

Genomic analysis reveals high virulence and antibiotic resistance amongst phage susceptible *Acinetobacter baumannii*

Udomluk Leungtongkam¹, Rapee Thummeepak¹, Thawatchai Kitt², Kannipa Tasanapak¹, Jintana Wongwigkarn¹, Kathryn M. Styles³, Elizabeth M. H. Wellington³, Andrew D. Millard⁴ Antonia P. Sagona³, and Sutthirat Sitthisak^{1*}

¹Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Phitsanulok, 65000, Thailand

²Faculty of Oriental Medicine, Chiang Rai College, Chiang Rai, 57000, Thailand

³School of Life Sciences, University of Warwick, Coventry, CV4 7AL, United Kingdom

⁴Department of Genetics and Genome Biology, University of Leicester, Leicester, LE1 7RH, United Kingdom

*Correspondence: Associate Professor Dr. Sutthirat Sitthisak

Address: Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Phitsanulok, Thailand

(Tel): 66-55-964626, 66-84-5734203

(Fax): 66-55-964770

E-mail: sutthirats@nu.ac.th

Fig. S1 Bacteriophage susceptibility test of vPhT02, vPhT04, vPhT39 and vPhT40 on *A. baumannii* strain AB329.



Table S1. Supplement of 230 *A. baumannii* isolates

| No | Strain ID | Hospitals | Phage susceptibility | Rep-types | Antibiotic resistance ^a | Phenotype | ompA gene | Biofilm formation | CRISPR-associated (cas) genes |
|----|-----------|-----------|----------------------|-----------|---|-----------------------|-----------|-------------------|-------------------------------|
| 1 | AB002 | HE | 0 | R34 | AK/CIP/SXT/CTX/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | - | - |
| 2 | AB003 | HE | 9 | R34 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 3 | AB004 | HE | 0 | R34 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO/CN | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 4 | AB005 | HE | 0 | R34 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO/CN | MDR-AB, CR-AB | + | - | cas1, cas3, cas5 |
| 5 | AB007 | HE | 0 | R34 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 6 | AB008 | HE | 4 | R34 | AK/CIP/SXT/CTX/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | - | - |
| 7 | AB009 | HE | 0 | R34 | AK/CIP/SXT/CTX/IPM/MEM/PIP/CRO/CN | MDR-AB, CR-AB | - | - | - |
| 8 | AB010 | HE | 0 | R34 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 9 | AB011 | HE | 4 | R34 | AK/CIP/SXT/CTX/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 10 | AB012 | HE | 10 | R34 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 11 | AB013 | HE | 6 | R34 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 12 | AB014 | HA | 2 | R1 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 13 | AB015 | HA | 0 | R6 | No resistance | Non MDR-AB | - | + | cas1, cas3, cas5 |
| 14 | AB016 | HA | 2 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 15 | AB021 | HA | 0 | R1 | CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 16 | AB022 | HA | 4 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 17 | AB023 | HA | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 18 | AB025 | HA | 4 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 19 | AB027 | HA | 0 | R16 | IPM/MEM | CR-AB | + | + | cas2, cas6 |
| 20 | AB028 | HA | 2 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 21 | AB029 | HA | 2 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 22 | AB030 | HA | 2 | R16 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 23 | AB032 | HA | 0 | R7 | No resistance | Non MDR-AB | - | + | - |
| 24 | AB035 | HA | 0 | R6 | No resistance | Non MDR-AB | - | + | cas1, cas3, cas5 |
| 25 | AB037 | HA | 0 | R8 | No resistance | Non MDR-AB | - | + | cas1, cas3, cas5 |
| 26 | AB038 | HA | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas5 |
| 27 | AB039 | HA | 0 | R9 | No resistance | Non MDR-AB | - | + | - |
| 28 | AB040 | HA | 2 | R16 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 29 | AB043 | HA | 2 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 30 | AB044 | HA | 0 | R10 | No resistance | Non MDR-AB | - | + | - |
| 31 | AB045 | HA | 0 | R6 | No resistance | Non MDR-AB | + | + | - |
| 32 | AB047 | HA | 0 | R11 | No resistance | Non MDR-AB | + | + | - |
| 33 | AB049 | HA | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 34 | AB050 | HA | 1 | R12 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | - | - |
| 35 | AB051 | HA | 4 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/CN | MDR-AB, CR-AB | - | + | - |
| 36 | AB053 | HA | 2 | R15 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | cas1 |
| 37 | AB056 | HA | 0 | R6 | No resistance | Non MDR-AB | - | + | cas5, cas6 |
| 38 | AB057 | HA | 2 | R15 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | cas1, cas3 |
| 39 | AB058 | HA | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas5 |
| 40 | AB059 | HA | 1 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 41 | AB060 | HA | 0 | R11 | No resistance | Non MDR-AB | + | + | - |
| 42 | AB061 | HA | 4 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 43 | AB063 | HA | 3 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 44 | AB065 | HA | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 45 | AB066 | HA | 0 | R12 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 46 | AB067 | HA | 1 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 47 | AB068 | HA | 1 | R16 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 48 | AB069 | HA | 3 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 49 | AB070 | HA | 1 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 50 | AB071 | HA | 0 | R16 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/CN | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 51 | AB072 | HA | 0 | R2 | No resistance | Non MDR-AB | + | + | - |
| 52 | AB074 | HA | 3 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 53 | AB075 | HA | 2 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 54 | AB077 | HA | 2 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 55 | AB081 | HA | 2 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 56 | AB082 | HA | 6 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 57 | AB084 | HA | 5 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 58 | AB085 | HA | 2 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 59 | AB086 | HA | 0 | R12 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 60 | AB088 | HA | 2 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 61 | AB089 | HA | 3 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 62 | AB090 | HA | 4 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 63 | AB092 | HA | 1 | R27 | CIP/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO | MDR-AB, CR-AB | + | + | cas6 |
| 64 | AB123 | HB | 3 | R16 | CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 65 | AB124 | HB | 0 | R12 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 66 | AB125 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | - | - | - |
| 67 | AB126 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 68 | AB127 | HB | 0 | R16 | CIP/SXT/CTX/CAZ/PIP/TE/CRO/FEP/CN | MDR-AB | + | + | - |
| 69 | AB128 | HB | 5 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 70 | AB129 | HB | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 71 | AB130 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | - | - |
| 72 | AB131 | HB | 3 | R16 | AK/CIP/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 73 | AB132 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 74 | AB133 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 75 | AB134 | HB | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 76 | AB135 | HB | 3 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | - | - | - |
| 77 | AB136 | HB | 0 | R16 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | - | + | cas1, cas3, cas5 |
| 78 | AB137 | HB | 1 | R11 | CIP/SXT/CTX/MEM/CRO | MDR-AB, CR-AB | + | + | - |
| 79 | AB138 | HB | 0 | R12 | CIP/SXT/CTX/CAZ/SL/IPM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 80 | AB139 | HB | 9 | R11 | CIP/CTX/CAZ/CRO/FEP/CN | MDR-AB | + | + | cas1, cas3, cas5 |
| 81 | AB140 | HB | 4 | R4 | AK/CIP/SXT/CTX/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 82 | AB141 | HB | 0 | R12 | CIP/SXT/CTX/CAZ/IPM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 83 | AB194 | HB | 0 | R12 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 84 | AB195 | HB | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 85 | AB196 | HB | 0 | R12 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 86 | AB197 | HB | 1 | R12 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 87 | AB198 | HB | 0 | R12 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 88 | AB199 | HB | 3 | R16 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 89 | AB200 | HB | 3 | R16 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 90 | AB204 | HB | 0 | R12 | CIP/CTX/CAZ/CRO/TE | MDR-AB | + | + | - |
| 91 | AB205 | HB | 0 | R4 | No resistance | Non MDR-AB | + | - | - |
| 92 | AB206 | HB | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 93 | AB208 | HB | 1 | R16 | AK/CIP/SXT/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 94 | AB209 | HB | 3 | R16 | AK/CIP/SXT/CAZ/SL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 95 | AB210 | HB | 0 | R12 | AK/CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 96 | AB212 | HB | 0 | R16 | AK/CIP/SXT/CAZ/MEM/PIP/CRP/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 97 | AB214 | HB | 0 | R12 | CIP/SXT/TE | MDR-AB | + | + | - |

| | | | | | | | | | |
|-----|-------|----|---|-----|--|-----------------------|---|---|------------------|
| 98 | AB215 | HB | 1 | R6 | No resistance | Non MDR-AB | + | + | cas6 |
| 99 | AB216 | HB | 3 | R16 | AK/CIP/SXT/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 100 | AB217 | HB | 3 | R16 | AK/CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 101 | AB219 | HB | 0 | R12 | CIP/CAZ/PIP/CRO/FEP | MDR-AB | - | + | - |
| 102 | AB220 | HB | 3 | R16 | AK/CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | - | - |
| 103 | AB221 | HB | 2 | R16 | AK/CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 104 | AB225 | HB | 2 | R16 | AK/CIP/SXT/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 105 | AB226 | HB | 0 | R12 | CIP/SXT/CTX/CAZ/IPM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 106 | AB227 | HB | 1 | R16 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 107 | AB228 | HB | 0 | R14 | No resistance | Non MDR-AB | - | - | - |
| 108 | AB229 | HB | 3 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 109 | AB094 | HC | 0 | R13 | No resistance | Non MDR-AB | + | + | cas6 |
| 110 | AB095 | HC | 0 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 111 | AB097 | HC | 0 | R6 | No resistance | Non MDR-AB | + | + | - |
| 112 | AB098 | HC | 0 | R12 | SXT/CTX/CAZ/CRO/FEP/TE | MDR-AB | - | - | cas6 |
| 113 | AB099 | HC | 2 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 114 | AB101 | HC | 5 | R24 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 115 | AB102 | HC | 3 | R24 | IPM/MEM/PIP/TE/CN | MDR-AB, CR-AB | + | + | - |
| 116 | AB103 | HC | 0 | R8 | IPM/MEM | CR-AB | + | + | cas2 |
| 117 | AB106 | HC | 0 | R6 | No resistance | Non MDR-AB | + | - | - |
| 118 | AB109 | HC | 0 | R12 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 119 | AB120 | HC | 0 | R1 | CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 120 | AB121 | HC | 3 | R24 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 121 | AB143 | HC | 0 | R16 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | - | + | - |
| 122 | AB148 | HC | 0 | R1 | CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 123 | AB159 | HC | 0 | R12 | No resistance | Non MDR-AB | + | + | cas6 |
| 124 | AB162 | HC | 4 | R24 | AK/CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TE/PIP | MDR-AB, CR-AB | + | + | - |
| 125 | AB163 | HC | 0 | R16 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 126 | AB166 | HC | 0 | R1 | CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 127 | AB168 | HC | 0 | R1 | No resistance | Non MDR-AB | + | + | - |
| 128 | AB172 | HC | 2 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | cas1 |
| 129 | AB175 | HC | 4 | R31 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 130 | AB176 | HC | 5 | R24 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 131 | AB177 | HC | 5 | R24 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 132 | AB180 | HC | 0 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 133 | AB183 | HC | 3 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 134 | AB185 | HC | 1 | R12 | AK/CIP/SXT/IPM/MEM/PIP/FEP/CN | MDR-AB, CR-AB | - | + | cas1, cas3, cas5 |
| 135 | AB230 | HC | 5 | R24 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO | MDR-AB, CR-AB | + | - | - |
| 136 | AB231 | HC | 0 | R1 | CIP/CTX/CAZ/IPM/MEM/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 137 | AB232 | HC | 0 | R16 | CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 138 | AB233 | HC | 2 | R24 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 139 | AB235 | HC | 0 | R1 | No resistance | Non MDR-AB | + | + | cas5 |
| 140 | AB237 | HC | 3 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 141 | AB239 | HC | 0 | R16 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 142 | AB241 | HC | 5 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 143 | AB246 | HC | 0 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | cas1, cas3, cas5 |
| 144 | AB248 | HC | 0 | R12 | No resistance | Non MDR-AB | + | + | - |
| 145 | AB252 | HC | 0 | R16 | AK/CIP/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 146 | AB253 | HC | 0 | R16 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 147 | AB254 | HC | 0 | R21 | CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 148 | AB255 | HC | 0 | R12 | No resistance | Non MDR-AB | + | - | - |
| 149 | AB261 | HC | 0 | R2 | No resistance | Non MDR-AB | - | + | cas5 |
| 150 | AB265 | HC | 1 | R16 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 151 | AB266 | HC | 5 | R24 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 152 | AB269 | HC | 0 | R4 | AK/CIP/SXT/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 153 | AB270 | HC | 0 | R14 | No resistance | Non MDR-AB | + | - | - |
| 154 | AB275 | HC | 0 | R16 | IPM/MEM | CR-AB | + | - | - |
| 155 | AB279 | HC | 5 | R28 | AK/CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 156 | AB280 | HC | 3 | R21 | AK/CIP/SXT/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 157 | AB284 | HC | 0 | R6 | No resistance | Non MDR-AB | + | - | - |
| 158 | AB287 | HC | 6 | R22 | AK/CIP/CTX/CAZ/IPM/MEM/TE/CRO/CN | MDR-AB, CR-AB | + | + | - |
| 159 | AB313 | HD | 0 | R1 | AK/CIP/TMX/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 160 | AB314 | HD | 2 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 161 | AB316 | HD | 6 | R12 | TMX/TE | Non MDR-AB | + | + | - |
| 162 | AB318 | HD | 0 | R1 | AK/CIP/TMX/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 163 | AB319 | HD | 4 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | + | - |
| 164 | AB320 | HD | 5 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 165 | AB324 | HD | 0 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 166 | AB326 | HD | 0 | R16 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB | + | - | - |
| 167 | AB327 | HD | 2 | R16 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 168 | AB328 | HD | 0 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 169 | AB329 | HD | 6 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 170 | AB334 | HD | 0 | R16 | CIP/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 171 | AB335 | HD | 0 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 172 | AB339 | HD | 0 | R12 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 173 | AB340 | HD | 0 | R16 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 174 | AB341 | HD | 0 | R16 | CIP/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 175 | AB348 | HD | 0 | R8 | CIP/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | - | + | - |
| 176 | AB349 | HD | 3 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 177 | AB350 | HD | 2 | R4 | AK/CIP/TMX/CTX/CAZ/PIP/CT/GC/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 178 | AB353 | HD | 4 | R16 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 179 | AB354 | HD | 6 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 180 | AB355 | HD | 3 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 181 | AB360 | HD | 3 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 182 | AB361 | HD | 0 | R12 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | - | + | - |
| 183 | AB367 | HD | 3 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | + | - |
| 184 | AB368 | HD | 6 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 185 | AB369 | HD | 0 | R12 | CIP/TMX/CTX/CAZ/PIP/TE/CRO/FEP/CN | MDR-AB | + | + | - |
| 186 | AB371 | HD | 6 | R16 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 187 | AB373 | HD | 0 | R12 | CIP/TMX/CTX/CAZ/PIP/TE/CRO/FEP/CN | MDR-AB | + | + | - |
| 188 | AB375 | HD | 0 | R5 | AK/CIP/TMX/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 189 | AB376 | HD | 1 | R4 | CIP/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 190 | AB377 | HD | 0 | R1 | AK/CIP/TMX/CTX/CAZ/IPM/MEM/PIP/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 191 | AB385 | HD | 6 | R4 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 192 | AB388 | HD | 0 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 193 | AB389 | HD | 7 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 194 | AB394 | HD | 0 | R16 | TMX | Non MDR-AB | - | - | - |
| 195 | AB396 | HD | 4 | R19 | CIP/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 196 | AB403 | HD | 0 | R16 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 197 | AB404 | HD | 4 | R16 | CIP/TMX/CTX/CAZ/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 198 | AB405 | HD | 6 | R1 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |

| | | | | | | | | | |
|-----|-------|----|---|-----|--|-----------------------|---|---|------------------|
| 199 | AB410 | HD | 3 | R16 | CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | + | - |
| 200 | AB411 | HD | 0 | R4 | CIP/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP | MDR-AB, CR-AB | + | - | - |
| 201 | AB301 | HD | 0 | R12 | CTX/CAZ/CRO/CIP/CN/IPM/MEM/PIP | MDR-AB, CR-AB | - | + | - |
| 202 | AB302 | HD | 6 | R16 | AK/CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/ PIP | MDR-AB, CR-AB | + | - | - |
| 203 | AB303 | HD | 0 | R16 | CTX/CAZ/CRO/CN/ TMX/TE/PIP | MDR-AB | + | + | - |
| 204 | AB305 | HD | 0 | R12 | CTX/CAZ/CRO/FEP/CIP/CN/TMX/TE | MDR-AB | + | - | - |
| 205 | AB310 | HD | 3 | R12 | CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TE/PIP | MDR-AB, CR-AB | + | - | - |
| 206 | AB412 | HF | 0 | R35 | AK/CTX/CAZ/CRO/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 207 | AB415 | HF | 0 | R36 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 208 | AB416 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 209 | AB418 | HF | 0 | R36 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 210 | AB419 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/TE/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 211 | AB420 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 212 | AB421 | HF | 0 | R36 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/TE/PIP | MDR-AB, CR-AB | + | - | - |
| 213 | AB422 | HF | 0 | R36 | AK/CTX/CAZ/CRO/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 214 | AB423 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 215 | AB424 | HF | 0 | R35 | AK/CIP/TMX/CTX/CAZ/CSL/IPM/MEM/PIP/TE/CRO/FEP/CN | MDR-AB, CR-AB, XDR-AB | + | - | - |
| 216 | AB429 | HF | 0 | R36 | AK/CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 217 | AB430 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/TE/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 218 | AB431 | HF | 0 | R36 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | - | - |
| 219 | AB433 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 220 | AB437 | HF | 0 | R39 | No resistance | Non MDR-AB | + | + | cas1, cas3, cas5 |
| 221 | AB439 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/SCF/PIP | MDR-AB, CR-AB | + | + | - |
| 222 | AB440 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/SCF/PIP | MDR-AB, CR-AB | + | + | - |
| 223 | AB443 | HF | 0 | R37 | CTX/CAZ/CRO/CN/FEP/CIP/IPM/MEM/TMX/TE/SCF/PIP | MDR-AB, CR-AB | + | + | - |
| 224 | AB446 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 225 | AB448 | HF | 0 | R38 | CTX/CAZ/CRO/CIP/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 226 | AB449 | HF | 0 | R40 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | + | - |
| 227 | AB451 | HF | 0 | R35 | AK/CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/PIP | MDR-AB, CR-AB | + | + | - |
| 228 | AB452 | HF | 0 | R38 | AK/CTX/CAZ/CRO/FEP/CIP/IPM/MEM/TMX/PIP | MDR-AB, CR-AB | + | + | cas1, cas3, cas5 |
| 229 | AB455 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/SCF/PIP | MDR-AB, CR-AB | + | + | - |
| 230 | AB456 | HF | 0 | R37 | CTX/CAZ/CRO/FEP/CIP/CN/IPM/MEM/TMX/TE/SCF/PIP | MDR-AB, CR-AB | + | + | - |

^aAK: amikacin, CTX: cefotaxime, CAZ: ceftazidime, CRO: ceftriaxone, FEP: cefepime, CIP: ciprofloxacin, CN: gentamicin, IMP: imipenem, MEM: meropenem, SXT: trimethoprim/sulfamethoxazole, TE: tetracycline, SCF: cefoperazone/subactam and TZP: piperacillin/tazobactam.

Table S2. REP-PCR typing among phage susceptible and resistant *A. baumannii* strains

| REP-PCR typing | No. of isolates | |
|----------------|------------------------------|----------------------------|
| | Phage susceptible (n=107) | Phage resistant (n=123) |
| R1 | 1/107 (0.93%) | 10/123 (8.13%) |
| R2 | 0/107 (0.00%) | 2/123 (1.63%) |
| R3 | 0/107 (0.00%) | 0/123 (0.00%) |
| R4 | 18/107 (16.82%) | 8/123 (6.50%) |
| R5 | 0/107 (0.00%) | 1/123 (0.81%) |
| R6 | 1/107 (0.93%) | 6/123 (4.88%) |
| R7 | 0/107 (0.00%) | 1/123 (0.81%) |
| R8 | 0/107 (0.00%) | 3/123 (2.44%) |
| R9 | 0/107 (0.00%) | 1/123 (0.81%) |
| R10 | 0/107 (0.00%) | 1/123 (0.81%) |
| R11 | 2/107 (1.87%) | 2/123 (1.63%) |
| R12 | 4/107 (3.74%) | 23/123 (18.70%) |
| R13 | 0/107 (0.00%) | 2/123 (1.63%) |
| R14 | 0/107 (0.00%) | 2/123 (1.63%) |
| R15 | 2/107 (1.87%) | 0/123 (0.00%) |
| R16 | 59/107 (55.14%) | 28/123 (22.76%) |
| R17 | 0/107 (0.00%) | 0/123 (0.00%) |
| R18 | 0/107 (0.00%) | 0/123 (0.00%) |
| R19 | 1/107 (0.93%) | 0/123 (0.00%) |
| R20 | 0/107 (0.00%) | 0/123 (0.00%) |
| R21 | 1/107 (0.93%) | 2/123 (1.63%) |
| R22 | 1/107 (0.93%) | 0/123 (0.00%) |
| R23 | 0/107 (0.00%) | 0/123 (0.00%) |
| R24 | 9/107 (8.41%) | 0/123 (0.00%) |
| R25 | 0/107 (0.00%) | 0/123 (0.00%) |
| R26 | 0/107 (0.00%) | 0/123 (0.00%) |
| R27 | 1/107 (0.93%) | 0/123 (0.00%) |
| R28 | 1/107 (0.93%) | 0/123 (0.00%) |
| R29 | 0/107 (0.00%) | 0/123 (0.00%) |
| R30 | 0/107 (0.00%) | 0/123 (0.00%) |
| R31 | 1/107 (0.93%) | 0/123 (0.00%) |
| R32 | 0/107 (0.00%) | 0/123 (0.00%) |
| R33 | 0/107 (0.00%) | 0/123 (0.00%) |
| R34 | 5/107 (4.67%) | 6/123 (4.88%) |
| R35 | 0/107 (0.00%) | 3/123 (2.44%) |
| R36 | 0/107 (0.00%) | 6/123 (4.88%) |
| R37 | 0/107 (0.00%) | 7/123 (5.69%) |
| R38 | 0/107 (0.00%) | 7/123 (5.69%) |
| R39 | 0/107 (0.00%) | 1/123 (0.81%) |
| R40 | 0/107 (0.00%) | 1/123 (0.81%) |

Table S3. List of primers used in this study to detect CRISPR-associated (*cas*) genes

| No. multiplex | Target genes | Primer name | Sequence (5'-3') | Templates (Genbank accession no.) | Amplicon size (bp) |
|---------------|--------------|-------------------------|-------------------------|--------------------------------------|--------------------|
| Multiplex-1 | <i>cas1</i> | cas1_506-F | GCTGCGATGCGAATGTTATGT | CP030106.1 | 506 |
| | | cas1_506-R | AGTACCCAAAGTGTCGTCGC | | |
| | <i>cas2</i> | cas2_196-F | CCGCTATGGTGTTTAAGTTACGA | UFJW01000108.1 | 196 |
| | | cas2_196-R | GAAAAACCGCAAGACGGTCA | | |
| <i>cas3</i> | cas3_850-F | ACTTGATTATGATGCTATGCCCA | CP030106.1 | 850 | |
| | cas3_850-R | TCGCTCTTGTTCACTGCGTA | | | |
| Multiplex-2 | <i>cas5</i> | cas5_611-F | TGCTTGTGCTTTAGGTGAGCA | JZBV01000044.1 | 611 |
| | | cas5_611-R | CACCGTATGGCTCAATCGCA | | |
| | <i>cas6</i> | cas6_432-F | GGAAACTGCCTGCGCATTAC | CP015121.1 | 432 |
| | | cas6_432-R | ATCCCGCGTTTTCACTCTCC | | |
| | <i>cas9</i> | cas9_247-F | ACTCTCGAAGACAAAGCGCA | CP015145.1 | 247 |
| | | cas9_247-R | TGGTTGCGACCACACAGTTT | | |