Remember: Central Dogma: (p 337)

Transcription  Translation
DNA  RNA  protein

One gene one enzyme

Beadle and Tatum: (p 335):
three classes of arginine requiring mutants, all required arg, some with citrulline, few of those with ornithine, conclude sequence:

Xanthine  ornithine  citrulline  arginine

Deduced that mutations altered enzyme activity: a gene codes for an enzyme
(Now modified: one gene one polypeptide.)

Transcription in nucleus (p. 340) (VIDEO: http://www.youtube.com/watch?v=WsofH466lqk&NR=1 (starts at 19 sec, complex)

RNA polymerase uses DNA as template
makes: messenger RNA (mRNA)
ribsosomal RNA (rRNA)
transfer RNAs (tRNA)
transcription and translation, fancy:
http://www.youtube.com/watch?v=41_Ne5mS2ls

Translation: (p 345) Good YouTube:
https://www.youtube.com/watch?v=Ilkq9AcBcohA
in cytoplasm on ribosomes (p 345 intro)
mRNA (needs to be edited in eukaryotes to remove the introns)
tRNAs for all amino acids
Charging of the tRNA and translation:
http://www.youtube.com/watch?v=0B-CFLNAnX8

Illustrate transfer RNA: (p 346)
two crucial features, anticodon, specific AA
overall picture: (p 352)
https://www.youtube.com/watch?v=4QSTcfsbCcA

(From DNA to protein)

Define (LEARN):
mutation, mutant, mutagen, mutagenesis
mutation classes (p. 355) alteration in base sequence - alters amino acid in protein
base substitution
deletions
frameshift

mutagenesis
agents which alter base sequence cause mutations, carcinogenesis
UV sun bathing, tanning bed, germicidal lamp melanin is response to damage
benzyrene incomplete combustion, activated by liver. Nicotine causes prolonged exposure
nitrites color preservative in meats, convert to nitrous acid in stomach

Somatic mutations cause cancer, Germ line mutations cause birth defects.

REPAIR:
In situ: Thymine dimers recognized, energy in visible light breaks them apart (photoreactivation)
Excision and resynthesis: mismatch section cut out, resynthesized, ligase closes.
There can be a 50% chance wrong base resynthesized

http://www.youtube.com/watch?v=4jtmOZa1vS0 (p 246-247)