Cheatography

AP Biology Unit 8: Molecular Biology Cheat Sheet

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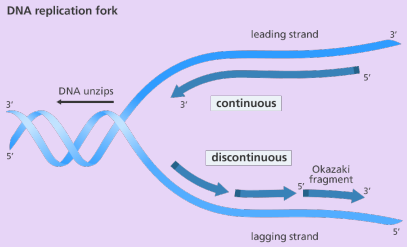
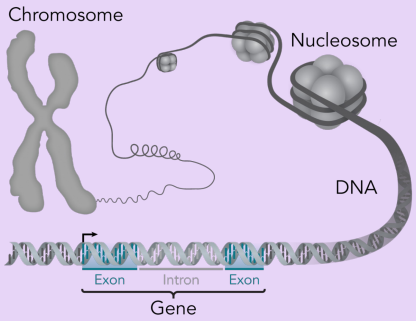
DNA Replication



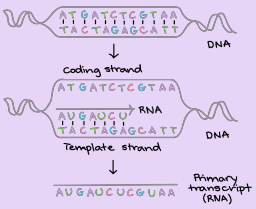
helicases- untwist double helix
topoisomerase- breaks, swivels, & rejoins
primer- initial stretch of RNA
DNA polymerases- adds nucleotides

Chromosome Structure



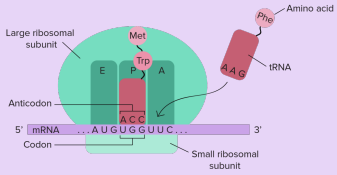
histones make up nucleosomes

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 substitutions	replacement of nucleotide w/another; silent=no effect, missense=change 1 amino acid, nonsense=changes amino acid codon to stop codon
insertions & deletions	additions or losses of nucleotide pairs

Regulation of Genes

operon	stretch of DNA required for enzyme production (repressible & inducible)
repressor	blocks attachment of RNA polymerase
corepressor	cooperates w/repressor to turn operon off
activator	stimulates transcription (ex: cAMP)
miRNA, siRNA	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

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