**Exercise 1**

**Mariyum Bashir**

(A)

1. 24 chromosomes

Lineage: [**Eukaryota**](https://www.ncbi.nlm.nih.gov/taxonomy/2759)**[**[**4854**](https://www.ncbi.nlm.nih.gov/genome?term=txid2759%5borgn%5d)**];**[**Metazoa**](https://www.ncbi.nlm.nih.gov/taxonomy/33208)**[**[**1776**](https://www.ncbi.nlm.nih.gov/genome?term=txid33208%5borgn%5d)**];**[**Chordata**](https://www.ncbi.nlm.nih.gov/taxonomy/7711)**[**[**959**](https://www.ncbi.nlm.nih.gov/genome?term=txid7711%5borgn%5d)**];**[**Craniata**](https://www.ncbi.nlm.nih.gov/taxonomy/89593)**[**[**942**](https://www.ncbi.nlm.nih.gov/genome?term=txid89593%5borgn%5d)**];**[**Vertebrata**](https://www.ncbi.nlm.nih.gov/taxonomy/7742)**[**[**942**](https://www.ncbi.nlm.nih.gov/genome?term=txid7742%5borgn%5d)**];**[**Euteleostomi**](https://www.ncbi.nlm.nih.gov/taxonomy/117571)**[**[**931**](https://www.ncbi.nlm.nih.gov/genome?term=txid117571%5borgn%5d)**];**[**Mammalia**](https://www.ncbi.nlm.nih.gov/taxonomy/40674)**[**[**388**](https://www.ncbi.nlm.nih.gov/genome?term=txid40674%5borgn%5d)**];**[**Eutheria**](https://www.ncbi.nlm.nih.gov/taxonomy/9347)**[**[**381**](https://www.ncbi.nlm.nih.gov/genome?term=txid9347%5borgn%5d)**];**[**Euarchontoglires**](https://www.ncbi.nlm.nih.gov/taxonomy/314146)**[**[**149**](https://www.ncbi.nlm.nih.gov/genome?term=txid314146%5borgn%5d)**];**[**Primates**](https://www.ncbi.nlm.nih.gov/taxonomy/9443)**[**[**59**](https://www.ncbi.nlm.nih.gov/genome?term=txid9443%5borgn%5d)**];**[**Haplorrhini**](https://www.ncbi.nlm.nih.gov/taxonomy/376913)**[**[**40**](https://www.ncbi.nlm.nih.gov/genome?term=txid376913%5borgn%5d)**];**[**Catarrhini**](https://www.ncbi.nlm.nih.gov/taxonomy/9526)**[**[**28**](https://www.ncbi.nlm.nih.gov/genome?term=txid9526%5borgn%5d)**];**[**Hominidae**](https://www.ncbi.nlm.nih.gov/taxonomy/9604)**[**[**6**](https://www.ncbi.nlm.nih.gov/genome?term=txid9604%5borgn%5d)**];**[**Pan**](https://www.ncbi.nlm.nih.gov/taxonomy/9596)**[**[**2**](https://www.ncbi.nlm.nih.gov/genome?term=txid9596%5borgn%5d)**];**[**Pan troglodytes**](https://www.ncbi.nlm.nih.gov/taxonomy/9598)**[**[**1**](https://www.ncbi.nlm.nih.gov/genome?term=txid9598%5borgn%5d)**]**

2.

|  |
| --- |
| [PAX6,  *H.sapiens*](https://www.ncbi.nlm.nih.gov/gene/5080) |

436aa

[PAX6,  *B.taurus*](https://www.ncbi.nlm.nih.gov/gene/286857)

422 aa

PAX6 G.gallus   
436 aa

[toy,  *D.melanogaster*](https://www.ncbi.nlm.nih.gov/gene/43833)   
543 aa

3. Mechanism of Action

Amoxicillin binds to [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin)-binding protein 1A (PBP-1A) located inside the bacterial cell well. Penicillins acylate the [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin)-sensitive transpeptidase C-terminal domain by opening the lactam ring. This inactivation of the enzyme prevents the formation of a cross-link of two linear [peptidoglycan](https://pubchem.ncbi.nlm.nih.gov/compound/peptidoglycan) strands, inhibiting the third and last stage of bacterial cell wall synthesis. Cell lysis is then mediated by bacterial cell wall autolytic enzymes such as autolysins; it is possible that amoxicllin interferes with an autolysin inhibitor.

DrugBank

The penicillins and their metabolites are potent immunogens because of their ability to combine with proteins and act as haptens for acute antibody-mediated reactions. The most frequent (about 95 percent) or "major" determinant of [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin) allergy is the penicilloyl determinant produced by opening the beta-lactam ring of the [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin). This allows linkage of the [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin) to protein at the amide group. "Minor" determinants (less frequent) are the other metabolites formed, including native [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin) and penicilloic acids. /Penicillins/

*Haddad, L.M., Clinical Management of Poisoning and Drug Overdose. 2nd ed. Philadelphia, PA: W.B. Saunders Co., 1990., p. 953*

HSDB

Amoxicillin is similar to [penicillin](https://pubchem.ncbi.nlm.nih.gov/compound/penicillin) in its bactericidal action against susceptible bacteria during the stage of active multiplication. It acts through the inhibition of cell wall biosynthesis that leads to the death of the bacteria.

*NIH; DailyMed. Current Medication Information for Amoxicillin Capsule (Updated: October 2016). Available from, as of November 17, 2016:*[*https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=4d0f063a-d896-4757-8f22-9614e2ad71d4*](https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=4d0f063a-d896-4757-8f22-9614e2ad71d4)

HSDB

(B).

1.

>E00389.1 DNA coding for cellobiohydrolase I

AAGGTTAGCCAAGAACAATAGCCGATAAAGATAGCCTCATTAAACGGAATGAGCTAGTAGGCAAAGTCAG

CGAATGTGTATATATAAAGGTTCGAGGTCCGTGCCTCCCTCATGCTCTCCCCATCTACTCATCAACTCAG

ATCCTCCAGGAGACTTGTACACCATCTTTTGAGGCACAGAAACCCAATAGTCAACCGCGGACTGGCATCA

TGTATCGGAAGTTGGCCGTCATCACGGCCTTCTTGGCCACAGCTCGTGCTCAGTCGGCCTGCACTCTCCA

ATCGGAGACTCACCCGCCTCTGACATGGCAGAAATGCTCGTCTGGTGGCACTTGCACTCAACAGACAGGC

TCCGTGGTCATCGACGCCAACTGGCGCTGGACTCACGCTACGAACAGCAGCACGAACTGCTACGATGGCA

ACACTTGGAGCTCGACCCTATGTCCTGACAACGAGACCTGCGCGAAGAACTGCTGTCTGGACGGTGCCGC

CTACGCGTCCACGTACGGAGTTACCACGAGCGGTAACAGCCTCTCCATTGGCTTTGTCACCCAGTCTGCG

CAGAAGAACGTTGGCGCTCGCCTTTACCTTATGGCGAGCGACACGACCTACCAGGAATTCACCCTGCTTG

GCAACGAGTTCTCTTTCGATGTTGATGTTTCGCAGCTGCCGTAAGTGACTTACCATGAACCCCTGACGTA

TCTTCTTGTGGGCTCCCAGCTGACTGGCCAATTTAAGGTGCGGCTTGAACGGAGCTCTCTACTTCGTGTC

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CATCCAACAACGCAAACACGGGCATTGGAGGACACGGAAGCTGCTGCTCTGAGATGGATATCTGGGAGGC

CAACTCCATCTCCGAGGCTCTTACCCCCCACCCTTGCACGACTGTCGGCCAGGAGATCTGCGAGGGTGAT

GGGTGCGGCGGAACTTACTCCGATAACAGATATGGCGGCACTTGCGATCCCGATGGCTGCGACTGGAACC

CATACCGCCTGGGCAACACCAGCTTCTACGGCCCTGGCTCAAGCTTTACCCTCGATACCACCAAGAAATT

GACCGTTGTCACCCAGTTCGAGACGTCGGGTGCCATCAACCGATACTATGTCCAGAATGGCGTCACTTTC

CAGCAGCCCAACGCCGAGCTTGGTAGTTACTCTGGCAACGAGCTCAACGATGATTACTGCACAGCTGAGG

AGACAGAATTCGGCGGATCTCTTTCTCAGACAAGGGCGGCCTGACTCAGTTCAAGAAGGCTACCTCTGGC

GGCATGGTTCTGGTCATGAGTCTGTGGGATGATGTGAGTTTGATGGACAAACATGCGCGTTGACAAAGAG

TCAAGCAGCTGACTGAGATGTTACAGTACTACGCCAACATGCTGTGGCTGGACTCCACCTACCCGACAAA

CGAGACCTCCTCCACACCCGGTGCCGTGCGCGGAAGCTGCTCCACCAGCTCCGGTGTCCCTGCTCAGGTC

GAATCTCAGTCTCCCAACGCCAAGGTCACCTTCTCCAACATCAAGTTCGGACCCATTGGCAGCACCGGCA

ACCCTAGCGGCGGCAACCCTCCCGGCGGAAACCGTGGCACCACCACCACCCGCCGCCCAGCCACTACCAC

TGGAAGCTCTCCCGGACCTACCCAGTCTCACTACGGCCAGTGCGGCGGTATTGGCTACAGCGGCCCCACG

GTCTGCGCCAGCGGCACAACTTGCCAGGTCCTGAACCCTTACTACTCTCAGTGCCTGTAAAGCTCCGTGC

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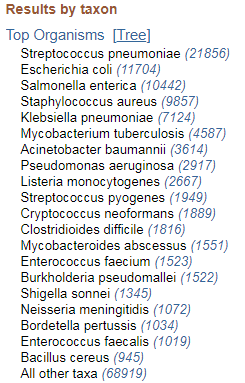
GGTGATTTATTTTTTTTGTATCTACTTCTGACCCTTTTCAAATATACGGTCAACTCATCTTTCACTGGAG

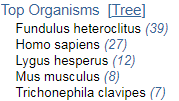
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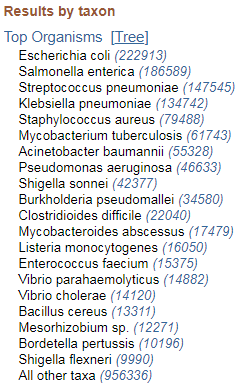
ATCCCGTTCATAACCCGTAGAATCGCCGCTCTTCGTGTATCCCAGTACCA

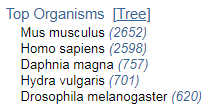
## 2. Orotidine: 159352 no of hits





## Decarboxylase: 2113988 no of hits





>AY582746.1 Physeter catodon NADH dehydrogenase subunit 2 (nad2) gene, partial cds; mitochondrial

TAATACTAACTATATCCCTACTCTCCATTCTCATCGGGGGTTGAGGAGGACTAAACCAGACTCAACTCCG

AAAAATTATAGCTTACTCATCAATCGCCCACATAGGATGAATAACCACAATCCTACCCTACAATACAACC

ATAACCCTACTAAACCTACTAATCTATGTCACAATAACCTTCACCATATTCATACTATTTATCCAAAACT

CAACCACAACCACACTATCTCTGTCCCAGACATGAAACAAAACACCCATTACCACAACCCTTACCATACT

TACCCTACTTTCCATAGGGGGCCTCCCACCACTCTCGGGCTTTATCCCCAAATGAATAATTATTCAAGAA

CTAACAAAAAACGAAACCCTCATCATACCAACCTTCATAGCCACCACAGCATTACTCAACCTCTACTTCT

ATATACGCCTCACCTACTCAACAGCACTAACCCTATTCCCCTCCACAAATAACATAAAAATAAAATGACA

ATTCTACCCCACAAAACGAATAACCCTCCTGCCAACAGCAATTGTAATATCAACAATACTCCTACCCCTT

ACACCAATACTCTCCACCCTATTATAG

3. 

