

## Cotransduction

داده های جدول زیر نمی تواند برای محاسبه  $B - C$  کوترانس داکسیون مورد استفاده قرار گیرد زیرا

داده های داده شده مقادیر انتخاب شده ای هستند که همه آن ها  $A^+$  را در بر می گیرند آنها همه داده ها نیستند.

Class	Number
$A^+B^+C^+$	50
$A^+B^+C^-$	75
$A^+B^-C^+$	1
$A^+B^-C^-$	<u>300</u>
	426
<i>Relative Cotransductance</i>	
$A-B: (50 + 75)/426 = 0.29$	
$A-C: (50 + 1)/426 = 0.12$	

بحث قبلی در رابطه با موضوع ترانسفورماسیون را به خاطر آورید که در برخی رویدادها به انتخاب نسل نیاز

است در این مورد این اتفاق رخ داده است در تلاش برای مطالعه ترانس داکسیون همه سلول هایی که ترانس

داکسیون انجام ندادند محو کنیم ( $A^-B^-C^-$ ) ما این کار را با رشد آن هایی که مورد عمل ترانس داکسیون قرار

گرفته بودند در محیط فاقد یکی از نیازهای غذایی سلول های  $A^-B^-C^-$  انجام دادیم در این مورد ما ماده  $A$  که

سلول های  $A^-$  به آن احتیاج دارند حذف کردیم پس فقط سلول های  $A^+$  می توانند باقی بمانند و رشد کنند که

برخی از آن ها  $B^+$  و برخی  $C^+$  و برخی دیگر  $B^+C^+$  می باشند سلول های اولیه  $A^-B^-C^-$  می میرند علاوه بر آن

ها  $A^-B^+C^+$  و  $A^-B^-C^+$  و  $A^-B^-C^+$  نیز می میرند پس بنابر طبیعت فرآیند ما باید برای انجام یک ترانس

داکسیون موفق یک انتخاب انجام دهیم که در این مورد ترانس داکسیون آлл  $A^+$  می باشد. اگر ما نیازهای غذایی



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### Symbols Used in the Gene Map of the *E. coli* Chromosome

Genetic Symbols	Mutant Character	Enzyme or Reaction Affected
<i>araD</i>	Cannot use the sugar arabinose as a carbon source	L-Ribulose-5-phosphate-4-epimerase
<i>araA</i>		L-Arabinose isomerase
<i>araB</i>		L-Ribulokinase
<i>argC</i>	Requires the amino acid arginine for growth	N-Acetylglutamate synthetase N-Acetyl-γ-glutamokinase N-Acetylglutamate-γ-semialdehyde dehydrogenase Acetylmethylglutamate-4-transaminase Acetylmethylglutamate Ornithine transcarbamylase Argininosuccinate synthetase Argininosuccinase
<i>argB</i>		
<i>argC</i>		
<i>argH</i>		
<i>argG</i>		
<i>argA</i>		
<i>argD</i>		
<i>argE</i>		
<i>argF</i>		
<i>argR</i>		
<i>aroA, B, C</i>	Requires several aromatic amino acids and vitamins for growth	Shikimic acid to 3-enolpyruvyl-shikimate phosphate Biosynthesis of shikimic acid
<i>aroD</i>	Resistant to sodium azide	
<i>azi</i>		
<i>bio</i>	Requires the vitamin biotin for growth	
<i>carA</i>	Requires urease and arginine	Carbamate kinase
<i>carB</i>		
<i>chlA-E</i>	Cannot reduce chlorate	Nitrate-chlorate reductase and hydrogen
<i>cysA</i>	Requires the amino acid cysteine for growth	3-Phosphoadenosine-5-phosphosulfate to Sulfate to sulfide; 4 known enzymes
<i>cysB</i>		
<i>cysC</i>		
<i>dapA</i>		
<i>dapB</i>		
<i>dap + aux</i>	Requires the amino acid precursor homoserine and the cell-wall component diaminopimelic acid for growth	Dihydrodipicolinic acid synthetase N-Succinyl-diaminopimelic acid diacylase Aspartic semialdehyde dehydrogenase
<i>dnaA-Z</i>	Mutation, DNA replication	DNA biosynthesis
<i>Dad</i>	Cannot use the amino acid D-serine as a nitrogen source	D-Serine deaminase
<i>fla</i>	Flagella are absent	
<i>galA</i>	Cannot use the sugar galactose as a carbon source	Galactokinase Galactose-1-phosphate uridylyl transferase Uridine-diphosphogalactose-4-epimerase Serine hydroxymethyl transferase
<i>galB</i>		
<i>galP</i>		
<i>galA</i>		
<i>galT</i>		
<i>glyA</i>	Requires glycine	
<i>gln</i>	Requires the purine guanine for growth	
<i>H</i>	The H antigen is present	
<i>his</i>	Requires the amino acid histidine for growth	10 known enzymes*
<i>lacRE</i>	Host restriction	Endonuclease R
<i>thr</i>	Requires the amino acid threonine for growth	Threonine deaminase
<i>trpA</i>	Requires the amino acids isoleucine and valine for growth	α-Hydroxy-β-keto acid reductoisomerase α,β-dihydroxyisovaleric dehydratase* Transaminase B
<i>trpB</i>		
<i>trpC</i>		
<i>trp</i> (tryptone)	Cannot grow on tryptophan as a carbon source	Tryptophanase
<i>λ (lambda)</i>	Chromosomal location where prophage λ is normally inserted	
<i>lacI</i>	<i>Lac</i> operon regulator	
<i>lacI</i>	Unable to concentrate β-galactosides	Galactoside permease
<i>lacZ</i>	Cannot use the sugar lactose as a carbon source	β-Galactosidase
<i>lacO</i>	Constitutive synthesis of lactose operon proteins	Defective operator
<i>leu</i>	Requires the amino acid leucine for growth	3 known enzymes*
<i>lyt</i>	Requires lipote	
<i>low</i> (long waves)	Filament formation and radiation sensitivity are affected	
<i>lys</i>	Requires the amino acid lysine for growth	Diaminopimelic acid decarboxylase
<i>lys + met</i>	Requires the amino acids lysine and methionine for growth	
<i>malT, malT'</i>	Resistant to phage λ and cannot use the sugar maltose	Regulator for 2 operons
<i>malX</i>	Cannot use the sugar maltose as a carbon source	Amylomaltase (T)
<i>man</i>	Cannot use mannose sugar	Phosphomannose isomerase
<i>man</i>	Cannot use melibiose sugar	Alpha-galactosidase

Genetic Symbols	Mutant Character	Enzyme or Reaction Affected
<i>met A-M</i>	Requires the amino acid methionine for growth	10 or more genes
<i>mit</i>	Cannot use the sugar mannitol as a carbon source	Mannitol dehydrogenase (?)
<i>muc</i>	Forms mucoid colonies	Regulation of capsular polysaccharide synthesis
<i>nalA</i>	Resistance to nalidixic acid	
<i>O</i>	The O antigen is present	
<i>pan</i>	Requires the vitamin pantothenic acid for growth	
<i>pabB</i>	Requires <i>p</i> -aminobenzoate	
<i>phe A, B</i>	Requires the amino acid phenylalanine for growth	
<i>pho</i>	Cannot use phosphate esters	Alkaline phosphatase
<i>pil</i>	Has filaments (pili) attached to the cell wall	
<i>plsB</i>	Deficient phospholipid synthesis	Glycerol 3-phosphate acyltransferase
<i>polA</i>	Repairs deficiencies	DNA polymerase I
<i>proA</i>	Requires the amino acid proline for growth	Pts-system enzyme I
<i>proB</i>		
<i>proC</i>		
<i>ptsI</i>		
<i>purA</i>		
<i>purB</i>	Defective phosphotransferase system	Adenylosuccinate synthetase
<i>purC, E</i>		
<i>purD</i>	Requires certain purines for growth	Adenylosuccinase
<i>pyrB</i>		
<i>pyrC</i>		
<i>pyrD</i>		
<i>pyrE</i>		
<i>pyrF</i>		
<i>R gal</i>		
<i>R1 pho, R2 pho</i>	Requires the pyrimidine uracil for growth	5-Aminoimidazole ribotide (AIR) to 5-aminoimidazole-4-(N-succino carboximide) ribotide
<i>R try</i>	Requires the pyrimidine uracil for growth	Biosynthesis of AIR
<i>RC (RNA control)</i>	Constitutive synthesis of phosphatase	Aspartate transcarbamylase
<i>recA</i>	Constitutive synthesis of tryptophan	Dihydroorotase
<i>rhaA-D</i>	Uncontrolled synthesis of RNA	Dihydroorotic acid dehydrogenase
<i>rpoA-D</i>	Cannot repair DNA radiation damage or recombine	Orotidylic acid pyrophosphorylase
<i>serA</i>	Cannot use the sugar rhamnose as a carbon source	Orotidylic acid decarboxylase
<i>serB</i>	Problems of transcription	Repressor for enzymes involved in galactose production
<i>str</i>	Requires the amino acid serine for growth	Alkaline phosphatase repressor
<i>suc</i>	Resistant to or dependent on streptomycin	Repressor for enzymes involved in tryptophan synthesis
<i>supB</i>	Requires succinic acid	
<i>tonA</i>	Suppresses ochre mutations	t-RNA
<i>tonB</i>	Resistant to phages T1 and T5 (mutants called B/1, 5)	T1, T5 receptor sites absent
<i>T6, colK rec</i>	Resistant to phage T1 (mutants called B/1)	T1 receptor site absent
<i>T4 rec</i>	Resistant to phage T6 and colicine K	T6 and colicine receptor sites absent
<i>tsx</i>	Resistant to phage T4 (mutants called B/4)	T4 receptor site absent
<i>thi</i>	T6 resistance	
<i>tolC</i>	Requires the vitamin thiamine for growth	
<i>thr</i>	Tolerance to colicine E1	
<i>thy</i>	Requires the amino acid threonine for growth	
<i>trpA</i>	Requires the pyrimidine thymine for growth	Thymidylate synthetase
<i>trpB</i>	Requires the amino acid tryptophan for growth	Tryptophan synthetase, A protein
<i>trpC</i>		Tryptophan synthetase, B protein
<i>trpD</i>		Indole-3-glycerolphosphate synthetase
<i>trpE</i>		Phosphoribosyl anthranilate transferase
<i>tyrA</i>	Requires the amino acid tyrosine for growth	Anthranilate synthetase
<i>tyrR</i>		
<i>uvrA-E</i>	Requires the amino acid tyrosine for growth	Chorismate mutase T-prephenate dehydrogenase
<i>valS</i>	Resistant to ultraviolet radiation	Regulates 3 genes
<i>xyl</i>	Cannot charge Valyl-tRNA	Ultraviolet-induced lesions in DNA are reactivated
	Cannot use the sugar xylose as a carbon source	Valyl-tRNA synthetase

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