STE

More Genetics Practice

First letter	Second letter: U	Second letter: C	Second letter: A	Second letter: G	Third letter
U	UUU, UUC: Phe; UUA, UUG: Leu	UCU, UCC, UCA, UCG: Ser	UAU, UAC: Tyr; UAA: Stop; UAG: Stop	UGU, UGC: Cys; UGA: Stop; UGG: Trp	U C A G
C	CUU, CUC, CUA, CUG: Leu	CCU, CCC, CCA, CCG: Pro	CAU, CAC: His; CAA, CAG: Gln	CGU, CGC, CGA, CGG: Arg	U C A G
A	AUU, AUC, AUA: Ile; AUG: Met	ACU, ACC, ACA, ACG: Thr	AAU, AAC: Asn; AAA, AAG: Lys	AGU, AGC: Ser; AGA, AGG: Arg	U C A G
G	GUU, GUC, GUA, GUG: Val	GCU, GCC, GCA, GCG: Ala	GAU, GAC: Asp; GAA, GAG: Glu	GGU, GGC, GGA, GGG: Gly	U C A G

1. The most common mutation is the transition that exchanges A into G or C into T . (don't confuse this with the pairings A-T and G-C)
   a) Give the corresponding DNA code for alanine's(Ala) code of GCU?

      GCT

      Reason? GCU is the tRNA code; the mRNA code is CGA and so the DNA code is GCT

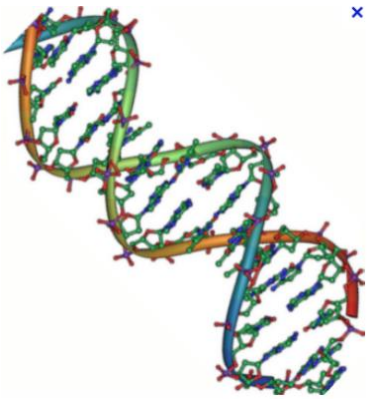
   b) What amino acid will be picked up if the DNA GCT code mutates to GCC?

      The tRNA code corresponding to the DNA code GCC = GCC, which still picks up Ala

   c) What amino acid will be picked up if the DNA GCT code mutates to GTT?
      The tRNA code corresponding to the DNA code GTT = GUU, which picks up Val

   d) Judging from your answers in (b), how is alanine's code sometimes protected from mutations?

      There is more than one code (4 in all) that code for the same amino acid.



2. TRUE? Or FALSE?

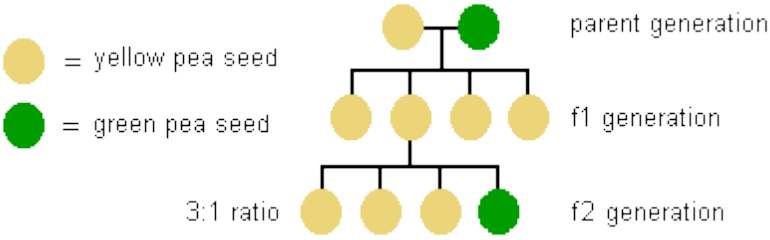
a) DNA's molecular shape differs from that of RNA.
   False; only DNA's structure is a double helix

b) In Monday's workshop on Medical Technology, the presenter mentioned that viruses are detected by amplifying their base-sequence by the PCR(polymerase chain reaction) technique. Based on this, different viruses must have different RNA or DNA sequences. TRUE

c) Any section of DNA is a gene FALSE. The section has to code for 1 protein, no more, no less.

3. An allele is one of two copies of genes found on homologous chromosomes (pair). If the allelic gene, R, is dominant, expressing round seeds, what will be the phenotype of Rr?
   round

4. In the diagram below, what accounts for the green pea seed in the f2 generation?



Two recessive allelic genes (yy)