**Supplementary Table S7. Evaluation of the ability for novel ARG identification using recently experimental validated ARGs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| GenBank accession ID | Type | Best-hit in ONN4ARG-DB | Predicted type by ONN4ARG | Best-hit in DeepARG-DB | Predicted type by DeepARG | Reference |
| MW234453 | Beta-lactam | AAD37403, 35.3% | Beta-lactam | None | Non-ARG | [36] |
| MW234454 | Beta-lactam | CAG27800, 47.7% | Beta-lactam | None | Non-ARG | [36] |
| MW234455 | Beta-lactam | AAS48620, 54.9% | Beta-lactam | FJ825622, 54.9% | Beta-lactam | [36] |
| MW234456 | Beta-lactam | AAF61417, 57.4% | Beta-lactam | ACJ61335, 57.3% | Beta-lactam | [36] |
| MW234457 | Beta-lactam | AAN32638, 82.5% | Beta-lactam | AF416700, 82.5% | Beta-lactam | [36] |
| MW234458 | Fosfomycin | ACC85616, 60.7% | ARG | WP\_058686534,60.7% | Fosfomycin | [36] |
| MW234459 | Fosfomycin | ACC85616, 60.1% | ARG | WP\_058686534,59.3% | Fosfomycin | [36] |
| OL806614 | Aminoglycoside | BAD12078, 54.9% | Aminoglycoside | AB119105, 54.9% | Aminoglycoside | [37] |
| OL806615 | Aminoglycoside | ADA63498, 34.2% | Aminoglycoside | None | Non-ARG | [37] |
| OL806616 | Aminoglycoside | AGV10830, 99.6% | Aminoglycoside | CAA67773, 100% | Aminoglycoside | [37] |
| OL806617 | Aminoglycoside | BAQ22025, 48.0% | Aminoglycoside | None | Non-ARG | [37] |
| OL806618 | Aminoglycoside | AAA88548, 100% | Aminoglycoside | NP\_863643, 100% | Aminoglycoside | [37] |
| NG\_070891 | Aminoglycoside | None | Non-ARG | None | Non-ARG | [7] |

*Note*: The value behind the accession ID of best-hit means sequence identity.