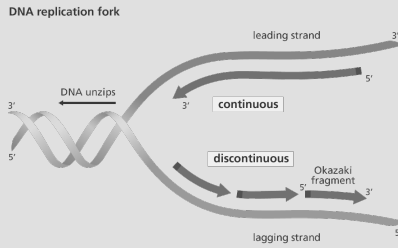
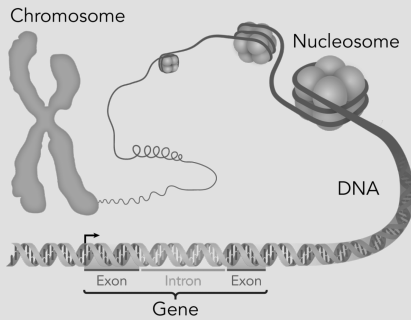


DNA Replication



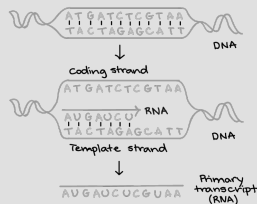
helicases- untwist double helix
 topoisomerase- breaks, swivels, & rejoins
 primer- initial stretch of RNA
 DNA polymerases- adds nucleotides

Chromosome Structure



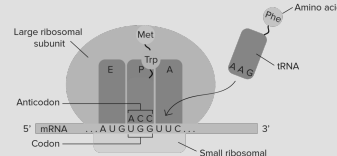
histones make up nucleosomes

Transcription



-RNA polymerase synthesizes RNA
 -promoter initiates, terminator (bacteria)/polyadenylation sequence (eukaryotes) ends
 -TATA box= crucial to initiation complex
 -mods: 5' cap, poly-A tail, RNA splicing

Translation



initiation factors- bring components together w/GTP
 elongation factors- add amino acids to chain
 release factors- binds to A site codon & hydrolyzes bond in P site
 processing: protein folding & mods

Mutations

base-pair substitution
 ns
 insertions & deletions

replacement of nucleotide w/another; silent=no effect, missense=change 1 amino acid, nonsense=changes amino acid codon to stop codon

additions or losses of nucleotide pairs

Regulation of Genes

operon
 repressor
 corepressor
 activator
 miRNA, siRNA

stretch of DNA required for enzyme production (repressible & inducible)

blocks attachment of RNA polymerase

cooperates w/repressor to turn operon off

stimulates transcription (ex: cAMP)

degrades target mRNA, blocks translation

Biotechnology

restriction enzymes	cut DNA sequences at palindrome restriction sites
ligase	seals breaks
vector	vehicle of DNA to replace or express genetic material
Polymerase Chain Reaction	produces copies of DNA w/o cells
cDNA	DNA produced w/ reverse transcriptase

Viruses

capsid	protein coat, made of capsomeres
lytic cycle	phage enters cell, takes control, replicates, lyses cell
lysogenic cycle	viruses replicate w/o destroying host
prophage	dormant virus within host genome
retrovirus	synthesize cDNA from RNA w/ reverse transcriptase

Bacteria

binary fission	asexual reproduction (variation w/mutation)
transformation	recombination of pieces of DNA into a live bacterium
transduction	bacteriophages carry genes host-host
plasmid	foreign, small, circular, self-replicating DNA
conjugation	F plasmid produces sex pilli, allow DNA to transfer