# WGS Quality Control Report

Batch Name: 2024-07-04

Experiment Name: 24ARS_EMR_LG788

| Isolate No. | Sample ID | Description | ARSRL | WGS |
|---|---|---|---|---|
| 1 | 23ARS_VSM0511 | SAL68 | Salmonella species | Salmonella enterica subsp. enterica serovar Enteritidis |
| 2 | 24ARS_BRH0014 | EMR142_2 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 3 | 24ARS_BRT0017 | EMR141_2 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 4 | 24ARS_CRH0017 | EMR146 | Escherichia coli | Escherichia coli |
| 5 | 24ARS_CRH0030 | EMR148 | Klebsiella pneumoniae | Klebsiella quasipneumoniae |
| 6 | 24ARS_DMC0098 | EMR149 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 7 | 24ARS_DMC0102 | EMR157 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 8 | 24ARS_EVR0011 | EMR155 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 9 | 24ARS_EVR0017 | EMR158 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 10 | 24ARS_GMH0029 | EMR145 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 11 | 24ARS_JLM0018 | EMR143 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 12 | 24ARS_JLM0020 | EMR144 | Klebsiella pneumoniae | Klebsiella quasipneumoniae |
| 13 | 24ARS_NKI0048 | EMR147 | Escherichia coli | Escherichia coli |
| 14 | 24ARS_NKI0050 | EMR150 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 15 | 24ARS_NKI0051 | EMR151 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 16 | 24ARS_SLH0030 | EMR154 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 17 | 24ARS_STU0024 | EMR152 | Klebsiella pneumoniae | Klebsiella pneumoniae |
| 18 | 24ARS_STU0027 | EMR153 | Acinetobacter baumannii | Acinetobacter pittii |
| 19 | 24ARS_ZMC0002 | EMR156 | Pseudomonas aeruginosa | Pseudomonas aeruginosa |
| 20 | UTP_BL_006 | tricycle | Escherichia coli | Escherichia coli |
| 21 | UTP_ST_031 | tricycle | Escherichia coli | Escherichia coli |

Legend:

PASS | WARNING | FAILURE | EXCEEDS THRESHOLD METRIC/S | NON-CONCORDANT

**Sample excluded in the analysis**

| Sample ID | Description | Index reads | Remarks |
|---|---|---|---|
| 24ARS_NKI0053 | EMR159 | 0.8429 | low read count |

| Isolate No. | Sample ID | Contamination | Contigs | GC Percent | N50 | Total Length |
|---|---|---|---|---|---|---|
| 1 | 23ARS_VSM0511 | 0 | 24 | 52.13 | 478941 | 4700439 |
| 2 | 24ARS_BRH0014 | 0 | 84 | 65.97 | 247991 | 6878546 |
| 3 | 24ARS_BRT0017 | 0 | 122 | 65.33 | 220628 | 7348540 |
| 4 | 24ARS_CRH0017 | 0 | 127 | 50.53 | 136602 | 5373741 |
| 5 | 24ARS_CRH0030 | 0 | 39 | 57.75 | 801312 | 5379490 |
| 6 | 24ARS_DMC0098 | 0 | 44 | 57.19 | 479099 | 5405179 |
| 7 | 24ARS_DMC0102 | 0 | 51 | 66.32 | 488628 | 6482852 |
| 8 | 24ARS_EVR0011 | 0 | 47 | 66.47 | 407140 | 6291421 |
| 9 | 24ARS_EVR0017 | 0 | 131 | 66.36 | 151006 | 6423637 |
| 10 | 24ARS_GMH0029 | 0 | 110 | 56.65 | 172819 | 5772594 |
| 11 | 24ARS_JLM0018 | 0 | 95 | 56.79 | 394359 | 5742923 |
| 12 | 24ARS_JLM0020 | 0 | 77 | 57.65 | 229344 | 5512178 |
| 13 | 24ARS_NKI0048 | 0 | 93 | 50.83 | 320376 | 5148168 |
| 14 | 24ARS_NKI0050 | 0 | 55 | 57.20 | 236088 | 5425644 |
| 15 | 24ARS_NKI0051 | 0 | 81 | 56.82 | 238924 | 5595191 |
| 16 | 24ARS_SLH0030 | 0 | 99 | 65.94 | 361062 | 6937344 |
| 17 | 24ARS_STU0024 | 0 | 55 | 57.13 | 303929 | 5493891 |
| 18 | 24ARS_STU0027 | 0 | 17 | 38.58 | 519454 | 3995354 |
| 19 | 24ARS_ZMC0002 | 0 | 89 | 66.46 | 197528 | 6319285 |
| 20 | UTP_BL_006 | 0 | 44 | 50.61 | 279880 | 4940847 |
| 21 | UTP_ST_031 | 0 | 109 | 50.42 | 166206 | 5380880 |

Legend:

| PASS | WARNING | FAILURE | EXCEEDS THRESHOLD METRIC/S | *Isolates were tagged with warning due to uncertain results of species identification using bactinspector or sequence identification levels. |
|---|---|---|---|---|

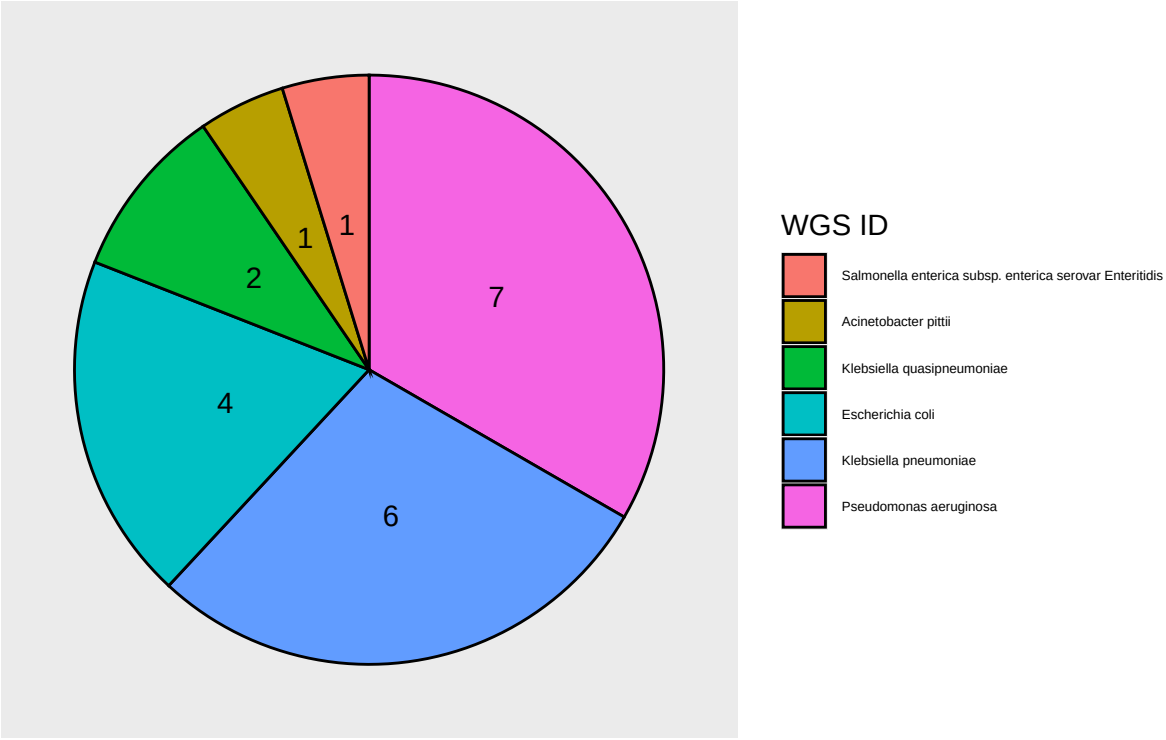
**List of samples above/below QC threshold metrics**

| Sample ID | Remarks |
|---|---|
| | No QC failures found. |

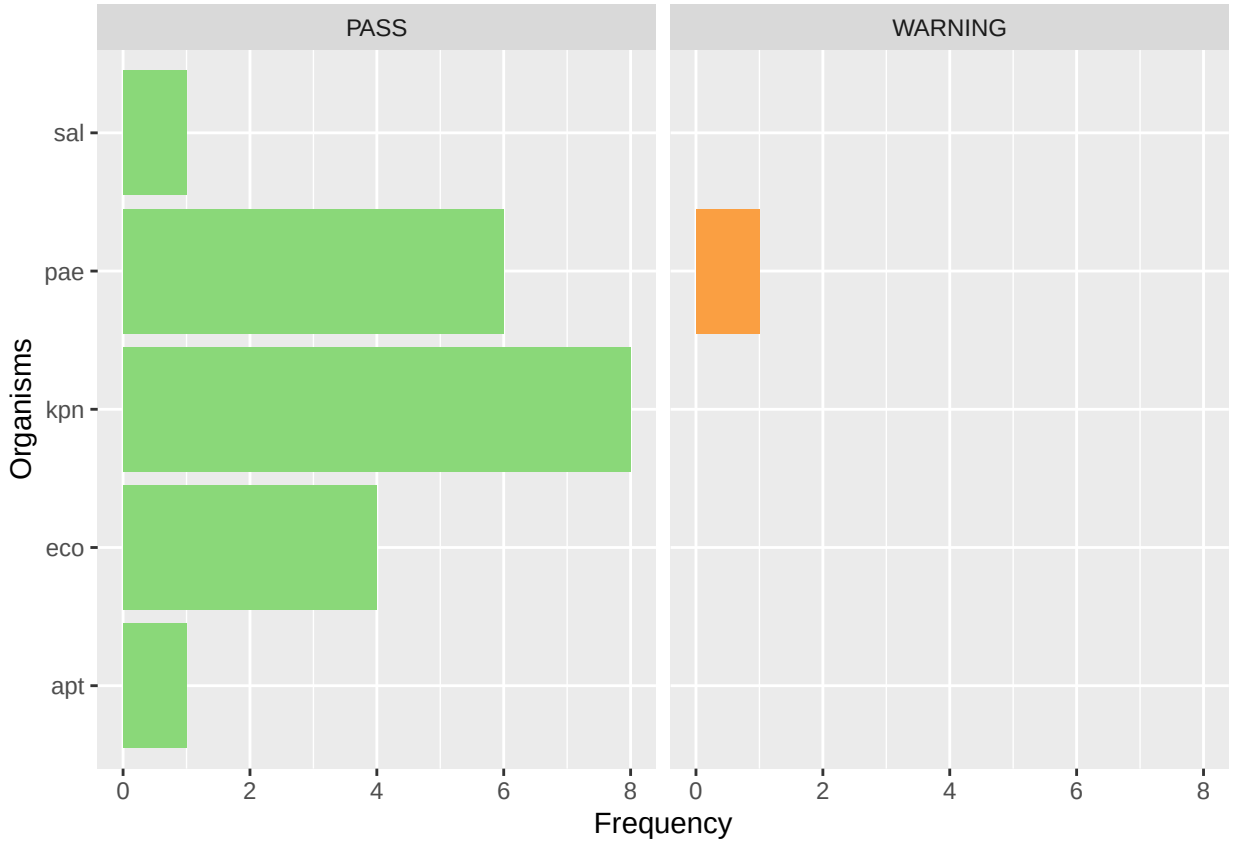
| WGS_ID | Number |
|---|---|
| Pseudomonas aeruginosa | 7 |
| Klebsiella pneumoniae | 6 |
| Escherichia coli | 4 |
| Klebsiella quasipneumoniae | 2 |
| Acinetobacter pittii | 1 |
| Salmonella enterica subsp. enterica serovar Enteritidis | 1 |

- 6 distinct species were identified among 21 isolates.
- 95.24 % (n=20) of the isolates passed the QC, while 4.76 % (n=1) were tagged with warning.
- Concordance between ARSRL and WGS species report was 100.00 %.

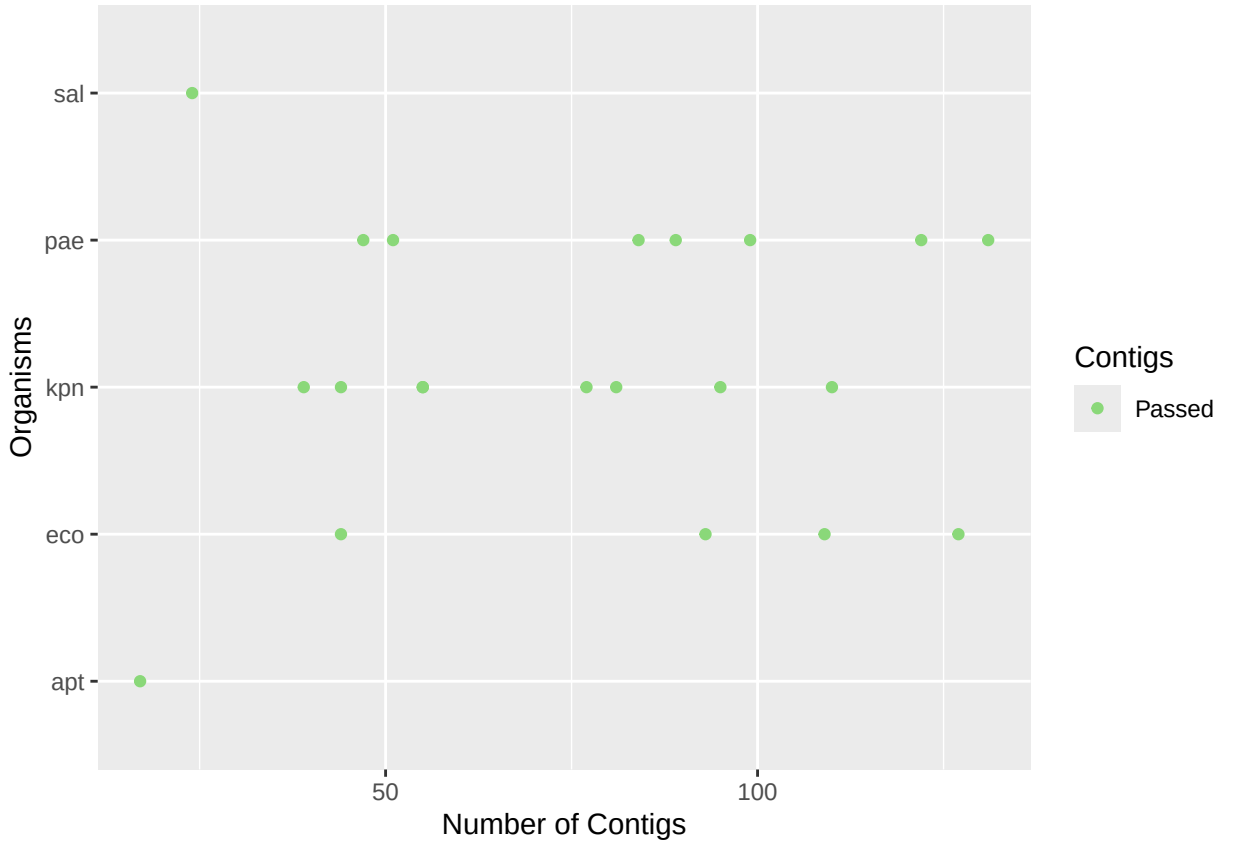
## GRAPHS



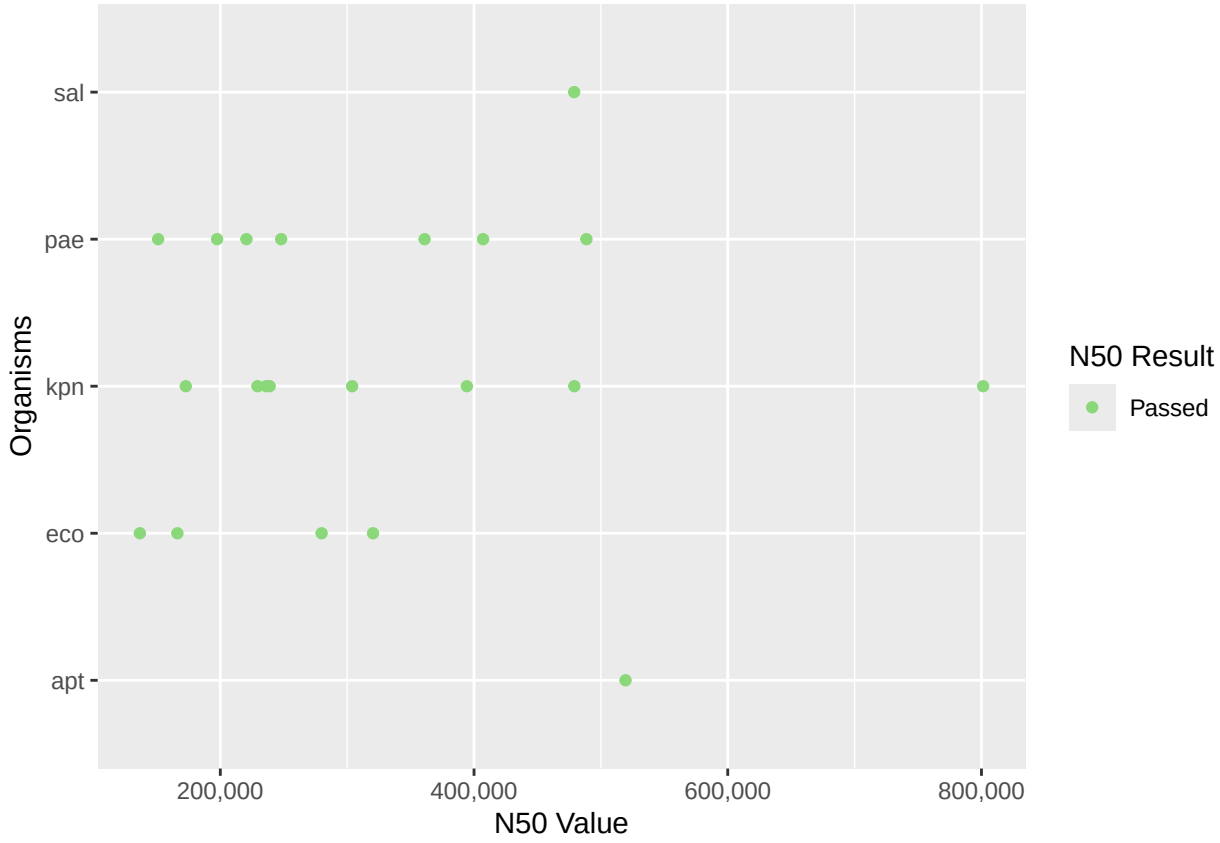
**Result Classification**



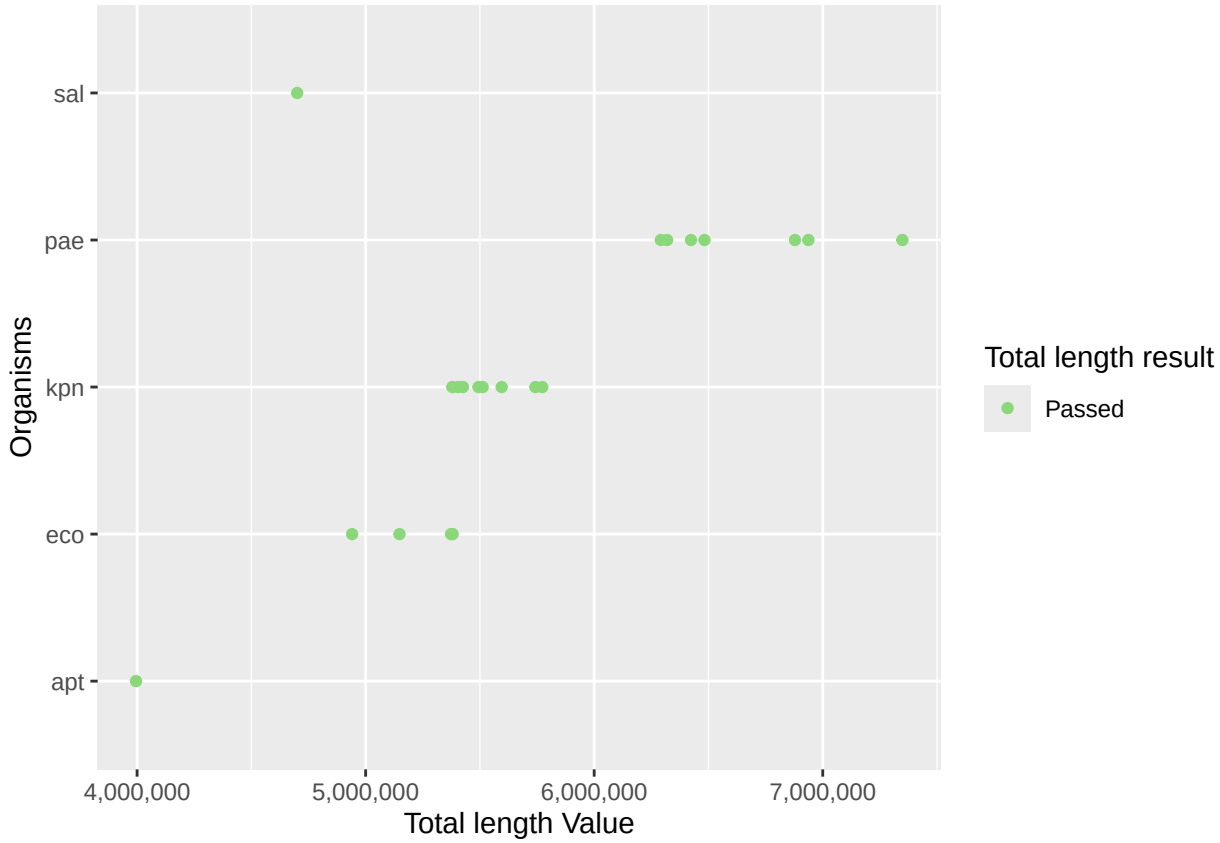

**Number of contigs**



**N50 Value**




**Total Length**



## RECOMMENDATION:

| Sample ID | Action | Reason |
|---|---|---|
| 24ARS_NKI0053 | Repeat testing | Low read count |

## MLST RESULTS

| sample_id | species | MLST | aroC | dnaN | hemD | hisD | purE | sucA | thrA |
|---|---|---|---|---|---|---|---|---|---|
| 23ARS_VSM0511 | Salmonella enterica subsp. enterica serovar Enteritidis | - | 5,638 | 2 | 3 | 7 | 6 | 6 | 11 |

| sample_id | species | MLST | aroC | dnaN | hemD | hisD | purE | sucA | thrA |
|---|---|---|---|---|---|---|---|---|---|
| 24ARS_BRH0014 | Pseudomonas aeruginosa | 639 | 11 | 19 | 19 | 3 | 4 | 4 | 7 |
| 24ARS_BRT0017 | Pseudomonas aeruginosa | - | 28,347 | 5 | 36 | 3 | 3 | 13 | 7 |
| 24ARS_DMC0102 | Pseudomonas aeruginosa | 2617 | 84 | 3 | 20 | 71 | 4 | 7 | 1 |
| 24ARS_EVR0011 | Pseudomonas aeruginosa | - | 15,345 | 5 | 11 | 3 | 15 | 42 | 9 |
| 24ARS_EVR0017 | Pseudomonas aeruginosa | 641 | 6 | 5 | 6 | 5 | 4 | 4 | 7 |
| 24ARS_SLH0030 | Pseudomonas aeruginosa | - | 11,345 | 20 | 1 | 65 | 4 | 4 | 10 |
| 24ARS_ZMC0002 | Pseudomonas aeruginosa | 3014 | 16 | 5 | 12 | 3 | 3 | 1 | 18 |

| sample_id | species | MLST | aroC | dnaN | hemD | hisD | purE | sucA | thrA |
|---|---|---|---|---|---|---|---|---|---|
| 24ARS_CRH0017 | Escherichia coli | 2083 | 6 | 322 | 5 | 16 | 11 | 8 | 7 |
| 24ARS_NKI0048 | Escherichia coli | 131 | 53 | 40 | 47 | 13 | 36 | 28 | 29 |
| UTP_ST_031 | Escherichia coli | 38 | 4 | 26 | 2 | 25 | 5 | 5 | 19 |

| sample_id | species | MLST | aroC | dnaN | hemD | hisD | purE | sucA | thrA |
|---|---|---|---|---|---|---|---|---|---|
| 24ARS_CRH0030 | Klebsiella quasipneumoniae | - | 18 | 22 | 74 | 22 | 123 | 20 | 99 |
| 24ARS_DMC0098 | Klebsiella pneumoniae | 17 | 2 | 1 | 1 | 1 | 4 | 4 | 4 |
| 24ARS_GMH0029 | Klebsiella pneumoniae | 147 | 3 | 4 | 6 | 1 | 7 | 4 | 38 |
| 24ARS_JLM0018 | Klebsiella pneumoniae | 39 | 2 | 1 | 2 | 4 | 9 | 1 | 14 |
| 24ARS_JLM0020 | Klebsiella quasipneumoniae | 6403 | 18 | 22 | 26 | 59 | 92 | 13 | 192 |
| 24ARS_NKI0050 | Klebsiella pneumoniae | 2050 | 2 | 3 | 2 | 37 | 10 | 1 | 15 |
| 24ARS_NKI0051 | Klebsiella pneumoniae | 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 24ARS_STU0024 | Klebsiella pneumoniae | 39 | 2 | 1 | 2 | 4 | 9 | 1 | 14 |

| sample_id | species | MLST | aroC | dnaN | hemD | hisD | purE | sucA | thrA |
|---|---|---|---|---|---|---|---|---|---|
| 24ARS_STU0027 | Acinetobacter pittii | - | ~101 | ~233 | 46 | 29 | ~124 | ~59 | 119 |

## MLST RESULTS SUMMARY:

| Species | MLST |
|---|---|
| Salmonella enterica subsp. enterica serovar Enteritidis | - (n= 1 ) |
| Pseudomonas aeruginosa | - (n= 3 ),2617 (n= 1 ),3014 (n= 1 ),639 (n= 1 ),641 (n= 1 ) |
| Escherichia coli | 131 (n= 1 ),2083 (n= 1 ),38 (n= 1 ) |
| Klebsiella pneumoniae | - (n= 1 ),147 (n= 1 ),15 (n= 1 ),17 (n= 1 ),2050 (n= 1 ),39 (n= 2 ),6403 (n= 1 ) |
| Acinetobacter pittii | - (n= 1 ) |

## AMR PREDICTION RESULTS

***Salmonella enterica subsp. enterica serovar Enteritidis***

| sample_id | AMR EFFLUX | STRESS COPPER/ GOLD | STRESS GOLD | STRESS NA | VIRULENCE NA |
|---|---|---|---|---|---|
| 23ARS_VSM0511 | mdsA, mdsB | golT | golS | fieF | sodC1, iroC, iroB, sinH |

***Pseudomonas aeruginosa***

| sample_id | AMR AMIKACIN/ KANAMYCIN | AMR BETA-LACTAM | AMR CARBAPENEM | AMR CEPHALOSPORIN | AMR CHLORAM-PHENICOL | AMR EFFLUX | AMR FOSFOMYCIN | AMR KANAMYCIN | AMR QUINOLONE | AMR STREPTOMYCIN | AMR SULFONAMIDE | AMR TIGECYCLINE | STRESS CHROMATE | STRESS MERCURY | STRESS NA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24ARS_BRH0014 | NA | blaOXA-486 | NA | blaPDC-3 | catB7 | mexA, mexE, mexX | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |
| 24ARS_BRT0017 | aph(3')-VIa | blaOXA-396 | blaIMP-26, blaVIM-2 | blaPDC-5, blaOXA-10 | catB7, catB3 | mexA, mexX, mexE | fosA | aph(3')-IIb | qnrVC1 | aadA1, aph(3")-Ib, aph(3")-Ib | sul1 | tmexC3, tmexD3, toprJ1 | chrA | merE, merD, merA, merP, merT, merR | clpK |
| 24ARS_DMC0102 | NA | blaOXA-486 | NA | blaPDC-5 | catB7 | mexA, mexE, mexX | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |
| 24ARS_EVR0011 | NA | blaOXA-50 | NA | blaPDC-3 | catB7 | mexA, mexE, mexX | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |
| 24ARS_EVR0017 | NA | blaOXA-50 | NA | blaPDC-5 | catB7 | mexA, mexX, mexE | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |
| 24ARS_SLH0030 | NA | blaOXA-50 | NA | blaPDC-14 | catB7 | mexE, mexA, mexX | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |
| 24ARS_ZMC0002 | NA | blaOXA-1023 | NA | blaPDC-3 | catB7 | mexA, mexE, mexX | fosA | aph(3')-IIb | NA | NA | NA | NA | NA | NA | NA |

***Escherichia coli***

| sample_id | AMR AMIKACIN/ KANAMYCIN/ QUINOLONE/ TOBRAMYCIN | AMR AZITHROMYCIN/ ERYTHROMYCIN/ SPIRAMYCIN/ TELITHROMYCIN | AMR BETA-LACTAM | AMR BLEOMYCIN | AMR CARBAPENEM | AMR CEPHALOSPORIN | AMR CHLORAM-PHENICOL | AMR CLINDAMYCIN/ ERYTHROMYCIN | AMR COLISTIN | AMR EFFLUX | AMR GENTAMICIN | AMR KANAMYCIN | AMR STREPTOMYCIN | AMR SULFONAMIDE | AMR TETRACYCLINE | AMR TRIMETHOPRIM | STRESS ARSENATE | STRESS ARSENIC | STRESS EFFLUX | STRESS NA | STRESS QUATERNARY AMMONIUM | VIRULENCE NA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24ARS_CRH0017 | aac(6')-Ib-cr5 | NA | blaEC, blaTEM-1 | ble | blaNDM-7 | blaCMY-42 | catA2 | erm(42) | mcr-1.1 | acrF, mdtM, emrD | aac(3)-IId | aph(3')-Ia | aph(6)-Id, aph(3")-Ib | sul2 | tet(B) | NA | arsC | arsR | NA | ariR, asr, fieF | NA | fdeC, lpfA-O113, astA, espX1 |
| 24ARS_NKI0048 | aac(6')-Ib-cr5 | mph(A) | blaEC | NA | NA | blaCTX-M-15, blaOXA-1 | NA | NA | NA | acrF, emrD, mdtM | NA | NA | aadA5 | sul1 | tet(A) | dfrA17 | arsC | NA | emrE | ariR, fieF, asr | qacEdelta1 | fdeC, iss, ybtP, ybtQ, afaC, nfaE, papA, iucA, iucB, iucC, iucD, iutA, sat, iha |
| UTP_ST_031 | NA | mph(A) | blaEC, blaTEM-1 | NA | NA | blaCTX-M-14 | NA | NA | NA | acrF, emrD | NA | NA | aadA5 | sul1 | NA | dfrA17 | arsC | arsR | NA | asr, fieF, ariR | qacEdelta1 | espX1, fdeC, ybtQ, ybtP, afaC, nfaE, eilA, aap, eatA, astA |

***Klebsiella pneumoniae***

| sample_id | AMR AMIKACIN/ KANAMYCIN/ QUINOLONE/ TOBRAMYCIN | AMR AMINOGLY-COSIDE | AMR AZITHROMYCIN/ ERYTHROMYCIN/ SPIRAMYCIN/ TELITHROMYCIN | AMR BETA-LACTAM | AMR BLEOMYCIN | AMR CARBAPENEM | AMR CEPHALOSPORIN | AMR EFFLUX | AMR FOSFOMYCIN | AMR GENTAMICIN | AMR KANAMYCIN | AMR PHENICOL/ QUINOLONE | AMR QUINOLONE | AMR RIFAMYCIN | AMR STREPTOMYCIN | AMR SULFONAMIDE | AMR TETRACYCLINE | AMR TRIMETHOPRIM | STRESS COPPER | STRESS COPPER/ SILVER | STRESS MERCURY | STRESS NA | STRESS ORGANOMER-CURY | STRESS QUATERNARY AMMONIUM | STRESS SILVER | STRESS TELLURIUM | VIRULENCE NA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 24ARS_CRH0030 | NA | NA | mph(A) | blaOKP-B | NA | NA | blaCTX-M-15 | kdeA, emrD | fosA | NA | NA | oqxA, oqxB | qnrS1 | NA | aadA2, aph(6)-Id, aph(3")-Ib | sul1, sul2 | tet(A) | dfrA12 | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | NA | fieF | NA | qacEdelta1 | silE, silP | terB, terC, terD, terE | NA |
| 24ARS_DMC0098 | aac(6')-Ib-cr5 | NA | mph(A) | blaSHV-11, blaTEM-1 | NA | NA | blaCTX-M-15 | kdeA, emrD | fosA | aac(3)-IId | NA | oqxA, oqxB25 | NA | arr-3 | aadA16 | sul1 | tet(A) | NA | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | NA | fieF | NA | qacEdelta1 | silE, silP | terB, terC, terD, terE | NA |
| 24ARS_GMH0029 | aac(6')-Ib-cr | rmtB1 | mph(A) | blaSHV-11 | ble | blaNDM-7 | blaCTX-M-15, blaOXA-1 | kdeA, emrD | fosA | aac(3)-IIe | NA | oqxA, oqxB | qnrB6 | arr-3 | aadA16 | sul1 | tet(A) | NA | NA | NA | NA | fieF | NA | qacEdelta1 | NA | NA | NA |
| 24ARS_JLM0018 | aac(6')-Ib-cr5 | NA | mph(A) | blaSHV-11 | ble | blaNDM-5 | blaCTX-M-15, blaOXA-1 | kdeA, emrD | fosA | aac(3)-IId | NA | oqxA, oqxB32 | qnrS1, qnrB6 | arr-3 | aadA16, aadA2, aph(3")-Ib | sul1 | tet(A) | dfrA12 | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | merP, merT, merR | fieF | merC | NA | silE, silP | terB, terC, terD, terE | ybtP, ybtQ |
| 24ARS_JLM0020 | NA | NA | mph(A) | blaOKP-B | NA | NA | blaCTX-M-15 | emrD, kdeA | fosA | NA | NA | oqxA, oqxB | qnrS1 | NA | aadA2, aph(3")-Ib, aph(6)-Id | sul1, sul2 | tet(A) | dfrA12 | pcoS, pcoR, pcoD, pcoC, pcoB, pcoA | silA, silB, silF, silC, silR, silS | NA | fieF | NA | qacEdelta1 | silP, silE | terB, terC, terD, terE | NA |
| 24ARS_NKI0050 | NA | NA | NA | blaSHV-1 | NA | NA | NA | emrD, kdeA | fosA | NA | NA | oqxA, oqxB25 | NA | NA | NA | NA | NA | NA | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | NA | fieF | NA | NA | silE, silP | terE, terD, terC, terB | ybtQ, ybtP, iroB, iroC, iroD, iroN, pag-344, mrpC, mrpA, iutA, iucC, iucB, iucA |
| 24ARS_NKI0051 | aac(6')-Ib-cr5 | NA | mph(A) | blaSHV-28 | ble | blaNDM-5 | blaCTX-M-15, blaOXA-1 | emrD, kdeA | fosA | aac(3)-IIe | NA | oqxA, oqxB | qnrS1, qnrB1 | NA | aadA2, aph(6)-Id, aph(3")-Ib | sul1, sul2 | NA | dfrA12 | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | NA | fieF | NA | qacEdelta1 | silE, silP | terB, terC, terD, terE | NA |
| 24ARS_STU0024 | NA | NA | NA | blaSHV-11 | NA | NA | blaCTX-M-15 | kdeA, emrD | fosA | NA | aph(3')-Ia | oqxA, oqxB32 | qnrS1 | NA | aph(3")-Ib, aph(6)-Id | sul2, sul1 | NA | dfrA7 | pcoA, pcoB, pcoC, pcoD, pcoR, pcoS | silS, silR, silC, silF, silB, silA | NA | fieF | NA | qacEdelta1 | silE, silP | terB, terC, terD, terE | ybtQ, ybtP |

***Acinetobacter pittii***

| sample_id | AMR CARBAPENEM | AMR CEPHALOSPORIN | AMR EFFLUX | AMR FOSFOMYCIN | AMR SPECTINO-MYCIN/ STREPTOMYCIN | STRESS NICKEL |
|---|---|---|---|---|---|---|
| 24ARS_STU0027 | blaOXA | blaADC | amvA, adeE, adeD | abaF | ant(3”)-IIa | nreB |