DNA and RNA FactSheet

History of the Discovery of DNA

JERICK GRIFFITH (1928)
1. Studied way in which ____________________ cause pneumonia and recognized
   process of ___________________________
2. Showed through experiments that ___________________________ could
   be transformed into another.
3. Hypothesized that there was a ___________________________ involved.

avery (1944)
1. Repeated ___________________________ experiments and identified _______
   as the transforming factor
2. ___________ -stores and transmits ___________________________ from
   one generation to another.

HERSHEY-CHASE (1952)

Experiments with ___________________________

confirmed that ___________________________

ROSALIND FRANKLIN and MAURICE WILKINS (1950's)
1. Studied ___________________________ by using a purified DNA sample and
   ___________________________ pictures of molecule.
2. Found it was a ___________________________

ERWIN CHARGAFF (early 1950's)
1. Observed that in any DNA sample, the number of ___________________________
   molecules was equal to the number of ___________________________; same for
   ___________________________
2. Developed ___________________________

WATSON-CRICK (1953)
1. Tried to build ___________________________
   sed ___________________________ pictures to develop the
   ___________________________
3. ________________ model explained much about DNA structure, including ________________

4. Received ________________ along with ________________
   (Franklin didn’t—why? ________________)

B. The Structure of DNA
1. DNA made of ________________, the basic unit of DNA
   Nucleotide is made of three parts:
   a. ________________
   b. ________________
   c. ________________
      Purines
      Pyrimidines

2. ________________ are the "backbone" of DNA

3. Two ________________ strands of ________________
   groups with pairs of ________________ bases linking the two
   strands together with ________________,
   forming a double helix.
   WHY WEAK BONDS?

4. Nitrogen Base Pairing 'Rulz':
   ________________ (one purine/ pyrimidine)
   ________________ (one purine/ pyrimidine)

5. DNA strands are ________________ because of base pairing
   rules. What does complementary mean???

6. Nitrogen bases are always attached to ________________

C. DNA Replication

1. A Perfect Copy
   When a cell divides, each daughter cell receives a complete set of chromosomes.
   This means that each new cell has a complete set of the DNA code. Before a cell
   can divide, the DNA must be copied so that there are two sets ready to be
   distributed to the new cells.
2. Complementary strands of DNA serve as a __________________________ for a new strand.

DNA replication carried out by __________________________ which "unzip" the two strands by breaking the __________________________

4. Then, appropriate __________________________ are inserted.

____________________________ also proofread the bases to make sure of correct base pairing.

DNA G C C A T T G T A A T

D. RNA: The Other Code

1. RNA similar to DNA
   a. long chain made of __________________________
   b. each nucleotide consists of: __________________________
   c. __________________________ still backbone of RNA

RNA different from DNA
   a. Different type of __________________________
   b. __________________________
   c. RNA molecule is a __________________________ of DNA
   d. Nitrogen base __________________________ found in DNA is replaced by a similar base __________________________ in RNA

   ex. ( _______ ) and ( C - G )

3. Why does DNA need to transfer genetic information to RNA?
   a. DNA is found in the __________________________.

   __________________________ are outside the nucleus.
   b. DNA does not __________________________
   c. Messenger must bring genetic information from the __________________________ to the __________________________ to make __________________________

   Special molecule, __________________________ performs this task.
RNA - The Other Part of the Code

1. RNA - "messenger" between the ____________________________
2. ____________________________ - organelles outside the nucleus that make proteins from amino acids.
3. ____________________________ - used to build and repair cells.
4. ____________________________ - process by which one strand of DNA is copied into a ____________________________ of mRNA in the nucleus.

DNA  G C C A T T G T A A T
RNA  ____________________________

Types of RNA

1. Transfer RNA (__________________)
   a. Carries ____________________________
   b. ____________________________ looped back on itself
   c. ____________________________ - three nucleotides on tRNA are complementary to the three on the mRNA.
   d. Matching of ____________________________ (mRNA) to ____________________________ (tRNA)
      allows the correct amino acid to be put in place.
2. ______________ RNA (rRNA)
   a. makes up majority of ____________________________

Protein Synthesis

1. ____________________________ in DNA have all the information to make proteins.
2. ____________________________ code copied into ____________________________
3. Proteins are made of ____________________________, which are coded from mRNA.
4. mRNA code is read in ____________________________ form called a ____________________________
   which specifies certain amino acids using a decoder (p.201)
5. Only ________ amino acids make all life as we know it!
   How can this be?
* - codes for amino acid methionine or be an "initiator codon" and will always 
are codons which end mRNA

6. - the decoding of mRNA code into an amino acids which when assembled together form proteins

DNA: TAC TTT GTA ACT
RNA: 
Amino Acids: 

Mutations

1. Mutations can occur on individual by way of gene mutations.
   a. Base sequence gets and may cause of genes
   Mutations can also occur with chromosomes.