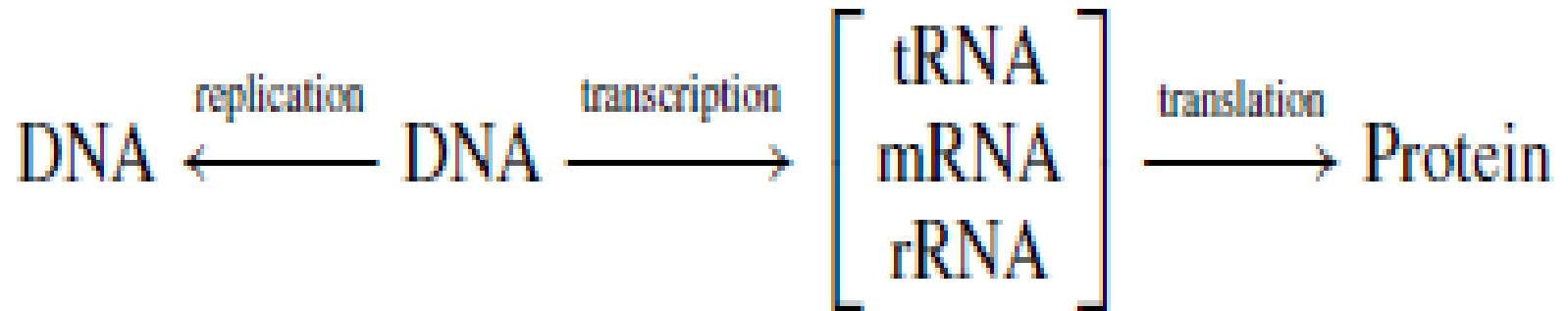


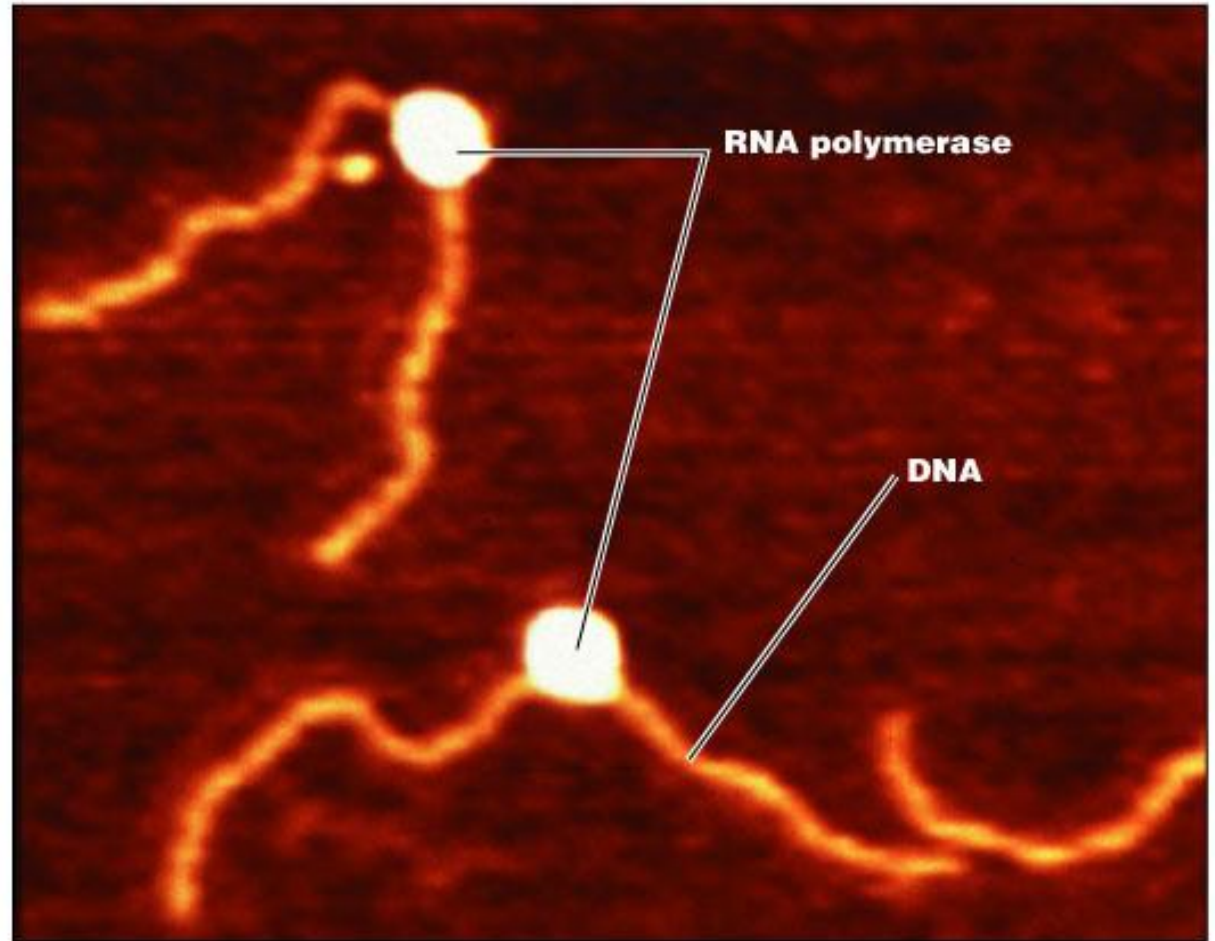
**وراثة الأحياء الدقيقة**  
**Microbial Genetics**

**أساسيات في علم الوراثة**  
**Fundamentals of Genetics**  
**Lecture 5**

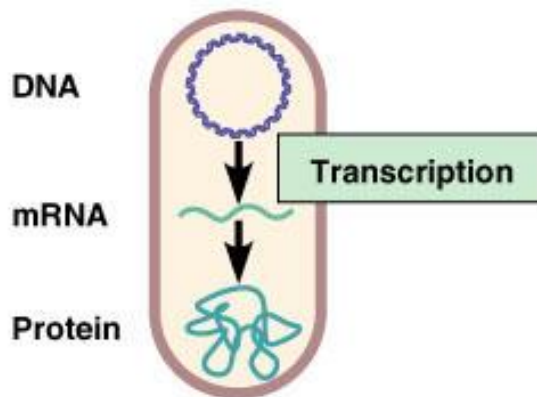
# Genetic Materials المادة الوراثية



# Transcription



RNA Polymerase bound to DNA



# Translation: Protein Synthesis

- Bacterial nucleoid and its cytoplasm- No physical boundary.
- Translation proceed simultaneously with transcription.
- The complex of mRNA and translating ribosomes is designated as “**Polysome**”.
- The mRNA binding site for a ribosome is not at the 5'-end of an mRNA molecule.
- In Bacteria the binding site- 9 bp known as the Shine–Dalgarno box.

# Translation: Protein Synthesis

- mRNA is translated in codons (3 nucleotides).
- Translation of mRNA begins at the START codon: **AUG**.
- Translation ends at a STOP codon: **UAA, UAG, UGA**.
- In Bacteria, a ribosome cannot terminate without the stop codon.
- If the ribosome does manage to terminate, the truncated protein- toxic or inhibitory properties within the cytoplasm.

Second base

		Second base					
		U	C	A	G		
First base	U	UUU } Phenyl- UUC } alanine <b>F</b> UUA } Leucine <b>L</b> UUG }	UCU } UCC } Serine UCA } <b>S</b> UCG }	UAU } Tyrosine <b>Y</b> UAC } UAA } Stop codon UAG } Stop codon	UGU } Cysteine <b>C</b> UGC } UGA } Stop codon UGG } Tryptophan <b>W</b>	U	C
	C	CUU } CUC } Leucine <b>L</b> CUA } CUG }	CCU } CCC } Proline CCA } <b>P</b> CCG }	CAU } Histidine <b>H</b> CAC } CAA } Glutamine <b>Q</b> CAG }	CGU } CGC } Arginine CGA } <b>R</b> CGG }	U	C
	A	AUU } Isoleucine <b>I</b> AUC } AUA } AUG } Methionine start codon <b>M</b>	ACU } ACC } Threonine ACA } <b>T</b> ACG }	AAU } Asparagine <b>N</b> AAC } AAA } Lysine <b>K</b> AAG }	AGU } Serine <b>S</b> AGC } AGA } Arginine AGG } <b>R</b>	U	C
	G	GUU } GUC } Valine <b>V</b> GUA } GUG }	GCU } GCC } Alanine GCA } <b>A</b> GCG }	GAU } Aspartic GAC } acid <b>D</b> GAA } Glutamic GAG } acid <b>E</b>	GGU } GGC } Glycine GGA } <b>G</b> GGG }	U	C
						A	G
						Third base	

# QUESTIONS??

