

Bacterial antibiotic resistance puzzle

Case A: *Neisseria meningitidis*, sulfonamide sensitive

A C G C C C G A T T C T T T T T C C G A C G G C G G C G C G
T G C G G G C T A A G A A A A G G C T G C C G C C G C G C
A C G C C C G A U U C U U U U U C C G A C G G C G G C G C G mRNA 4
Thr Pro Asp Ser Phe Ser Asp Gly Gly Ala protein

Case B: *Neisseria meningitidis* sulfonamide resistant

A C G C C C G A T T C T T T G T C C G A C G G C G G C G C G
T G C G G G C T A A G A A A C A G G C T G C C G C C G C G C
A C G C C C G A U U C U U U G U C C G A C G G C G G C G C G mRNA 3
Thr Pro Asp Ser Leu Ser Asp Gly Gly Ala protein

Case C: *Escherichia coli* sulfonamide sensitive

A C G C C T G A T T C C T T T T C G G A T G G T G G C A C G
T G C G G A C T A A G G A A A A G C C T A C C A C C G T G C
A C G C C U G A U U C C U U U U C G G A U G G U G G C A C G mRNA 2
Thr Pro Asp Ser Phe Ser Asp Gly Gly Thr protein

Case D: *Escherichia coli* sulfonamide resistant

A C G C C T G A T T C C T T G T C G G A T G G T G G C A C G
T G C G G A C T A A G G A A C A G C C T A C C A C C G T G C
A C G C C U G A U U C C U U G U C G G A U G G U G G C A C G mRNA 1
Thr Pro Asp Ser Leu Ser Asp Gly Gly Thr protein

- Find an example in which:
- a nucleotide difference between two strains results in a different amino acid
 - a nucleotide difference between two strains DOES NOT result in a different amino acid
 - a nucleotide difference leads to an amino acid change that makes the bacterial strain drug resistant

d) a nucleotide difference leads to an amino acid change that has no effect on drug resistance