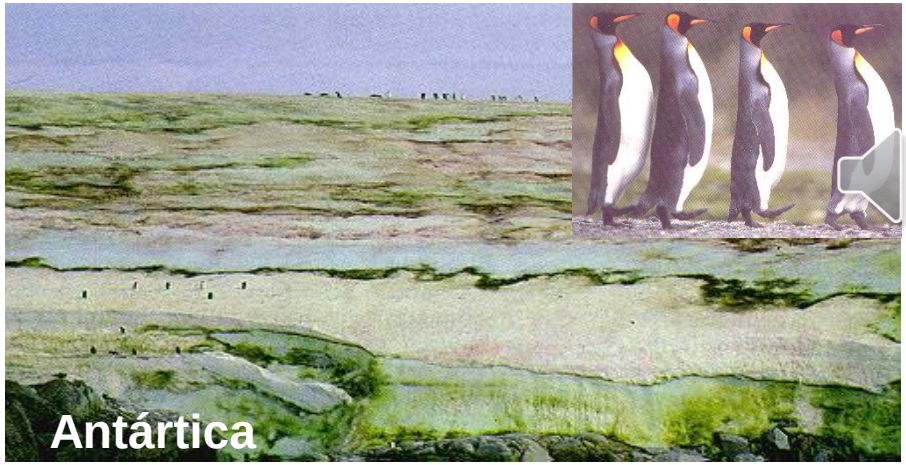
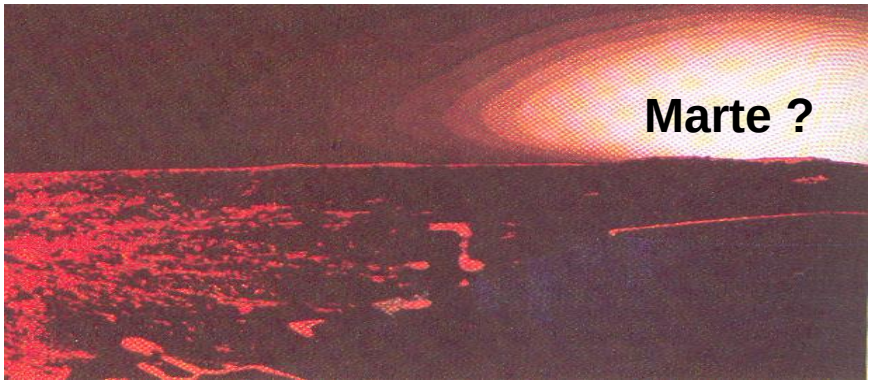
Aspectos básicos da fisiologia e crescimento bacteriano

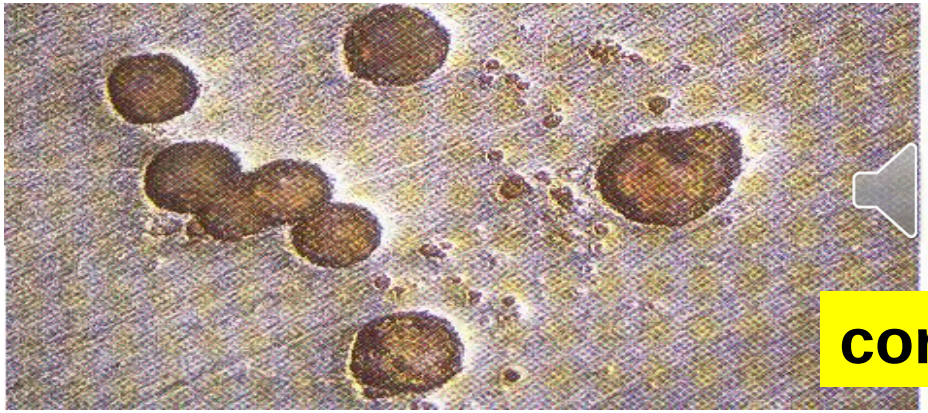
Diversidade de ambientes microbianos

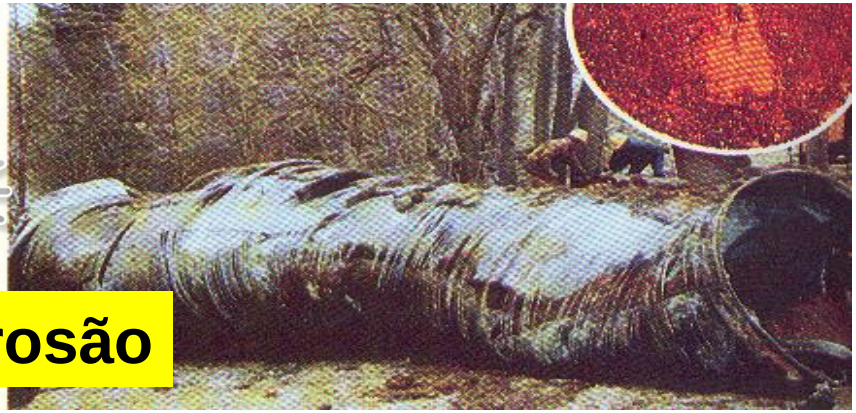




Diversidade de ambientes microbianos

fotossíntese

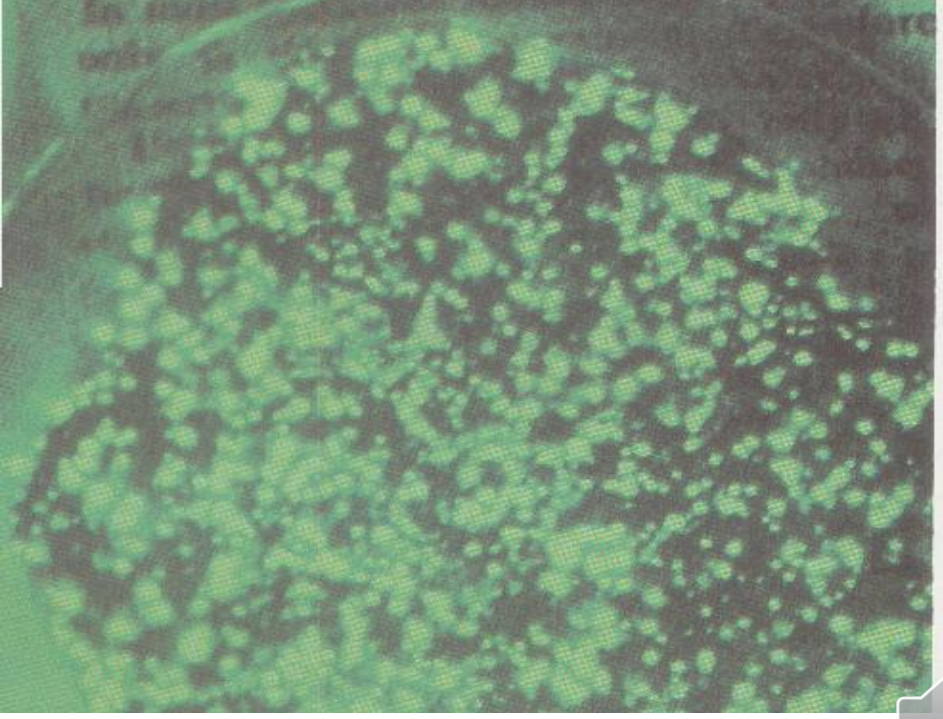


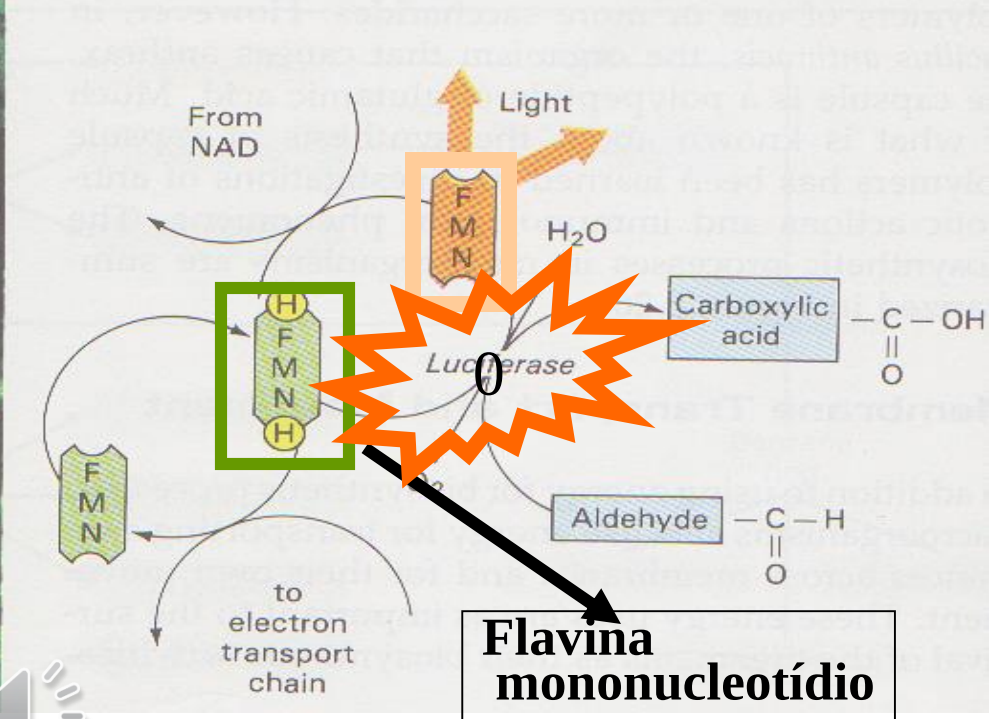


corrosão

Ambiente c/ enxofre

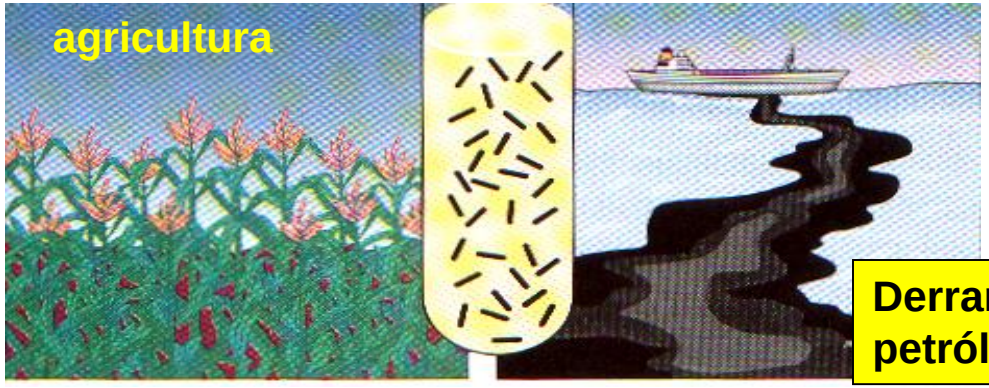
vulcões



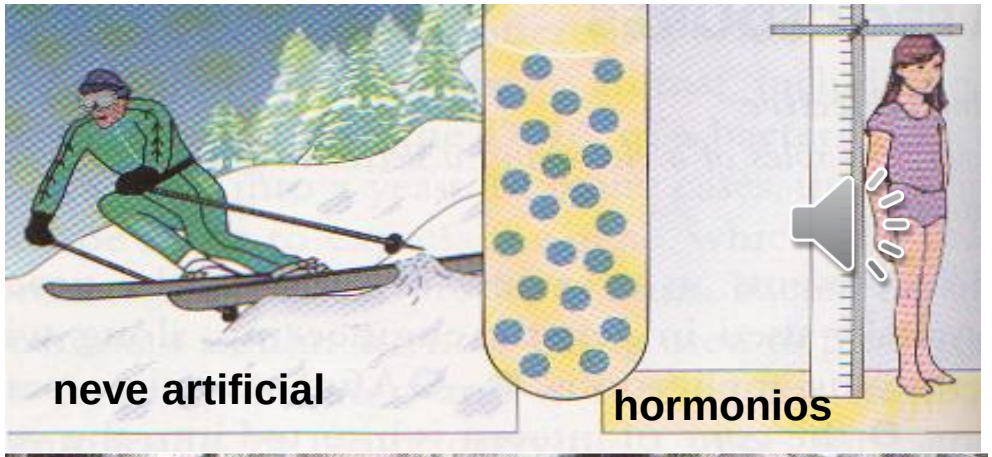


fotobactérias

Algumas aplicações das bactérias na biotecnologia



Derrame de petróleo



Inoculacãode bactérias para tratamento

produção de goma xantana

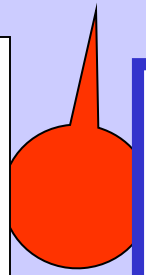
AUTOTRÓFICOS
Carbono inorg.=CO2
fazem seu próprio alimento

HETEROTRÓFICOS
Carbono orgânico

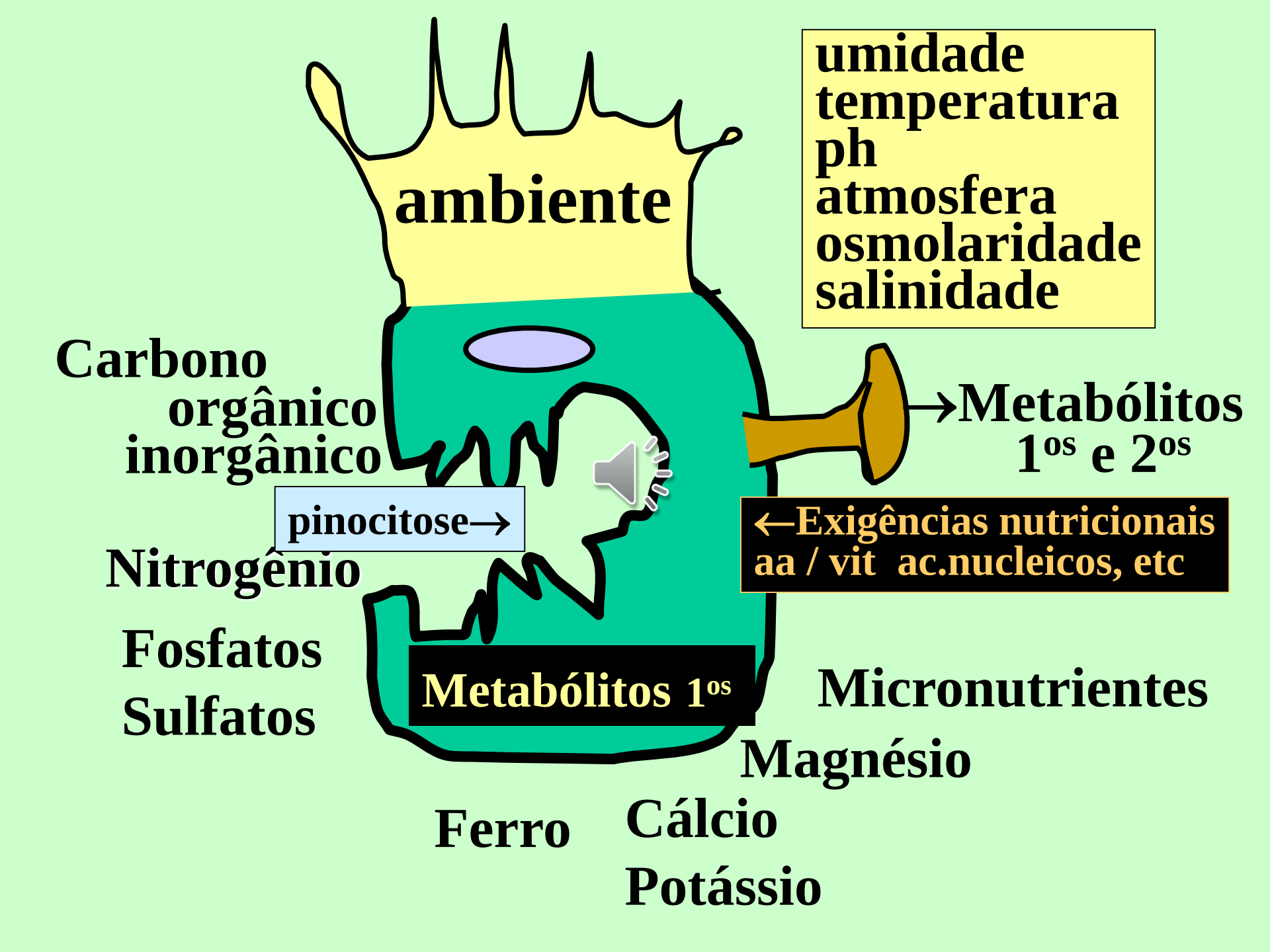
FOTOAUTOTRÓFICOS
Fotosintéticas
bactérias sulfurosas
cianobactérias

FOTOHETEROTRÓFICAS
Bactérias verdes ñ sulfurosas

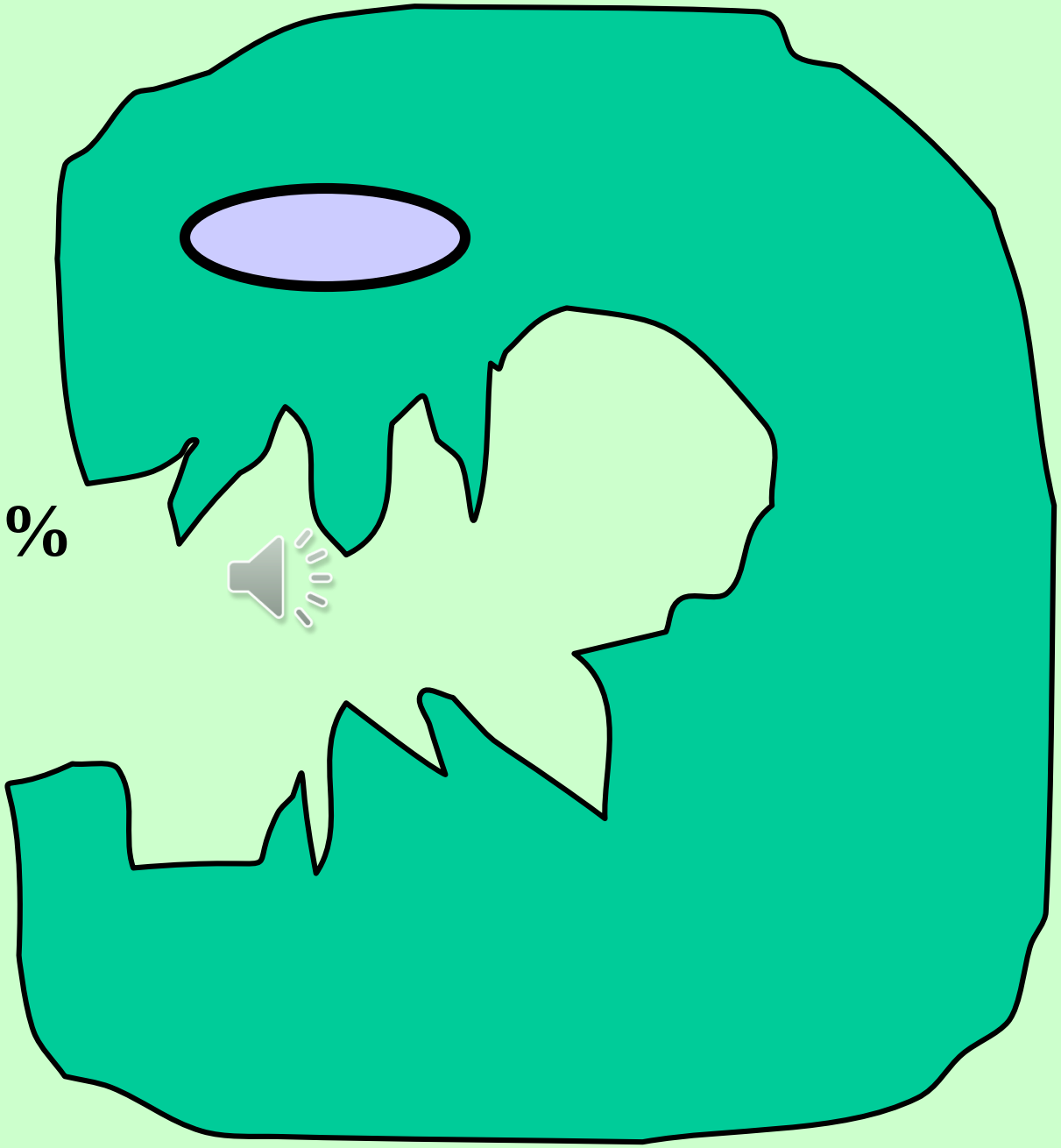
QUIMIOAUTOTRÓFICOS
Bactérias do ferro,
hidrogênio e nitrificadoras
Archeobactérias



QUIMIOHETEROTRÓFICAS
bactérias, protozoários
fungos/animais


ambiente
umidade
temperatura
ph
atmosfera
osmolaridade
salinidade
Carbono
orgânico
inorgânico
→Metabólitos
1os e 2os
pinocitose→
←Exigências nutricionais
aa / vit ac.nucleicos, etc
Nitrogênio
Fosfatos
Sulfatos
Metabólitos 1os
Micronutrientes
Magnésio
Ferro
Cálcio
Potássio

H_2O:70-80 %
proteínas:15%
lipídios: 2%
açúcares: 1%
ions inorg.:<0,5%



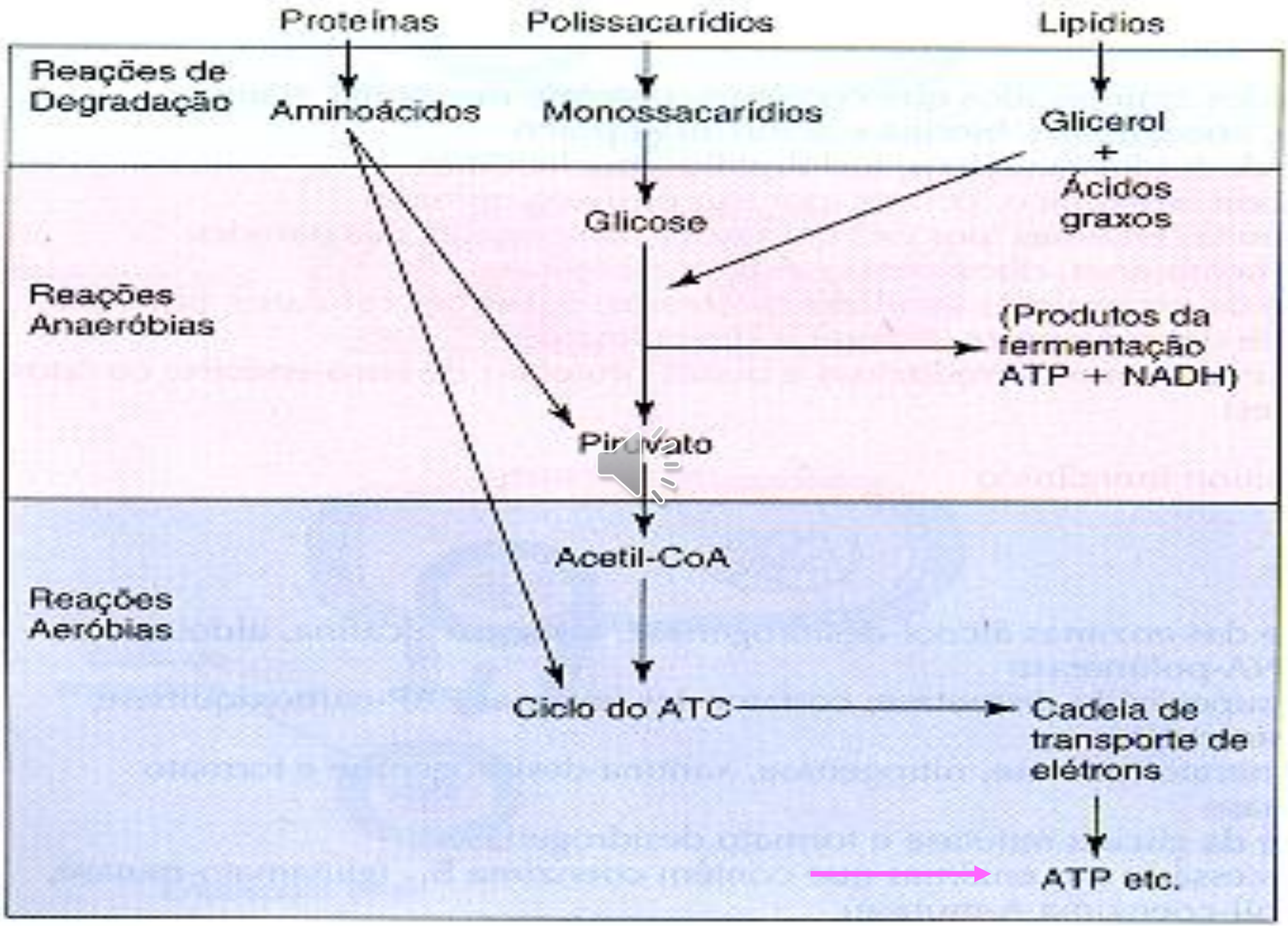
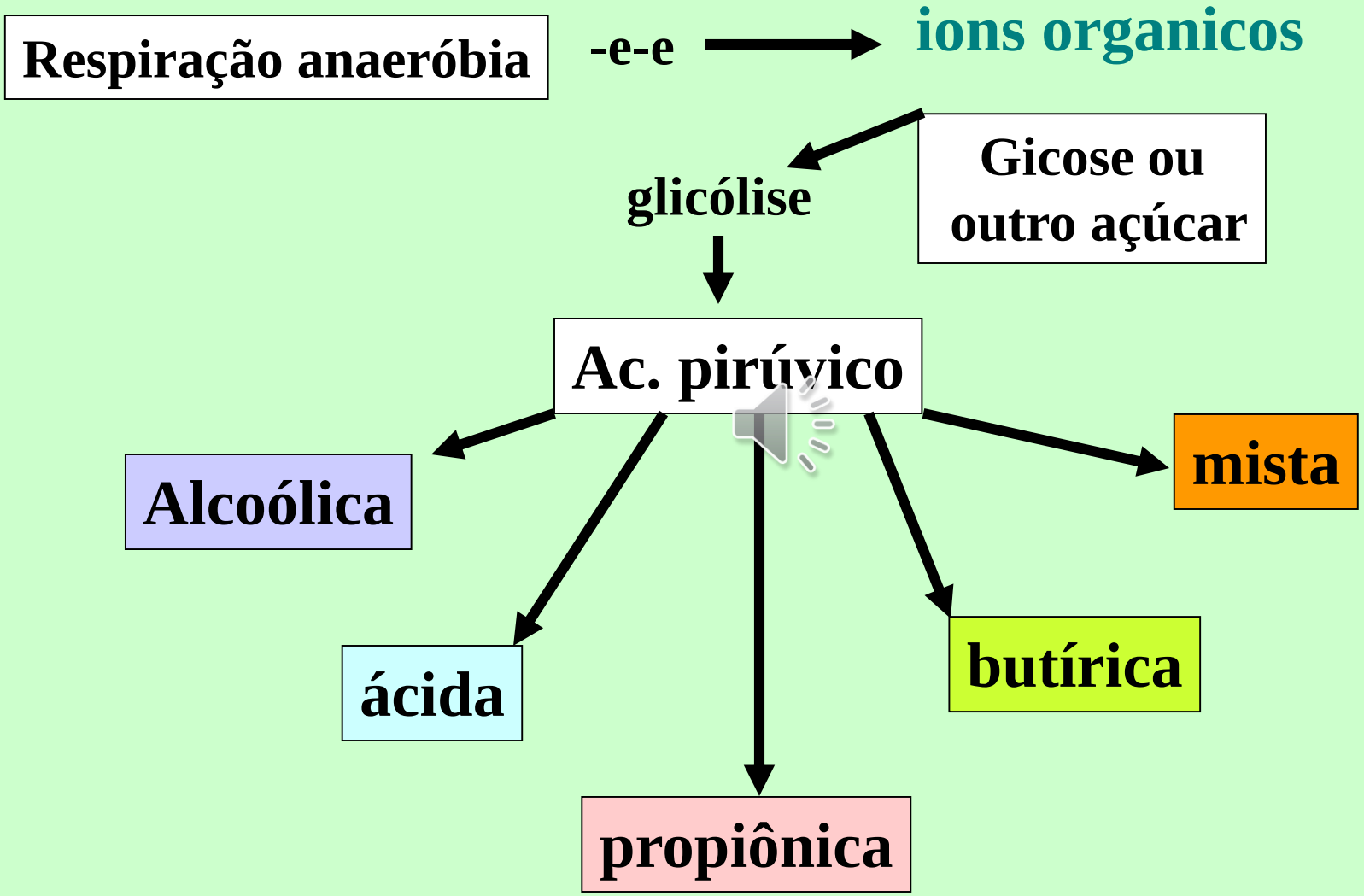


Fig. 4.1 O catabolismo das proteínas, polissacarídios e lipídios produz gli-

Fermentação de açúcar



Respiração anaeróbia → **e-e- ions organicos**

Fermentação de aminoácidos

metionina cisteína → metilmercaptana metilsulfato

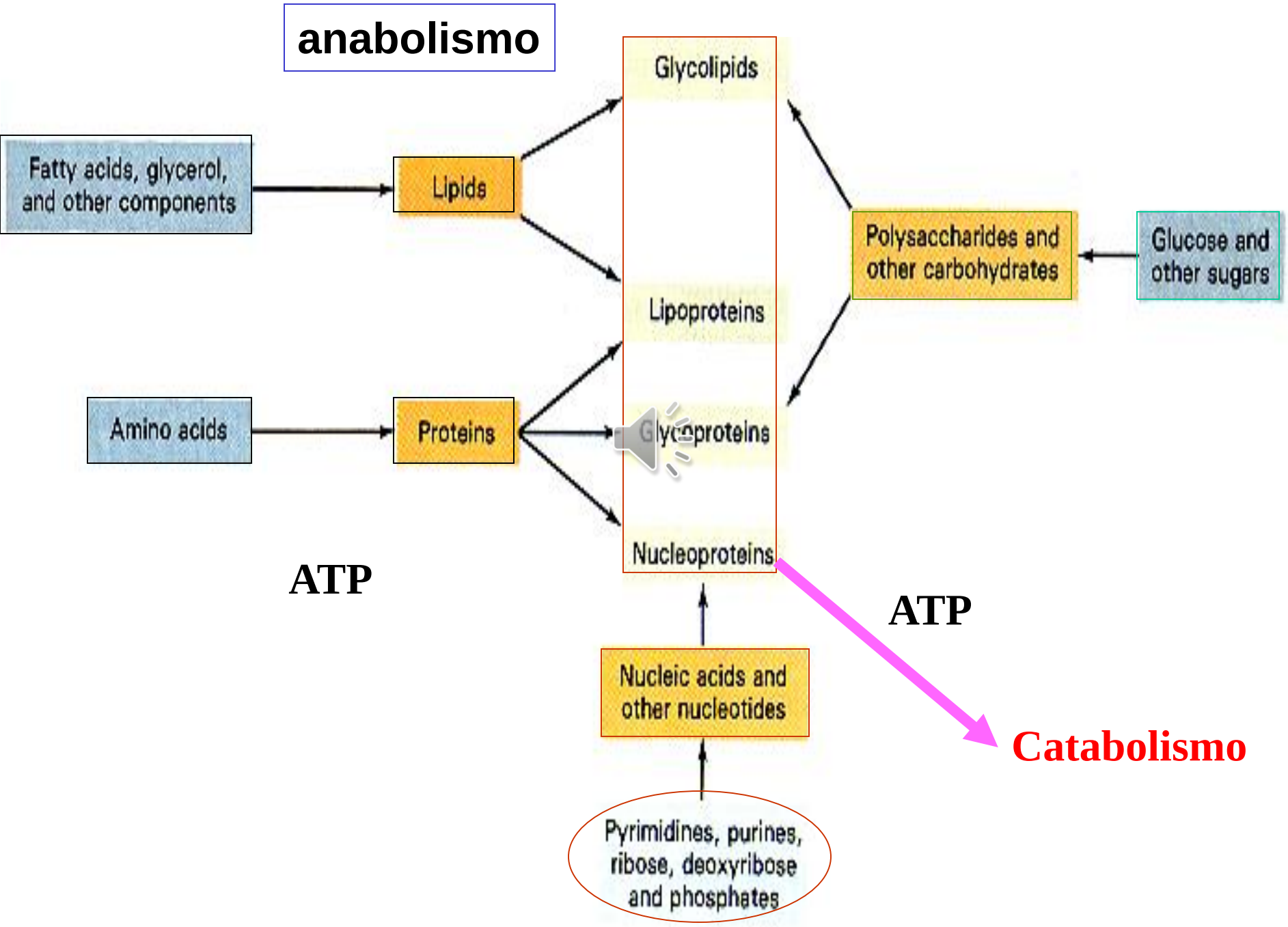
lisina triptofano ornitina → indol putrescina cadaverina

Respiração anaeróbia → **e-e- ions inorganicos**

Nitrato NO3 → **Nitrito NO2**
óxido nitroso N2O
nitrogênio N2

Sulfato SO4 → **Sulfeto H2S**

Carbonato CO3 → **Metano CH4**


anabolismo
Glycolipids
Fatty acids, glycerol, and other components
Lipids
Polysaccharides and other carbohydrates
Glucose and other sugars
Lipoproteins
Amino acids
Proteins
Glycoproteins
Nucleoproteins
ATP
ATP
Nucleic acids and other nucleotides
Catabolismo
Pyrimidines, purines, ribose, deoxyribose and phosphates

pH

Acidófilas 1,8- 5

Neutrófilas 5-9

Alcalófilas 9-11

NaCl

não halófilas <0,05%

Halófilas 3,5%

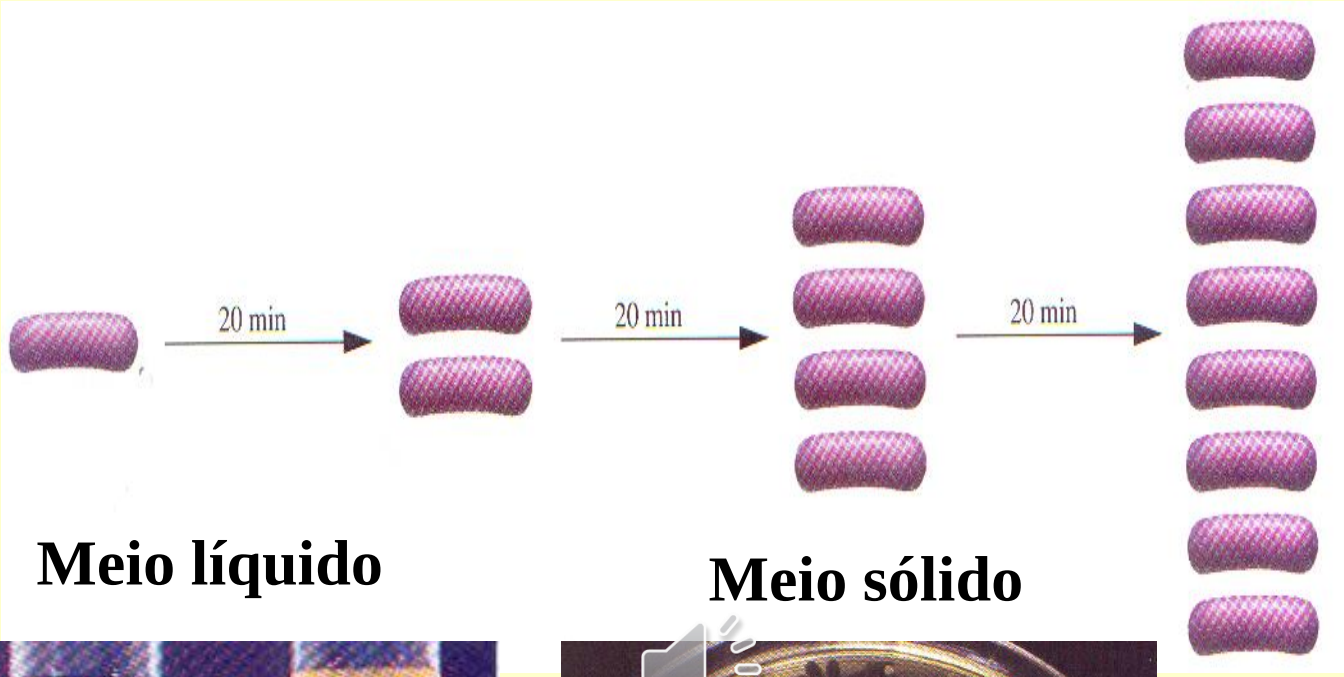
Halotolerantes 6%

Halófilas extremas 30%

Supertermófilas 93-87°C

FIGURE 5-9 **Temperature and microbial growth.** Bacteria can be categorized according to the temperature range that allows optimal growth.

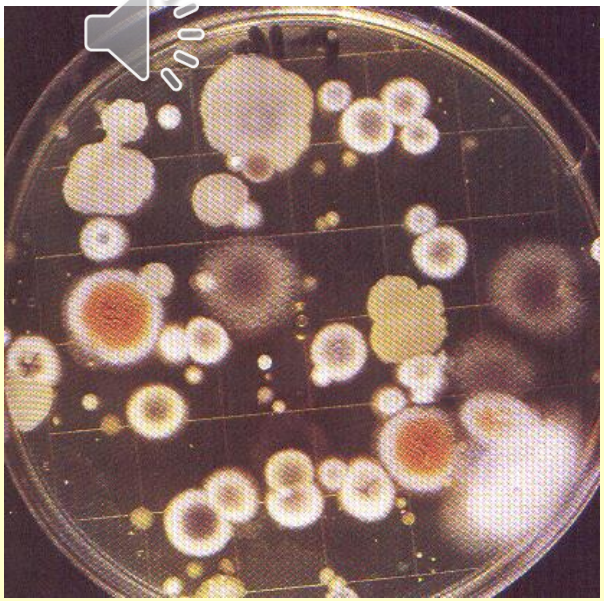
intervalo



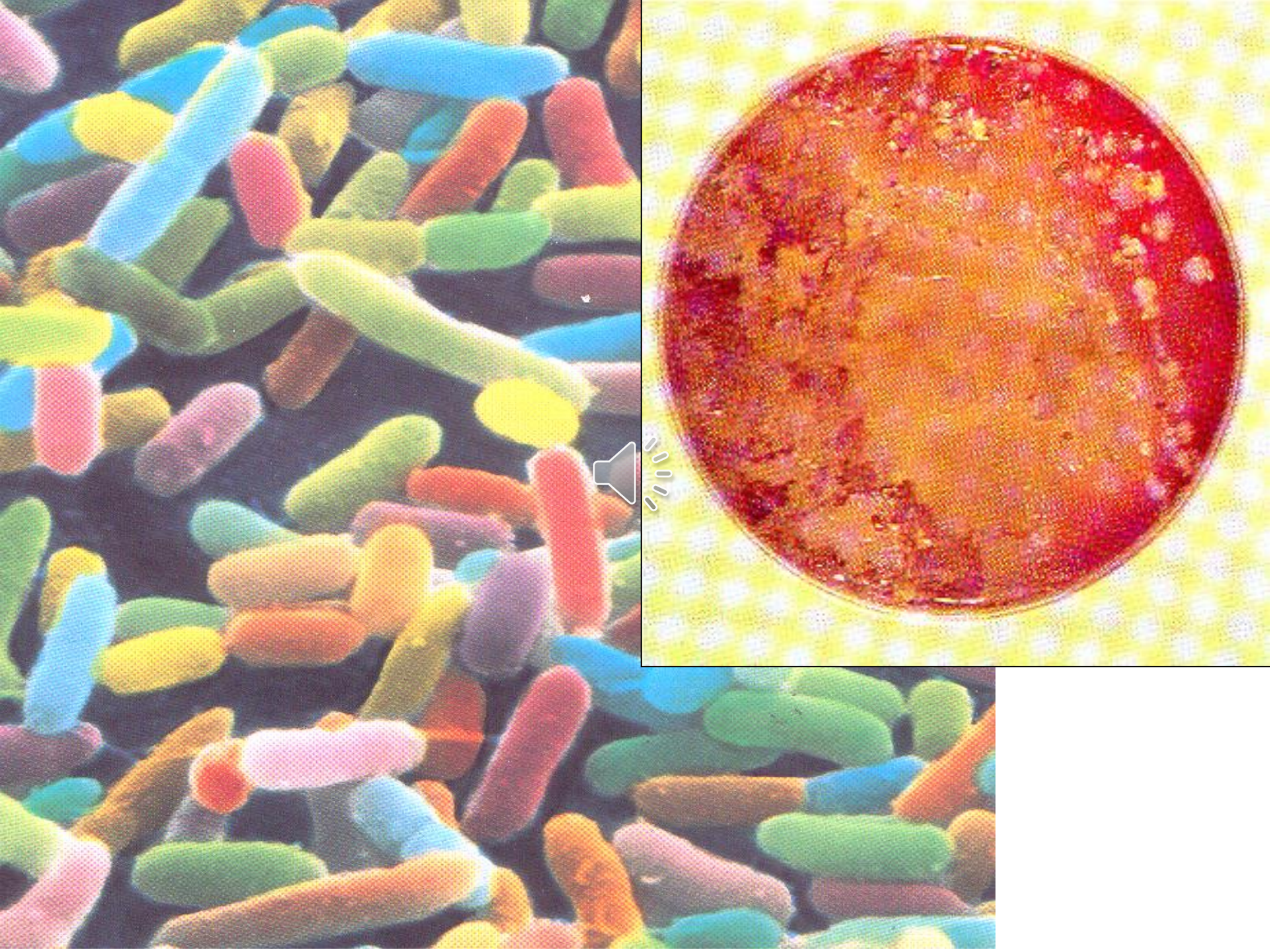
Meio líquido

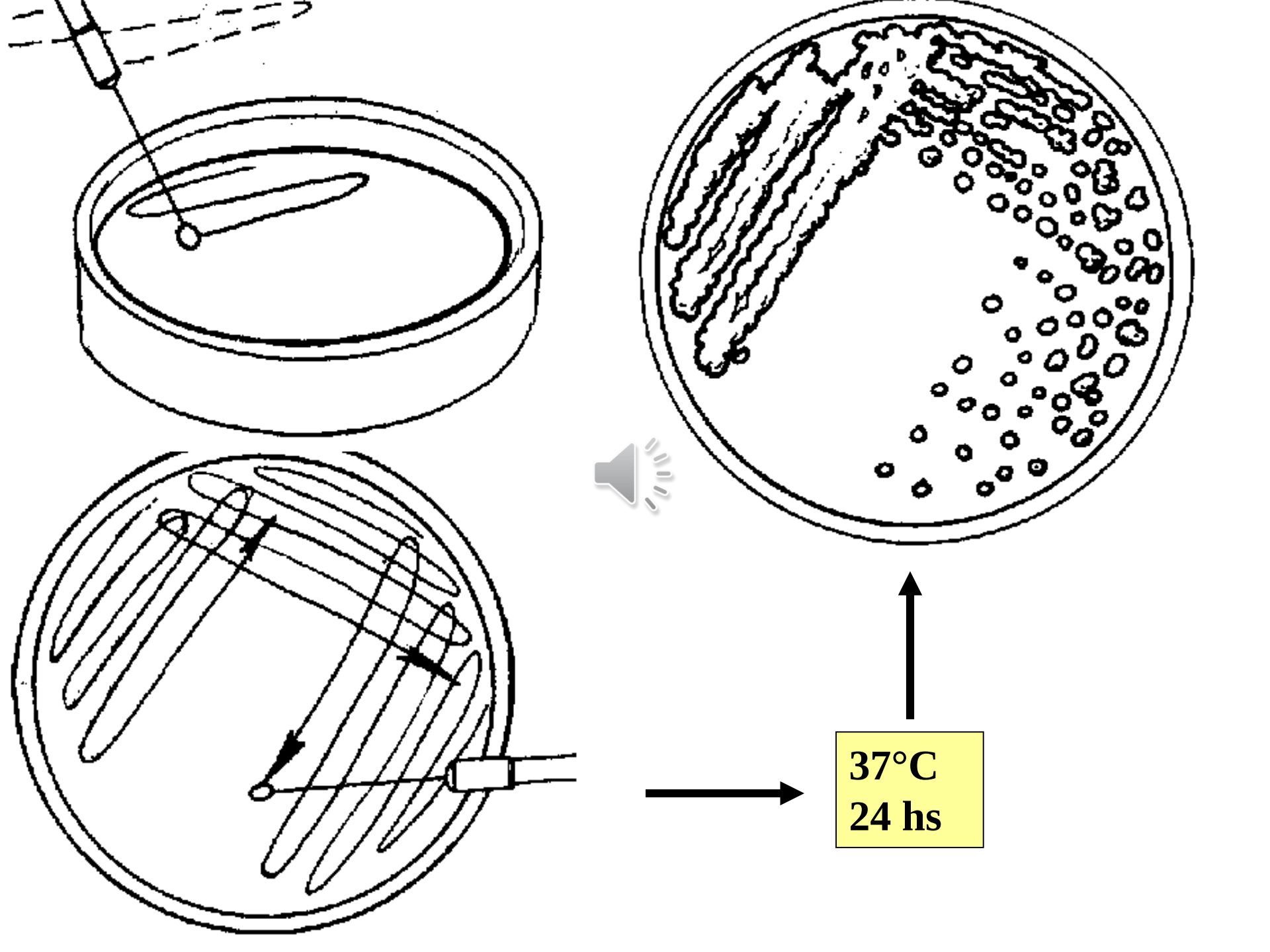
Meio sólido

turvação

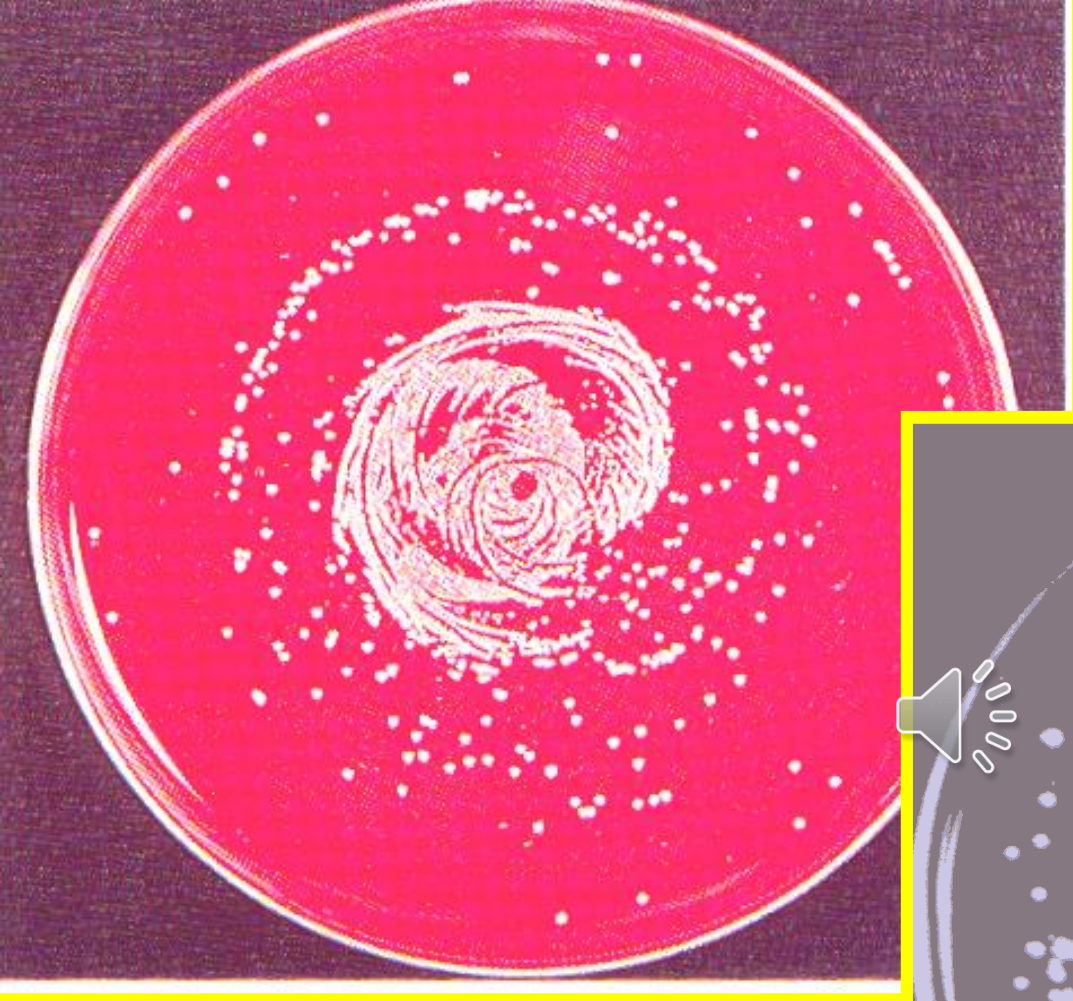


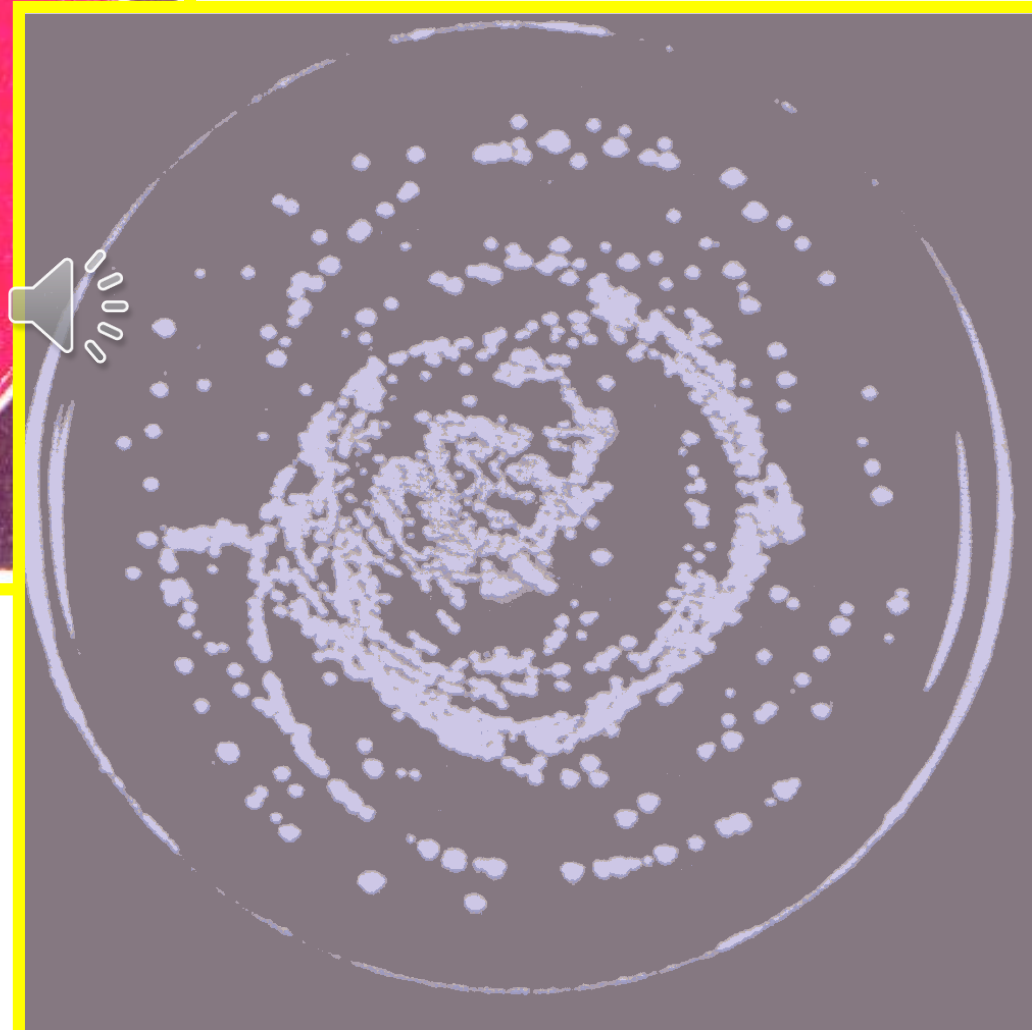
colônias

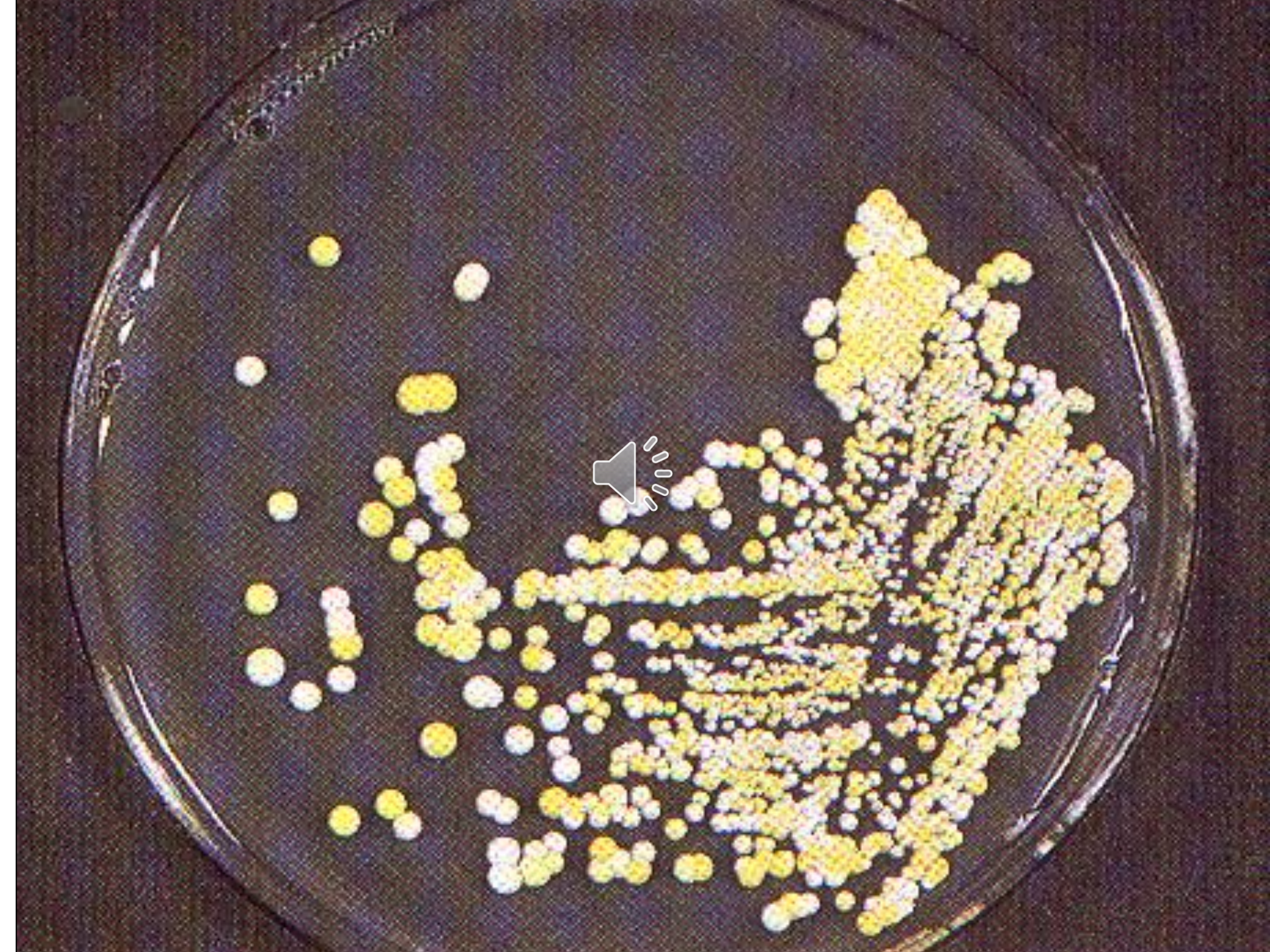



37°C
24 hs

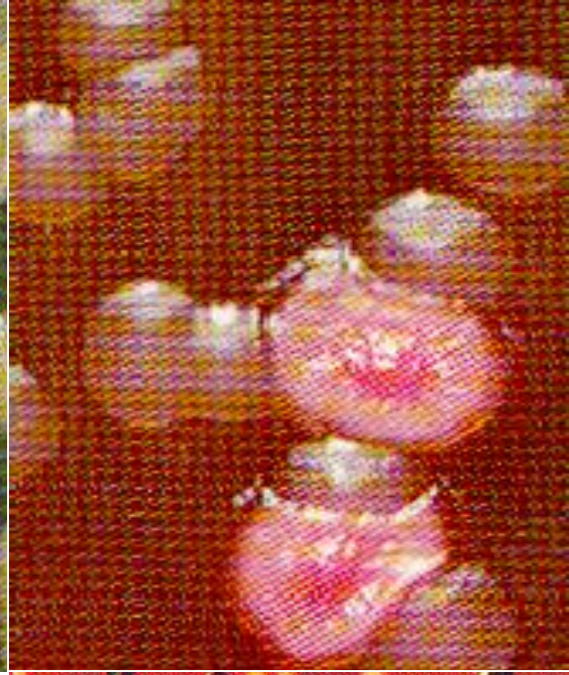
Semeadura em caracol ou espiral

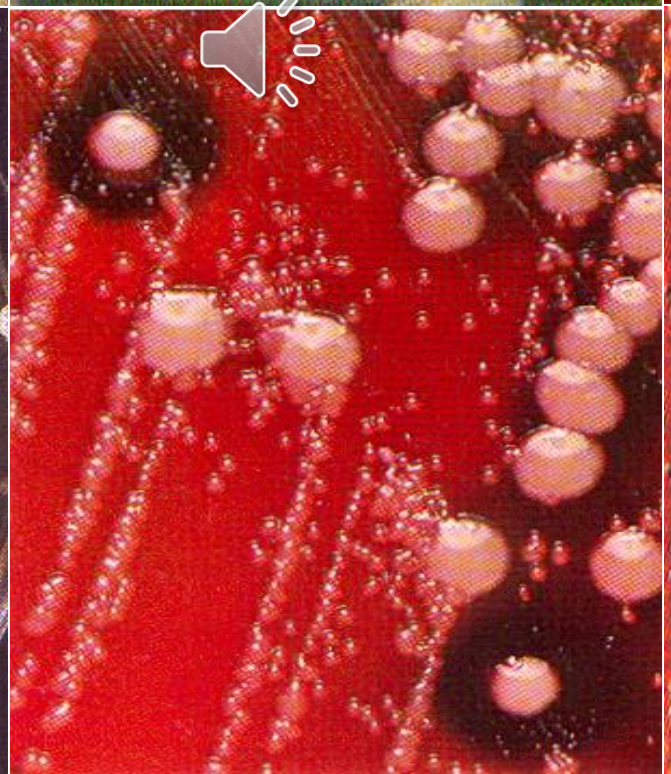
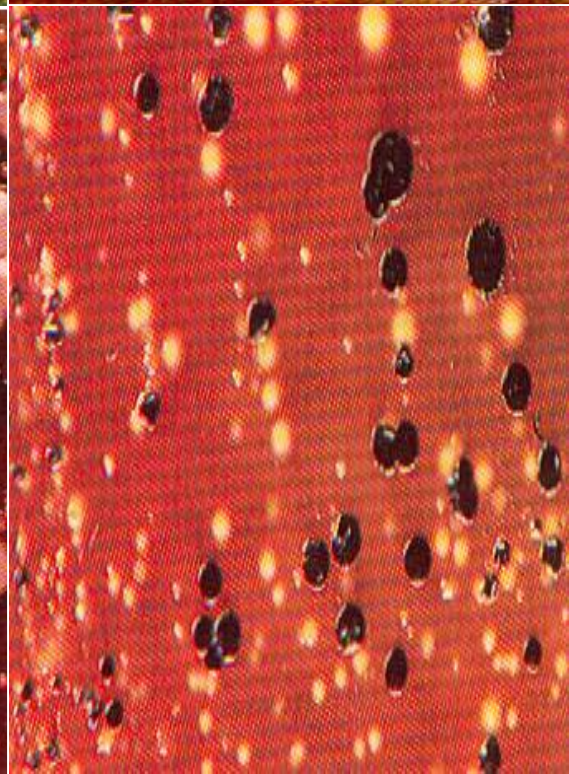










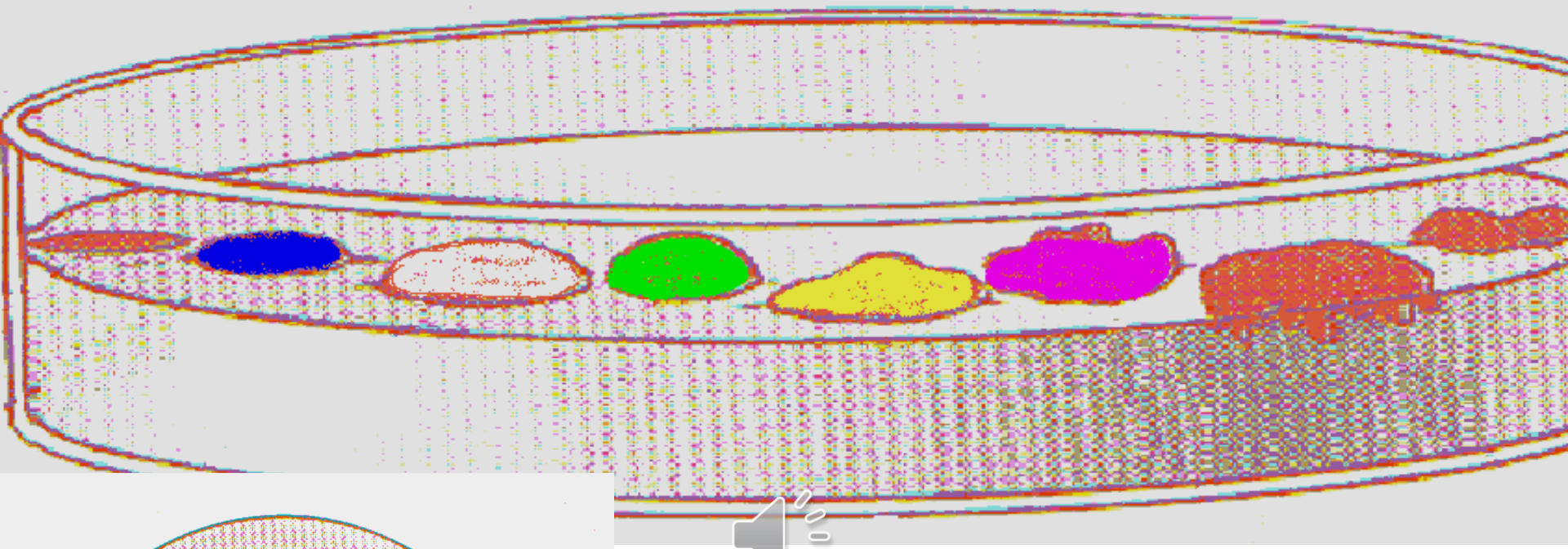
Culturas acelulares - meios de cultura maioria das bactérias e fungos

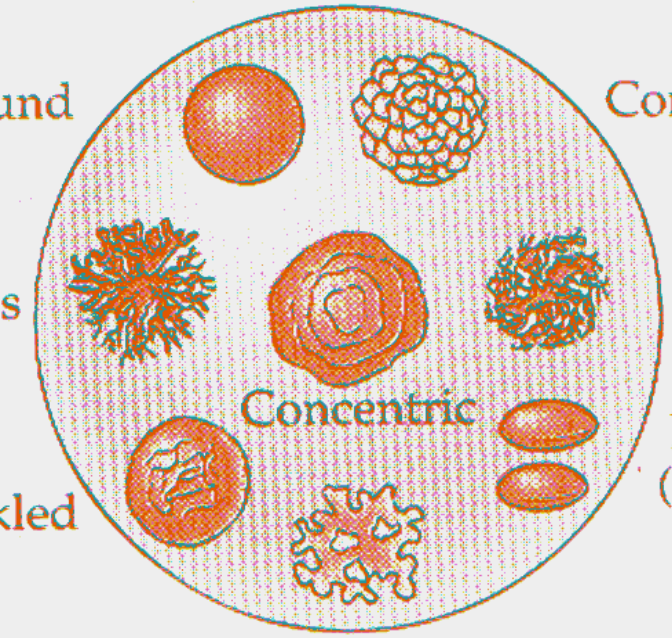
Meios simples:
peptona, glicose, NaCl

Meios ricos ou complexos:
extrato de carne, soro, sangue

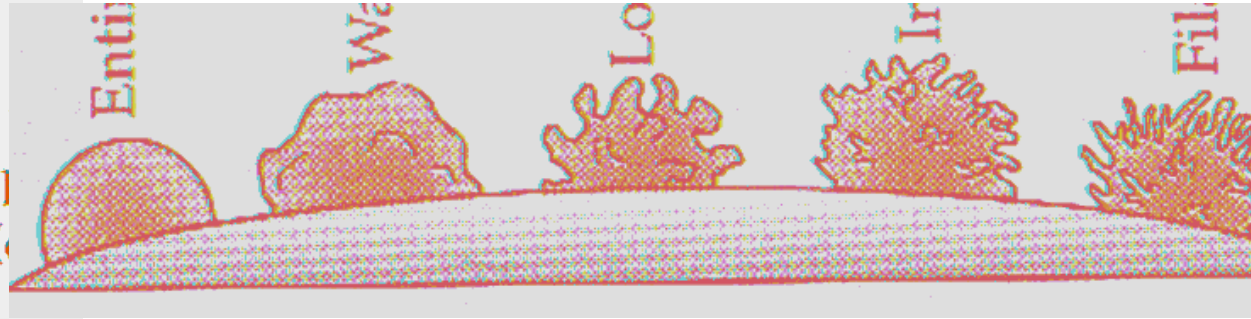
Meios sintéticos:
composição exata

Meios seletivos / Meios diferenciais

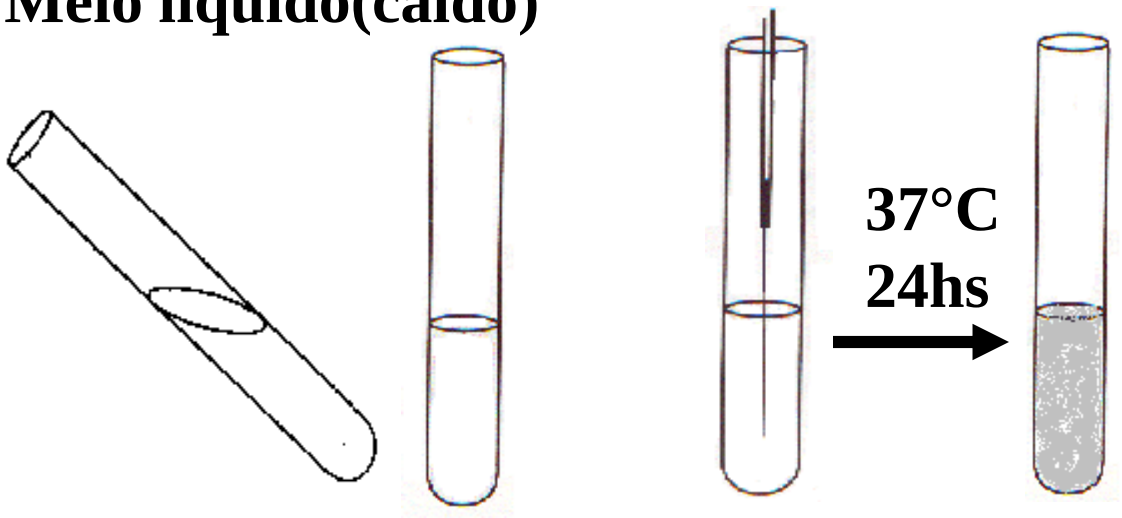




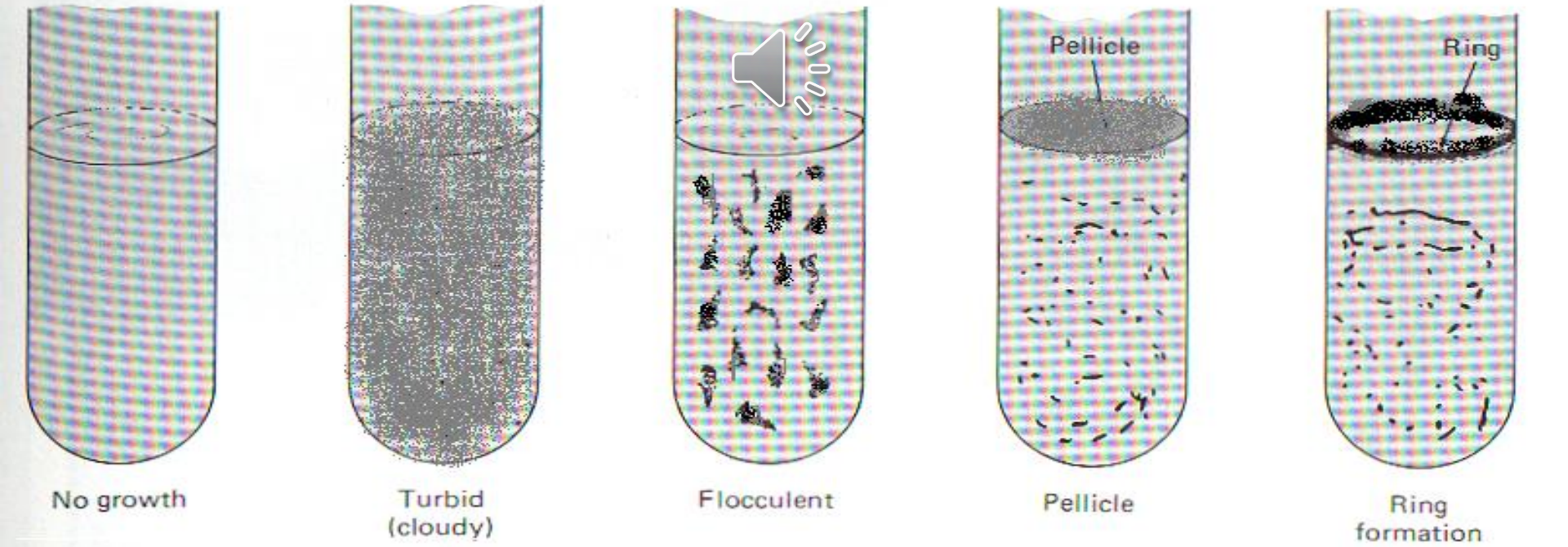
Irregular and Spreading

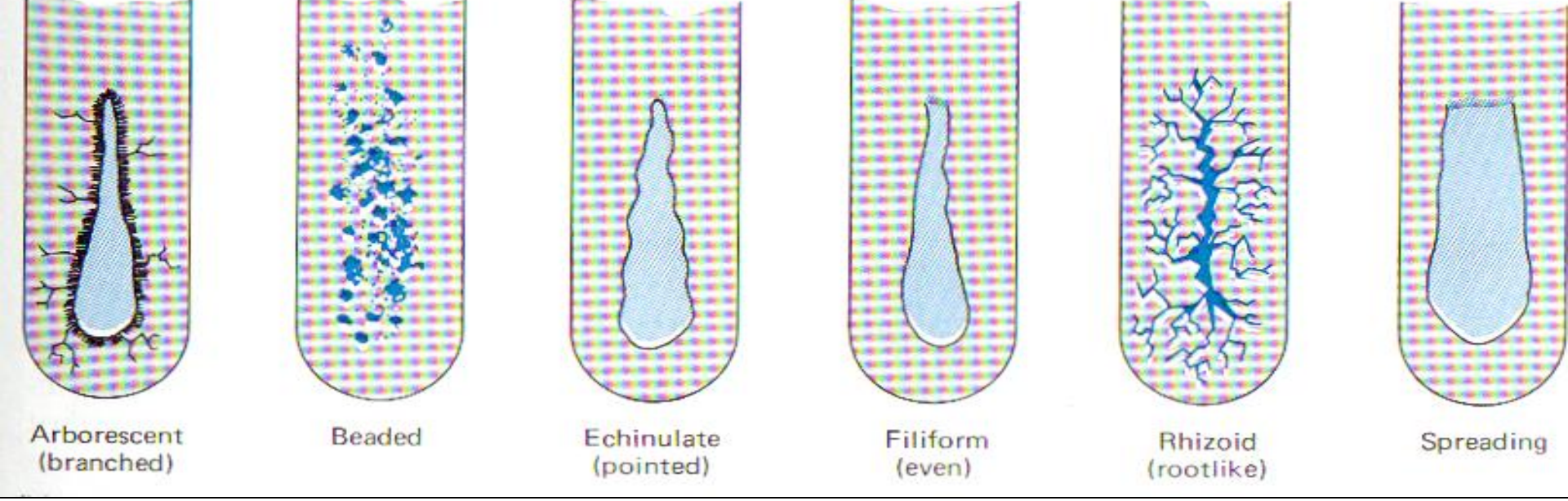


Meio líquido(caldo)

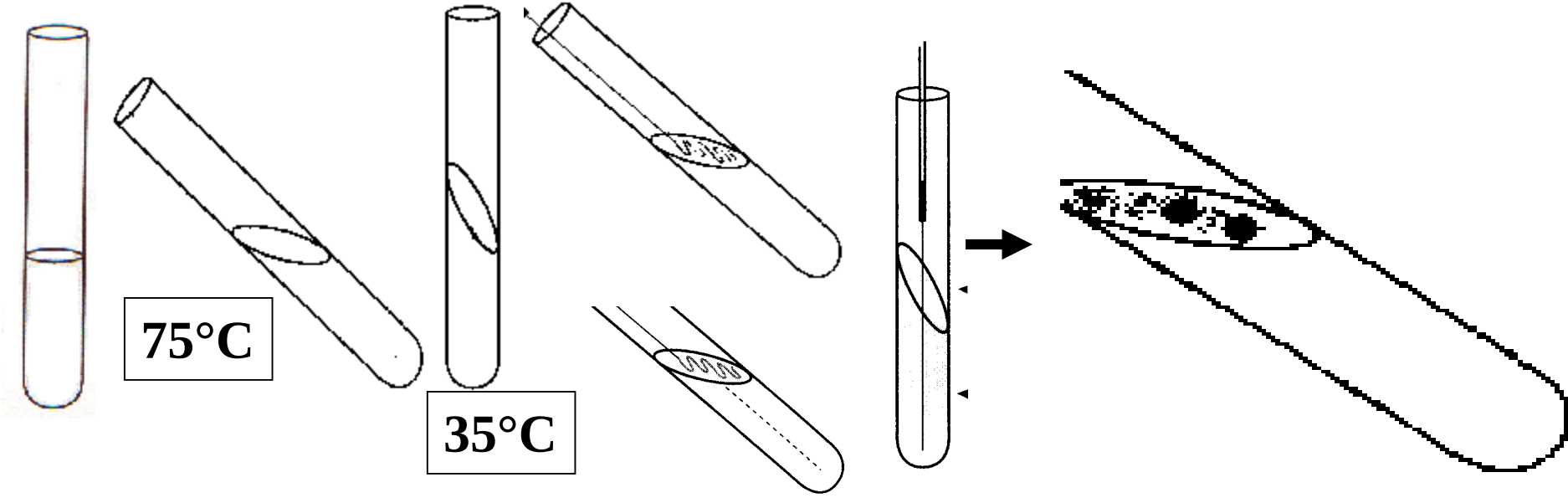


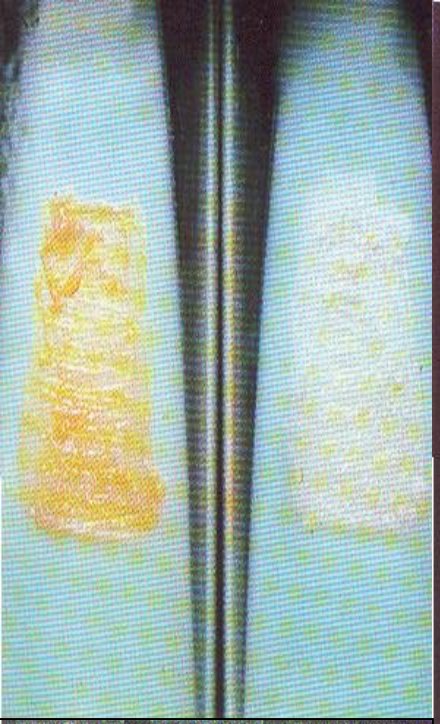
10^8 bactérias/mL

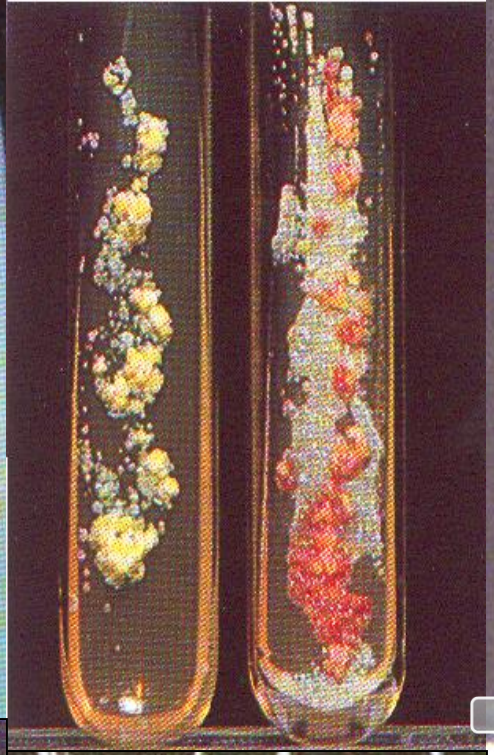


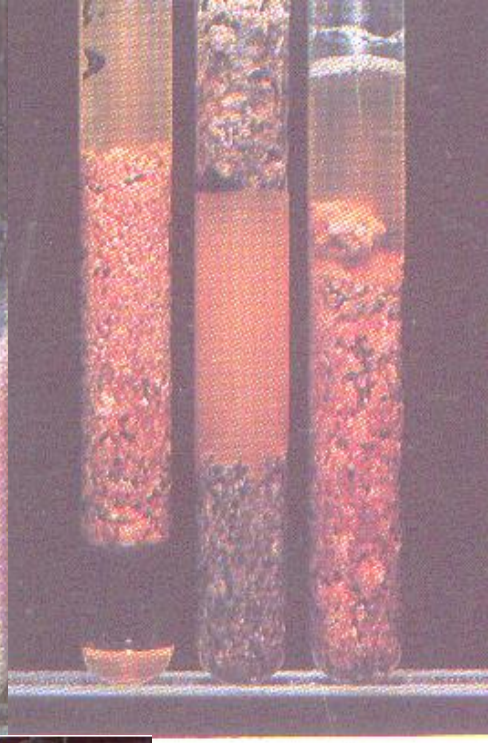


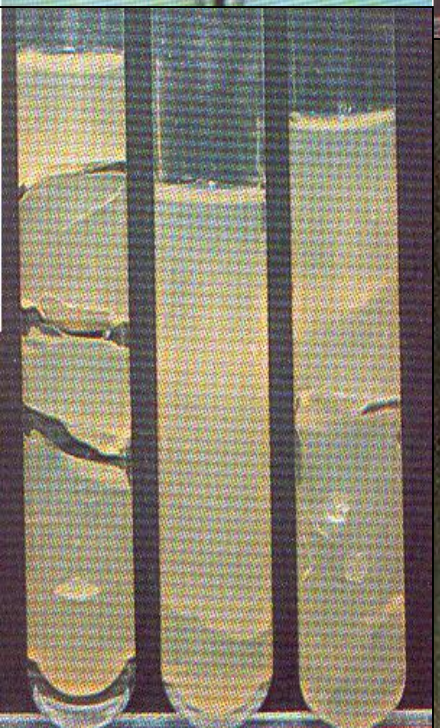
Meio sólido (agar inclinado)

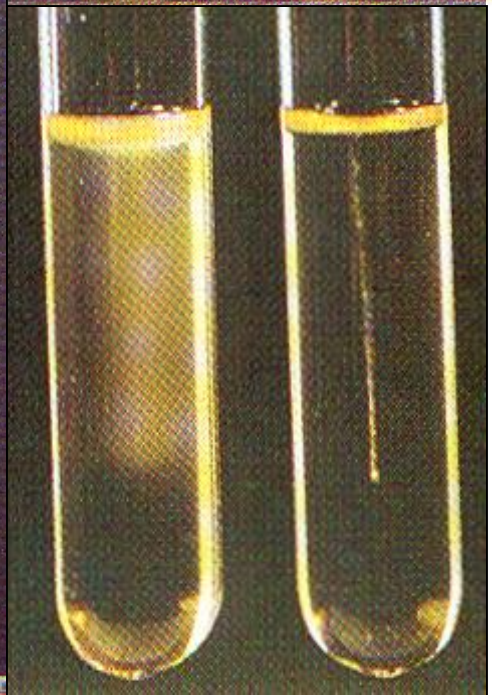


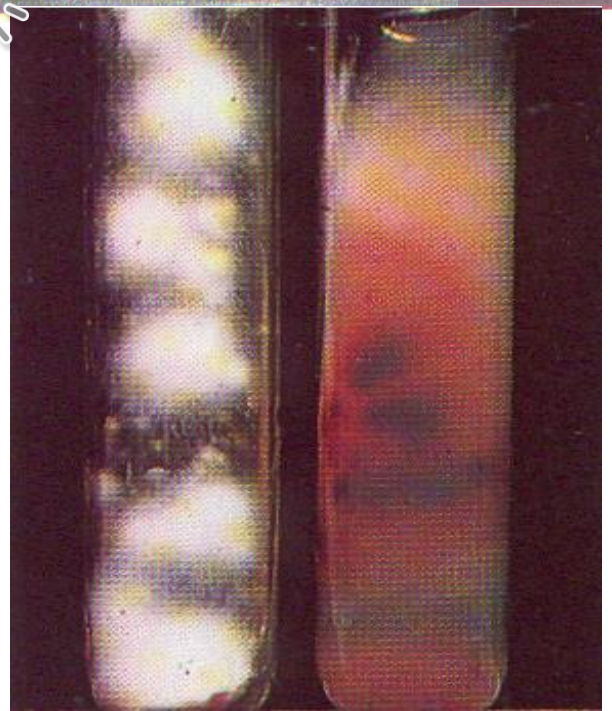


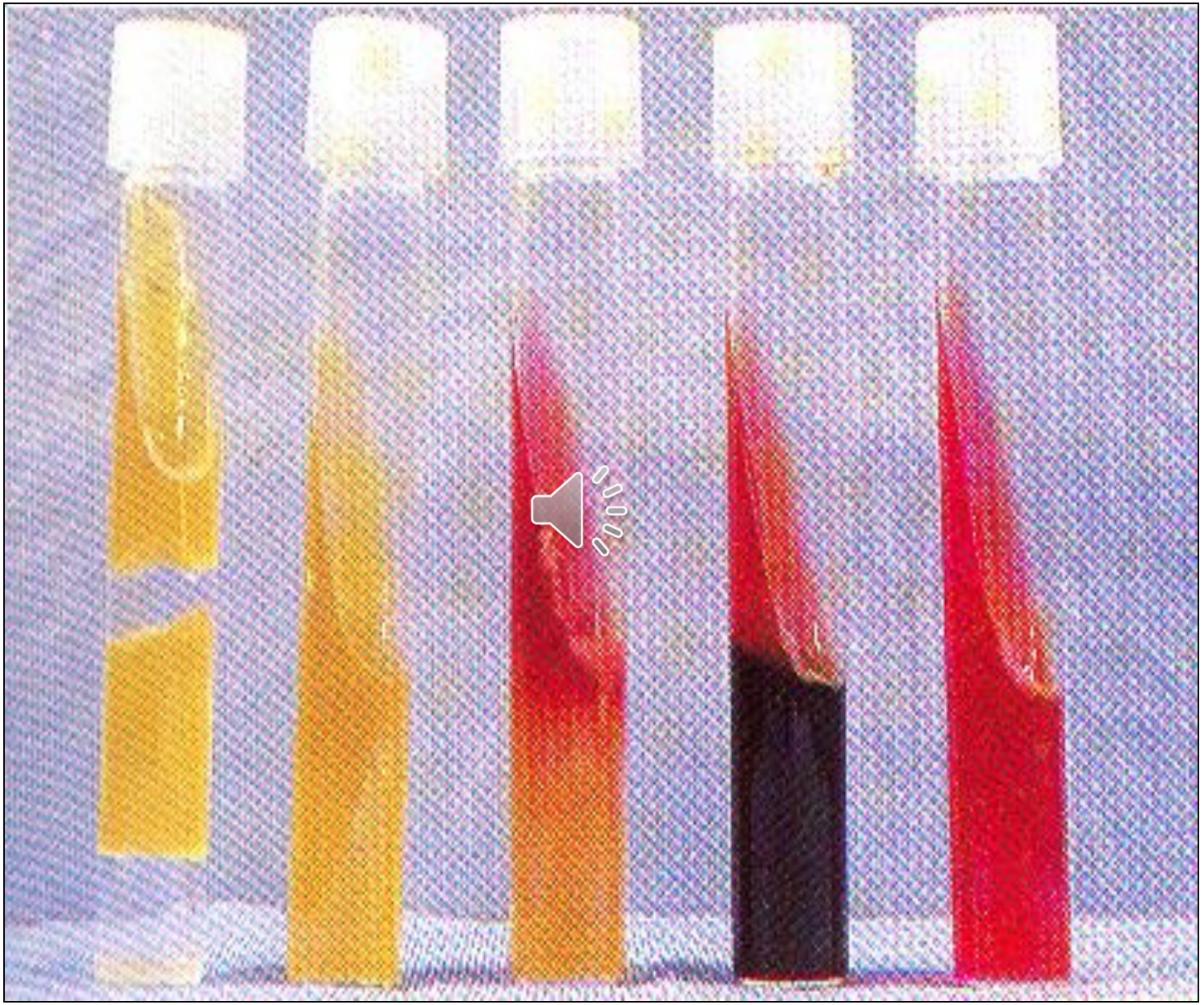




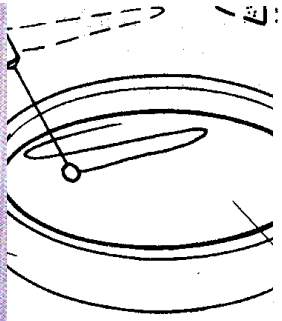


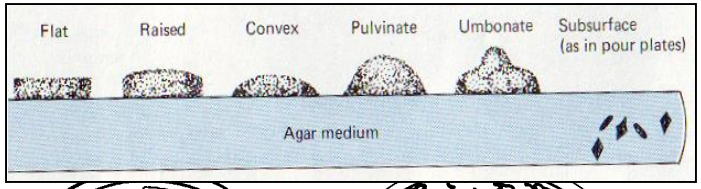


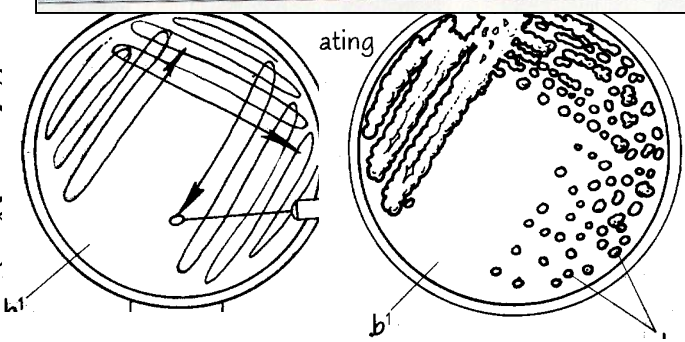




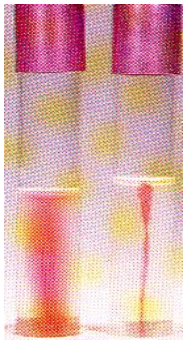
Meios sólidos

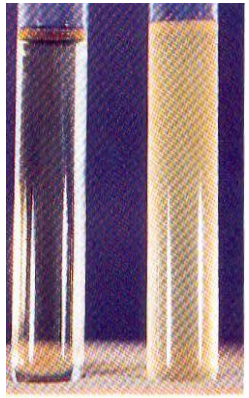






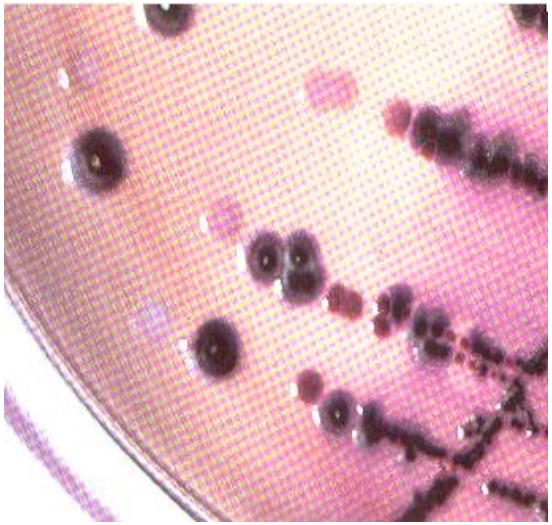
Semisólido - líquido



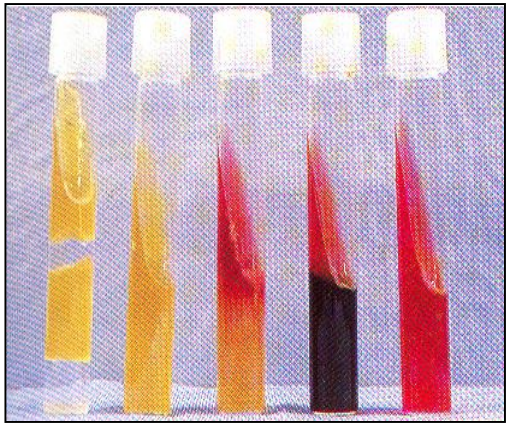


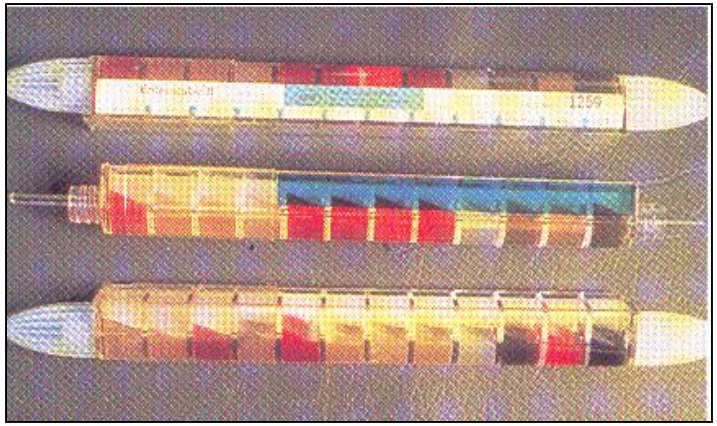
Meios ricos e sintéticos

Meios seletivos

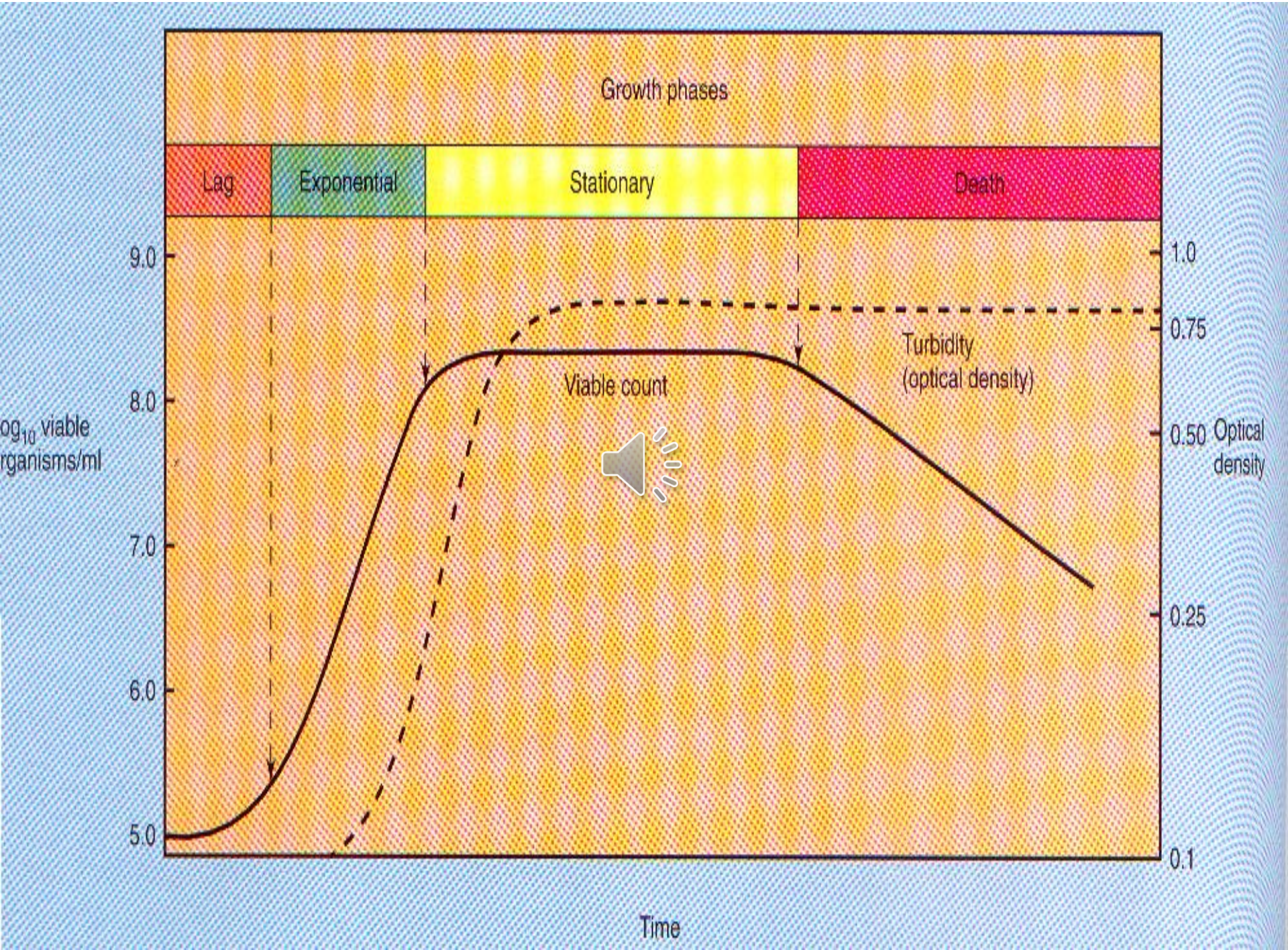


Meios diferenciais





intervalo

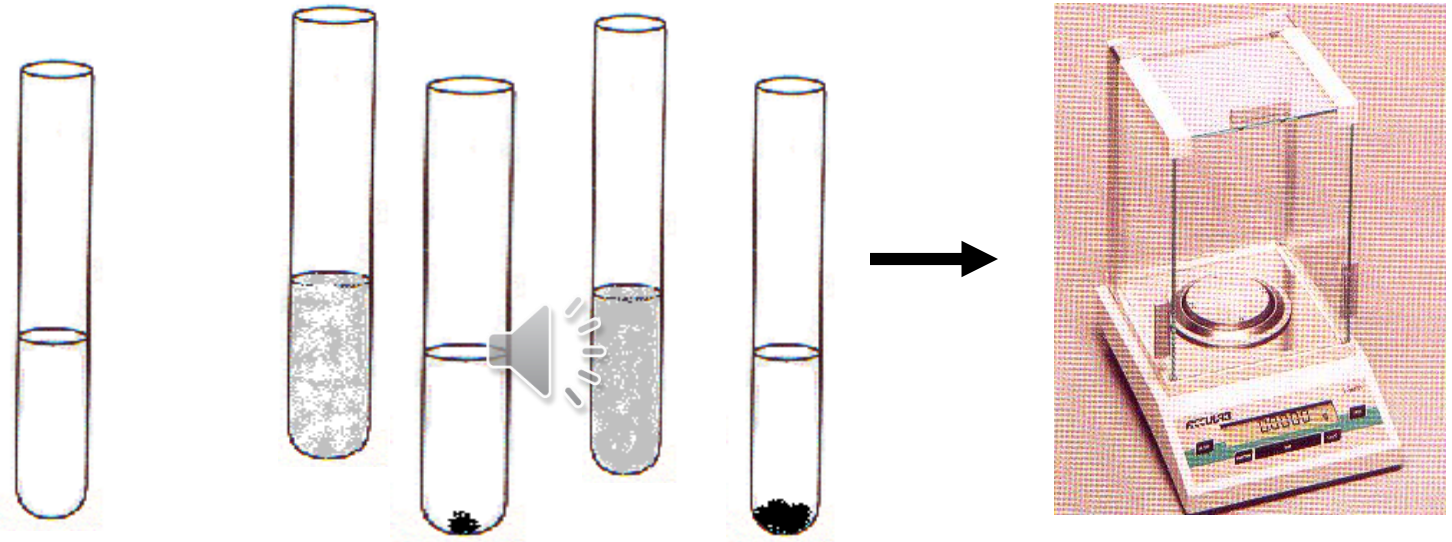

Growth phases
Lag
Exponential
Stationary
Death
9.0
8.0
7.0
6.0
5.0
1.0
0.75
0.50
0.25
0.1
Optical density
Turbidity (optical density)
Viable count
Time

Medidas de crescimento bacteriano

Determinação da massa

Métodos diretos

Peso seco



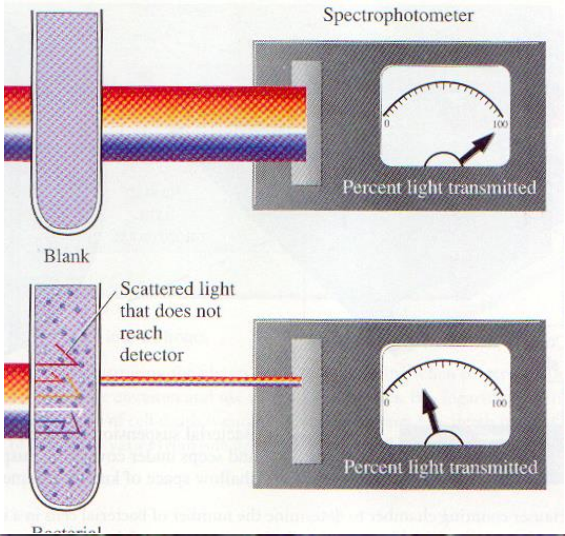
Dosagem de proteína
dosagem de ATP

Medidas de crescimento bacteriano
Determinação da massa

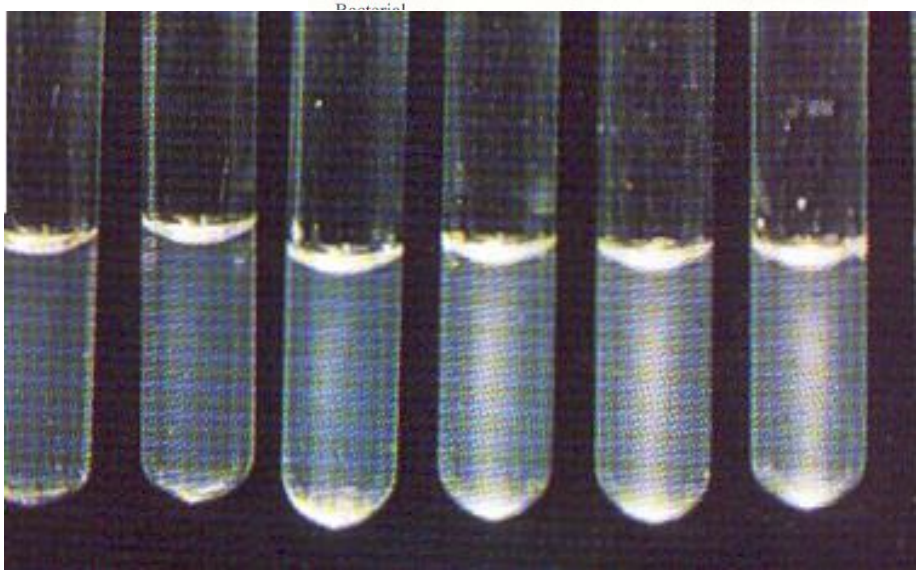
Métodos indiretos

medida da turbidez

Fotometria

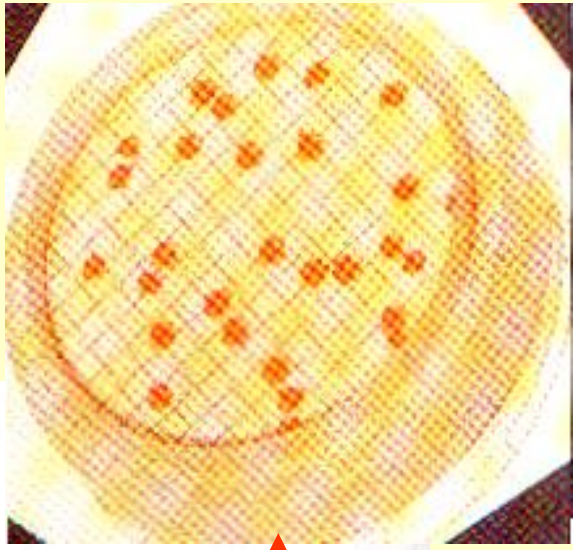


Escala de McFarland

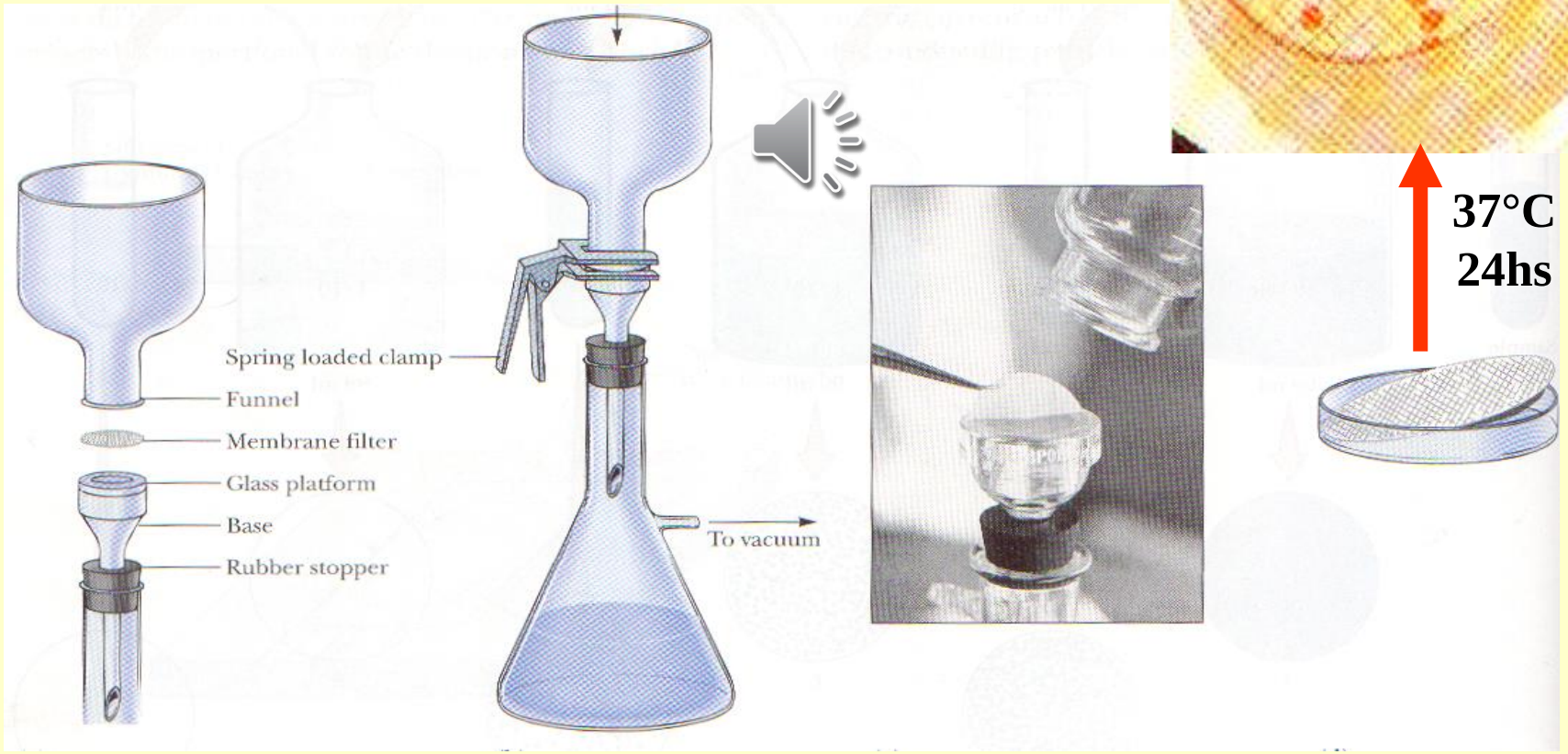


Medidas de crescimento bacteriano

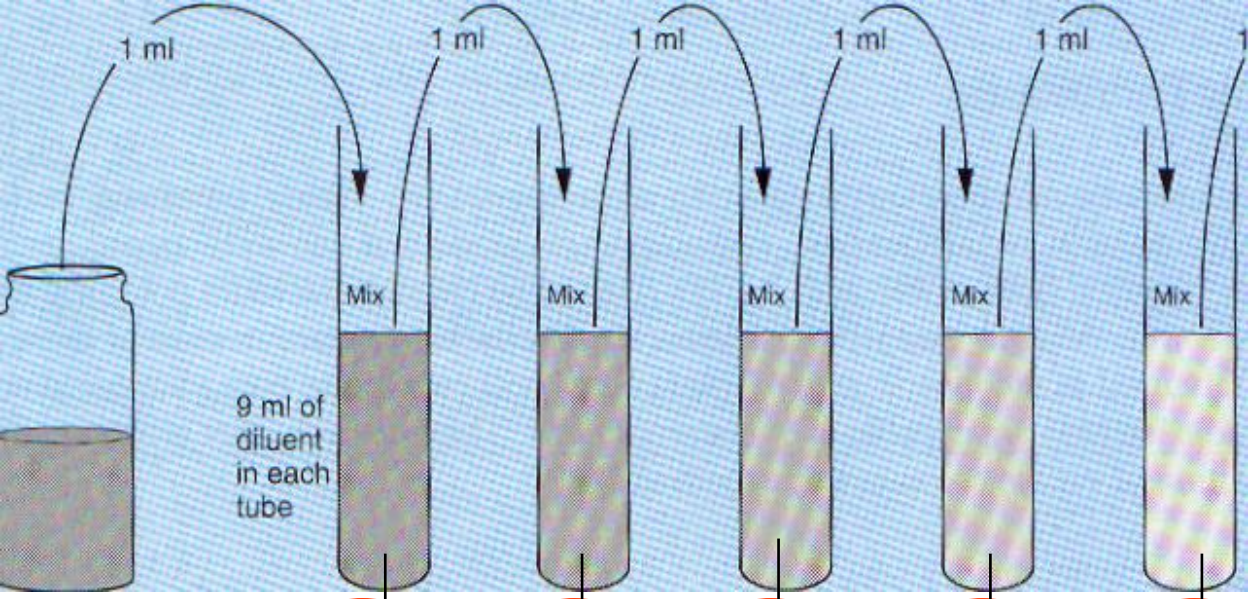
Método de contagem de células viáveis ou unidades formadoras de colônias(UFC)

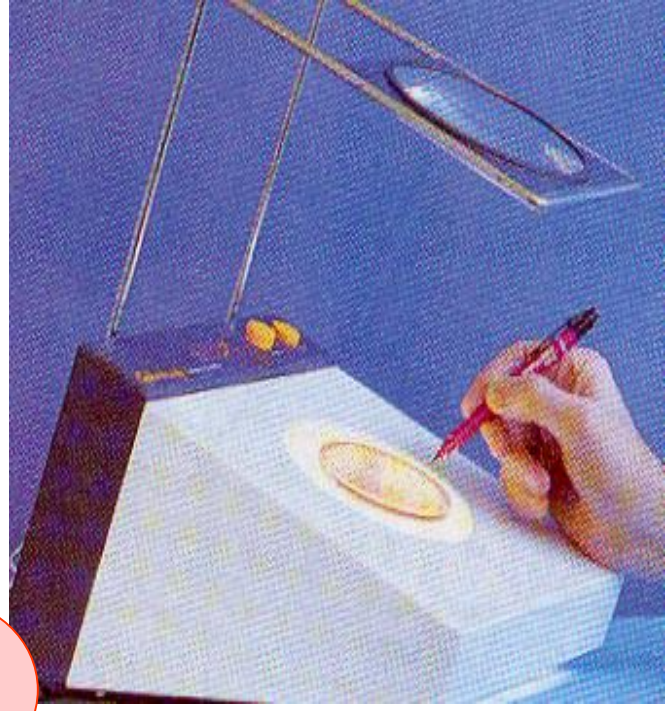


Filtração

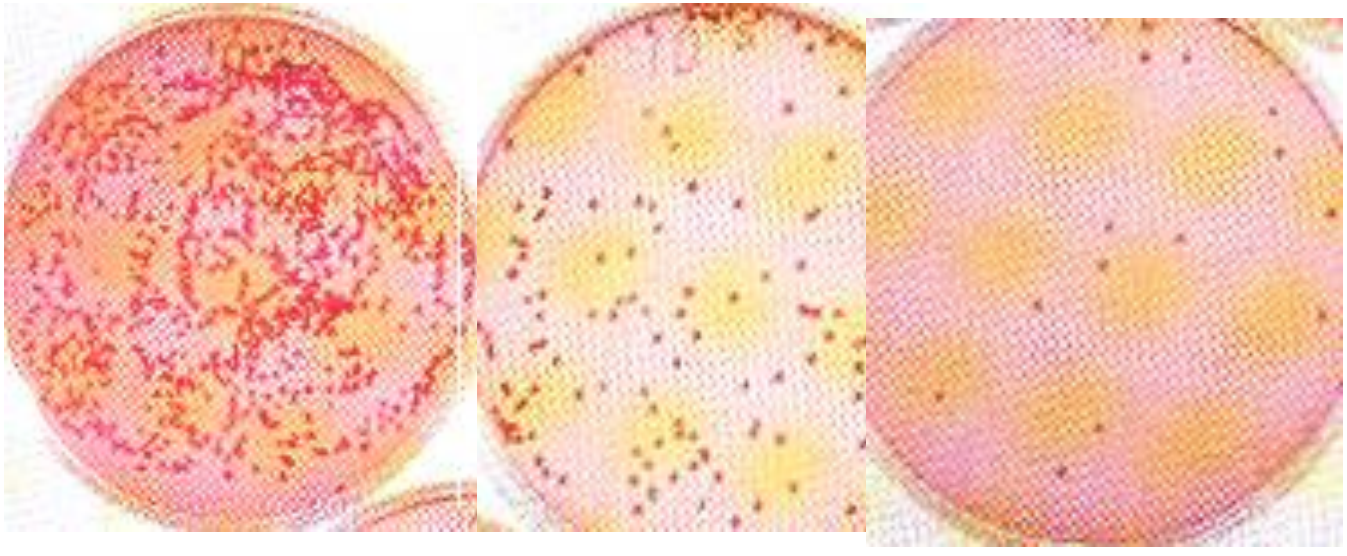


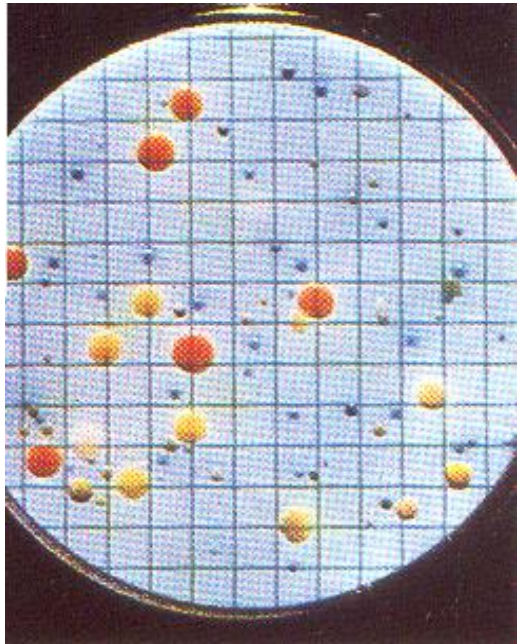
37°C
24hs


1 ml
1 ml
1 ml
1 ml
1 ml
Mix
Mix
Mix
Mix
Mix
9 ml of
diluent
in each
tube



37°C
24hs





Camara de Newbauer