

Escherichia coli* – *Staphylococcus aureus* Shuttle Vector pCN38, Recombinant in *Staphylococcus aureus

Catalog No. NR-46128

Product Description: NR-46128 is a culture of *Staphylococcus aureus* (*S. aureus*), strain 4220 (RN9591, NRS591) containing the *Escherichia coli* (*E. coli*)-staphylococcal shuttle vector pCN38. Vector pCN38 contains the *E. coli* ColE1 replication origin and the *S. aureus* pT181 *cop-wt-repC* replicon. Vector pCN38 was deposited as resistant to ampicillin and chloramphenicol in *E. coli* and resistant to chloramphenicol in *S. aureus*.

Lot¹: 63341060

Manufacturing Date: 27FEB2015

TEST	SPECIFICATIONS	RESULTS
Phenotypic Analysis Cellular morphology Colony morphology ² Motility (wet mount)	Gram-positive cocci Report results Report results	Gram-positive cocci Circular, low convex, entire, smooth and cream (Figure 1) Non-motile
Confirmation of pCN38 Sequence Illumina [®] MiSeq [®] sequence (Figure 2, Table 1)	Report results	Consistent with pCN38 vector description ^{3,4}
Antibiotic Resistance Chloramphenicol (10 µg/mL)	Resistant	Resistant
Purity (post-freeze)⁵	Growth consistent with <i>S. aureus</i>	Growth consistent with <i>S. aureus</i>
Viability (post-freeze)²	Growth	Growth

¹NR-46128 was produced by inoculation of the deposited material in Casitone-Yeast broth containing 0.1 M glycerol phosphate and 10 µg/mL chloramphenicol and incubated for 24 hours at 37°C in an aerobic atmosphere. Broth inoculum was passaged once in Casitone-Yeast broth containing 0.1 M glycerol phosphate and 10 µg/mL chloramphenicol and grown for 21 hours at 37°C in an aerobic atmosphere with shaking at ~ 200 rpm to produce this lot.

²19 hours at 37°C in an aerobic atmosphere on Tryptic Soy agar with 10 µg/mL chloramphenicol

³Illumina[®] MiSeq[®] sequence was analyzed with CLC Genomics Workbench Version 7.0.2.

⁴pCN38 was sequenced and annotated by BEI Resources and is consistent with the vector described in Charpentier et al. "Novel Cassette-Based Shuttle Vector System for Gram-Positive Bacteria." *Appl. Environ. Microbiol.* 70 (2004): 6076-6085. PubMed: 15466553. The BEI Resources vector sequence was deposited into GenBank as NR-46128 (GenBank: KR781477).

⁵Purity of this lot was assessed for 7 days on Tryptic Soy agar with 5% defibrinated sheep blood at 37°C in an aerobic atmosphere

Figure 1: Colony Morphology



Date: 27 JUL 2016

Signature:



BEI Resources Authentication

ATCC[®], on behalf of BEI Resources, hereby represents and warrants that the material provided under this certificate has been subjected to the tests and procedures specified and that the results described, along with any other data provided in this certificate, are true and accurate to the best of ATCC[®]'s knowledge.

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Figure 2: Shuttle Vector pCN38

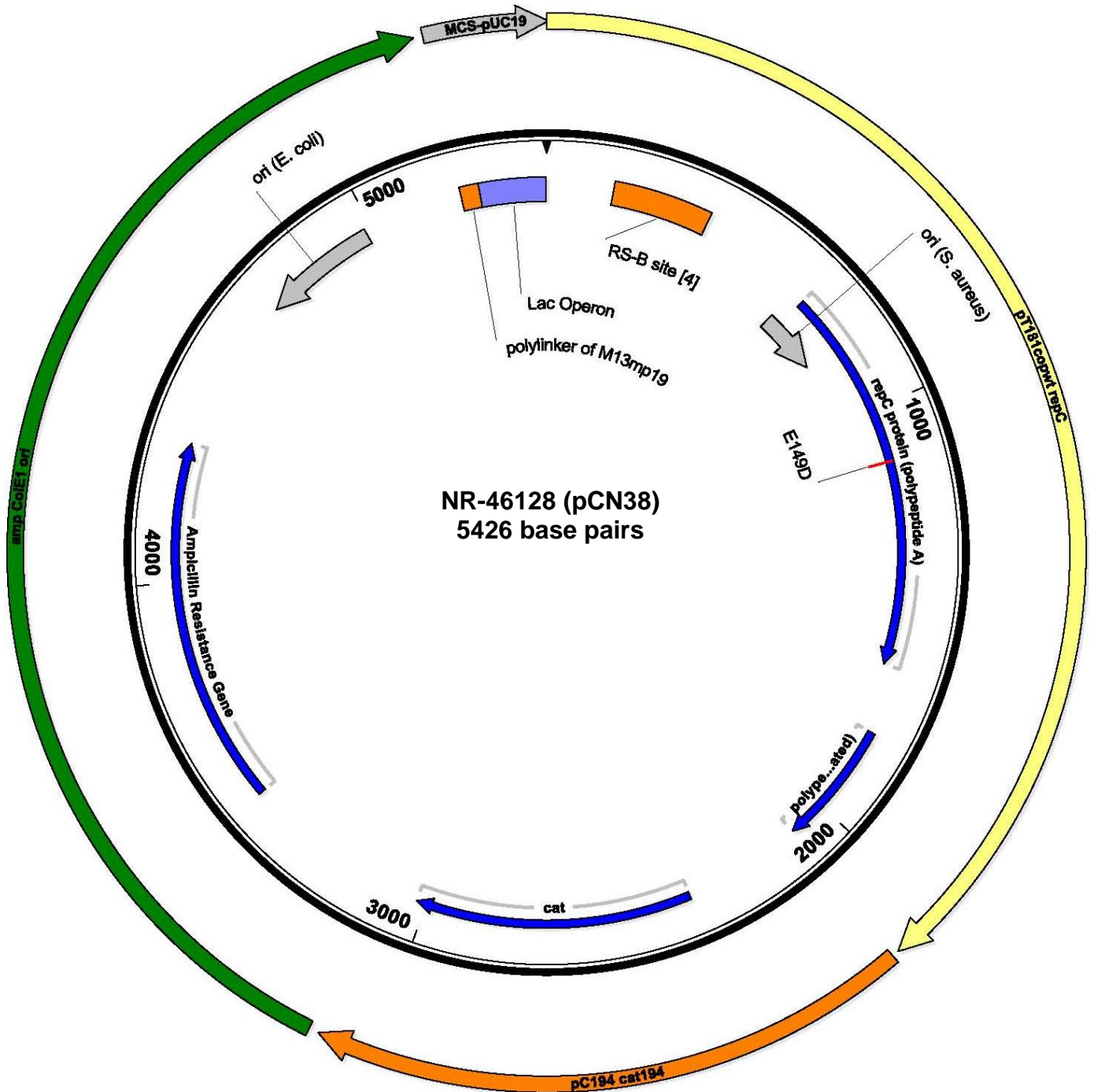


Table 1: Sequence of shuttle vector pCN38

1	CCTTTGCGGA	AAGAGTTAAT	AAGTTAACAG	AAGATGAACC	AAAACATAAT	50
51	GGTTTAGCAG	GAAACTTAGA	TAAAAAATG	AATCCAGAAT	TATATTCAGA	100
101	ACAGGAACAG	CAACAAGAAC	AACAAAAGAA	TCAAAAACGA	GATAGAGGTA	150
151	TGCACCTTATA	GAACATGCAT	TTATGCCGAG	AAAACCTTAT	GGTTGGAATG	200
201	GGCTATGTGT	TAGCTAACTT	GTTAGCGAGT	TGGTTGGACT	TGAATTGGGA	250
251	TAAATCCCAA	GAAAGTACCA	ACTCAACAAC	ACATAAAGCC	CTGTAGGTTT	300
301	CGACCAATAA	GGAAATGGGA	ATAAAGCAAT	AAAAGGAGTT	GAAGAAATGA	350
351	AATTCAGAGA	AGCCTTTGAG	AATTTTATAA	CAAGTAAGTA	TGTACTTGGT	400
401	GTTTTAGTAG	TTTTAACTGT	TTACCAGATA	ATACAAATGC	TTAAATAAAA	450
451	AAAGACTTGA	TCTGATTAGA	CCAAATCTTT	TGATAGTGTT	ATATTAATAA	500
501	CAAAATAAAA	AGGAGTCGCT	CACGCCCTGA	CCAAAGTTTG	TGAACGACAT	550
551	CATTCAAAGA	AAAAAACACT	GAGTTGTTTT	TATAATCTTG	TATATTTAGA	600
601	TATTTAAACGA	TATTTAAATA	TACATCAAGA	TATATATTTG	GGTGAGCGAT	650
651	TCCTTAAACG	AAATTGAGAT	TAAGGAGTCG	ATTTTTTATG	TATAAAAACA	700
701	ATCATGCAAA	TCATTCAAAT	CATTTGGAAA	ATCACGATTT	AGACAATTTT	750
751	TCTAAAACCG	GCTACTCTAA	TAGCCGGTTG	GACGCACATA	CTGTGTGCAT	800
801	ATCTGATCCA	AAATTAAGTT	TTGATGCAAT	GACGATCGTT	GGAAATCTCA	850
851	ACCGAGACAA	CGCTCAAGCC	CTTTTCTAAAT	TTATGAGTGT	AGAGCCCCAA	900
901	ATAAGACTTT	GGGATATTCT	TCAAACAAAG	TTTAAAGCTA	AAGCACTTCA	950
951	AGAAAAAGTT	TATATTGAAT	ATGACAAAGT	GAAAGCAGAT	AGTTGGGATA	1000
1001	GACGTAATAT	GCGTATTGAA	TTTAAATCCAA	ACAACTTAC	ACGAGATGAA	1050
1051	ATGATTTGGT	TAAAACAAAA	TATAATAAGC	TACATGGAAG	ATGACGGTTT	1100
1101	TACAAGATTA	GATTTAGCCT	TTGATTTTGA	AGATGATTTG	AGTGACTACT	1150
1151	ATGCAATGTC	TGATAAAGCA	GTTAAGAAAA	CTATTTTTTA	TGGTCGTAAT	1200
1201	GGTAAGCCAG	AAACAAAATA	TTTTGGCGTG	AGAGATAGTA	ATAGATTTAT	1250
1251	TAGAATTTAT	AATAAAAAGC	AAGAACGTAA	AGATAATGCA	GATGCTGAAG	1300
1301	TTATGTCTGA	ACATTTATGG	CGTGTAGAAA	TCGAACTTAA	AAGAGATATG	1350
1351	GTGGATTACT	GGAATGATTG	CTTTTAGTGAT	TTACATATCT	TGCAACCAGA	1400
1401	TTGGAAAAC	ATCCAACGCA	CTGCGGATAG	AGCAATAGTT	TTTATGTTAT	1450
1451	TGAGTGATGA	AGAAGAATGG	GGAAAGCTTC	ACAGAAATTC	TAGAACAAAA	1500
1501	TATAAGAATT	TGATAAAAAGA	AATTTTCGCCA	GTCGATTTAA	CGGACTTAAT	1550
1551	GAAATCGACT	TTAAAAGCGA	ACGAAAAACA	ATTGCAAAAA	CAAATCGATT	1600
1601	TTTGGCAACA	TGAATTTAAA	TTTTGGAAAT	AGTGTACATA	TTAATATTAC	1650
1651	TGAACAAAAA	TGATATATTT	AAACTATTCT	AATTTAGGAG	GATTTTTTTA	1700
1701	TGAAGTGTCT	ATTTAAAAAT	TTGGGGAATT	TATATGAGGT	GAAAGAATAA	1750
1751	TTTACCCCTA	TAACTTTTAG	TCACCTCAAG	TAAAGAGGTA	AAATTGTTTA	1800
1801	GTTTTATATA	AAAATTTAAA	GGTTTGTTTT	ATAGCGTTTT	ATTTTGGCTT	1850
1851	TGTATTCCTT	CATTTTTTTAG	TGTATTTAAAT	GAAATGGTTT	TAAATGTTTC	1900
1901	TTTACCTGAT	ATTGCAAATC	ATTTTAATAC	TACTCCTGGA	ATTACAAACT	1950
1951	GGGTAAACAC	TGCATATATG	TTAACTTTTT	CGATAGGAAC	AGCAGTATAT	2000
2001	GGAAAATTAT	CTGATTATAT	AAATATAAAA	AAATTGTTAA	TTATTGGTAT	2050
2051	TAGTTTGAGC	TGCTTTGGTT	CATTGATTGC	TTTTATTGGG	CCCACCTAGG	2100
2101	TATTATCAAG	ATAAGAAAGA	AAAGATTTT	TCGCTACGCT	CAAATCCTTT	2150
2151	AAAAAAACAC	AAAAGACCAC	ATTTTTTAAT	GTGGTCTTTT	ATTCTTCAAC	2200
2201	TAAAGCACCC	ATTAGTTCAA	CAAACGAAAA	TTGGATAAAG	TGGGATATTT	2250
2251	TTAAATATA	TATTTATGTT	ACAGTAATAT	TGACTTTTAA	AAAAGGATTG	2300
2301	ATTCTAATGA	AGAAAGCAGA	CAAGTAAGCC	TCCTAAATTC	ACTTTAGATA	2350
2351	AAAATTTAGG	AGGCATATCA	AATGAACTTT	AATAAAATTG	ATTTAGACAA	2400
2401	TTGGAAGAGA	AAAGAGATAT	TTAATCATTA	TTTGAACCAA	CAAACGACTT	2450
2451	TTAGTATAAC	CACAGAAATT	GATATTAGTG	TTTTATAACG	AAACATAAAA	2500
2501	CAAGAAGGAT	ATAAATTTTA	CCCTGCATTT	ATTTTCTTAG	TGACAAGGGT	2550
2551	GATAAACTCA	AATACAGCTT	TTAGAACTGG	TTACAATAGC	GACGGAGAGT	2600

2601	TAGGTTATTG	GGATAAGTTA	GAGCCACTTT	ATACAATTTT	TGATGGTGTA	2650
2651	TCATAAACAT	TCTCTGGTAT	TTGGACTCCT	GTAAAGAATG	ACTTCAAAGA	2700
2701	GTTTTATGAT	TTATACCTTT	CTGATGTAGA	GAAATATAAT	GGTTCGGGGA	2750
2751	AATTGTTTTCC	CAAAACACCT	ATACCTGAAA	ATGCTTTTTTC	TCTTTCTATT	2800
2801	ATTCCATGGA	C TTCATTTAC	TGGGTTTTAAC	TTAAATATCA	ATAATAATAG	2850
2851	TAATTACCTT	CTACCCATTA	TTACAGCAGG	AAAATTCATT	AATAAAGGTA	2900
2901	ATTCAATATA	TTTACCGCTA	TCTTTACAGG	TACATCATTC	TGTTTGTGAT	2950
2951	GGTTATCATG	CAGGATTGTT	TATGAACTCT	ATTCAGGAAT	TGTCAGATAG	3000
3001	GCCTAATGAC	TGGCTTTTTAT	AATATGAGAT	AATGCCGACT	GTACTTTTTTA	3050
3051	CAGTCGGTTT	TCTAATGTCA	CTAACCTGCC	CCGTTAGTTG	AAGAAGGCCG	3100
3101	CGGCCTCGAG	CGGCCGCATA	GTTAAGCCAG	CCCCGACACC	CGCCAACACC	3150
3151	CGCTGACGCG	CCCTGACGGG	CTTGCTCGCT	CCCGGCATCC	GCTTACAGAC	3200
3201	AAGCTGTGAC	CGTCTCCGGG	AGCTGCATGT	GTCAGAGGTT	TTCACCGTCA	3250
3251	TCACCGAAAC	GCGCGAGACG	AAAGGGCCTC	GTGATACGCC	TATTTTTTATA	3300
3301	GGTTAATGTC	ATGATAATAA	TGGTTTTCTTA	GACGTCAGGT	GGCACTTTTC	3350
3351	GGGAAAATGT	GCGCGGAACC	CCTATTTGTT	TATTTTTCTA	AATACATTC	3400
3401	AATATGTATC	CGCTCATGAG	ACAATAACCC	TGATAAATGC	TTCAATAATA	3450
3451	TTGAAAAAGG	AAGAGTATGA	GTATTCACAA	TTTCCGTGTC	GCCCTTATTC	3500
3501	CCTTTTTTGC	GGCATTTTGC	CTTCCGTGTT	TTGCTCACCC	AGAAACGCTG	3550
3551	GTGAAAGTAA	AAGATGCTGA	AGATCAGTTG	GGTGCACGAG	TGGGTTACAT	3600
3601	CGAACTGGAT	CTCAACAGCG	GTAAAGTCCT	TGAGAGTTTT	CGCCCCGAAG	3650
3651	AACGTTTTCC	AATGATGAGC	ACTTTTTAAAG	TTCTGCTATG	TGGCGCGGTA	3700
3701	TTATCCCGTA	TTGACGCCGG	GCAAGAGCAA	CTCGGTGCGC	GCATACACTA	3750
3751	TTCTCAGAAT	GACTTGGTTG	AGTACTCACC	AGTCACAGAA	AAGCATCTTA	3800
3801	CGGATGGCAT	GACAGTAAGA	GAATTATGCA	GTGCTGCCAT	AACCATGAGT	3850
3851	GATAACACTG	CGGCCAACTT	ACTTCTGACA	ACGATCGGAG	GACCGAAGGA	3900
3901	GCTAACCGCT	TTTTTGCACA	ACATGGGGGA	TCATGTAACT	CGCCTTGATC	3950
3951	GTTGGGAACC	GGAGCTGAAT	GAAGCCATAC	CAAACGACGA	GCGTGACACC	4000
4001	ACGATGCCTG	TAGCAATGGC	AACAACGTTG	CGCAAACAT	TAAC TGGCGA	4050
4051	ACTACTTACT	CTAGCTTCCC	GGCAACAATT	AATAGACTGG	ATGGAGGCGG	4100
4101	ATAAAGTTGC	AGGACCACCT	CTGCGCTCGG	CCCTTCCGGC	TGGCTGGTTT	4150
4151	ATTGCTGATA	AATCTGGAGC	CGGTGAGCGT	GGGTCTCGCG	GTATCATTGC	4200
4201	AGCACTGGGG	CCAGATGGTA	AGCCCTCCCG	TATCGTAGTT	ATCTACACGA	4250
4251	CGGGGAGTCA	GGCAACTATG	GATGAACGAA	ATAGACAGAT	CGCTGAGATA	4300
4301	GGTGCCTCAC	TGATTAAGCA	TTGGTAACTG	TCAGACCAAG	TTTACTCATA	4350
4351	TATACTTTAG	ATTGATTTAA	AACTTCATTT	TTAATTTAAA	AGGATCTAGG	4400
4401	TGAAGATCCT	TTTTGATAAT	CTCATGACCA	AAATCCCTTA	ACGTGAGTTT	4450
4451	TCGTTCACCT	GAGCGTCAGA	CCCCGTAGAA	AAGATCAAAG	GATCTTCTTG	4500
4501	AGATCCTTTT	TTTTCTGCGG	TAATCTGCTG	CTTGCAAACA	AAAAAACCCAC	4550
4551	CGCTACCAGC	GGTGGTTTTGT	TTGCCGGATC	AAGAGCTACC	AACTCTTTTT	4600
4601	CCGAAGGTAA	CTGGCTTCAG	CAGAGCGCAG	ATACCAAATA	CTGTTCTTCT	4650
4651	AGTGTAGCCG	TAGTTAGGCC	ACCAC TTCAA	GAACTCTGTA	GCACCGCCTA	4700
4701	CATACCTCGC	TCTGCTAATC	CTGTTACCAG	TGGCTGCTGC	CAGTGGCGAT	4750
4751	AAGTCGTGTC	TTACCGGGTT	GGACTCAAGA	CGATAGTTAC	CGGATAAGGC	4800
4801	GCAGCGGTCG	GGCTGAACGG	GGGGTTCGTG	CACACAGCCC	AGCTTGGAGC	4850
4851	GAACGACCTA	CACCGAACTG	AGATACCTAC	AGCGTGAGCT	ATGAGAAAGC	4900
4901	GCCACGCTTC	CCGAAGGGAG	AAAGGCGGAC	AGGTATCCGG	TAAGCGGCAG	4950
4951	GGTCGGAACA	GGAGAGCGCA	CGAGGGAGCT	TCCAGGGGGA	AACGCC TGGT	5000
5001	ATCTTTATAG	TCCTGTGCGG	TTTCGCCACC	TCTGACTTGA	GCGTCGATTT	5050
5051	TTGTGATGCT	CGTCAGGGGG	GCGGAGCCTA	TGGAAAAACG	CCAGCAACGC	5100
5101	GGCCTTTTTTA	CGGTTCCCTGG	CCTTTTGTCTG	GCCTTTTGTCT	CACATGTTCT	5150
5151	TTCTTGCCTT	ATCCCCTGAT	TCTGTGGATA	ACCGTATTAC	CGCCTTTGAG	5200
5201	TGAGCTGGCG	GCCGCTGCAT	GCCTGCAGGT	CGACTCTAGA	GGATCCCCCG	5250

5251	GTACCGAGCT	CGAATTCAC	GGCCGTCGTT	TTACAACGTC	GTGACTGGGA	5300
5301	AAACCCTGGC	GTTACCCAAC	TTAATCGCCT	TGCAGCACAT	CCCCCTTTCG	5350
5351	CCAGCTGGCG	TAATAGCGAA	GAGGCCCGCA	CCGATCGCCC	TTCCCAACAG	5400
5401	TTGCGCAGCC	TGAATGGCGA	ATGGCG			5426
