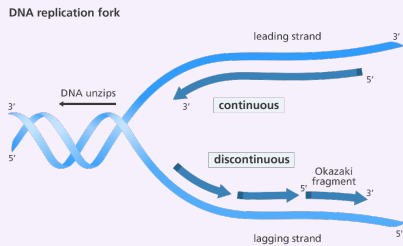
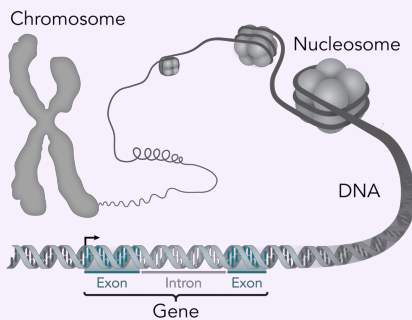


DNA Replication



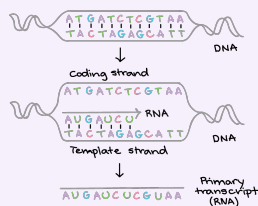
helicases- untwist double helix
topoisomerase- breaks, swivels, & rejoins
primer- initial stretch of RNA
DNA polymerases- adds nucleotides

Chromosome Structure



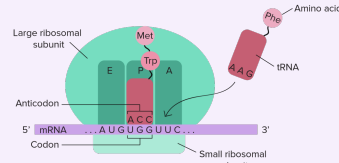
histones make up nucleosomes

Transcription



-RNA polymerase synthesizes RNA
-promoter initiates, terminator (bacteria)/p-
olyadenylation 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 replacement of nucleotide
substi- w/another; silent=no effect,
tutions missense=change 1 amino
acid, nonsense=changes
amino acid codon to stop
codon

insertions additions or losses of
& nucleotide pairs
deletions

Regulation of Genes

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

repressor blocks attachment of RNA
polymerase

corepr- cooperates w/repressor to turn
essor operon off

activator stimulates transcription (ex:
cAMP)

miRNA, degrades target mRNA, blocks
siRNA translation

Biotechnology

restriction cut DNA sequences at
enzymes palindrome restriction sites

ligase seals breaks

vector vehicle of DNA to replace
or express genetic material

Polymerase produces copies of DNA
Chain w/o cells
Reaction

cDNA DNA produced w/ reverse
transcriptase

Viruses

capsid protein coat, made of
capsomeres

lytic phage enters cell, takes
cycle control, replicates, lyses cell

lysogenic viruses replicate w/o destroying
cycle host

prophage dormant virus within host
genome

retrovirus synthesize cDNA from RNA w/
reverse transcriptase

Bacteria

binary asexual reproduction (variation
fission w/mutation)

transf- recombination of pieces of DNA
orm- into a live bacterium
ation

transd- bacteriophages carry genes
uction host-host

plasmid foreign, small, circular, self-repl-
icating DNA

conjug- F plasmid produces sex pilli,
ation allow DNA to transfer