  | 5.9  | 41.8  | 0.0 | 0.0 | <i>ydeQ</i> | 1.6  | 0.9  | 26.1  | 0.0 | 0.0 |
| <i>hisP</i> | -1.1 | 4.8  | 46.0  | 0.0 | 0.0 | <i>glmY</i> | 2.2  | 4.2  | 42.2  | 0.0 | 0.0 | <i>ydeT</i> | 2.6  | 2.3  | 136.2 | 0.0 | 0.0 |
| <i>hofB</i> | 1.2  | 3.4  | 21.6  | 0.0 | 0.0 | <i>glmZ</i> | 1.2  | 7.1  | 21.7  | 0.0 | 0.0 | <i>ydfD</i> | 2.1  | 0.0  | 36.5  | 0.0 | 0.0 |
| <i>hslO</i> | -1.2 | 7.9  | 23.5  | 0.0 | 0.0 | <i>glnU</i> | 1.6  | 10.0 | 21.8  | 0.0 | 0.0 | <i>ydiN</i> | 2.1  | 0.9  | 51.8  | 0.0 | 0.0 |
| <i>hslR</i> | -1.3 | 6.9  | 24.3  | 0.0 | 0.0 | <i>glnW</i> | 1.8  | 10.1 | 30.0  | 0.0 | 0.0 | <i>ydjM</i> | 1.4  | 4.4  | 144.6 | 0.0 | 0.0 |
| <i>hslU</i> | -1.6 | 9.5  | 27.6  | 0.0 | 0.0 | <i>glpA</i> | -3.5 | 9.1  | 179.2 | 0.0 | 0.0 | <i>yebE</i> | 1.0  | 5.1  | 91.1  | 0.0 | 0.0 |
| <i>hslV</i> | -1.7 | 8.1  | 42.5  | 0.0 | 0.0 | <i>glpB</i> | -3.7 | 8.9  | 357.8 | 0.0 | 0.0 | <i>yebF</i> | 1.7  | 7.7  | 114.7 | 0.0 | 0.0 |

|             |      |      |       |     |     |             |      |      |       |     |     |                                                      |      |     |       |     |     |
|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|------------------------------------------------------|------|-----|-------|-----|-----|
| <i>hxpA</i> | -1.3 | 6.9  | 37.2  | 0.0 | 0.0 | <i>glpC</i> | -3.7 | 8.6  | 438.6 | 0.0 | 0.0 | <i>yebG</i>                                          | 2.8  | 7.7 | 514.3 | 0.0 | 0.0 |
| <i>ibsD</i> | 1.4  | 5.5  | 53.0  | 0.0 | 0.0 | <i>glpD</i> | -2.4 | 11.8 | 126.6 | 0.0 | 0.0 | <i>yedR</i>                                          | 1.1  | 2.1 | 30.7  | 0.0 | 0.0 |
| <i>icd</i>  | -1.2 | 11.3 | 27.0  | 0.0 | 0.0 | <i>glpF</i> | -3.0 | 11.3 | 110.3 | 0.0 | 0.0 | <i>yeeA</i>                                          | 1.4  | 5.7 | 169.7 | 0.0 | 0.0 |
| <i>iclR</i> | -1.1 | 6.6  | 126.4 | 0.0 | 0.0 | <i>glpK</i> | -3.3 | 12.5 | 95.7  | 0.0 | 0.0 | <i>yejG</i>                                          | 1.6  | 5.7 | 66.1  | 0.0 | 0.0 |
| <i>ilvE</i> | -1.3 | 8.1  | 40.2  | 0.0 | 0.0 | <i>glpQ</i> | -2.7 | 12.6 | 355.5 | 0.0 | 0.0 | <i>yfbM</i>                                          | -1.1 | 2.6 | 43.5  | 0.0 | 0.0 |
| <i>ilvM</i> | -1.2 | 4.8  | 46.5  | 0.0 | 0.0 | <i>glpT</i> | -2.7 | 12.7 | 287.5 | 0.0 | 0.0 | <i>yfdV</i>                                          | 1.6  | 1.1 | 33.4  | 0.0 | 0.0 |
| <i>ilvX</i> | -1.9 | 1.8  | 57.5  | 0.0 | 0.0 | <i>glpX</i> | -1.9 | 7.9  | 87.4  | 0.0 | 0.0 | <i>yfeC</i>                                          | -1.2 | 7.2 | 74.9  | 0.0 | 0.0 |
| <i>iroK</i> | -2.2 | 3.1  | 50.7  | 0.0 | 0.0 | <i>gltA</i> | -2.9 | 11.0 | 38.6  | 0.0 | 0.0 | <i>yfeD</i>                                          | -1.1 | 7.1 | 73.7  | 0.0 | 0.0 |
| <i>iscA</i> | -1.0 | 8.2  | 67.7  | 0.0 | 0.0 | <i>gltI</i> | -2.9 | 9.3  | 39.4  | 0.0 | 0.0 | <i>yfeK</i>                                          | 2.2  | 4.8 | 116.7 | 0.0 | 0.0 |
| <i>iscR</i> | -1.6 | 8.0  | 48.8  | 0.0 | 0.0 | <i>gltJ</i> | -2.4 | 6.8  | 36.9  | 0.0 | 0.0 | <i>yfeS</i>                                          | 1.4  | 6.4 | 87.4  | 0.0 | 0.0 |
| <i>iscS</i> | -1.2 | 9.3  | 59.1  | 0.0 | 0.0 | <i>gltK</i> | -2.5 | 6.5  | 50.7  | 0.0 | 0.0 | <i>yfeY</i>                                          | 1.2  | 7.0 | 145.5 | 0.0 | 0.0 |
| <i>iscU</i> | -1.1 | 8.2  | 60.8  | 0.0 | 0.0 | <i>gltL</i> | -2.3 | 7.4  | 35.0  | 0.0 | 0.0 | <i>ygaC</i>                                          | 1.1  | 5.3 | 85.4  | 0.0 | 0.0 |
| <i>ispE</i> | 1.2  | 9.3  | 39.7  | 0.0 | 0.0 | <i>glyA</i> | -1.2 | 9.7  | 89.4  | 0.0 | 0.0 | <i>ygcN</i>                                          | -1.1 | 6.7 | 52.8  | 0.0 | 0.0 |
| <i>katG</i> | -1.7 | 8.7  | 58.7  | 0.0 | 0.0 | <i>glyV</i> | 2.5  | 8.8  | 28.3  | 0.0 | 0.0 | <i>ygcO</i>                                          | -1.4 | 3.7 | 62.7  | 0.0 | 0.0 |
| <i>kbaZ</i> | -1.3 | 4.1  | 34.3  | 0.0 | 0.0 | <i>glyX</i> | 2.4  | 8.5  | 30.6  | 0.0 | 0.0 | <i>ygcP</i>                                          | -1.4 | 4.6 | 116.4 | 0.0 | 0.0 |
| <i>kbl</i>  | -1.3 | 9.5  | 99.6  | 0.0 | 0.0 | <i>glyY</i> | 2.7  | 8.7  | 35.0  | 0.0 | 0.0 | <i>ygcW</i>                                          | -1.5 | 1.3 | 24.4  | 0.0 | 0.0 |
| <i>kbp</i>  | -1.4 | 7.5  | 69.4  | 0.0 | 0.0 | <i>gmd</i>  | 1.1  | 1.7  | 16.0  | 0.0 | 0.0 | <i>ygeV</i>                                          | -1.7 | 8.2 | 47.8  | 0.0 | 0.0 |
| <i>kdgK</i> | -1.0 | 6.2  | 115.2 | 0.0 | 0.0 | <i>gpmA</i> | -1.1 | 9.9  | 41.5  | 0.0 | 0.0 | <i>ygiM</i>                                          | 2.0  | 7.0 | 242.6 | 0.0 | 0.0 |
| <i>kefB</i> | -1.5 | 5.9  | 40.6  | 0.0 | 0.0 | <i>gpmM</i> | -1.1 | 6.7  | 79.9  | 0.0 | 0.0 | <i>yhcG</i>                                          | -1.1 | 5.4 | 42.3  | 0.0 | 0.0 |
| <i>kefG</i> | -1.4 | 4.6  | 27.8  | 0.0 | 0.0 | <i>gpr</i>  | -1.7 | 7.3  | 90.8  | 0.0 | 0.0 | <i>yhcH</i>                                          | -1.9 | 7.8 | 78.9  | 0.0 | 0.0 |
| <i>kgtP</i> | -2.9 | 6.7  | 306.5 | 0.0 | 0.0 | <i>gpsA</i> | -1.4 | 9.2  | 70.6  | 0.0 | 0.0 | <i>yhfA</i>                                          | -1.1 | 7.1 | 24.4  | 0.0 | 0.0 |
| <i>ldhA</i> | -1.3 | 6.7  | 24.9  | 0.0 | 0.0 | <i>groL</i> | -2.1 | 12.3 | 21.4  | 0.0 | 0.0 | <i>yhjV</i>                                          | -1.3 | 7.0 | 67.8  | 0.0 | 0.0 |
| <i>leuW</i> | 1.8  | 10.1 | 28.9  | 0.0 | 0.0 | <i>groS</i> | -2.1 | 10.6 | 21.4  | 0.0 | 0.0 | <i>yiaO</i>                                          | -1.0 | 2.6 | 29.6  | 0.0 | 0.0 |
| <i>livJ</i> | -1.4 | 5.7  | 66.8  | 0.0 | 0.0 | <i>grpE</i> | -2.3 | 10.6 | 58.4  | 0.0 | 0.0 | <i>yigI</i>                                          | 1.7  | 5.5 | 80.4  | 0.0 | 0.0 |
| <i>lldP</i> | -3.1 | 10.5 | 37.0  | 0.0 | 0.0 | <i>grxA</i> | 1.2  | 2.8  | 26.1  | 0.0 | 0.0 | <i>yjbE</i>                                          | 1.4  | 1.6 | 32.6  | 0.0 | 0.0 |
| <i>lon</i>  | -1.4 | 10.3 | 19.8  | 0.0 | 0.0 | <i>gshA</i> | -1.4 | 8.9  | 159.5 | 0.0 | 0.0 | <i>ymdF</i>                                          | 1.2  | 3.3 | 33.0  | 0.0 | 0.0 |
| <i>lsrA</i> | -1.5 | 4.0  | 62.5  | 0.0 | 0.0 | <i>gspJ</i> | 1.1  | 2.9  | 34.9  | 0.0 | 0.0 | <i>ymdG</i>                                          | 1.7  | 1.1 | 31.6  | 0.0 | 0.0 |
| <i>lsrB</i> | -1.5 | 3.1  | 66.4  | 0.0 | 0.0 | <i>guaB</i> | 1.6  | 8.4  | 31.0  | 0.0 | 0.0 | <i>ymgA</i>                                          | 1.9  | 3.8 | 53.2  | 0.0 | 0.0 |
| <i>lsrC</i> | -1.3 | 3.5  | 41.5  | 0.0 | 0.0 | <i>hcaR</i> | -2.0 | 6.8  | 47.6  | 0.0 | 0.0 | <i>ymgC</i>                                          | 1.7  | 2.2 | 33.0  | 0.0 | 0.0 |
| <i>lsrD</i> | -1.1 | 2.7  | 35.7  | 0.0 | 0.0 | <i>hdeA</i> | -2.0 | 5.5  | 80.8  | 0.0 | 0.0 | <i>ymgD</i>                                          | 2.9  | 6.2 | 127.9 | 0.0 | 0.0 |
| <i>lsrF</i> | -1.5 | 2.9  | 42.4  | 0.0 | 0.0 | <i>hdeB</i> | -2.7 | 3.7  | 97.3  | 0.0 | 0.0 | <i>ymgG</i>                                          | 3.1  | 5.6 | 158.1 | 0.0 | 0.0 |
| <i>lsrG</i> | -1.1 | 2.2  | 23.1  | 0.0 | 0.0 | <i>hdeD</i> | -1.6 | 3.6  | 53.9  | 0.0 | 0.0 | <i>ymgI</i>                                          | 2.9  | 3.6 | 226.4 | 0.0 | 0.0 |
| <i>lsrR</i> | -1.1 | 5.0  | 20.5  | 0.0 | 0.0 | <i>hisP</i> | -1.1 | 4.8  | 46.8  | 0.0 | 0.0 | <i>ynaJ</i>                                          | 1.0  | 6.0 | 45.0  | 0.0 | 0.0 |
| <i>luxS</i> | -1.8 | 8.3  | 153.2 | 0.0 | 0.0 | <i>hofB</i> | 1.0  | 3.4  | 16.2  | 0.0 | 0.0 | <i>ynfQ</i>                                          | 2.0  | 1.6 | 24.0  | 0.0 | 0.0 |
| <i>malE</i> | -1.0 | 11.0 | 40.3  | 0.0 | 0.0 | <i>hslO</i> | -1.2 | 7.9  | 20.9  | 0.0 | 0.0 | <i>yohJ</i>                                          | 1.1  | 3.0 | 29.7  | 0.0 | 0.0 |
| <i>malM</i> | -1.0 | 9.2  | 55.3  | 0.0 | 0.0 | <i>hslR</i> | -1.1 | 6.9  | 17.4  | 0.0 | 0.0 | <i>ypeC</i>                                          | 1.7  | 5.0 | 97.3  | 0.0 | 0.0 |
| <i>malP</i> | -1.1 | 9.5  | 71.9  | 0.0 | 0.0 | <i>hslU</i> | -1.8 | 9.5  | 33.5  | 0.0 | 0.0 | <i>ypfG</i>                                          | 1.4  | 5.0 | 64.4  | 0.0 | 0.0 |
| <i>manX</i> | -1.1 | 9.3  | 23.1  | 0.0 | 0.0 | <i>hslV</i> | -1.7 | 8.1  | 42.3  | 0.0 | 0.0 | <i>yqeB</i>                                          | -1.3 | 6.3 | 23.6  | 0.0 | 0.0 |
| <i>manY</i> | -1.6 | 8.7  | 47.6  | 0.0 | 0.0 | <i>htpG</i> | -2.1 | 10.3 | 16.2  | 0.0 | 0.0 | <i>yqeC</i>                                          | -1.8 | 5.8 | 23.3  | 0.0 | 0.0 |
| <i>manZ</i> | -1.7 | 9.3  | 69.6  | 0.0 | 0.0 | <i>htrE</i> | 1.0  | 4.3  | 18.6  | 0.0 | 0.0 | <i>ysaB</i>                                          | 1.3  | 2.8 | 37.3  | 0.0 | 0.0 |
| <i>mdtJ</i> | 1.5  | 4.2  | 21.9  | 0.0 | 0.0 | <i>hxpA</i> | -1.3 | 6.9  | 38.5  | 0.0 | 0.0 | <i>ytfQ</i>                                          | -1.5 | 7.2 | 32.8  | 0.0 | 0.0 |
| <i>metH</i> | -1.2 | 8.0  | 41.4  | 0.0 | 0.0 | <i>icd</i>  | -1.0 | 11.3 | 20.6  | 0.0 | 0.0 | <i>ytfR</i>                                          | -1.3 | 5.9 | 31.0  | 0.0 | 0.0 |
| <i>metT</i> | 1.8  | 10.3 | 27.8  | 0.0 | 0.0 | <i>ilvD</i> | -1.0 | 7.2  | 23.7  | 0.0 | 0.0 | <i>ytfT</i>                                          | -1.4 | 4.6 | 31.2  | 0.0 | 0.0 |
| <i>metV</i> | 4.7  | 7.0  | 273.5 | 0.0 | 0.0 | <i>ilvE</i> | -1.6 | 8.1  | 59.9  | 0.0 | 0.0 | <i>ytjA</i>                                          | 1.5  | 6.1 | 41.7  | 0.0 | 0.0 |
| <i>metW</i> | 4.9  | 8.8  | 166.8 | 0.0 | 0.0 | <i>ilvM</i> | -1.4 | 4.8  | 61.5  | 0.0 | 0.0 | <i>yzgL</i>                                          | -1.6 | 7.5 | 44.3  | 0.0 | 0.0 |
| <i>metZ</i> | 4.7  | 7.9  | 252.3 | 0.0 | 0.0 | <i>ilvX</i> | -1.1 | 1.8  | 24.4  | 0.0 | 0.0 | *pnp <sup>+</sup> , C-1a; Δpnp, C-5691; hPNP, C-6001 |      |     |       |     |     |
| <i>mglA</i> | -2.0 | 10.1 | 68.7  | 0.0 | 0.0 | <i>iroK</i> | -2.0 | 3.1  | 42.8  | 0.0 | 0.0 |                                                      |      |     |       |     |     |
| <i>mglB</i> | -2.0 | 11.4 | 77.8  | 0.0 | 0.0 | <i>iscA</i> | -1.2 | 8.2  | 99.3  | 0.0 | 0.0 |                                                      |      |     |       |     |     |
| <i>mglC</i> | -1.8 | 9.1  | 46.3  | 0.0 | 0.0 | <i>iscR</i> | -1.8 | 8.0  | 66.6  | 0.0 | 0.0 |                                                      |      |     |       |     |     |

|             |      |      |        |     |     |             |      |      |       |     |     |
|-------------|------|------|--------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>mgrR</i> | 1.1  | 3.2  | 23.4   | 0.0 | 0.0 | <i>iscS</i> | -1.5 | 9.3  | 91.4  | 0.0 | 0.0 |
| <i>mgsA</i> | -1.1 | 7.4  | 37.6   | 0.0 | 0.0 | <i>iscU</i> | -1.4 | 8.2  | 100.6 | 0.0 | 0.0 |
| <i>mgtA</i> | -1.1 | 7.3  | 101.6  | 0.0 | 0.0 | <i>ispE</i> | 1.3  | 9.3  | 50.8  | 0.0 | 0.0 |
| <i>mhpR</i> | -3.0 | 6.0  | 40.6   | 0.0 | 0.0 | <i>katG</i> | -2.0 | 8.7  | 78.0  | 0.0 | 0.0 |
| <i>micA</i> | -1.1 | 5.2  | 90.4   | 0.0 | 0.0 | <i>kbaZ</i> | -1.8 | 4.1  | 67.6  | 0.0 | 0.0 |
| <i>mngA</i> | 1.6  | 4.0  | 26.7   | 0.0 | 0.0 | <i>kbl</i>  | -1.4 | 9.5  | 115.6 | 0.0 | 0.0 |
| <i>mngB</i> | 1.3  | 6.1  | 83.5   | 0.0 | 0.0 | <i>kbp</i>  | -1.1 | 7.5  | 45.5  | 0.0 | 0.0 |
| <i>mnmG</i> | 1.3  | 9.0  | 70.1   | 0.0 | 0.0 | <i>kdgK</i> | -1.1 | 6.2  | 126.6 | 0.0 | 0.0 |
| <i>moaA</i> | -2.4 | 7.9  | 508.8  | 0.0 | 0.0 | <i>kduD</i> | -1.0 | 4.9  | 25.5  | 0.0 | 0.0 |
| <i>moaB</i> | -3.5 | 7.7  | 731.4  | 0.0 | 0.0 | <i>kduI</i> | -1.3 | 4.8  | 53.3  | 0.0 | 0.0 |
| <i>moaC</i> | -3.3 | 7.0  | 662.8  | 0.0 | 0.0 | <i>kefB</i> | -1.1 | 5.9  | 25.6  | 0.0 | 0.0 |
| <i>moaD</i> | -3.3 | 6.3  | 615.5  | 0.0 | 0.0 | <i>kgtP</i> | -2.1 | 6.7  | 175.2 | 0.0 | 0.0 |
| <i>moaE</i> | -3.1 | 6.8  | 684.5  | 0.0 | 0.0 | <i>lacZ</i> | -1.3 | 4.7  | 63.3  | 0.0 | 0.0 |
| <i>mgo</i>  | -2.8 | 7.7  | 92.2   | 0.0 | 0.0 | <i>lamB</i> | -1.8 | 11.3 | 131.0 | 0.0 | 0.0 |
| <i>msrA</i> | -1.2 | 5.8  | 30.0   | 0.0 | 0.0 | <i>ldtC</i> | 1.6  | 4.2  | 59.4  | 0.0 | 0.0 |
| <i>msrB</i> | -1.3 | 7.7  | 64.1   | 0.0 | 0.0 | <i>leuW</i> | 1.8  | 10.1 | 27.6  | 0.0 | 0.0 |
| <i>mtlA</i> | -1.6 | 6.6  | 137.9  | 0.0 | 0.0 | <i>lexA</i> | 1.5  | 8.6  | 127.8 | 0.0 | 0.0 |
| <i>murP</i> | -1.2 | 6.1  | 37.0   | 0.0 | 0.0 | <i>lgoR</i> | -2.4 | 6.1  | 35.5  | 0.0 | 0.0 |
| <i>murQ</i> | -1.4 | 6.4  | 29.4   | 0.0 | 0.0 | <i>livJ</i> | -1.3 | 5.7  | 56.8  | 0.0 | 0.0 |
| <i>mutM</i> | -1.0 | 6.8  | 58.6   | 0.0 | 0.0 | <i>lldD</i> | -2.9 | 9.8  | 19.7  | 0.0 | 0.0 |
| <i>nadE</i> | -1.0 | 6.6  | 33.1   | 0.0 | 0.0 | <i>lldP</i> | -3.7 | 10.5 | 50.5  | 0.0 | 0.0 |
| <i>nadK</i> | -1.1 | 6.4  | 140.3  | 0.0 | 0.0 | <i>lldR</i> | -3.3 | 9.0  | 27.4  | 0.0 | 0.0 |
| <i>napF</i> | 1.1  | 3.1  | 22.5   | 0.0 | 0.0 | <i>lon</i>  | -1.5 | 10.3 | 20.8  | 0.0 | 0.0 |
| <i>narG</i> | -1.2 | 5.3  | 35.4   | 0.0 | 0.0 | <i>lsrA</i> | -2.1 | 4.0  | 118.6 | 0.0 | 0.0 |
| <i>ndh</i>  | 1.7  | 6.6  | 31.2   | 0.0 | 0.0 | <i>lsrB</i> | -1.9 | 3.1  | 97.3  | 0.0 | 0.0 |
| <i>ndk</i>  | -1.6 | 10.1 | 110.8  | 0.0 | 0.0 | <i>lsrC</i> | -1.6 | 3.5  | 57.1  | 0.0 | 0.0 |
| <i>nfuA</i> | -1.1 | 8.7  | 35.6   | 0.0 | 0.0 | <i>lsrD</i> | -1.3 | 2.7  | 47.5  | 0.0 | 0.0 |
| <i>nlpI</i> | 1.4  | 10.6 | 111.0  | 0.0 | 0.0 | <i>lsrF</i> | -1.8 | 2.9  | 62.4  | 0.0 | 0.0 |
| <i>nrdD</i> | 1.5  | 7.8  | 53.9   | 0.0 | 0.0 | <i>lsrR</i> | -1.7 | 5.0  | 47.6  | 0.0 | 0.0 |
| <i>nrdE</i> | -1.4 | 5.9  | 101.0  | 0.0 | 0.0 | <i>luxS</i> | -1.8 | 8.3  | 142.4 | 0.0 | 0.0 |
| <i>nrdF</i> | -1.2 | 3.9  | 57.4   | 0.0 | 0.0 | <i>lysT</i> | 1.6  | 8.9  | 16.4  | 0.0 | 0.0 |
| <i>nrdG</i> | 1.6  | 4.7  | 55.3   | 0.0 | 0.0 | <i>lysU</i> | -1.0 | 9.3  | 28.7  | 0.0 | 0.0 |
| <i>nrdH</i> | -1.9 | 3.8  | 111.8  | 0.0 | 0.0 | <i>lysW</i> | 1.6  | 7.9  | 18.2  | 0.0 | 0.0 |
| <i>nrdI</i> | -1.7 | 4.4  | 146.4  | 0.0 | 0.0 | <i>lyxK</i> | -1.5 | 3.0  | 45.3  | 0.0 | 0.0 |
| <i>nth</i>  | 1.0  | 5.8  | 26.9   | 0.0 | 0.0 | <i>maeB</i> | -1.5 | 10.2 | 53.9  | 0.0 | 0.0 |
| <i>nuoE</i> | -1.0 | 9.2  | 43.3   | 0.0 | 0.0 | <i>malE</i> | -2.0 | 11.0 | 143.7 | 0.0 | 0.0 |
| <i>nuoF</i> | -1.0 | 10.0 | 38.5   | 0.0 | 0.0 | <i>malF</i> | -1.7 | 9.2  | 171.7 | 0.0 | 0.0 |
| <i>nupG</i> | -1.1 | 8.6  | 44.1   | 0.0 | 0.0 | <i>malG</i> | -1.6 | 8.4  | 181.6 | 0.0 | 0.0 |
| <i>obgE</i> | 1.3  | 7.9  | 29.5   | 0.0 | 0.0 | <i>malK</i> | -1.8 | 10.3 | 163.7 | 0.0 | 0.0 |
| <i>oppB</i> | -1.4 | 6.9  | 29.5   | 0.0 | 0.0 | <i>malM</i> | -2.5 | 9.2  | 309.9 | 0.0 | 0.0 |
| <i>oxc</i>  | 1.1  | 2.4  | 26.3   | 0.0 | 0.0 | <i>malP</i> | -1.0 | 9.5  | 60.5  | 0.0 | 0.0 |
| <i>paaB</i> | 1.8  | 0.6  | 26.2   | 0.0 | 0.0 | <i>malT</i> | -1.5 | 10.0 | 71.3  | 0.0 | 0.0 |
| <i>paaK</i> | -1.6 | 5.5  | 61.9   | 0.0 | 0.0 | <i>malX</i> | -1.6 | 6.5  | 234.9 | 0.0 | 0.0 |
| <i>patZ</i> | -1.3 | 8.5  | 100.1  | 0.0 | 0.0 | <i>manY</i> | -1.3 | 8.7  | 32.0  | 0.0 | 0.0 |
| <i>pdxJ</i> | -1.2 | 7.3  | 92.9   | 0.0 | 0.0 | <i>manZ</i> | -1.3 | 9.3  | 42.9  | 0.0 | 0.0 |
| <i>pepD</i> | -1.2 | 9.0  | 41.0   | 0.0 | 0.0 | <i>marR</i> | 1.1  | 5.1  | 29.5  | 0.0 | 0.0 |
| <i>pepN</i> | -1.3 | 9.3  | 34.4   | 0.0 | 0.0 | <i>mdh</i>  | -1.5 | 10.9 | 58.0  | 0.0 | 0.0 |
| <i>pgaA</i> | 3.9  | 9.6  | 741.3  | 0.0 | 0.0 | <i>mdtI</i> | 1.2  | 4.3  | 26.4  | 0.0 | 0.0 |
| <i>pgaB</i> | 4.4  | 8.7  | 1128.1 | 0.0 | 0.0 | <i>mdtJ</i> | 2.2  | 4.2  | 46.4  | 0.0 | 0.0 |

|             |      |      |        |     |     |             |      |      |       |     |     |
|-------------|------|------|--------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>pgaC</i> | 4.1  | 7.9  | 1040.9 | 0.0 | 0.0 | <i>mdtL</i> | -1.1 | 4.9  | 25.0  | 0.0 | 0.0 |
| <i>pgaD</i> | 3.3  | 6.6  | 276.9  | 0.0 | 0.0 | <i>melR</i> | -1.5 | 7.0  | 39.5  | 0.0 | 0.0 |
| <i>pgk</i>  | -1.0 | 10.3 | 47.5   | 0.0 | 0.0 | <i>metF</i> | 1.0  | 4.0  | 19.4  | 0.0 | 0.0 |
| <i>pgl</i>  | -1.2 | 7.8  | 41.6   | 0.0 | 0.0 | <i>metH</i> | -1.7 | 8.0  | 80.4  | 0.0 | 0.0 |
| <i>pheA</i> | -1.3 | 7.2  | 207.7  | 0.0 | 0.0 | <i>metN</i> | 1.4  | 6.0  | 35.2  | 0.0 | 0.0 |
| <i>phoE</i> | -1.3 | 5.1  | 26.9   | 0.0 | 0.0 | <i>metT</i> | 1.8  | 10.3 | 29.3  | 0.0 | 0.0 |
| <i>pnp</i>  | -2.2 | 9.6  | 234.8  | 0.0 | 0.0 | <i>metV</i> | 5.3  | 7.0  | 335.1 | 0.0 | 0.0 |
| <i>potB</i> | 1.1  | 6.5  | 18.7   | 0.0 | 0.0 | <i>metW</i> | 5.6  | 8.8  | 202.4 | 0.0 | 0.0 |
| <i>potC</i> | 1.1  | 6.3  | 24.9   | 0.0 | 0.0 | <i>metY</i> | 2.0  | 6.0  | 24.2  | 0.0 | 0.0 |
| <i>ppc</i>  | -1.2 | 8.2  | 19.4   | 0.0 | 0.0 | <i>metZ</i> | 5.3  | 7.9  | 309.6 | 0.0 | 0.0 |
| <i>ppsA</i> | 1.0  | 11.8 | 31.8   | 0.0 | 0.0 | <i>mfd</i>  | -1.0 | 7.9  | 28.9  | 0.0 | 0.0 |
| <i>pqqL</i> | 2.1  | 5.3  | 151.4  | 0.0 | 0.0 | <i>mglA</i> | -3.9 | 10.1 | 225.6 | 0.0 | 0.0 |
| <i>preA</i> | -1.4 | 6.8  | 29.7   | 0.0 | 0.0 | <i>mglB</i> | -3.5 | 11.4 | 203.4 | 0.0 | 0.0 |
| <i>preT</i> | -1.7 | 6.3  | 30.5   | 0.0 | 0.0 | <i>mglC</i> | -3.7 | 9.1  | 168.5 | 0.0 | 0.0 |
| <i>priB</i> | 1.0  | 9.8  | 16.7   | 0.0 | 0.0 | <i>mgrR</i> | 1.8  | 3.2  | 72.6  | 0.0 | 0.0 |
| <i>priC</i> | -1.4 | 9.0  | 39.4   | 0.0 | 0.0 | <i>mgsA</i> | -1.8 | 7.4  | 105.6 | 0.0 | 0.0 |
| <i>proV</i> | -1.5 | 4.2  | 150.9  | 0.0 | 0.0 | <i>mgtS</i> | 1.5  | 1.8  | 44.3  | 0.0 | 0.0 |
| <i>prpR</i> | -1.3 | 4.4  | 46.5   | 0.0 | 0.0 | <i>mhpR</i> | -2.4 | 6.0  | 27.3  | 0.0 | 0.0 |
| <i>pssA</i> | -1.1 | 8.9  | 75.5   | 0.0 | 0.0 | <i>micA</i> | -1.3 | 5.2  | 119.4 | 0.0 | 0.0 |
| <i>pstC</i> | 1.1  | 5.6  | 52.7   | 0.0 | 0.0 | <i>micL</i> | 1.1  | 3.9  | 60.2  | 0.0 | 0.0 |
| <i>ptsG</i> | -1.4 | 8.5  | 84.8   | 0.0 | 0.0 | <i>mliC</i> | 1.2  | 4.2  | 43.8  | 0.0 | 0.0 |
| <i>putP</i> | -2.1 | 7.9  | 25.2   | 0.0 | 0.0 | <i>mltD</i> | 1.3  | 7.9  | 37.2  | 0.0 | 0.0 |
| <i>rarD</i> | -1.2 | 5.5  | 78.0   | 0.0 | 0.0 | <i>mmuM</i> | -1.1 | 5.4  | 18.6  | 0.0 | 0.0 |
| <i>recN</i> | -1.0 | 8.2  | 73.6   | 0.0 | 0.0 | <i>mnaT</i> | -1.3 | 4.6  | 30.4  | 0.0 | 0.0 |
| <i>rhlE</i> | 1.0  | 5.9  | 19.0   | 0.0 | 0.0 | <i>mnmG</i> | 1.4  | 9.0  | 77.1  | 0.0 | 0.0 |
| <i>rhsC</i> | 1.2  | 5.6  | 133.3  | 0.0 | 0.0 | <i>mntP</i> | 1.4  | 6.0  | 16.8  | 0.0 | 0.0 |
| <i>rluB</i> | 1.5  | 7.7  | 30.6   | 0.0 | 0.0 | <i>moaA</i> | -2.6 | 7.9  | 566.1 | 0.0 | 0.0 |
| <i>rmf</i>  | 1.4  | 5.2  | 16.6   | 0.0 | 0.0 | <i>moaB</i> | -3.5 | 7.7  | 751.7 | 0.0 | 0.0 |
| <i>rpiB</i> | -1.6 | 4.3  | 28.5   | 0.0 | 0.0 | <i>moaC</i> | -3.4 | 7.0  | 685.8 | 0.0 | 0.0 |
| <i>rplB</i> | 1.1  | 12.4 | 18.1   | 0.0 | 0.0 | <i>moaD</i> | -3.4 | 6.3  | 648.4 | 0.0 | 0.0 |
| <i>rplC</i> | 1.2  | 12.1 | 20.3   | 0.0 | 0.0 | <i>moaE</i> | -3.2 | 6.8  | 715.0 | 0.0 | 0.0 |
| <i>rplD</i> | 1.1  | 11.4 | 17.4   | 0.0 | 0.0 | <i>mocA</i> | -1.8 | 5.3  | 42.9  | 0.0 | 0.0 |
| <i>rplI</i> | 1.0  | 10.9 | 17.7   | 0.0 | 0.0 | <i>mqq</i>  | -1.7 | 7.7  | 37.3  | 0.0 | 0.0 |
| <i>rplW</i> | 1.1  | 10.8 | 18.5   | 0.0 | 0.0 | <i>mqsA</i> | 1.6  | 7.0  | 126.7 | 0.0 | 0.0 |
| <i>rpoE</i> | -2.0 | 9.5  | 170.4  | 0.0 | 0.0 | <i>mqsR</i> | 1.6  | 6.6  | 90.3  | 0.0 | 0.0 |
| <i>rpsF</i> | 1.1  | 10.4 | 17.4   | 0.0 | 0.0 | <i>mtlA</i> | -1.8 | 6.6  | 165.3 | 0.0 | 0.0 |
| <i>rpsJ</i> | 1.3  | 11.2 | 20.1   | 0.0 | 0.0 | <i>murP</i> | -2.0 | 6.1  | 95.9  | 0.0 | 0.0 |
| <i>rpsR</i> | 1.1  | 9.7  | 18.2   | 0.0 | 0.0 | <i>murQ</i> | -2.6 | 6.4  | 91.6  | 0.0 | 0.0 |
| <i>rsd</i>  | -1.4 | 6.5  | 35.1   | 0.0 | 0.0 | <i>murR</i> | -1.4 | 4.3  | 47.5  | 0.0 | 0.0 |
| <i>rseA</i> | -2.1 | 9.3  | 199.2  | 0.0 | 0.0 | <i>nadA</i> | 1.3  | 4.6  | 59.4  | 0.0 | 0.0 |
| <i>rseB</i> | -1.7 | 8.5  | 236.1  | 0.0 | 0.0 | <i>nanA</i> | -2.6 | 10.2 | 74.3  | 0.0 | 0.0 |
| <i>rseC</i> | -1.5 | 7.1  | 149.9  | 0.0 | 0.0 | <i>nanE</i> | -2.0 | 7.5  | 47.8  | 0.0 | 0.0 |
| <i>rseD</i> | -1.7 | 7.1  | 143.2  | 0.0 | 0.0 | <i>nanK</i> | -1.6 | 7.7  | 43.1  | 0.0 | 0.0 |
| <i>rsmJ</i> | -1.1 | 6.7  | 41.5   | 0.0 | 0.0 | <i>nanT</i> | -2.8 | 8.7  | 86.8  | 0.0 | 0.0 |
| <i>rsxD</i> | 1.2  | 6.5  | 43.4   | 0.0 | 0.0 | <i>narG</i> | -1.5 | 5.3  | 55.3  | 0.0 | 0.0 |
| <i>rsxE</i> | 1.1  | 5.5  | 34.2   | 0.0 | 0.0 | <i>narW</i> | -1.1 | 2.5  | 22.7  | 0.0 | 0.0 |
| <i>rsxG</i> | 1.2  | 5.7  | 37.3   | 0.0 | 0.0 | <i>narY</i> | -1.0 | 3.7  | 48.0  | 0.0 | 0.0 |
| <i>ryfA</i> | 1.1  | 6.0  | 71.4   | 0.0 | 0.0 | <i>narZ</i> | -1.1 | 5.5  | 63.3  | 0.0 | 0.0 |
| <i>ryfD</i> | -1.9 | 7.1  | 43.7   | 0.0 | 0.0 | <i>ndh</i>  | 2.2  | 6.6  | 46.6  | 0.0 | 0.0 |

|             |      |      |       |     |     |             |      |      |       |     |     |
|-------------|------|------|-------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>sdaB</i> | 1.4  | 8.8  | 40.8  | 0.0 | 0.0 | <i>ndk</i>  | -1.6 | 10.1 | 105.3 | 0.0 | 0.0 |
| <i>sdhA</i> | -1.6 | 11.4 | 30.1  | 0.0 | 0.0 | <i>nfrB</i> | 1.1  | 4.6  | 31.0  | 0.0 | 0.0 |
| <i>sdhB</i> | -1.5 | 10.0 | 20.5  | 0.0 | 0.0 | <i>nfuA</i> | -1.3 | 8.7  | 44.4  | 0.0 | 0.0 |
| <i>sdhC</i> | -1.6 | 9.4  | 84.6  | 0.0 | 0.0 | <i>nhaA</i> | 1.1  | 7.0  | 54.5  | 0.0 | 0.0 |
| <i>sdhD</i> | -1.8 | 9.3  | 73.8  | 0.0 | 0.0 | <i>nhaR</i> | 1.0  | 5.8  | 60.1  | 0.0 | 0.0 |
| <i>serC</i> | -1.1 | 7.7  | 76.8  | 0.0 | 0.0 | <i>nlpI</i> | 1.0  | 10.6 | 60.6  | 0.0 | 0.0 |
| <i>sfmD</i> | 1.0  | 3.3  | 48.5  | 0.0 | 0.0 | <i>nrdE</i> | -1.7 | 5.9  | 157.0 | 0.0 | 0.0 |
| <i>sibD</i> | 1.3  | 5.7  | 43.1  | 0.0 | 0.0 | <i>nrdF</i> | -1.6 | 3.9  | 97.1  | 0.0 | 0.0 |
| <i>sodA</i> | -1.4 | 9.3  | 43.6  | 0.0 | 0.0 | <i>nrdH</i> | -2.1 | 3.8  | 130.0 | 0.0 | 0.0 |
| <i>soxS</i> | 1.1  | 5.8  | 23.9  | 0.0 | 0.0 | <i>nrdI</i> | -2.0 | 4.4  | 203.2 | 0.0 | 0.0 |
| <i>srlA</i> | 1.3  | 7.7  | 33.2  | 0.0 | 0.0 | <i>nth</i>  | 1.1  | 5.8  | 31.2  | 0.0 | 0.0 |
| <i>srlB</i> | 1.4  | 5.9  | 48.0  | 0.0 | 0.0 | <i>nuoB</i> | -1.1 | 9.7  | 78.8  | 0.0 | 0.0 |
| <i>srlD</i> | 1.5  | 7.9  | 65.4  | 0.0 | 0.0 | <i>nuoC</i> | -1.2 | 10.2 | 62.0  | 0.0 | 0.0 |
| <i>srlE</i> | 1.2  | 7.5  | 66.0  | 0.0 | 0.0 | <i>nuoE</i> | -1.3 | 9.2  | 66.5  | 0.0 | 0.0 |
| <i>sthA</i> | -2.3 | 9.0  | 59.6  | 0.0 | 0.0 | <i>nuoF</i> | -1.3 | 10.0 | 60.9  | 0.0 | 0.0 |
| <i>sucA</i> | -1.4 | 12.3 | 19.8  | 0.0 | 0.0 | <i>nuoG</i> | -1.3 | 10.9 | 44.2  | 0.0 | 0.0 |
| <i>suhB</i> | 2.0  | 8.2  | 24.7  | 0.0 | 0.0 | <i>nuoH</i> | -1.2 | 9.4  | 56.9  | 0.0 | 0.0 |
| <i>talB</i> | -1.0 | 10.3 | 47.7  | 0.0 | 0.0 | <i>nuoI</i> | -1.3 | 8.9  | 68.5  | 0.0 | 0.0 |
| <i>tas</i>  | -1.0 | 7.0  | 26.0  | 0.0 | 0.0 | <i>nuoJ</i> | -1.2 | 9.3  | 53.7  | 0.0 | 0.0 |
| <i>tdcA</i> | 2.3  | 8.4  | 230.2 | 0.0 | 0.0 | <i>nuoK</i> | -1.3 | 8.0  | 75.6  | 0.0 | 0.0 |
| <i>tdcB</i> | 1.4  | 6.4  | 103.1 | 0.0 | 0.0 | <i>nupG</i> | -2.7 | 8.6  | 242.2 | 0.0 | 0.0 |
| <i>tdcC</i> | 1.3  | 6.4  | 33.6  | 0.0 | 0.0 | <i>obgE</i> | 1.3  | 7.9  | 29.4  | 0.0 | 0.0 |
| <i>tdcD</i> | 1.9  | 5.8  | 38.8  | 0.0 | 0.0 | <i>ompF</i> | -2.2 | 12.2 | 140.4 | 0.0 | 0.0 |
| <i>tdcE</i> | 1.9  | 6.5  | 29.4  | 0.0 | 0.0 | <i>ompG</i> | 1.1  | 2.1  | 15.1  | 0.0 | 0.0 |
| <i>tdcF</i> | 1.5  | 3.7  | 26.4  | 0.0 | 0.0 | <i>oppA</i> | -2.0 | 10.0 | 74.7  | 0.0 | 0.0 |
| <i>tdcG</i> | 1.6  | 4.6  | 20.3  | 0.0 | 0.0 | <i>oppB</i> | -2.5 | 6.9  | 93.9  | 0.0 | 0.0 |
| <i>tdh</i>  | -1.4 | 9.0  | 74.6  | 0.0 | 0.0 | <i>oppC</i> | -2.2 | 7.3  | 112.1 | 0.0 | 0.0 |
| <i>thrV</i> | 2.1  | 3.1  | 18.0  | 0.0 | 0.0 | <i>oppD</i> | -2.1 | 7.4  | 72.6  | 0.0 | 0.0 |
| <i>thrW</i> | 1.1  | 5.4  | 17.7  | 0.0 | 0.0 | <i>oppF</i> | -1.7 | 7.7  | 52.8  | 0.0 | 0.0 |
| <i>tpiA</i> | -1.2 | 8.9  | 57.3  | 0.0 | 0.0 | <i>ortT</i> | 1.3  | 3.8  | 20.1  | 0.0 | 0.0 |
| <i>trpA</i> | -1.3 | 4.7  | 24.6  | 0.0 | 0.0 | <i>osmB</i> | 2.5  | 5.4  | 185.2 | 0.0 | 0.0 |
| <i>trpB</i> | -1.4 | 5.2  | 34.8  | 0.0 | 0.0 | <i>oxc</i>  | 1.6  | 2.4  | 60.4  | 0.0 | 0.0 |
| <i>trpC</i> | -1.1 | 4.8  | 35.3  | 0.0 | 0.0 | <i>paaB</i> | 1.5  | 0.6  | 18.5  | 0.0 | 0.0 |
| <i>trpT</i> | 1.2  | 5.2  | 48.7  | 0.0 | 0.0 | <i>paaJ</i> | -1.1 | 4.9  | 41.7  | 0.0 | 0.0 |
| <i>trxC</i> | -1.9 | 6.2  | 143.0 | 0.0 | 0.0 | <i>paaK</i> | -2.0 | 5.5  | 96.7  | 0.0 | 0.0 |
| <i>tsx</i>  | -1.2 | 11.1 | 73.1  | 0.0 | 0.0 | <i>patZ</i> | -2.4 | 8.5  | 306.3 | 0.0 | 0.0 |
| <i>tyrA</i> | -1.2 | 7.1  | 135.6 | 0.0 | 0.0 | <i>pck</i>  | -1.3 | 11.0 | 43.4  | 0.0 | 0.0 |
| <i>tyrB</i> | -1.5 | 6.9  | 70.7  | 0.0 | 0.0 | <i>pdhR</i> | 2.1  | 8.7  | 20.3  | 0.0 | 0.0 |
| <i>ubiA</i> | -1.1 | 6.9  | 43.2  | 0.0 | 0.0 | <i>pdxI</i> | -1.8 | 5.4  | 56.7  | 0.0 | 0.0 |
| <i>ubiC</i> | -1.1 | 6.6  | 85.5  | 0.0 | 0.0 | <i>pdxJ</i> | -1.3 | 7.3  | 109.6 | 0.0 | 0.0 |
| <i>udp</i>  | -1.0 | 11.8 | 31.5  | 0.0 | 0.0 | <i>pepD</i> | -1.2 | 9.0  | 47.7  | 0.0 | 0.0 |
| <i>ugpA</i> | -2.8 | 3.5  | 39.9  | 0.0 | 0.0 | <i>pepE</i> | -2.2 | 7.4  | 154.2 | 0.0 | 0.0 |
| <i>ugpB</i> | -3.4 | 6.1  | 73.1  | 0.0 | 0.0 | <i>pepN</i> | -1.5 | 9.3  | 45.8  | 0.0 | 0.0 |
| <i>ugpC</i> | -1.8 | 5.5  | 28.8  | 0.0 | 0.0 | <i>pgaA</i> | 3.6  | 9.6  | 650.2 | 0.0 | 0.0 |
| <i>ugpE</i> | -2.7 | 3.8  | 41.5  | 0.0 | 0.0 | <i>pgaB</i> | 3.9  | 8.7  | 944.5 | 0.0 | 0.0 |
| <i>ugpQ</i> | -1.1 | 5.9  | 54.1  | 0.0 | 0.0 | <i>pgaC</i> | 3.6  | 7.9  | 843.0 | 0.0 | 0.0 |
| <i>uidA</i> | -1.3 | 4.1  | 57.3  | 0.0 | 0.0 | <i>pgaD</i> | 2.9  | 6.6  | 221.6 | 0.0 | 0.0 |
| <i>ung</i>  | -1.3 | 6.4  | 224.6 | 0.0 | 0.0 | <i>pgk</i>  | -1.3 | 10.3 | 78.0  | 0.0 | 0.0 |
| <i>uspD</i> | -1.1 | 7.0  | 20.4  | 0.0 | 0.0 | <i>pgl</i>  | -1.1 | 7.8  | 36.0  | 0.0 | 0.0 |

|             |      |     |       |     |     |             |      |      |        |     |     |
|-------------|------|-----|-------|-----|-----|-------------|------|------|--------|-----|-----|
| <i>uspG</i> | 1.1  | 9.1 | 28.3  | 0.0 | 0.0 | <i>pheA</i> | -1.3 | 7.2  | 216.0  | 0.0 | 0.0 |
| <i>uxaC</i> | -1.0 | 6.5 | 23.0  | 0.0 | 0.0 | <i>phnH</i> | 1.3  | 0.9  | 16.7   | 0.0 | 0.0 |
| <i>uxuA</i> | -1.1 | 7.2 | 34.9  | 0.0 | 0.0 | <i>pinQ</i> | 1.9  | 2.8  | 26.4   | 0.0 | 0.0 |
| <i>wcaA</i> | 1.6  | 2.8 | 37.0  | 0.0 | 0.0 | <i>pnp</i>  | -6.1 | 9.6  | 1270.5 | 0.0 | 0.0 |
| <i>wzxC</i> | 1.5  | 1.1 | 27.0  | 0.0 | 0.0 | <i>polA</i> | -1.0 | 8.5  | 63.4   | 0.0 | 0.0 |
| <i>xapB</i> | 1.1  | 4.5 | 76.5  | 0.0 | 0.0 | <i>potA</i> | 1.3  | 7.5  | 16.3   | 0.0 | 0.0 |
| <i>xdhA</i> | -1.2 | 6.3 | 47.9  | 0.0 | 0.0 | <i>potB</i> | 1.3  | 6.5  | 24.8   | 0.0 | 0.0 |
| <i>yadN</i> | 1.8  | 1.3 | 24.7  | 0.0 | 0.0 | <i>potC</i> | 1.1  | 6.3  | 27.8   | 0.0 | 0.0 |
| <i>yadV</i> | 1.4  | 2.5 | 38.2  | 0.0 | 0.0 | <i>ppc</i>  | -1.3 | 8.2  | 24.9   | 0.0 | 0.0 |
| <i>yafW</i> | 1.4  | 3.3 | 57.8  | 0.0 | 0.0 | <i>pphC</i> | 1.4  | 2.5  | 46.2   | 0.0 | 0.0 |
| <i>yaiO</i> | 1.1  | 3.3 | 33.9  | 0.0 | 0.0 | <i>ppnN</i> | -1.5 | 8.5  | 32.1   | 0.0 | 0.0 |
| <i>ybaQ</i> | -1.7 | 4.3 | 88.5  | 0.0 | 0.0 | <i>ppsA</i> | 1.3  | 11.8 | 53.6   | 0.0 | 0.0 |
| <i>ybaY</i> | -1.1 | 6.8 | 21.6  | 0.0 | 0.0 | <i>pqqL</i> | 1.2  | 5.3  | 54.5   | 0.0 | 0.0 |
| <i>ybdZ</i> | 1.2  | 2.6 | 21.0  | 0.0 | 0.0 | <i>preA</i> | -2.6 | 6.8  | 94.9   | 0.0 | 0.0 |
| <i>ybeD</i> | -1.3 | 6.7 | 93.7  | 0.0 | 0.0 | <i>preT</i> | -2.3 | 6.3  | 49.5   | 0.0 | 0.0 |
| <i>ybeR</i> | 2.0  | 1.4 | 29.9  | 0.0 | 0.0 | <i>priB</i> | 1.1  | 9.8  | 17.3   | 0.0 | 0.0 |
| <i>ybfA</i> | 1.9  | 4.8 | 34.9  | 0.0 | 0.0 | <i>prlC</i> | -1.5 | 9.0  | 46.2   | 0.0 | 0.0 |
| <i>ybfB</i> | 1.7  | 1.7 | 20.2  | 0.0 | 0.0 | <i>prpR</i> | -1.6 | 4.4  | 66.5   | 0.0 | 0.0 |
| <i>ybgE</i> | 1.4  | 7.4 | 24.8  | 0.0 | 0.0 | <i>psiE</i> | 2.5  | 2.6  | 168.8  | 0.0 | 0.0 |
| <i>ybgI</i> | -1.0 | 6.8 | 23.0  | 0.0 | 0.0 | <i>pspA</i> | 1.6  | 6.4  | 98.0   | 0.0 | 0.0 |
| <i>ybgU</i> | -3.2 | 6.4 | 88.4  | 0.0 | 0.0 | <i>pspB</i> | 1.9  | 4.4  | 194.2  | 0.0 | 0.0 |
| <i>ybjM</i> | 1.2  | 4.5 | 106.0 | 0.0 | 0.0 | <i>pspC</i> | 1.6  | 4.6  | 140.2  | 0.0 | 0.0 |
| <i>yceH</i> | -1.0 | 6.2 | 28.3  | 0.0 | 0.0 | <i>pspD</i> | 1.7  | 3.1  | 61.5   | 0.0 | 0.0 |
| <i>ycfZ</i> | 1.0  | 5.1 | 27.2  | 0.0 | 0.0 | <i>pspE</i> | -1.2 | 7.6  | 57.7   | 0.0 | 0.0 |
| <i>ycgZ</i> | -2.7 | 3.5 | 89.5  | 0.0 | 0.0 | <i>pspG</i> | 2.4  | 2.3  | 88.2   | 0.0 | 0.0 |
| <i>yciI</i> | -2.8 | 6.9 | 89.3  | 0.0 | 0.0 | <i>pssA</i> | -1.4 | 8.9  | 114.5  | 0.0 | 0.0 |
| <i>yddA</i> | 3.6  | 4.7 | 152.2 | 0.0 | 0.0 | <i>pstA</i> | 1.4  | 5.3  | 63.7   | 0.0 | 0.0 |
| <i>yddB</i> | 2.7  | 5.2 | 146.9 | 0.0 | 0.0 | <i>pstC</i> | 1.7  | 5.6  | 133.9  | 0.0 | 0.0 |
| <i>yddK</i> | 2.4  | 0.5 | 16.7  | 0.0 | 0.0 | <i>pstS</i> | 2.0  | 6.6  | 69.4   | 0.0 | 0.0 |
| <i>ydeR</i> | 1.9  | 0.7 | 16.9  | 0.0 | 0.0 | <i>psuG</i> | -1.7 | 3.9  | 69.9   | 0.0 | 0.0 |
| <i>ydfD</i> | -1.7 | 0.0 | 20.0  | 0.0 | 0.0 | <i>psuK</i> | -1.5 | 3.5  | 119.0  | 0.0 | 0.0 |
| <i>ydfJ</i> | 1.2  | 2.9 | 21.0  | 0.0 | 0.0 | <i>purL</i> | 1.1  | 7.2  | 32.9   | 0.0 | 0.0 |
| <i>ydfZ</i> | 1.3  | 2.2 | 24.3  | 0.0 | 0.0 | <i>purM</i> | 1.1  | 5.6  | 16.8   | 0.0 | 0.0 |
| <i>ydhP</i> | 1.7  | 4.8 | 112.1 | 0.0 | 0.0 | <i>purR</i> | 1.2  | 7.2  | 25.0   | 0.0 | 0.0 |
| <i>ydiE</i> | 1.1  | 4.6 | 57.5  | 0.0 | 0.0 | <i>putP</i> | -1.7 | 7.9  | 16.5   | 0.0 | 0.0 |
| <i>yeaC</i> | -1.2 | 6.7 | 50.4  | 0.0 | 0.0 | <i>pykA</i> | -1.3 | 9.1  | 109.6  | 0.0 | 0.0 |
| <i>yeaD</i> | -1.1 | 7.6 | 38.4  | 0.0 | 0.0 | <i>qorA</i> | -1.0 | 5.8  | 24.0   | 0.0 | 0.0 |
| <i>yebB</i> | 1.4  | 4.4 | 42.5  | 0.0 | 0.0 | <i>rbsB</i> | -1.1 | 12.4 | 65.4   | 0.0 | 0.0 |
| <i>yebQ</i> | 1.3  | 3.8 | 37.0  | 0.0 | 0.0 | <i>rcnB</i> | 1.0  | 7.0  | 44.9   | 0.0 | 0.0 |
| <i>yebV</i> | 1.2  | 4.4 | 61.7  | 0.0 | 0.0 | <i>recA</i> | 2.8  | 10.3 | 297.1  | 0.0 | 0.0 |
| <i>yecN</i> | 1.0  | 7.6 | 59.9  | 0.0 | 0.0 | <i>recN</i> | 2.6  | 8.2  | 436.2  | 0.0 | 0.0 |
| <i>yedE</i> | 2.3  | 7.4 | 166.5 | 0.0 | 0.0 | <i>recX</i> | 2.5  | 4.0  | 178.6  | 0.0 | 0.0 |
| <i>yedF</i> | 2.3  | 5.8 | 214.8 | 0.0 | 0.0 | <i>rem</i>  | 1.3  | 2.4  | 31.2   | 0.0 | 0.0 |
| <i>yeeW</i> | 1.0  | 2.2 | 21.4  | 0.0 | 0.0 | <i>rhaR</i> | -1.2 | 5.3  | 62.4   | 0.0 | 0.0 |
| <i>yegJ</i> | 1.3  | 1.2 | 17.1  | 0.0 | 0.0 | <i>rhIE</i> | 1.8  | 5.9  | 57.7   | 0.0 | 0.0 |
| <i>yehF</i> | 1.4  | 3.4 | 45.0  | 0.0 | 0.0 | <i>rhsC</i> | 1.4  | 5.6  | 173.9  | 0.0 | 0.0 |
| <i>yehL</i> | 2.0  | 1.6 | 39.6  | 0.0 | 0.0 | <i>ribB</i> | -2.6 | 9.2  | 211.6  | 0.0 | 0.0 |
| <i>yfaA</i> | 1.4  | 4.6 | 57.1  | 0.0 | 0.0 | <i>rihA</i> | -1.8 | 9.0  | 126.8  | 0.0 | 0.0 |
| <i>yfaQ</i> | 1.4  | 4.1 | 43.9  | 0.0 | 0.0 | <i>rihC</i> | -1.9 | 7.3  | 162.2  | 0.0 | 0.0 |

|             |      |     |       |     |     |             |      |      |       |     |     |
|-------------|------|-----|-------|-----|-----|-------------|------|------|-------|-----|-----|
| <i>yfaT</i> | 1.5  | 2.5 | 21.0  | 0.0 | 0.0 | <i>rluB</i> | 1.6  | 7.7  | 34.3  | 0.0 | 0.0 |
| <i>yfbK</i> | 1.2  | 3.6 | 70.5  | 0.0 | 0.0 | <i>rmf</i>  | 1.5  | 5.2  | 20.0  | 0.0 | 0.0 |
| <i>yfbL</i> | 2.0  | 1.2 | 17.7  | 0.0 | 0.0 | <i>rpiB</i> | -2.2 | 4.3  | 48.6  | 0.0 | 0.0 |
| <i>yfbM</i> | 1.8  | 2.6 | 95.6  | 0.0 | 0.0 | <i>rplI</i> | 1.1  | 10.9 | 20.1  | 0.0 | 0.0 |
| <i>yfbN</i> | 1.5  | 1.9 | 36.5  | 0.0 | 0.0 | <i>rplT</i> | 1.0  | 11.6 | 45.6  | 0.0 | 0.0 |
| <i>yfbU</i> | -1.3 | 7.2 | 32.5  | 0.0 | 0.0 | <i>rpmI</i> | 1.0  | 10.7 | 50.4  | 0.0 | 0.0 |
| <i>yfgI</i> | 1.1  | 3.3 | 41.2  | 0.0 | 0.0 | <i>rpsF</i> | 1.1  | 10.4 | 17.0  | 0.0 | 0.0 |
| <i>yfiM</i> | -1.1 | 5.4 | 144.5 | 0.0 | 0.0 | <i>rpsJ</i> | 1.1  | 11.2 | 16.0  | 0.0 | 0.0 |
| <i>ygaM</i> | -1.6 | 5.7 | 123.5 | 0.0 | 0.0 | <i>rpsR</i> | 1.1  | 9.7  | 18.1  | 0.0 | 0.0 |
| <i>ygbJ</i> | -1.4 | 4.1 | 61.3  | 0.0 | 0.0 | <i>rsmJ</i> | -1.3 | 6.7  | 60.7  | 0.0 | 0.0 |
| <i>ygbL</i> | -1.0 | 3.5 | 19.1  | 0.0 | 0.0 | <i>rsxC</i> | 1.1  | 7.5  | 24.9  | 0.0 | 0.0 |
| <i>yghG</i> | -1.3 | 3.9 | 30.0  | 0.0 | 0.0 | <i>rsxD</i> | 1.4  | 6.5  | 55.6  | 0.0 | 0.0 |
| <i>yghJ</i> | -1.6 | 7.8 | 133.6 | 0.0 | 0.0 | <i>rsxE</i> | 1.1  | 5.5  | 38.5  | 0.0 | 0.0 |
| <i>yghO</i> | -1.5 | 3.9 | 34.5  | 0.0 | 0.0 | <i>rsxG</i> | 1.4  | 5.7  | 44.8  | 0.0 | 0.0 |
| <i>yghR</i> | 1.1  | 1.8 | 19.5  | 0.0 | 0.0 | <i>rutE</i> | 1.2  | 1.4  | 29.7  | 0.0 | 0.0 |
| <i>ygiM</i> | -1.6 | 7.0 | 151.6 | 0.0 | 0.0 | <i>ruvA</i> | 1.3  | 6.6  | 135.5 | 0.0 | 0.0 |
| <i>ygiQ</i> | 1.3  | 7.1 | 29.5  | 0.0 | 0.0 | <i>ruvB</i> | 1.0  | 7.2  | 122.9 | 0.0 | 0.0 |
| <i>ygjH</i> | -1.2 | 2.5 | 29.4  | 0.0 | 0.0 | <i>rydB</i> | 2.5  | 0.8  | 42.5  | 0.0 | 0.0 |
| <i>ygiI</i> | -1.6 | 2.7 | 109.7 | 0.0 | 0.0 | <i>ryfA</i> | 1.4  | 6.0  | 123.7 | 0.0 | 0.0 |
| <i>yhbE</i> | 1.4  | 7.7 | 19.3  | 0.0 | 0.0 | <i>ryfD</i> | -2.2 | 7.1  | 57.2  | 0.0 | 0.0 |
| <i>yhbW</i> | -1.2 | 5.2 | 35.4  | 0.0 | 0.0 | <i>sbmC</i> | 2.0  | 6.4  | 165.2 | 0.0 | 0.0 |
| <i>yhcA</i> | 1.7  | 2.0 | 23.4  | 0.0 | 0.0 | <i>sdhA</i> | -1.4 | 11.4 | 22.8  | 0.0 | 0.0 |
| <i>yhdJ</i> | 1.6  | 4.5 | 50.7  | 0.0 | 0.0 | <i>sdhB</i> | -1.4 | 10.0 | 18.3  | 0.0 | 0.0 |
| <i>yheV</i> | -1.7 | 4.6 | 33.9  | 0.0 | 0.0 | <i>sdhD</i> | -1.3 | 9.3  | 38.5  | 0.0 | 0.0 |
| <i>yhfL</i> | 1.3  | 3.1 | 47.6  | 0.0 | 0.0 | <i>secB</i> | -1.4 | 9.7  | 63.7  | 0.0 | 0.0 |
| <i>yhiD</i> | -1.0 | 1.7 | 16.5  | 0.0 | 0.0 | <i>setC</i> | 1.0  | 1.9  | 17.3  | 0.0 | 0.0 |
| <i>yhjC</i> | -1.1 | 4.7 | 17.6  | 0.0 | 0.0 | <i>sfmC</i> | 2.7  | 1.6  | 32.4  | 0.0 | 0.0 |
| <i>yiaK</i> | -1.3 | 3.8 | 49.0  | 0.0 | 0.0 | <i>sfmD</i> | 1.6  | 3.3  | 122.0 | 0.0 | 0.0 |
| <i>yiaL</i> | -1.5 | 2.5 | 37.0  | 0.0 | 0.0 | <i>sgbE</i> | -1.1 | 2.5  | 15.6  | 0.0 | 0.0 |
| <i>yiaM</i> | -2.4 | 1.1 | 42.2  | 0.0 | 0.0 | <i>sgbH</i> | -2.1 | 1.4  | 33.0  | 0.0 | 0.0 |
| <i>yiaN</i> | -1.2 | 2.4 | 59.3  | 0.0 | 0.0 | <i>sgbU</i> | -2.0 | 2.1  | 119.7 | 0.0 | 0.0 |
| <i>yiaO</i> | -1.1 | 2.6 | 43.9  | 0.0 | 0.0 | <i>sodA</i> | -1.0 | 9.3  | 25.2  | 0.0 | 0.0 |
| <i>yibF</i> | -1.1 | 5.6 | 50.8  | 0.0 | 0.0 | <i>soxS</i> | 3.2  | 5.8  | 204.2 | 0.0 | 0.0 |
| <i>yigB</i> | -1.0 | 5.4 | 86.9  | 0.0 | 0.0 | <i>spf</i>  | -1.0 | 4.0  | 54.3  | 0.0 | 0.0 |
| <i>yigI</i> | -2.5 | 5.5 | 165.4 | 0.0 | 0.0 | <i>spy</i>  | 1.8  | 5.5  | 212.6 | 0.0 | 0.0 |
| <i>yihM</i> | -1.1 | 5.2 | 85.7  | 0.0 | 0.0 | <i>sraG</i> | -1.1 | 8.0  | 58.4  | 0.0 | 0.0 |
| <i>yihN</i> | -1.6 | 4.8 | 139.6 | 0.0 | 0.0 | <i>srlR</i> | -1.0 | 6.7  | 130.9 | 0.0 | 0.0 |
| <i>yiiS</i> | -1.0 | 6.3 | 27.1  | 0.0 | 0.0 | <i>sseA</i> | -1.2 | 8.1  | 61.7  | 0.0 | 0.0 |
| <i>yjcH</i> | -2.4 | 4.0 | 34.0  | 0.0 | 0.0 | <i>sstT</i> | -1.1 | 6.9  | 43.6  | 0.0 | 0.0 |
| <i>yjfl</i> | 1.1  | 3.1 | 25.1  | 0.0 | 0.0 | <i>ssuC</i> | 1.3  | 1.3  | 19.6  | 0.0 | 0.0 |
| <i>yjfk</i> | 1.4  | 3.3 | 28.1  | 0.0 | 0.0 | <i>sthA</i> | -1.7 | 9.0  | 33.9  | 0.0 | 0.0 |
| <i>yjfl</i> | 1.4  | 1.8 | 17.4  | 0.0 | 0.0 | <i>sucA</i> | -1.6 | 12.3 | 25.5  | 0.0 | 0.0 |
| <i>yjfm</i> | 1.1  | 3.0 | 26.6  | 0.0 | 0.0 | <i>sucB</i> | -1.2 | 12.1 | 25.8  | 0.0 | 0.0 |
| <i>yjiH</i> | 1.4  | 2.7 | 47.5  | 0.0 | 0.0 | <i>sucC</i> | -1.1 | 11.8 | 19.7  | 0.0 | 0.0 |
| <i>yjjU</i> | -1.1 | 5.1 | 98.0  | 0.0 | 0.0 | <i>suhB</i> | 2.6  | 8.2  | 39.4  | 0.0 | 0.0 |
| <i>ykfG</i> | 1.5  | 3.0 | 42.3  | 0.0 | 0.0 | <i>sulA</i> | 4.1  | 8.4  | 813.4 | 0.0 | 0.0 |
| <i>ykfH</i> | 1.1  | 1.9 | 19.9  | 0.0 | 0.0 | <i>talB</i> | -1.0 | 10.3 | 47.2  | 0.0 | 0.0 |
| <i>ykfl</i> | 1.6  | 4.2 | 69.0  | 0.0 | 0.0 | <i>tdcA</i> | -2.6 | 8.4  | 289.3 | 0.0 | 0.0 |
| <i>ykfM</i> | 2.0  | 2.1 | 85.9  | 0.0 | 0.0 | <i>tdcB</i> | -3.6 | 6.4  | 518.5 | 0.0 | 0.0 |

|             |      |     |       |     |     |
|-------------|------|-----|-------|-----|-----|
| <i>ykgH</i> | -1.1 | 3.4 | 19.0  | 0.0 | 0.0 |
| <i>ymfA</i> | 2.1  | 4.6 | 62.6  | 0.0 | 0.0 |
| <i>ymgA</i> | -2.7 | 3.8 | 112.5 | 0.0 | 0.0 |
| <i>ymgC</i> | -2.9 | 2.2 | 99.7  | 0.0 | 0.0 |
| <i>ymgG</i> | -1.1 | 5.6 | 23.0  | 0.0 | 0.0 |
| <i>yncJ</i> | 1.1  | 3.4 | 22.8  | 0.0 | 0.0 |
| <i>ynhF</i> | 1.8  | 3.2 | 82.4  | 0.0 | 0.0 |
| <i>ynjE</i> | 1.2  | 5.4 | 98.3  | 0.0 | 0.0 |
| <i>yoaL</i> | 1.0  | 4.7 | 65.3  | 0.0 | 0.0 |
| <i>ypjD</i> | -1.3 | 6.6 | 67.8  | 0.0 | 0.0 |
| <i>yqaB</i> | -1.1 | 7.1 | 100.0 | 0.0 | 0.0 |
| <i>yqeB</i> | -1.3 | 6.3 | 24.6  | 0.0 | 0.0 |
| <i>yqhD</i> | -1.1 | 5.8 | 26.2  | 0.0 | 0.0 |
| <i>yqhH</i> | 1.2  | 2.8 | 22.9  | 0.0 | 0.0 |
| <i>yqiJ</i> | 1.2  | 3.5 | 35.8  | 0.0 | 0.0 |
| <i>yqiK</i> | 1.2  | 4.9 | 31.8  | 0.0 | 0.0 |
| <i>yraQ</i> | 1.1  | 6.1 | 54.2  | 0.0 | 0.0 |
| <i>yrbN</i> | 2.2  | 5.6 | 37.0  | 0.0 | 0.0 |
| <i>ytfE</i> | -1.1 | 4.9 | 26.6  | 0.0 | 0.0 |
| <i>ytfQ</i> | -1.7 | 7.2 | 43.8  | 0.0 | 0.0 |
| <i>ytfR</i> | -1.3 | 5.9 | 29.8  | 0.0 | 0.0 |
| <i>ytfT</i> | -1.1 | 4.6 | 23.7  | 0.0 | 0.0 |
| <i>ytjA</i> | -1.0 | 6.1 | 21.2  | 0.0 | 0.0 |

\**pnp*<sup>+</sup>, C-1a;  $\Delta$ *pnp*, C-5691; *hPNP*, C-6001

|             |      |      |       |     |     |
|-------------|------|------|-------|-----|-----|
| <i>tdcC</i> | -1.7 | 6.4  | 55.1  | 0.0 | 0.0 |
| <i>tdcD</i> | -2.0 | 5.8  | 37.4  | 0.0 | 0.0 |
| <i>tdcE</i> | -1.6 | 6.5  | 20.6  | 0.0 | 0.0 |
| <i>tdcF</i> | -1.6 | 3.7  | 22.0  | 0.0 | 0.0 |
| <i>tdh</i>  | -1.5 | 9.0  | 89.0  | 0.0 | 0.0 |
| <i>thiM</i> | 1.2  | 5.1  | 39.5  | 0.0 | 0.0 |
| <i>tisB</i> | 4.5  | 8.1  | 575.8 | 0.0 | 0.0 |
| <i>tnaA</i> | -5.6 | 12.6 | 295.8 | 0.0 | 0.0 |
| <i>tnaB</i> | -6.0 | 9.4  | 250.3 | 0.0 | 0.0 |
| <i>tnaC</i> | -6.1 | 9.5  | 207.3 | 0.0 | 0.0 |
| <i>tomB</i> | 1.2  | 6.6  | 114.8 | 0.0 | 0.0 |
| <i>torS</i> | 1.1  | 4.8  | 70.3  | 0.0 | 0.0 |
| <i>torY</i> | 1.2  | 2.7  | 24.8  | 0.0 | 0.0 |
| <i>tpiA</i> | -1.3 | 8.9  | 71.0  | 0.0 | 0.0 |
| <i>treA</i> | -1.5 | 5.9  | 112.2 | 0.0 | 0.0 |
| <i>treB</i> | -1.1 | 12.0 | 42.6  | 0.0 | 0.0 |
| <i>trmL</i> | -1.2 | 6.6  | 31.2  | 0.0 | 0.0 |
| <i>trpT</i> | 1.0  | 5.2  | 34.5  | 0.0 | 0.0 |
| <i>tsgA</i> | 2.3  | 5.7  | 108.8 | 0.0 | 0.0 |
| <i>tsx</i>  | -2.5 | 11.1 | 307.9 | 0.0 | 0.0 |
| <i>ttdB</i> | 1.1  | 1.3  | 20.8  | 0.0 | 0.0 |
| <i>tyrB</i> | -1.6 | 6.9  | 80.3  | 0.0 | 0.0 |
| <i>udp</i>  | -1.3 | 11.8 | 47.2  | 0.0 | 0.0 |
| <i>ugpA</i> | -2.9 | 3.5  | 41.5  | 0.0 | 0.0 |
| <i>ugpB</i> | -2.9 | 6.1  | 54.8  | 0.0 | 0.0 |
| <i>ugpC</i> | -1.8 | 5.5  | 28.8  | 0.0 | 0.0 |
| <i>ugpE</i> | -2.7 | 3.8  | 43.6  | 0.0 | 0.0 |
| <i>ugpQ</i> | -1.1 | 5.9  | 49.3  | 0.0 | 0.0 |
| <i>uhpC</i> | 1.0  | 4.6  | 51.1  | 0.0 | 0.0 |
| <i>uhpT</i> | 3.4  | 6.2  | 412.1 | 0.0 | 0.0 |
| <i>uidA</i> | -1.9 | 4.1  | 120.4 | 0.0 | 0.0 |
| <i>uidC</i> | 1.3  | 2.4  | 28.6  | 0.0 | 0.0 |
| <i>ulaB</i> | -1.3 | 2.9  | 26.3  | 0.0 | 0.0 |
| <i>ulaC</i> | -1.4 | 2.5  | 19.5  | 0.0 | 0.0 |
| <i>ulaD</i> | -1.2 | 3.3  | 18.9  | 0.0 | 0.0 |
| <i>ulaF</i> | -1.0 | 3.5  | 59.8  | 0.0 | 0.0 |
| <i>umuC</i> | 3.0  | 6.1  | 323.9 | 0.0 | 0.0 |
| <i>umuD</i> | 4.2  | 5.2  | 710.8 | 0.0 | 0.0 |
| <i>ung</i>  | -1.3 | 6.4  | 218.6 | 0.0 | 0.0 |
| <i>uspG</i> | 1.4  | 9.1  | 46.7  | 0.0 | 0.0 |
| <i>uvrA</i> | 1.2  | 8.4  | 118.8 | 0.0 | 0.0 |
| <i>uxaA</i> | -1.5 | 6.3  | 55.4  | 0.0 | 0.0 |
| <i>uxaB</i> | 1.3  | 4.9  | 112.6 | 0.0 | 0.0 |
| <i>uxaC</i> | -1.9 | 6.5  | 77.5  | 0.0 | 0.0 |
| <i>uxuA</i> | -2.0 | 7.2  | 112.1 | 0.0 | 0.0 |
| <i>uxuB</i> | -1.8 | 7.1  | 138.0 | 0.0 | 0.0 |
| <i>valT</i> | 1.5  | 8.6  | 15.5  | 0.0 | 0.0 |
| <i>ves</i>  | 1.7  | 3.5  | 60.9  | 0.0 | 0.0 |
| <i>wcaA</i> | 1.7  | 2.8  | 40.4  | 0.0 | 0.0 |

|             |      |     |       |     |     |
|-------------|------|-----|-------|-----|-----|
| <i>wcaD</i> | 2.1  | 1.0 | 22.9  | 0.0 | 0.0 |
| <i>wcaE</i> | 2.1  | 0.0 | 33.7  | 0.0 | 0.0 |
| <i>wcaI</i> | 1.6  | 1.4 | 25.6  | 0.0 | 0.0 |
| <i>wza</i>  | 1.4  | 1.5 | 39.7  | 0.0 | 0.0 |
| <i>wzxC</i> | 1.8  | 1.1 | 38.8  | 0.0 | 0.0 |
| <i>xapB</i> | 1.2  | 4.5 | 101.5 | 0.0 | 0.0 |
| <i>xapR</i> | 1.1  | 4.4 | 40.5  | 0.0 | 0.0 |
| <i>xdhA</i> | -2.0 | 6.3 | 126.0 | 0.0 | 0.0 |
| <i>xdhB</i> | -2.1 | 4.0 | 51.1  | 0.0 | 0.0 |
| <i>xdhC</i> | -2.2 | 4.1 | 78.7  | 0.0 | 0.0 |
| <i>xerC</i> | -1.1 | 6.6 | 158.1 | 0.0 | 0.0 |
| <i>xylF</i> | -1.6 | 3.7 | 74.4  | 0.0 | 0.0 |
| <i>yadK</i> | 1.6  | 2.1 | 43.6  | 0.0 | 0.0 |
| <i>yadL</i> | 1.2  | 2.7 | 38.9  | 0.0 | 0.0 |
| <i>yadM</i> | 1.2  | 2.7 | 74.5  | 0.0 | 0.0 |
| <i>yadN</i> | 1.7  | 1.3 | 23.5  | 0.0 | 0.0 |
| <i>yadV</i> | 1.4  | 2.5 | 42.6  | 0.0 | 0.0 |
| <i>yafP</i> | 1.9  | 3.6 | 183.7 | 0.0 | 0.0 |
| <i>yafT</i> | 1.1  | 3.8 | 24.1  | 0.0 | 0.0 |
| <i>yafW</i> | 1.5  | 3.3 | 61.2  | 0.0 | 0.0 |
| <i>yagE</i> | -2.2 | 5.4 | 49.5  | 0.0 | 0.0 |
| <i>yagF</i> | -1.4 | 5.5 | 16.0  | 0.0 | 0.0 |
| <i>yagU</i> | -1.6 | 6.4 | 59.6  | 0.0 | 0.0 |
| <i>yaiO</i> | 1.8  | 3.3 | 93.9  | 0.0 | 0.0 |
| <i>yaiP</i> | 1.3  | 2.0 | 23.2  | 0.0 | 0.0 |
| <i>yaiY</i> | 1.2  | 3.8 | 97.7  | 0.0 | 0.0 |
| <i>yaiZ</i> | -1.2 | 5.8 | 56.8  | 0.0 | 0.0 |
| <i>yajI</i> | 1.1  | 4.1 | 92.9  | 0.0 | 0.0 |
| <i>ybaQ</i> | -1.4 | 4.3 | 59.3  | 0.0 | 0.0 |
| <i>ybdD</i> | -1.3 | 4.6 | 22.1  | 0.0 | 0.0 |
| <i>ybeR</i> | 2.6  | 1.4 | 52.5  | 0.0 | 0.0 |
| <i>ybeU</i> | 1.0  | 2.2 | 23.8  | 0.0 | 0.0 |
| <i>ybfA</i> | 2.5  | 4.8 | 57.8  | 0.0 | 0.0 |
| <i>ybgS</i> | 1.5  | 4.2 | 142.3 | 0.0 | 0.0 |
| <i>ybgU</i> | -2.0 | 6.4 | 37.3  | 0.0 | 0.0 |
| <i>ybhH</i> | 3.5  | 0.4 | 29.1  | 0.0 | 0.0 |
| <i>ybhI</i> | 1.6  | 2.1 | 29.0  | 0.0 | 0.0 |
| <i>ybhM</i> | 1.1  | 3.6 | 23.0  | 0.0 | 0.0 |
| <i>ybjM</i> | 1.2  | 4.5 | 103.6 | 0.0 | 0.0 |
| <i>ycaD</i> | 1.4  | 6.0 | 19.8  | 0.0 | 0.0 |
| <i>ycdU</i> | 2.1  | 2.1 | 32.6  | 0.0 | 0.0 |
| <i>ycfJ</i> | 2.6  | 4.9 | 450.3 | 0.0 | 0.0 |
| <i>yciF</i> | 1.9  | 0.3 | 35.2  | 0.0 | 0.0 |
| <i>ycdH</i> | -1.5 | 6.3 | 32.9  | 0.0 | 0.0 |
| <i>ycdI</i> | -2.1 | 6.9 | 53.0  | 0.0 | 0.0 |
| <i>ycdJ</i> | -1.3 | 6.1 | 108.7 | 0.0 | 0.0 |
| <i>ycdL</i> | -1.1 | 6.2 | 74.6  | 0.0 | 0.0 |
| <i>ycdS</i> | -2.2 | 5.9 | 85.8  | 0.0 | 0.0 |
| <i>ycdT</i> | -2.3 | 4.7 | 118.8 | 0.0 | 0.0 |

|             |      |     |       |     |     |
|-------------|------|-----|-------|-----|-----|
| <i>ydcU</i> | -1.6 | 4.5 | 85.2  | 0.0 | 0.0 |
| <i>ydcV</i> | -1.9 | 4.2 | 72.3  | 0.0 | 0.0 |
| <i>yddA</i> | 2.0  | 4.7 | 49.8  | 0.0 | 0.0 |
| <i>yddB</i> | 1.4  | 5.2 | 40.4  | 0.0 | 0.0 |
| <i>yddH</i> | -1.1 | 3.9 | 21.3  | 0.0 | 0.0 |
| <i>yddK</i> | 3.7  | 0.5 | 53.9  | 0.0 | 0.0 |
| <i>ydeA</i> | 1.3  | 3.9 | 63.5  | 0.0 | 0.0 |
| <i>ydeO</i> | 2.3  | 0.3 | 22.3  | 0.0 | 0.0 |
| <i>ydeP</i> | 1.2  | 3.9 | 67.0  | 0.0 | 0.0 |
| <i>ydeQ</i> | 2.8  | 0.9 | 53.4  | 0.0 | 0.0 |
| <i>ydeR</i> | 3.1  | 0.7 | 54.7  | 0.0 | 0.0 |
| <i>ydeS</i> | 2.6  | 0.9 | 31.8  | 0.0 | 0.0 |
| <i>ydeT</i> | 3.2  | 2.3 | 167.3 | 0.0 | 0.0 |
| <i>ydfC</i> | 1.3  | 3.0 | 80.3  | 0.0 | 0.0 |
| <i>ydfI</i> | 1.2  | 3.1 | 32.1  | 0.0 | 0.0 |
| <i>ydfJ</i> | 1.8  | 2.9 | 47.7  | 0.0 | 0.0 |
| <i>ydfN</i> | 1.6  | 1.7 | 20.5  | 0.0 | 0.0 |
| <i>ydfO</i> | 1.6  | 1.8 | 16.4  | 0.0 | 0.0 |
| <i>ydfU</i> | 1.0  | 2.2 | 35.3  | 0.0 | 0.0 |
| <i>ydfZ</i> | 1.0  | 2.2 | 16.2  | 0.0 | 0.0 |
| <i>ydGI</i> | 2.0  | 5.6 | 37.6  | 0.0 | 0.0 |
| <i>ydGK</i> | 1.3  | 6.3 | 18.5  | 0.0 | 0.0 |
| <i>ydHF</i> | -1.3 | 6.6 | 55.6  | 0.0 | 0.0 |
| <i>ydHP</i> | 2.0  | 4.8 | 163.3 | 0.0 | 0.0 |
| <i>ydiH</i> | 1.4  | 3.0 | 33.7  | 0.0 | 0.0 |
| <i>ydiM</i> | 1.3  | 1.5 | 21.4  | 0.0 | 0.0 |
| <i>ydiN</i> | 2.2  | 0.9 | 52.9  | 0.0 | 0.0 |
| <i>ydjH</i> | 1.0  | 1.8 | 16.6  | 0.0 | 0.0 |
| <i>ydjM</i> | 2.0  | 4.4 | 268.1 | 0.0 | 0.0 |
| <i>yeaD</i> | -1.6 | 7.6 | 72.8  | 0.0 | 0.0 |
| <i>yeaY</i> | 1.0  | 7.0 | 21.4  | 0.0 | 0.0 |
| <i>yebB</i> | 1.4  | 4.4 | 41.8  | 0.0 | 0.0 |
| <i>yebE</i> | 1.1  | 5.1 | 107.3 | 0.0 | 0.0 |
| <i>yebF</i> | 2.3  | 7.7 | 203.2 | 0.0 | 0.0 |
| <i>yebG</i> | 3.7  | 7.7 | 822.8 | 0.0 | 0.0 |
| <i>yebO</i> | 1.4  | 7.8 | 24.6  | 0.0 | 0.0 |
| <i>yebQ</i> | 1.6  | 3.8 | 59.0  | 0.0 | 0.0 |
| <i>yecN</i> | 1.2  | 7.6 | 83.6  | 0.0 | 0.0 |
| <i>yedE</i> | 1.7  | 7.4 | 89.4  | 0.0 | 0.0 |
| <i>yedF</i> | 1.5  | 5.8 | 99.1  | 0.0 | 0.0 |
| <i>yedR</i> | 1.4  | 2.1 | 43.7  | 0.0 | 0.0 |
| <i>yeeA</i> | 1.5  | 5.7 | 179.8 | 0.0 | 0.0 |
| <i>yeeS</i> | 1.3  | 3.2 | 41.3  | 0.0 | 0.0 |
| <i>yeeW</i> | 1.2  | 2.2 | 32.0  | 0.0 | 0.0 |
| <i>yegJ</i> | 1.7  | 1.2 | 32.3  | 0.0 | 0.0 |
| <i>yegL</i> | 1.1  | 2.3 | 28.6  | 0.0 | 0.0 |
| <i>yegQ</i> | 1.7  | 6.4 | 31.1  | 0.0 | 0.0 |
| <i>yegR</i> | 1.4  | 2.5 | 41.5  | 0.0 | 0.0 |
| <i>yegT</i> | -1.3 | 3.7 | 34.5  | 0.0 | 0.0 |

|             |      |     |       |     |     |
|-------------|------|-----|-------|-----|-----|
| <i>yehA</i> | 1.5  | 3.3 | 42.0  | 0.0 | 0.0 |
| <i>yehB</i> | 1.1  | 2.2 | 20.2  | 0.0 | 0.0 |
| <i>yehF</i> | 2.2  | 3.4 | 106.3 | 0.0 | 0.0 |
| <i>yehL</i> | 2.1  | 1.6 | 42.5  | 0.0 | 0.0 |
| <i>yfaA</i> | 1.2  | 4.6 | 46.7  | 0.0 | 0.0 |
| <i>yfaQ</i> | 1.5  | 4.1 | 48.5  | 0.0 | 0.0 |
| <i>yfaT</i> | 1.4  | 2.5 | 17.0  | 0.0 | 0.0 |
| <i>yfbK</i> | 1.1  | 3.6 | 57.8  | 0.0 | 0.0 |
| <i>yfbL</i> | 2.1  | 1.2 | 19.9  | 0.0 | 0.0 |
| <i>yfbN</i> | 1.1  | 1.9 | 21.2  | 0.0 | 0.0 |
| <i>yfbU</i> | -1.1 | 7.2 | 25.3  | 0.0 | 0.0 |
| <i>yfcQ</i> | 1.2  | 2.3 | 35.2  | 0.0 | 0.0 |
| <i>yfcV</i> | 1.8  | 0.6 | 37.9  | 0.0 | 0.0 |
| <i>yfdV</i> | 2.0  | 1.1 | 45.9  | 0.0 | 0.0 |
| <i>yfeK</i> | 1.8  | 4.8 | 78.6  | 0.0 | 0.0 |
| <i>yfeS</i> | 1.1  | 6.4 | 57.6  | 0.0 | 0.0 |
| <i>yfeW</i> | -1.5 | 5.7 | 138.2 | 0.0 | 0.0 |
| <i>yfgI</i> | 1.3  | 3.3 | 65.5  | 0.0 | 0.0 |
| <i>yfhH</i> | 1.2  | 5.6 | 68.5  | 0.0 | 0.0 |
| <i>yfhR</i> | 1.1  | 3.6 | 19.0  | 0.0 | 0.0 |
| <i>yfiM</i> | -1.3 | 5.4 | 172.6 | 0.0 | 0.0 |
| <i>yfjD</i> | -1.2 | 7.5 | 82.9  | 0.0 | 0.0 |
| <i>yfjQ</i> | 1.2  | 2.1 | 21.6  | 0.0 | 0.0 |
| <i>ygaM</i> | -1.3 | 5.7 | 80.9  | 0.0 | 0.0 |
| <i>ygbJ</i> | -1.9 | 4.1 | 110.5 | 0.0 | 0.0 |
| <i>ygbL</i> | -1.4 | 3.5 | 37.2  | 0.0 | 0.0 |
| <i>ygcP</i> | -1.0 | 4.6 | 61.8  | 0.0 | 0.0 |
| <i>ygeV</i> | -2.7 | 8.2 | 110.2 | 0.0 | 0.0 |
| <i>yghG</i> | -1.1 | 3.9 | 23.5  | 0.0 | 0.0 |
| <i>yghJ</i> | -1.9 | 7.8 | 182.2 | 0.0 | 0.0 |
| <i>yghO</i> | -1.1 | 3.9 | 19.7  | 0.0 | 0.0 |
| <i>yghR</i> | 1.1  | 1.8 | 20.5  | 0.0 | 0.0 |
| <i>ygiQ</i> | 1.3  | 7.1 | 30.3  | 0.0 | 0.0 |
| <i>ygjH</i> | -1.9 | 2.5 | 71.7  | 0.0 | 0.0 |
| <i>ygjI</i> | -1.8 | 2.7 | 139.1 | 0.0 | 0.0 |
| <i>ygjR</i> | -1.9 | 6.7 | 45.7  | 0.0 | 0.0 |
| <i>yhbE</i> | 1.4  | 7.7 | 21.7  | 0.0 | 0.0 |
| <i>yhcA</i> | 2.0  | 2.0 | 33.1  | 0.0 | 0.0 |
| <i>yhcH</i> | -1.8 | 7.8 | 72.8  | 0.0 | 0.0 |
| <i>yhdH</i> | -1.1 | 6.6 | 65.5  | 0.0 | 0.0 |
| <i>yhdJ</i> | 1.7  | 4.5 | 59.5  | 0.0 | 0.0 |
| <i>yhdV</i> | 1.2  | 1.9 | 24.2  | 0.0 | 0.0 |
| <i>yheV</i> | -1.7 | 4.6 | 33.3  | 0.0 | 0.0 |
| <i>yhfA</i> | -1.3 | 7.1 | 31.7  | 0.0 | 0.0 |
| <i>yhfL</i> | 1.6  | 3.1 | 67.8  | 0.0 | 0.0 |
| <i>yhhQ</i> | 1.1  | 3.9 | 27.5  | 0.0 | 0.0 |
| <i>yhhX</i> | -1.1 | 6.9 | 29.8  | 0.0 | 0.0 |
| <i>yhjV</i> | -1.3 | 7.0 | 68.4  | 0.0 | 0.0 |
| <i>yiaK</i> | -2.0 | 3.8 | 101.3 | 0.0 | 0.0 |

|              |      |     |       |     |     |
|--------------|------|-----|-------|-----|-----|
| <i>yiaL</i>  | -2.6 | 2.5 | 90.5  | 0.0 | 0.0 |
| <i>yiaM</i>  | -1.7 | 1.1 | 25.5  | 0.0 | 0.0 |
| <i>yiaN</i>  | -1.1 | 2.4 | 45.5  | 0.0 | 0.0 |
| <i>yiaO</i>  | -2.2 | 2.6 | 138.9 | 0.0 | 0.0 |
| <i>yicS</i>  | 1.0  | 2.8 | 16.2  | 0.0 | 0.0 |
| <i>yidE</i>  | -1.2 | 7.4 | 37.1  | 0.0 | 0.0 |
| <i>yidP</i>  | -1.1 | 3.6 | 19.7  | 0.0 | 0.0 |
| <i>yigB</i>  | -1.2 | 5.4 | 117.3 | 0.0 | 0.0 |
| <i>yihM</i>  | -1.9 | 5.2 | 246.5 | 0.0 | 0.0 |
| <i>yihN</i>  | -2.3 | 4.8 | 261.8 | 0.0 | 0.0 |
| <i>yihT</i>  | -1.1 | 3.3 | 25.7  | 0.0 | 0.0 |
| <i>yihU</i>  | -1.6 | 2.5 | 43.1  | 0.0 | 0.0 |
| <i>yihW</i>  | -1.0 | 6.5 | 127.2 | 0.0 | 0.0 |
| <i>yihY</i>  | -1.0 | 6.3 | 85.9  | 0.0 | 0.0 |
| <i>yiiX</i>  | 1.1  | 5.3 | 26.7  | 0.0 | 0.0 |
| <i>yjbE</i>  | 2.0  | 1.6 | 51.5  | 0.0 | 0.0 |
| <i>yjcB</i>  | 1.7  | 4.4 | 70.4  | 0.0 | 0.0 |
| <i>yjcH</i>  | -2.9 | 4.0 | 47.5  | 0.0 | 0.0 |
| <i>yjfl</i>  | 1.1  | 3.1 | 24.3  | 0.0 | 0.0 |
| <i>yjfJ</i>  | 1.2  | 3.7 | 80.4  | 0.0 | 0.0 |
| <i>yjfK</i>  | 1.5  | 3.3 | 28.8  | 0.0 | 0.0 |
| <i>yjfl</i>  | 1.4  | 1.8 | 18.5  | 0.0 | 0.0 |
| <i>yjfM</i>  | 1.0  | 3.0 | 22.6  | 0.0 | 0.0 |
| <i>yjgR</i>  | -1.6 | 6.9 | 107.3 | 0.0 | 0.0 |
| <i>yjiA</i>  | -1.0 | 5.2 | 36.9  | 0.0 | 0.0 |
| <i>yjiH</i>  | 1.6  | 2.7 | 61.5  | 0.0 | 0.0 |
| <i>yjjQ</i>  | 2.0  | 0.9 | 24.6  | 0.0 | 0.0 |
| <i>ykfG</i>  | 1.4  | 3.0 | 38.9  | 0.0 | 0.0 |
| <i>ykfH</i>  | 1.2  | 1.9 | 24.0  | 0.0 | 0.0 |
| <i>ykfI</i>  | 1.5  | 4.2 | 62.9  | 0.0 | 0.0 |
| <i>ykfM</i>  | 2.0  | 2.1 | 82.7  | 0.0 | 0.0 |
| <i>ykge</i>  | -1.7 | 7.6 | 71.1  | 0.0 | 0.0 |
| <i>ykgeF</i> | -1.7 | 8.4 | 97.5  | 0.0 | 0.0 |
| <i>ykgeG</i> | -1.6 | 7.3 | 113.9 | 0.0 | 0.0 |
| <i>ykgeH</i> | -1.5 | 3.4 | 32.9  | 0.0 | 0.0 |
| <i>yliM</i>  | 1.7  | 6.5 | 28.9  | 0.0 | 0.0 |
| <i>ymdG</i>  | 1.4  | 1.1 | 21.5  | 0.0 | 0.0 |
| <i>ymfA</i>  | 1.9  | 4.6 | 51.7  | 0.0 | 0.0 |
| <i>ymgC</i>  | -1.1 | 2.2 | 22.1  | 0.0 | 0.0 |
| <i>ymgD</i>  | 1.9  | 6.2 | 62.5  | 0.0 | 0.0 |
| <i>ymgG</i>  | 1.9  | 5.6 | 69.5  | 0.0 | 0.0 |
| <i>ymgI</i>  | 2.0  | 3.6 | 119.6 | 0.0 | 0.0 |
| <i>yncJ</i>  | 1.2  | 3.4 | 27.2  | 0.0 | 0.0 |
| <i>ynfQ</i>  | 3.1  | 1.6 | 43.1  | 0.0 | 0.0 |
| <i>ynhF</i>  | 2.0  | 3.2 | 102.7 | 0.0 | 0.0 |
| <i>yoaL</i>  | 1.0  | 4.7 | 63.5  | 0.0 | 0.0 |
| <i>yobB</i>  | 1.2  | 6.7 | 122.2 | 0.0 | 0.0 |
| <i>yobF</i>  | -1.1 | 7.4 | 36.4  | 0.0 | 0.0 |
| <i>yohJ</i>  | 1.5  | 3.0 | 46.7  | 0.0 | 0.0 |

|             |      |     |       |     |     |
|-------------|------|-----|-------|-----|-----|
| <i>ypdK</i> | 2.1  | 2.3 | 25.4  | 0.0 | 0.0 |
| <i>ypeC</i> | 1.6  | 5.0 | 89.8  | 0.0 | 0.0 |
| <i>ypfG</i> | 1.3  | 5.0 | 58.5  | 0.0 | 0.0 |
| <i>ypjD</i> | -1.2 | 6.6 | 61.6  | 0.0 | 0.0 |
| <i>yqaA</i> | -1.1 | 7.3 | 147.4 | 0.0 | 0.0 |
| <i>yqaB</i> | -1.0 | 7.1 | 94.4  | 0.0 | 0.0 |
| <i>yqeB</i> | -2.7 | 6.3 | 88.5  | 0.0 | 0.0 |
| <i>yqeC</i> | -2.9 | 5.8 | 59.1  | 0.0 | 0.0 |
| <i>yqeF</i> | -1.3 | 9.2 | 57.4  | 0.0 | 0.0 |
| <i>yqgD</i> | 1.4  | 4.2 | 28.1  | 0.0 | 0.0 |
| <i>yqhH</i> | 1.1  | 2.8 | 21.3  | 0.0 | 0.0 |
| <i>yqiJ</i> | 1.0  | 3.5 | 25.1  | 0.0 | 0.0 |
| <i>yqiK</i> | 1.1  | 4.9 | 22.9  | 0.0 | 0.0 |
| <i>yraQ</i> | 1.6  | 6.1 | 114.3 | 0.0 | 0.0 |
| <i>yrbN</i> | 2.1  | 5.6 | 34.2  | 0.0 | 0.0 |
| <i>ysaB</i> | 1.0  | 2.8 | 23.9  | 0.0 | 0.0 |
| <i>ytfE</i> | -1.2 | 4.9 | 30.9  | 0.0 | 0.0 |
| <i>ytfQ</i> | -3.2 | 7.2 | 135.6 | 0.0 | 0.0 |
| <i>ytfR</i> | -2.6 | 5.9 | 112.3 | 0.0 | 0.0 |
| <i>ytfT</i> | -2.5 | 4.6 | 101.9 | 0.0 | 0.0 |
| <i>yzgL</i> | -1.6 | 7.5 | 41.2  | 0.0 | 0.0 |

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*\*pnp*<sup>+</sup>, C-1a; *Δpnp*, C-5691; *hPNP*, C-6001