









## 2) Specialized RNA polymerases.

In Prokaryotes there is only one RNA polymerase responsible for transcription. In Eukaryotes there are three!!

Properties of	Eukaryotic	RNA Po	lymerases
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RNA Polymerase	LOCATION	PRODUCTS	α-Αμανιτιν Sensitivity
I	Nucleolus	28S, 18S, 5.8S rRNAs	Insensitive
11	Nucleus	mRNA Some snRNAs	Highly sensitive
111	Nucleus	tRNA 55 rRNA Some snRNAs	Intermediate sensitivity



















CONTRASTING HUMAN GENE SIZE, MRNA SIZE, AND THE NUMBER OF INTRONS						
Gene Size (kb)	mRNA Size (kb)	Number of Introns				
1.7	0.4	2				
38.0	5.0	50				
25.0	2.1	14				
90.0	2.4	12				
2000.0	17.0	50				
	Contra Size, M Number Size (kb) 1.7 38.0 25.0 90.0 2000.0	CONTRASTING HUM SIZE, MRNA SIZE, M NUMBER OF INTROM				





## **Classes of Introns**

I. Self excising RNAs (ribozymes) Discovered by T. Cech

Organelle genomes, bacteria and rRNA of Protists

II. Mitochondrial and Chloroplast mRNA & some Bacteria

III. mRNA in Eukaryotes. Introns have characteristic junctions (5'---<u>GU ---A--- AG</u>----3'). Spliceosome complex with snRNP (small nuclear ribo-nucleo-proteins, U1 - U6) is required for removal.

IV. tRNA folding loop (about 15 nucleotides near anti codon of some tRNAs) enzymatically removed.



The gene for dystrophin (a mutation in which causes muscular dystrophy), is over 2000kb long, but the mRNA is only 14kb long. What is the cause of this discrepancy?

A) Exons are spliced out of the mRNA before translation

B) DNA is double stranded and RNA is single stranded

C) There are more amino acids coded by the DNA than the mRNA

D) Introns are spliced out of the DNA before mRNA is produced

E) Introns are spliced out of the RNA before translation









			Co	ntrol	of genes.				
Recall, in Drosophila:									
			if ) fer	if X/A = 1, SxI gene is turned "on" and a female is produced					
If X/A = ½, SxI is "off", a male is produce						produced.			
Dro	sop <b>li</b> a _	<u>Xsisab,</u> Adprn(de	<u>; (sisterless</u> ) adpam)		SxI Sex lethal	tı tr	<b>a</b> ansforn	ner	dsx doublesex
хх	Courting	g →	X:A = 1	<b>→</b>	ON	<b>→</b>	ON	•	Female
XY	Courting	g →	X:A = 0.5	<b>→</b>	OFF	<b>→</b>	OFF	•	Male









