Ch 17.3 Notes

---------------------------------------------------------------------------------------------------------------------

Vocab

---------------------------------------------------------------------------------------------------------------------

RNA Processing: The sequence of events through which the primary transcript from a gene acquires its mature form

5’ Cap: A specially altered nucleotide on the 5′ end of some primary transcripts such as precursor messenger RNA

Poly-A tail:A long chain of adenine nucleotides that is added to a messenger RNA (mRNA) molecule during RNA processing

RNA Splicing: A process that removes the intervening, non-coding sequences of genes (introns) from pre-mRNA and joins the protein-coding sequences (exons)

Introns: Non-coding sequences of genes

Exons: Protein-coding sequences of genes

Spliceosome: A large RNA-protein complex that catalysis the removal of introns from nuclear pre-mRNA

Ribozymes: Catalytically active RNA molecules or RNA–protein complexes, in which solely the RNA provides catalytic activity

Alternative RNA Splicing: The process of selecting different combinations of splice sites within a messenger RNA precursor (pre-mRNA) to produce variably spliced mRNAs

---------------------------------------------------------------------------------------------------------------------

Notes

---------------------------------------------------------------------------------------------------------------------

RNA processing

* Primary transcript 🡪 mRNA

5’ cap

Poly-A tail

Splicing

End Additions

mRNA processing

* Nucleotide added to beginning of each mRNA= 5’ cap
  + Helps mRNA bind to ribosome and prevents premature breaking down of strand
* String of nucleotides added to end of mRNA= poly-A tail
  + Helps mRNA exit nucleus

Splicing

Spliceosome

* Carries out splicing
* Introns= nucleotides that don’t code for proteins
  + Removed from mRNA before leaves nucleus
  + Maybe regulate expression
  + Can be different for different proteins= increase genetic variation
  + Prokaryotes don’t have many of these and they aren’t removed

Exons= coding nucleotides

Ribozyme

RNA molecule that acts like an enzyme

Catalyzes own splicing

Not all catalysts are proteins???

Requirements

* Antiparallel section
  + Temporary 3D structure
* Certain bases have catalytic function
* RNA can hydrogen bond with other nucleic acid molecules (can bond with itself)

Alternative Splicing

One gene can encode more than one polypeptide

Different exons can code for different domains (functional parts of protein)

Introns provide more variation possibilities for crossing over