Supplementary Material

Table S1 Specific source information of milk samples.

| Dairy farm | Location             | Incidence of mastitis (%) | Sample quantity |
|------------|----------------------|---------------------------|-----------------|
| Farm A     | Heilongjiang, China  | 2.82                      | 24              |
| Farm B     | Shangdong, China     | 2.13                      | 38              |
| Farm C     | Anhui, China         | Unknown                   | 28              |
| Farm D     | Jiangsu, China       | Unknown                   | 12              |
| Farm E     | Hubei, China         | 2.26                      | 13              |
| Farm F     | Hebei, China         | 3.00                      | 24              |
| Farm G     | Ningxia, China       | 2.20                      | 17              |
| Farm H     | Ningxia, China       | 1.74                      | 25              |

Table S2 Breakpoints of 12 Antibiotics for *K. pneumoniae*.

| Antibiotic                              | S     | I   | R  |
|-----------------------------------------|-------|-----|----|
| Penicillin G                            | ≤16   |    | ≥32|
| Ampicillin                              | ≤16   | 16  | ≥32|
| Amoxicillin/clavulanic acid             | ≤4    | 8   | ≥16|
| Sodium Ceftiofur                        | ≤1    | 2   | ≥4 |
| Enrofloxacin                            | ≤4    | 8   | ≥16|
| Sulfamethoxazole                        | ≤256  |    | ≥512|
| Spectinomycin                           | ≤16   | 32  | ≥64|
| Tobramycin                              | ≤4    | 8   | ≥16|
| Cefoxitin                               | ≤8    | 6   | ≥32|
| Florfenicol                             | ≤4    |    | ≥16|
| Erythromycin                            | ≤16   |    | ≥32|
| Doxycycline                             | ≤4    | 8   | ≥16|
| Genes   | Sequence (5'-3') | Amplicon size (bp) | Annealing temperature (°C) |
|---------|-----------------|--------------------|--------------------------|
| **bla**<sub>OXA-48</sub> | GCGTGGTTAAGGATGAACAC CATCAAGTTCAACCCAACCG | 438                | 52                      |
|         | GCTTTATCGGCCTTCACTCAAG |                    |                          |
| **bla**<sub>SHV</sub> | TTAGCGTTGCCAGTGCTCGATCA AACCGTCACGCTGGTTTAG | 898                | 55                      |
|         | TTAGCGTTGCCAGTGCTCGATCA AACCGTCACGCTGGTTTAG |                    |                          |
| **bla**<sub>CTX-M</sub> | TTGAGGCGTGTGGAAGTAAG | 766                | 52                      |
|         | ACGTGGCGGATGATGCT |                    |                          |
| **oqxA** | CCACTCTTCACGGGAGACGA | 392                | 55                      |
| **parC** | CTGAATGCCAGGCCAAAAT | 382                | 54                      |
| **gyrA** | CGCGTACTATACGCCCCATGAACGTA ACCGTGTACCTTCGTCAG | 420                | 55                      |
|         | CGCGATCGCAACACATGACG |                    |                          |
| **sul2** | GTCGGCGGATCGATCAG | 722                | 50                      |
| **tetB** | CTCAGTTTTCACCATTTTTC | 416                | 57                      |
| **strAB** | TATCTGCGATTGGACCTCTG CATGGCTACATTTTGATCGGTCTG | 538                | 55                      |
| **aadA** | GCAGCCGAATGACATTCTTG ATCCTTCGGCGCATTTT | 282                | 60                      |
Table S4 Primers for virulence genes and product size of *K. pneumoniae*.

| Genes | Sequence (5’-3’) | Amplicon size (bp) | Annealing temperature (°C) |
|-------|------------------|--------------------|---------------------------|
| *wabG* | ACCATCGGCCATTGATAGA CGGACTGGCAGATCCATATC TCTTACGCCCTTCTCTCCTACT | 683 | 50 |
| *uge* | GATCATCCCGTCTCCCTCTGTA TGCTGCTGGGCTGGTCGATG | 534 | 51 |
| *fimH* | GGGAGGGTGACGGTGACATC | 550 | 57 |
| *mrkD* | AAGCTATCGCTGTACCTCCGGCA GCGTGGCCGTCAGTATAGG | 340 | 57 |
| *entB* | GTCAACTGGGCTTTTGACGCGTC TATGCGTAAACCGCGTGTAG | 400 | 57 |
| *kfu* | ATAGTAGGCGAGCACCAGAGA AGAACCTTCCTCGCTGAAACA | 530 | 57 |
| *ureA* | GCTGACTTAAGAGAACGTTATG GATCATGGCGCTACCT(C/T)A | 337 | 50 |
| *ybtA* | AGACGGAGTCACCGCAAAC TTACATCAGCGTTAAAGG | 960 | 55 |
| *rmpA* | TACATAGGAAGGAGATGTTAAT GAGCATCTTTCTACATCAAC | 505 | 48 |
| *magA* | GGTGCTCTTACATCATTCG GCAATGGCCATTTGCGTTAG | 1238 | 49 |
Table S5 Specific background information of 102 *K. pneumoniae* strains.

| Isolate ID | Strain | Country | Year | Source | Accession No. |
|------------|--------|---------|------|--------|---------------|
| M1         | WI-01  | USA     | 2014 | Bovine | SAMN13523781  |
| M2         | MN-01  | USA     | 2014 | Bovine | SAMN13523782  |
| M3         | MN-02  | USA     | 2014 | Bovine | SAMN13523783  |
| M4         | WI-02  | USA     | 2014 | Bovine | SAMN13523786  |
| M5         | FL-01  | USA     | 2014 | Bovine | SAMN13523787  |
| M6         | FL-02  | USA     | 2014 | Bovine | SAMN13523789  |
| M7         | VT-01  | USA     | 2014 | Bovine | SAMN13523791  |
| M8         | FL-03  | USA     | 2014 | Bovine | SAMN13523792  |
| M9         | FL-04  | USA     | 2015 | Bovine | SAMN13523793  |
| M10        | CT-01  | USA     | 2015 | Bovine | SAMN13523795  |
| M11        | PA-01  | USA     | 2015 | Bovine | SAMN13523803  |
| M12        | PA-02  | USA     | 2015 | Bovine | SAMN13523804  |
| M13        | NC-01  | USA     | 2015 | Bovine | SAMN13523807  |
| M14        | MN-11  | USA     | 2016 | Bovine | SAMN13523815  |
| M15        | WA-01  | USA     | 2016 | Bovine | SAMN13523816  |
| M16        | MN-12  | USA     | 2016 | Bovine | SAMN13523818  |
| M17        | WI-08  | USA     | 2016 | Bovine | SAMN13523819  |
| M18        | WI-09  | USA     | 2016 | Bovine | SAMN13523820  |
| M19        | WI-10  | USA     | 2016 | Bovine | SAMN13523821  |
| M20        | WI-11  | USA     | 2016 | Bovine | SAMN13523822  |
| M21        | NY-05  | USA     | 2016 | Bovine | SAMN13523823  |
| M22        | NY-06  | USA     | 2016 | Bovine | SAMN13523824  |
| M23        | NY-07  | USA     | 2016 | Bovine | SAMN13523825  |
| M24        | NC-02  | USA     | 2017 | Bovine | SAMN13523829  |
| M25        | CT-02  | USA     | 2017 | Bovine | SAMN13523831  |
| M26        | CT-03  | USA     | 2017 | Bovine | SAMN13523837  |
| M27        | CT-04  | USA     | 2017 | Bovine | SAMN13523840  |
| M28        | NY-10  | USA     | 2017 | Bovine | SAMN13523841  |
| M29        | NY-11  | USA     | 2017 | Bovine | SAMN13523842  |
| M30        | NY-12  | USA     | 2017 | Bovine | SAMN13523844  |
| M31        | MN-20  | USA     | 2018 | Bovine | SAMN13523848  |
| M32        | CA-01  | USA     | 2018 | Bovine | SAMN13523849  |
| M33        | IA-001 | USA     | 2015 | Bovine | SAMN13523850  |
| M34        | IA-004 | USA     | 2015 | Bovine | SAMN13523853  |
| M35        | IA-018 | USA     | 2015 | Bovine | SAMN13523867  |
| M36        | IA-020 | USA     | 2015 | Bovine | SAMN13523869  |
| M37        | IA-021 | USA     | 2015 | Bovine | SAMN13523870  |
| M38        | IA-022 | USA     | 2015 | Bovine | SAMN13523871  |
| M39        | IA-059 | USA     | 2015 | Bovine | SAMN13523908  |
| M40        | K3     | Egypt   | NA   | Bovine | SRR13933220   |
| M41        | SB2722 | Netherlands | 2009 | Bovine | Unknown |


|   | isolate | country | year | species | status | Accession Number |
|---|---------|---------|------|---------|--------|------------------|
| M42 | SB2726 | Netherlands | 2009 | Bovine | Unknown | ERR025515 |
| H1  | SKP000534 | USA | 2008 | Human | ERR025515 |
| H2  | SKP000795 | USA | 2006 | Human | ERR025140 |
| H3  | SKP000800 | USA | 2006 | Human | ERR025986 |
| H4  | SKP000802 | USA | 2007 | Human | ERR025988 |
| H5  | SKP000803 | USA | 2007 | Human | ERR025989 |
| H6  | KP01 | Netherlands | 2016 | Human | ERR1616341 |
| H7  | KP02 | Netherlands | 2016 | Human | ERR1616345 |
| H8  | KP03 | Netherlands | 2016 | Human | ERR1616353 |
| H9  | KP04 | Netherlands | 2016 | Human | ERR1616359 |
| H10 | KP05 | Netherlands | 2016 | Human | ERR1616362 |
| H11 | H150660738 | UK | 2016 | Human | Unknown |
| H12 | H15390402 | UK | 2016 | Human | Unknown |
| H13 | H135060621 | UK | 2016 | Human | Unknown |
| H14 | H140240552 | UK | 2016 | Human | Unknown |
| H15 | H142140857 | UK | 2016 | Human | Unknown |
| H16 | Kp_1093127 | Italy | 2016 | Human | Unknown |
| H17 | Kp_811117 | Italy | 2016 | Human | Unknown |
| H18 | Kp002 | Australia | 2016 | Human | ERR025540 |
| H19 | Kp1832 | USA | 2016 | Human | ERR025540 |
| H20 | 38941 | Kenya | 2017 | Human | ERR214375 |
| H21 | 33909 | Kenya | 2017 | Human | ERR214297 |
| H22 | 45441 | Kenya | 2017 | Human | ERR219172 |
| H23 | NCSR101 | Vietnam | 2014 | Human | ERR025479 |
| H24 | DM23092/04 | Singapore | 2014 | Human | ERR025540 |
| H25 | DU38032/05 | Singapore | 2014 | Human | ERR025541 |
| H26 | SA25 | France | 2013 | Human | Unknown |
| H27 | SA26 | France | 2013 | Human | Unknown |
| H28 | T6 | France | 2013 | Human | Unknown |
| H29 | L3 | France | 2013 | Human | Unknown |
| H30 | Pus_13542 | Laos | 2015 | Human | ERR011870 |
| H31 | Pus_15007 | Laos | 2015 | Human | ERR011871 |
| H32 | Pus_15987 | Laos | 2015 | Human | ERR011873 |
| H33 | NN61 | Spain | 2009 | Human | Unknown |
| H34 | N66 | Spain | 2009 | Human | Unknown |
| H35 | I5 | Spain | 2009 | Human | Unknown |
| E1  | SKP000753 | USA | 2006 | Bovine | ERR025575 |
| E2  | SKP000754 | USA | 2006 | Bovine | ERR025563 |
| E3  | SKP000755 | USA | 2006 | Bovine | ERR025588 |
| E4  | SKP000764 | USA | 2005 | Bovine | ERR025131 |
| E5  | SKP000765 | USA | 2005 | Bovine | ERR025132 |
| E6  | SKP000827 | USA | 2007 | Bovine | ERR025615 |
| E7  | SKP000832 | USA | 2007 | Bovine | ERR025618 |
| E8  | SKP000781 | USA | 2005 | Environmental | ERR025151 |
|   |   |   |   |   |
|---|---|---|---|---|
| E9 | SKP000826 | USA | 2005 | Environmental | ERR025614 |
| E10 | SKP000830 | USA | 2005 | Environmental | ERR025607 |
| E11 | ESBLH238T | India | 2014 | Environmental | Unknown |
| E12 | E48T | India | 2014 | Environmental | Unknown |
| E13 | 19SK1 | India | 2014 | Environmental | Unknown |
| E14 | ESBLH239T | Thailand | 2014 | Environmental | Unknown |
| E15 | ABW S20 | Switzerland | 2015 | Environmental | Unknown |
| E16 | 002 SK5 | Switzerland | 2016 | Environmental | Unknown |
| E17 | 2-2 | The Netherlands | Unknown | Environmental | Unknown |
| E18 | 2-3 | The Netherlands | Unknown | Environmental | Unknown |
| E19 | 3-1 | The Netherlands | Unknown | Environmental | Unknown |
| E20 | 3-2 | The Netherlands | Unknown | Environmental | Unknown |
| E21 | 5-1 | The Netherlands | Unknown | Environmental | Unknown |
| E22 | 808 | Libya | 2009 | Environmental | Unknown |
| E23 | 809 | Libya | 2009 | Environmental | Unknown |
| E24 | 817 | Libya | 2008 | Environmental | Unknown |
| E25 | DR85_08 | Singapore | 2008 | Environmental | ERS011922 |
**Table S6** Specific background information of the *K. pneumoniae* strains.

| Strain | Source | Cow number | Year |
|--------|--------|------------|------|
| HLJ-1  | Farm A | 140142     | 2021 |
| HLJ-2  | Farm A | 140439     | 2021 |
| HLJ-3  | Farm A | 141011     | 2021 |
| HLJ-4  | Farm A | 150170     | 2021 |
| HLJ-5  | Farm A | 151054     | 2021 |
| HLJ-6  | Farm A | 160427     | 2021 |
| HLJ-10 | Farm A | 161158     | 2021 |
| HLJ-14 | Farm A | 170581     | 2021 |
| HLJ-16 | Farm A | 170872     | 2021 |
| HLJ-20 | Farm A | 180218     | 2021 |
| HLJ-23 | Farm A | 181270     | 2021 |
| HLJ-24 | Farm A | 190281     | 2021 |
| HLJ-24F| Farm A | 190281     | 2021 |
| SD-1   | Farm B | 158069     | 2021 |
| SD-3   | Farm B | 174827     | 2021 |
| SD-6   | Farm B | 183568     | 2021 |
| SD-7   | Farm B | 181566     | 2021 |
| SD-8   | Farm B | 175611     | 2021 |
| SD-9   | Farm B | 140361     | 2021 |
| SD-10  | Farm B | 131890     | 2021 |
| SD-13  | Farm B | 193586     | 2021 |
| SD-14  | Farm B | 193189     | 2021 |
| SD-15  | Farm B | 175239     | 2021 |
| SD-16  | Farm B | 167058     | 2021 |
| SD-18  | Farm B | 171431     | 2021 |
| SD-19  | Farm B | 172361     | 2021 |
| SD-20  | Farm B | 145156     | 2021 |
| SD-21  | Farm B | 184381     | 2021 |
| SD-23  | Farm B | 172943     | 2021 |
| SD-25  | Farm B | 173540     | 2021 |
| SD (2)-7| Farm B | 180653     | 2021 |
| AH-1   | Farm C | 155500     | 2021 |
| AH-5   | Farm C | 175145     | 2021 |
| AH-12  | Farm C | 168544     | 2021 |
| AH-13  | Farm C | 14701      | 2021 |
| AH-16  | Farm C | 187972     | 2021 |
| AH-17  | Farm C | 178388     | 2021 |
| AH-20  | Farm C | 152870     | 2021 |
| AH-21  | Farm C | 193067     | 2021 |
| AH-23  | Farm C | 164864     | 2021 |
| JS-1   | Farm D | 4068       | 2021 |
| JS-2   | Farm D | 6295       | 2021 |
| Dairy farm | Sampling time | Sample quantity | Positive sample quantity | Detection rate (%) |
|-----------|---------------|-----------------|--------------------------|--------------------|
| Farm A    | 2021.07       | 24              | 13                       | 54.17              |
| Farm E    | 2021.07       | 13              | 7                        | 53.85              |
| Farm B    | 2021.08       | 38              | 18                       | 47.37              |
| Farm F    | 2021.09       | 24              | 11                       | 45.83              |
| Farm G    | 2021.09       | 17              | 2                        | 11.76              |
| Farm D    | 2021.10       | 12              | 5                        | 41.67              |
| Farm H    | 2021.10       | 25              | 0                        | 0                  |
| Farm C    | 2021.10       | 28              | 9                        | 32.14              |

**Table S7** Detection rates of *K. pneumoniae* in different farms.
Table S8 Results of antimicrobial susceptibility testing.

| Types of antibiotics          | Antibiotics               | Strain number | Proportion (%) | Strain number | Proportion (%) | Strain number | Proportion (%) |
|-------------------------------|---------------------------|---------------|----------------|---------------|----------------|---------------|----------------|
| β-lactam/β-lactamase-inhibitor combinations | Penicillin G | 0 | 0 | 0 | 0 | 65 | 100 |
| Amoxicillin/clavulanic acid  | Ampicillin  | 0 | 0 | 1 | 1.54 | 64 | 98.46 |
| Ceftriaxone                   | Enrofloxacin             | 17 | 26.15 | 14 | 21.54 | 34 | 52.31 |
| Fluoroquinolones             | Sulfamethoxazole         | 0 | 0 | 1 | 1.54 | 64 | 98.46 |
| Aminoglycosides              | Spectinomycin            | 4 | 6.15 | 23 | 35.39 | 38 | 58.46 |
| Cephamycins                  | Tobramycin               | 49 | 75.39 | 5 | 7.69 | 11 | 16.92 |
| Chloramphenicol              | Cefoxitin                | 48 | 73.84 | 9 | 13.85 | 8 | 12.31 |
| Macrolides                   | Florfenicol              | 9 | 13.85 | 15 | 23.08 | 41 | 63.07 |
| Tetracyclines                | Erythromycin             | 0 | 0 | 0 | 0 | 65 | 100 |
|                              | Doxycycline              | 19 | 29.23 | 8 | 12.31 | 38 | 58.46 |

Table S9 Statistics of Nanopore data quality.

| Strain | Sequence number | sum_len (bp) | min_len (bp) | avg_len (bp) | max_len (bp) | N50 (bp) |
|--------|-----------------|--------------|--------------|--------------|--------------|----------|
| SD-14  | 58 821          | 1 000 008 661 | 7 533        | 17 000.9     | 134 766     | 19 434   |
| HB-21  | 54 597          | 1 000 019 433 | 9 785        | 18 316.4     | 91 271      | 19 533   |

Table S10 The genomics islands prediction of K. pneumoniae strain SD-14.

| GIs ID | Sequence ID | Start | End | GIs length (bp) |
|--------|-------------|-------|-----|-----------------|
| GI1    | assembly_1  | 1 165 213 | 1 185 458 | 20 246 |
| GI2    | assembly_1  | 2 049 012 | 2 081 938 | 32 927 |
| GI3    | assembly_1  | 2 277 317 | 2 293 045 | 15 729 |
| GI4    | assembly_1  | 2 879 024 | 2 923 750 | 44 727 |
| GI5    | assembly_1  | 2 958 582 | 2 991 994 | 33 413 |
| GI6    | assembly_1  | 3 060 808 | 3 071 120 | 10 313 |
| GI7    | assembly_1  | 3 221 868 | 3 268 487 | 46 620 |
| GI8    | assembly_1  | 4 669 391 | 4 696 362 | 26 972 |
| GI9    | assembly_1  | 4 887 309 | 4 895 520 | 8 212 |
| GI10   | assembly_2  | 30 386   | 48 614     | 18 229    |
| GI11   | assembly_2  | 103 225  | 118 189    | 14 965    |
Table S11 The genomics islands prediction of *K. pneumoniae* strain HB-21.

| GIs ID | Sequence ID | Start (bp) | End (bp) | GIs length (bp) |
|--------|-------------|------------|----------|-----------------|
| GI1    | assembly_1  | 756 743    | 785 165  | 28 423          |
| GI2    | assembly_1  | 1 461 283  | 1 515 264| 53 982          |
| GI3    | assembly_1  | 2 962 544  | 2 993 406| 30 863          |
| GI4    | assembly_1  | 2 999 915  | 3 025 821| 25 907          |
| GI5    | assembly_1  | 3 179 377  | 3 234 127| 54 751          |
| GI6    | assembly_1  | 4 205 438  | 4 220 159| 14 722          |
| GI7    | assembly_1  | 4 654 342  | 4 662 352| 8 011           |
| GI8    | assembly_1  | 4 667 975  | 4 692 945| 24 971          |
| GI9    | assembly_2  | 99 711     | 107 987  | 8 277           |
| GI10   | assembly_2  | 122 655    | 128 859  | 6 205           |
| GI11   | assembly_2  | 235 824    | 245 742  | 9 919           |
| GI12   | assembly_3  | 9 964      | 18 942   | 8 979           |

Table S12 The values of alleles and the respective sequence types of 104 strains.

| Strain | gapA | infB | mdh | pgi | phoE | rpoB | tonB | ST  |
|--------|------|------|-----|-----|------|------|------|-----|
| SD-14  | 2    | 6    | 1   | 5   | 11   | 1    | 15   | 43  |
| HB-21  | 2    | 9    | 2   | 1   | 13   | 1    | 38   | 896 |
| M1     | 3    | 1    | 1   | 1   | 3    | 3    | 1    | 4   |
| M2     | 10   | 20   | 2   | 1   | 9    | 11   | 14   | 442 |
| M3     | 2    | 1    | 2   | 17  | 27   | 1    | 39   | 107 |
| M4     | 2    | 1    | 99  | 6   | 1    | 1    | 129  | 867 |
| M5     | 18   | 22   | 26  | 63  | 85   | 20   | 51   | 414 |
| M6     | 4    | 3    | 1   | 1   | 43   | 1    | 13   | 191 |
| M7     | 2    | 3    | 2   | 2   | 6    | 4    | 4    | 29  |
| M8     | 2    | 3    | 6   | 1   | 9    | 7    | 299  | 5734|
| M9     | 4    | 3    | 1   | 1   | 43   | 1    | 13   | 191 |
| M10    | 2    | 1    | 1   | 37  | 3    | 4    | 64   | 1496|
| M11    | 2    | 1    | 2   | 1   | 3    | 4    | 4    | 109 |
| M12    | 2    | 1    | 2   | 17  | 27   | 1    | 39   | 107 |
| M13    | 2    | 1    | 5   | 1   | 17   | 4    | 42   | 111 |
| M14    | 10   | 20   | 2   | 1   | 9    | 11   | 14   | 442 |
| M15    | 4    | 7    | 1   | 37  | 177  | 4    | 6    | 2159|
| M16    | 2    | 1    | 2   | 1   | 7    | 1    | 24   | 234 |
| M17    | 3    | 5    | 1   | 12  | 4    | 46   | 1426 |
| M18    | 4    | 5    | 2   | 2   | 1    | 1    | 24   | 2253|
| M19    | 2    | 1    | 1   | 10  | 1    | 9    | 5753 |
| M20    | 2    | 1    | 97  | 1   | 9    | 4    | 13   | 846 |
| M21    | 38   | 19   | 53  | 58  | 73   | 21   | 130  | 526 |
| M22    | 3    | 1    | 1   | 20  | 2    | 62   | 5754 |
| M23    | 4    | 1    | 2   | 6   | 2    | 5    | 9    | 5755|
|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|M24| 4 | 6 | 1 | 1 | 8 | 1 | 56 | 229|
|M25| 2 | 9 | 2 | 1 | 13| 1 | 10 | 309|
|M26| 4 | 3 | 1 | 36| 9 | 10| 14 | 661|
|M27| 2 | 1 | 2 | 2 | 10| 4 | 19 | 1117|
|M28| 2 | 20| 2 | 1 | 9 | 11| 355| 5759|
|M29| 4 | 1 | 1 | 21| 1 | 35 | 76 |
|M30| 17| 19| 28| 20| 103| 18| 52 | 5760|
|M31| 17| 19| 92| 39| 170 |18 | 125| 3212|
|M32| 2 | 7 | 7 | 1 | 61 | 1 | 456 | 3664|
|M33| 2 | 1 | 2 | 3 | 1 | 36 | 9 | 10 | 661|
|M34| 2 | 1 | 2 | 1 | 2 | 1 | 776 |
|M35| 2 | 1 | 5 | 1 | 17 | 4 | 42  |111 |
|M36| 2 | 1 | 2 | 3 | 27| 1 | 39  | 219|
|M37| 2 | 9 | 2 | 1 | 13| 1 | 16  | 37 |
|M38| 2 | 1 | 1 | 1 | 7 | 1 | 12  | 485|
|M39| 3 | 1 | 2 | 1 | 3 | 4 | 31  | 1086|
|M40| 2 | 5 | 2 | 2 | 7 | 1 | 10  | 48 |
|M41| 5 | 1 | 5 | 1 | 7 | 1 | 24  | 87 |
|M42| 2 | 5 | 2 | 2 | 7 | 1 | 10  | 48 |
|H1 |16 | 3 | 2 | 1 | 1 | 1 | 18  | 769|
|H2 |11 | 3 | 2 | 2 | 6 | 4 | 4  | 754|
|H3 |17 | 19| 39| 39| 51| 18| 72  |196 |
|H4 |10 | 1 | 1 | 1 | 12| 1 | 38  | 225|
|H5 |10 | 7 | 2 | 2 | 3 | 25 | 4  | 247|
|H6 |2  | 5 | 2 | 2 | 7 | 1 | 10  | 48 |
|H7 |10 | 1 | 2 | 1 | 9 | 27 | 6  | 359|
|H8 |14 | 1 | 2 | 1 | 7 | 4 | 182 | 873|
|H9 |2  | 1 | 2 | 1 | 2 | 1 | 4  | 1836|
|H10| 4 | 1 | 11| 1 | 9 | 4 | 59  |1593|
|H11| 2 | 7 | 2 | 1 | 2 | 1 | 2  |2201|
|H12| 2 | 3 | 65| 6 | 3 | 15 | 4  | 2202|
|H13| 2 | 6 | 1 | 37| 3 | 27 | 111 |2203|
|H14| 10| 1 | 11| 1 | 9 | 10 | 300 |2204|
|H15| 3 | 31| 2 | 1 | 4 | 1 | 220 |2205|
|H16| 2 | 6 | 88| 5 | 4 | 1 | 6  |2287|
|H17| 16| 18| 21| 33| 55| 59 |75  |2288|
|H18| 2 | 6 | 1 | 5 | 4 | 1 | 6  |101 |
|H19| 2 | 6 | 1 | 3 | 8 | 1 | 15  | 42 |
|H20| 3 | 1 | 5 | 1 | 1 | 4 | 223 |2813|
|H21| 4 | 1 | 2 | 1 | 1 | 247| 4  | 2814|
|H22| 4 | 2 | 2 | 1 | 247| 4 | 25  |2815|
|H23| 3 | 3 | 1 | 1 | 1 | 4 | 11 |
|H24| 3 | 3 | 1 | 1 | 1 | 4 | 11 |
|H25| 3 | 3 | 1 | 1 | 1 | 4 | 11 |
|   | H26 | H27 | H28 | H29 | H30 | H31 | H32 | H33 | H34 | H35 | E1  | E2  | E3  | E4  | E5  | E6  | E7  | E8  | E9  | E10 | E11 | E12 | E13 | E14 | E15 | E16 | E17 | E18 | E19 | E20 | E21 | E22 | E23 | E24 | E25 |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|   | 2   | 1   | 1   | 1   | 1   | 4   | 19  | 380 | 2   | 1   | 1   | 1   | 1   | 4   | 19  | 380 | 2   | 1   | 1   | 1   | 1   | 4   | 19  | 380 | 2   | 1   | 1   | 1   | 1   | 4   | 19  | 380 |    |
|   | 43  | 1   | 2   | 1   | 10  | 4   | 13  | 375 | 2   | 1   | 1   | 1   | 1   | 4   | 13  | 25  | 16  | 24  | 43  | 38  | 54  | 22  | 346 | 2139| 12  | 1   | 1   | 2   | 5   | 1   | 36  | 133 |    |
|   | 2   | 3   | 1   | 1   | 10  | 1   | 19  | 13  | 3   | 1   | 2   | 1   | 1   | 1   | 4   | 134 |    | 1   | 6   | 1   | 1   | 1   | 1   | 1   | 14  | 2   | 9   | 30  | 13  | 1   | 16  | 177 |    |
|   | 2   | 2   | 1   | 2   | 7   | 4   | 4   | 222 | 2   | 1   | 1   | 2   | 1   | 13  | 1   | 256 |    | 23  | 31  | 2   | 1   | 9   | 4   | 23  | 187 | 2   | 1   | 2   | 6   | 9   | 1   | 10  | 224 |    |
|   | 4   | 5   | 1   | 1   | 12  | 4   | 46  | 289 | 3   | 37  | 1   | 1   | 1   | 10  | 4   | 4   | 222 |    | 2   | 5   | 1   | 6   | 9   | 1   | 10  | 224 | 4   | 5   | 1   | 1   | 12  | 4   | 46  | 289 |    |
|   | 2   | 1   | 2   | 42  | 26  | 4   | 18  | 211 | 2   | 1   | 2   | 1   | 13  | 1   | 4   | 222 |    | 2   | 3   | 2   | 1   | 17  | 1   | 4   | 2   | 1740| 2   | 1   | 2   | 1   | 42  | 26  | 4   | 18  | 221 |
|   | 4   | 1   | 1   | 1   | 7   | 1   | 1   | 1739| 17  | 19  | 39  | 20  | 150 | 18  | 52  | 1740|    | 2   | 3   | 2   | 1   | 17  | 4   | 42  | 1741| 2   | 3   | 1   | 1   | 220 | 1   | 4   | 1743|    |
|   | 65  | 110 | 189 | 1   | 260 | 4   | 170 | 2256| 18  | 19  | 175 | 114 | 261 | 21  | 338 | 2257|    | 18  | 19  | 175 | 114 | 261 | 21  | 338 | 2257| 2   | 1   | 2   | 1   | 112 | 511 |    |    |
|   | 18  | 19  | 175 | 114 | 261 | 21  | 338 | 2257| 2   | 1   | 2   | 1   | 1   | 25  | 63  |    | 12  | 1   | 1   | 2   | 23  | 1   | 36  | 50  |    | 4   | 5   | 1   | 1   | 9   | 1   | 31  | 46  |    |
|   | 2   | 1   | 15  | 1   | 1   | 18  | 4   | 30  | 62  | 2   | 1   | 1   | 14  | 24  | 1   | 19  | 52  |    | 2   | 1   | 2   | 1   | 1   | 1   | 112 | 511 |    | 38  | 19  | 69  | 39  | 96  | 51  | 126 | 509 |
|   | 2   | 1   | 1   | 1   | 14  | 24  | 1   | 19  | 52  | 2   | 1   | 1   | 2   | 1   | 1   | 112 | 511 |    | 50  | 19  | 66  | 20  | 97  | 18  | 126 | 486 |    | 2   | 1   | 2   | 1   | 1   | 112 | 511 |    |
|   | 18  | 15  | 26  | 22  | 94  | 13  | 165 | 734 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
Figure S1 Phylogenetic tree of 65 strains of *K. pneumoniae*
Figure S2 Carriage rate of multiple antimicrobial resistance genes.

Figure S3 Carriage rate of multiple virulence genes.
**Figure S4** Circular map of *K. pneumoniae* strain SD-14. From the outside to the inside: the first ring corresponds to the information of genome sequence; the second ring corresponds to GC content; the third ring corresponds to GC skew; the forth ring corresponds to Illumina sequencing depth; the fifth ring corresponds to Nanopore sequencing depth; the last ring corresponds to CDS and ncRNA.
Figure S5 Circular map of *K. pneumoniae* strain HB-21. From the outside to the inside: the first ring corresponds to the information of genome sequence; the second ring corresponds to GC content; the third ring corresponds to GC skew; the forth ring corresponds to Illumina sequencing depth; the fifth ring corresponds to Nanopore sequencing depth; the last ring corresponds to CDS and ncRNA.
Figure S6 (A) GO classification of *K. pneumoniae* strain SD-14. (B) GO classification of *K. pneumoniae* strain HB-21.
**Figure S7** (A) KEGG classification of *K. pneumoniae* strain SD-14. (B) KEGG classification of *K. pneumoniae* strain HB-21.