

PLANT PHYSIOLOGY Lecture 16 – “Molecular Biology”

- I. Structure of DNA (Watson, Crick, & Wilkins)**
 - A. Sugar (deoxyribose)**
 - B. Phosphate group**
 - C. Base**
 - 1. Purines - adenine & guanine**
 - 2. Pyrimidines - thymine & cytosine**
 - D. The double helix**
- II. Replication of DNA - Semiconservative**
 - A. Produces two DNA molecules that contain a mother strand and a daughter strand**
- III. What DNA encodes - Ultimately....protein**
 - A. DNA makes RNA makes protein**
- IV. Transcription**
 - A. DNA makes RNA**
 - B. rRNA, mRNA, and tRNA**
 - C. Only one of the two unwound DNA strands is transcribed**
 - D. Processing**
 - 1. Intron removal, 5' cap, and poly-A tail**
- V. Translation**
 - A. mRNA carries the "blueprint"**
 - B. rRNA helps form the site of action (ribosomes)**
 - C. tRNA matches sets of three bases with proteins**
 - D. Peptide bonds connect amino acids**
- VI. What is the result? ---- PROTEIN =====> ENZYMES =====> METABOLISM**
- VII. Recombinant DNA technology**
 - A. Genes of interest are isolated**
 - B. Genes are modified**
 - C. Genes are inserted into a target for (hopeful) integration**
 - D. There are problems**