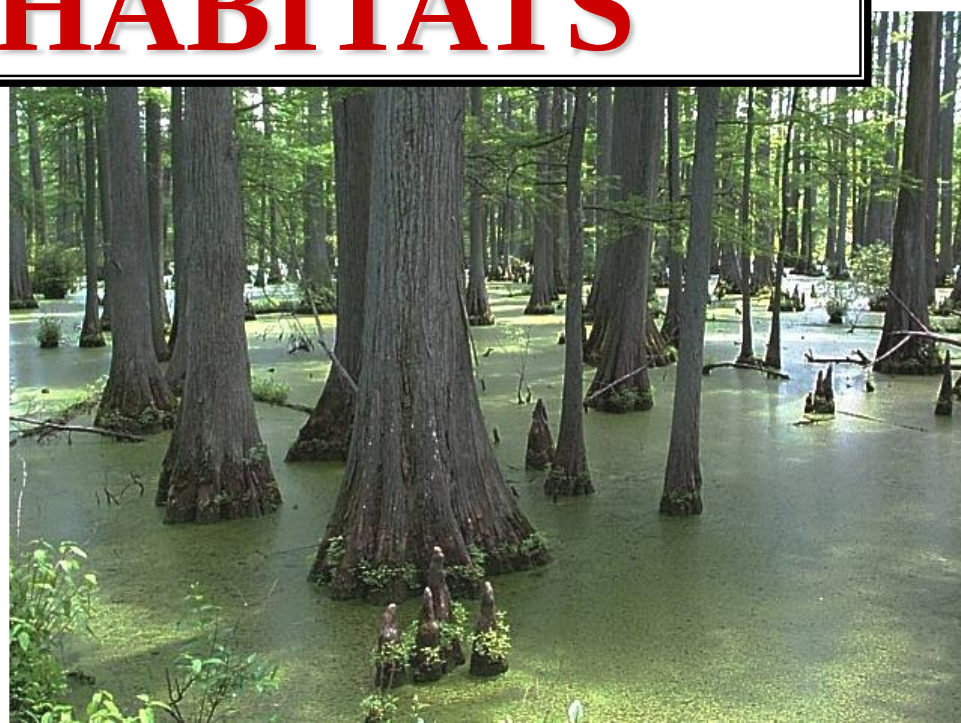
AQUATIC HABITATS



HOT SPRINGS

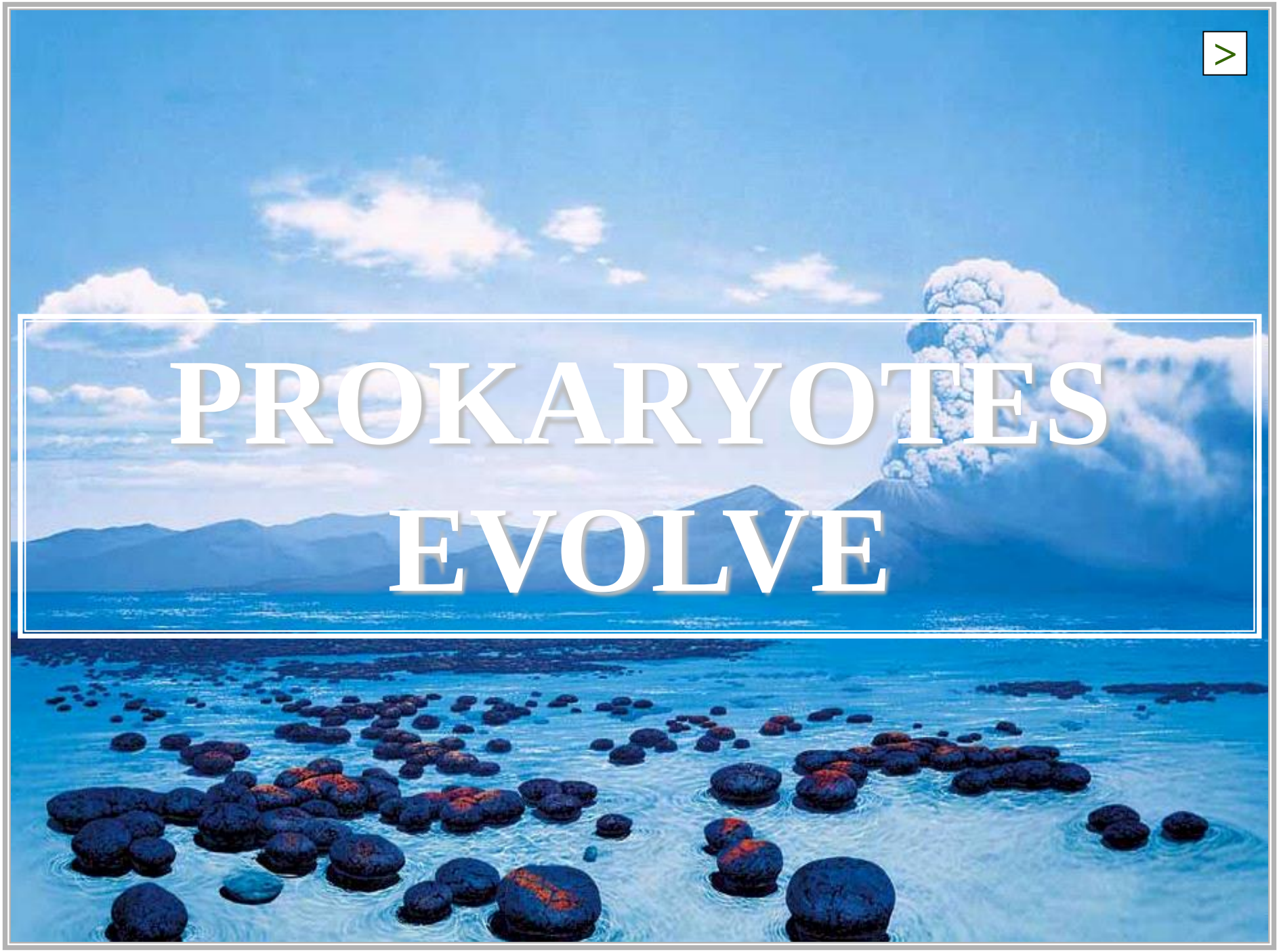
EXTREME HABITATS

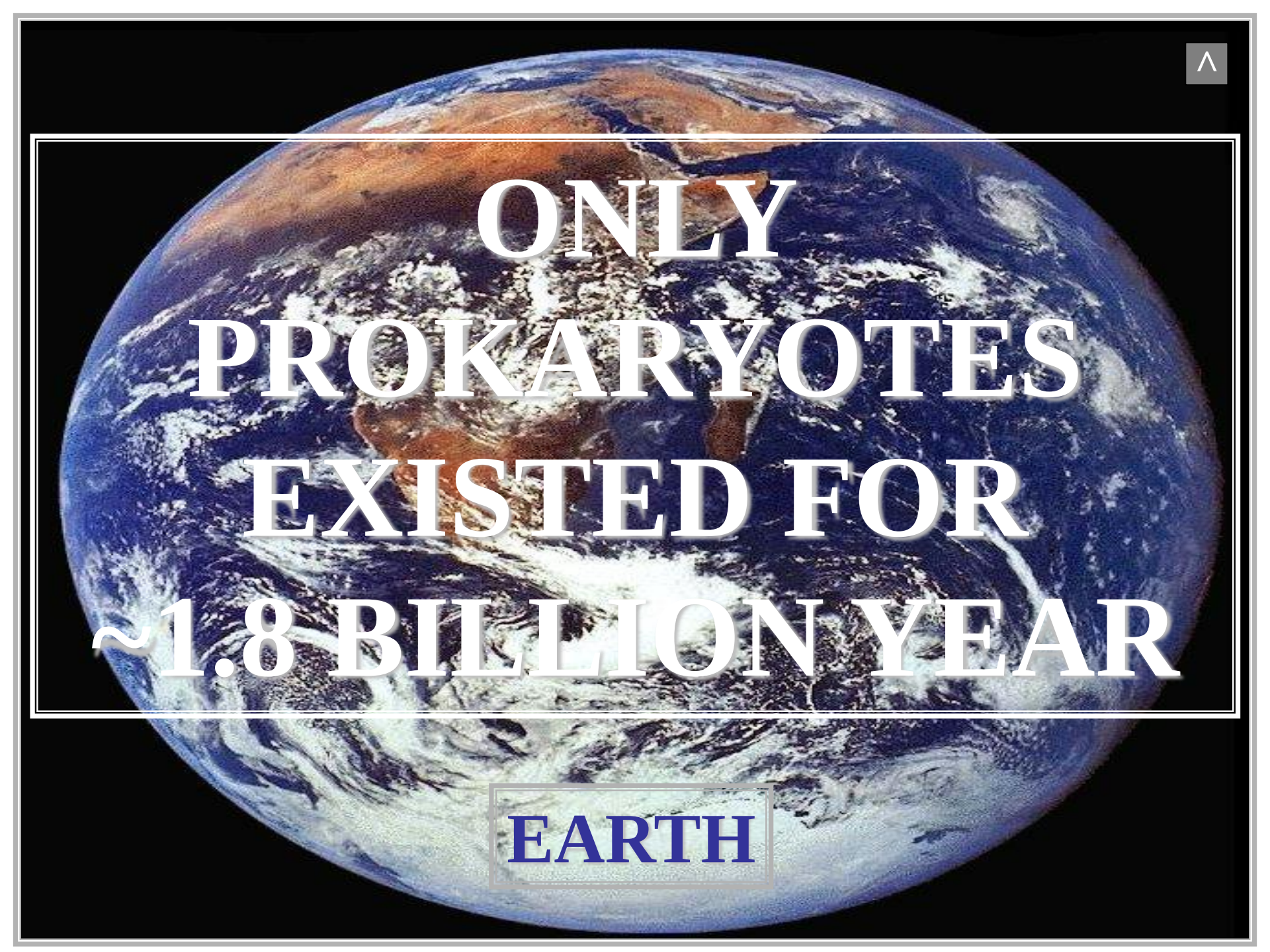
PROKARYOTE FOSSIL RECORD

~3.5

BILLION YEARS


E
PRECAMBRIAN


PROKARYOTES
EVOLVE

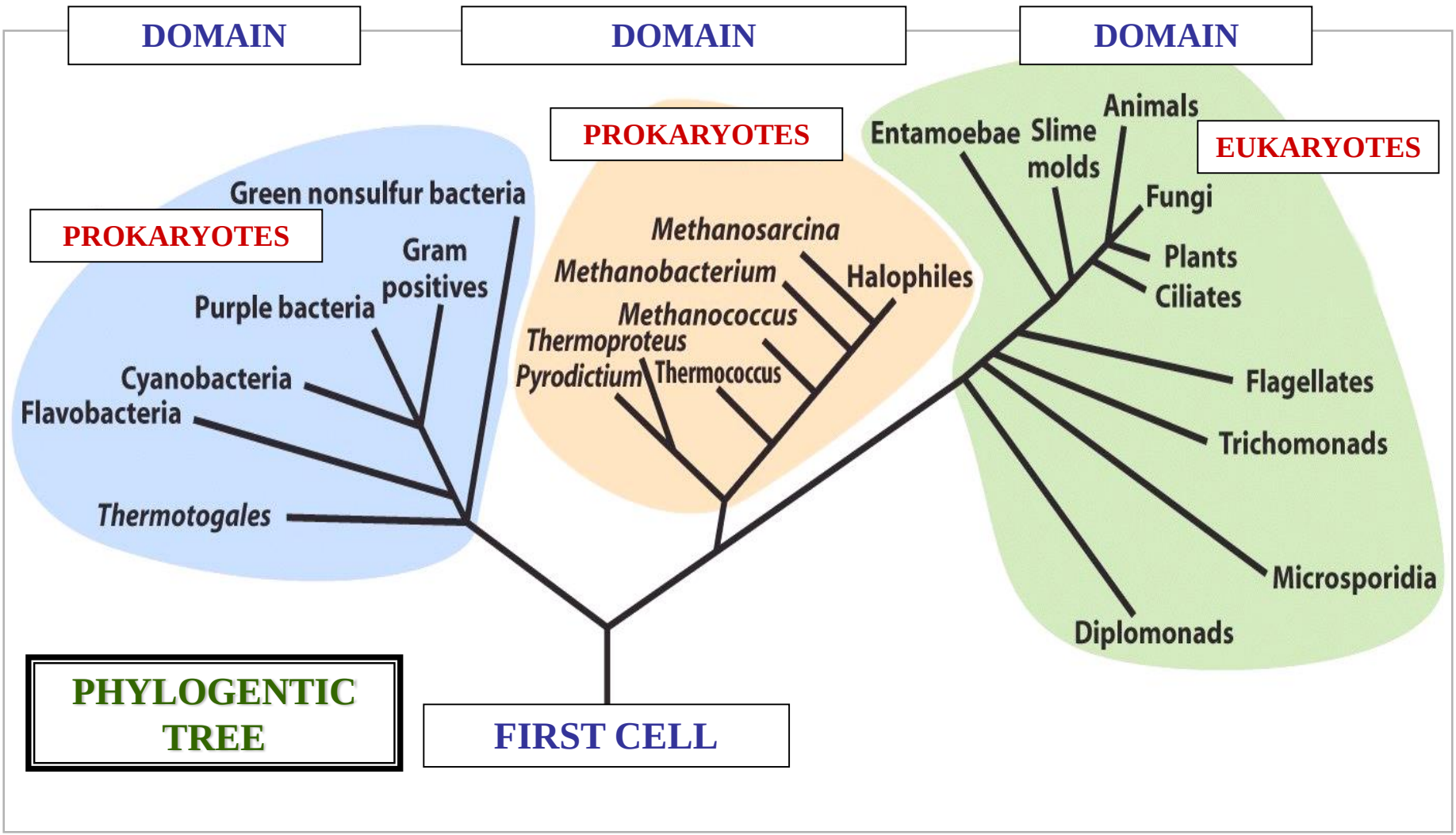

ONLY
PROKARYOTES
EXISTED FOR
~1.8 BILLION YEAR
EARTH

PROKARYOTE CLASSIFICATION

PROKARYOTE DOMAINS

A

PROKARYOTE DOMAINS



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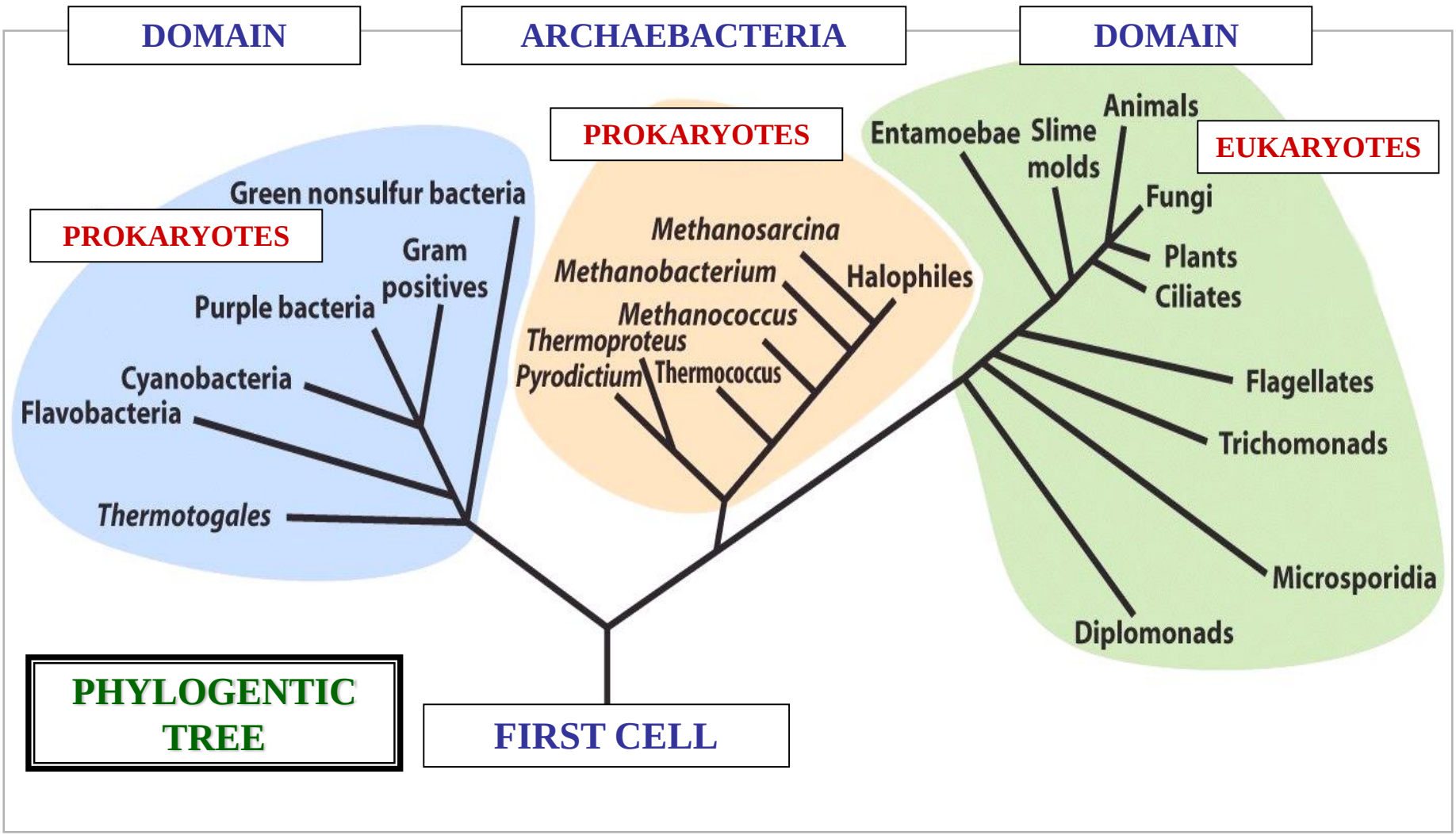
PROKARYOTE DOMAINS



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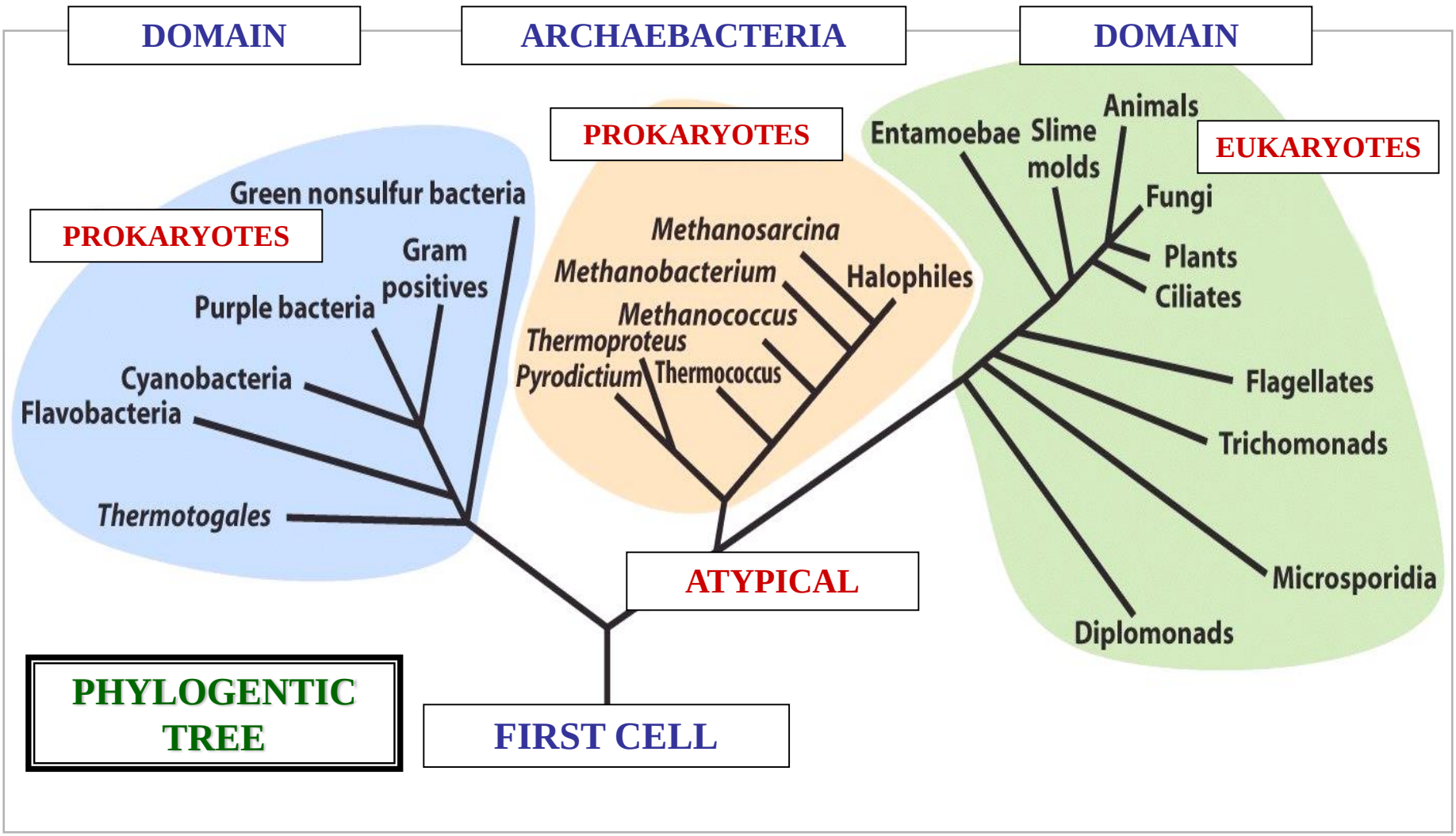
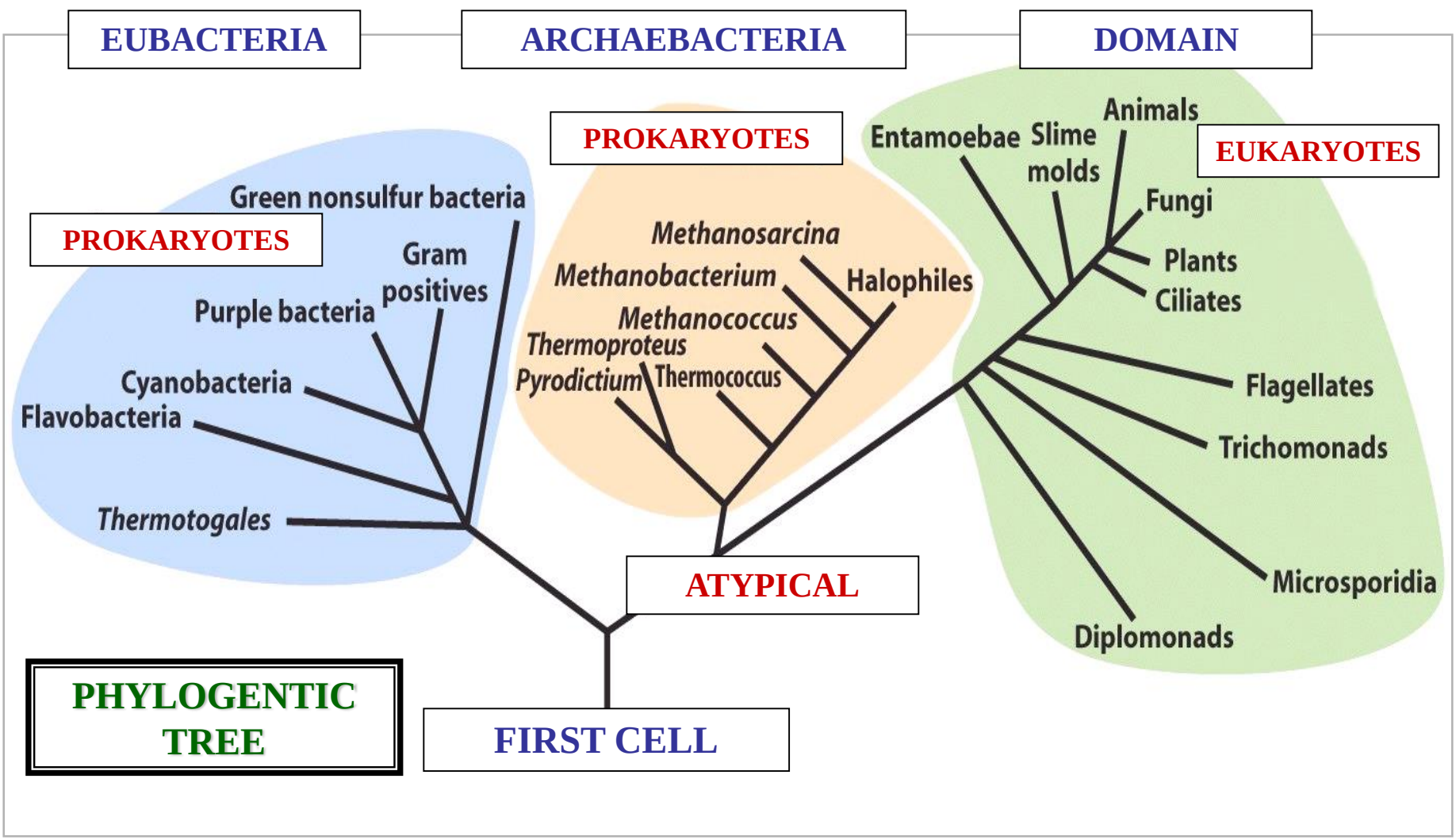
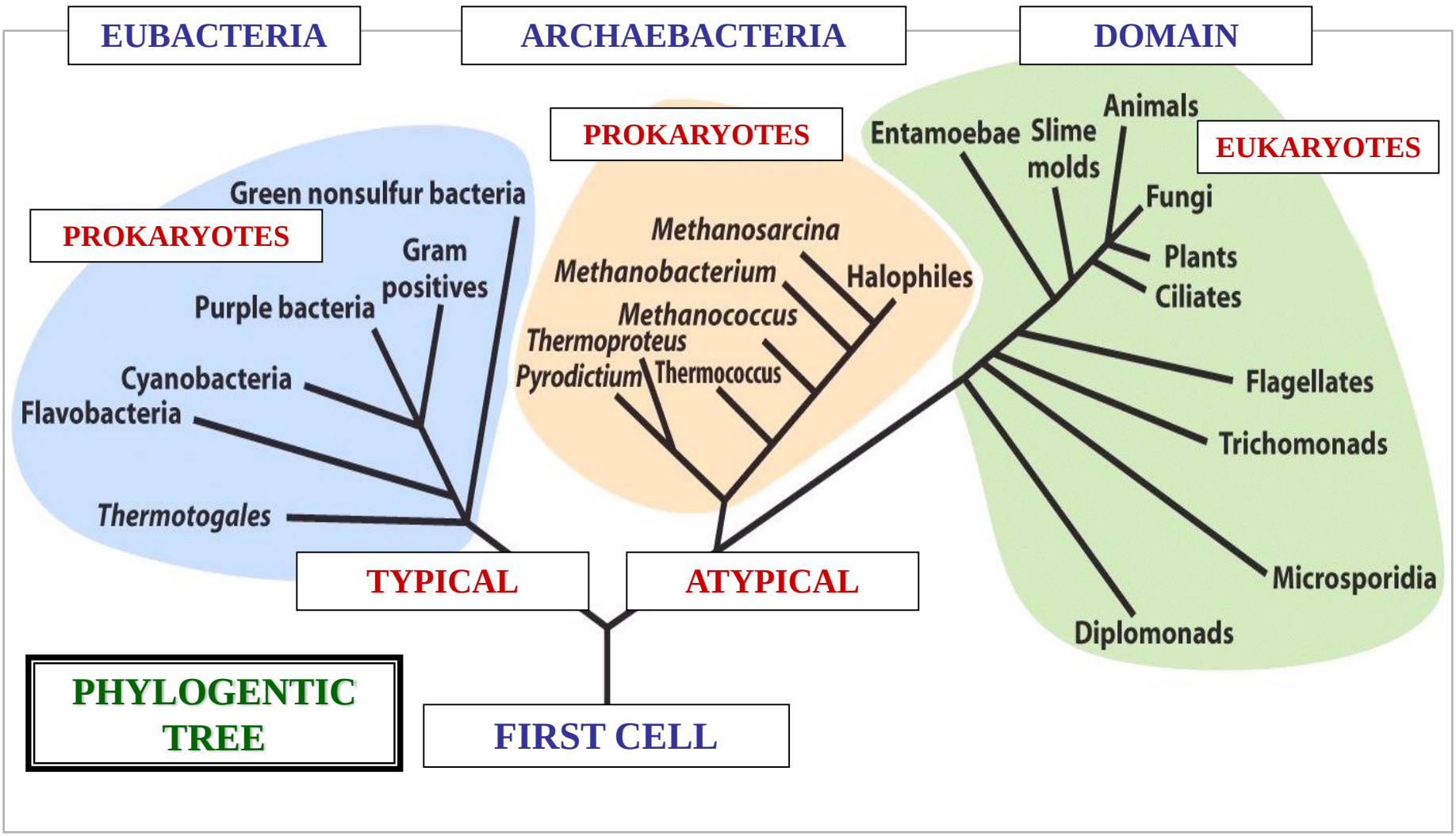
PROKARYOTE DOMAINS



PROKARYOTE DOMAINS



PROKARYOTE DOMAINS



EUBACTERIA CHARACTERS

EUBACTERIA GROWTH FORMS

EUBACTERIA GROWTH FORMS

UNICELLULAR

EUBACTERIA GROWTH FORMS

EUBACTERIA
GROWTH FORMS

UNICELLULAR
COLONIAL

EUBACTERIA
GROWTH FORMS

EUBACTERIA
GROWTH FORMS

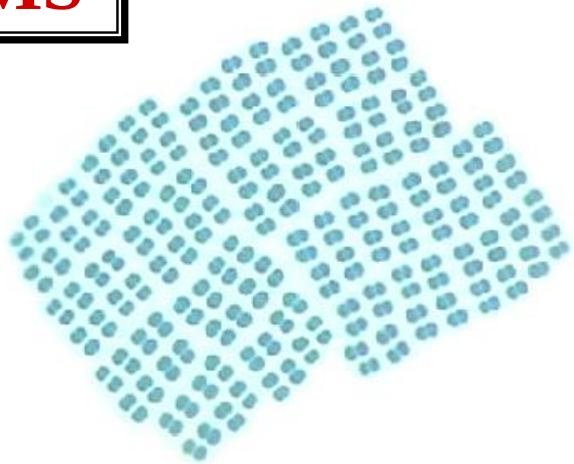
UNICELLULAR
COLONIAL
FILAMENTOUS

EUBACTERIA
GROWTH FORMS

EUBACTERIA GROWTH FORMS

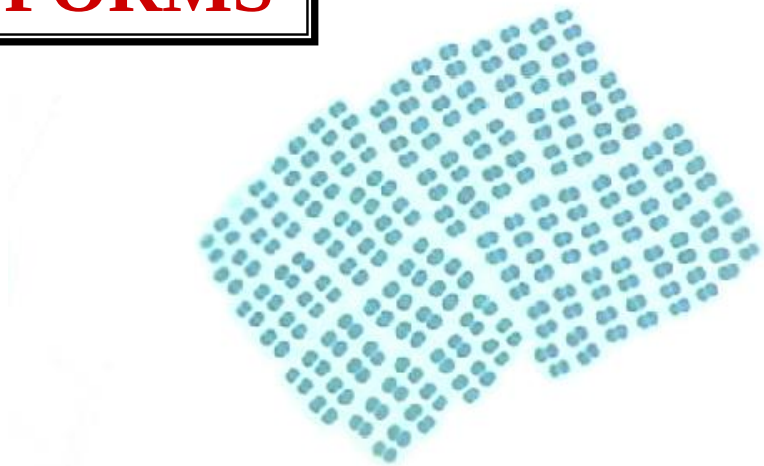
F

COLONIAL



EUBACTERIA GROWTH FORMS

COLONIAL



FILAMENTOUS

EUBACTERIA CELL FORMS

EUBACTERIA
CELL FORMS

COCCOID

EUBACTERIA
CELL FORMS

EUBACTERIA
CELL FORMS

COCCOID

BACILLOID

EUBACTERIA
CELL FORMS

C

EUBACTERIA
CELL FORMS

COCCOID
BACILLOID
SPIRILLOID

EUBACTERIA
CELL FORMS

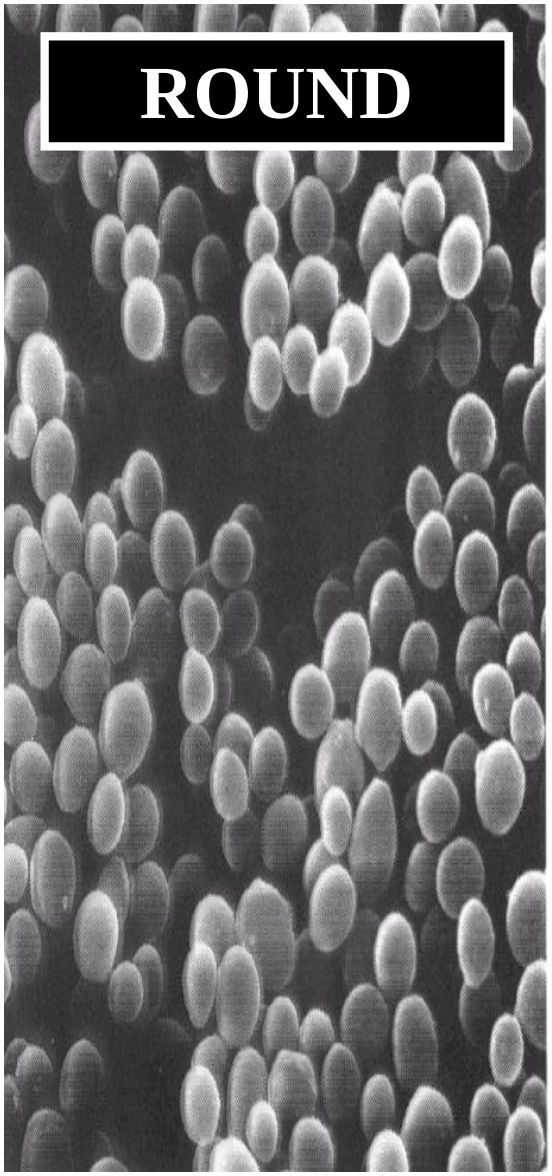
COCCOID

EUBACTERIA
CELL FORMS
COCCOID

ROUND IN SHAPE

EUBACTERIA
CELL FORMS
COCCOID

B



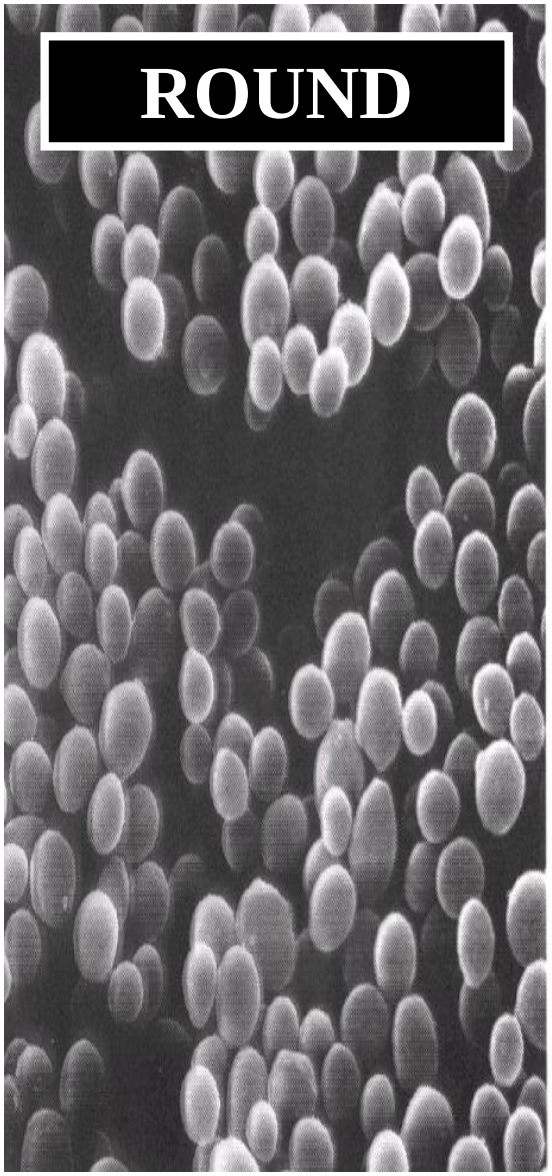
COCCOID

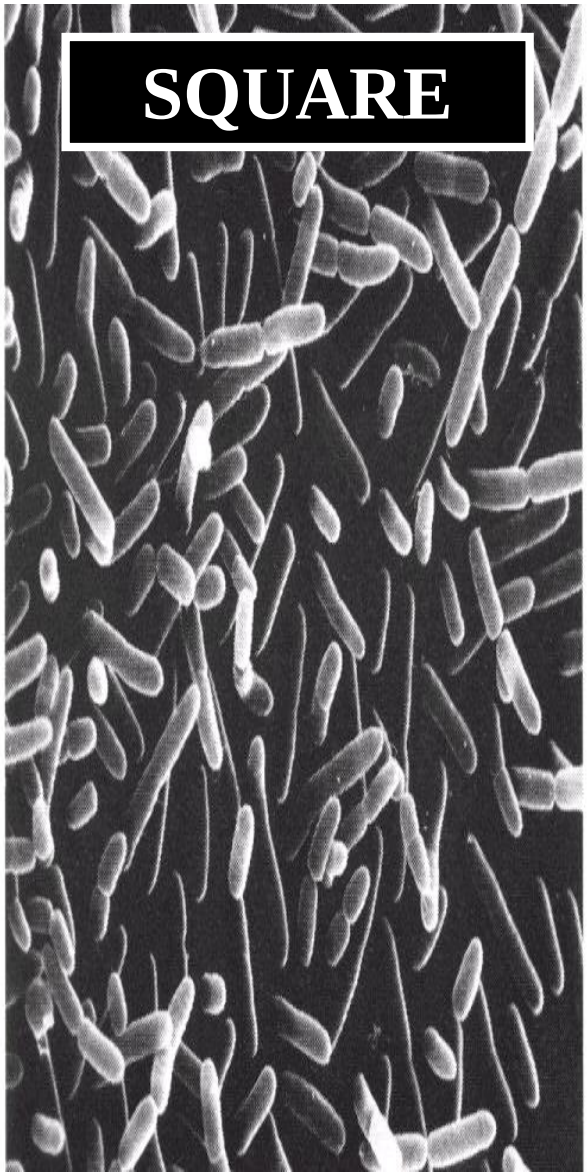
BACILLOID

EUBACTERIA
CELL FORMS
BACILLOID

SQUARE IN SHAPE

EUBACTERIA
CELL FORMS
BACILLOID





COCCOID

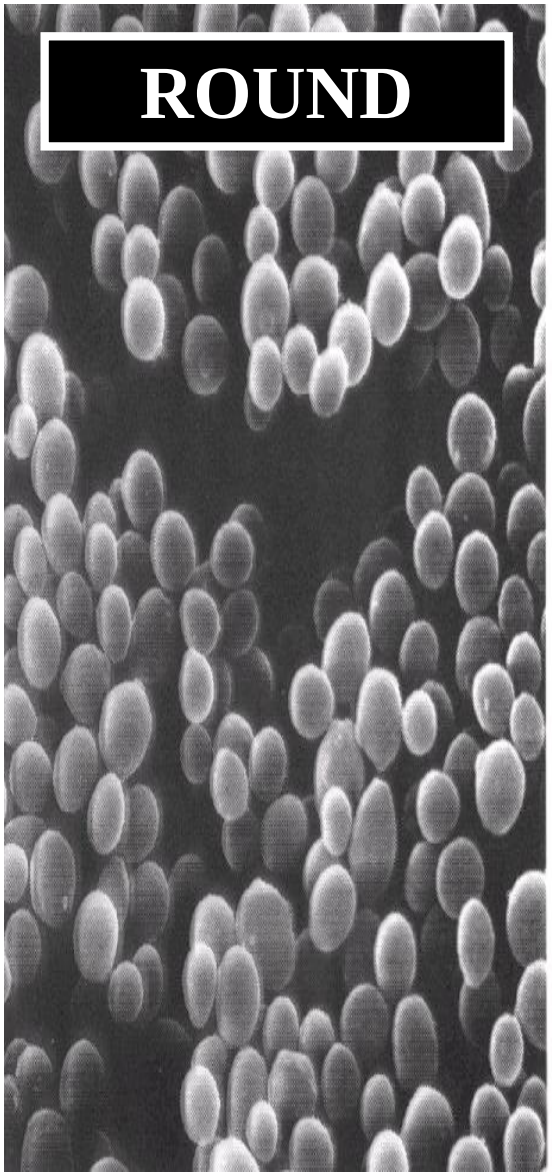
BACILLOID

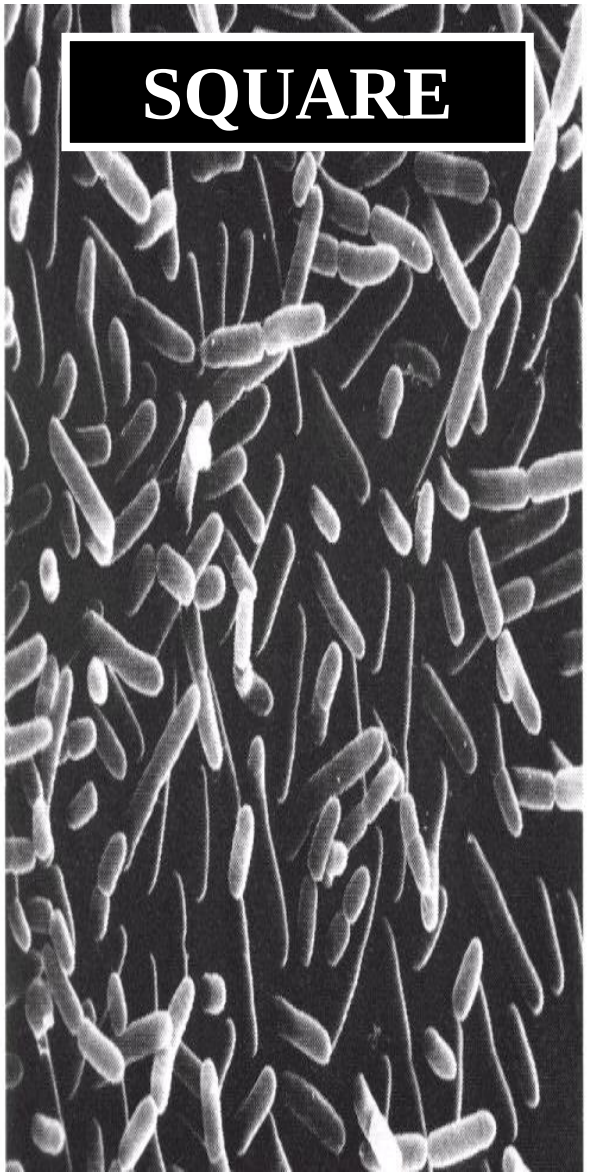
SPIRILLOID

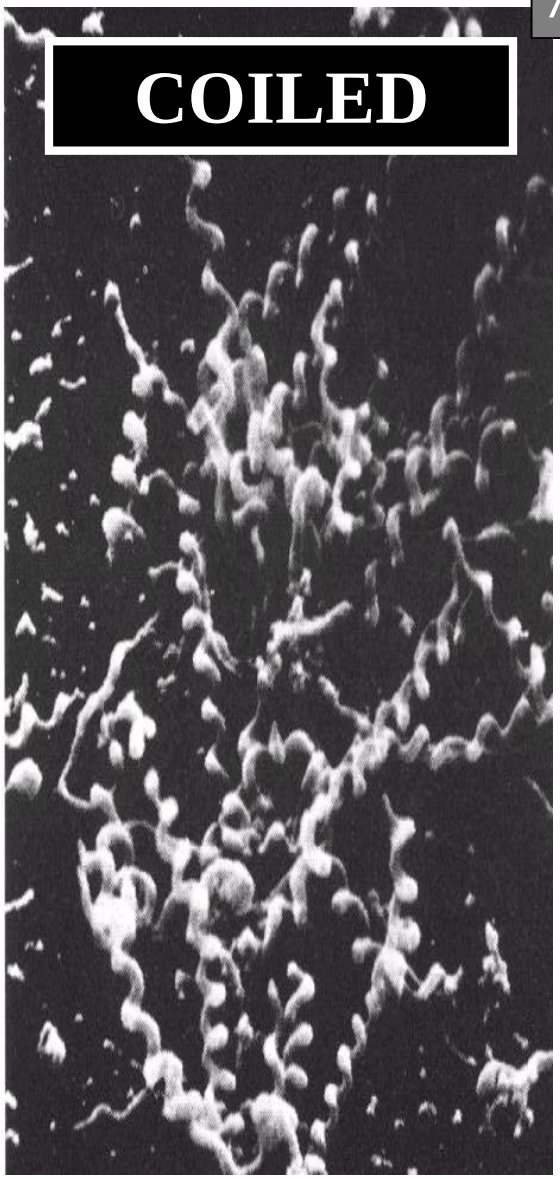
EUBACTERIA
CELL FORMS
SPIRILLOID

COILED IN SHAPE

EUBACTERIA
CELL FORMS
SPIRILLOID







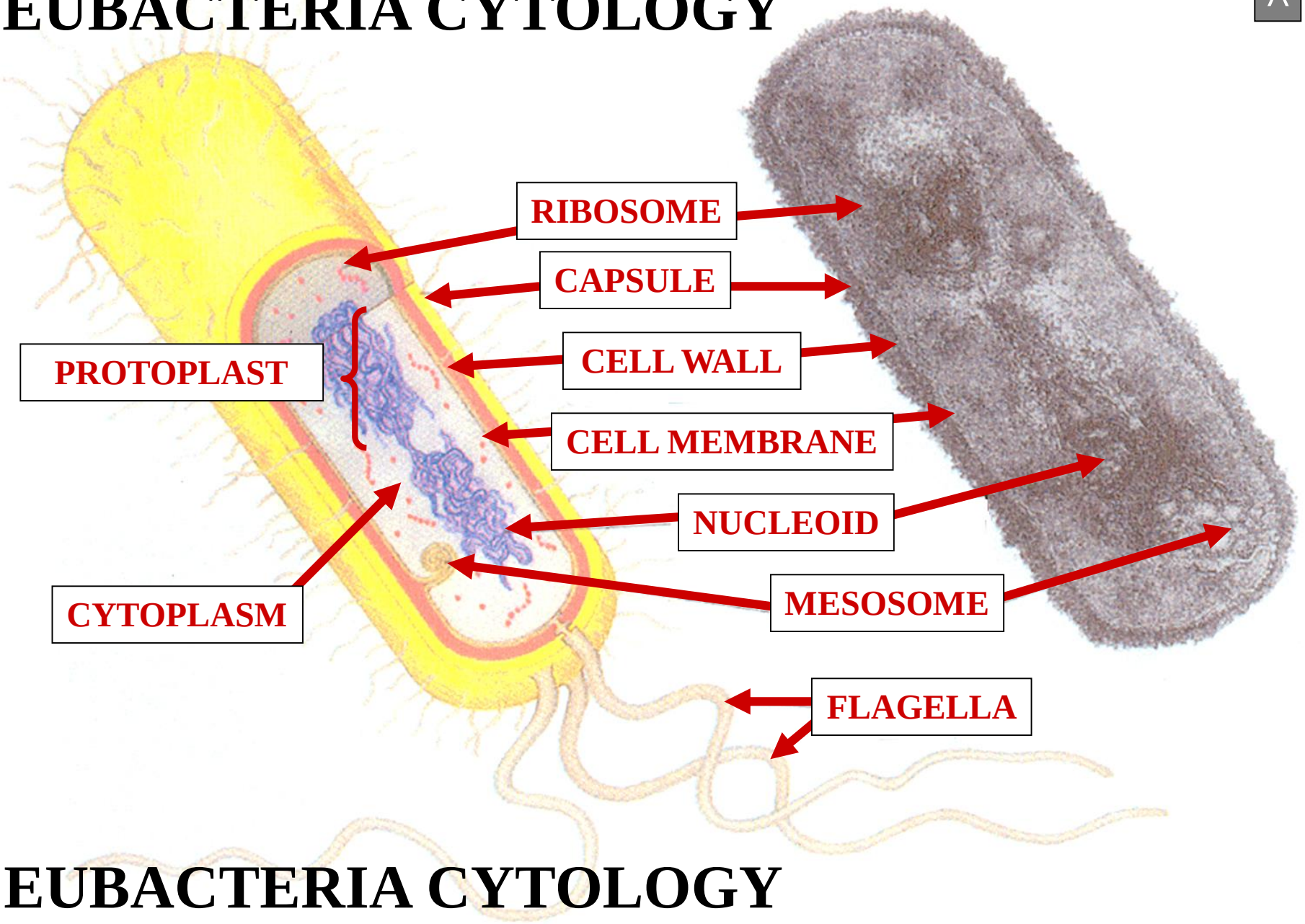
COCCOID

BACILLOID

SPIRILLOID

EUBACTERIA CYTOLOGY

EUBACTERIA CYTOLOGY



EUBACTERIA CYTOLOGY

C

CAPSULE

CAPSULE

EUBACTERIA
CYTOLOGY
CAPSULE

NON-LIVING GELATINOUS SHEATH

EUBACTERIA
CYTOLOGY
CAPSULE

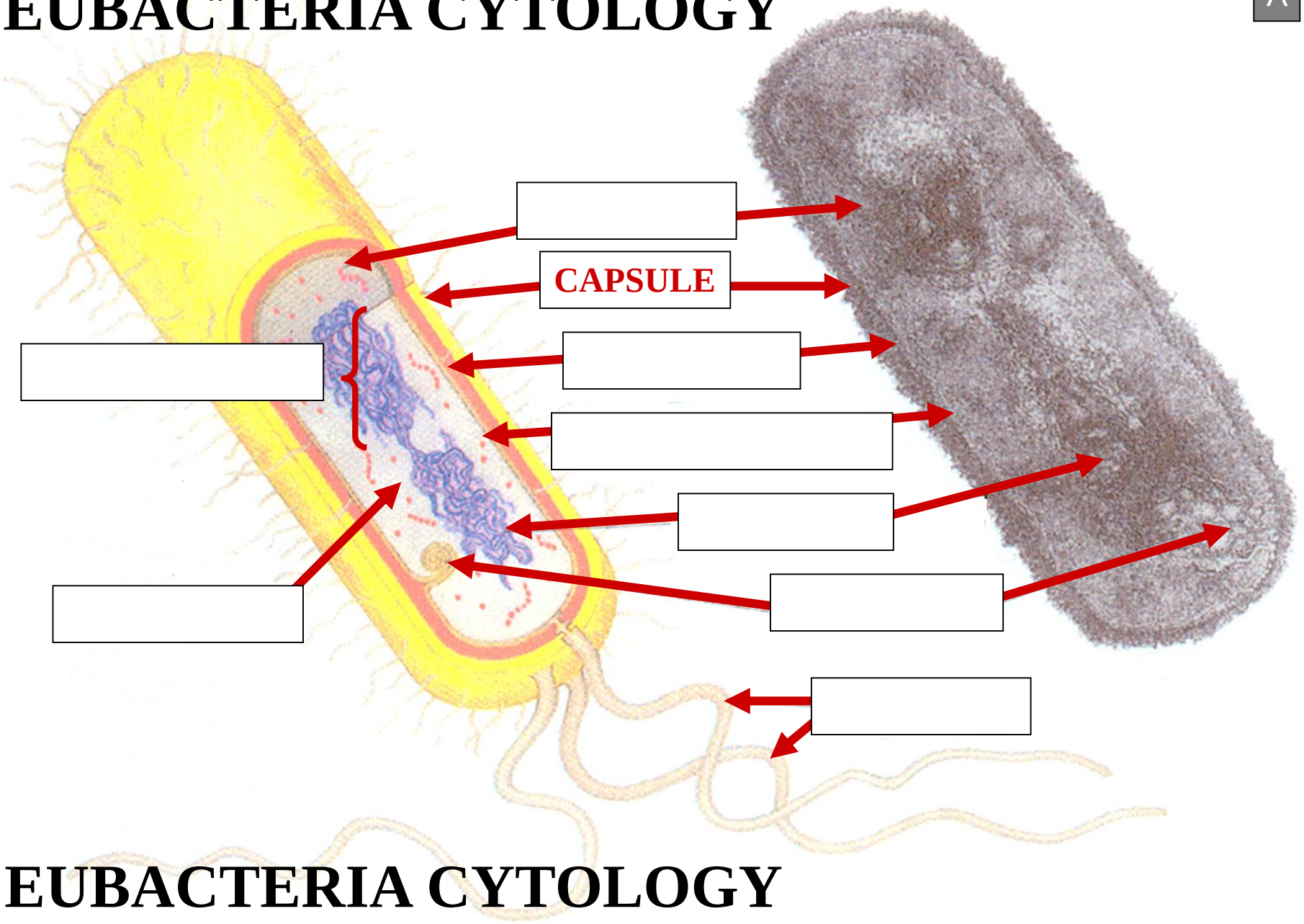
EUBACTERIA
CYTOLOGY
CAPSULE

NON-LIVING GELATINOUS SHEATH

INHIBITS DESICCATION

EUBACTERIA
CYTOLOGY
CAPSULE

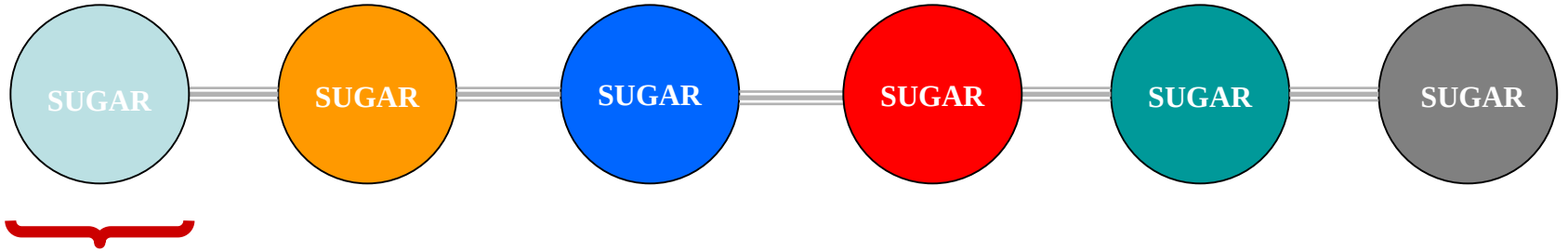
EUBACTERIA CYTOLOGY



EUBACTERIA CYTOLOGY

CAPSULE COMPOSITION

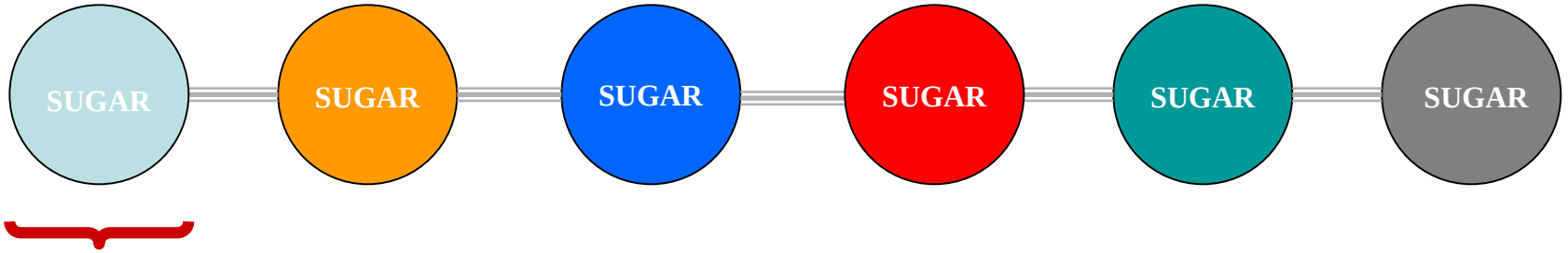
CAPSULE COMPOSITION



MONOSACCHARIDE **= BOND**

P

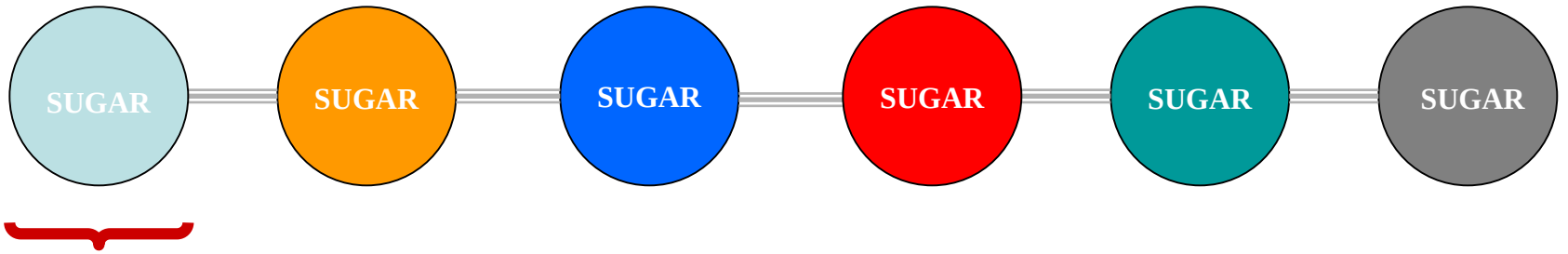
CAPSULE COMPOSITION



MONOSACCHARIDE = **BOND**

?

CAPSULE COMPOSITION



MONOSACCHARIDE = **BOND**

POLYSACCHARIDE

C

CELL WALL

CELL WALL

EUBACTERIA
CYTOLOGY
CELL WALL

NON-LIVING RIGID LAYER

EUBACTERIA
CYTOLOGY
CELL WALL

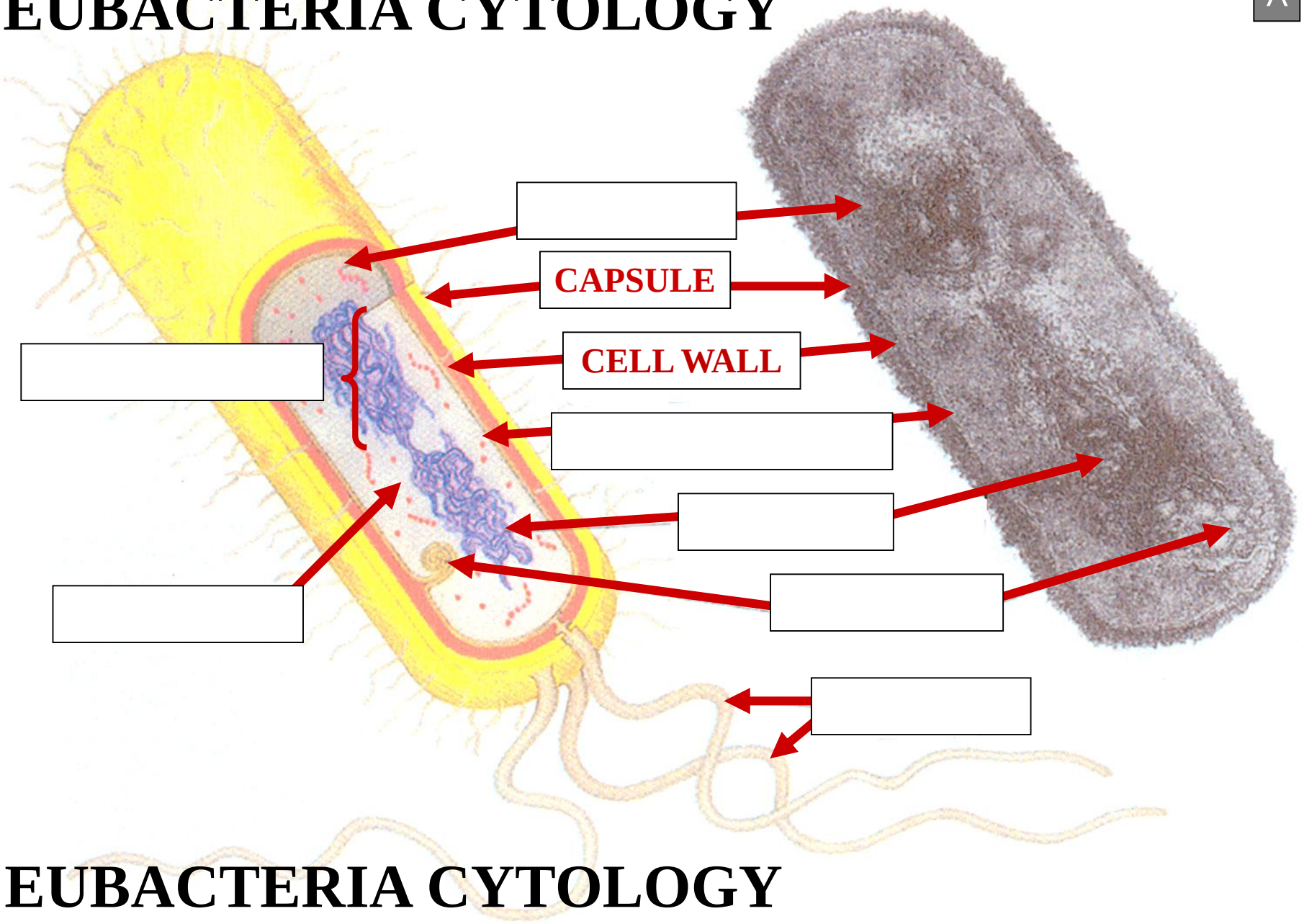
EUBACTERIA
CYTOLOGY
CELL WALL

NON-LIVING RIGID LAYER

SUPPORTS & PROTECTS CELL

EUBACTERIA
CYTOLOGY
CELL WALL

EUBACTERIA CYTOLOGY



EUBACTERIA CYTOLOGY

CELL WALL COMPOSITION

EUBACTERIA
CELL WALL
COMPOSITION

PEPTIDOGLYCANS

EUBACTERIA
CELL WALL
COMPOSITION

EUBACTERIA
CELL WALL
COMPOSITION

P

PEPTIDOGLYCANS
LIPOPOLYSACCHAIDES

EUBACTERIA
CELL WALL
COMPOSITION

PEPTIDOGLYCANS

EUBACTERIA
CELL WALL
PEPTIDOGLYCANS

PROTEIN-SUGAR COMPLEX

EUBACTERIA
CELL WALL
PEPTIDOGLYCANS

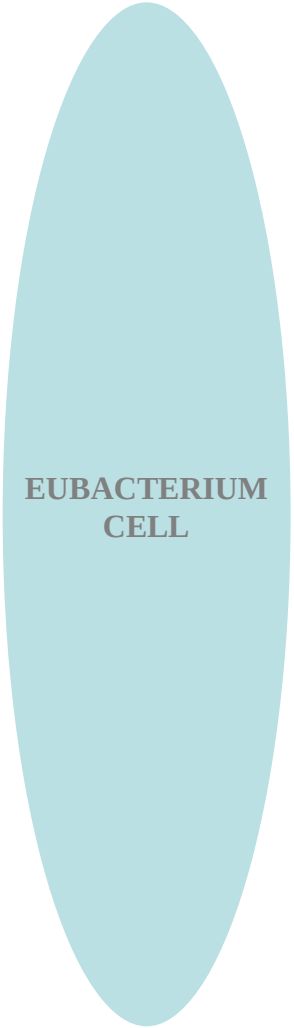
EUBACTERIA
CELL WALL
PEPTIDOGLYCANS

PROTEIN-SUGAR COMPLEX

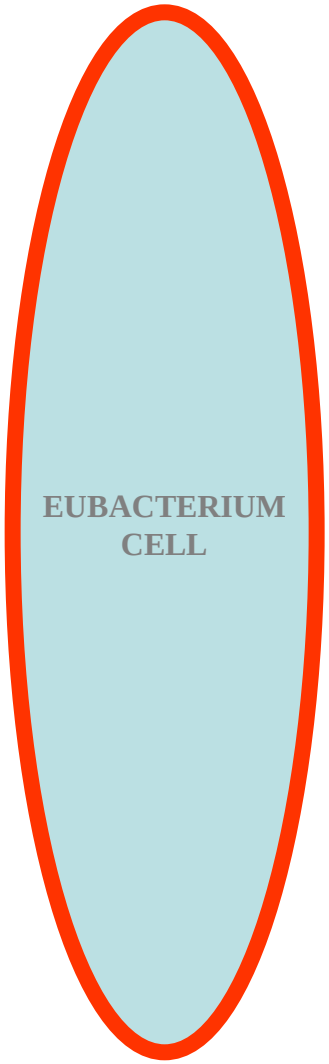
ALWAYS PRESENT

EUBACTERIA
CELL WALL
PEPTIDOGLYCANS

EUBACTERIA CELL WALL

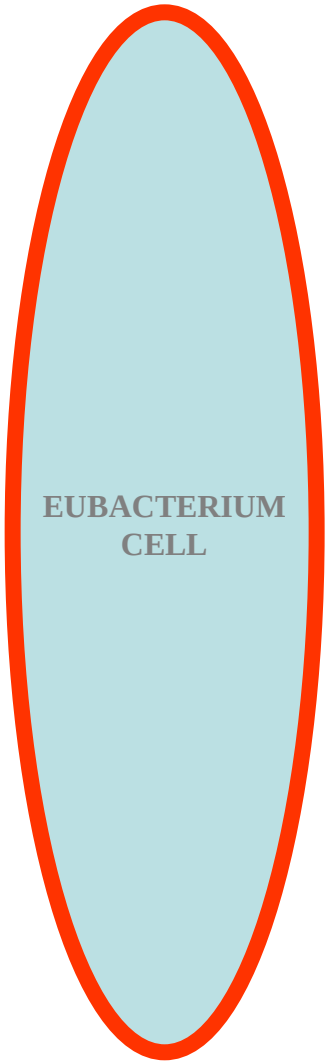


EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – PROTEIN-SUGAR COMPLEX

EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – ALWAYS PRESENT

LIPOPOLYSACCHARIDES

EUBACTERIA
CELL WALL
LIPOPOLYSACCHARIDES

LIPID-SUGAR COMPLEX

EUBACTERIA
CELL WALL
LIPOPOLYSACCHARIDES

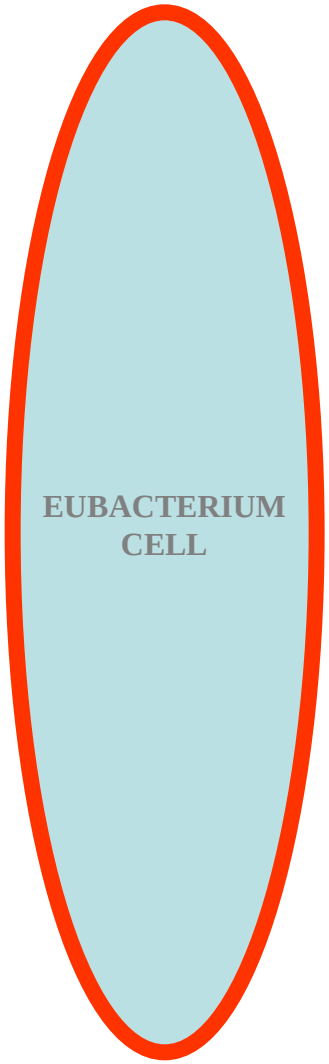
EUBACTERIA
CELL WALL
LIPOPOLYSACCHARIDES

LIPID-SUGAR COMPLEX

PRESENT OR ABSENT

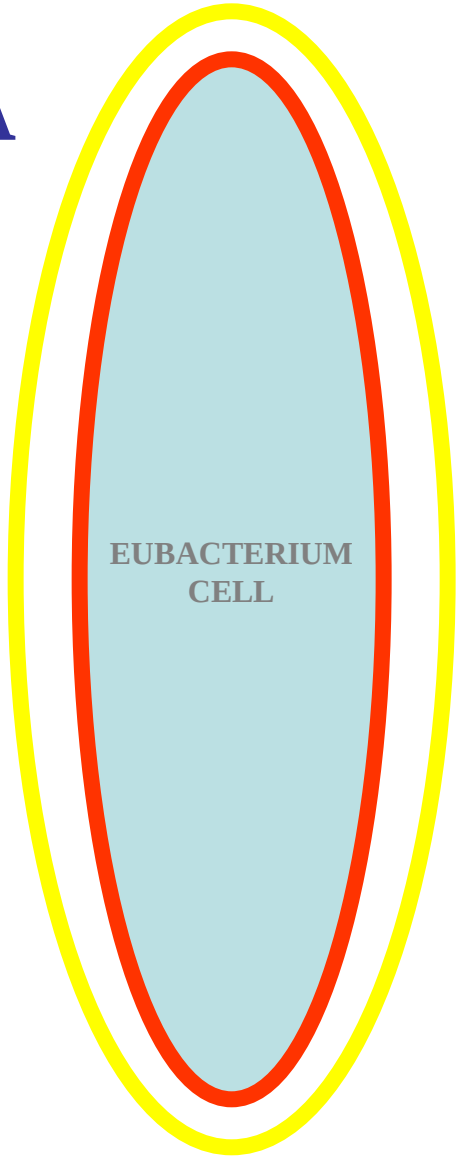
EUBACTERIA
CELL WALL
LIPOPOLYSACCHARIDES

EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – ALWAYS PRESENT

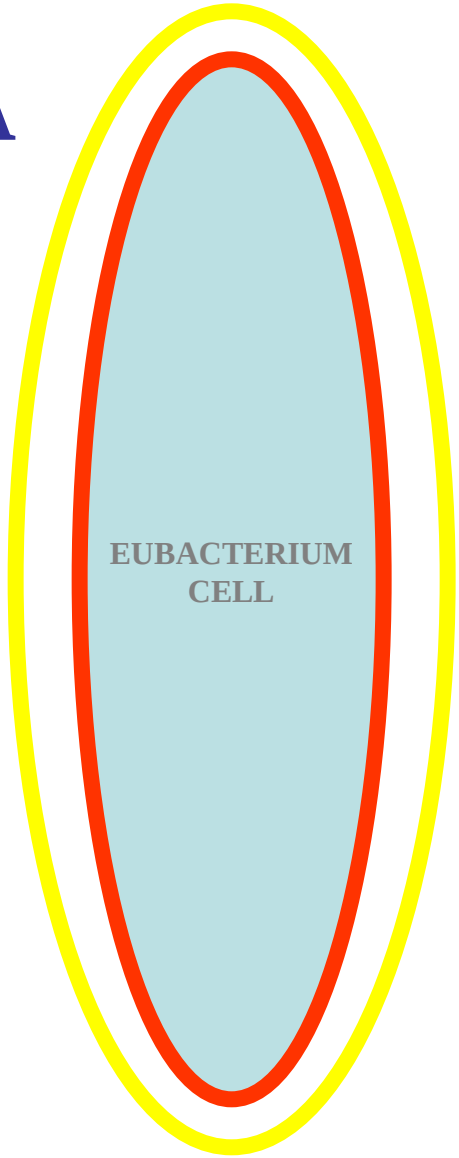
EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – ALWAYS PRESENT

= LIPOPOLYSACCHARIDES – LIPID-SUGAR COMPLEX

EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – ALWAYS PRESENT

= LIPOPOLYSACCHARIDES – PRESENT OR ABSENT

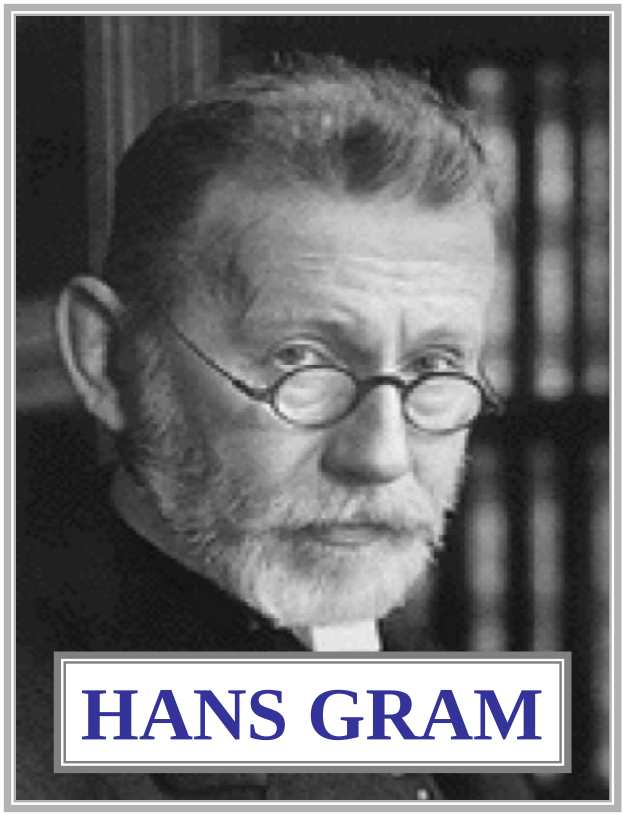
G

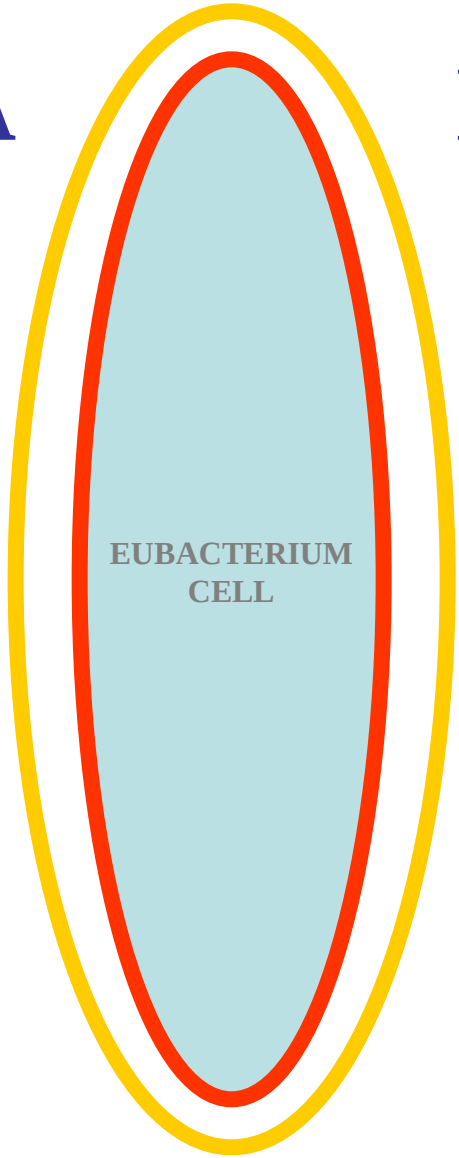
GRAM STAIN TEST

!

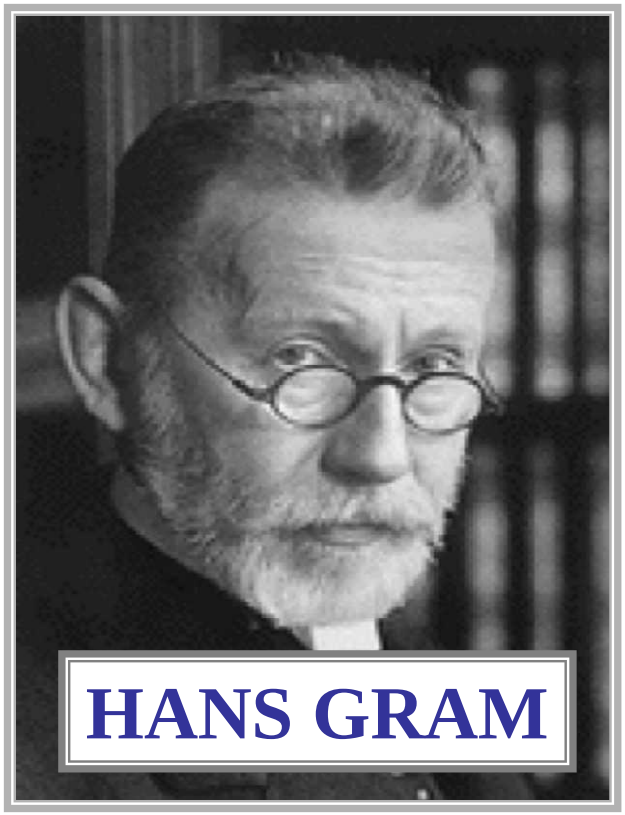
GRAM STAIN TEST

EUBACTERIA CELL WALL





EUBACTERIA CELL WALL



= PEPTIDOGLYCANS – ALWAYS PRESENT

= LIPOPOLYSACCHARIDES – PRESENT OR ABSENT

GRAM STAIN TEST

VIOLET DYE TEST FOR EXPOSED PEPTIDOGLYCANS

GRAM STAIN TEST

GRAM STAIN TEST

VIOLET DYE TEST FOR EXPOSED PEPTIDOGLYCANS

EXPOSED PEPTIDOGLYCANS ABSORB VIOLET DYE TURN VIOLET

GRAM STAIN TEST

GRAM STAIN TEST APPLIED

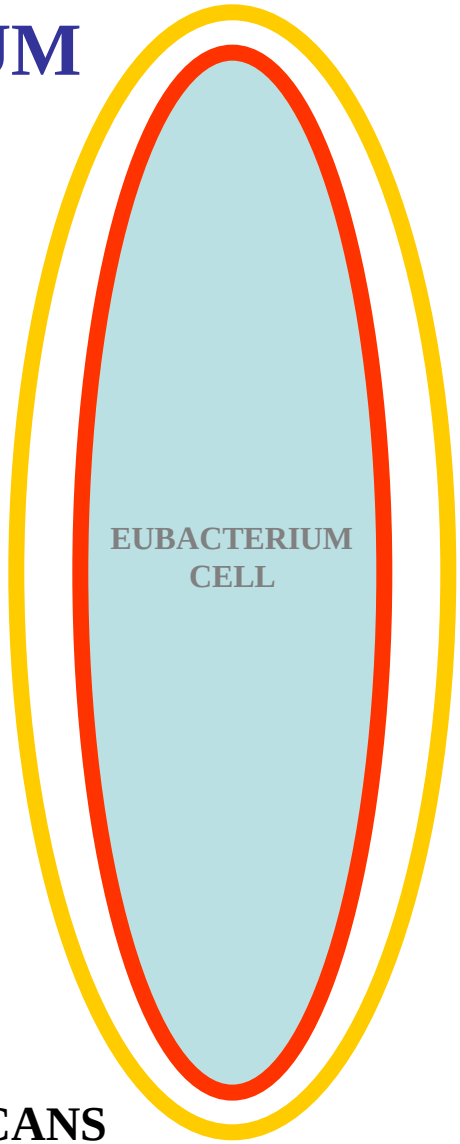
GRAM STAIN TEST

EUBACTERIUM

LIPOPOLYSACCHARIDES

ABSENT

EUBACTERIUM CELL

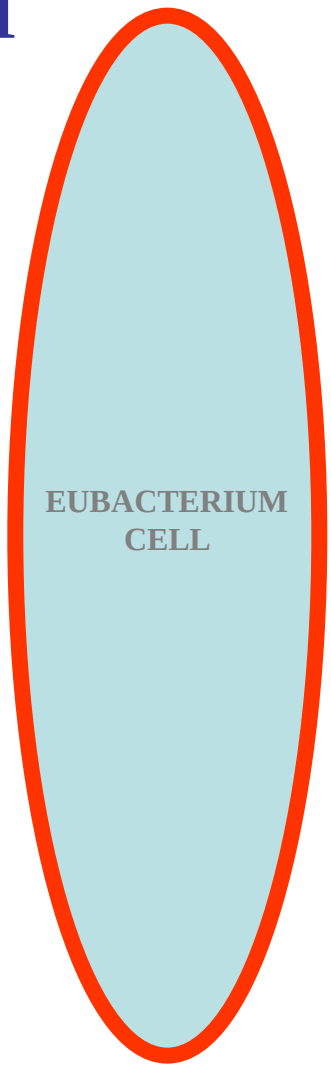


= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES

EX

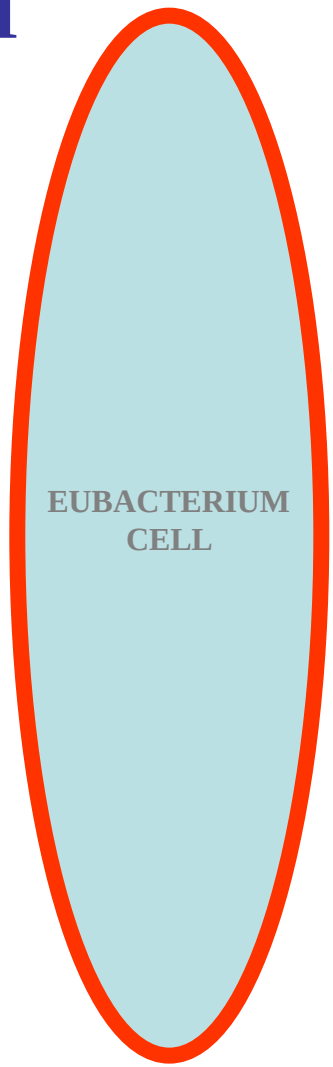
EUBACTERIUM CELL



= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL



EXPOSED PEPTIDOGLYCANS

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL

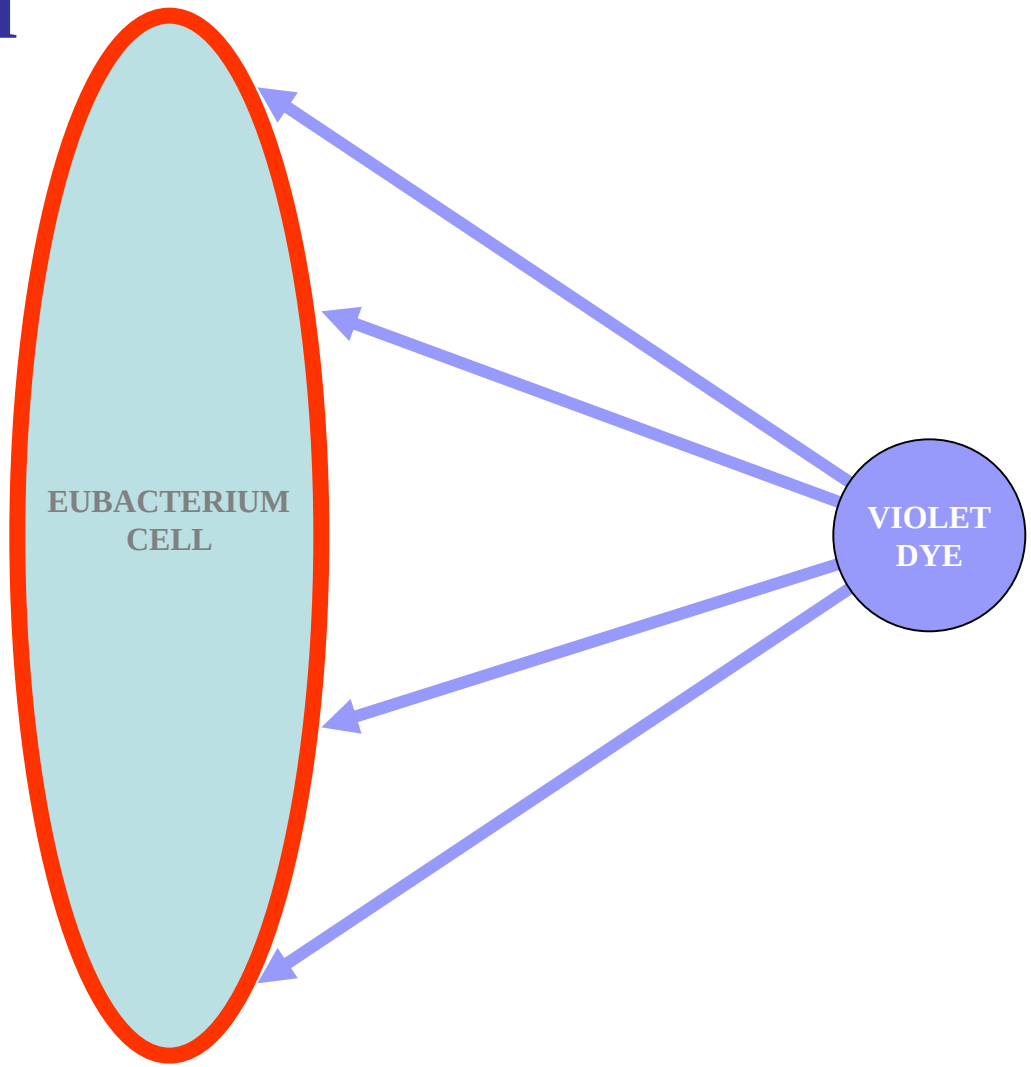
EUBACTERIUM CELL

VIOLET DYE

= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – ABSENT

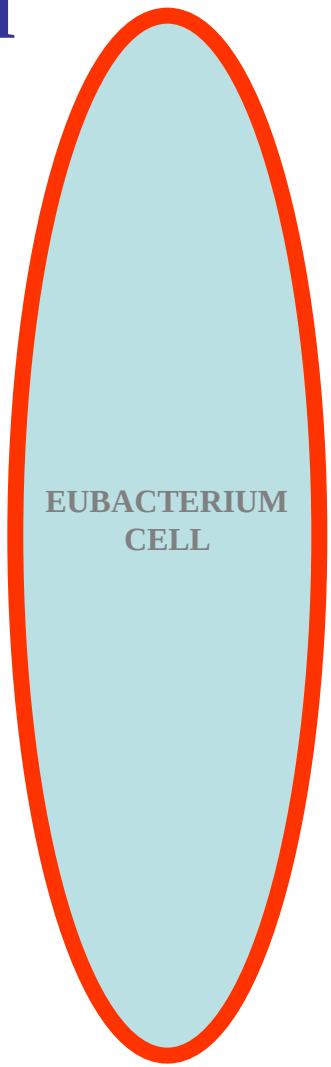
EUBACTERIUM CELL



= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – ABSENT

EUBACTERIUM CELL

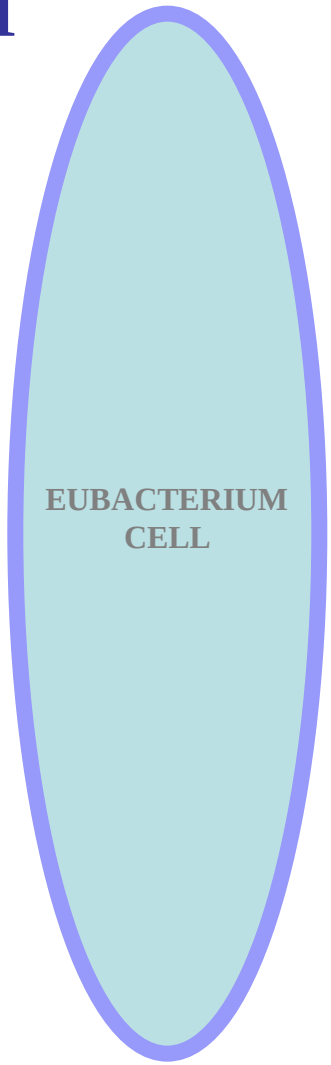


PEPTIDOGLYCANS ABSORB VIOLET DYE

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL



PEPTIDOGLYCANS TURN VIOLET

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL

EUBACTERIUM CELL

CELL WALL TURNS VIOLET

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL

EUBACTERIUM CELL

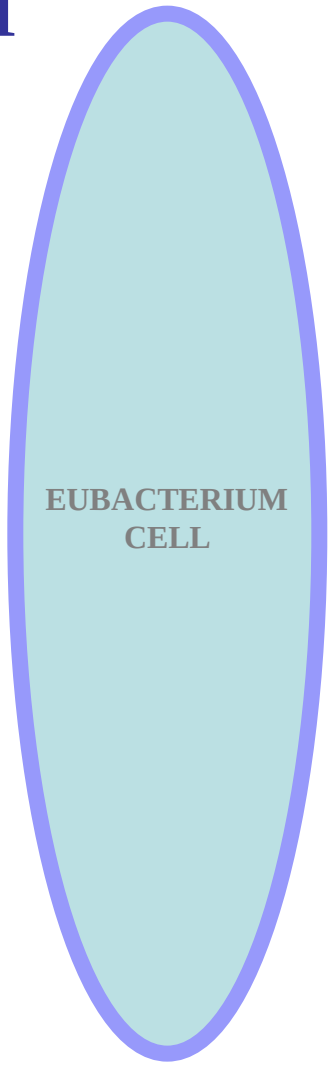
?

EUBACTERIUM

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – ABSENT**

EUBACTERIUM CELL



GRAM + EUBACTERIUM

= **PEPTIDOGLYCANS**

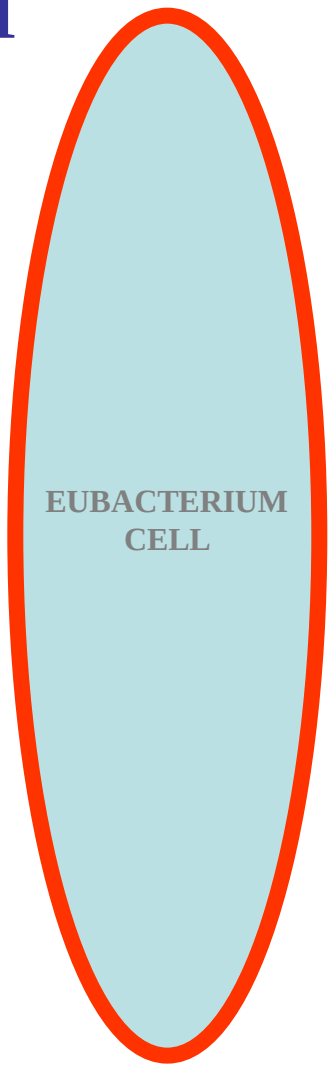
= **LIPOPOLYSACCHARIDES – ABSENT**

GRAM STAIN TEST

EUBACTERIUM

LIPOPOLYSACCHARIDES PRESENT

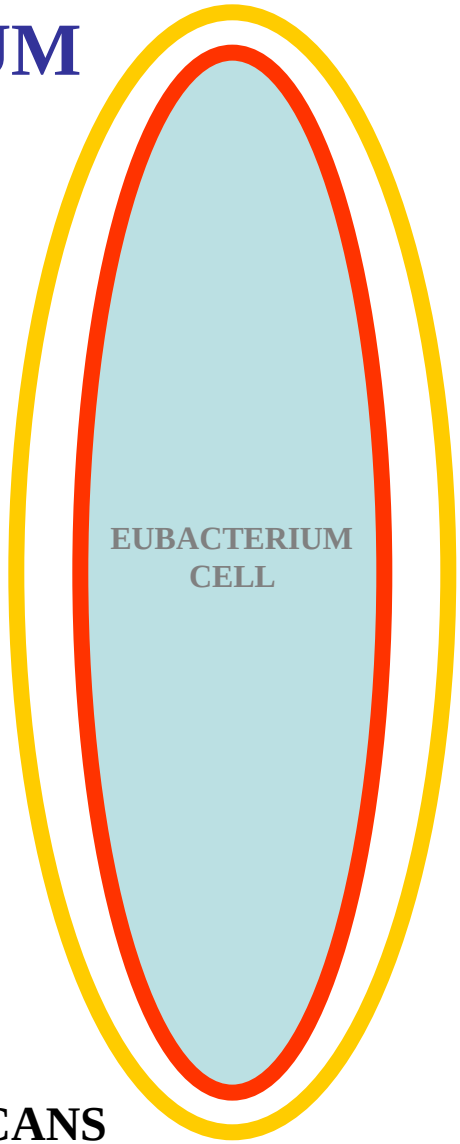
EUBACTERIUM CELL



= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES

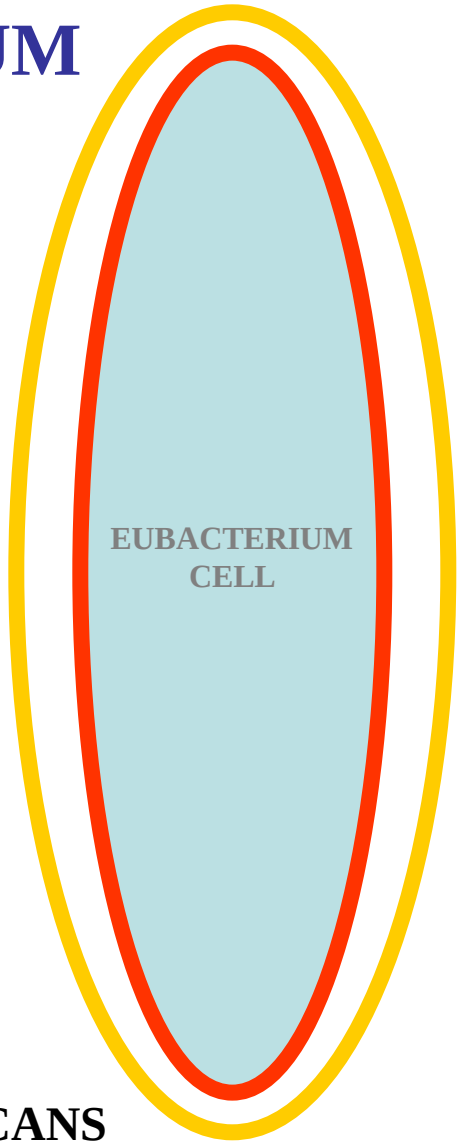
EUBACTERIUM CELL



= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – PRESENT**

EUBACTERIUM CELL

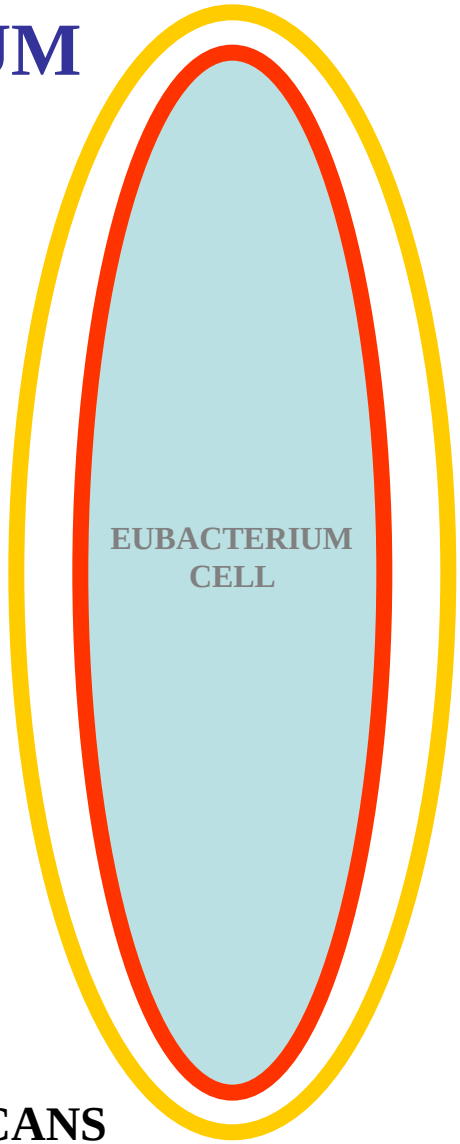


NON-EXPOSED PEPTIDOGLYCANS

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – PRESENT**

EUBACTERIUM CELL

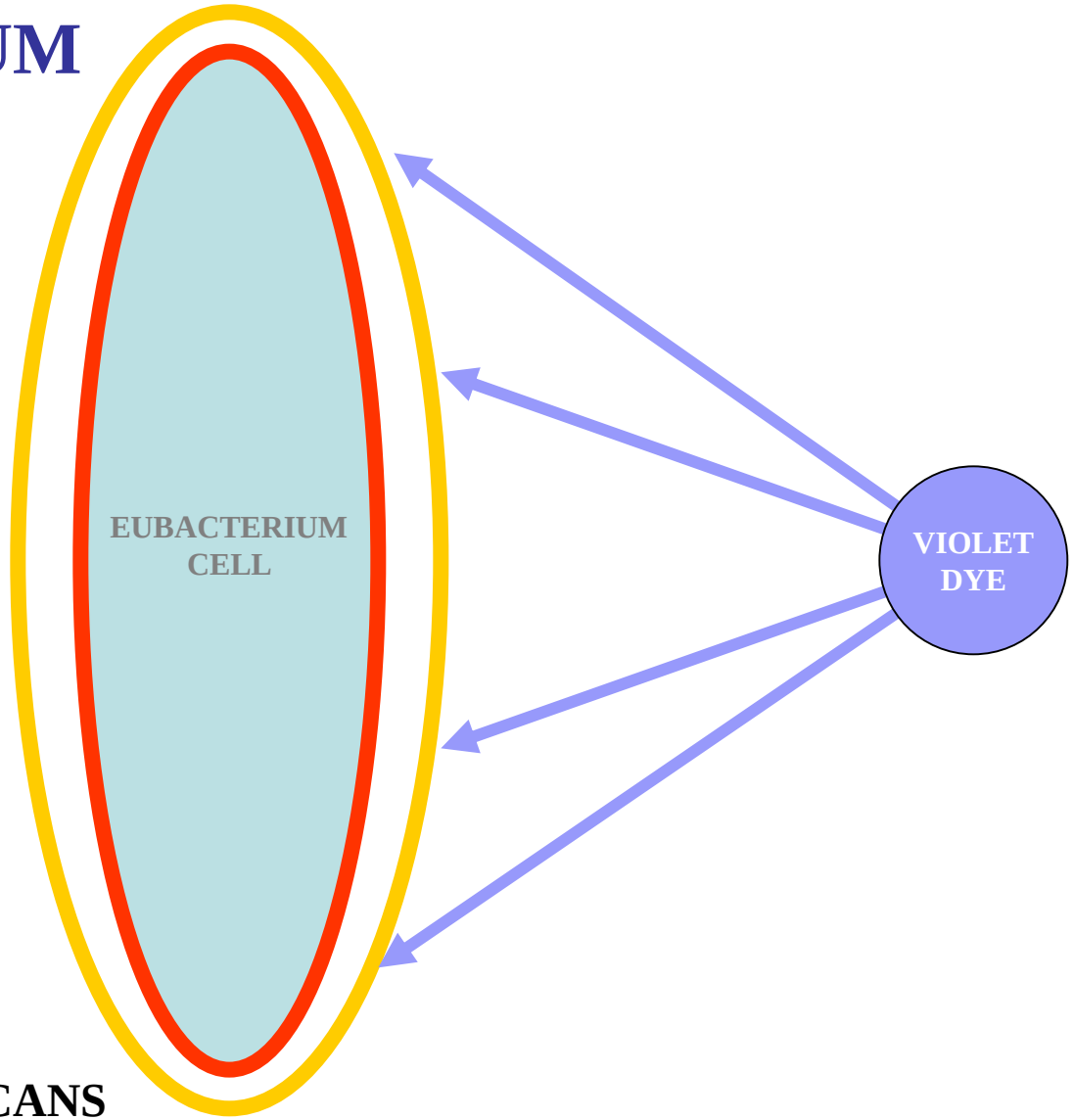


VIOLET DYE

= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – PRESENT

EUBACTERIUM CELL



= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – PRESENT

EUBACTERIUM CELL

EUBACTERIUM CELL

REPELS VIOLET DYE

P

VIOLET DYE

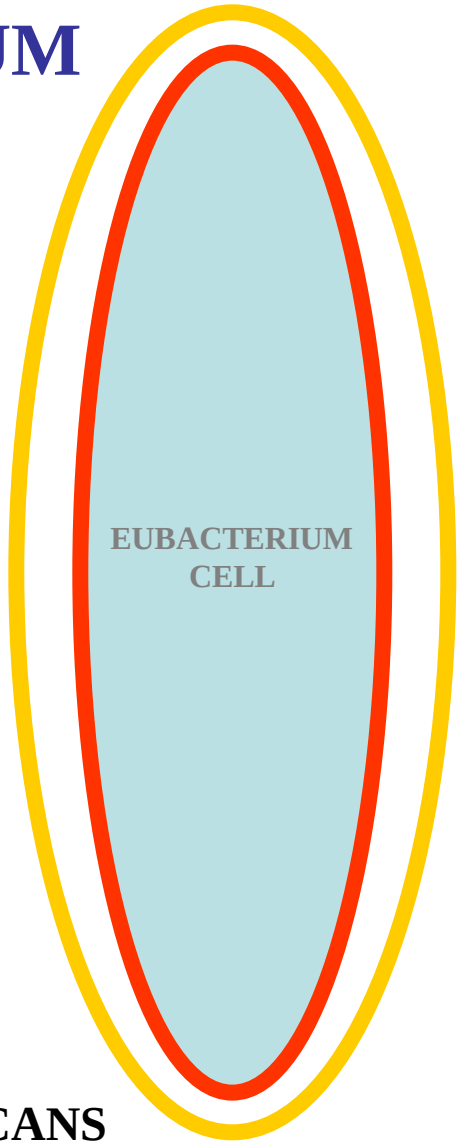
REPELS VIOLET DYE

= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – PRESENT

P

EUBACTERIUM CELL

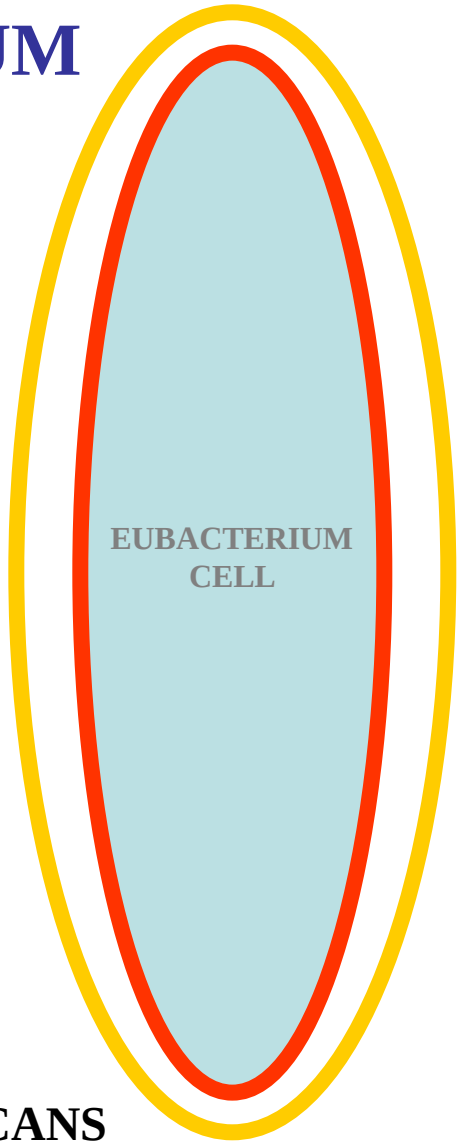


PEPTIDOGLYCANS DO NOT ABSORB VIOLET DYE

= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – PRESENT

EUBACTERIUM CELL

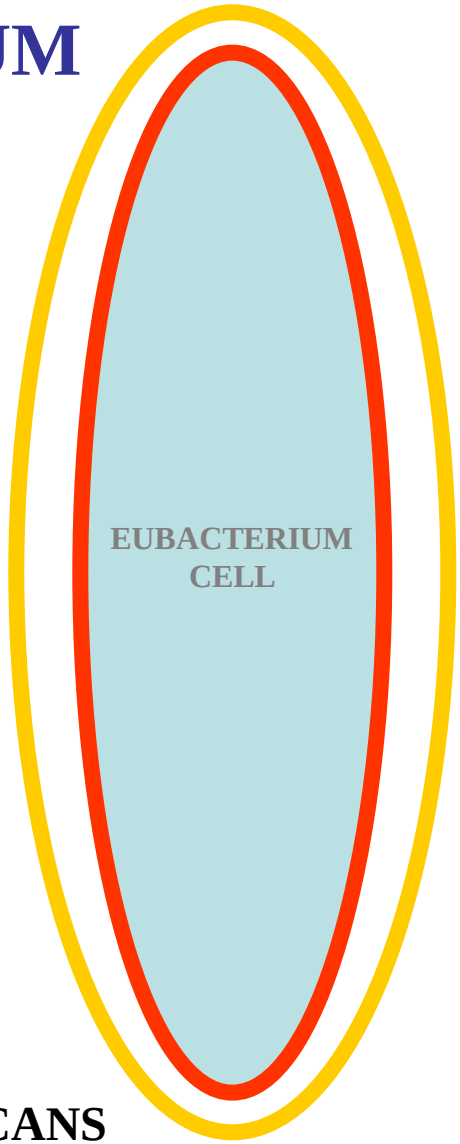


PEPTIDOGLYCANS DO NOT TURN VIOLET

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – PRESENT**

EUBACTERIUM CELL

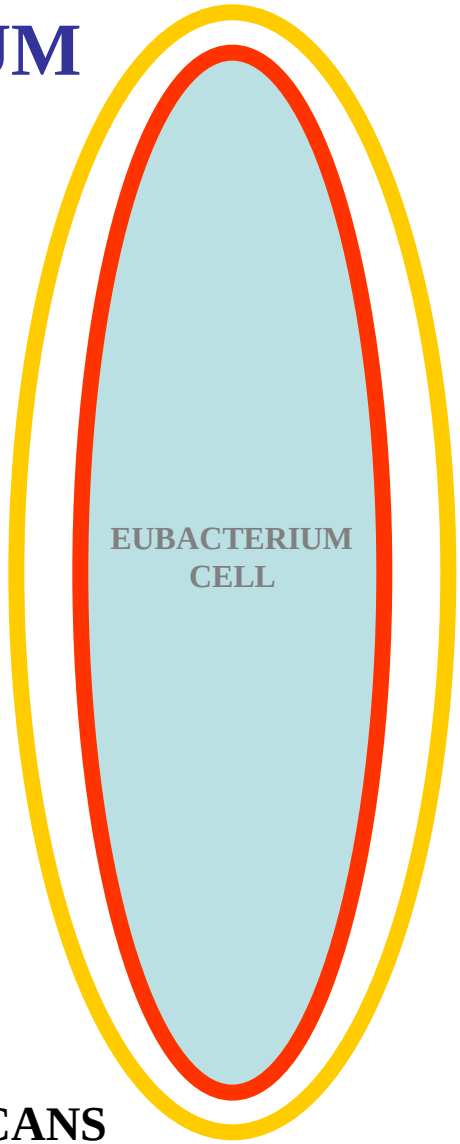


CELL WALL DOES NOT TURN VIOLET

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – PRESENT**

EUBACTERIUM CELL



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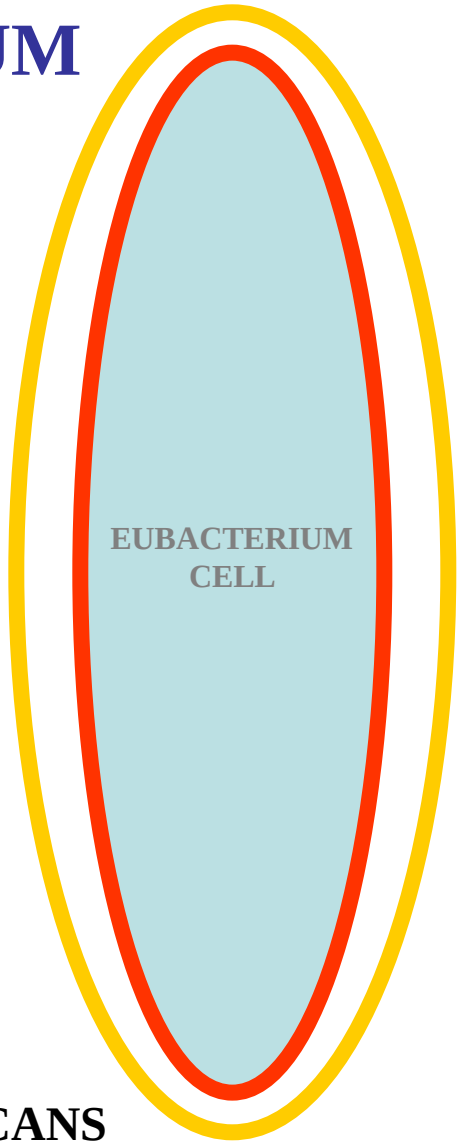
EUBACTERIUM

= PEPTIDOGLYCANS

= LIPOPOLYSACCHARIDES – PRESENT

EUBACTERIUM CELL



GRAM - EUBACTERIUM

= **PEPTIDOGLYCANS**

= **LIPOPOLYSACCHARIDES – PRESENT**

PROTOPLAST

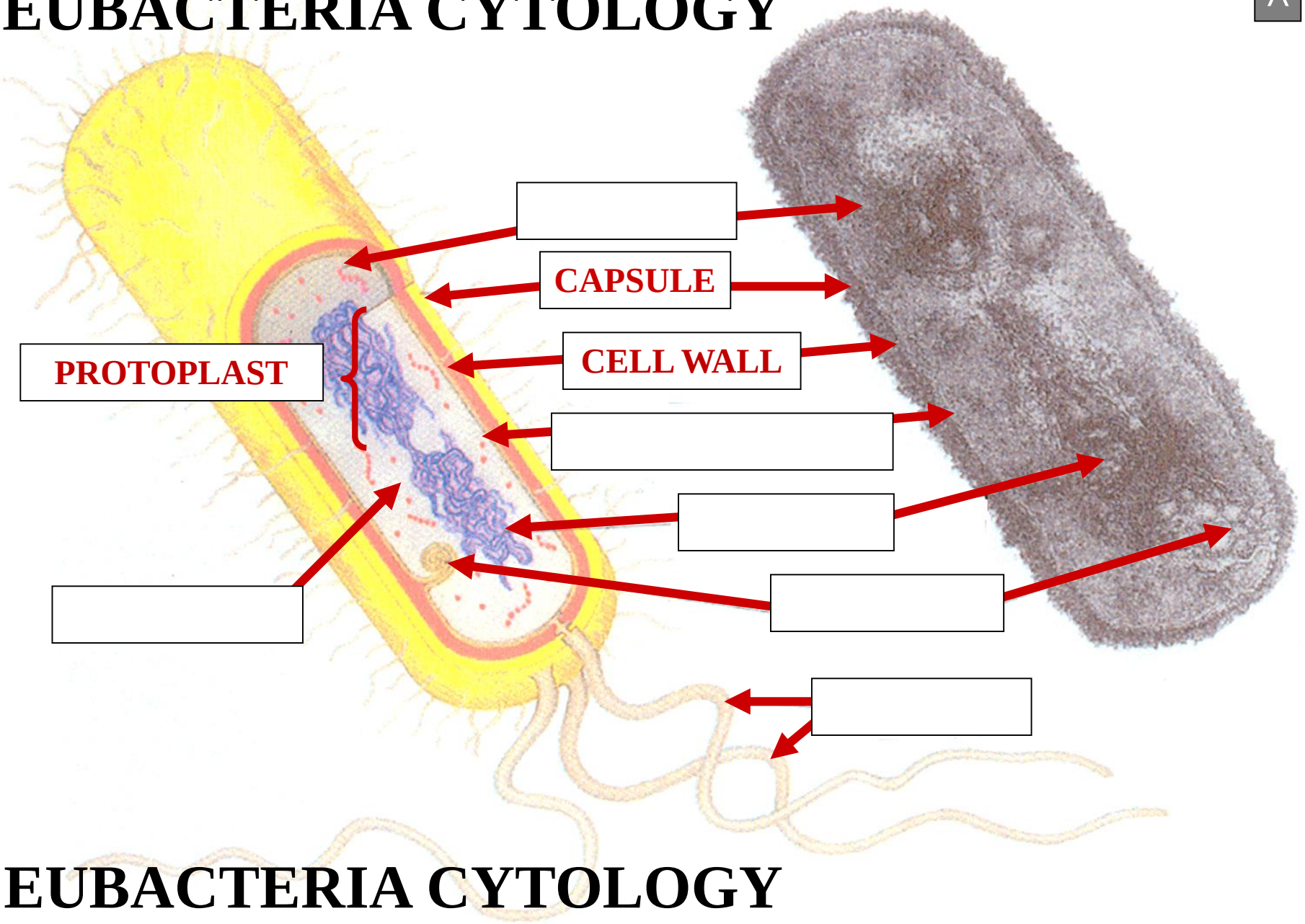
PROTOPLAST

EUBACTERIA
CYTOLOGY
PROTOPLAST

LIVING CONTENT BEYOND CELL WALL

EUBACTERIA
CYTOLOGY
PROTOPLAST

EUBACTERIA CYTOLOGY



EUBACTERIA CYTOLOGY

C

CELL MEMBRANE

CELL MEMBRANE