

From gene to phenotype



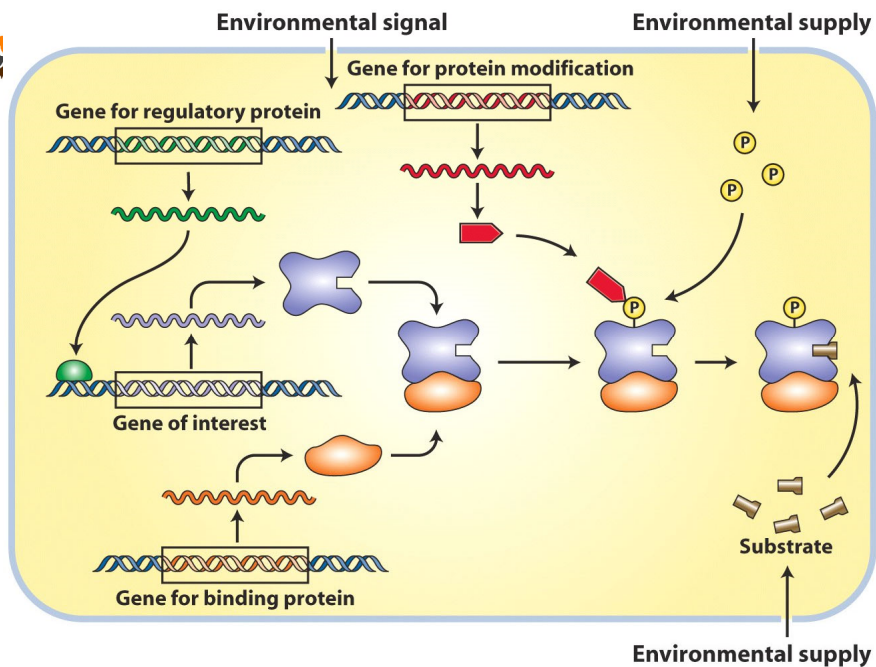
Hossein Jorjani
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018 - 67 1964

1

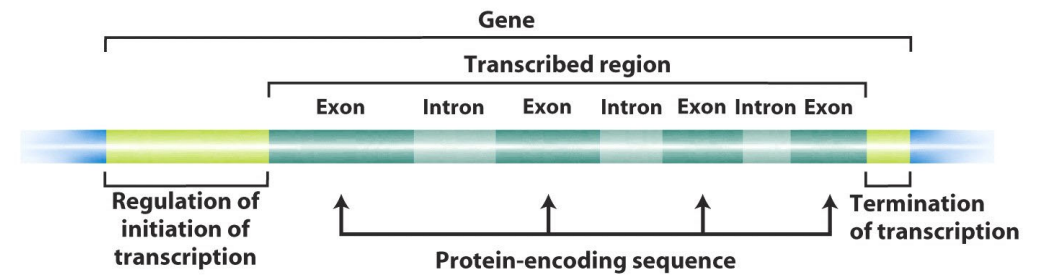


From DNA to protein

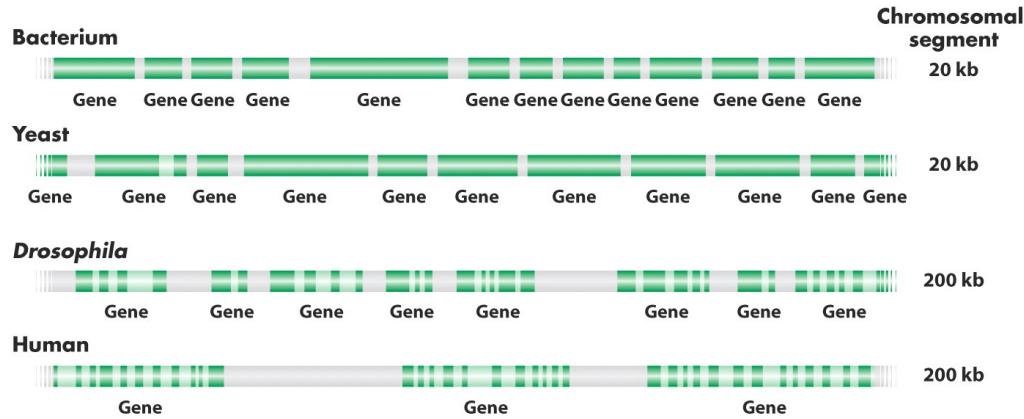
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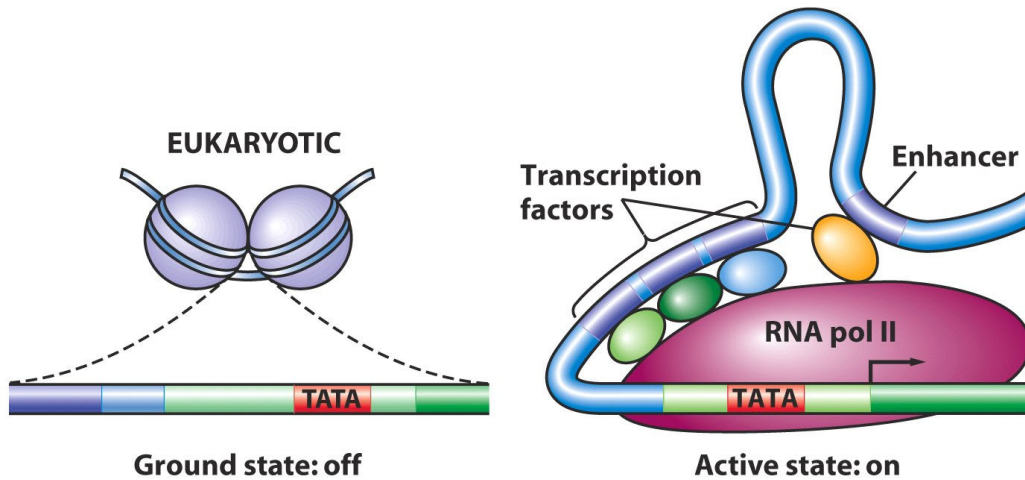
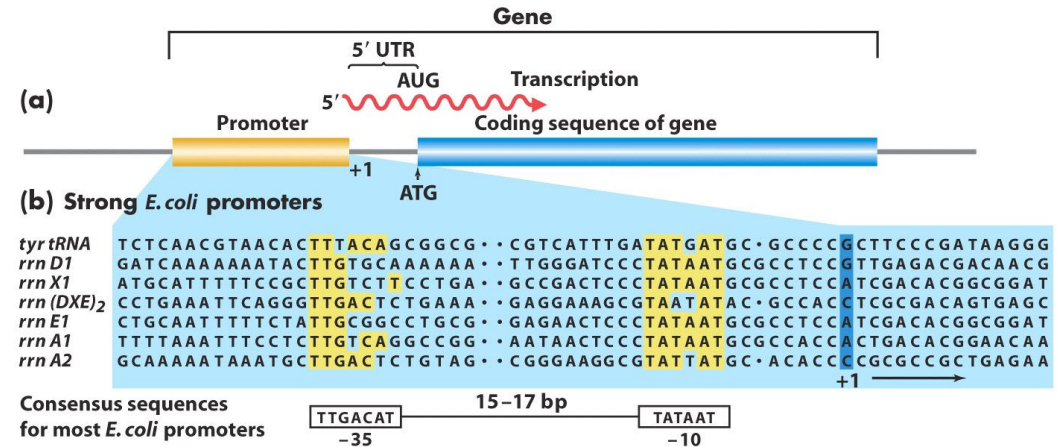
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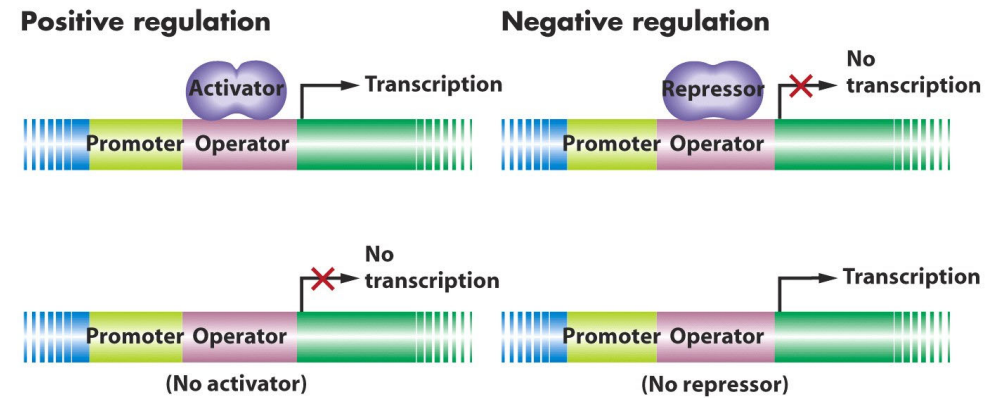
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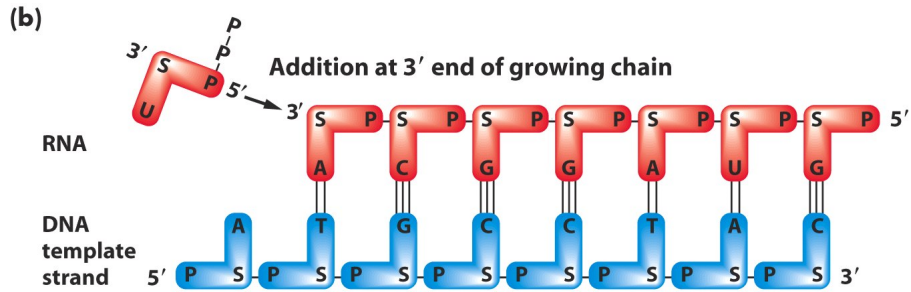
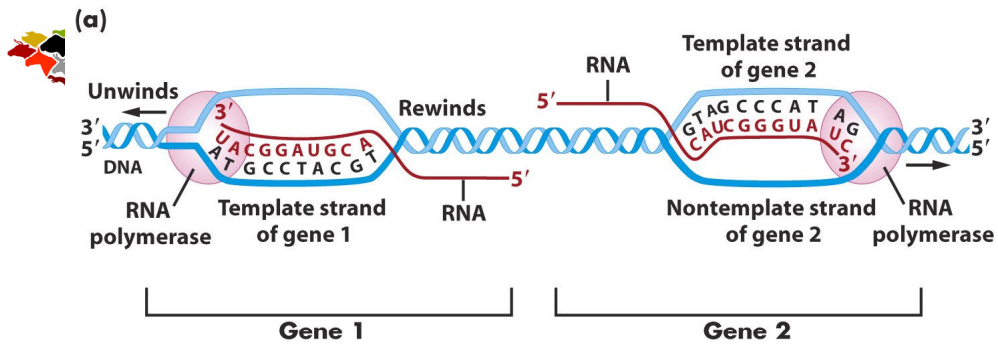
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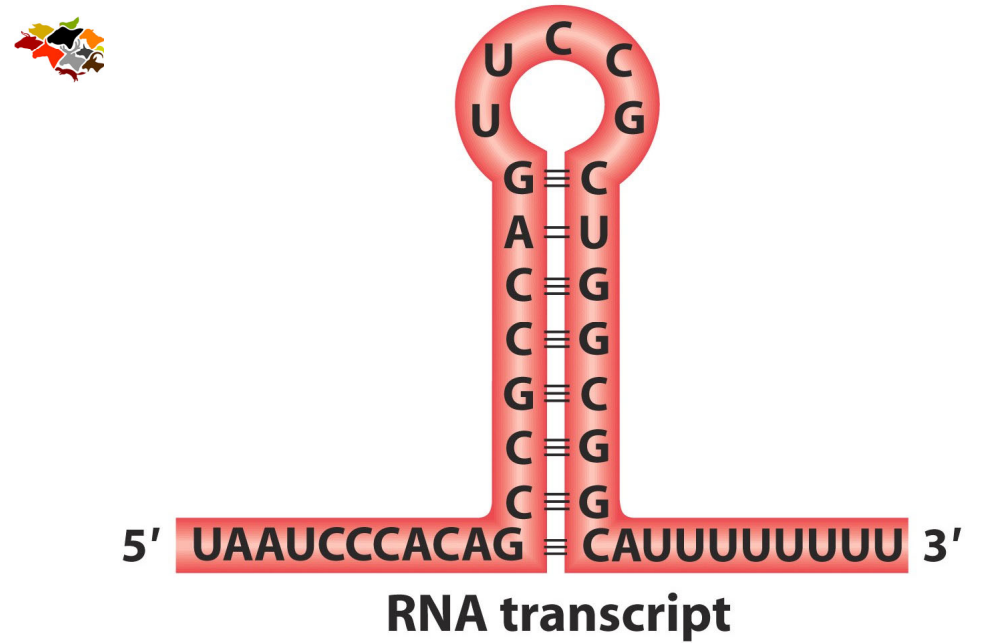
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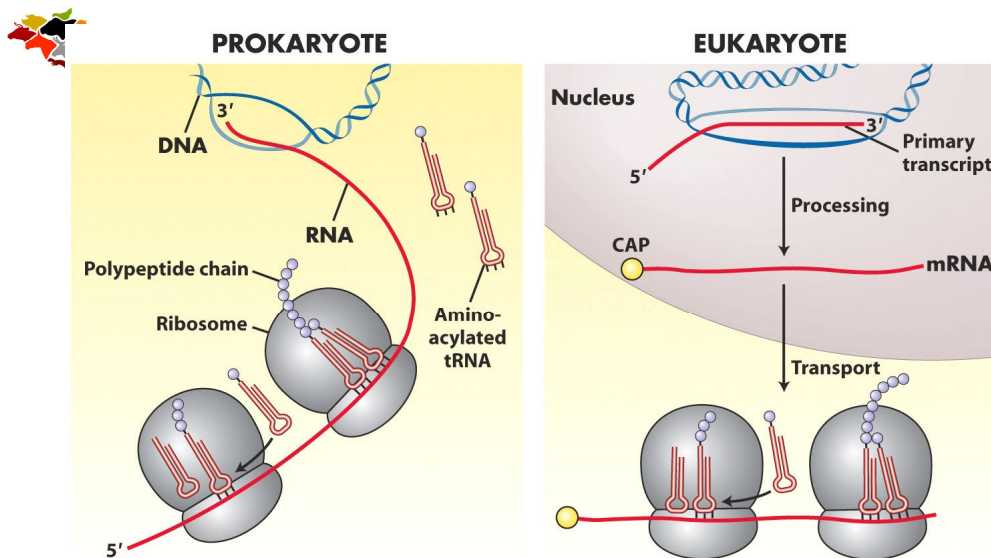
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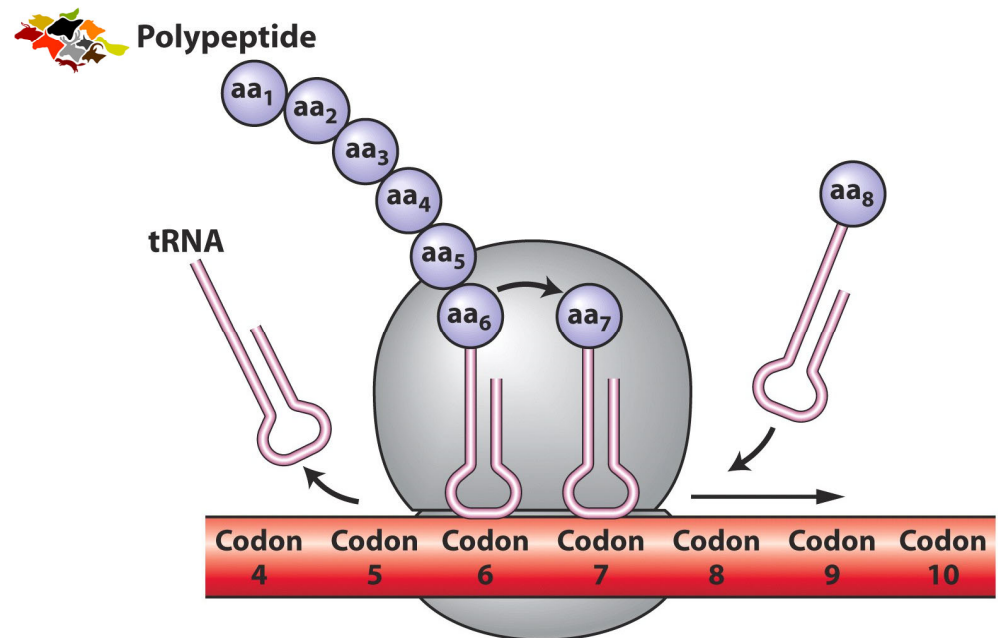
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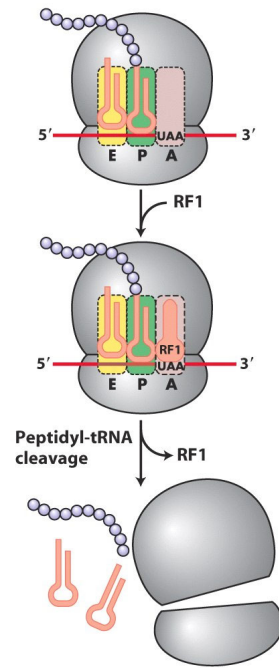
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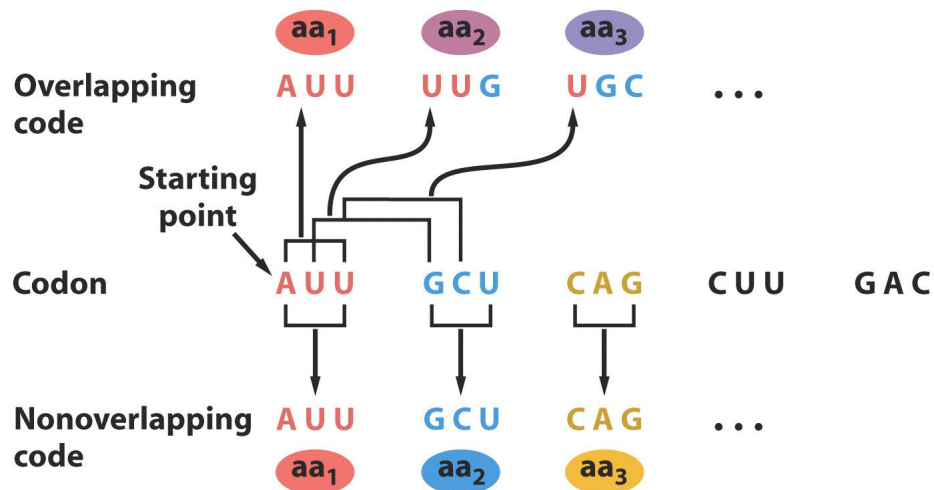


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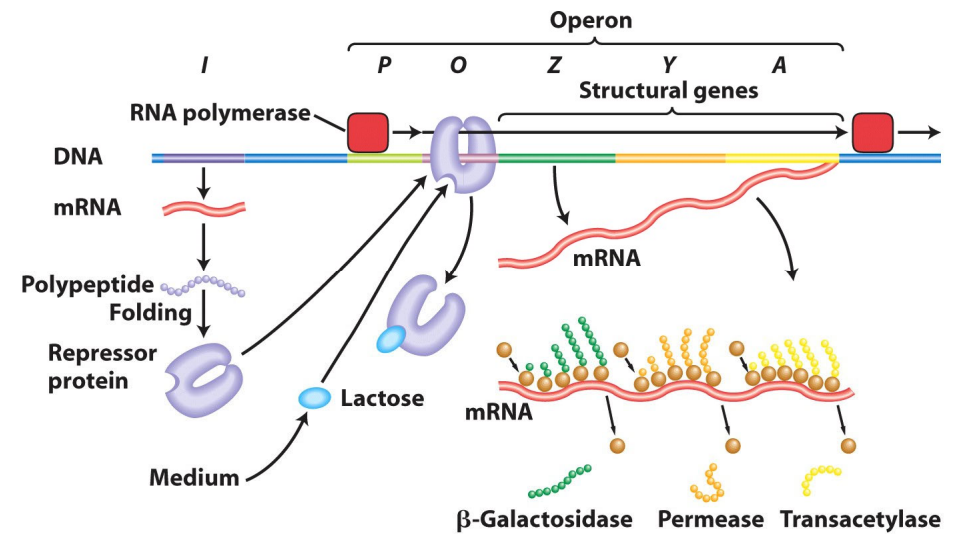


		Second letter				Third letter
First letter		U	C	A	G	
	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA Stop UAG Stop	UGU } Cys UGC } UGA Stop UGG Trp	
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	
	A	AUU } AUC } Ile AUA } AUG Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	

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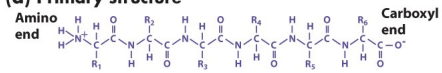
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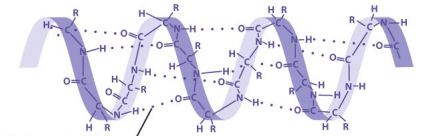
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(a) Primary structure



(b) Secondary structure

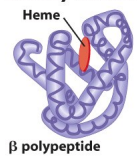


Hydrogen bonds between amino acids at different locations in polypeptide chain

α helix

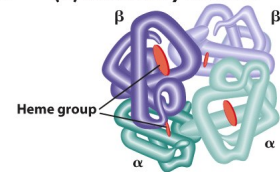
Pleated sheet

(c) Tertiary structure



β polypeptide

(d) Quaternary structure



Heme group

β

α

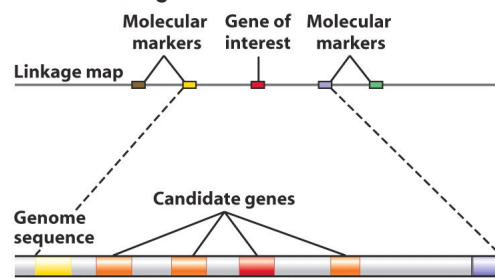
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Genomics

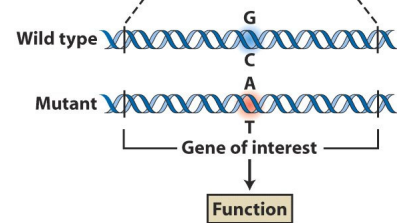
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1 Localize gene of interest to a delimited region



2 Find exact location of gene of interest



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Genome

1 Make random clones.



2 Sequence each clone.

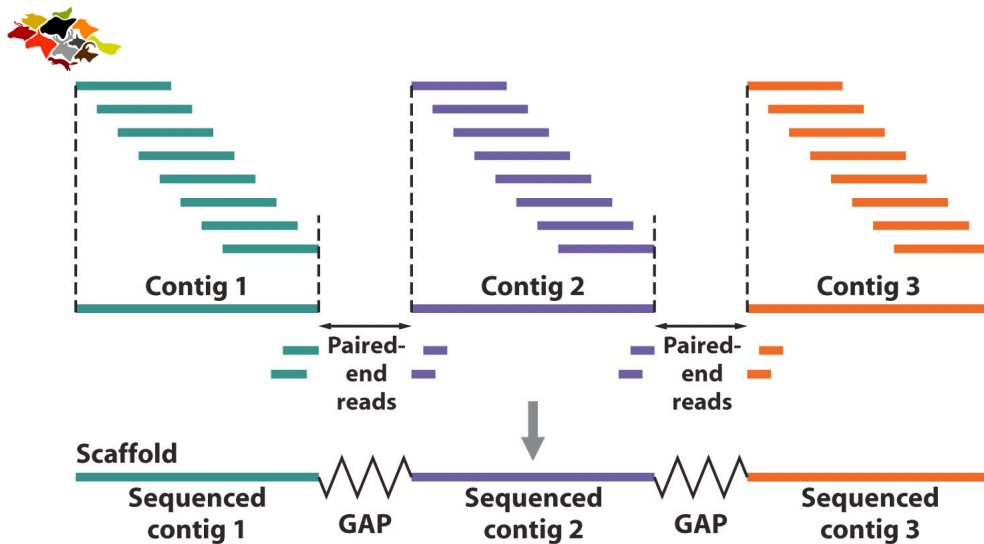
3 Overlap sequence reads.



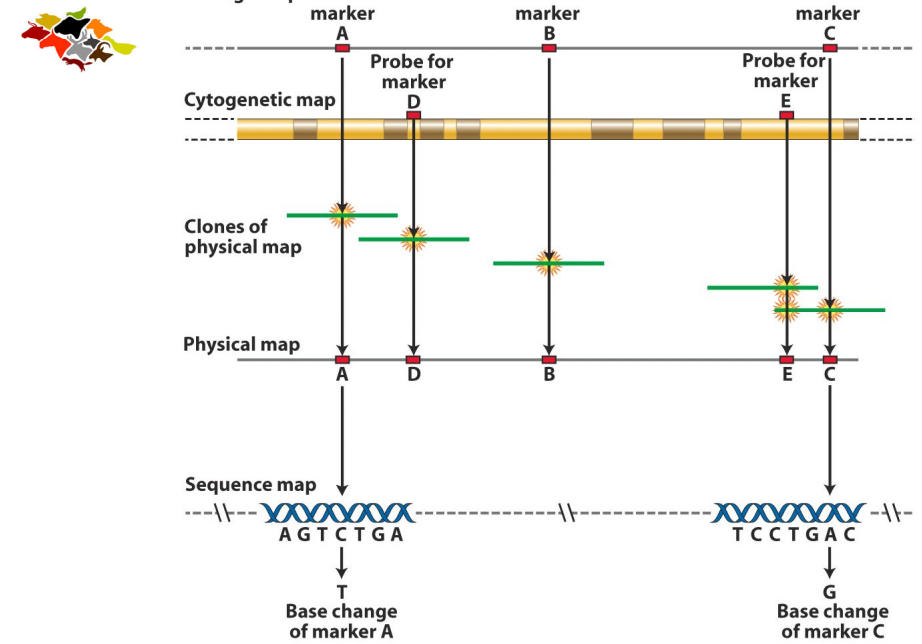
4 Overlap contigs for complete sequence.



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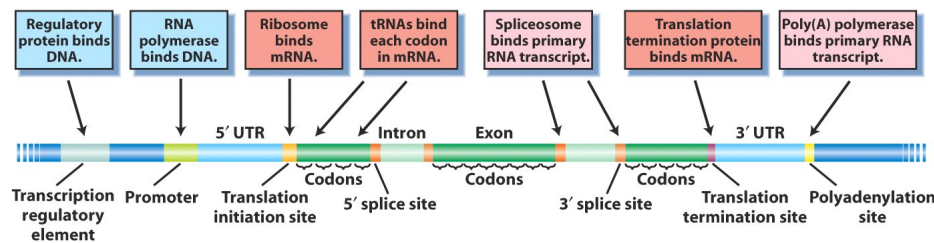


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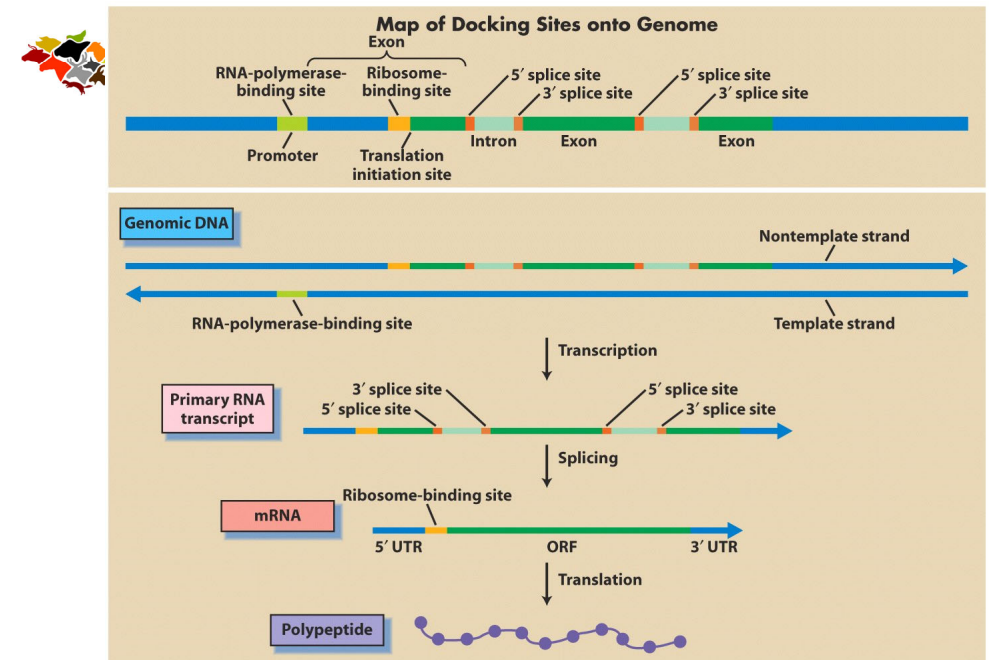


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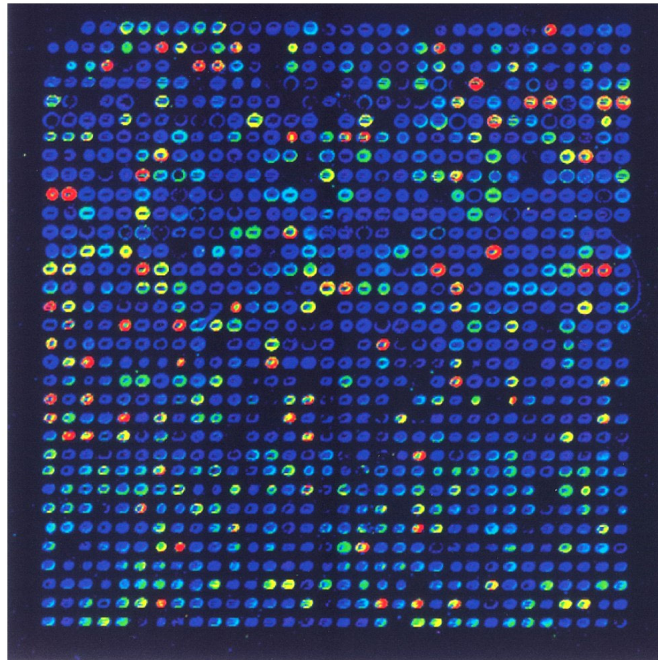
The circle is now complete ...



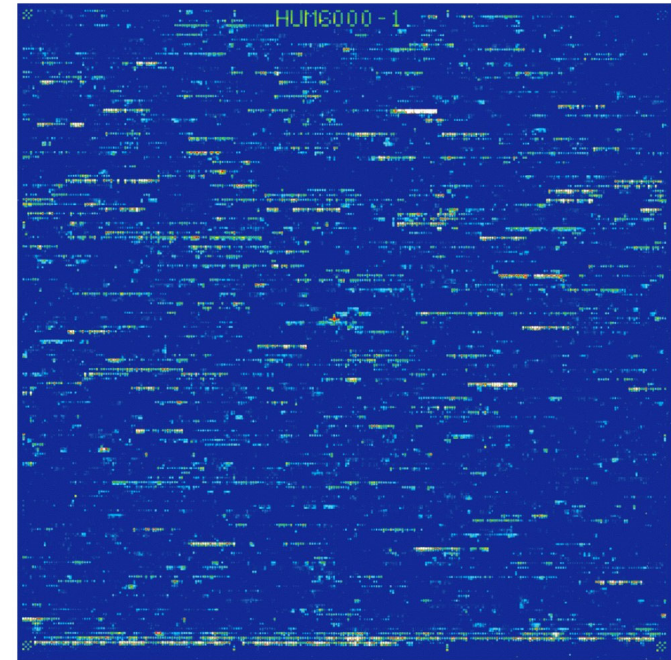
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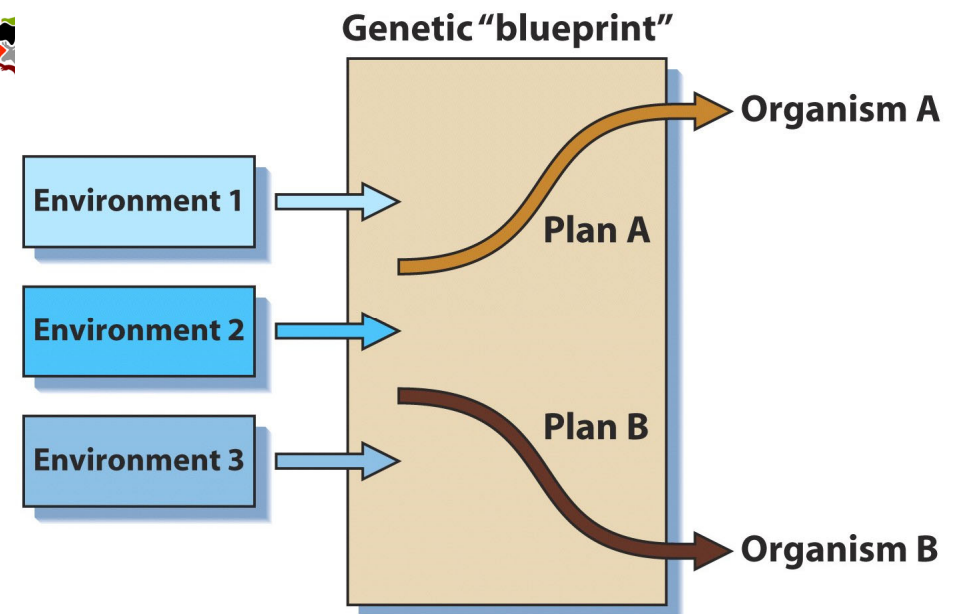


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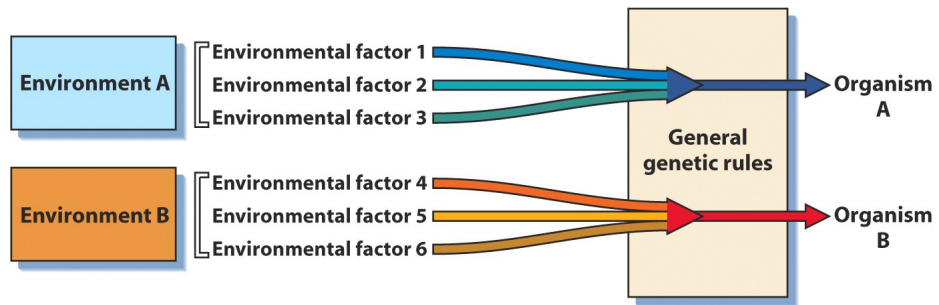


Genes and environments

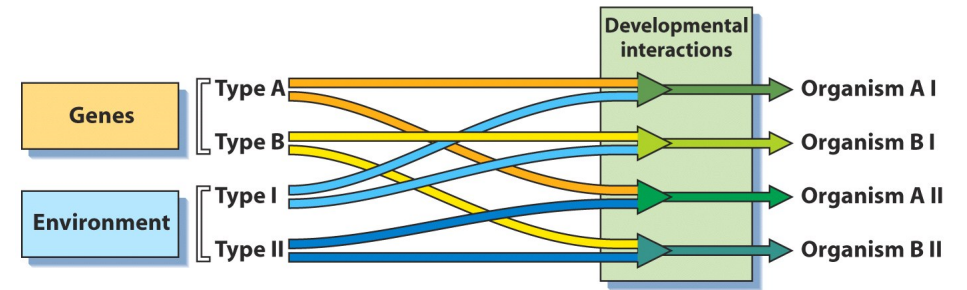
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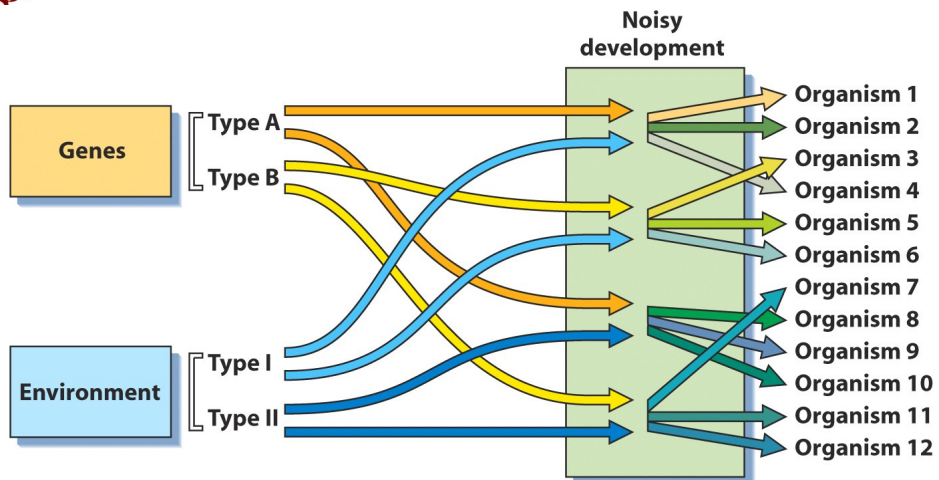
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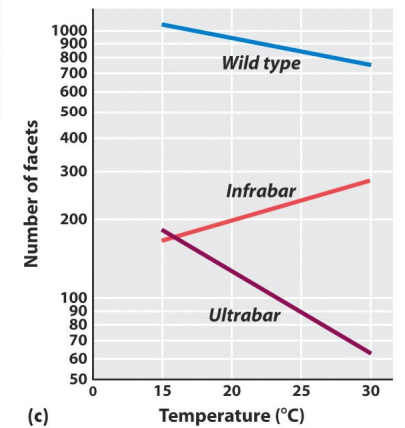
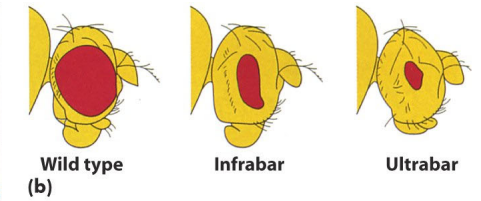
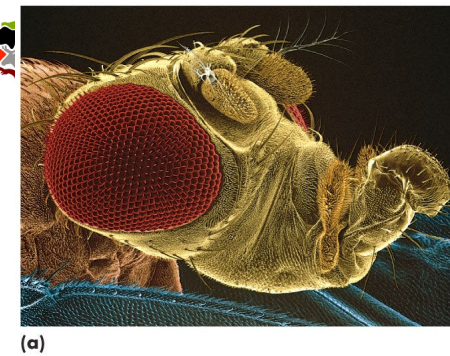
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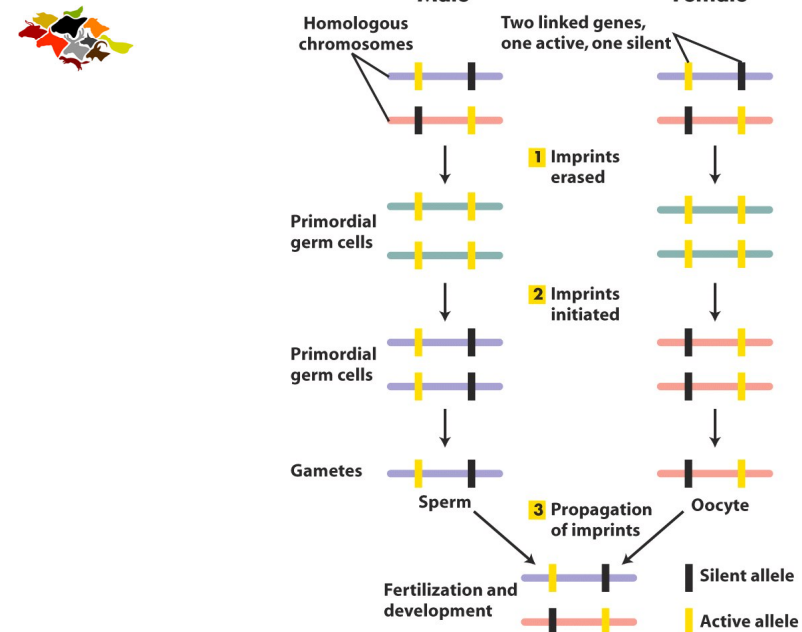
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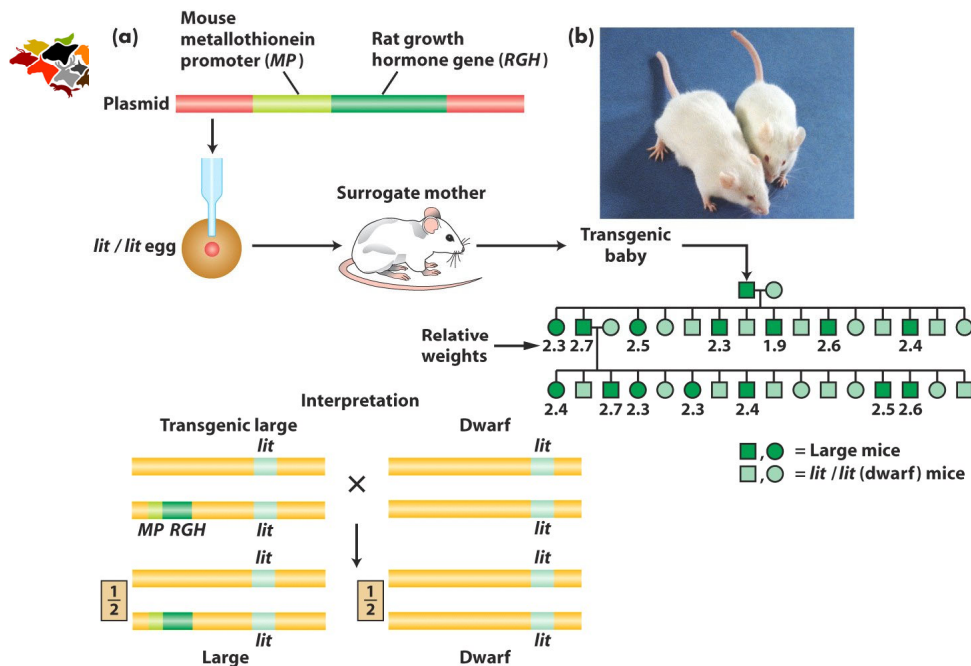
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Two special examples

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