

Erratum

The *secD* locus of *E.coli* codes for two membrane proteins required for protein export

by C.Gardel, K.Johnson, A.Jacq and J.Beckwith

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In the above paper, part of the sequence in Figure 3 was obscured due to a printing fault. The whole sequence is reprinted below.

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GATCTTTGATGAGTGTACGCCGATCTCTGCTGACTGGGATTACGCAAAACGCTCCATGGAGATGCTCTGCGTTGGGCGAACGTAGCCGT 90
                                     M G E R S R
GAGCCTTTTGACAGTCTCCGAAACAAAAATGCGCTGTTGGTATCATCCAGGGCAGCGTTTACGAAGATTTACGTGATATTTCTGTTAAA 180
E R F D S L G N K N A L F G I I Q G S V Y E D L R D I S V K
                                     ORF1
GGTCTGGTAGATATCGGTTTGTATCGTACCGTCTCGGGCTGGCTGGGTGAGCCGAAAGCAGATATGCACCCGATCTTGAGCAT 270
G L V D I G F D R Y A V G G L A V G E P K A D M H R I L E H
GTATCGCCGCAAATTCGGCAGACAAACCGCTTACCTGATGGCGTTGGTAAACCAGAAGACCTGGTGAAGCGTACGTCGTTGATC 360
V C P Q I P A D K P R Y L M G V G K P E D L V E G V R R G I
GATATGTTGACTCGTAATGCCAACCCCAACGCCCAATGGTCATTGTTCTGACCGATGGCGTGGTAAAATCCGCAATGCGAAGT 450
D M F D S * M P T P Q R P N G H L F V T D G V V K I R N A K Y
                                     ORF2
ATAAGAGCGTACTGGCCACTCGATCCTGAGTGTGATTGTACACCTGTCGCAATATTACGCGCTTACTTGATCATCTTGACCGTT 540
K S D T G P L D P E C D C Y T C R N Y S R A Y L H H L D R C
GCAACGAAATATTAGCGCGGACTCAACACCATTCATAACCTTCGTTACTACCAGCGTTTGTGCGGGTTTACGCAAGGCTATTGAAG 630
N E I L G A R L N T I H N L R Y Y Q R L M A G L R K A I E E
AGGGTAAATTAGAGAGCTTCGTAACGATTTTTACCAGCGTCAGGGCGAGAAGTACCACCTTTGAACGTTGATTAATTAATAATGAG 720
G K L E S F V T D F Y Q R Q G R E V P P L N V D *
GGAAATTAATGAGCTTTTTTATTCTGATGCGGTAGCGGCAACGGGTGCACCGCGCAAGTAGCCCGATGCTTTGATTTTGTGCTG 810
M S F F I S D A V A A T G A P A Q G S P M S L I L M L
                                     ORF3
CTGGTATTCGGTCTGATTTCTATTTTCATGATCCTCGCTCCACGAGCAAGCGCACCAAGAACAACAAAAGCTGATGGACTCCATTGCC 900
V V F G L I F Y F M I L R P Q Q K R T K E H K K L M D S I A
AAAGTGATGAAGTCTGACGAACGGTGGCTGGTGGTAAACAAAGTACGCGGAAACGGCTACATTCGTATCGCGCTGAATGAC 990
K G D E V L T N G G L V G R V T K V A E N G Y I R I A L N D
ACCACCTGAAGTAGTTATAAAGCTGACTTCGTAGCTGCCGTCCTGCCGAAAGGCACCATGAAGCGCTGAATTAATAATTTTCCCTAAG 1080
T T E V V I K R D F V A A V L P K G T M K A L *
GGATTCGCGTGTAAACCGTTATCCTTTGGAAGTACGTCATGCTGCTGGTGTATGTCATCGGTCTGCTGTATGCGCTCCCAAC 1170
M L N R Y P L W K Y V M L I V V I V I G L L Y A L P N
                                     secD
CTGTTGGTGGAGATCCGGCTGTTCAGATCACTGCGCGCGGAGTCCGCCAGTGAAGCAACCGTATCCAGTCCAGAAAACGTTA 1260
L F G E D P A V Q I T G A R G V A A S E Q T L I Q V Q K T L
CAAGAAGAAAAATAACTGCTAAGTCTGTGGCACTGGAAGAGGGCGCTATTCTTGGCGCTCCGACTCCACTGACACCCAGTTGCGCGCT 1350
Q E E K I T A K S V A L E E G A I L A R S D S T D T Q L R A
CGTGAAGCATTAATGGCGTTATGGGTGACAAATCGTCTGGCGCTAACCTTGCACCGCAACCGCGCTGGCTGGCAGCTATTAC 1440
R E A L M G V M G D K Y V V A L N L A P A T P R W L A A I H
GCTGAGCCGATGAAGCTCGCCCTGACCTGGCTGGCGGCTTCACTTCTGTGGAAGTGGATATGACACCGCGCTGGCAAACTCCAG 1530
A E P M K L G L D L R G G V H F L M E V D M D T A L G K L Q
GAACAAAATATCGATAGCCTAGCCAGTACCTGCGCGAAAAGGGCATCCGTTATACCACTGTTCTGTAAGAAAACAACACTACGGCTGAGC 1620
E Q N I D S L A S D L R E K G I P Y T T V R K E N N Y G L S
ATCACTTTCCGCGATGCTAAAGCTCGTGATGAAGCCATTGCGTATCTGAGCAAGCGCCATCCGACCTGGTGTATGACGACAGGGCAGC 1710
I T F R D A K A R D E A I A Y L S K R H P D L V I S S Q G S
AACCAGCTGCGTGGGTAATGAGCGATGCTGCTGAGTGAAGCGCGTGAATATCGGTGCAGCAGAACATTAATATCCTGCGTAACCGT 1800
N Q L R A V M S D A R L S E A R E Y A V Q Q N I N I L R N R
GTAACCAACTTGGCGTGGCGAGCCGGTGGTTCAGCGTACGGGTGCTGACCGTATCGTTGTTGAAGTCCAGGTTATCAGGACACTGGC 1890
V N Q L G V A E P V V Q R Q G A D R I V V E L P G I Q D T A
CGTGGCAAGAGATTCTGGTGGCAGCGCAACCGTGGAAATCCGCTGGTAAACACCAACGTTGACACGGCGCTGGCGATCCGGTCCG 1980
R A K E I L G A T A T L E F R L V N T N V D Q A A A S G R
GTACCGGGGACTCTGAAGTGAACAGACCCCGAAGGTCAGCCAGTTGTGCTGTAACAACCGGTAATCTGACCGGTGACCATATCAC 2070
V P G D S E V K Q T R E G Q P V V L Y K R V I L T G D H I T
GACTCCACTTCCAGCCAGGACGAATAACAACCCGAGTTAACATCTCGCTCGATAGCCGTTGGTAAACATCATGTCTAACTTCACT 2160
D S T S S Q D E Y N Q P Q V N I S L D S A G G N I M S N F T
AAGGACAACATCGGCAACCGATGGCAACCTGTTTGGAGTACAAGACAGCGGTAAGAAAGATGCAAAATGGTCTGCGGTTCTGGTG 2250
K D N I G K P M A T L F V E Y K D S G K K D A N G R A V L V
AAACAGGAAGAGGTGATTAACATCGCAACATCCAGTCTCGTCTGGTAAACAGTCTCCGATACCCGGCATCAACAACCCGAACGAGCC 2340
K Q E E V I N I A N I Q S R L G N S F R I T G I N N P N E A
CGTCAGCTGCTACTGCTGCTGCGGTCGCTGATCGCCGATCAGATTGTTGAAGAACGTACCATTGGCCCAACCTGGGTATG 2430
R Q L S L L L R A G A L I A P I Q I V E E R T I G P T L G M
CAGAACATTGAACAGGGCTGGAGGCTTGCCTTGGCGTCTGCTGGTTCATTCTGTTATGATCATCTTCTAAGAAGTTGGTCTG 2520
Q N I E Q G L E A C L A G L L V S I L F M I I F Y K K F G L
    
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ATTGCGACCAGTCTGATTGCCAACTTGATCTTAATCGTCGGCATTATGTCGCTGTGCCAGGCGCAACGCTGAGTATGCCAGGSTATC 2610
I A T S A L I A N L I L I V G I M S L L P G A T L S M P G I
GCGGTATCGTCTTAACCCCTTGGGTGGCGGTCGATGCGAACGTACTGATCAACGAACGTATTAAGAAGAGTTGAGCAACGGACGTACT 2700
A G I V L T L A V A V D A N V L I N E R I K E E L S N G R T
GTTCAACAGGCAATTGATGAAGTTATCGTGGCGCATTTCAGTCTATCTTCGATGCGAACATCACCACGCTGATTAAAGTCATCATCTG 2790
V Q Q A I D E G Y R G A F S S I F D A N I T T L I K V I I L
TACGCAGTGGGTACCGGGCAATTAAGGGTTCGCGATTACTACCGGTATCGGTGTGGCGACGTCGATGTTACCGCGATTGCGGTACG 2880
Y A V G T G A I K G F A I T T G I G V A T S M F T A I V G T
CGTCCATCGTAAACCTGTATATGGCGGCAAGCGCTCAAGAAGCTGTCAATCTGAGGAGTGGCGATGTGCCACAGGAATATACTGTGTA 2970
R A I V N L L Y G G K R V K K L S I * secF M A Q E Y T V E
ACAACAAACCAGCGCGTAAAGTCTATGACTTTATGCGCTGGGACTACTGGGCTTCGGCATCTCTGGTCTGCTGTTAATCGCTGCTAT 3060
Q L N W D R K V Y D F M R W A F G I S G L L L I A G T
CGTTATATGGCGTGGCGGCTTAACTGGGGCTGGATTCACCGGTGTACGGTTATTGAAATACGCTCGAAAACCGGCTGAAAT 3150
V I M G V R G F N W G L D F T G G T V I E I T L E K P A E I
TGACGTAATCGCTGATGACTTCAAAAAGCCGGTTTTGAAGAGCCGATGCTGAAAACCTTTGATAGCAGCCATGACATCATGGTCCGTAT 3240
D V M R D A L Q K A G F E E P M L Q N F G S S H D I M V R M
GCGCCGTGCTGAAGCGCAACCGCGGTGAGGTGTTGGGCAGCCAGGTTCTGAAGGTGATTAACGAATCCACCAATCAGAATGCAGCAGT 3330
P P A E G E T G G Q V L A G S Q V L K V I N E S T N Q N A A V
GAACCGTATTGAGTTCGTCGGTCCGAGCGTGGGGCAGACCTTGGCAACCGGTGCGATGGCGTGTATGGCAGCGCTGCTCTATCCT 3420
K R I E F V G P S V G A D L A Q T G A M A L M A A L L S I L
CGTGTACGTAGTTCCCGCTTTCAGTGGCGACTGGCGCAGGGTGGTTATTGCGCTGGCGCAGCAGCTTATCATTACGCTGGGTATTT 3510
V Y V G F R F E W R L A A G V V I A L A H D V I I T L G I L
GTCGTTATCCCATATCGAGATTGACCTGACCATGTGGCATCGTTGATGTCGGTTATCGGTTACTCGTTAACGACAGTATCGTGGTATC 3600
S L F H I E I D L T I V A S L M S V I G Y S L N D S I V V S
GGACCGTATTCGTGAAAACCTCCGCAAGTCCGTCGGGTACCGCTTACGAAATCTTAACTGTCCTTACCAGCAGCGTGCACCGTAC 3690
D R I R E N F R K I R R G T P Y E I F N V S L T Q T L H R T
CTTGATCACATCCGGTACTACCTTGATGGTTATCCTGATGCTGACTCTTCGGTGGTCCGGTACTGGAAGGCTTCTCGCTGACCATGCT 3780
L I T S G T T L M V I L M L Y L F G G P V L E G F S L T M L
TATCGGTGTTCCATCGGTACTGCAATCTCCATCTATGTGGCATCTGCGTTGGCTCTGAAACTGGGTATGAAGCGGAACACATGTTGCA 3860
I G V S I G T A S S I Y V A S A L A L K L G M K R E H M L Q
GCAGAAAGTGGAAAAGAAGGGCGGATCAGCCGTCAATTCGCCGTAATCAAGTTCCCGTTGATGTTGAAAATCCCGGTCAGAAGATCG 3950
Q K V E K E G A D Q P S I L P *
GGATTTTTTTTGATGTATGGAGATTGCGAAAATCCCGCATCTTGGGAAACTGCGCGTAACCCCTACATTTATCCAGGTAACTTTTTCATG 4040
M
GCTATCATCCAAAAAATATGCGCGTTAGAAAAGCGGTATCGCGAAAAGCATTAAAAATCTATCCGTGGGTCTGCGGTGCTGTTCC 4130
A I I P K N Y A R L E S G Y R E K A L K I Y P W V C G R C S ORF6
CGCGAGTTTGTATTCCAACTCGGTGAACCTACCGTTCACCACATTGATCAGACCATACCAATAACCGGAAGATGGCAGTAACTGG 4220
R E F V Y S N L R E L T V H H I D H D H T N N P E D G S N W
GAATTGTTGTCTCTATTGCCACGATCATGAGCATTGAAATATACCGAAGCGGATCAGTATGGTACGACCGTTATCGCAGGGGAAGAT 4310
E L L C L Y C H D H E H S K Y T E A D Q Y G T T V I A G E D
GCGCAGAAAGATGTCGGTGAAGCGAAGTACAACCCATTTCGTCGACCTGAAAGGATGATGAACAAGAAGTATTAAAACGTAAAATTG 4400
A Q K D V G E A K Y N P F A D L K G *
CCTGATCGCTACGCTTATCAGGCCT 4435

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Fig. 3. DNA sequence of the 4.4 kb region encoding the *secD* operon. The deduced amino acid sequences of the open reading frames are presented below the DNA sequence. Termination codons are indicated by an asterisk, potential ribosome binding sites are underlined, and a potential transcriptional terminator for the *secD* operon is overlined.