

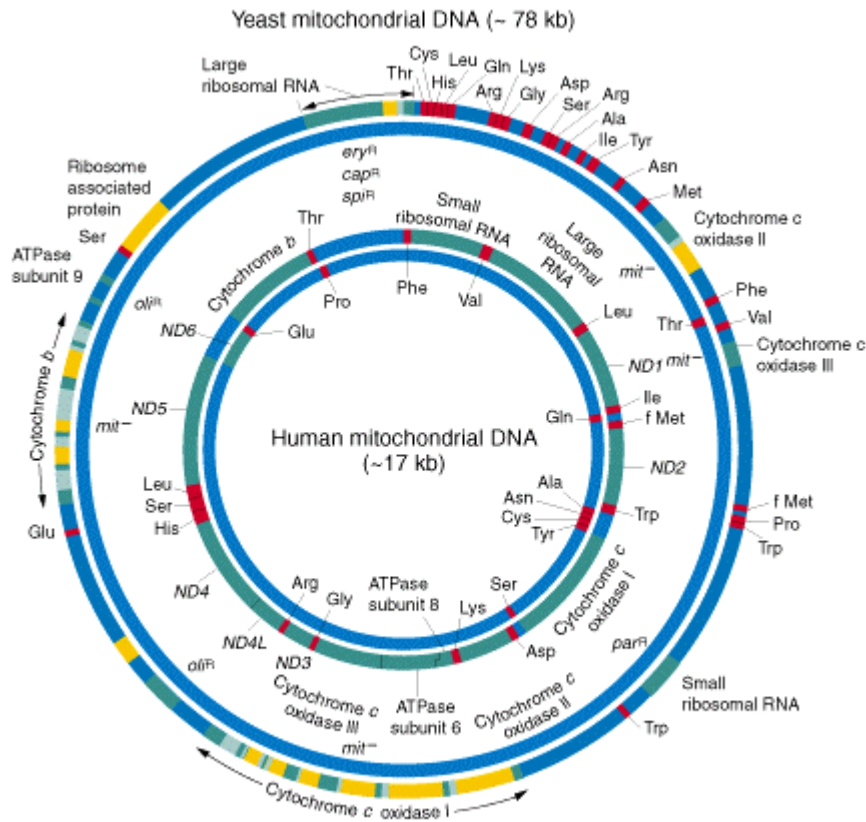
5/7/02

Research report due Friday

Final exam 11:30 a.m., May 16

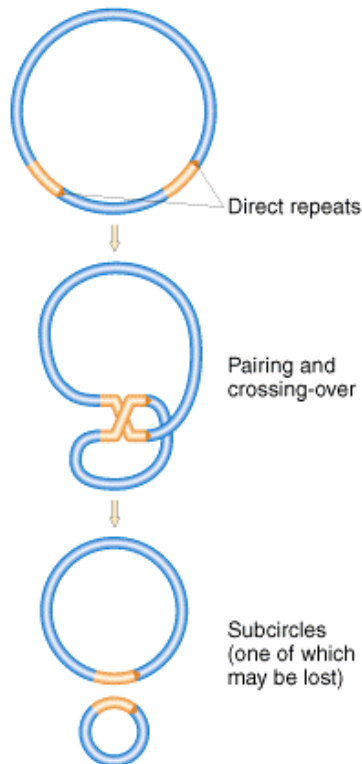
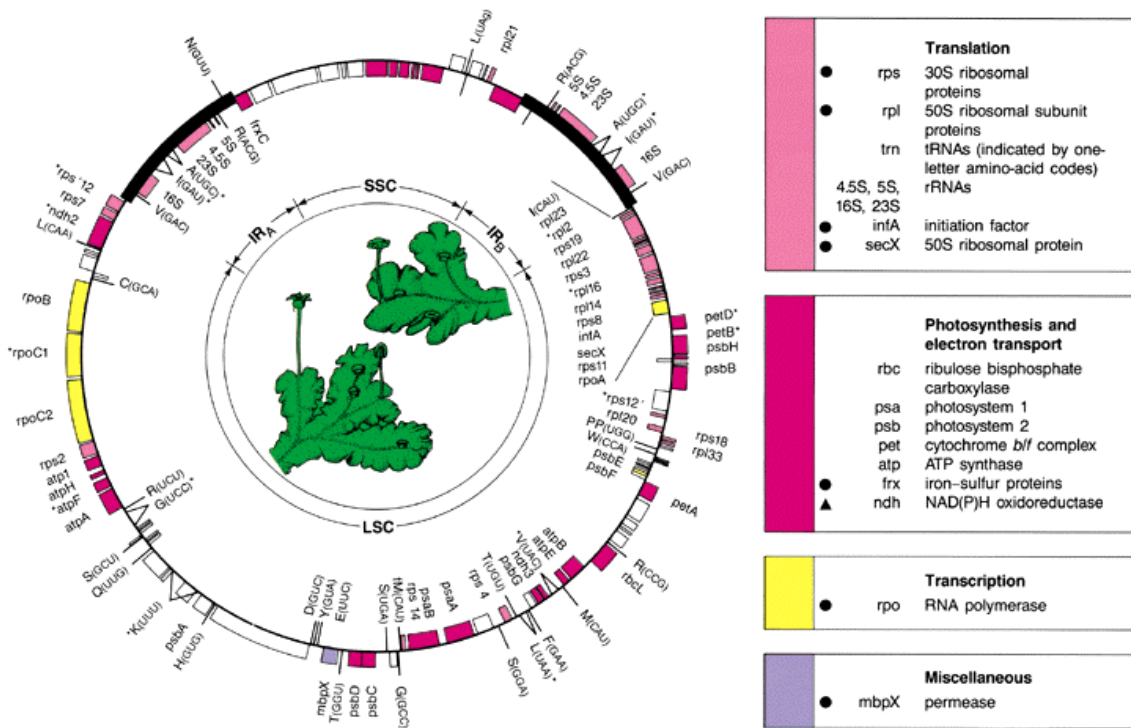
### Extranuclear Inheritance

- Genes from the mitochondria or chloroplast genomes
- With few exceptions, demonstrate uniparental inheritance, usually from female parent
- Most functional genes are for organellar transcription and translation and energy production
- Some gene products from the nuclear genome are transported into the organelles and function there
- Some organellar transcripts are translated in the cytoplasm then the polypeptides are transported into the organelle.
  
- Genome size - mitochondria
  - Mitochondria chromosome (mtDNA) - 17 kb (humans) - 78 kb (yeast)
  - mtDNA per mitochondrion - 2-10 (humans) - 40-150 (yeast)
  - mitochondria per cell - 100's-1000's (humans) - 1-45 (yeast)
  
- Genome size - chloroplast
  - Chloroplast chromosome (cpDNA) - 120-200 kb
  - cpDNA per chloroplast - 16-116 (beet) - 500-1500 (*Chlamydomonas*)
  - chloroplasts per cell - 1 (*Chlamydomonas*) - 40 (beet)



Second letter

		U	C	A	G			
U	U	Phe	Ser	Tyr	Cys	U	Third letter	
		Phe	Ser	Tyr	Cys			C
		Leu	Ser	Stop	(Stop) Trp			A
		Leu	Ser	Stop	Trp			G
C	C	Leu	Pro	His	Arg	U	Third letter	
		Leu	Pro	His	Arg			C
		Leu	Pro	Gin	Arg			A
		Leu	Pro	Gin	Arg			G
A	A	Ile (Met)	Thr	Asn	Ser	U	Third letter	
		Ile	Thr	Asn	Ser			C
		(Ile) Met	Thr	Lys	(Arg) Stop			A
		Ile	Thr	Lys	(Arg) Stop			G
G	G	Val	Ala	Asp	Gly	U	Third letter	
		Val	Ala	Asp	Gly			C
		Val	Ala	Glu	Gly			A
		Val	Ala	Glu	Gly			G



-produces petite mtDNA  
 -mitochondrial mutations thought to contribute to aging

