

Complete nucleotide sequence of the colicin E9 (*cei*) gene

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Colicin E9 is a plasmid-encoded, protein antibiotic which, like colicin E2 and colicin E8, has DNAase activity (1). Each E colicin plasmid also encodes a specific immunity protein which binds to the C-terminal region of homologous colicin, shortly after synthesis, to form a complex which protects colicin-producing cells against their own colicin. The specificity of the interaction between the DNAase type E colicins and their homologous immunity proteins make this a valuable system for studying protein-protein interaction.

Here we report the complete nucleotide sequence of colicin E9 together with its regulatory sequences. The start codon of the colicin E9 gene is underlined. Comparison of this sequence with that of colicin E2 and E8 (2,3) indicates 6 amino-acid positions which are candidates for specificity determinants. We are investigating the specificity determinants of both colicin E9 and the colicin E9 immunity protein by site-directed mutagenesis.

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                                AATTTTCC ACCTGAACCT GACAGAAAAA ACGATGACGG STACTTTTTG
ATCTGTACAT AAAACCAGTG GTTTTATGTA CAGTATTAAT CATGTAATTA ATTGTTTTAA CGCTTAAAAG AGGGACTTTT
ATGAGCGGTG GAGATGGACG CGGCCATAAC ACGGGCGCGC ATAGCACAAAG TGGAACATT AATGGTGGCC CGACCGGGCT
TGGTGTAGGT GGTGGTGCTT CTGATGGCTC CGGATGGAGT TCGGAAAATA ACCCGTGGGG TGGTGGTTCC GGTAGCGGCA
TTCACTGGGG AGGTGGCTCC GGTCTGTGTA ATGGCGGGGG TAATGGCAAT TCCCGTGGTG GCTCGGGAAC AGGCGGTAAT
TTGTCAGCAG TAGCTGCGCG AGTGGCATTT GGTTTCCCGG CTCTTTCCAC TCCAGGAGCT GCGCGTCTGG CTGTCAGTAT
TTCTGCAAGC GAATTATCGG CAGCTATTGC TGGTATTATT GCTAAATTA AAAAAAGTAAA TCTTAAATTC ACTCCTTTTTG
GGGTGTGCTT ATCTTCATTA ATTCCTCGG AAATAGCGAA AGATGACCCC AATATGATGT CAAAGATTGT GACGTCATTA
CCCGCAGATG ATATTACTGA ATCACTGTCT AGTTCATTA C TCTCGATAA GGCAACAGTA AACGTAATG TTCGTGTGT
TGATGATGTA AAAGACGAAC GACAGAATAT TTCGGTTGTT TCAGGTGTTC CGATGAGTGT TCCGGTGGTT GATGCAAAAC
CTACCGAAGC TCCAGGTGTT TTTACGGCAT CAATTCAGG TGACCTGTT CTGAATATTT CAGTTAATAA CAGTACGCCA
GCAGTACAGA CATTAAAGCC AGGTGTTACA AATAATACTG ATAAGGATGT TCGCCCGGCA GGATTTACTC AGGGTGGTAA
TACCAAGGAT GCAGTTATTC GATTCCCGAA GGACAGCGGT CATAATGCCG TATATGTTTC AGTGAGTGAT GTTCTTAGTC
CTGACCAGGT AAAACAACGT CAGGATGAAG AAAATCGCCG TCAGCAGGAA TGGGATGCTA CGCATCCGGT TGAAGCGGCT
GAGCGAAATT ATGAACCGCG CGGTGCAGAG CTGAATCAGG CAAATGAAGA TGTTGCCAGA AATCAGGAGC GACAGGCTAA
AGCTGTTTTCAG GTTTATAAAT CCGGTAAAAG CGAACTTGAT GCAGCGAATA AAACCTTTGC TGATGCAATA GCTCTTATAA
AACAATTTAA TCGATTTGCC CATGACCCAA TGGCTGGCGG TCACAGAATG TGGCAATG CCGGGCTTAA AGCTCAGCGG
CGCAGACGG ATGTAAATAA TAAGCAGGCT GCATTTGATG CTGCTGCAAA AGAGAAGTCA GATGCTGATG CTGCATTAAG
TCCCGCCAGG GAGCGCCGCA AACAGAAGGA AAATAAAGAA AAGGACGCTA AGGATAAATT AGATAAGGAG AGTAAACGGA
ATAAGCCAGG GAAGGCGACA GGTAAAGGTA AACCAGTTGG TGATAAATGG CTGGATGATG CAGGTAAAGA TTCAGGAGCC
CCAATTCAG ATCGCATTCG TGATAAGTTG CGTGATAAAG AATTTAAAAG CTTCGACGAT TTTCCGGAAGG CTGTATGGGA
AGAGGTGTCG AAAGATCTCG AGCTTAGTAA AAATTTAAAC CCAAGCAATA AGTCTAGTGT TTCAAAAAGGT TATTCTCCGT
TTACTCCAAA GAATCAACAG GTCGGAGGGA GAAAAGTCTA TGAACCTCAT CATGACAAGC CAATTAGTCA AGGTGGTGAG
GTTTATGACA TGGATAATAT CCGAGTGACT ACACCTAAGC GACATATCGA TATTCTCCGA GGTAAAGTAA

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