

Supplementary File S2: A total of 91 MCR-1 proteins of *E. coli* origin retrieved from NCBI database.

>strain_L40_MCR-1.1_Nigeria_1

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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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>strain_L39_MCR-1.1_Nigeria_2

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AAGACCGCACCGCATTCATCCGCTGA

>MT070408.1 Escherichia coli strain L36 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAGACCGCACCGCATTTCATCCGCTGA

>MT070407.1 Escherichia coli strain L29 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
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AAGACCGCACCGCATTTCATCCGCTGA

>MT070406.1 Escherichia coli strain L27 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG

ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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AAGACCGCACCGCATTTCATCCGCTGA

>MT070405.1 Escherichia coli strain L26 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MT070404.1 Escherichia coli strain L23 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete
cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAGACCGCACCGCATTTCATCCGCTGA

>MN879260.1 Escherichia coli strain SAUVM_E7 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, partial cds

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AAGACCGCACCGCATTCATCCGCTGA

>MN879256.1 Escherichia coli strain SAUVM_E2 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele,
partial cds

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>MN879255.1 Escherichia coli strain SAUVM_E1 MCR-1 family phosphoethanolamine--lipid A transferase (mcr-1) gene, partial cds

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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MN367316.1 Escherichia coli strain AF19 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA

AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTAAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
ATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATAA
GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
GTGCGCCAAAAGATAACCATTTATCACGCCAAAGACGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTG
GTGTTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
CAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTCA
GCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAATACCAAGAAAATGTGCTGGATACGCTGGATCGCTTGGGC
GTAAGTATCTTGTGGCGTGATAATAATTCGGA CTCAAAGGCGTGATGGATAAGCTGCCAAAAGCGCAATTTGCCGATTA
TAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATAACGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MN367315.1 Escherichia coli strain AF17 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGT CAGTCCGTTTGTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC

CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
ATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATAA
GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
GTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTG
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AAGACCGCACCGCATTTCATCCGCTGA

>MN367313.1 Escherichia coli strain AF15 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCACTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
ATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATAA
GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
GTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTG
GTGTTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
CAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTCA
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GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA

ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
GGCAACCGATAACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MH484519.1 Escherichia coli strain P0001 plasmid pP0001 insertion sequence ISAp11 transposase (tnpA) gene, complete cds; and
phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) and hypothetical protein genes, complete cds

CTTAATCACGGATTCACTCGTGAAATGGCAGAAGATGCTCTTGGAACAAATTTGTCCAGGCCAGAGAAGAACATCTGGA
ATTGCAGCAACAGCGTGACAATTCACAGGACATGCACTAATTAAGAAAAAAGCCCGGTTTTCGGGCTTTTAAGAGCTGA
ATTTACAATCCAAGTGCAACAAAAAAGAAGTACTCATCACTAGAATATAATTTTGTTCACACAAAAACCAATTCCA
AATGATGAGTACTTCCTACCGACATCTTACAATAAACGAGCGAGAAAAGATAATGATTTTACTCGCACAGGGCAAAAAAC
AAGCAGAAATTGCCAAAGCACTGGGACGTAGCTCCAGCACCATTTCTCGCGAGCTGAAACGACACGCTCTAGAAAGCTAC
AGTGCAACGAACGCACAAAACAGCTATTTGAAGCATCGTCAAAATAGCAAAGCACAGCGCAAATTAGAGCAGCCTGAATA
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CTGAATTATCCATTAGTTATTCAACCATTTATCGTGGTATTTATTCAGGGTTGTTTGATATAGGCGAACGCAAAGCCAGT
CGCAAACCTGCGCCACAAAGGCAAAACACGGCATAAAAAAATCATCATGAAAAACGTGGCAAATTCAGATATCCAACC
A
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GTGGAGCTTGTTTGCTGACGCTGACGGAACGCAAAAGTCGTTTTGAGTTGGTGAAGAAAATTCCTGCCAAAAAAGCCGAA
GCAGTCCAAAAAGCCATGATTGAATTGCTGGATTACATATATTGCGGTCAATTACGCCAGACCGTGGTAAAGAATTTGC
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ATGAAAATACAAATGGGTACTTCGTGAATACTTTCCGAAGCACCAAGACATCAATCAGTGGAGCGAAGTTGATATTCAA
CAGGTGATCAATAAACTGAATTTACGACCACGTAAATGTTTAGGTTGGAAAACACCTTATGAAGTTTACTTCAAAAAATC
GTTGCACTTGGTTTGACAATTCAAGATACAAATTATAAATACTCTCAAGTGTATATTCAGTATGGGATTGCGCAATGATT
GCCTAATAAAATTTCTGAAATATTTCTGTATCGCATAATTTTTTATATCAGATAAATTGTACTGGATTTCTTAAAAAATT
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AAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTA
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CAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGA
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TGCCAATCTACTCGGTGGGTAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTTATCACGCC
AAAGACGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTTCGTCGTCGGTGAGACGGCACGCGC
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GGACTCAAAGGCGTGATGGATAAGCTGCCAAAAGCGCAATTTGCCGATTATAAATCCGCGACCAACAACGCCATCTGCA
ACACCAATCCTTATAACGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAA

GATATGCTGATCATGCTGCACCAAATGGGCAATCACGGGCCTGCGTATTTTAAGCGATATGATGAAAAGTTTGCCAAATT
CACGCCAGTGTGTGAAGGTAATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTG
CCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTC
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CAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACG
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CTCCCTGTATTTTTTCCAAACCCACCGCACACTCCATTTCGTATTATGGGCGGTGGGGTGGGGTTTGTTATGCCGTATTTA
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GATTGATCTGATGGTCGCTGATTGGTTTTATCTGGGTATGGGGCATTGGATGGTTGCCAAGCAAGCTTTTTTGCCAGATT
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GGTGCTGACTTTGATCCTAGTGCCGACAGTTGTCGCGTCATTGAAGGCATATACTCATGTGGTCTGCCCTGTGCATTTGA
CGATTTTTGATGGTACGCTGCCGTATTTGCCGATGCTTGATAGTATGCGTAACACCATTCTGATAAGTGCTTTCCTGCG
GCGCATGCCAGTAGCGGATTTGCGCTGTTTGCCTTTGCGTTTGCGCCAAGTTTGCGCCGCGTCGTGGTGCGATCATCAT
CGTGGTGATGGCATTGGGCTGGGCGATGGGCTGCTATAAGATGATTATTGGCGATCATTTTTTGAGCCATACGGTGGTGT
CGATGATGCTTGCGTGGGCGATGTCGGCAGGGCTTGCGTGGGTGTTTTTAAGAAGGGTGAACAAGTTCAAGGAAAAAAA
ATCAACCCCAAACAGAAATAACAGCTACAAAAATGGACAGTAATAATGCAATAAAAGTAATGTTGAGCCATATGTTGGAC
GAGA

>MK405590.1 Escherichia coli strain CR4 plasmid phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene, mcr-1.1 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTGAGTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
ATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATAA
GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
GTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTG
GTGTTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
CAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTCA
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GTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAGGCGTGATGGATAAGCTGCCAAAAGCGCAATTTGCCGATTA
TAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATAACGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAG
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GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA
ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT

GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>LC427672.1 Escherichia coli plasmid pIVRIKOL-2 mcr-1 gene for phosphoethanolamine transferase MCR1, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
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GTGTTGTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
CAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTCA
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AAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTAATGAGCTTGCCAAGTGCGAACATCAGTCCTT

GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA
ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MH602243.1 Escherichia coli strain TA007 isolate R54 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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GTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAGGCGTGATGGATAAGCTGCCAAAAGCGCAATTTGCCGATTA

TAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATAACGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAG
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ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTCATCCGCTGA

>MH602242.1 Escherichia coli strain TA007 isolate R53 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

ATCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTG
TTCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCC
ATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATC
ATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTT
ATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCA
GCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTG
GGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCA
GTCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGT
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CAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATG

GCTATGAGCGCGATACTTTCCACAGCTTGCCAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCACA
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TGCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGCTGCA
CCAAATGGGCAATCACGGGCCTGCGTATTTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTA
ATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCT
CAAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCT
GGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTTTCT
GGACGGATAAGCAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTA
AAGCTGTTTGATGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAA
CCCACCGCACACTCCATTCGTAT

>MH602241.1 Escherichia coli strain TA007 isolate R51 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

TCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGT
TCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCA
TCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCA
TCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTATTTTACTGACACTTA
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GGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAG
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AGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAACC
AAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTTCGTTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGG
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CGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAATACCAAGAA
AATGTGCTGGATACGCTGGATCGCTTGGGCGTAAGTATCTTGTGGCGTGATAATAATTCCGACTCAAAGGCGTGATGGA
TAAGCTGCCAAAAGCGCAATTTGCCGATTATAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATAACGAAT
GCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGCTGCAC
CAAATGGGCAATCACGGGCCTGCGTATTTTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTAA
TGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTC
AAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTG
GGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTTTTCTG
GACGGATAAGCAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAA
AGCTGTTTGATGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAAC
CCACCGCACACTCCATT

>MH602240.1 Escherichia coli strain TA007 isolate R50 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

TATCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTT
GTTCTTGTGGCGAGTGTGCGGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCC

CATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTAT
CATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGTCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACT
TATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAACGC
AGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTT
GGGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGC
AGTCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGG
TAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAA
CCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAAT
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ATCGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAATACCAAG
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AATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGC
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TGGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTC
TGGACGGATAAGCAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATT
AAAGCTGTTTGATGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTTTTTCCAA

ACCCACCGCACACTCCATTCGTATT

>MH602239.1 Escherichia coli strain TA007 isolate R49 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

ATCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTG
TTCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCC
ATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATC
ATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTT
ATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCA
GCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTG
GGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCA
GTCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGT
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CAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTTCGTTCGTTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATG
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TGCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGCTGCA
CCAAATGGGCAATCACGGGCCTGCGTATTTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTA
ATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTCATCGCT

CAAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCT
GGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTTTTCT
GGACGGATAAGCAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTA
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CCCACCGCACACTCCATTCGTA

>MH602238.1 Escherichia coli strain TA007 isolate R48 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

TATCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTT
GTTCTTGTGGCGAGTGTGCGGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCC
CATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTAT
CATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACT
TATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAACGC
AGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTAAAGGTGGATTATCCGACTT
GGGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGC
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CCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAAT
GGCTATGAGCGCGATACTTTCCACAGCTTGCCAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCGGCAC
ATCGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAATACCAAG
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AATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGC
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TGGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGAACAGCGCAGTGTGCCTGCATTTTTC
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ACCCACCGCACACTCCATTCGTATTA

>MH602237.1 Escherichia coli strain TA007 isolate R45 plasmid phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
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AAGACCGCACCGCATTTCATCCGCTGA

>MH395740.1 Escherichia coli plasmid pRMCR55 phosphoethanolamine transferase MCR-1 (mcr-1) gene, complete cds

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TCCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAA
CCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACG
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TGACACTTATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTAT
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CGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTA
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ATGCTGCACCAAATGGGCAATCACGGGCCTGCGTATTTTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTG
TGAAGGTAATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATT
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CATTATTAAAGCTGTTTGATGTCACCGCGGACAAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTT
TTTCAAACCCACCGCACACTCCATTCGTATTATGG

>KX580711.1 Escherichia coli strain ZJ276 plasmid transposase, phosphoethanolamine transferase (mcr-1), and hypothetical protein genes, complete cds

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TCCAAATGATGAGTAC

>LC193130.1 Escherichia coli tnpA, mcr-1 genes for transposase, phosphoethanolamine transferase, hypothetical protein, complete cds, strain: NCGM-EC88

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>KX886345.1 Escherichia coli transposase (tnpA), MCR-1 (mcr-1), hypothetical protein, and transcriptional regulator (ydfA) genes,
complete cds

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>KX458104.1 Escherichia coli strain NDM132 plasmid pls1 insertion sequence ISAp1 integrase (int) gene, complete cds; mcr-1 (mcr-1) and hypothetical protein genes, complete cds; insertion sequence truncated ISAp1, complete sequence; insertion sequence ISKpn26 transposase (tnp) gene, complete cds; and insertion sequence truncated ISAp1, complete sequence

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>NG_050417.1 Escherichia coli SHP45 pHNSHP45 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.1, complete CDS

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CAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGA
TGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAACCCACCGCACA
CTCCATTTCGTATTATGGGCGGTGGGGTGGGGTTTGTATGCCGTATTTATCAAATAAACGCCTACT

>LC114017.1 *Escherichia coli* mcr-1 gene for phosphoethanolamine-lipid A transferase MCR-1, complete cds, strain: M165

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG

ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
TGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTG
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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GTGTTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
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>NG_068217.1 Escherichia coli 803_18 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.26, complete CDS

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TCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAA
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CACCGCGGACAAAGTCAAAGACCGCACCGCATTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAACCCACCGCACACTC
CATTCGTATTATGGGCGGTGGGGTGGGGTTTGTTATGCCGTATTTATCAAATAAACGCCTACT

>MN879258.1 Escherichia coli strain SAUVM_E5 MCR-1 family phosphoethanolamine--lipid A transferase (mcr-1) gene, partial cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATNCATCCGCTGA

>KY685070.1 Escherichia coli strain HKSH_MCR_161103180_EC phosphoethanolamine lipid A transferase (mcr1) gene, mcr1.8 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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GTGTTTCGTCGTGCGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGC
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>NG_068218.1 Escherichia coli 844_18 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.27, complete CDS

CGCATAATTTTTTATATCAGATAAATTGTACTGGATTTCTTAAAAAATTGCAGTATAATTGCCGCAATTATCCCACCGTT
TATTTTTTGAGTAGTTTCTCATGATGCAGCATACTTCTGTGTGGTGCCGACGCTCGGTCAGTCCGTTTGTTCTTGTGGCG
AGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAA
TCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCT
ATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTC
TATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCAT
GCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTAAAGGTGGATTATCCGACTTGGGGCAAGGGTT
TGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCC

AGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAGCTTGCCAG
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CGGTATGCTCGTTGGCTTAGATGACTTTGTGCGTGCCAATAACGGCAAAGATATGCTGATCATGCTGCACCAAATGGGCA
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CAAACCTGGCATCACGCCAATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGA
TGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAACCCACCGCACA
CTCCATTTCGTATTATGGGCGGTGGGGTGGGGTTTGTATGCCGTATTTATCAAATAAACGCCTACT

>NG_065944.1 Escherichia coli NIG-EC49 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.22, complete CDS

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG

ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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AAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTAATGAGCTTGCCAAGTGCGAACATCAGTTCTT
GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA
ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAA ACTGGCATCACGCCAAT
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AAGACCGCACCGCATTTCATCCGCTGA

>MN017134.1 Escherichia coli strain NIG-EC49 phosphoethanolamine--lipid A transferase MCR-1.22 (mcr-1) gene, mcr-1.22 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCACTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
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AAGACCGCACCGCATTTCATCCGCTGA

>NG_065451.1 Escherichia coli QHYN2016-F200 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.21, complete CDS

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAGACCGCACCGCATTTCATCCGCTGA

>NG_065450.1 Escherichia coli mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.20, complete CDS

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CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTCATCCGCTGA

>MK965884.1 Escherichia coli strain CY307223 truncated MCR family phosphoethanolamine--lipid A transferase (mcr) gene,
complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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>MK965883.1 Escherichia coli strain QHYN2016-F200 phosphoethanolamine--lipid A transferase MCR-1.21 (mcr-1) gene, mcr-1.21 allele, complete cds

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>MK754161.1 Escherichia coli strain CTX148 plasmid pCTX148 phosphoethanolamine--lipid A transferase MCR-1.1 (mcr-1) gene,
mcr-1.1 allele, complete cds

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>NG_064789.1 Escherichia coli sc12-96 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.18, complete CDS

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>NG_064788.1 Escherichia coli ECK2 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.17, complete CDS

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>NG_064787.1 Escherichia coli EC32 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.16, complete CDS

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>MK568463.1 Escherichia coli strain ECK2 phosphoethanolamine--lipid A transferase MCR-1.17 (mcr-1) gene, mcr-1.17 allele,
complete cds

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ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>MK568462.1 Escherichia coli strain EC32 phosphoethanolamine--lipid A transferase MCR-1.16 (mcr-1) gene, mcr-1.16 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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AAGACCGCACCGCATTTCATCCGCTGA

>MG198057.1 Escherichia coli strain SFV97 phosphoethanolamine transferase MCR-1.11 (mcr-1) gene, mcr-1.11 allele, complete cds
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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGCTGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA

AAGACCGCACCGCATTTCATCCGCTGA

>NG_057466.1 Escherichia coli 12-AB00501 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.13, complete CDS

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>NG_056412.1 Escherichia coli EC15-101 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.12, complete CDS

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTCATCCGCTGA

>MG384739.1 Escherichia coli strain 12-AB00501 phosphoethanolamine--lipid A transferase MCR-1.13 (mcr-1) gene, mcr-1.13 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCTTGTTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>KY780959.1 Escherichia coli strain LV23529 phosphoethanolamine-lipid A transferase MCR-1.9 (mcr-1.9) gene, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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AAGACCGCACCGCATTTCATCCGCTGA

>MG517528.1 Escherichia coli strain B11 plasmid pBF123 phosphoethanolamine transferase (mcr-1) gene, partial cds

GCGGATGAATGCGGTGCGGTCTTTGACTTTGTCCGCGGTGACATCAAACAGCTTTAATAATGTCGGCGTGATCGCGTCAT
GGGTCAGGACGGTATCGGTTGCCATTGGCGTGATGCCAGTTTGCTTATCCGTCCAGAAAAATGCAGGCACACTGCGCTGT
TCTTTTGGTGCAAAGGCATTTGGCATAACCATGTAGATAGACACCGTTCTCACCCAGACTTTTCGCCATGATCGCTGACATA
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CGCGCCAAAGAGCACGACAGCGATCGTCAGCACAAAGCCGAGATTGTCCGCGATGGGATAGGTTTGGCTGATTTTATCAA
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C

CACACAGAAGTATGCTGCATCAT

>LC337668.1 Escherichia coli EC15-101 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.12, complete cds

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AAGACCGCACCGCATTTCATCCGCTGA

>KY271416.1 Escherichia coli strain Ec1670 phosphoethanolamine--lipid A transferase MCR-1.5 (mcr-1) gene, mcr-1.5 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
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AAGACCGCACCGCATTTCATCCGCTGA

>NG_055582.1 Escherichia coli LV23529 pLV23529-MCR-1.9 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.9,
complete CDS

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TGCGTAAGCCACGCCTAGTGGTGTTTCGTTCGTTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAATGGCTATGAGCGC
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CGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGCTGCACCAAATGGGCA
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TGTCACCGCGGACAAAGTCAAAGACCGCACCGCATTTCATCCGCTGATTTCTCCCTGTATTTTTTCCAAACCCACCGCACA
CTCCATTTCGTATTATGGGCGGTGGGGTGGGGTTTGTATGCCGTATTTATCAAATAAACGCCTACT

>KY400027.1 Escherichia coli strain M4 Mcr-1.3 (mcr-1.3) gene, complete cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTGGTTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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AAGACCGCACCGCATTCATCCGCTGA

>NG_054697.1 Escherichia coli ST101 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.8, complete CDS

ATGATGCGGCATACTTCTGTGTGGTACCGACGCTCGGTCAGTCCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>NG_054678.1 Escherichia coli WCHEC1604 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.7, complete CDS

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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AAGACCGCACCGCATTTCATCCGCTGA

>KY685071.1 Escherichia coli strain HKSH_MCR_161114268_EC phosphoethanolamine lipid A transferase (mcr1) gene, mcr1.9 allele, complete cds

ATGATGCAGCATACTTCTGTGTGGTATCGACGCTCGGTCAGTCCGTTTGTCTTGTGGCGAGTGTTGCCGTTTTCTTGAC

CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
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GCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTAAAGCTTGCCAGTATTGAGTATAAAAAAGCCA
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA

AAGACCGCACCGCATTTCATCCGCTGA

>KY683842.1 Escherichia coli strain ST101 phosphoethanolamine transferase (mcr-1.8) gene, complete cds

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CGCGACCGCCAATCTTACCTTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
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GGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTATTAAAGCTGTTTGATGTCACCGCGGACAAAGTCA
AAGACCGCACCGCATTTCATCCGCTGA

>NG_052664.1 Escherichia coli WCHec1606 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.4, complete CDS

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
TCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTG
ATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCA
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AAGACCGCACCGCATTCATCCGCTGA

>NG_052663.1 Escherichia coli 1256822 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.5, complete CDS

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AAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTG
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AAGACCGCACCGCATTTCATCCGCTGA

>KY488488.1 Escherichia coli strain WCHEC1604 phosphoethanolamine--lipid A transferase MCR-1.7 (mcr-1) gene, mcr-1.7 allele, complete cds

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CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAGACCGCACCGCATTTCATCCGCTGA

>KX242348.1 Escherichia coli strain A434-59 plasmid phosphoethanolamine-lipid A transferase MCR-1 (mcr-1) gene, complete cds

TGTATGGGATTGCGCAATGATTGCCTAATAAAATTTTTGAAATATTTCTGTATCGCATAATTTTTTATATCAGATAAATT
GTACTGGATTTCTTAAAAAATTGCAGTATAATTGCCGCAATTATCCCACCGTTTATTTTTTGAGTAGTTTCTCATGATGC
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GCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGT
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GGGGTTTGTATGCCGTATTTATCAAATAAACGCCTAC

>KY041856.1 Escherichia coli strain WCHEC1606 phosphoethanolamine--lipid A transferase MCR-1.4 (mcr-1) gene, mcr-1.4 allele, complete cds

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AAGACCGCACCGCATTTCATCCGCTGA

>KY283125.1 Escherichia coli strain 1256822 phosphoethanolamine--lipid A transferase MCR-1.5 (mcr-1) gene, mcr-1.5 allele,
complete cds

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>MT770924.1 Escherichia coli isolate 1506 phosphoethanolamine--lipid A transferase MCR-1.28 (mcr-1) gene, mcr-1.28 allele,
complete cds

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>NG_067237.1 Escherichia coli SAUVM_E6 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.25, complete CDS

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AAGACCGCACCGCATTTCATCCGCTGA

>MN879259.1 Escherichia coli strain SAUVM_E6 phosphoethanolamine--lipid A transferase MCR-1.25 (mcr-1) gene, mcr-1.25 allele, partial cds

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>MF084991.1 Escherichia coli strain N8114 Mcr-1 (mcr-1) gene, mcr-1.9 allele, complete cds

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>NG_052861.1 Escherichia coli HeN867 pHeNE867 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.3, complete CDS

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>NG_055784.2 Escherichia coli 347-43491A p977565 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.11, complete CDS

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>MF197562.1 Escherichia coli strain MH2-19 phosphoethanolamine transferase (mcr-1) gene, partial cds

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CGCAC

>NG_067236.1 Escherichia coli SAUVM_E3 mcr-1 gene for phosphoethanolamine--lipid A transferase MCR-1.24, complete CDS

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GATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCA
ATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTATG
CCAAATGCCTTTGCACCAAAAGAACAGCGCAGTGTGCCTGCATTTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCAAT
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AAGACCGCACCGCATTTCATCCGCTGA

>MN879257.1 Escherichia coli strain SAUVM_E3 phosphoethanolamine--lipid A transferase MCR-1.24 (mcr-1) gene, mcr-1.24 allele, partial cds

ATGATGCAGCATACTTCTGTGTGGTACCGACGCTCGGTTCAGTCCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGAC
CGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGA
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AAGACCGCACCGCATTTCATCCGCTGA

>MH447366.1 Escherichia coli strain F9 phosphoethanolamine transferase MCR1 (mcr1) gene, partial cds

TCGTTTGTTCCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAAC
CTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGC
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ATTATTAAAGCTGTTGA

>MH447367.1 Escherichia coli strain F33 phosphoethanolamine transferase MCR1 (mcr1) gene, partial cds

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CTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGC
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AAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATC
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A

>KY218739.1 Escherichia coli strain W5-6 phosphoethanolamine--lipid A transferase MCR-1 (mcr-1) gene, partial cds

TTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTA
TCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGT
TATCATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGAC
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CGCAGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGA
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GTCTGGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTT
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>KY218738.1 Escherichia coli strain W2-5 phosphoethanolamine--lipid A transferase MCR-1 (mcr-1) gene, partial cds
TTTGTTCCTTGTTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTA
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>KY218737.1 Escherichia coli strain BE2-5 phosphoethanolamine--lipid A transferase MCR-1 (mcr-1) gene, partial cds
TTTGTTCCTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTA
TCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGT
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AAGAAAATGTGCTGGATACGCTGGATCGCTTGGGCGTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAGGCGTG
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CGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGC
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CGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAA
GTCTGGGTGAGAACGGTGTCTATCTACATGGTATGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTT
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>MK030127.2 Escherichia coli strain SS30 MCR family phosphoethanolamine--lipid A transferase (mcr) gene, partial cds

TCTTGTGGCGAGTGTGCGGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCA
TCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCA
TCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACTTA
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TCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGGTA
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>MK030126.2 Escherichia coli strain SS20 MCR family phosphoethanolamine--lipid A transferase (mcr) gene, partial cds
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AAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCT
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GCGATCACGCCGACATTA

>KY013597.1 Escherichia coli strain C2-007R phosphoethanolamine--lipid A transferase (mcr-1) gene, partial cds

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AGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGAT
CACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTT
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CGCGGTACAAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTTCGTGCTCGGTGAGACGGCACGCGCCGATC

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>MN148432.1 Escherichia coli strain RShimy4 MCR-1 family phosphoethanolamine--lipid A transferase (mcr-1) gene, partial cds

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GGTGACCAGTTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAG
CCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCT
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TTAGCAATGTCACATCGTGCGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTAT
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>MF134664.1 Escherichia coli strain 1-IM phosphoethanolamine transferase gene, partial cds

CACTTATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAA
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TGGGTAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATAACCATTTATCACGCCAAAGACGCGGTACAA
GCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTT
CAATGGCTATGAGCGCGATACTTTCCACAGCTTGCCAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTGCG
GCACATCGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAATAC

CAAGAAAATGTGCTGGATACGCTGGATCGCTTGGGCGTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAAGGCGT
GATGGATAAGCTGCCAAAAGCGCAATTTGCCGATTATAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATA
ACGAATGCCGCGATGTCGGTATGCTCGTTGGCTTAGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATG
CTGCACCAAATGGGCAATCACGGGCCTGCGTATTTTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGA
AGGTAATGAGCTTGCCAAGTGCGAACATCAGTCCTTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTCA
TCGCTCAAAGTATCCAGTGGCTGCAGACGCACAGCAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAA
AGTCTGGGTGAGAACGGTGTCTATC

>MG763104.1 Escherichia coli plasmid Mcr-1 (mcr-1) gene, partial cds

CCGTTTGTCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAAC
CTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGC
TGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTACT
GACACTTATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATT
AAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATC
CGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCG
TTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTC
GGTGGGTAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTATCACGCCAAAGACGCGGTAC
AAGCAACCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTTCGTCGTGCGTGAGACGGCACGCGCCGATCATGTCAGC
TTCAATGGCTATGAGCGCGATACTTTCCACAGCTTGCCAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTG
CGGCACATCGACGGCGTATTCTGTGCCGTGTATGTTTCAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGCCAAAT

ACCAAGAAAATGTGCTGGATACGCTGGATCGCTTGGGCGTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAAGGC
GTGATGGATAA

>MH425550.1 Escherichia coli strain 298 clone MCR1-3-CLR5-1-F_H03 polymyxin resistance protein MCR-1 (mcr-1) gene, partial cds

GTTCTTGTGGCGAGTGTGCGGTTTTCTTGACCGCGACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCC
CATCGCGGACAATCTCGGCTTTGTGCTGACGATCGCTGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTAT
CATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTTTGCTATTAATCATGGGCGCGGTGACCAGTTATTTTACTGACACT
TATGGCACGGTCTATGATACGACCATGCTCCAAAATGCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGC
AGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCTACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTT
GGGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCGTGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGC
AGTCATTATGCCAGTTTCTTTCGCGTGCATAAGCCGCTGCGTAGCTATGTCAATCCGATCATGCCAATCTACTCGGTGGG
TAAGCTTGCCAGTATTGAGTATAAAAAAGCCAGTGCGCCAAAAGATACCATTTATCACGCCAAAGACGCGGTACAAGCAA
CCAAGCCTGATATGCGTAAGCCACGCCTAGTGGTGTTCGTCGTCGGTGAGACGGCACGCGCCGATCATGTCAGCTTCAAT
GGCTATGAGCGCGATACTTTCCACAGCTTGCCAAGATCGATGGCGTGACCAATTTTAGCAATGTCACATCGTG

>MN148431.1 Escherichia coli strain RShimy3 MCR family phosphoethanolamine--lipid A transferase (mcr) gene, partial cds

CAGCTATCTGGGCGCGGATGAGTATGATGTCGATACCGACAAATACCAAGAAAATGTGCTGGATACGCTGGATCGCTTGG
GCGTAAGTATCTTGTGGCGTGATAATAATTCGGACTCAAAAGGCGTGATGGATAAGCTGCCAAAAGCGCAATTTGCCGAT
TATAAATCCGCGACCAACAACGCCATCTGCAACACCAATCCTTATAACGAATGCCGCGATGTCGGTATGCTCGTTGGCTT
AGATGACTTTGTCGCTGCCAATAACGGCAAAGATATGCTGATCATGCTGCACCAAATGGGCAATCACGGGCCTGCGTATT
TTAAGCGATATGATGAAAAGTTTGCCAAATTCACGCCAGTGTGTGAAGGTAATGAGCTTGCCAAGTGCGAACATCAGTCC

TTGATCAATGCTTATGACAATGCCTTGCTTGCCACCGATGATTTTCATCGCTCAAAGTATCCAGTGGCTGCAGACGCACAG
CAATGCCTATGATGTCTCAATGCTGTATGTCAGCGATCATGGCGAAAGTCTGGGTGAGAACGGTGTCTATCTACATGGTA
TGCCAAATGCCTTTGCACCAAAGAAGACAGCGCAGTGTGCCTGCATTTTTCTGGACGGATAAGCAAACCTGGCATCACGCCA
ATGGCAACCGATACCGTCCTGACCCATGACGCGATCACGCCGACATTA

>NG_051171.1 Escherichia coli KP37 pKP37-BE mcr-2 gene for phosphoethanolamine--lipid A transferase MCR-2.1, complete CDS

ACAGCCCCCTTTATTTATCTGCACAATATATCTAGATTCTACAACGACATTGAAGTATAATCGCCAACTTGTATCGTATAT
GGCATTGTGGGTAATTTCTATGACATCACATCACTCTTGGTATCGCTATTCTATCAATCCTTTTGTGCTGATGGGTTTG
GTGGCGTTATTTTTGGCAGCGACAGCGAACCTGACATTTTTTGAAAAAGCGATGGCGGTCTATCCTGTATCGGATAACTT
AGGCTTTATCATCTCAATGGCGGTGGCGGTGATGGGTGCTATGCTACTGATTGTCGTGCTGTTATCCTATCGCTATGTGC
TAAAGCCTGTCCTGATTTTGCTACTGATTATGGGTGCGGTGACGAGCTATTTTACCGATACTTATGGCACGGTCTATGAC
ACCACCATGCTCCAAAATGCCATGCAAACCGACCAAGCCGAGTCTAAGGACTTGATGAATTTGGCGTTTTTTGTGCGAAT
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TTTCGGGTGCATAAGCCAGTGCGTTTTTATATCAACCCGATTACGCCGATTTATTCGGTGGGTAAGCTTGCCAGTATCGA
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GCCGTGTATGTTACAGCTATTTGGGTCAAGATGACTATGATGTCGATACCGCCAAATACCAAGAAAATGTGCTAGATACGC
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CAGTATTTTGATTATAAATCAGCAACCAACAATACCATCTGTAACACCAATCCCTATAACGAATGCCGTGATGTCGGTAT
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GAACACCAATCACTCATCAATGCCTATGACAATGCGCTACTTGCGACTGATGATTTTATCGCCAAAAGCATCGATTGGCT
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GGGCAAGGTCAAAGACCGCGCGGCATTTATCCAGTAAGTTATCATCATAACCCAATCTCAAGCCATCACACTACGGTATC
GTGTGATGGCGCAGGGCGGATTTTGCAATCTATTTTGCAATGTTTTTTTAGGAATGT

>NG_065452.1 Escherichia coli ECCTRSRTH05 mcr-2 gene for phosphoethanolamine--lipid A transferase MCR-2.3, complete CDS

TCAAAGTGATCTACTATTCCGAACAGTTATTTAGATTCTACAACGACATTGAAGTATAATCGCCAACTTGTATCGTCTAT
GGCAATTGCGGGTAACATCTATGACATCACATCACTCTTGGTATCGCTATTCTATCAATCCCTTTGTGCTGATGGGTTTG
GTGGCGTTATTTTTGGCAGCGACAGCGAACCTGACATTTTTTGAAAAAGCGATGGCGGTCTATCCTGTATCGGATAACTT
AGGCTTTATCATCTCAATGGCGGTGGCGGTGATGGGTGCTATGCTATTGATTGTTGTGCTATTATCCTATCGCTATGTGC
TAAAGCCTGTGCTGATTTTGCTGCTTATCATGGGTGCGGTGACGAGCTATTTTACCGATACTTATGGCACGGTCTATGAC
ACCACCATGCTCCAAAATGCCATGCAAACCGACCAAGCCGAGTCTAAAGACTTGATGAATTTGGCGTTTTTTGTGCGGAT
TATCGGGCTTGGCGTGTTGCCAAGTCTATTGGTTCGAGTTGCCAAAGTGGGTATCCAACATGGGGCAAAGCCTGATTC
AGCGTGCGATGACGTGGGGTGTCAGCCTTGTGTTGTTGCTTGTGCCGATTGGGTATTTAGCAGTCAGTATGCGAGTTTC
TTTCGGGTGCATAAGCCAGTGCGTTTTTATATCAACCCGATTACGCCGATTTATTCGGTGGGTAAGCTTGCCAGTATCGA

GTACAAAAAAGCCACTGCACCAACAGACACCATCTATCATGCCAAAGATGCCGTGCAGACCACCAAGCCTAGCGAGCGTA
AGCCCCGTCTAGTGGTGTTCGTCGTCGGTGAGACGGCGCGTGCTGACCATGTGCAGTTCAATGGCTATAGCCGTGAGACT
TTCCCGCAGCTTGCCAAAGTTGATGGCTTGGCGAACTTTAGCCAAGTGACATCGTGTGGCACATCGACGGCGTATTCTGT
GCCGTGTATGTTTCACTATTTGGGTCAAGATGACTATGATGTGCGATACCGCCAAATACCAAGAAAATGTGCTAGATACGC
TTGACCGCTTGGGCGTGGGTATCTTGTGGCGTGATAATAATTCAGACTCAAAGGCGTGATGGATAAGCTACCTGCTACG
CAGTATTTTGATTATAAATCAGCGACCAACAACACCATCTGTAACACCAACCCTTATAATGAATGTCGTGATGTCGGTAT
GCTTGTGGGCTTGATGACTATGTCAGCGCCAATAATGGCAAAGATATGCTCATCATGCTACACCAAATGGGCAATCATG
GGCCGGCGTACTTTAAGCGTTATGATGAGCAATTTACCAAATTCACCCCTGTGTGCGAAGGCAACGAGCTTGCCAAATGC
GAACATCAATCGCTCATCAATGCCTATGATAATGCACTGCTTGCCACCGATGATTTTATCGCCAAAAGTATCGATTGGCT
AAAAACACATGAAGCAAACCTACGATGTCGCCATGCTCTATGTCAGCGACCACGGCGAGAGCTTGGGCGAAAATGGTGTCT
ATCTGCATGGTATGCCAAATGCCTTTGCACCAAAAAGAACAACGAGCCGTACCTGTGTTTTTTTGGTCAAATAATACGACA
TTCAAGCCAACTGCCAGCGATACTGCATTGACCCATGATGCGATTACGCCGACATTGCTTAAGCTGTTTGATGTCACAGC
TGATAAGGTCAAAGACCGCACGGCATTATCCAGTAAGTTATCAGCATAACCCAATACCGAGCCATCACACTGCATTATC
GTGTGATGGCAAAGGGTAGATTTGCAACATTTTTTTTGGGCGTAATAGACATTTTTC

>KU323969.1 Escherichia coli strain 235 phosphoethanolamine transferase (mcr-1) gene, partial cds

TGCAGCATACTTCTGTGTGGTACCGACGCTCGGTGAGTCCGTTTGTCTTGTGGCGAGTGTTGCCGTTTTCTTGACCGCG
ACCGCCAATCTTACCTTTTTTGATAAAATCAGCCAAACCTATCCCATCGCGGACAATCTCGGCTTTGTGCTGACGATCGC
TGTCGTGCTCTTTGGCGCGATGCTACTGATCACCACGCTGTTATCATCGTATCGCTATGTGCTAAAGCCTGTGTTGATTT
TGCTATTAATCATGGGCGCGGTGACCAGTATTTTACTGACACTTATGGCACGGTCTATGATACGACCATGCTCCAAAAT

GCCCTACAGACCGACCAAGCCGAGACCAAGGATCTATTAAACGCAGCGTTTATCATGCGTATCATTGGTTTGGGTGTGCT
ACCAAGTTTGCTTGTGGCTTTTGTTAAGGTGGATTATCCGACTTGGGGCAAGGGTTTGATGCGCCGATTGGGCTTGATCG
TGGCAAGTCTTGCGCTGATTTTACTGCCTGTGGTGGCGTTCAGCAGTCATTATGCCAGTTTCTTTCGCGTGCATA