



**EUBACTERIA  
CYTOLOGY  
CELL MEMBRANE**

**OUTER PROTOPLAST  
BOUNDARY**

**EUBACTERIA  
CYTOLOGY  
CELL MEMBRANE**



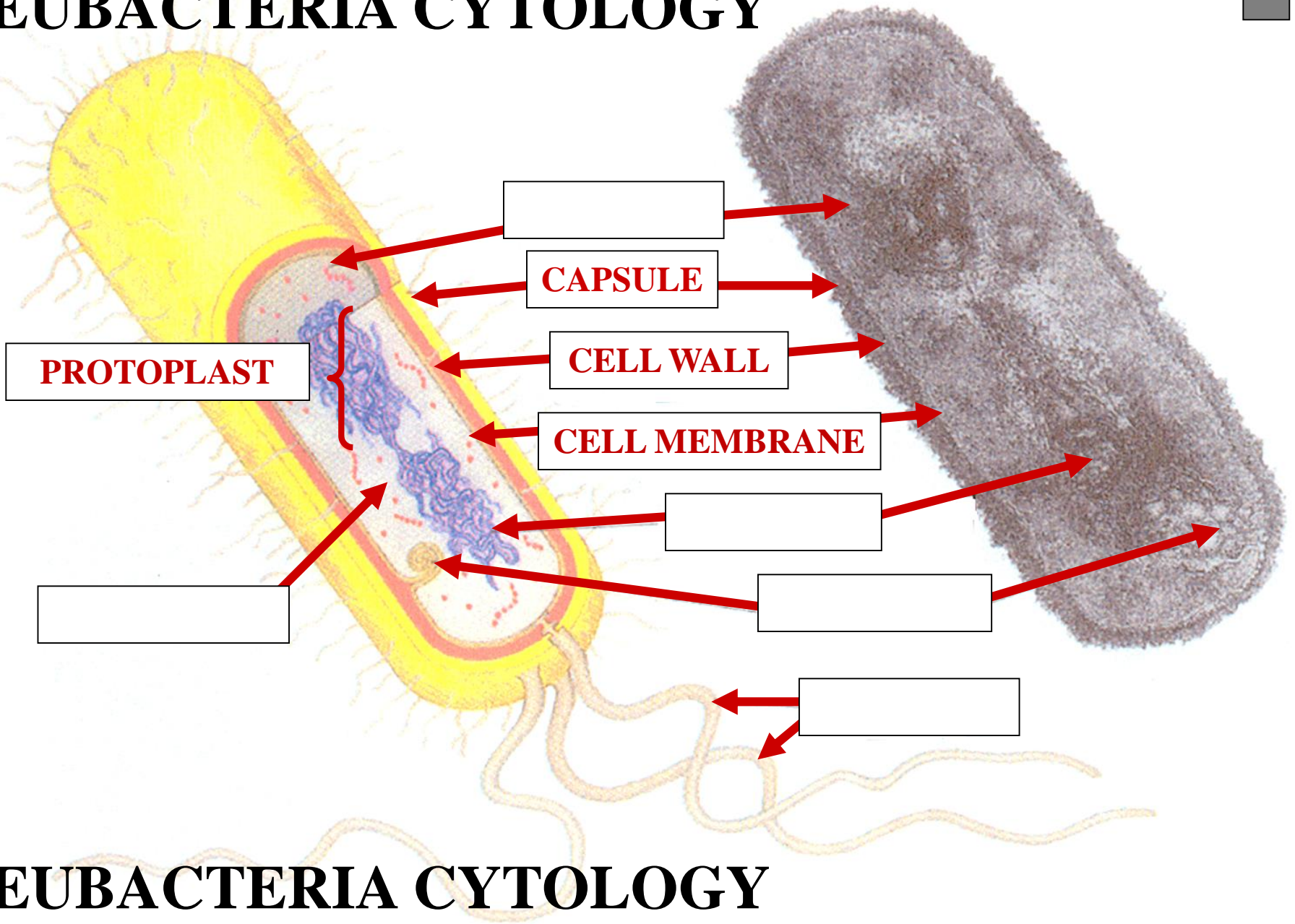
**EUBACTERIA  
CYTOLOGY  
CELL MEMBRANE  
OUTER PROTOPLAST  
BOUNDARY**

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**MEDIATES TRANSPORT  
INTO & OUT OF CELL**

**EUBACTERIA  
CYTOLOGY  
CELL MEMBRANE**

# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY

# MESOSOMES

**MESOSOMIE**

**EUBACTERIA  
CYTOLOGY  
MESOSOME**



**MEMBRANE INVAGINATION**

**EUBACTERIA  
CYTOLOGY  
MESOSOME**



**EUBACTERIA  
CYTOLOGY  
MESOSOME**

**MEMBRANE INVAGINATION**

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**INCREASES SURFACE AREA**

**EUBACTERIA  
CYTOLOGY  
MESOSOME**



**EUBACTERIA  
CYTOLOGY  
MESOSOME**

**MEMBRANE INVAGINATION**

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**INCREASES SURFACE AREA**

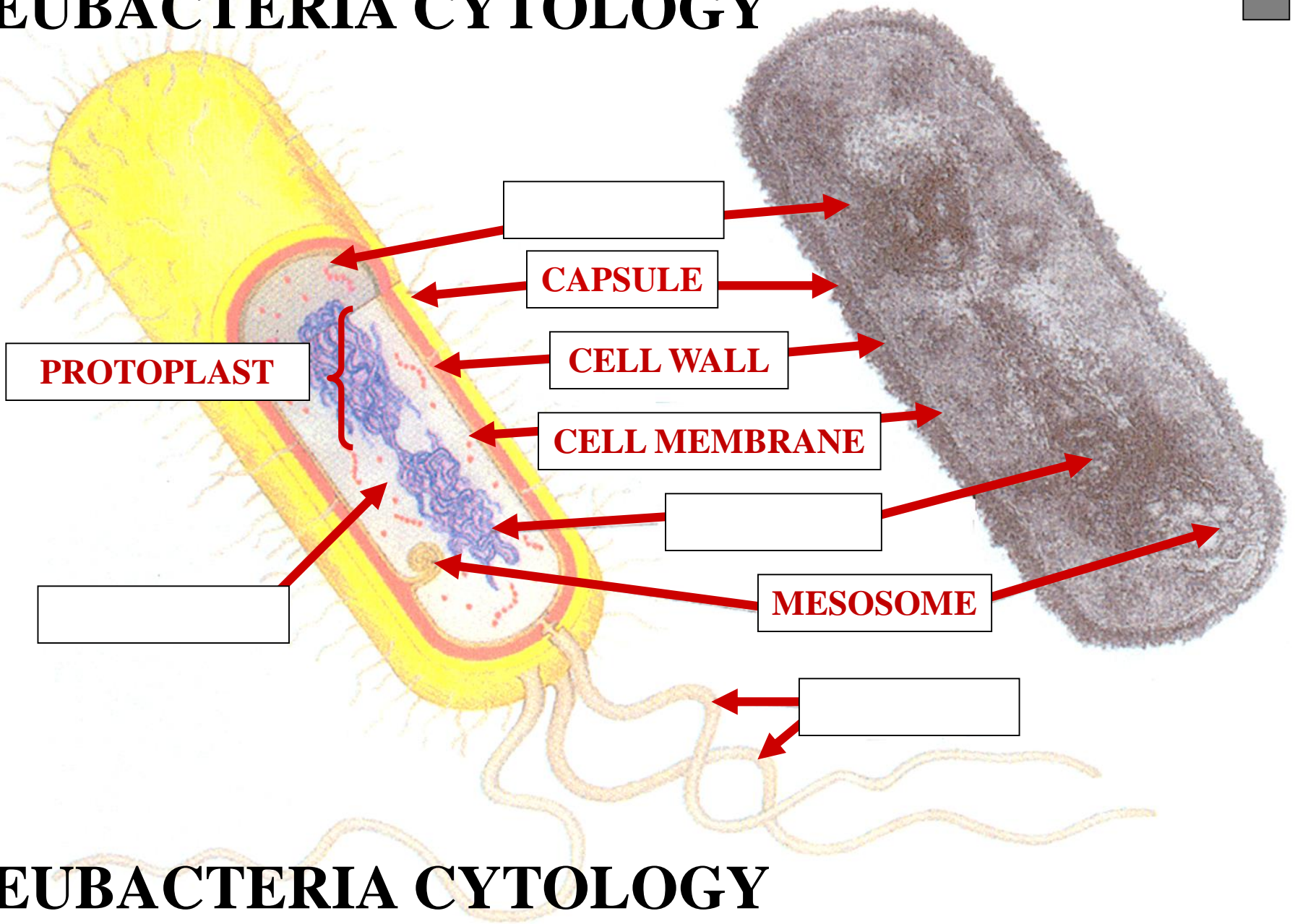
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**INCREASES FUNCTIONAL CAPACITY**

**EUBACTERIA  
CYTOLOGY  
MESOSOME**



# EUBACTERIA CYTOLOGY

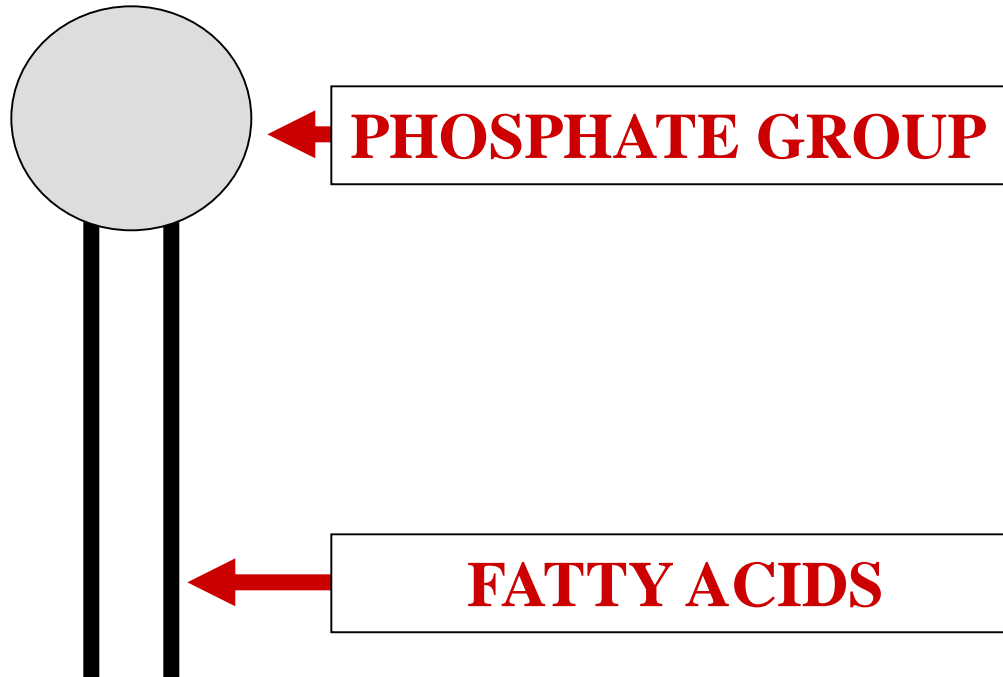


# EUBACTERIA CYTOLOGY



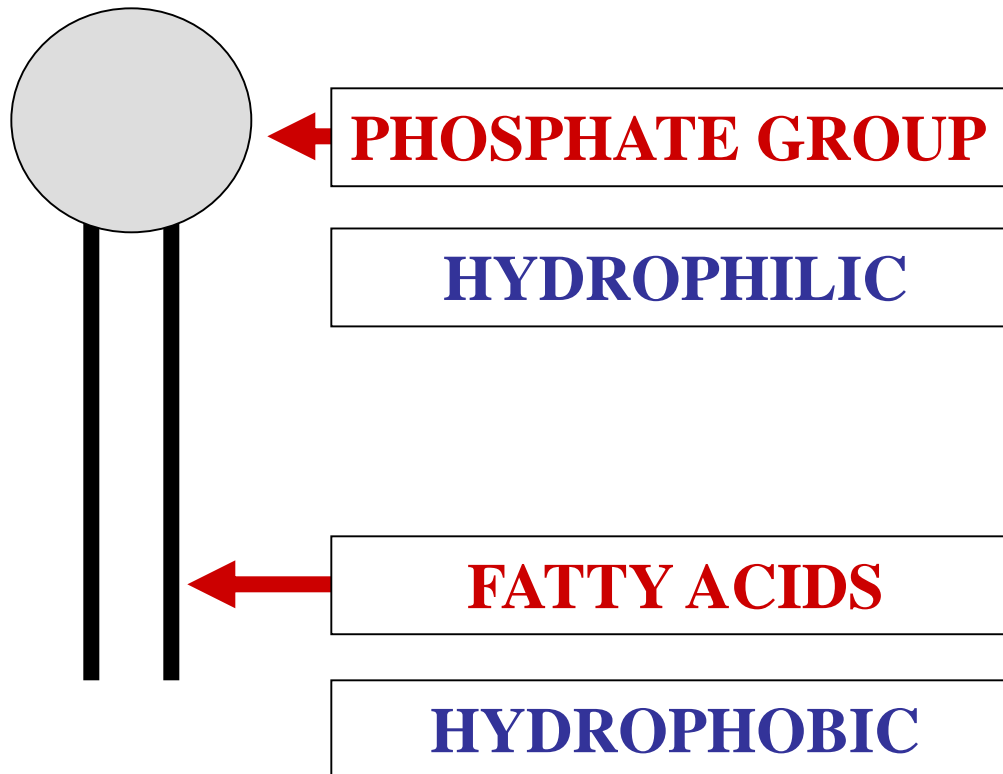
# CELL MEMBRANE COMPOSITION

# CELL MEMBRANE COMPOSITION



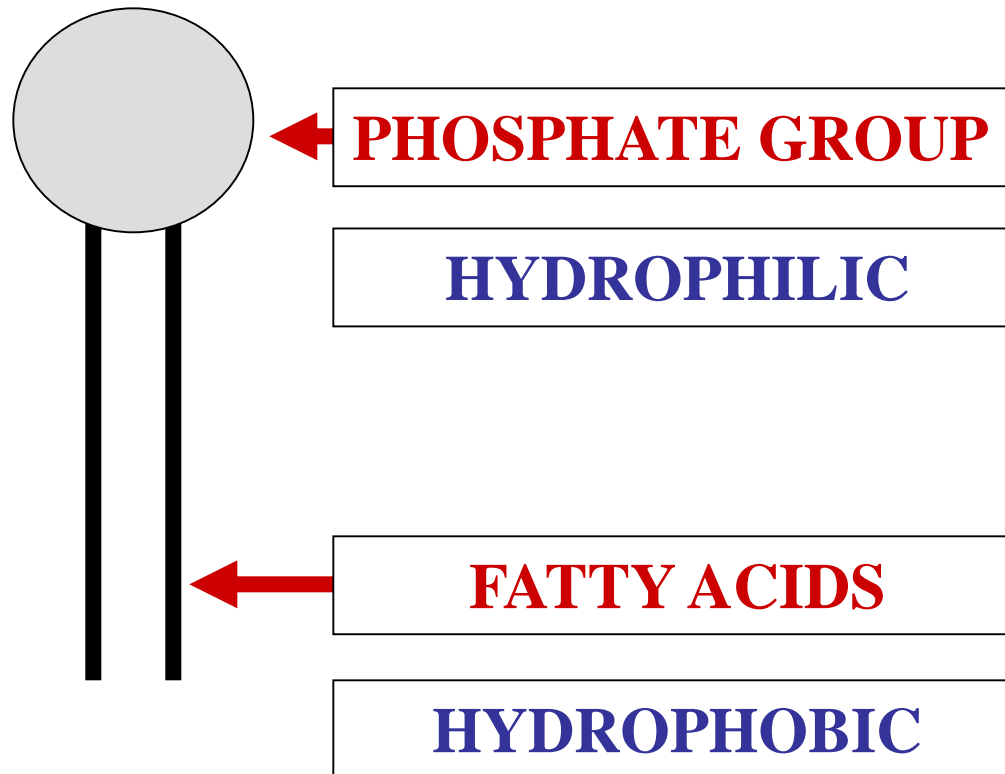
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# CELL MEMBRANE COMPOSITION



**PHOSPHOLIPID**

# CELL MEMBRANE COMPOSITION



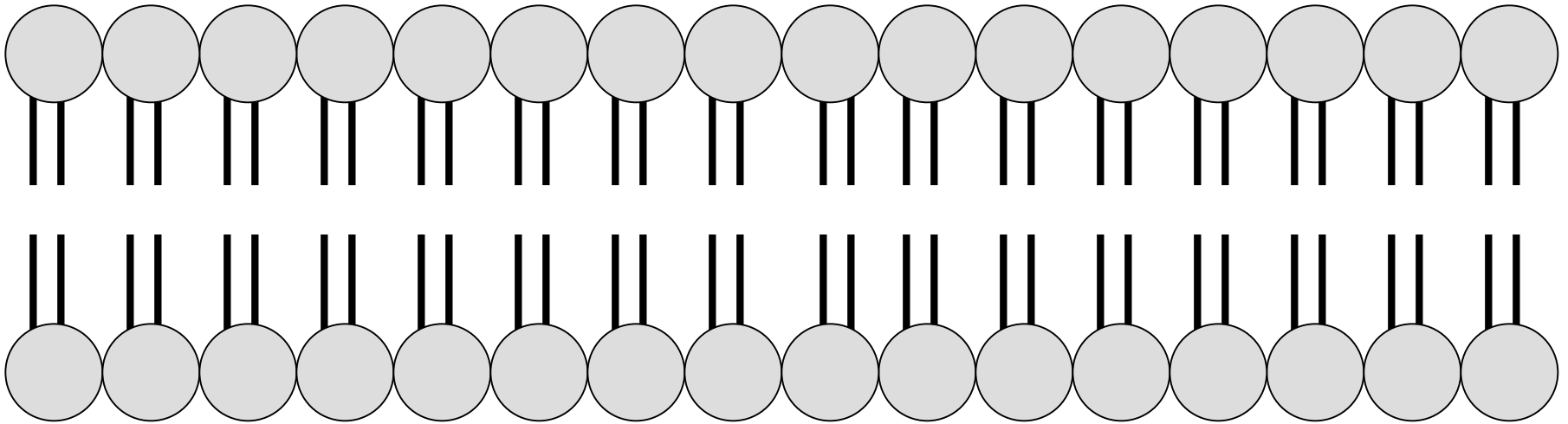
**PHOSPHOLIPID: AMPHIPATHIC**

# CELL MEMBRANE COMPOSITION

WATER

WATER

WATER



WATER

WATER

WATER

# CELL MEMBRANE COMPOSITION

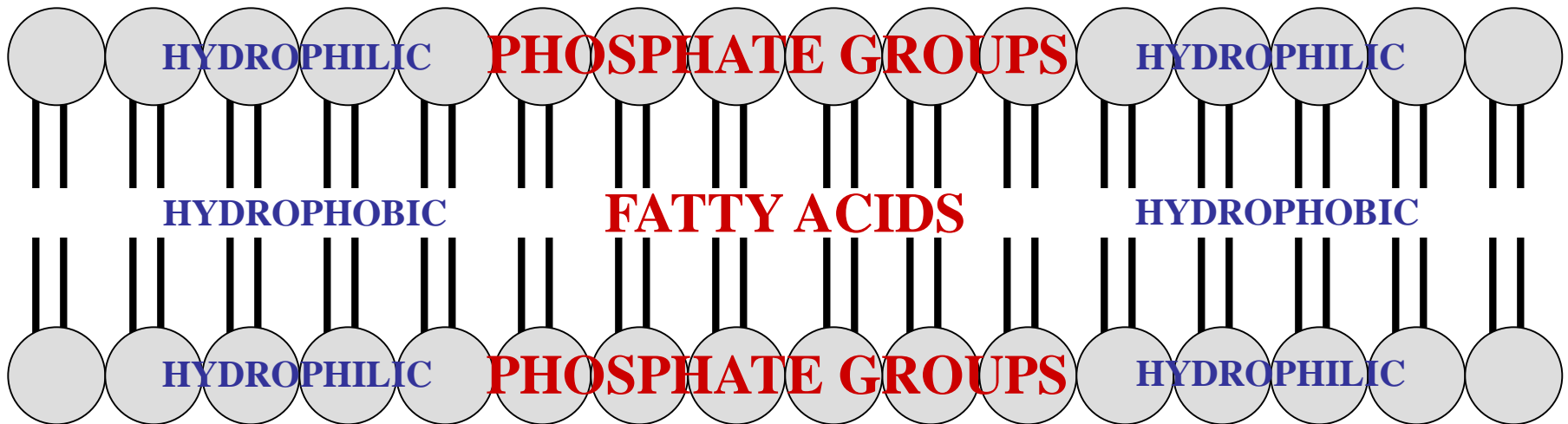
# CELL MEMBRANE COMPOSITION



WATER

WATER

WATER



WATER

WATER

WATER

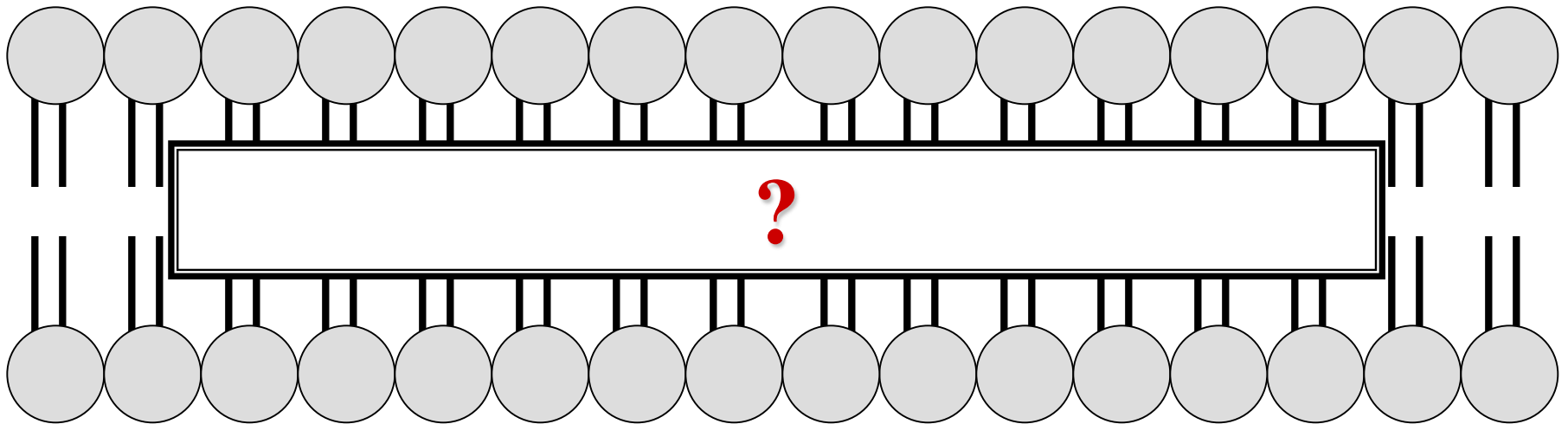
# CELL MEMBRANE COMPOSITION

# CELL MEMBRANE COMPOSITION

WATER

WATER

WATER



WATER

WATER

WATER

# CELL MEMBRANE COMPOSITION



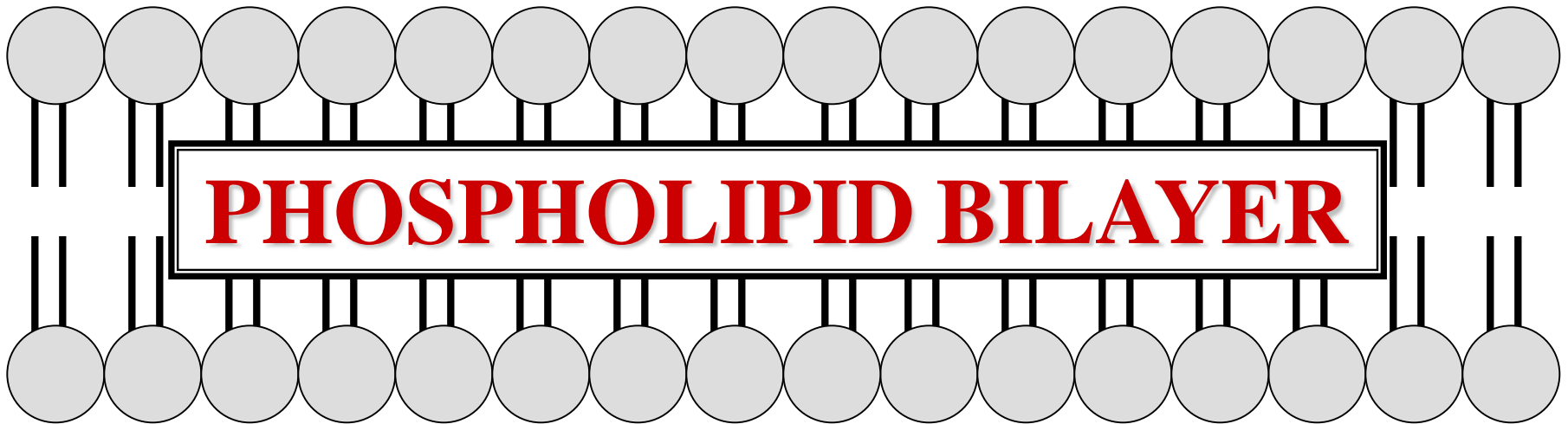
# CELL MEMBRANE COMPOSITION



WATER

WATER

WATER



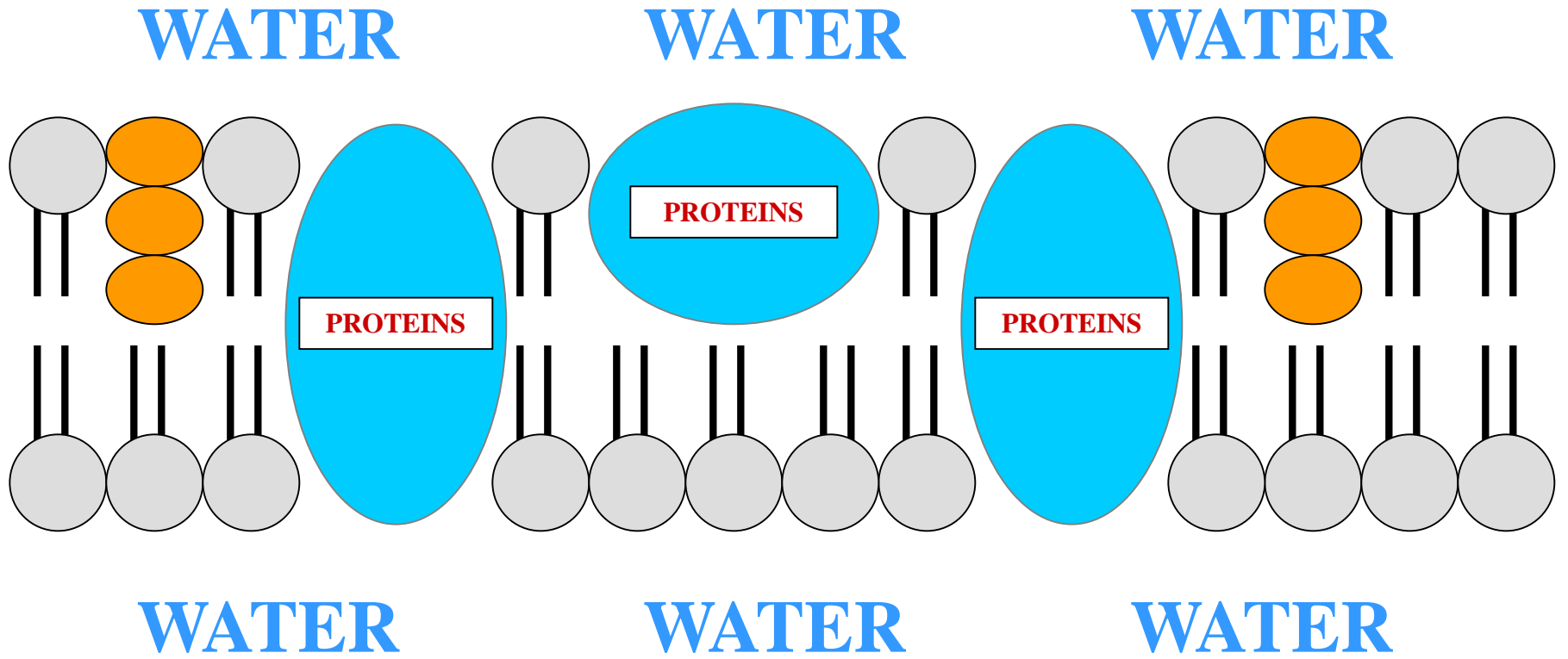
WATER

WATER

WATER

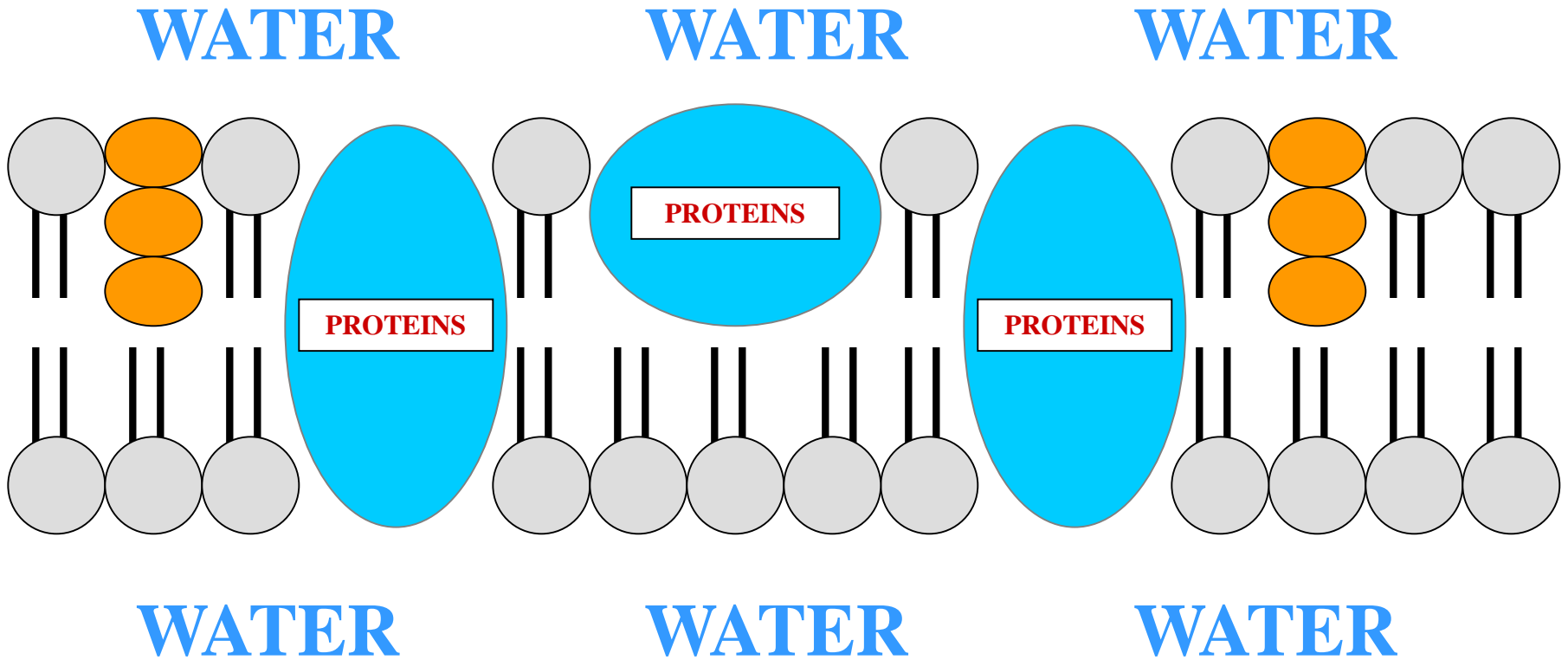
# CELL MEMBRANE COMPOSITION

# CELL MEMBRANE COMPOSITION



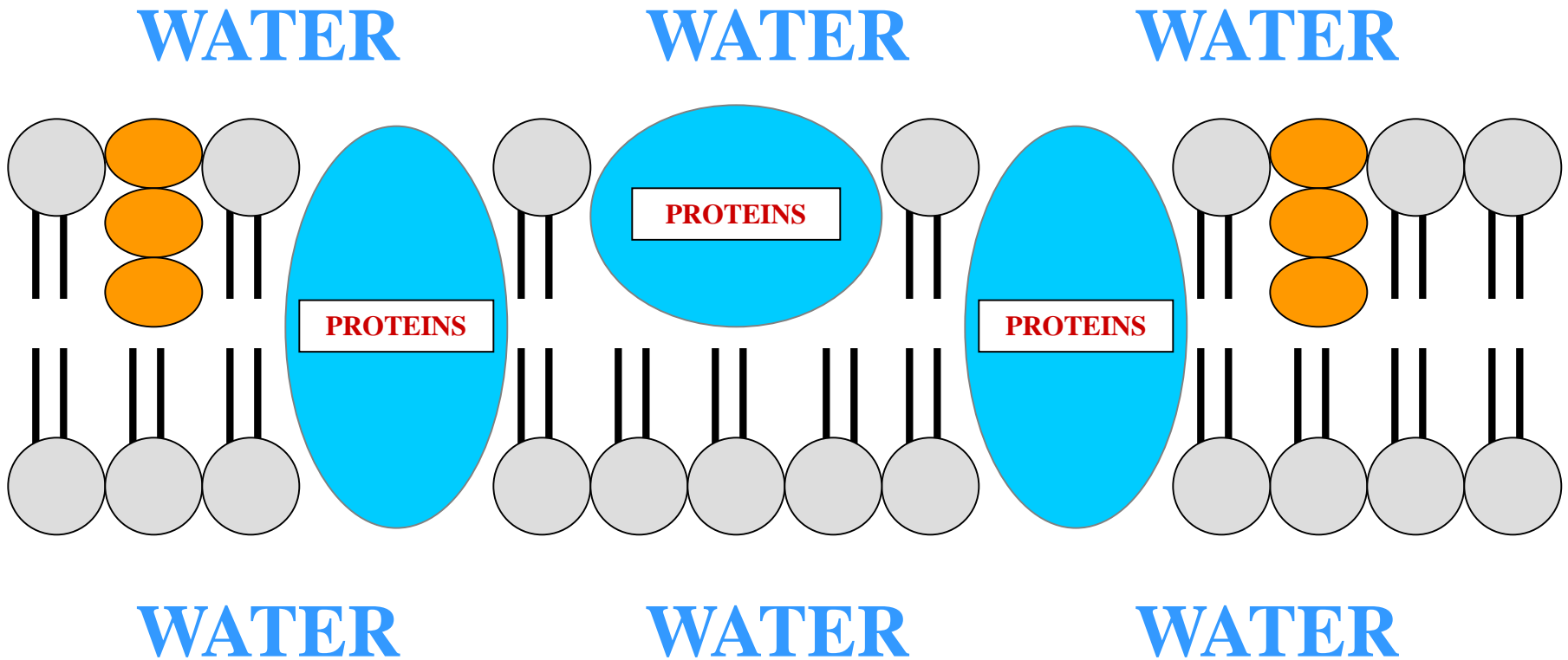
# CELL MEMBRANE COMPOSITION

# CELL MEMBRANE COMPOSITION



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# CELL MEMBRANE COMPOSITION



## FLUID MOSAIC MODEL

# CYTOPLASM

**CYTOPLASM**

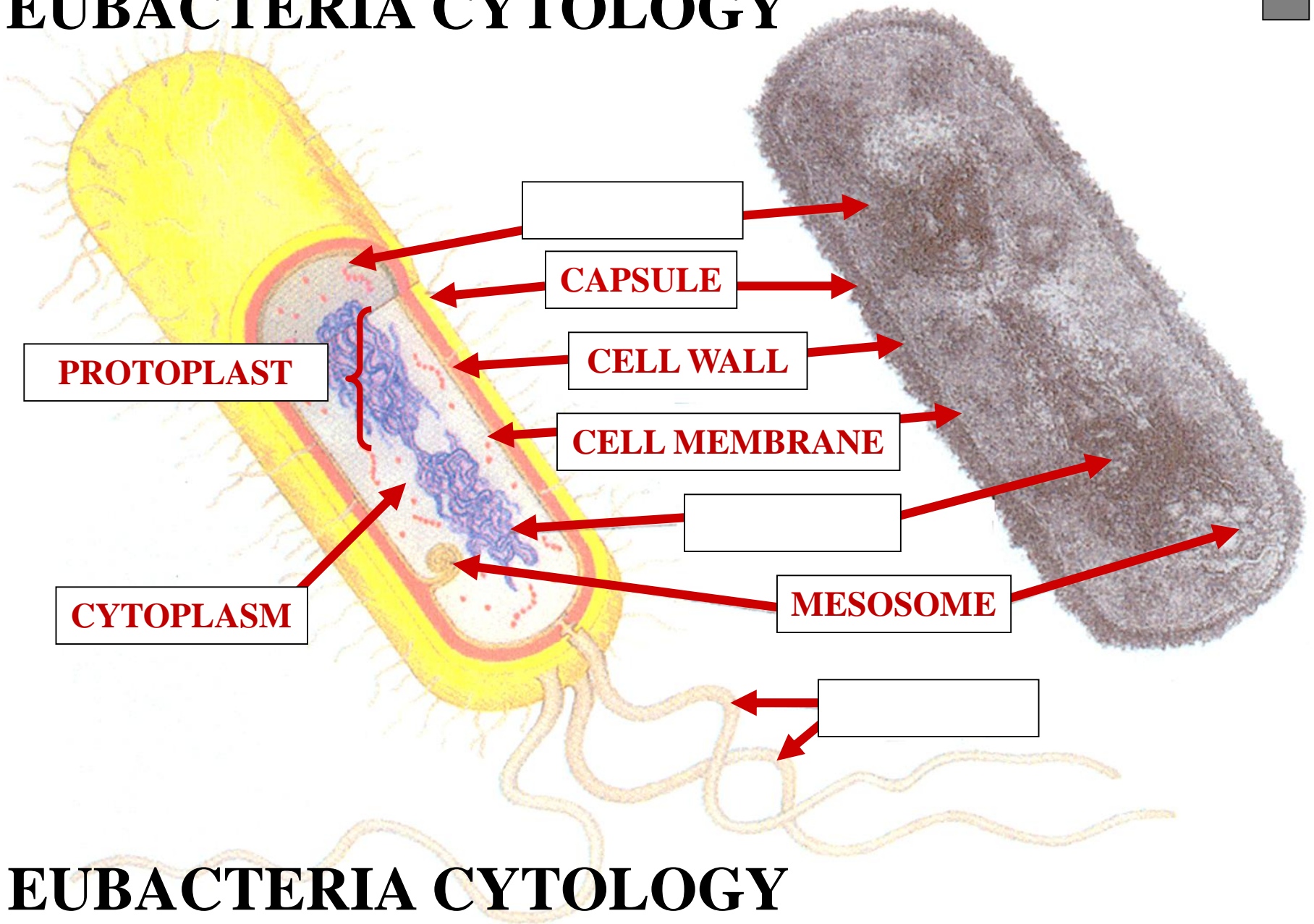
**EUBACTERIA  
CYTOLOGY  
CYTOPLASM**



**CONTENT BEYOND  
CELL MEMBRANE**

**EUBACTERIA  
CYTOLOGY  
CYTOPLASM**

# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY



# CYTOPLASM COMPONENTS

**EUBACTERIA  
CYTOLOGY  
CYTOPLASM COMPONENTS**

**CYTOSOL**

**EUBACTERIA  
CYTOLOGY  
CYTOPLASM COMPONENTS**

**EUBACTERIA  
CYTOLOGY  
CYTOPLASM COMPONENTS**

**CYTOSOL  
ORGANELLES**

**EUBACTERIA  
CYTOLOGY  
CYTOPLASM COMPONENTS**

**CYTOSOL**

**EUBACTERIA  
CYTOLOGY  
CYTOSOL**

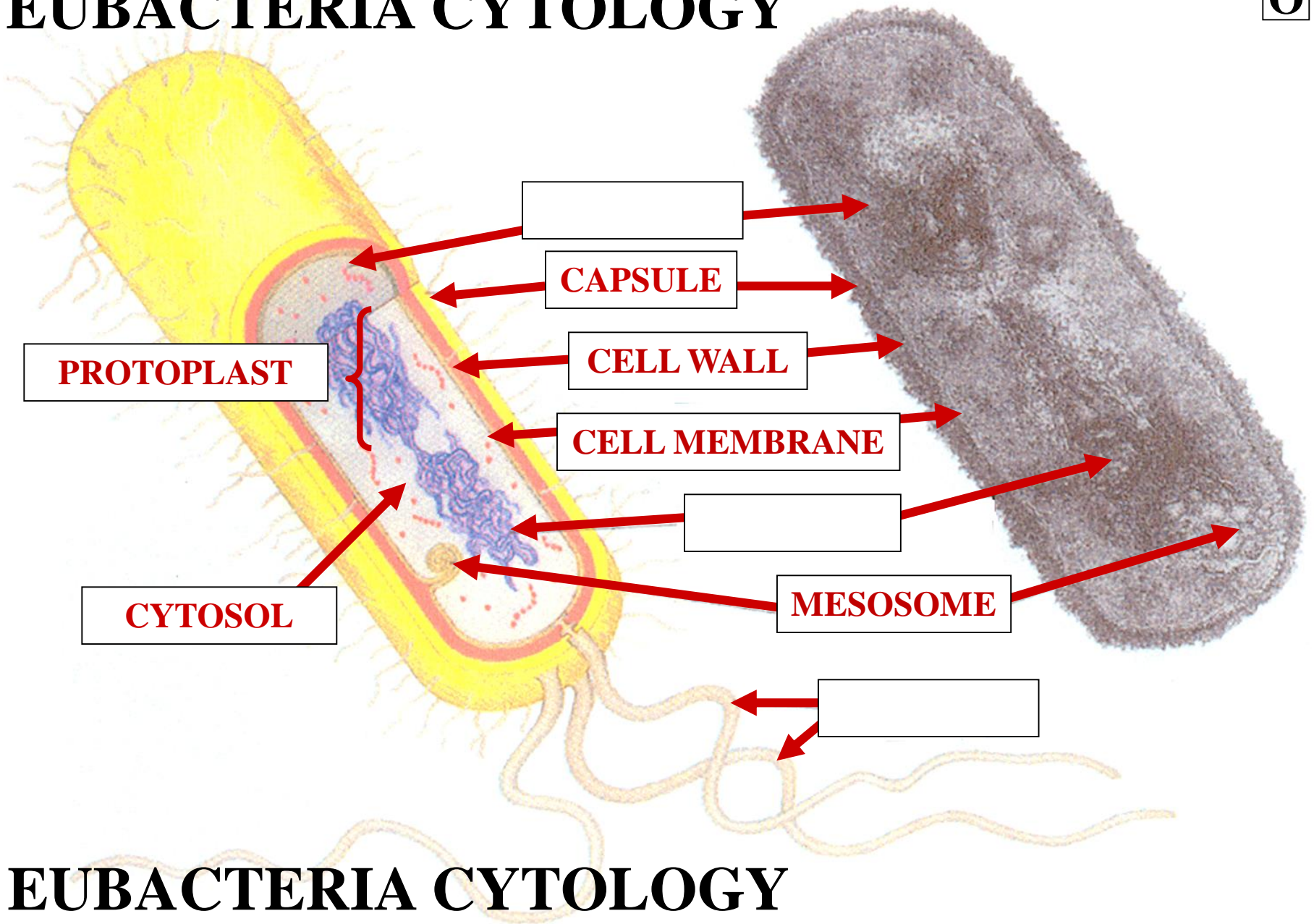


**FLUID MATRIX**

**EUBACTERIA  
CYTOLOGY  
CYTOSOL**

# EUBACTERIA CYTOLOGY

0



# EUBACTERIA CYTOLOGY

# **ORGANELLES**



**EUBACTERIA  
CYTOLOGY  
ORGANELLES**

**SPECIALIZED ENTITIES  
WITHIN CYTOSOL**

**EUBACTERIA  
CYTOLOGY  
ORGANELLES**





**EUBACTERIA  
CYTOLOGY  
ORGANELLES**

**SPECIALIZED ENTITIES  
WITHIN CYTOSOL**

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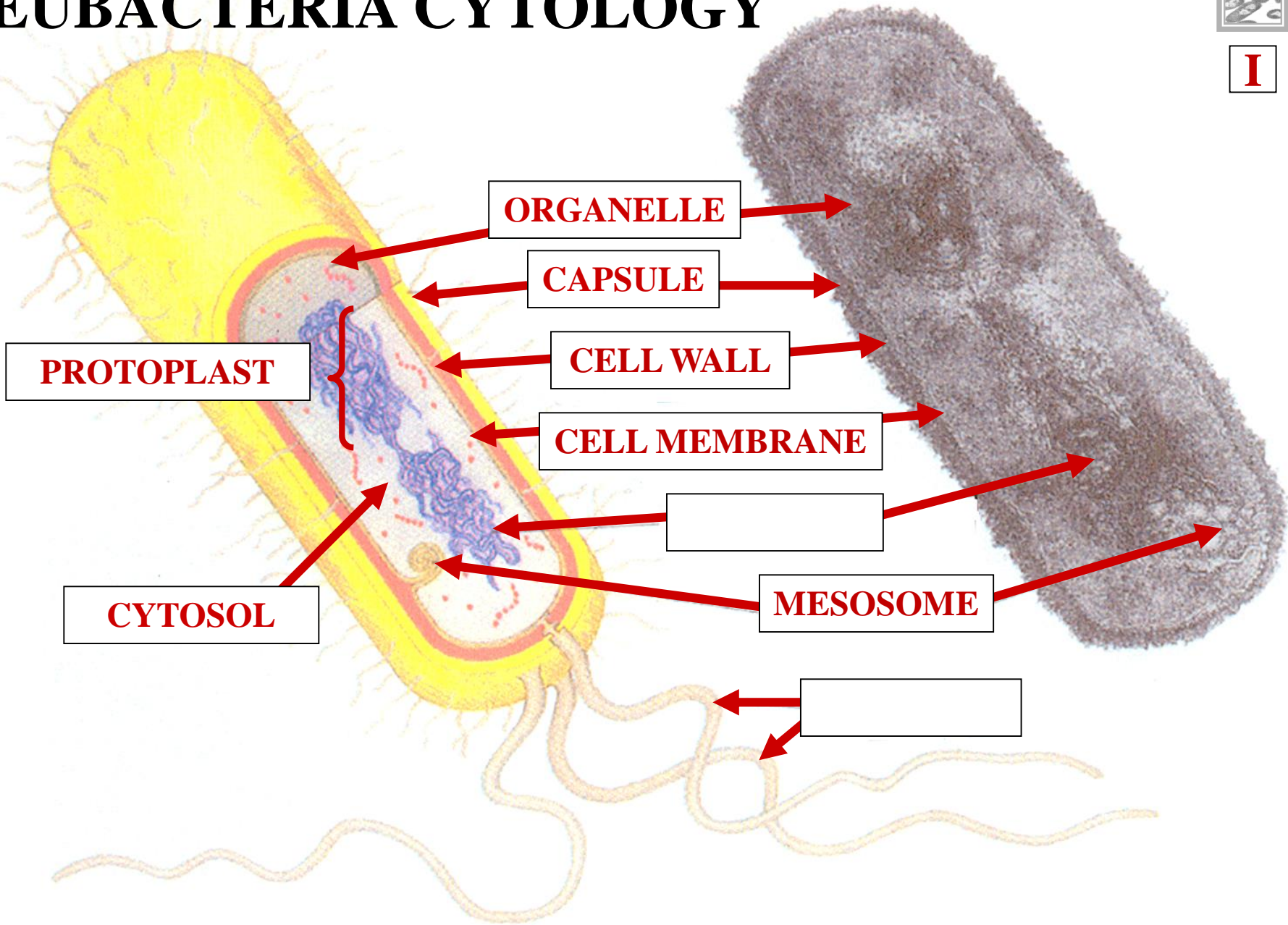
**ISOLATE NON-COMPATIBLE  
BIO-CHEMICAL REACTIONS**

**EUBACTERIA  
CYTOLOGY  
ORGANELLES**

# EUBACTERIA CYTOLOGY



I



***ORGANELLES***

***ISOLATE***

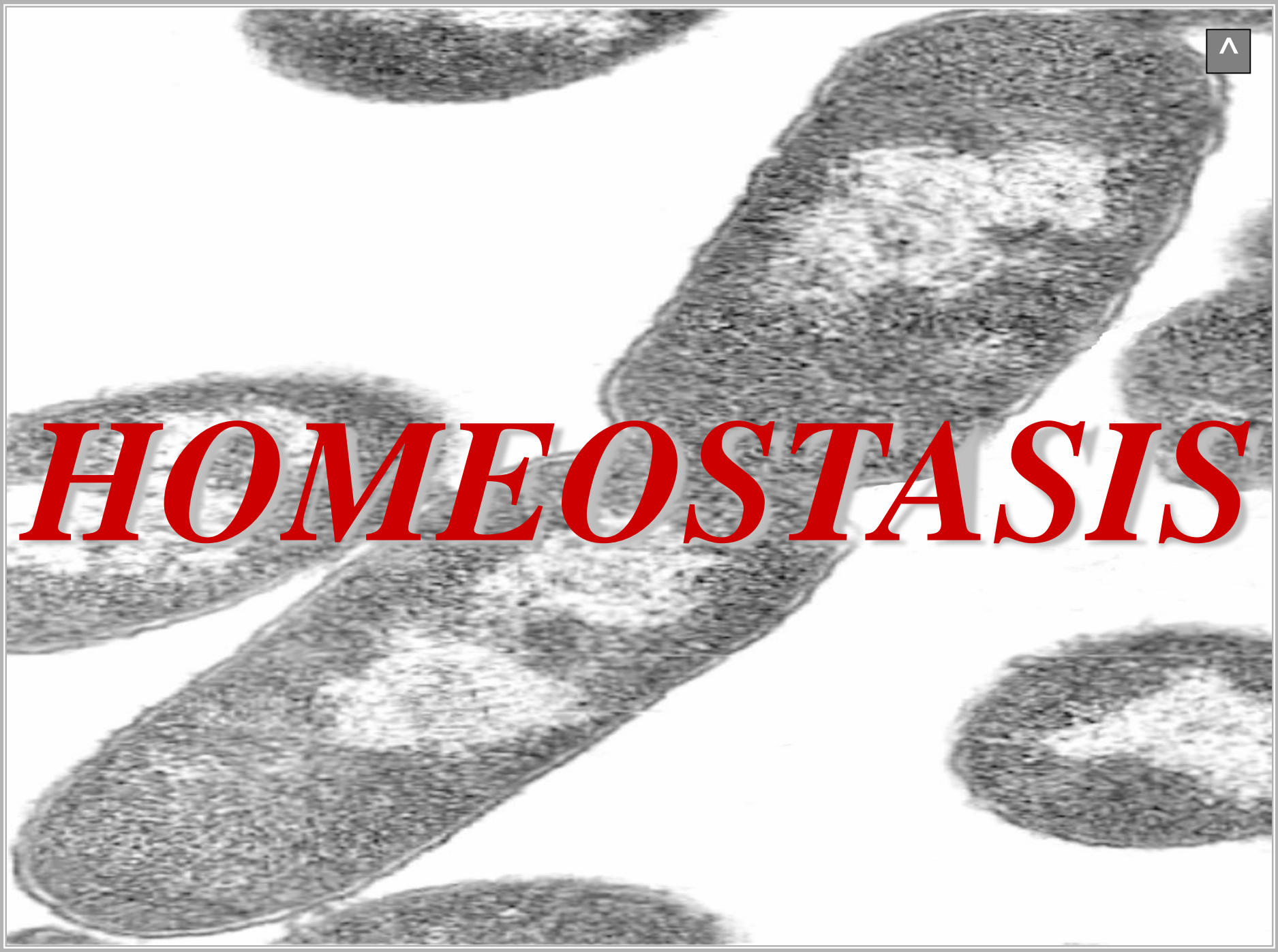
***NON-COMPATIBLE***

***BIO-CHEM RXTS***

***EFFICIENT  
METABOLISM***



# *HOMEOSTASIS*



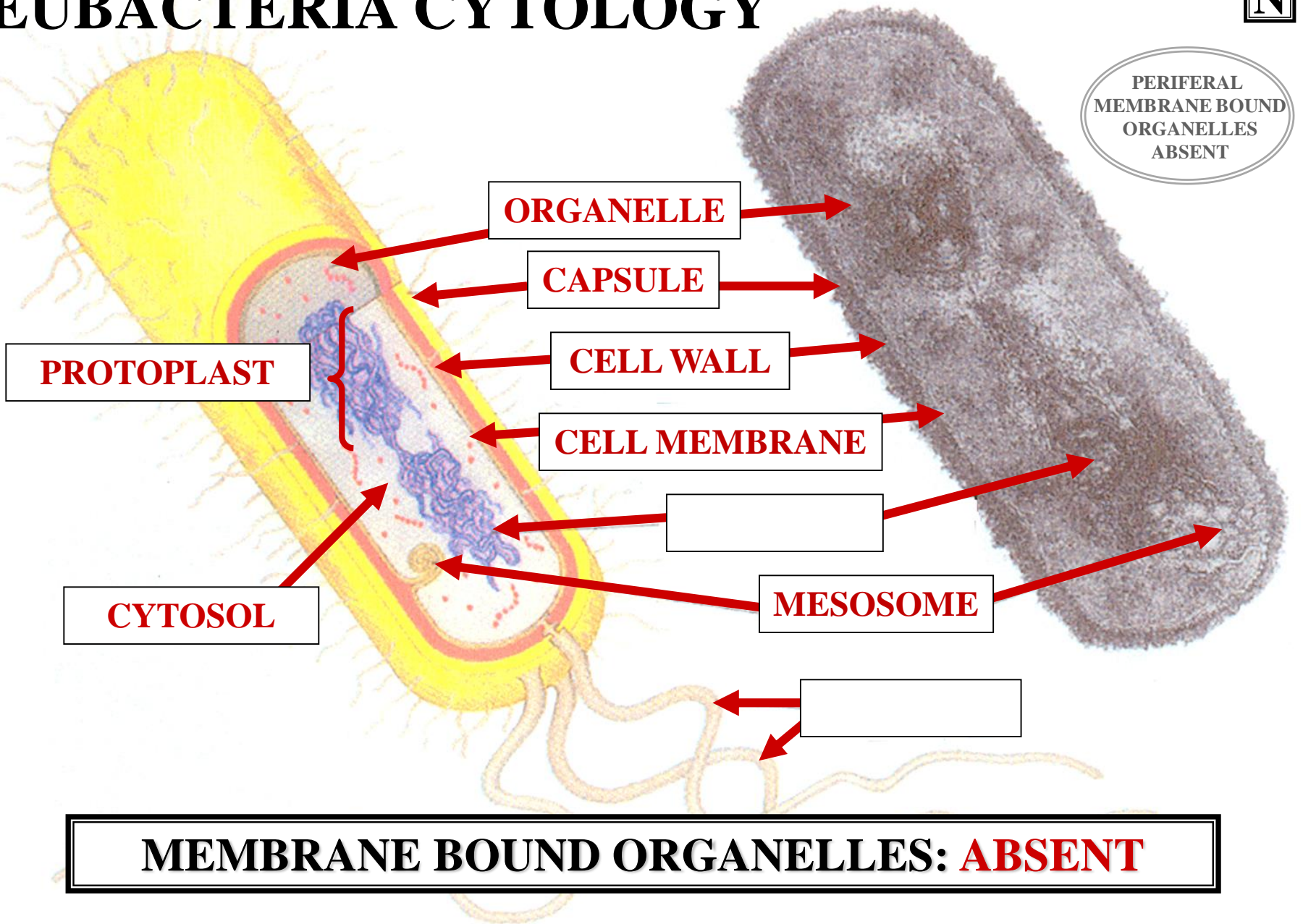


# ORGANELLES

# EUBACTERIA CYTOLOGY

N

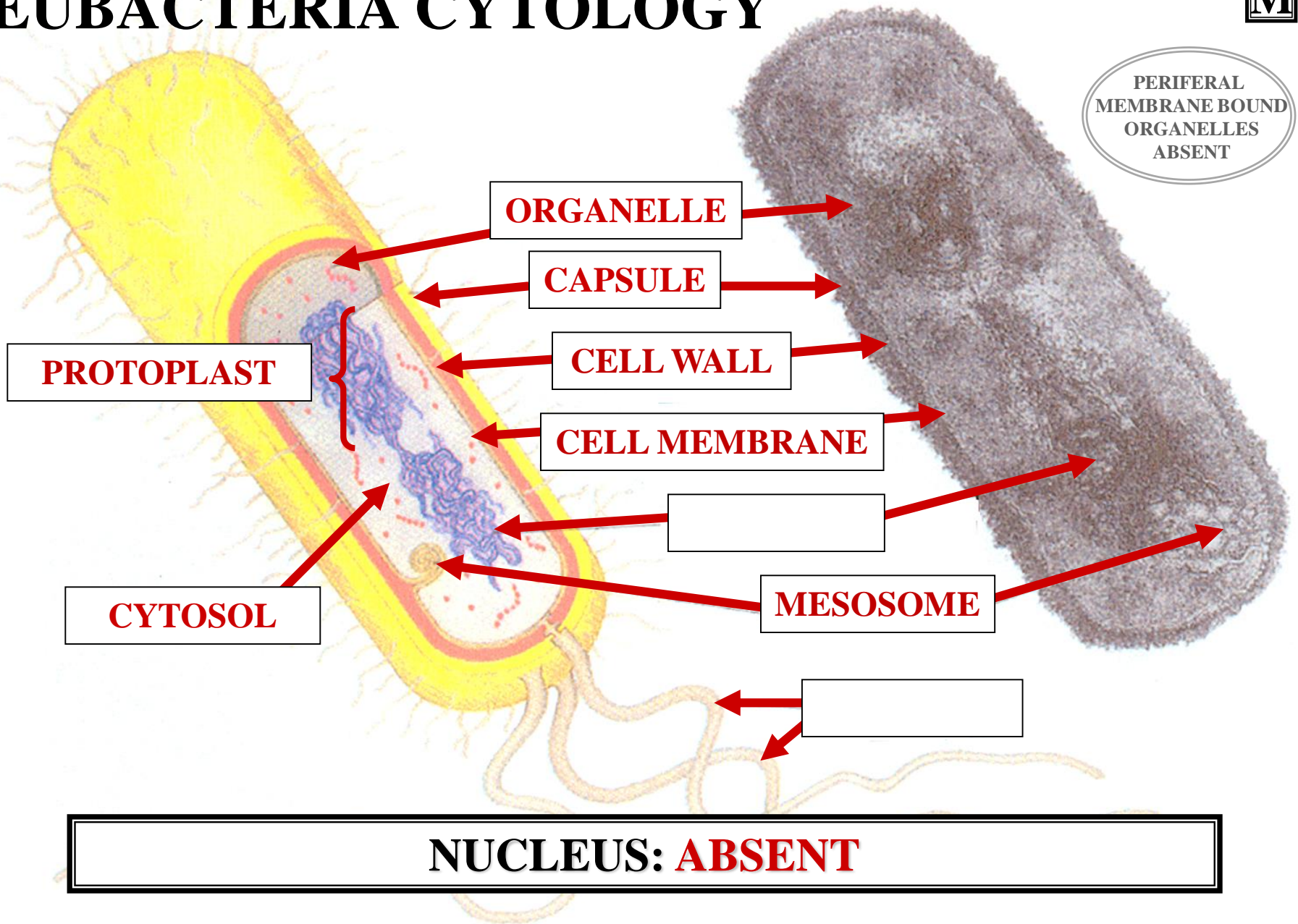
PERIFERAL  
MEMBRANE BOUND  
ORGANELLES  
ABSENT



# EUBACTERIA CYTOLOGY



PERIFERAL  
MEMBRANE BOUND  
ORGANELLES  
ABSENT



ORGANELLE

CAPSULE

CELL WALL

CELL MEMBRANE

MESOSOME

PROTOPLAST

CYTOSOL

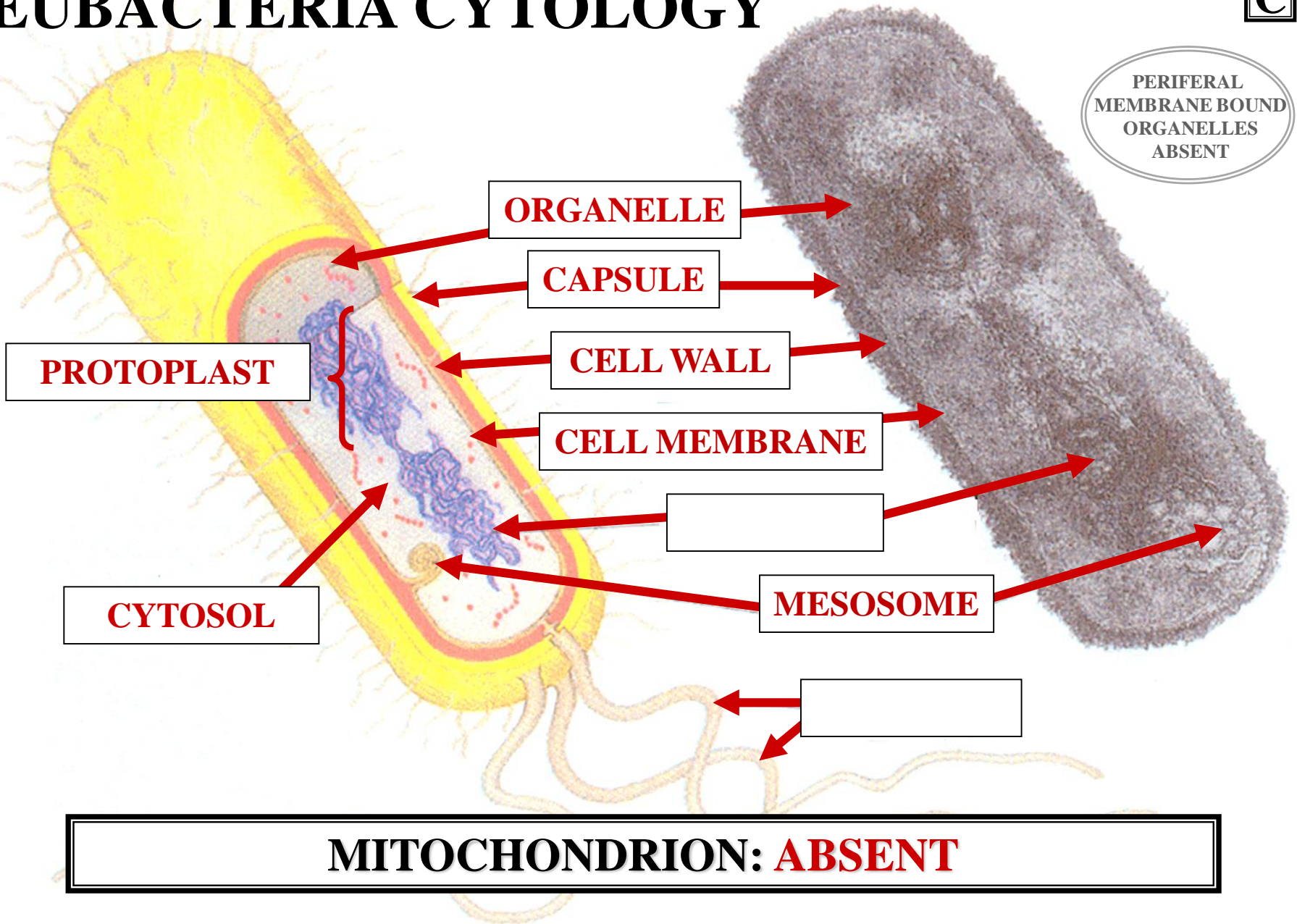
**NUCLEUS: ABSENT**



# EUBACTERIA CYTOLOGY

C

PERIFERAL  
MEMBRANE BOUND  
ORGANELLES  
ABSENT



ORGANELLE

CAPSULE

CELL WALL

CELL MEMBRANE

PROTOPLAST

CYTOSOL

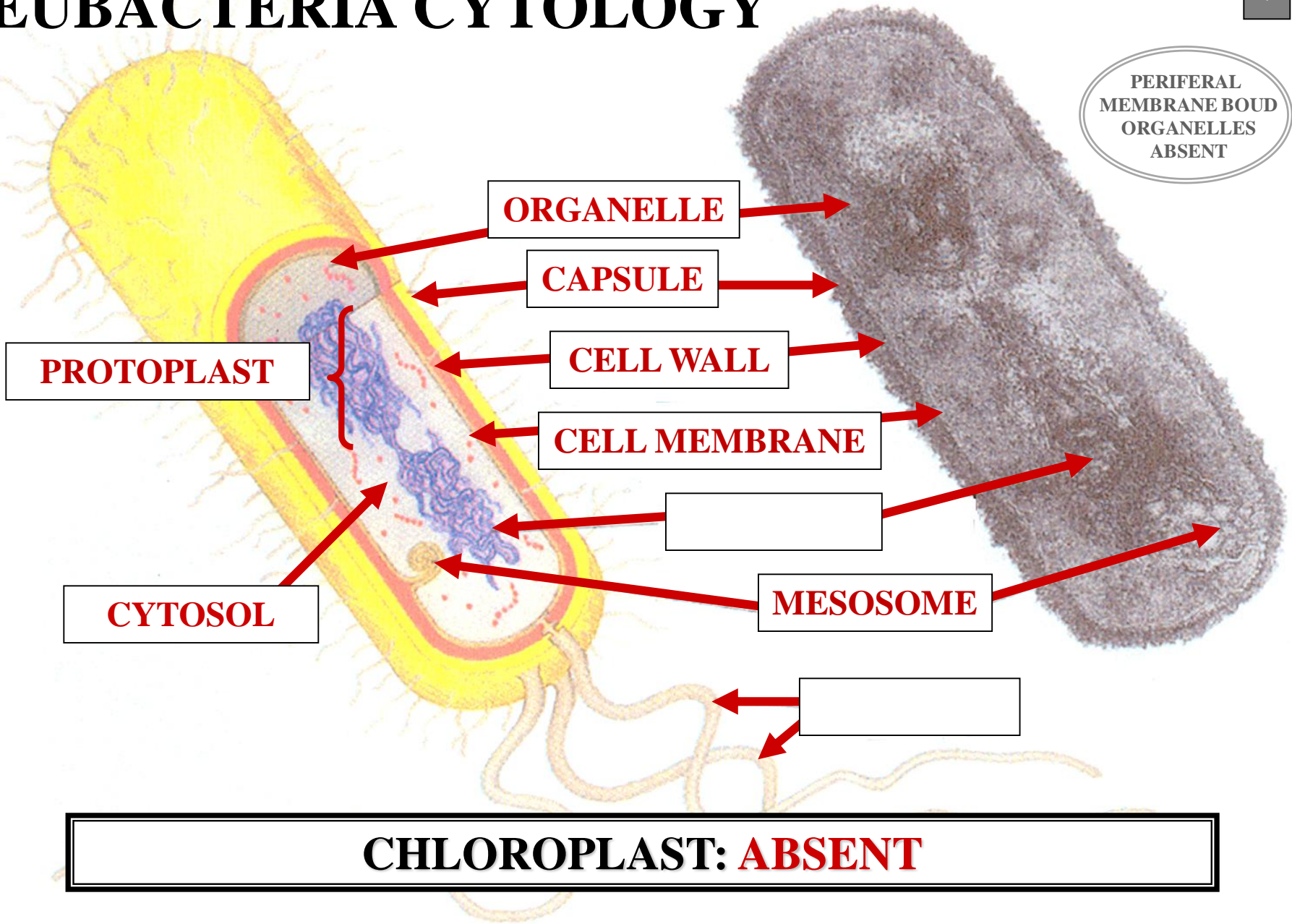
MESOSOME

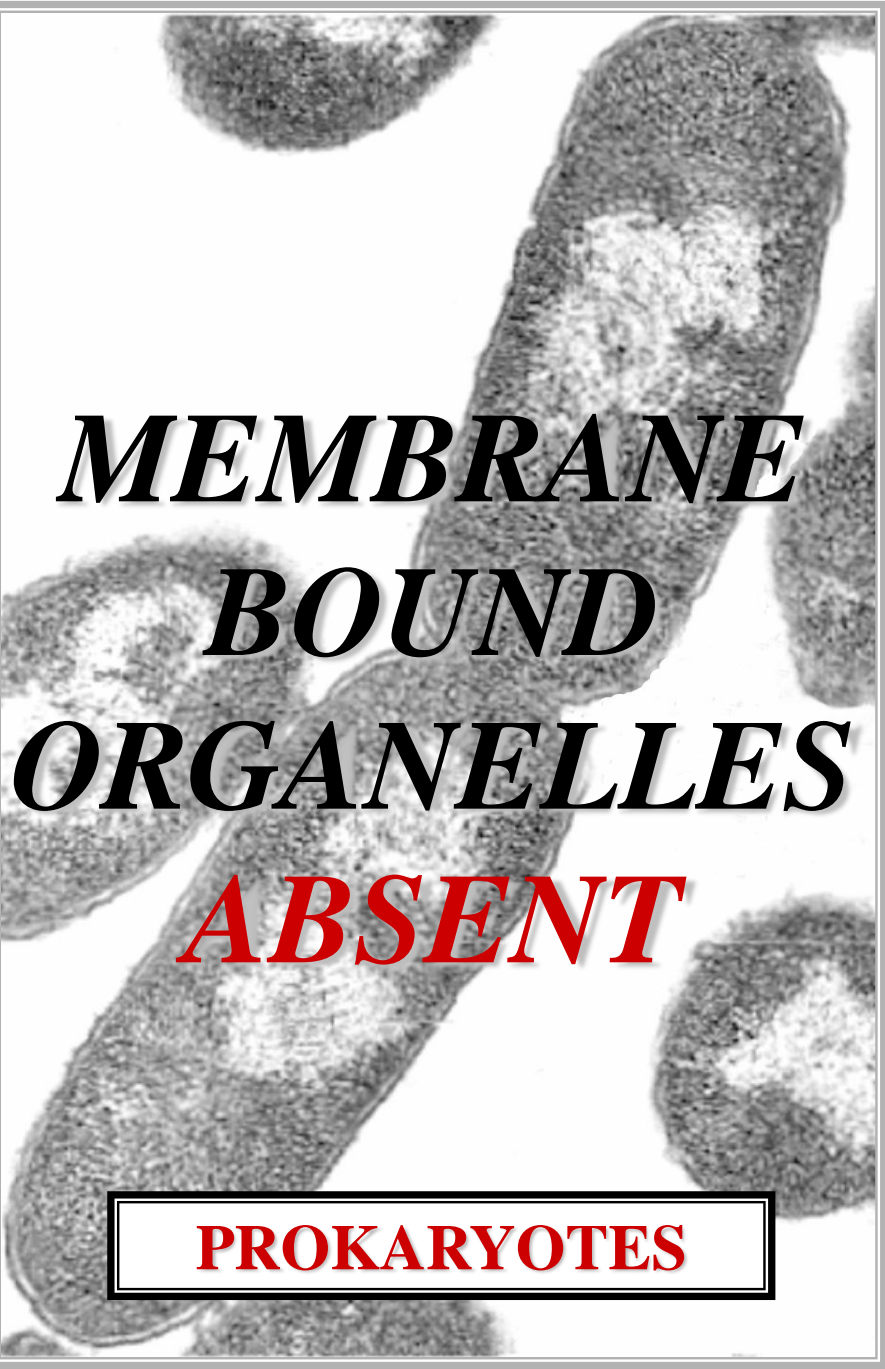
**MITOCHONDRION: ABSENT**

# EUBACTERIA CYTOLOGY



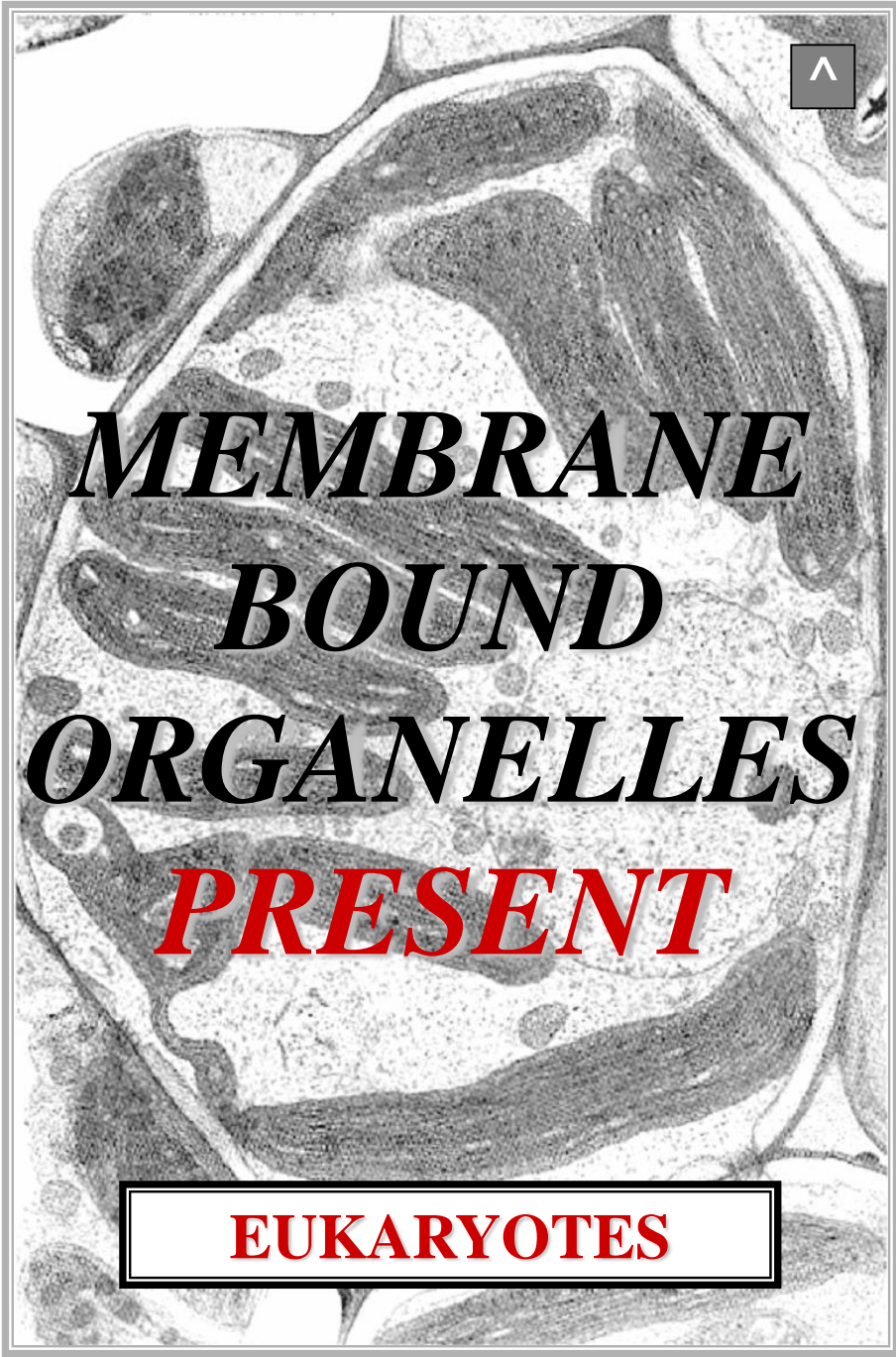
PERIFERAL  
MEMBRANE BOUD  
ORGANELLES  
ABSENT





***MEMBRANE  
BOUND  
ORGANELLES  
ABSENT***

**PROKARYOTES**



***MEMBRANE  
BOUND  
ORGANELLES  
PRESENT***

**EUKARYOTES**

# RIBOSOME

**RIBOSOME**

**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**



**NON-MEMBRANE BOUND ORGANELLE**

**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**



**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**

**NON-MEMBRANE BOUND ORGANELLE**

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**DISTRIBUTED THROUGHOUT CYTOSOL**

**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**



**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**

**NON-MEMBRANE BOUND ORGANELLE**

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**DISTRIBUTED THROUGHOUT CYTOSOL**

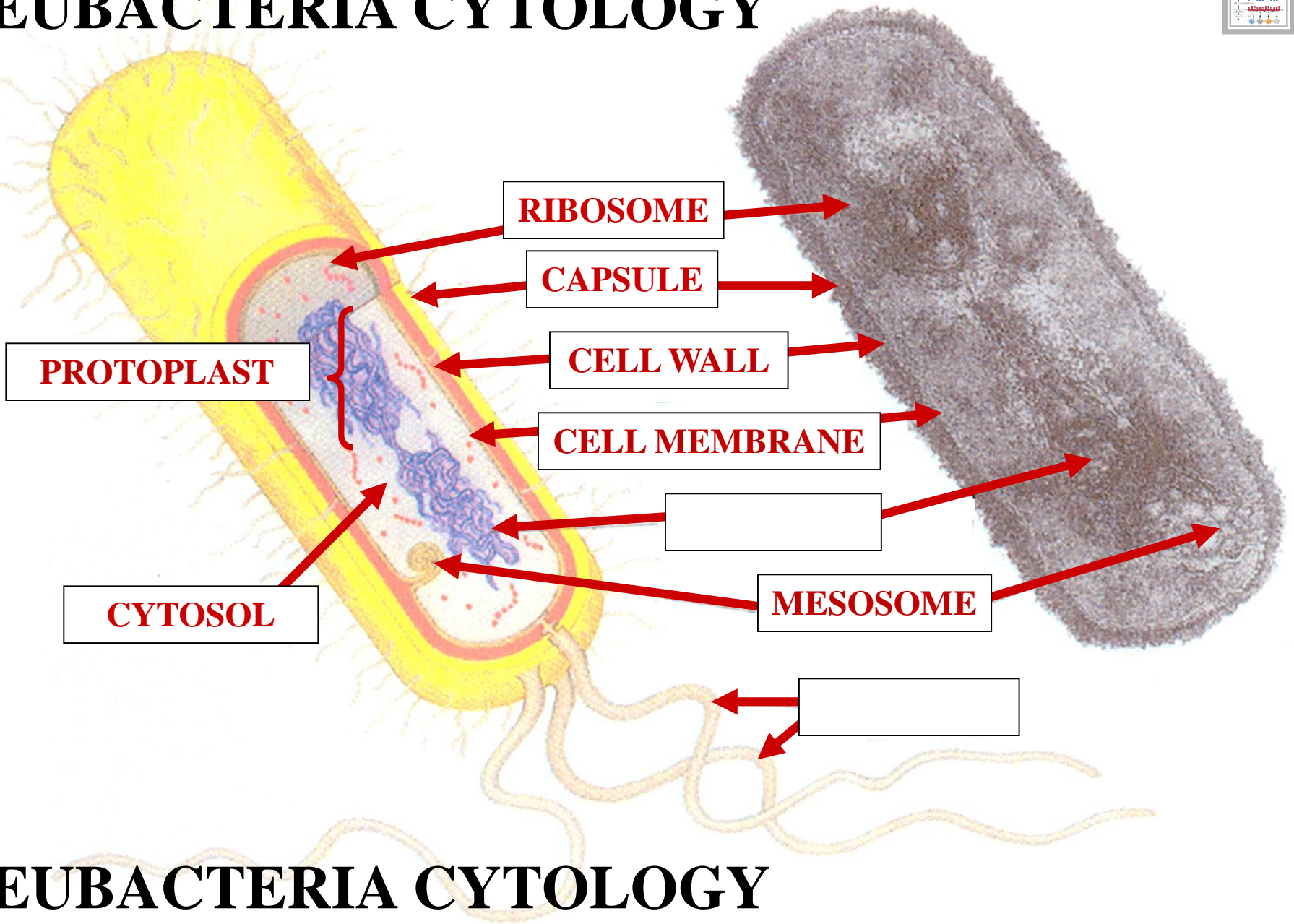
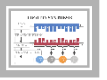
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**SITE: PROTEIN SYNTHESIS**

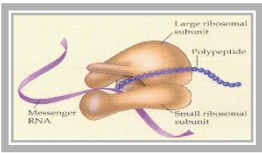
**EUBACTERIA  
CYTOLOGY  
RIBOSOMES**



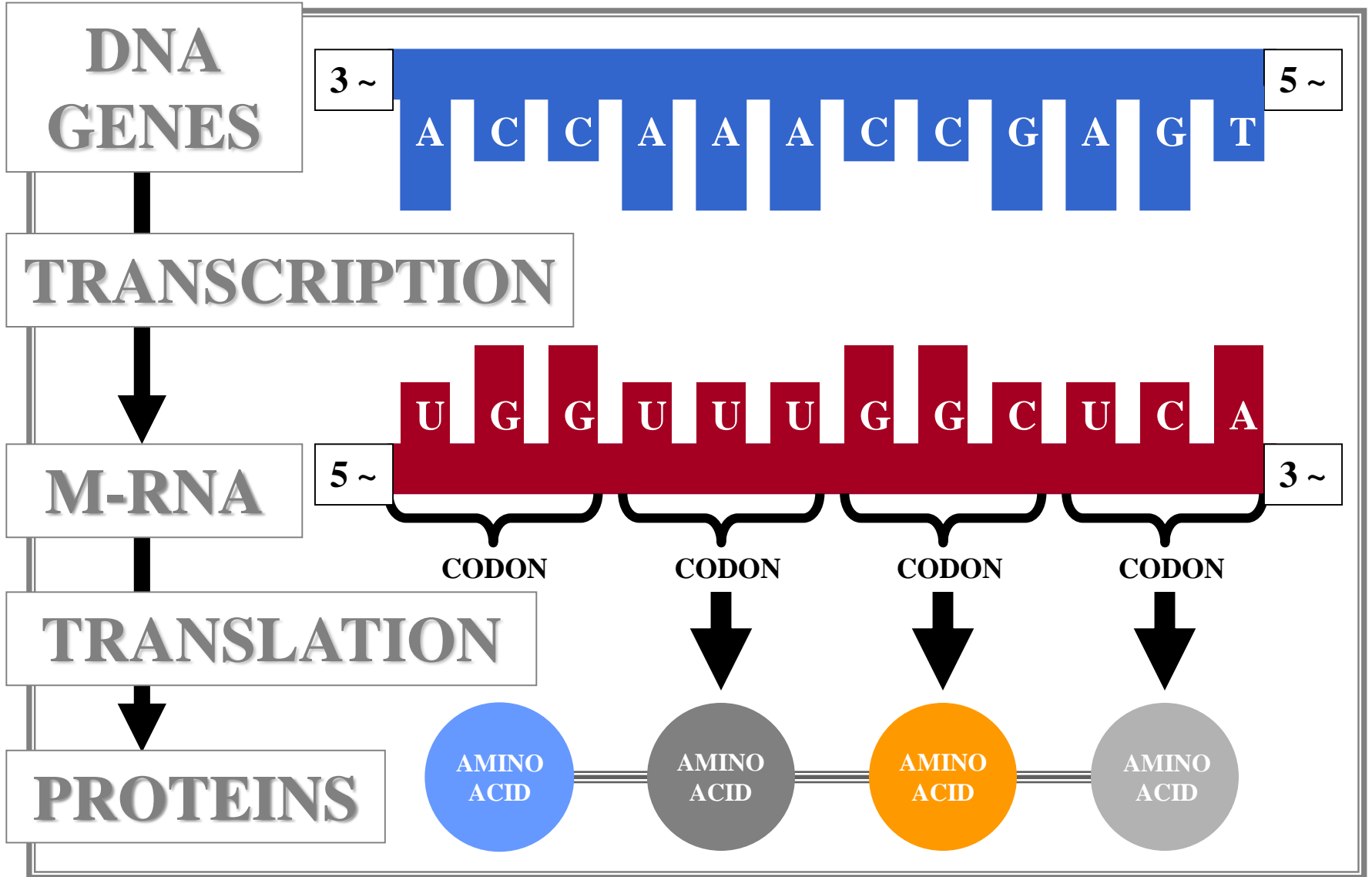
# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY



# PROTEIN SYNTHESIS





# RIBOSOME COMPOSITION

# **RIBOSOME COMPOSITION**



**NUCLEIC ACID  
PROTEIN  
COMPLEX**

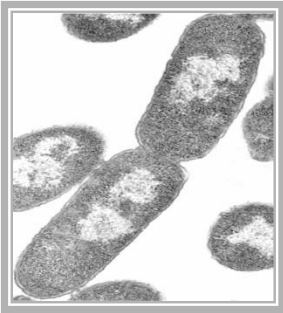
**RIBOSOME  
COMPOSITION**

# **RIBOSOME COMPOSITION**



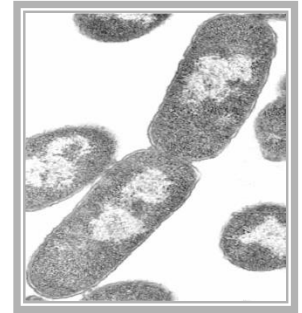
**RNA  
PROTEIN  
COMPLEX**

**RIBOSOME  
COMPOSITION**



**PROKARYOTE**

# PROKARYOTE RIBOSOME COMPOSITION



**PROKARYOTE**

**E**

**4**

**3 RNAs & 54 PROTEINS**

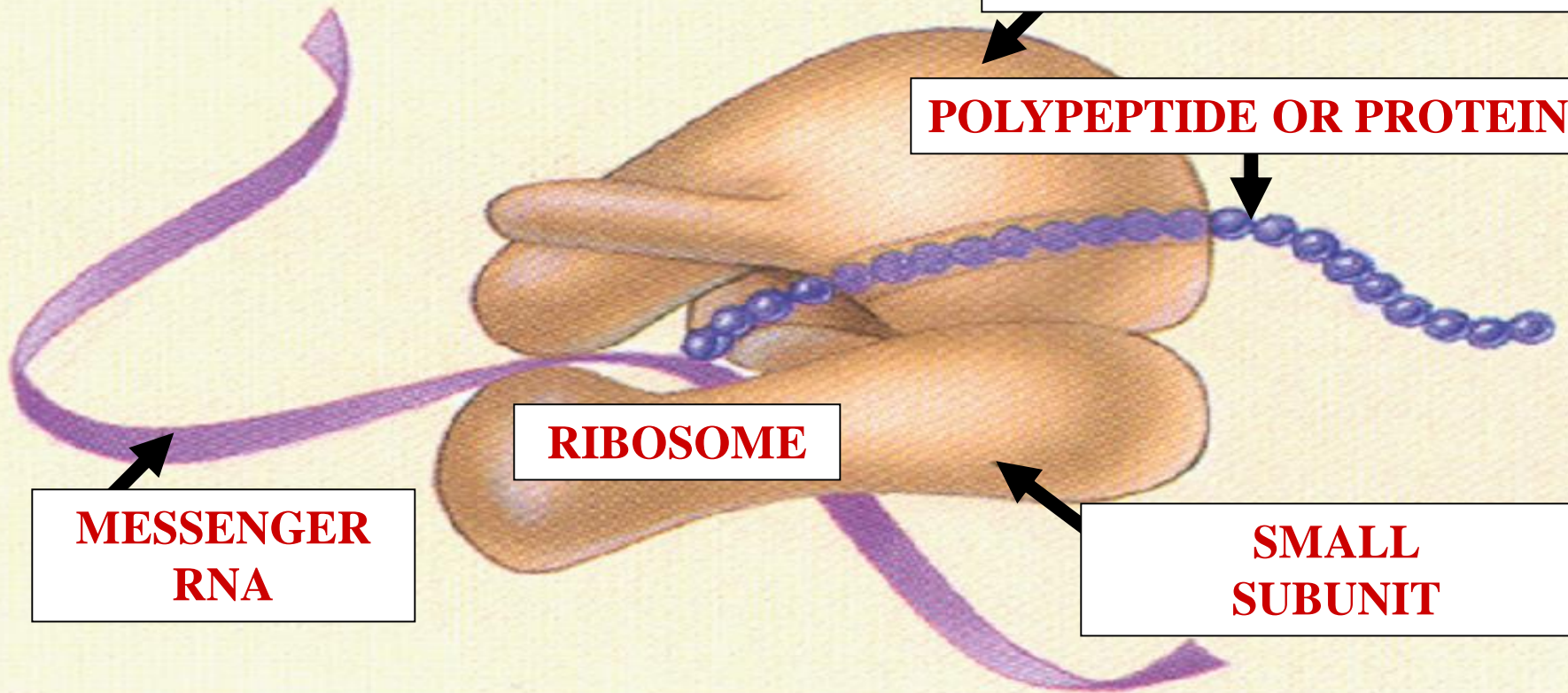
**LARGE  
SUBUNIT**

**POLYPEPTIDE OR PROTEIN**

**RIBOSOME**

**MESSENGER  
RNA**

**SMALL  
SUBUNIT**





**EUKARYOTE**

# EUKARYOTE RIBOSOME COMPOSITION



**EUKARYOTE**

**P**  
**S**

**4 RNAs & 73 PROTEINS**

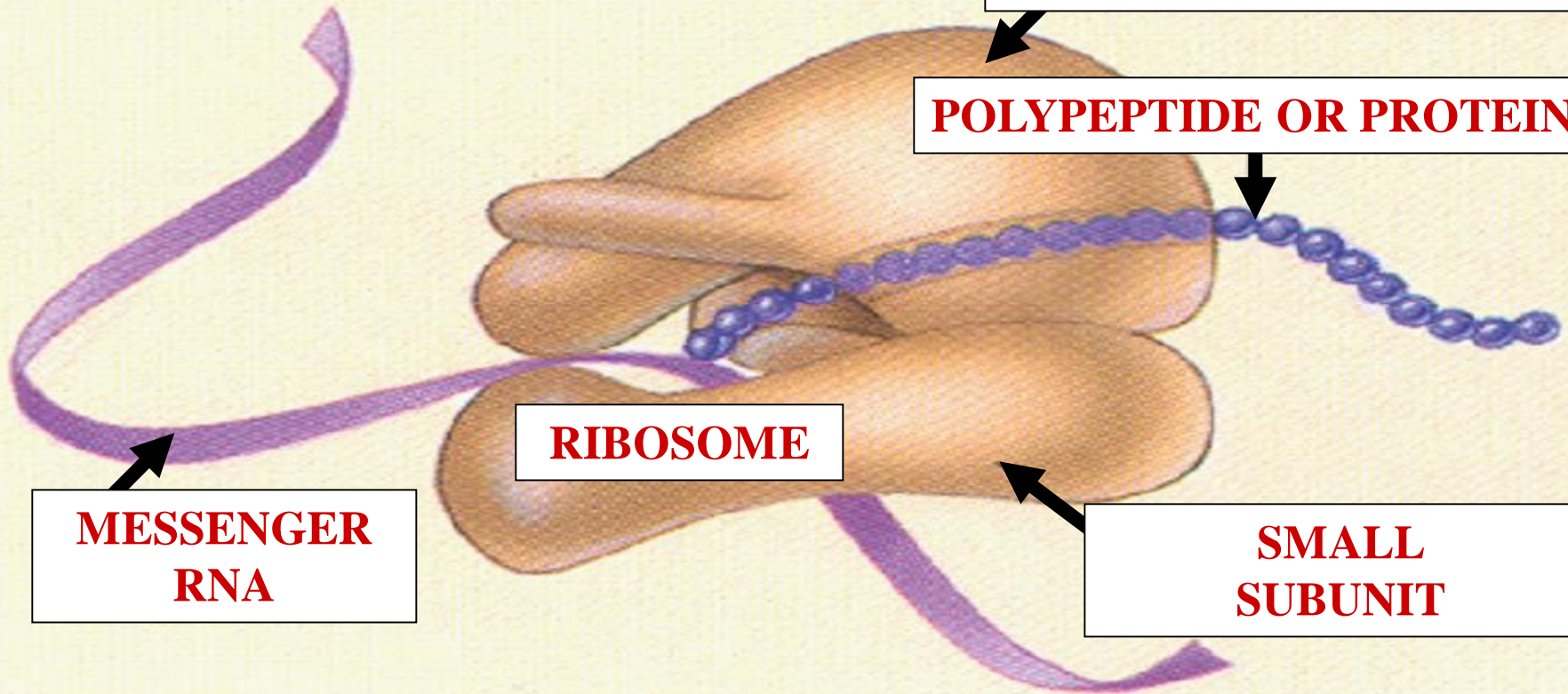
**LARGE  
SUBUNIT**

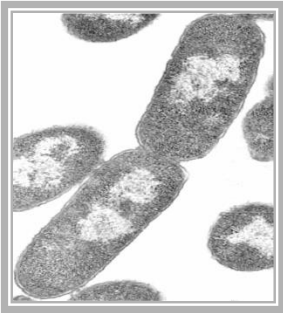
**POLYPEPTIDE OR PROTEIN**

**RIBOSOME**

**MESSENGER  
RNA**

**SMALL  
SUBUNIT**





**PROKARYOTE**

# PROKARYOTE RIBOSOME SMALLER



**PROKARYOTE**

**3 RNAs & 54 PROTEINS**

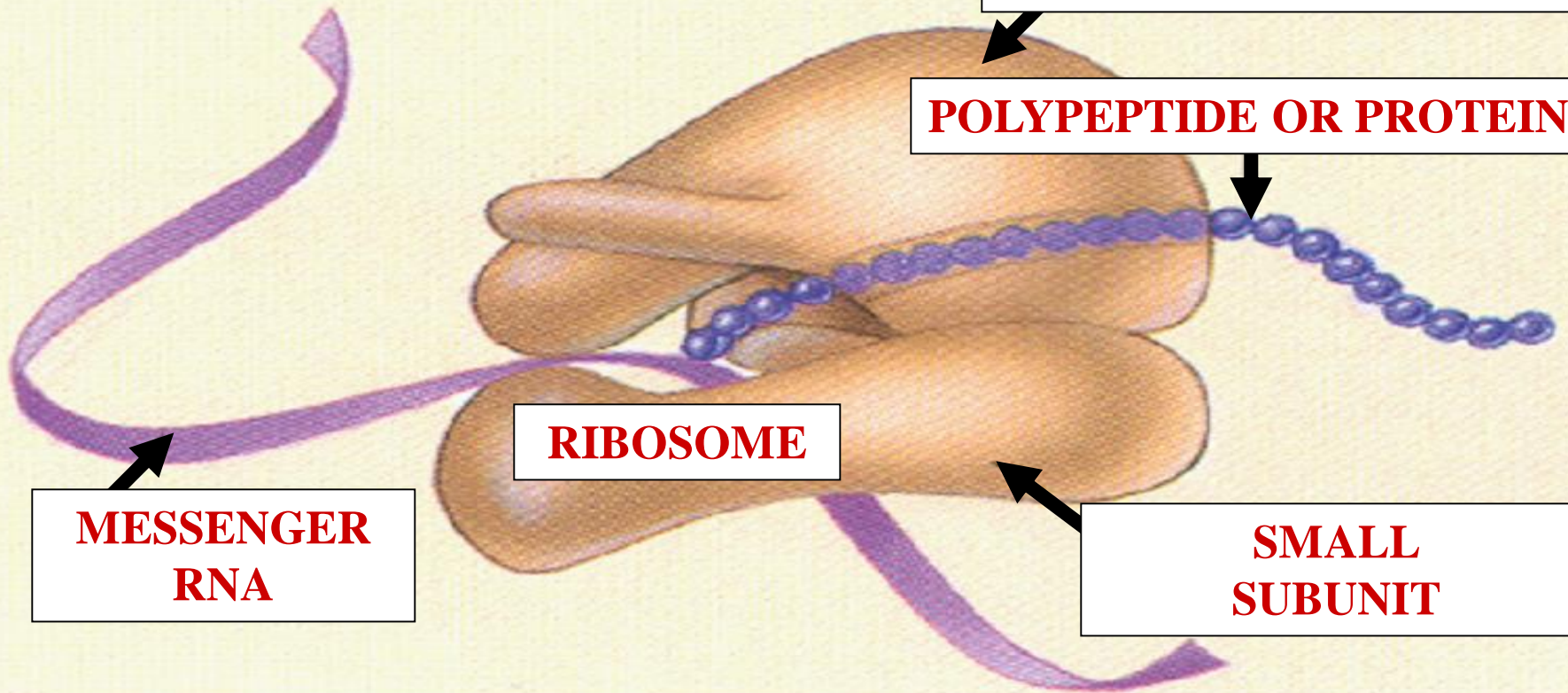
**LARGE  
SUBUNIT**

**POLYPEPTIDE OR PROTEIN**

**RIBOSOME**

**MESSENGER  
RNA**

**SMALL  
SUBUNIT**





Electron micrograph showing several large, dark, roughly spherical ribosomes. They have a granular, textured surface and are scattered across the field of view. One large ribosome is particularly prominent in the center-left.

***RIBOSOMES***  
***SMALL SIZE***

**PROKARYOTES**

Electron micrograph showing a large, complex eukaryotic cell. The cell contains various organelles, including a nucleus with a nucleolus, rough endoplasmic reticulum, and mitochondria. Numerous small, dark, spherical ribosomes are visible throughout the cytoplasm, appearing much smaller than those in the prokaryotic image. A small grey square with a white upward-pointing arrow is located in the top right corner.

***RIBOSOMES***  
***LARGE SIZE***

**EUKARYOTES**

# NUCLEOID

**NUCLEOID**

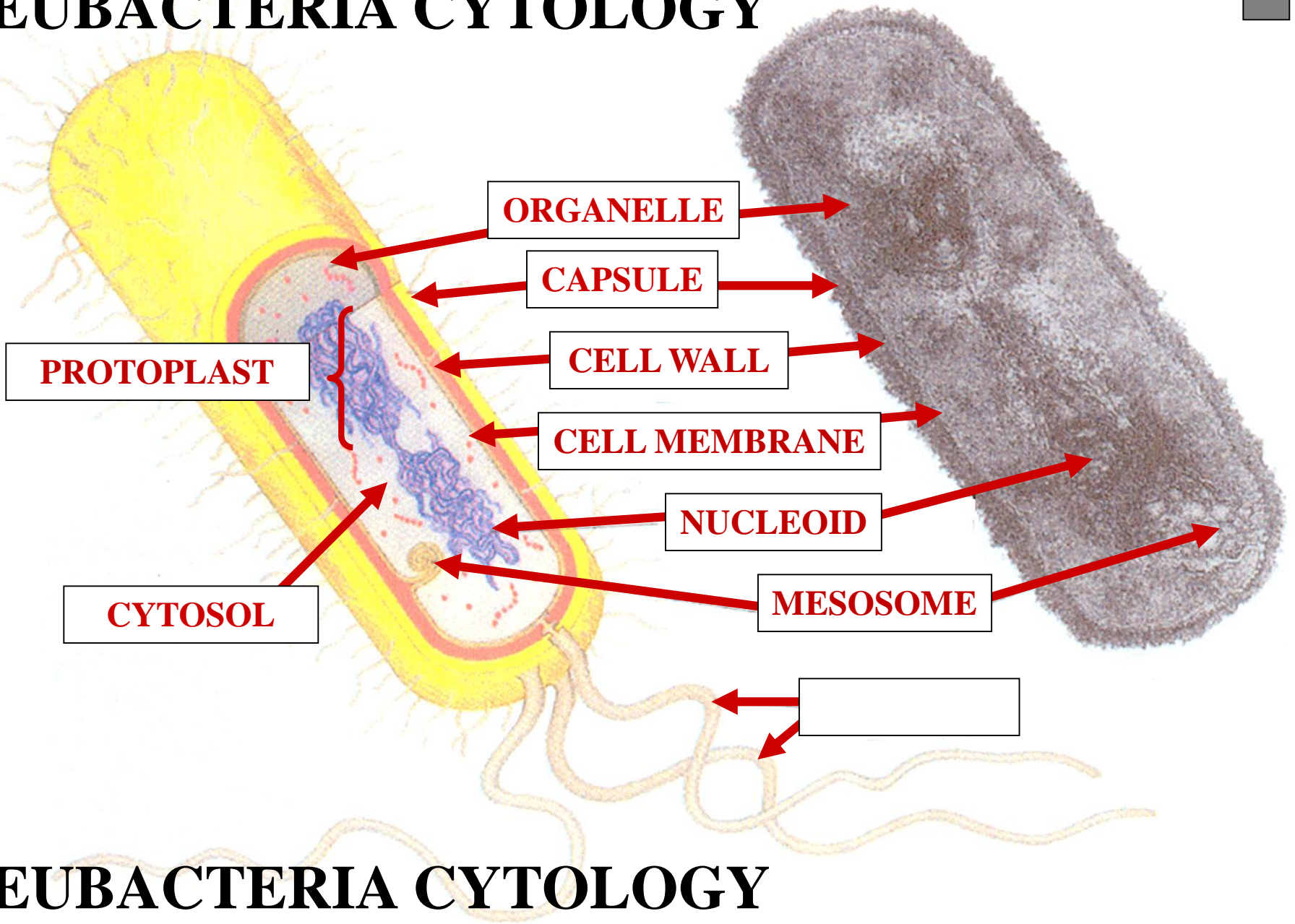
**EUBACTERIA  
CYTOLOGY  
NUCLEOID**



**CHROMOSOME LOCATION**

**EUBACTERIA  
CYTOLOGY  
NUCLEOID**

# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY



# CHROMOSOME



**EUBACTERIA  
CYTOLOGY  
CHROMOSOME**

**CIRCULAR DNA MOLECULE**

**EUBACTERIA  
CYTOLOGY  
CHROMOSOME**

**EUBACTERIA  
CYTOLOGY  
CHROMOSOME**



**CIRCULAR DNA MOLECULE**

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**HISTONE PROTEINS: ABSENT**

**EUBACTERIA  
CYTOLOGY  
CHROMOSOME**



# EUBACTERIA CHROMOSOME



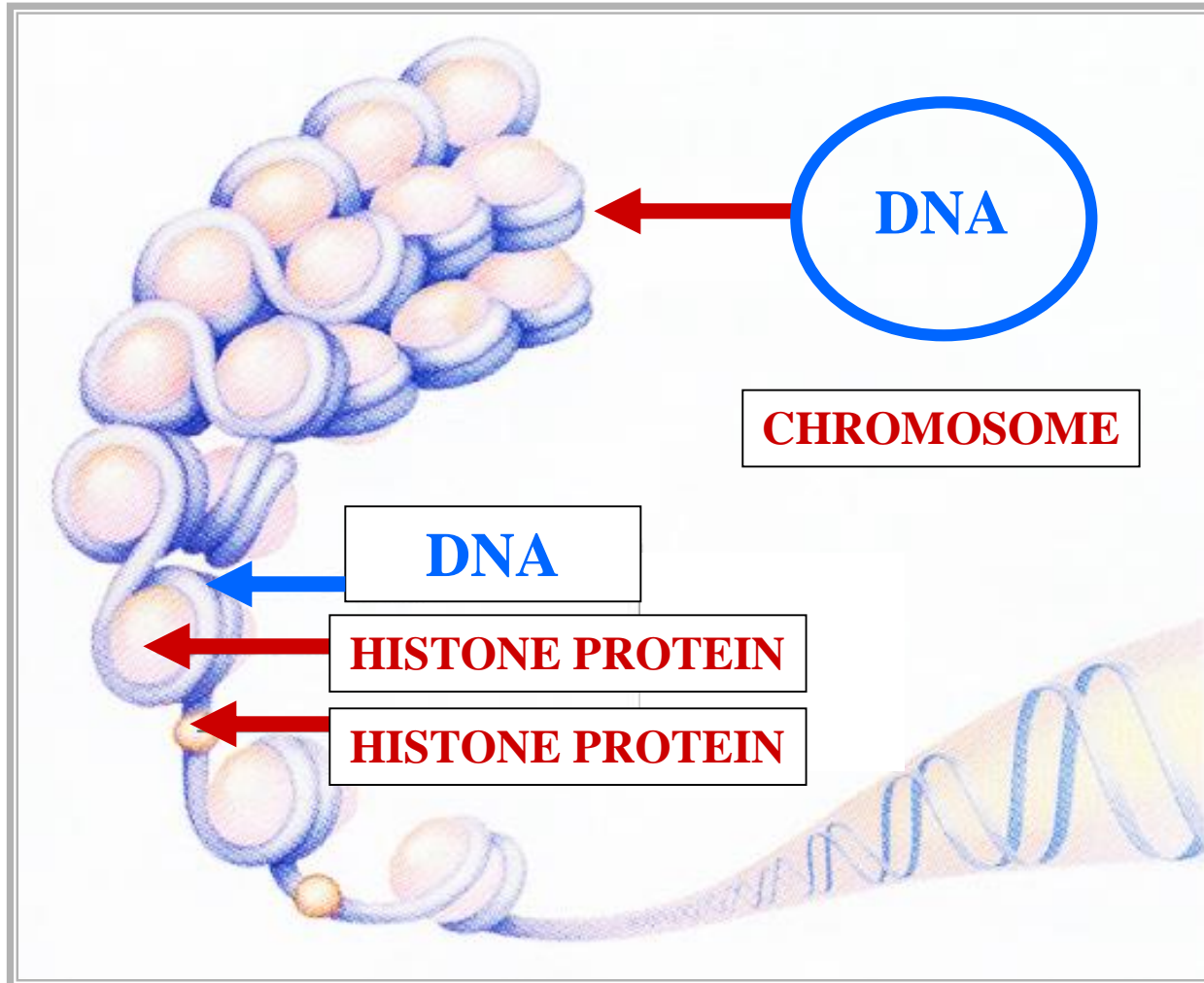
**H**



**CIRCULAR  
DNA  
MOLECULE**

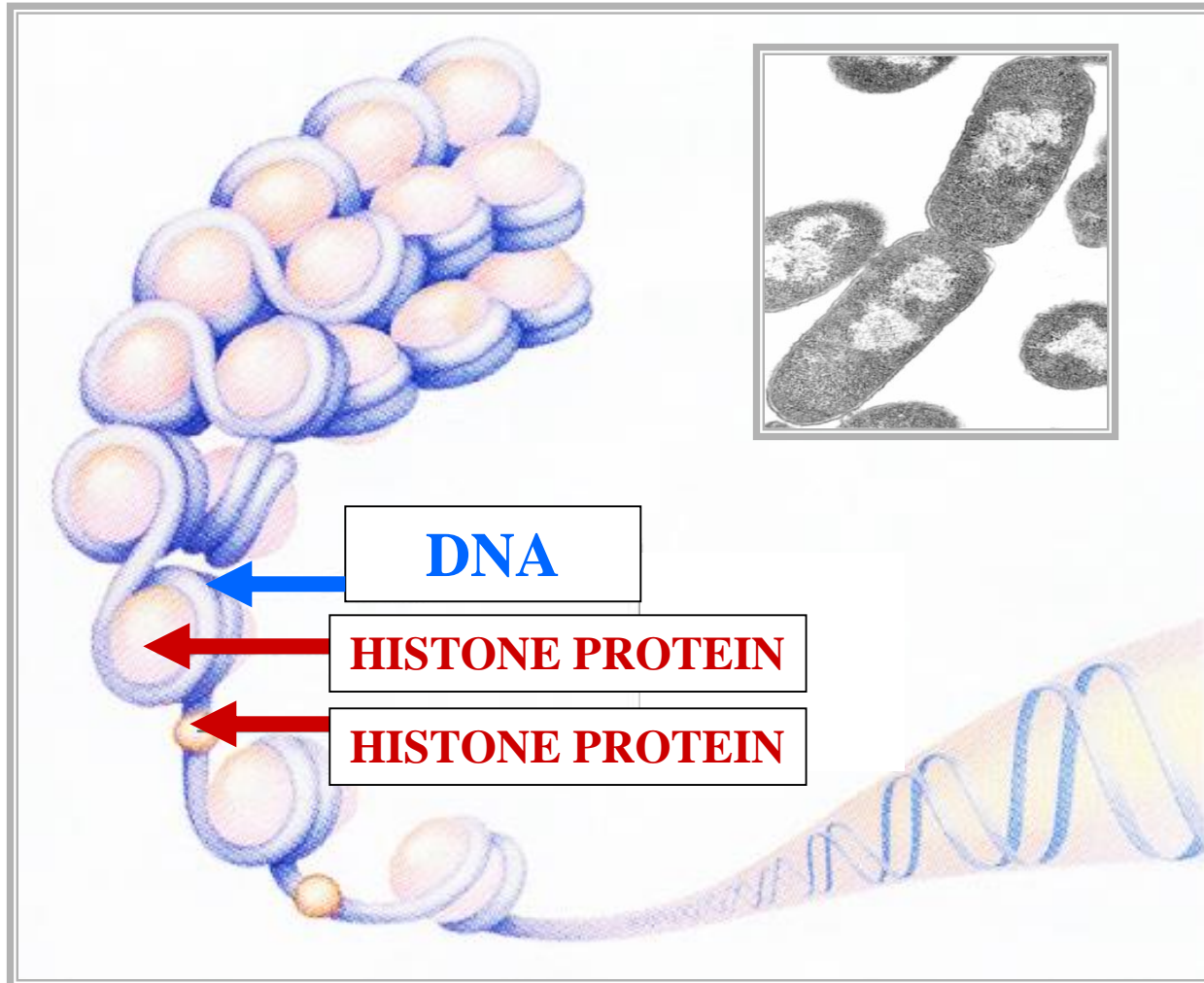
# EUBACTERIA CHROMOSOME

AB



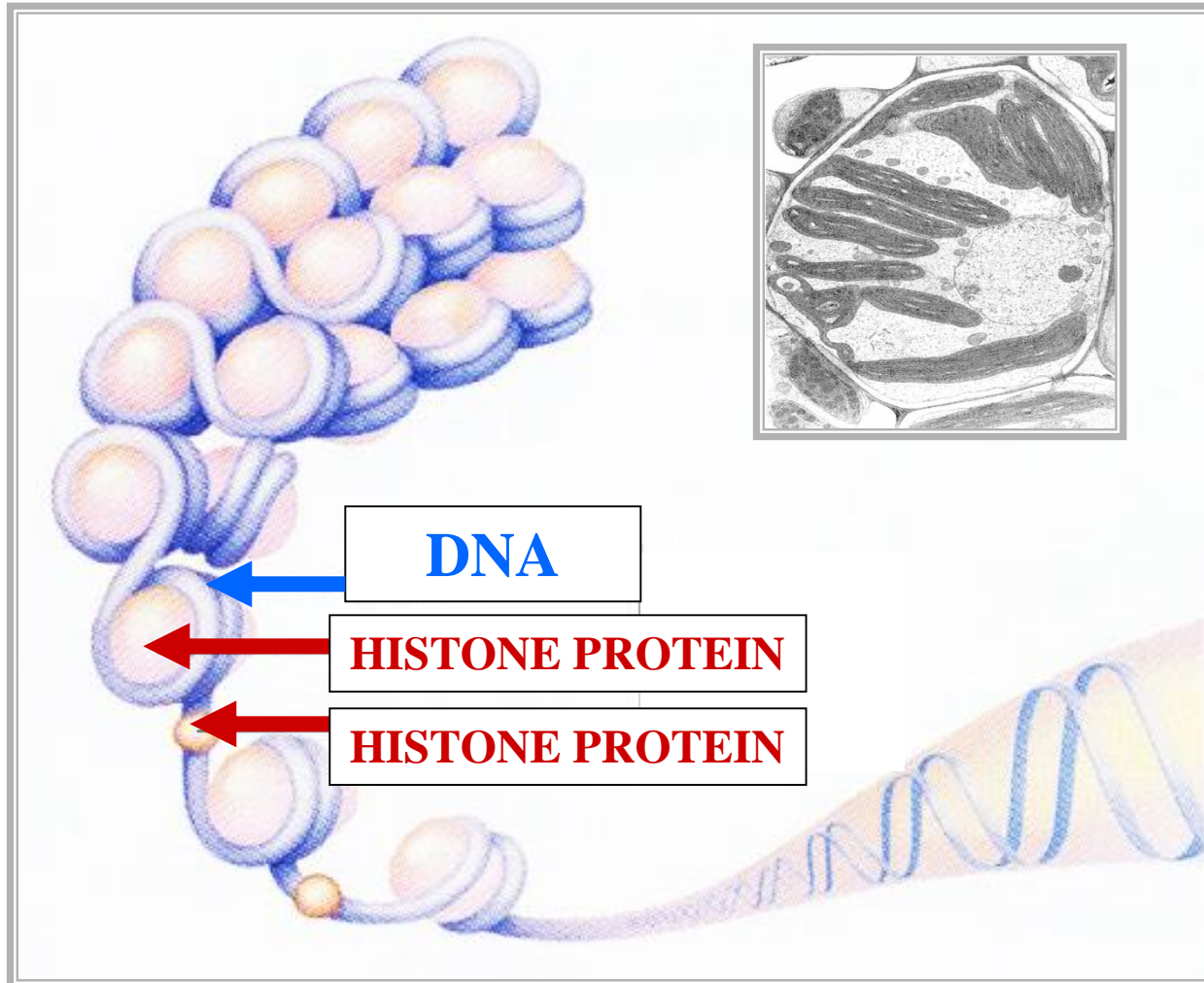
**PROKARYOTE CHROMOSOME:**

# EUBACTERIA CHROMOSOME



**PROKARYOTE CHROMOSOME: HISTONE PROTEINS ABSENT**

# EUKARYOTE CHROMOSOME



**EUKARYOTE CHROMOSOME: HISTONE PROTEINS PRESENT**

# HISTONE PROTEINS



**EUBACTERIA  
CHROMOSOME  
HISTONE PROTEINS**

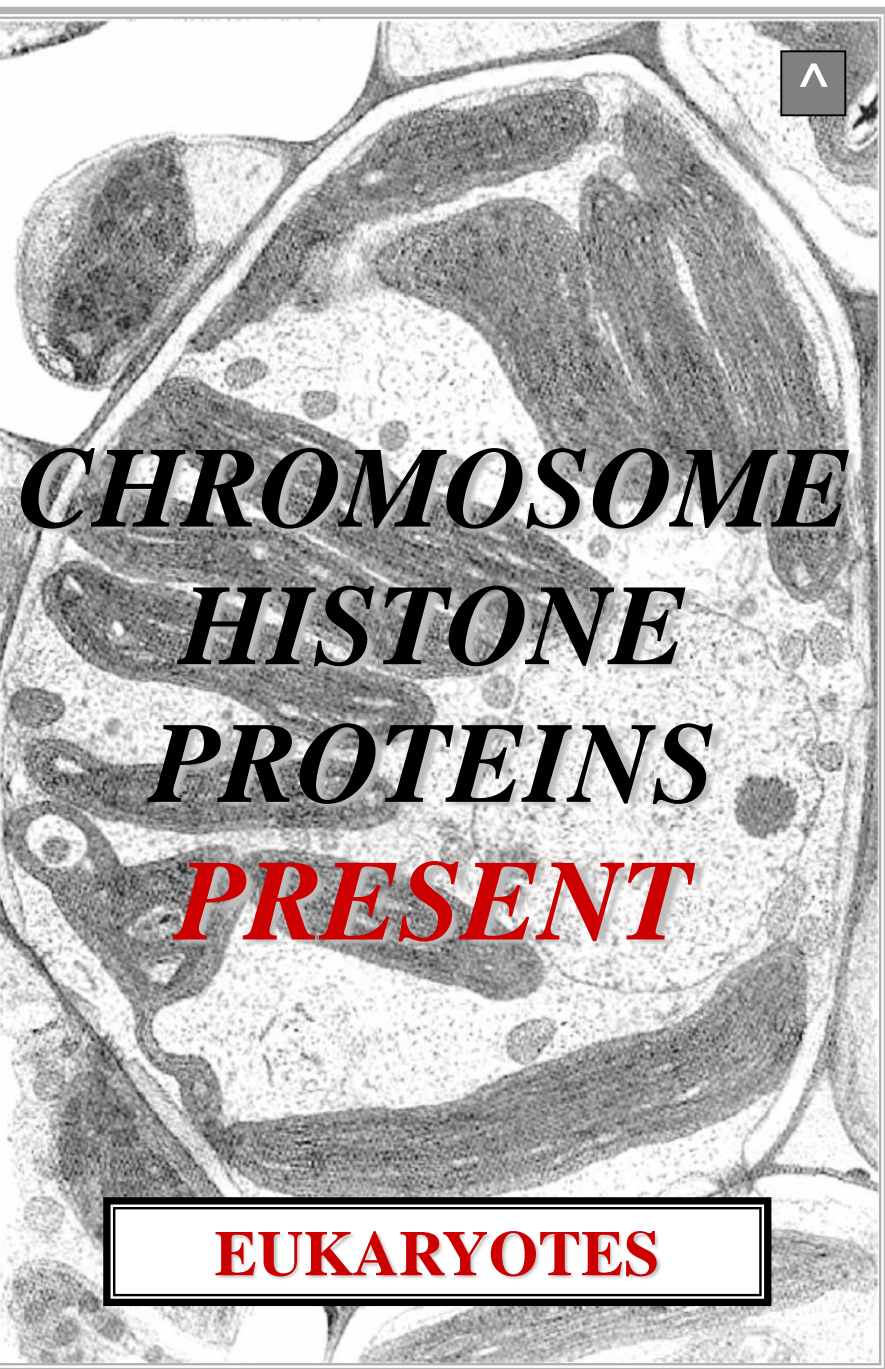
**EUKARYOTE  
CHROMOSOME PROTEINS**

**EUBACTERIA  
CHROMOSOME  
HISTONE PROTEINS**



***CHROMOSOME***  
***HISTONE***  
***PROTEINS***  
***ABSENT***

**PROKARYOTES**



***CHROMOSOME***  
***HISTONE***  
***PROTEINS***  
***PRESENT***

**EUKARYOTES**

# FLAGELLUM



**FLAGELLUM**

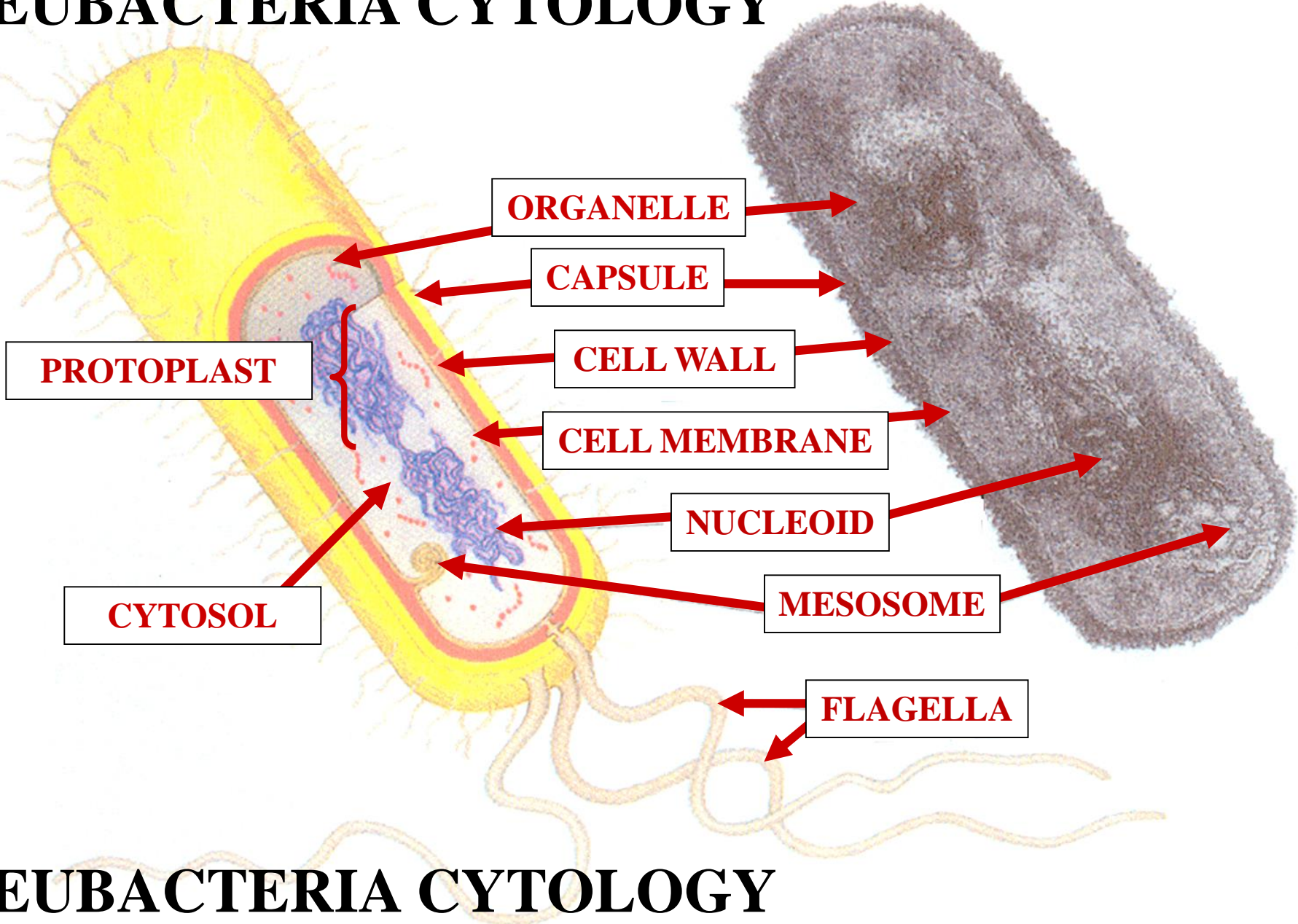
**EUBACTERIA  
CYTOLOGY  
FLAGELLUM**



**PROPULSION APPENDAGE**

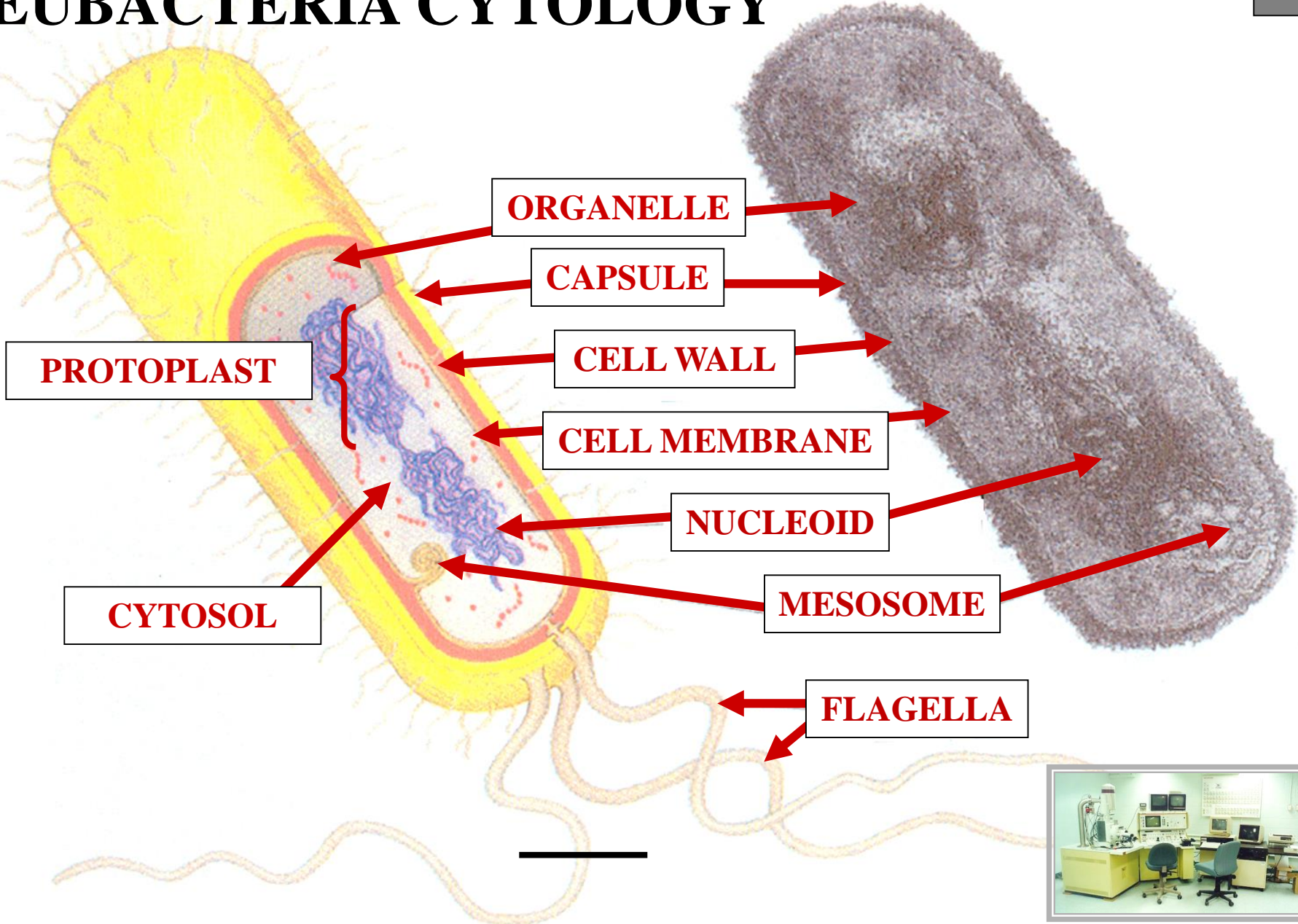
**EUBACTERIA  
CYTOLOGY  
FLAGELLUM**

# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY

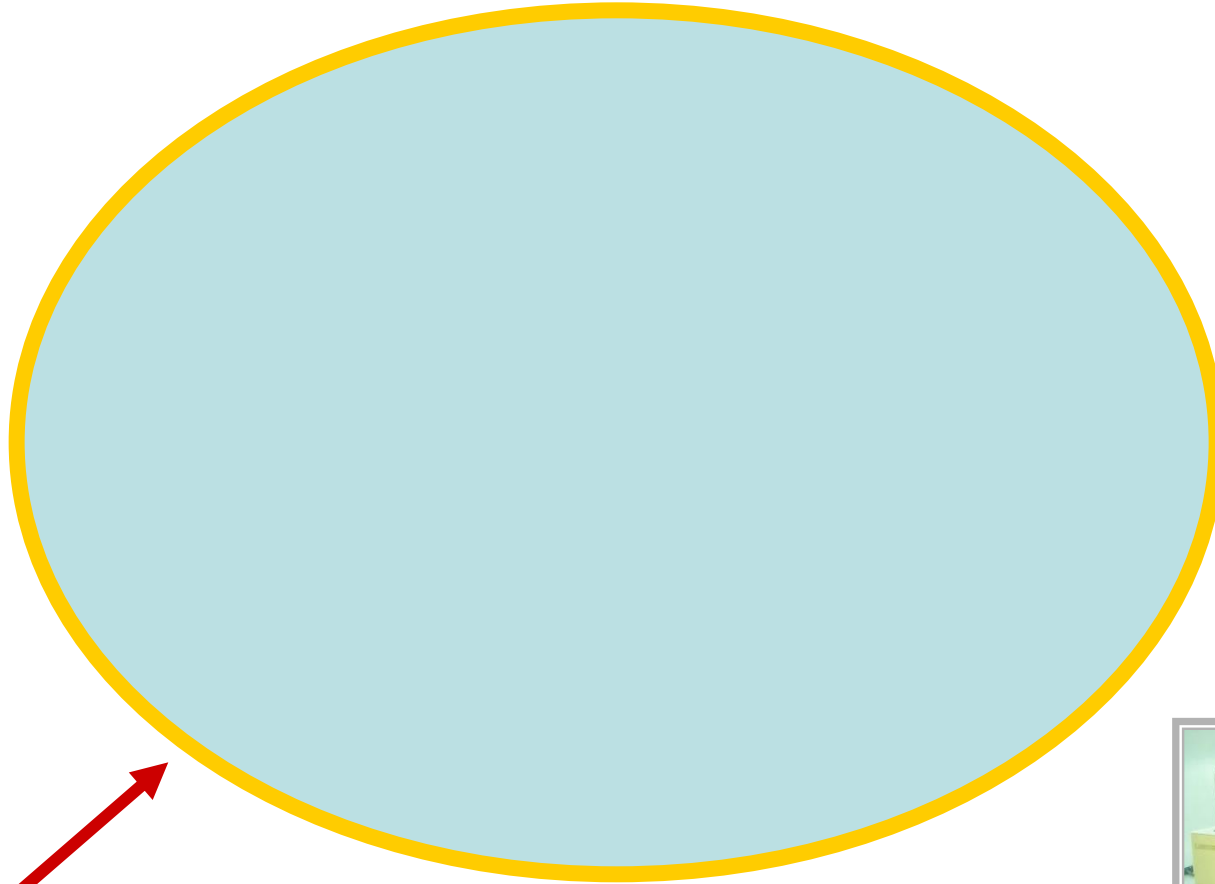
# EUBACTERIA CYTOLOGY





# FLAGELLUM ULTRASTRUCTURE

# **EUBACTERIA FLAGELLUM**



**MEMBRANE**



**C.S.**

# EUBACTERIA FLAGELLUM

9

AB



**MEMBRANE: ABSENT**



C.S.

# EUBACTERIA FLAGELLUM



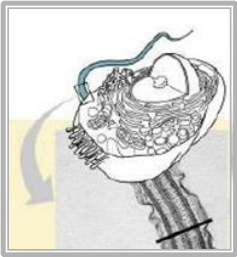
**9 + 2**  
**MICROTUBULE**  
**PATTERN**  
**ABSENT**

**MEMBRANE: ABSENT**



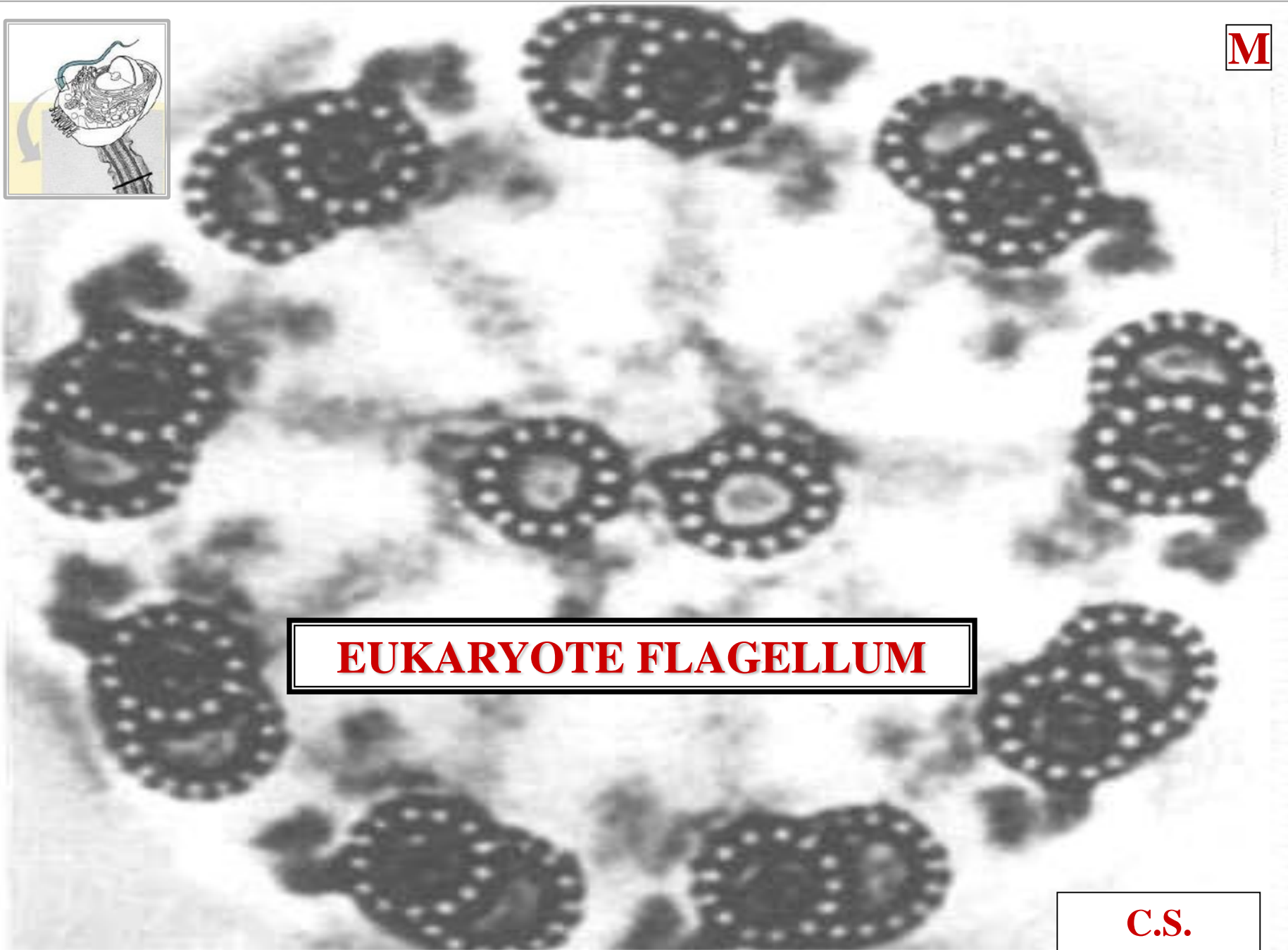
**C.S.**

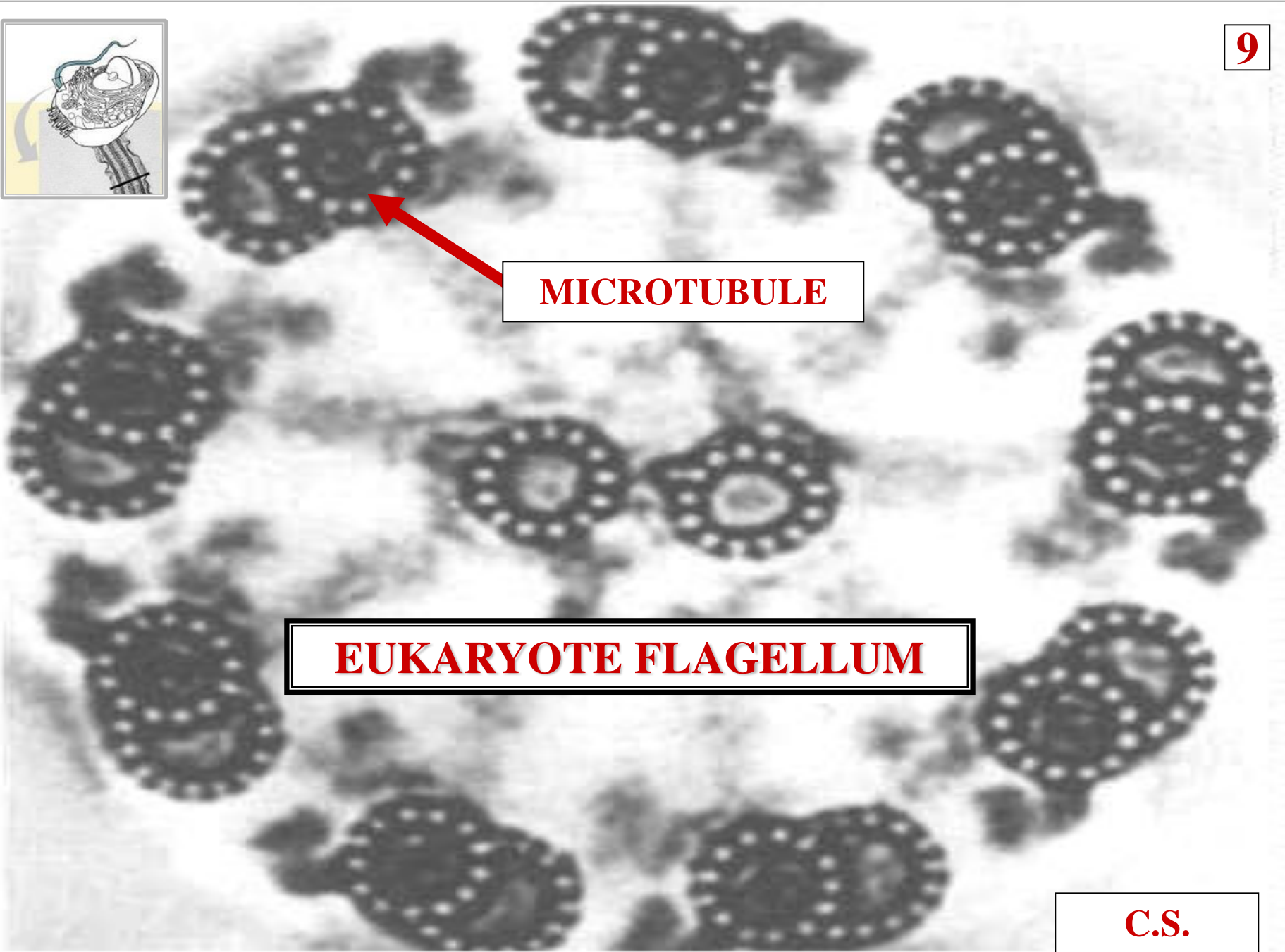




**EUKARYOTE FLAGELLUM**

**C.S.**





**MICROTUBULE**

**EUKARYOTE FLAGELLUM**

**C.S.**



1

2

2

3

**9 OUTER  
PAIRED  
MICROTUBULES**

4

9

**EUKARYOTE FLAGELLUM**

8

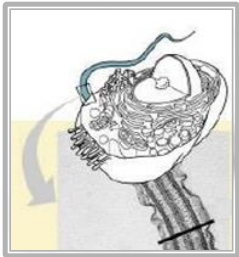
5

7

6



**C.S.**

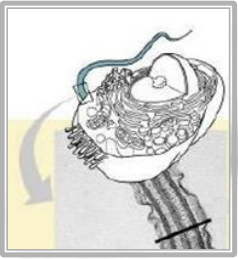


**9 OUTER  
PAIRED  
MICROTUBULES**

**2 INNER  
NON-PAIRED  
MICROTUBULES**

**EUKARYOTE FLAGELLUM**

**C.S.**

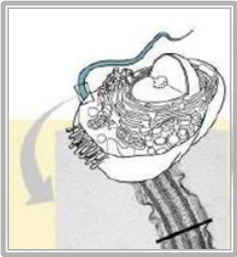


**9 OUTER  
PAIRED  
MICROTUBULES**

**2 INNER  
NON-PAIRED  
MICROTUBULES**

**EUKARYOTE FLAGELLUM**

**9+2 MICROTUBULE PATTERN: PRESENT**

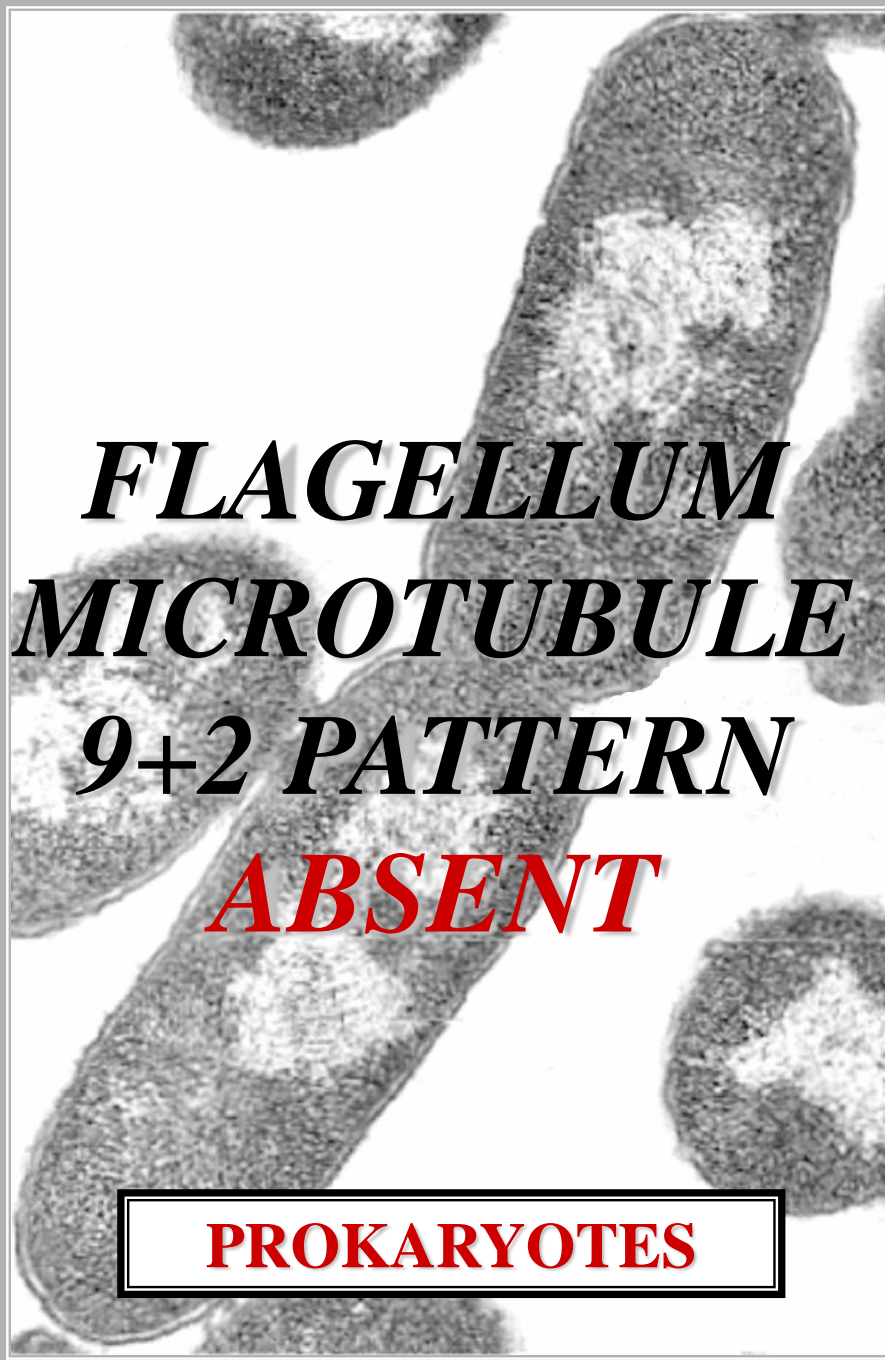


**9 OUTER  
PAIRED  
MICROTUBULES**

**2 INNER  
NON-PAIRED  
MICROTUBULES**

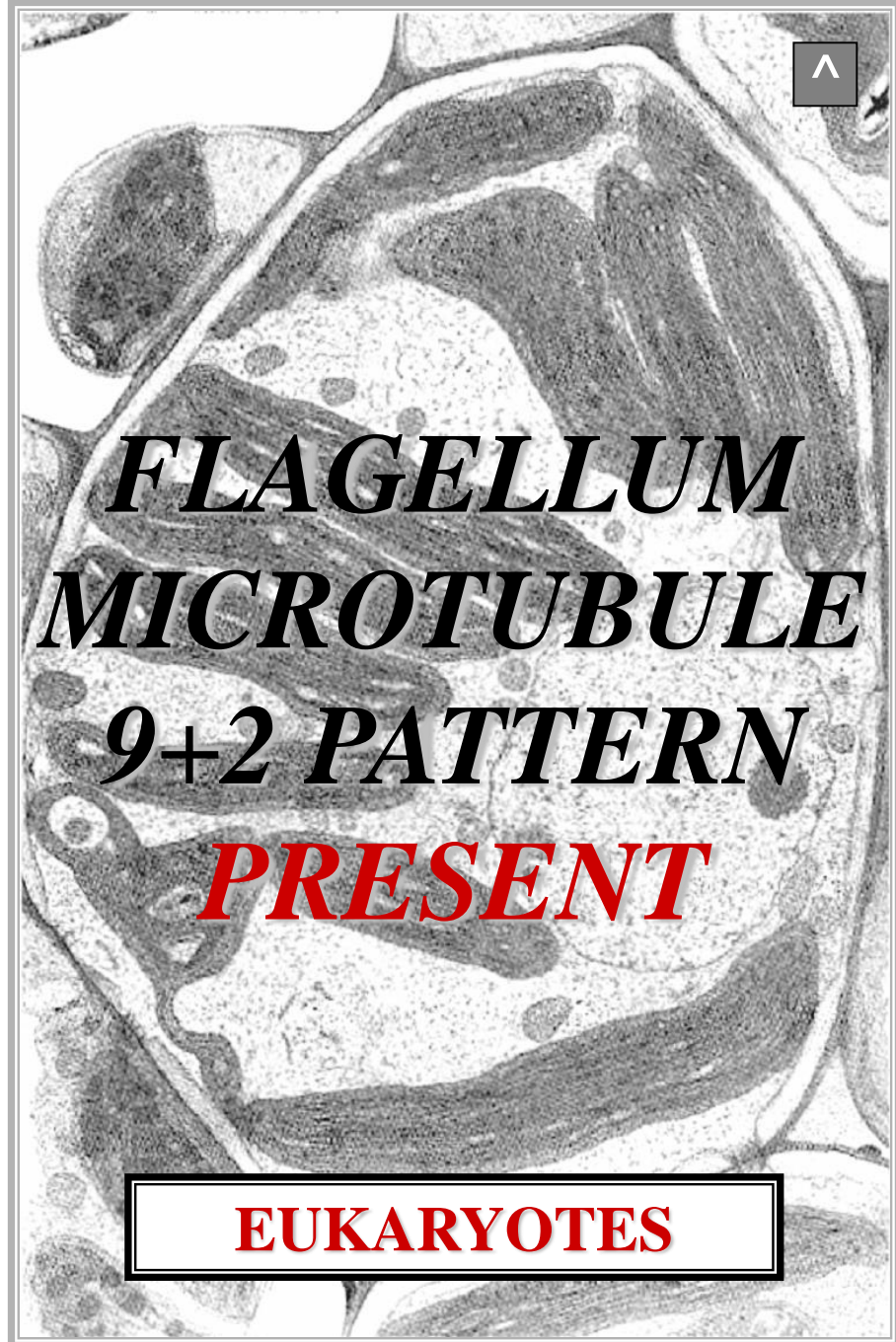
**PROKARYOTE FLAGELLUM**

**9+2 MICROTUBULE PATTERN: ABSENT**



***FLAGELLUM  
MICROTUBULE  
9+2 PATTERN  
ABSENT***

**PROKARYOTES**



***FLAGELLUM  
MICROTUBULE  
9+2 PATTERN  
PRESENT***

**EUKARYOTES**



# FLAGELLUM COMPOSITION



# **EUBACTERIA FLAGELLUM**

**FLAGELLIN**



**C.S.**

**FLAGELLIN**

**EUBACTERIA  
CYTOLOGY  
FLAGELLIN**



**CONTRACTILE PROTEIN**

**EUBACTERIA  
CYTOLOGY  
FLAGELLIN**

# EUBACTERIA FLAGELLUM



**FLAGELLIN**  
CONTRACTILE PROTEIN



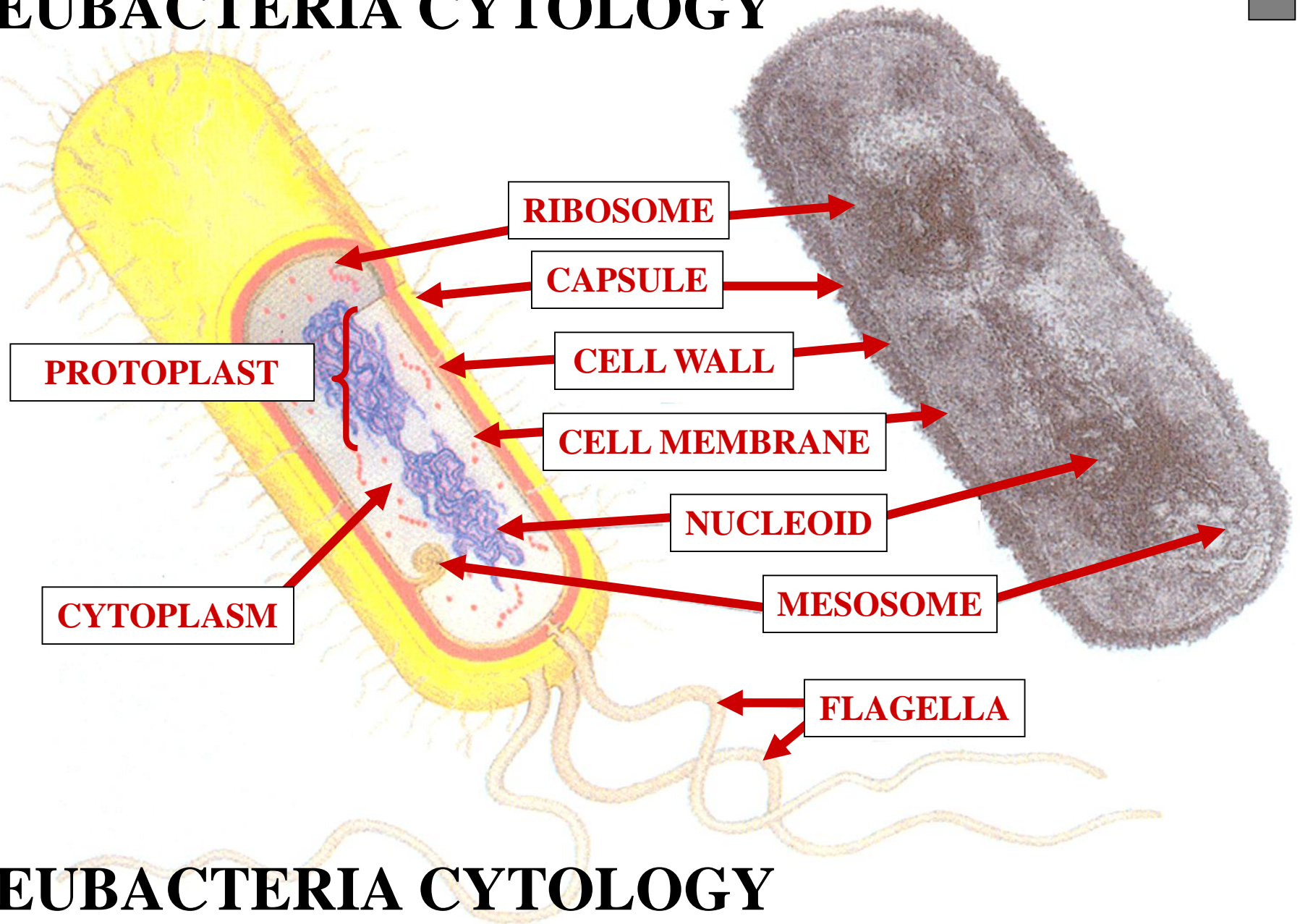
**PROKARYOTE FLAGELUM COMPOSITION: FLAGELLIN**

**C.S.**



# **EUBACTERIA CYTOLOGY SUMMARY**

# EUBACTERIA CYTOLOGY



# EUBACTERIA CYTOLOGY



# **EUBACTERIA REPRODUCTION**



# SEXUAL REPRODUCTION





**AB**

**TRUE SEXUAL  
REPRODUCTION**

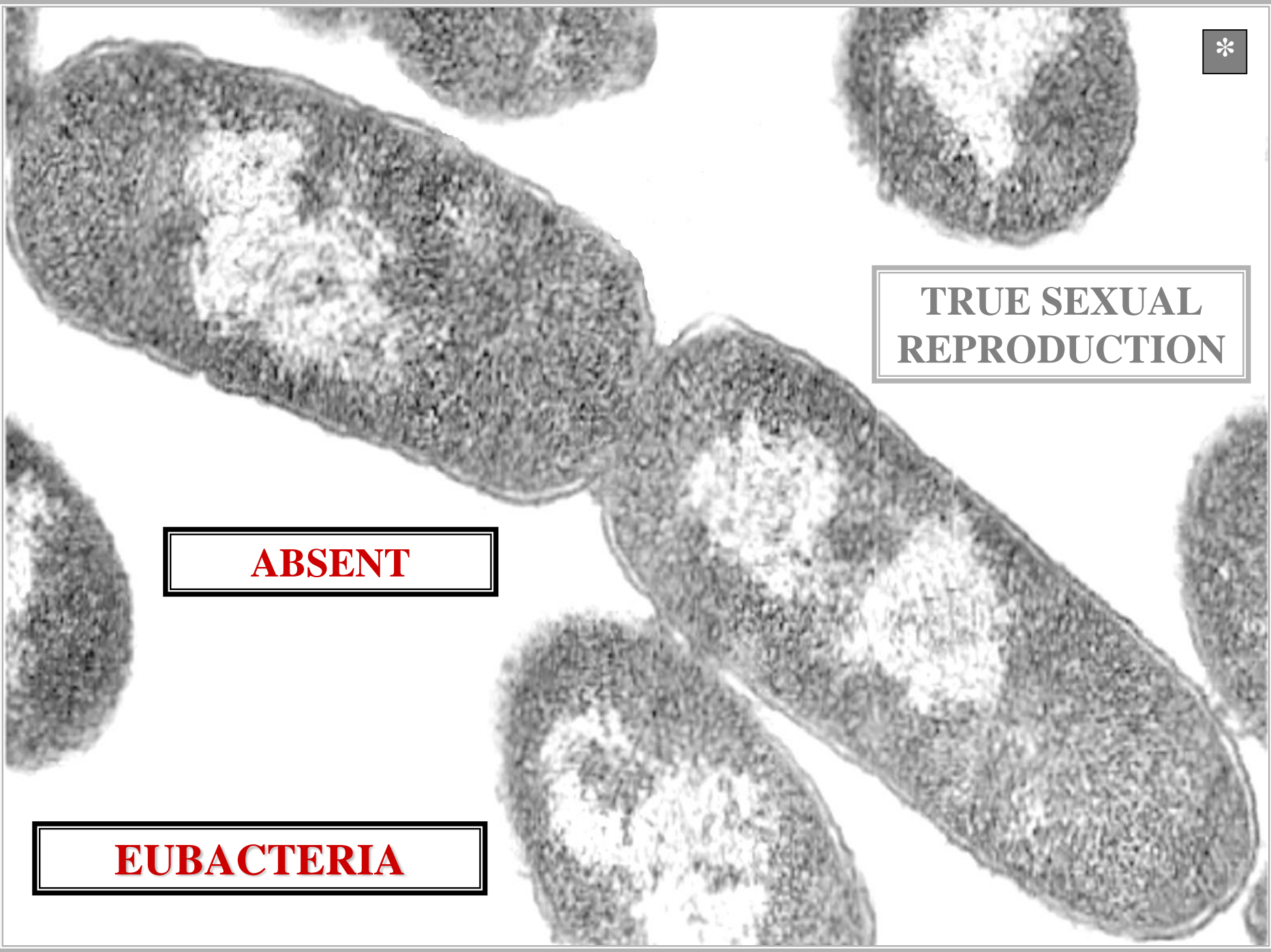
**EUBACTERIA**

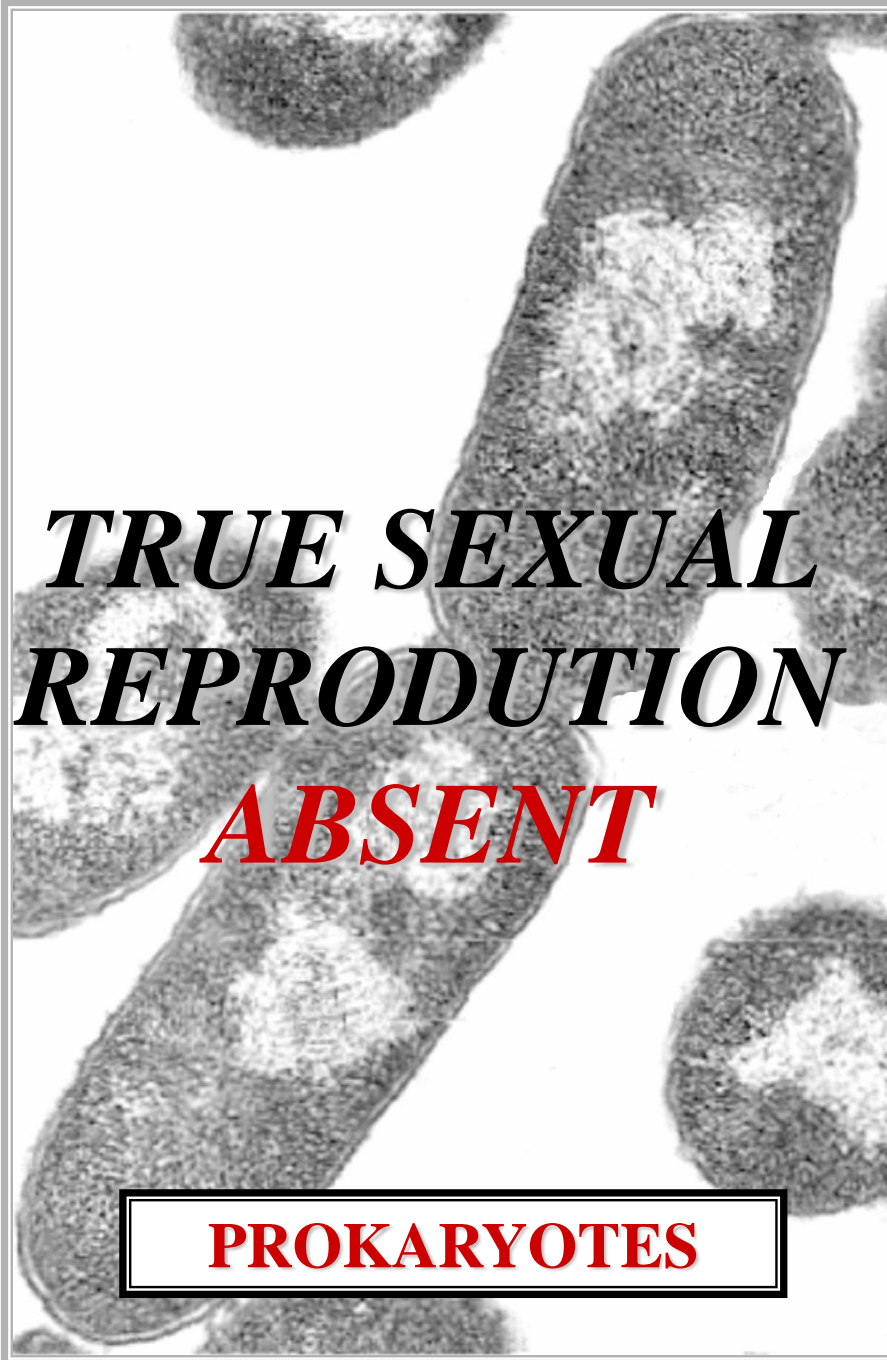


**TRUE SEXUAL  
REPRODUCTION**

**ABSENT**

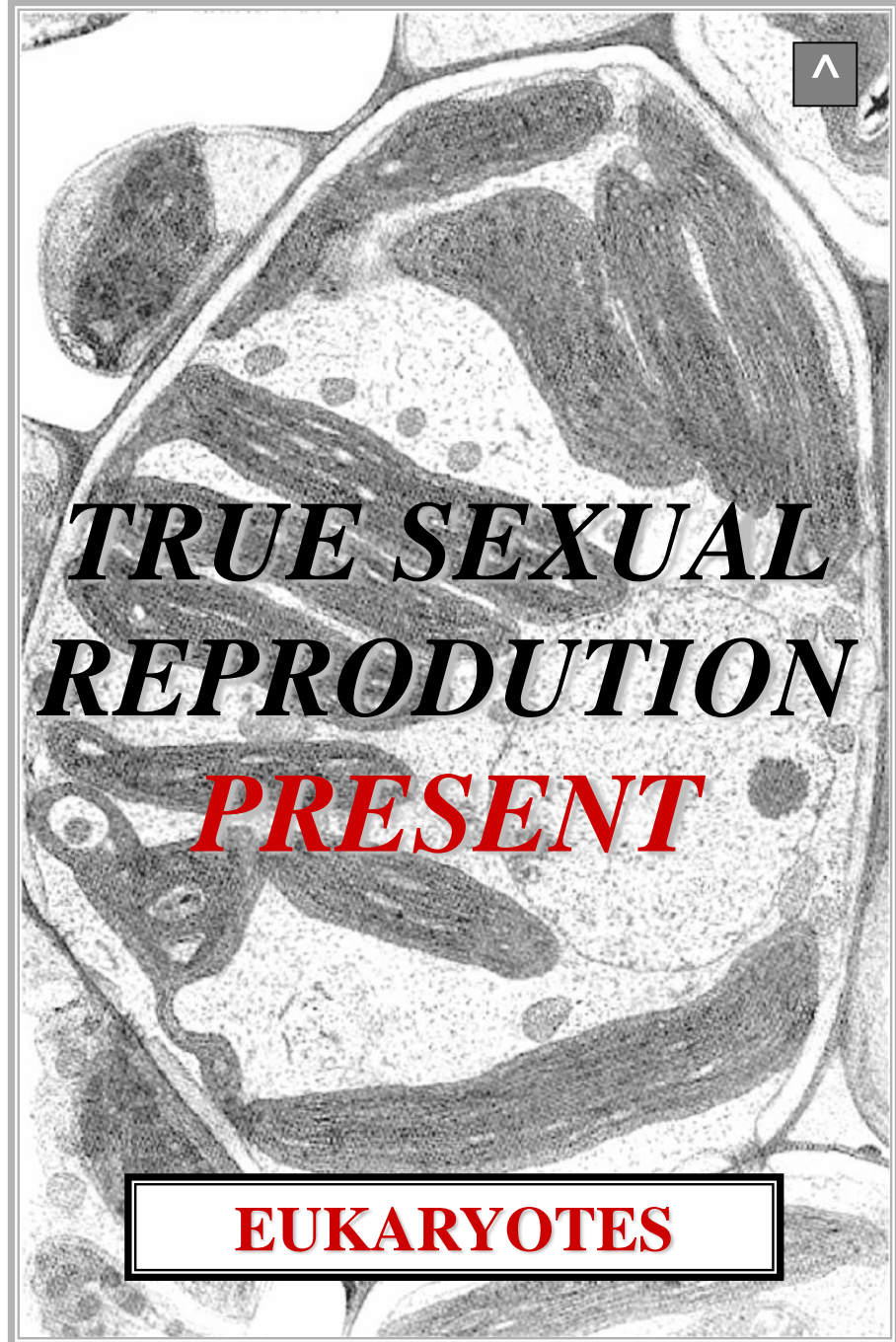
**EUBACTERIA**





***TRUE SEXUAL  
REPRODUCTION  
ABSENT***

**PROKARYOTES**



***TRUE SEXUAL  
REPRODUCTION  
PRESENT***

**EUKARYOTES**



# **ASEXUAL REPRODUCTION**