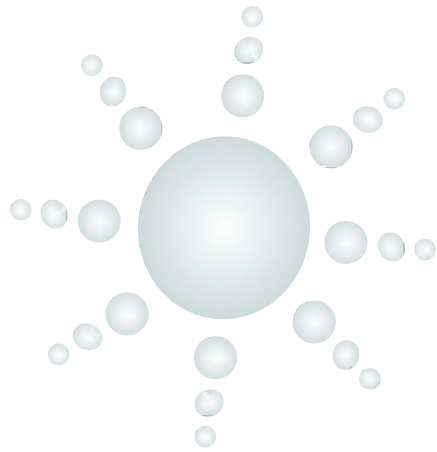




Mecanismos de virulencia de los microorganismos

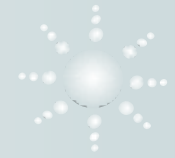
Prof. Loreto Abusleme

Prof. Leyla Gómez

Área de Microbiología

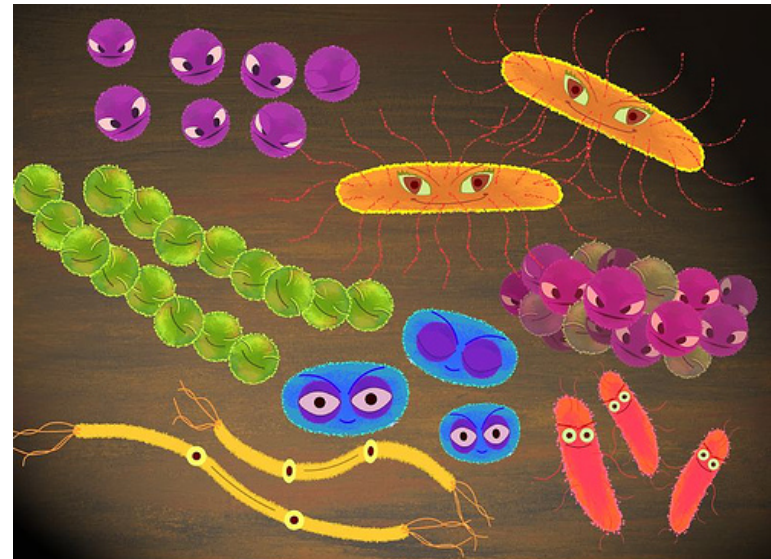
Escuela de Verano 2011

Mecanismos de Virulencia

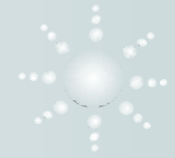


Definición

Distintos factores que utilizan los microorganismos para generar daño en el hospedero



Algunas definiciones



❖ *Infección*



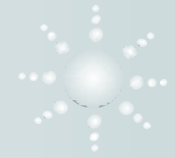
Multiplicación de un agente infeccioso dentro del organismo hospedero, donde ejerce su virulencia.

❖ *Patogenicidad*



Capacidad de un agente infeccioso de causar daño en el organismo hospedero

Algunas definiciones



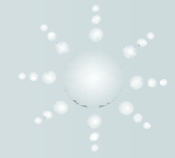
❖ Virulencia



Grado de patogenicidad que es capaz de producir un determinado agente infeccioso, es cuantificable



Infección



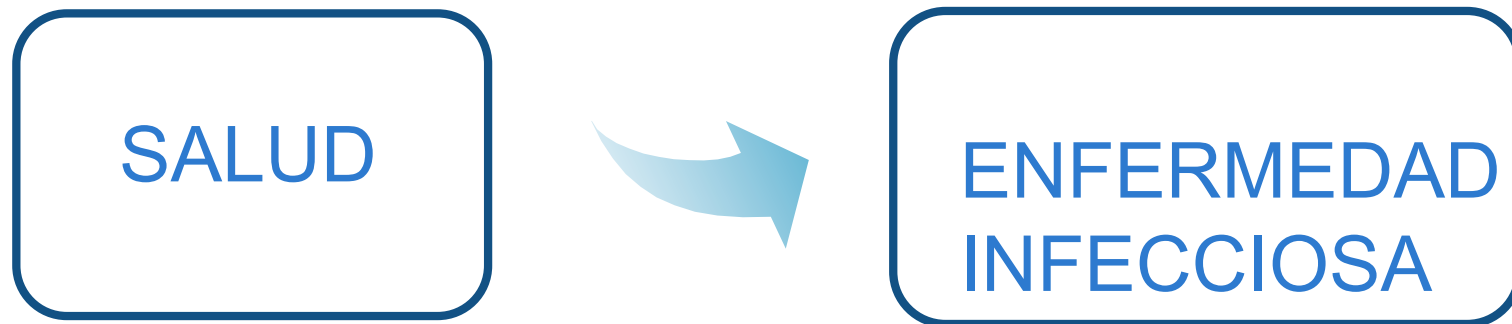
- ❖ Cuando los microorganismos patógenos colonizan, se multiplican e invaden los tejidos del hospedero



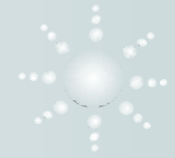
Infección



- ❖ El resultado esta interacción entre los microorganismos y el hospedero es determinada por las características que favorecen su establecimiento dentro del hospedero.



Patogenicidad



❖ **Incluye la habilidad de :**



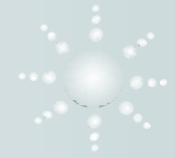
❖ *Entrar a un hospedero*

❖ *Encontrar un nicho ecológico único*

❖ *Alterar las defensas normales del hospedero*

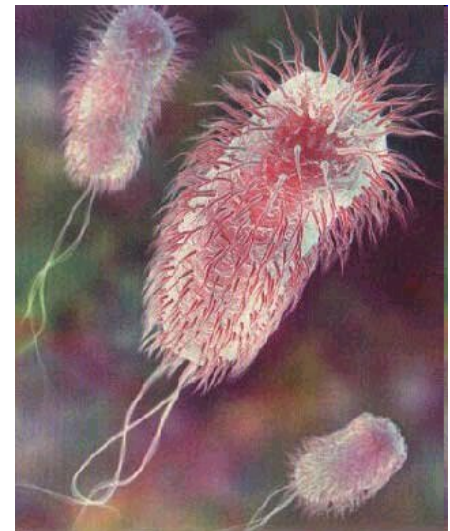
❖ *Replicarse en un nuevo ambiente*

❖ *Expresar rasgos patogénicos especializados*



¿Cuáles son las estrategias que utilizan las bacterias para ejercer su virulencia?

- ❖ Adherencia
- ❖ Invasividad
- ❖ Toxigenicidad
- ❖ Producción de enzimas
- ❖ Alterar el sistema inmune



Generación de daño en el hospedero

Bacterias

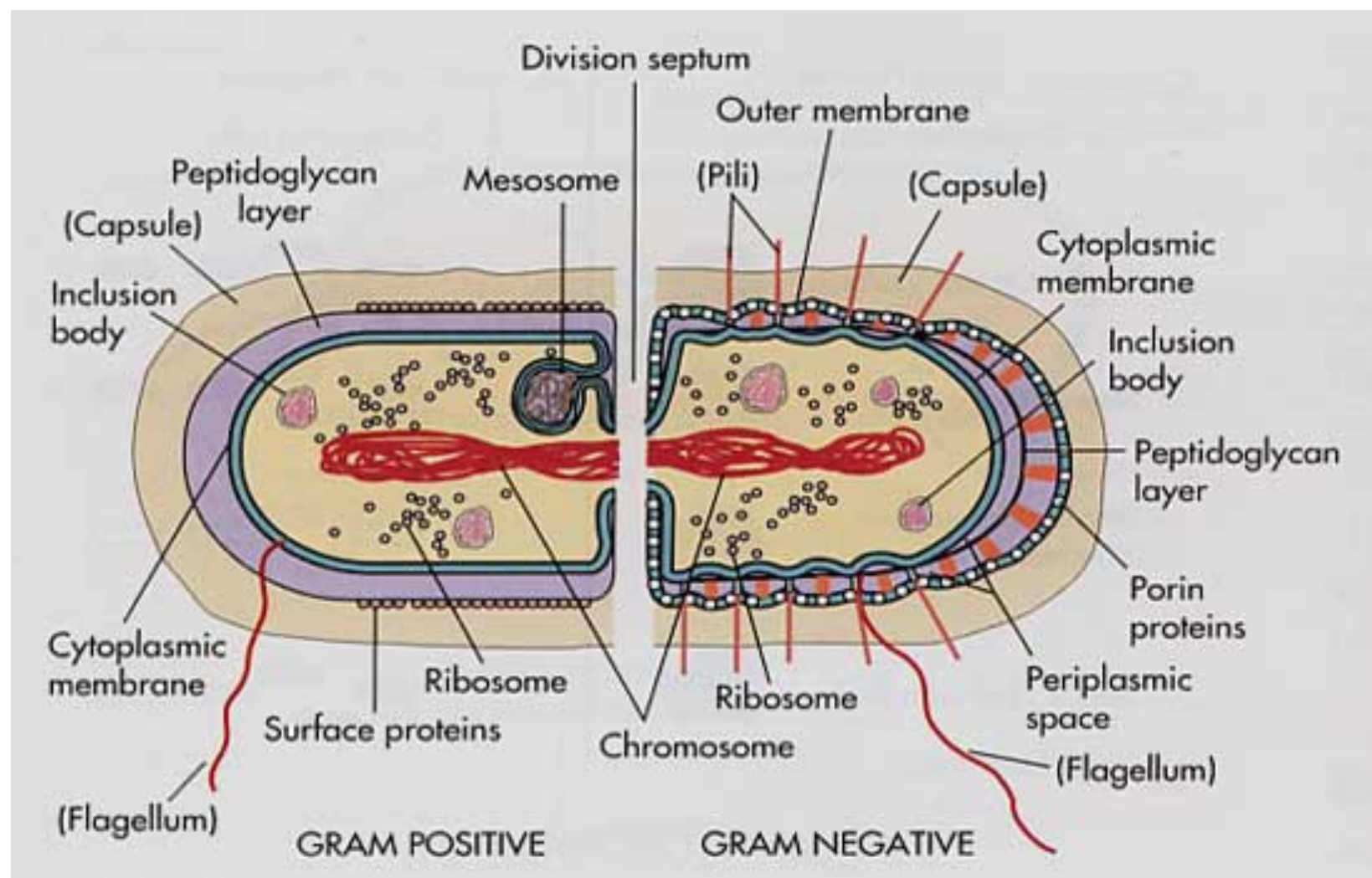
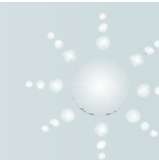


Estructuras

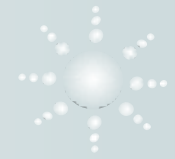


**Productos del
Metabolismo**

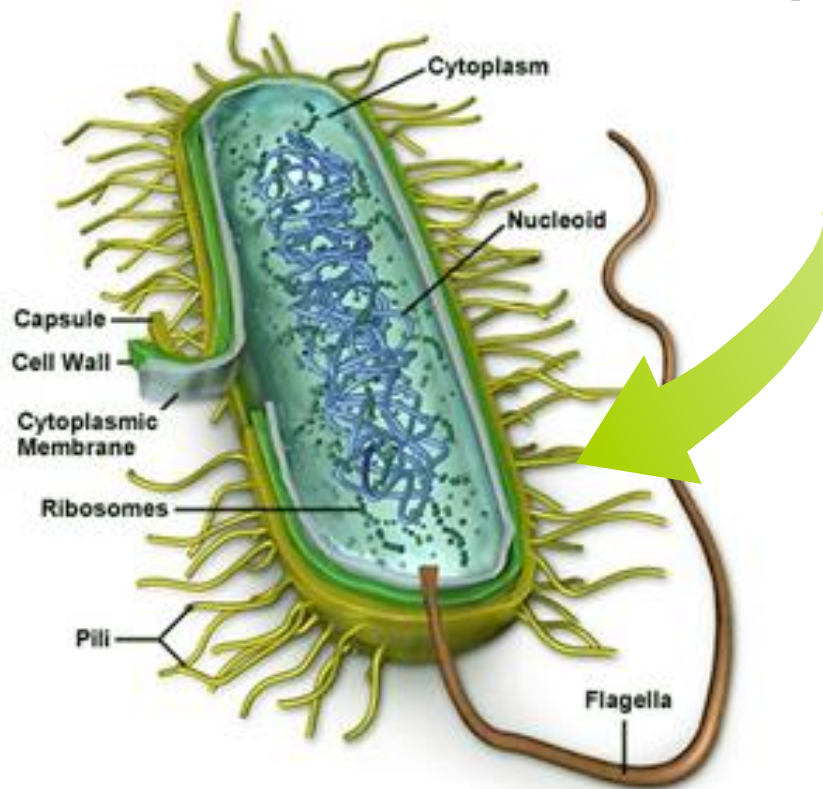




Adherencia

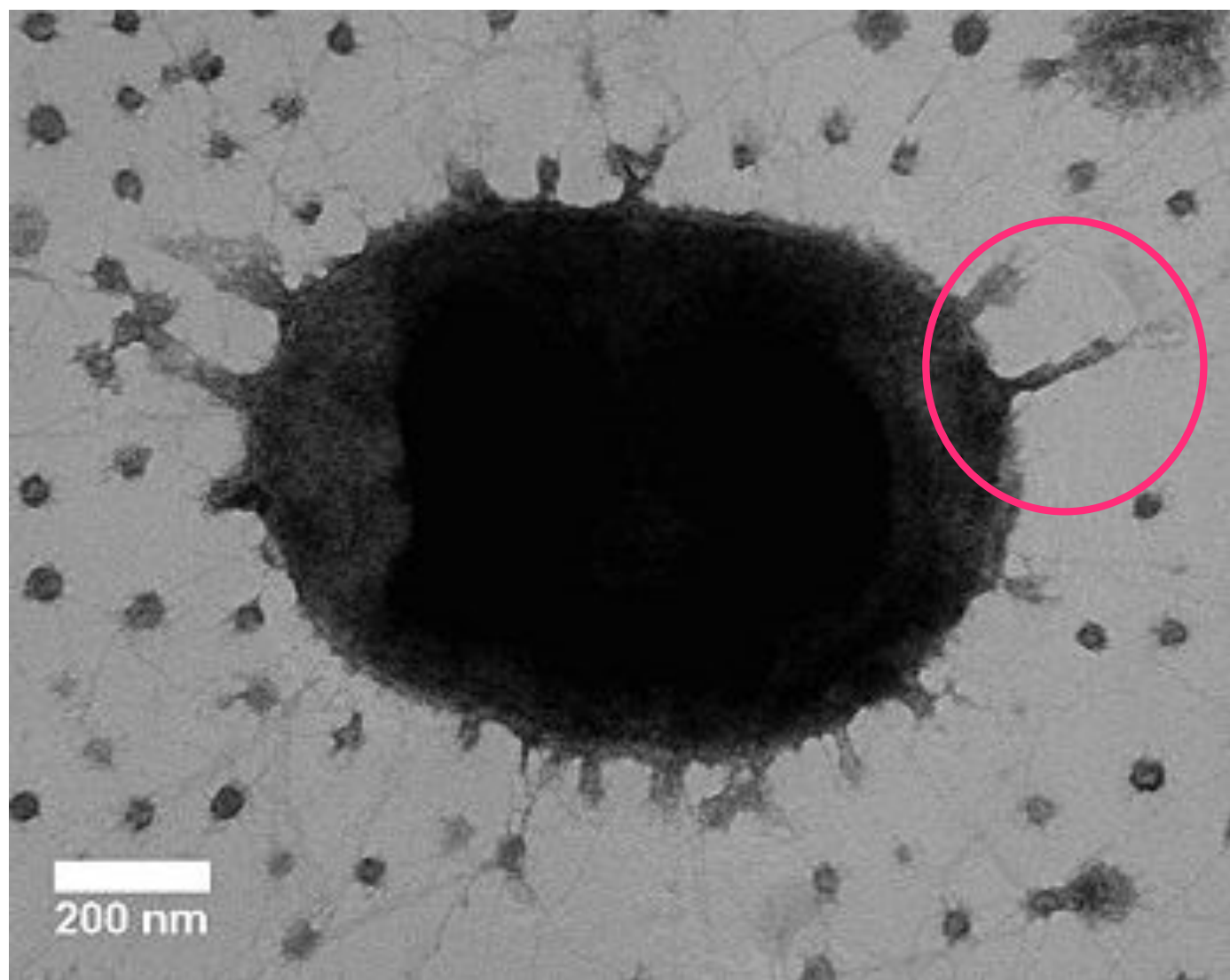
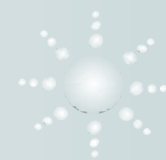


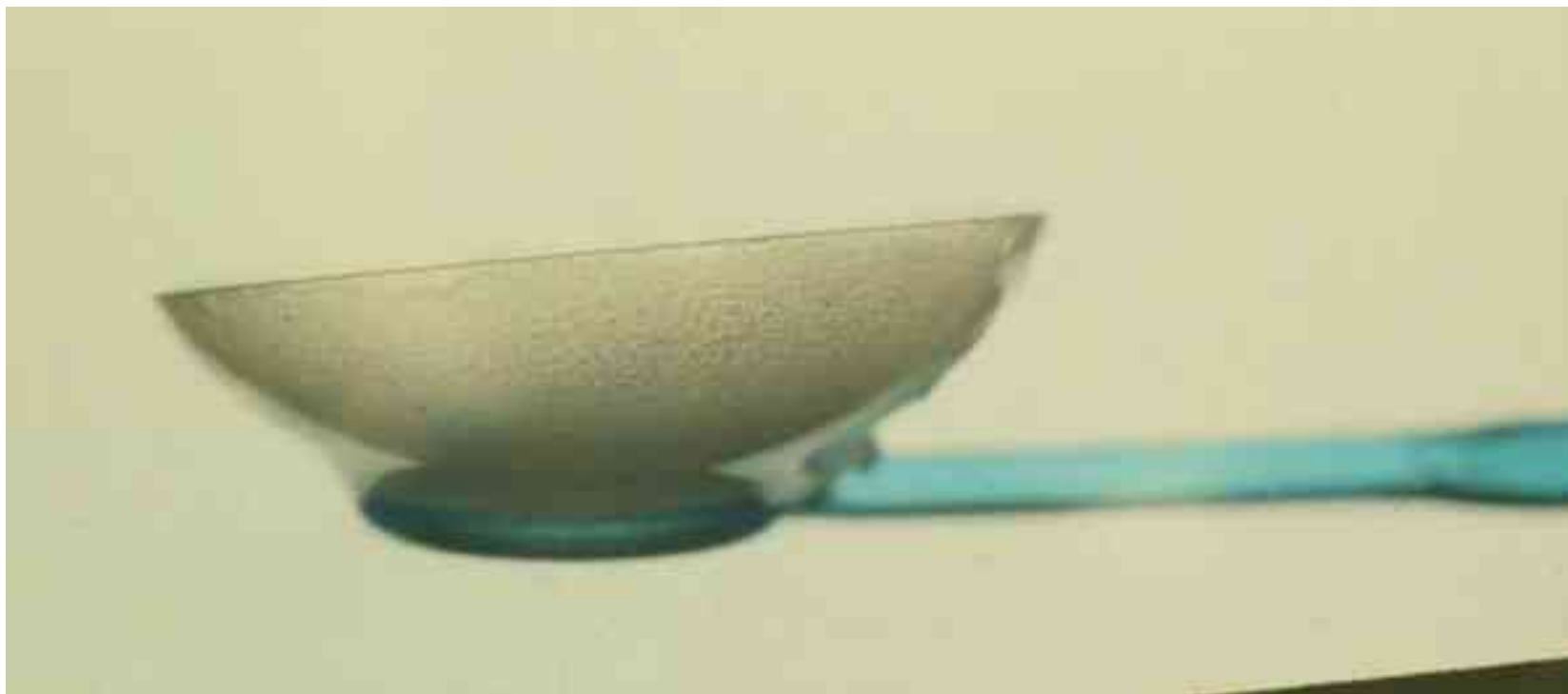
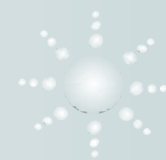
- ❖ Propiedad de las bacterias que les permite fijarse a las superficies

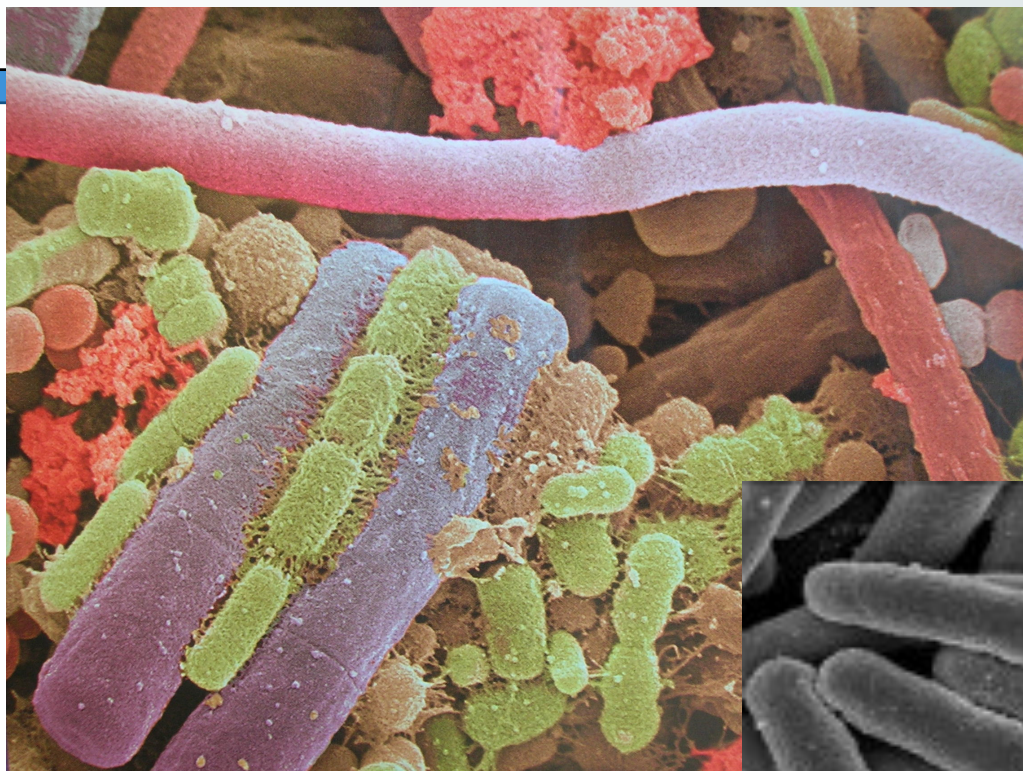
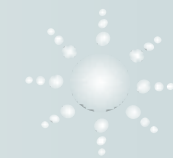


Fimbrias

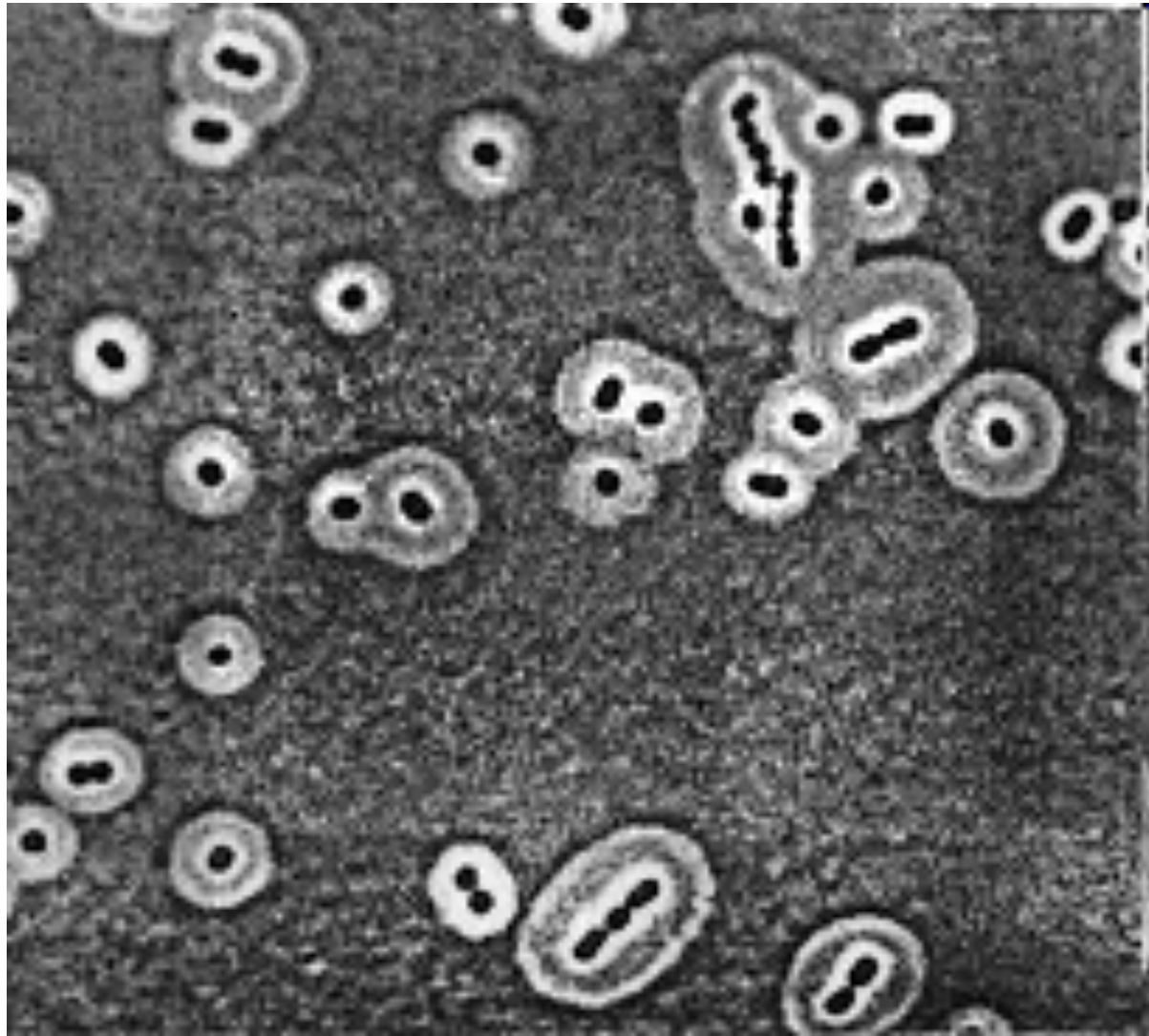
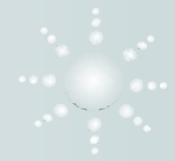
Importantes en la adherencia bacteriana

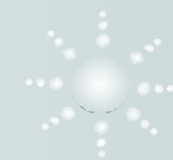




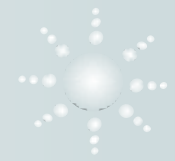


Cápsula





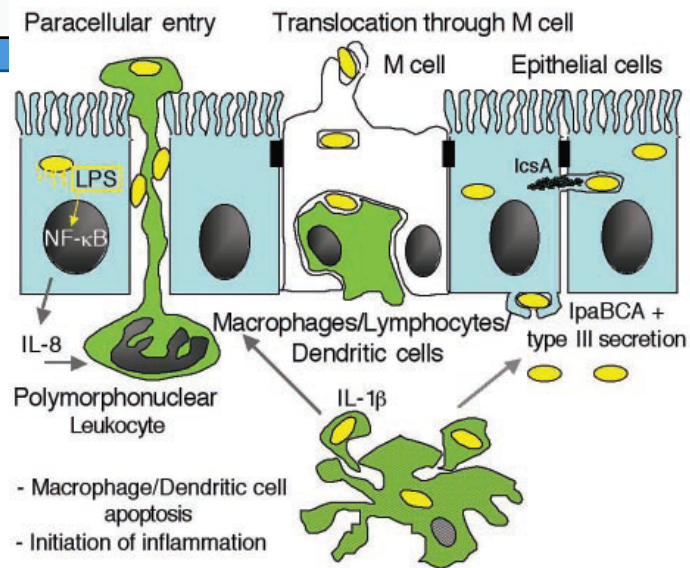
Invasividad



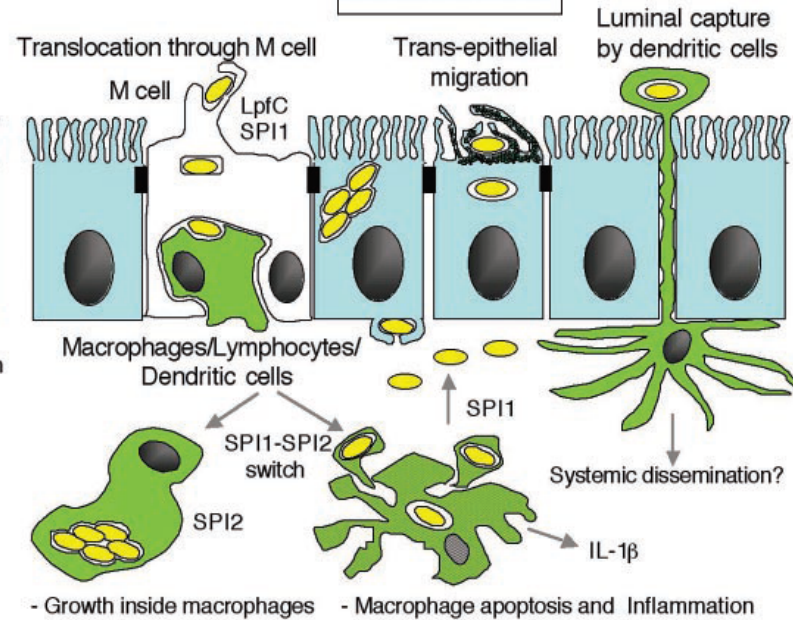
- ❖ *Capacidad de un patógeno para introducirse en el hospedero y diseminarse*



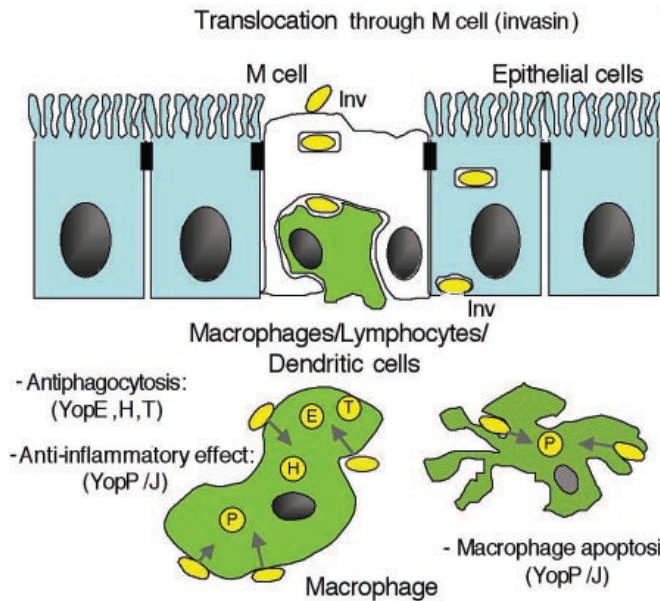
Shigella



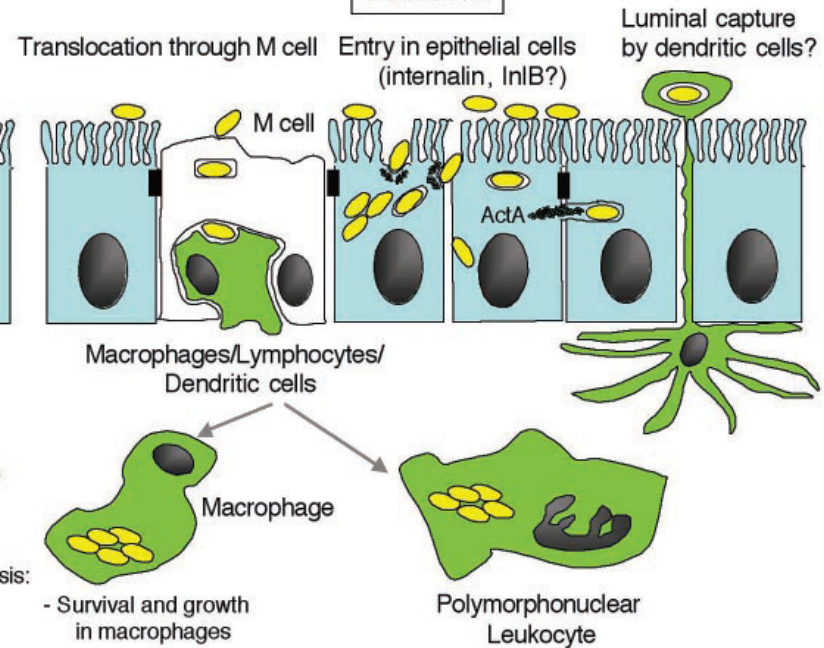
Salmonella



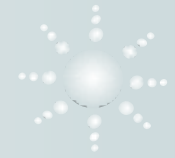
Yersinia



Listeria



Toxigenicidad

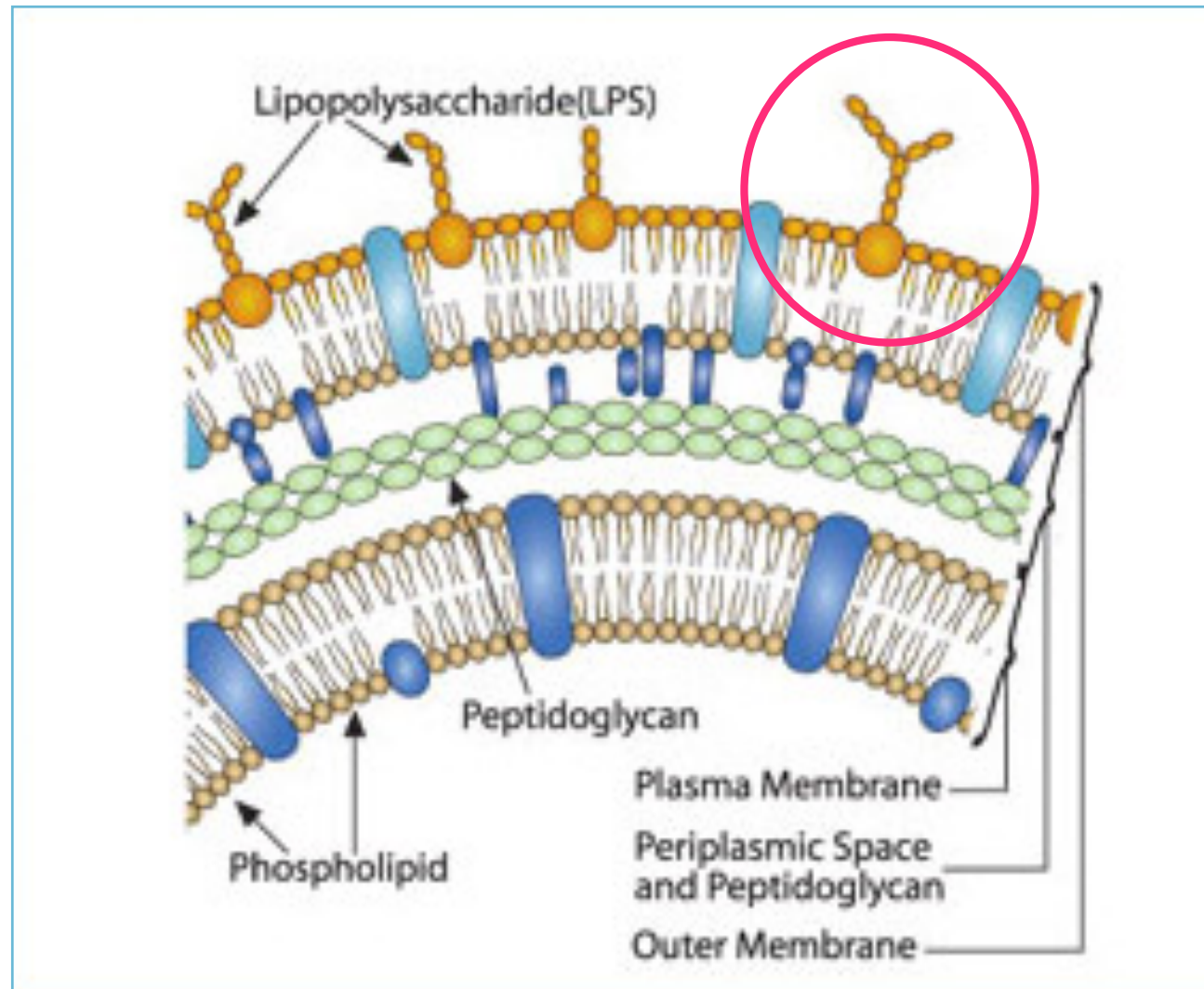
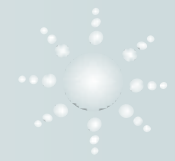


- ❖ Patogenicidad causada por toxinas producidas por un patógeno

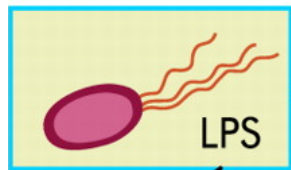
- ❖ ***Endotoxinas***

Fracción del LPS de bacterias Gram (-) que al solubilizarse actúa como una toxina

Pared celular



Gram -ve organism



TLR4



Gram +ve organism

TLR2

NF κ B

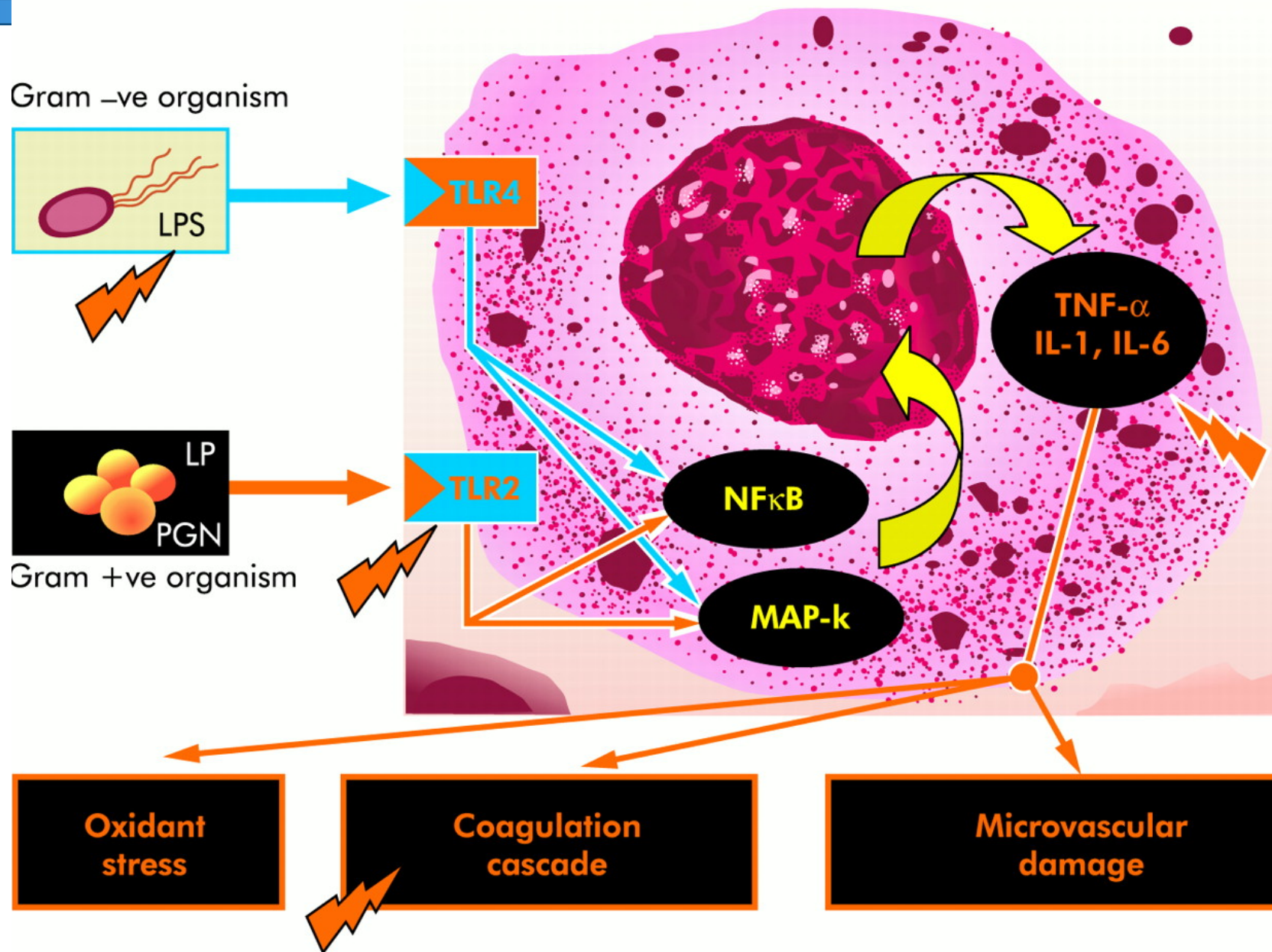
MAP-k

TNF- α
IL-1, IL-6

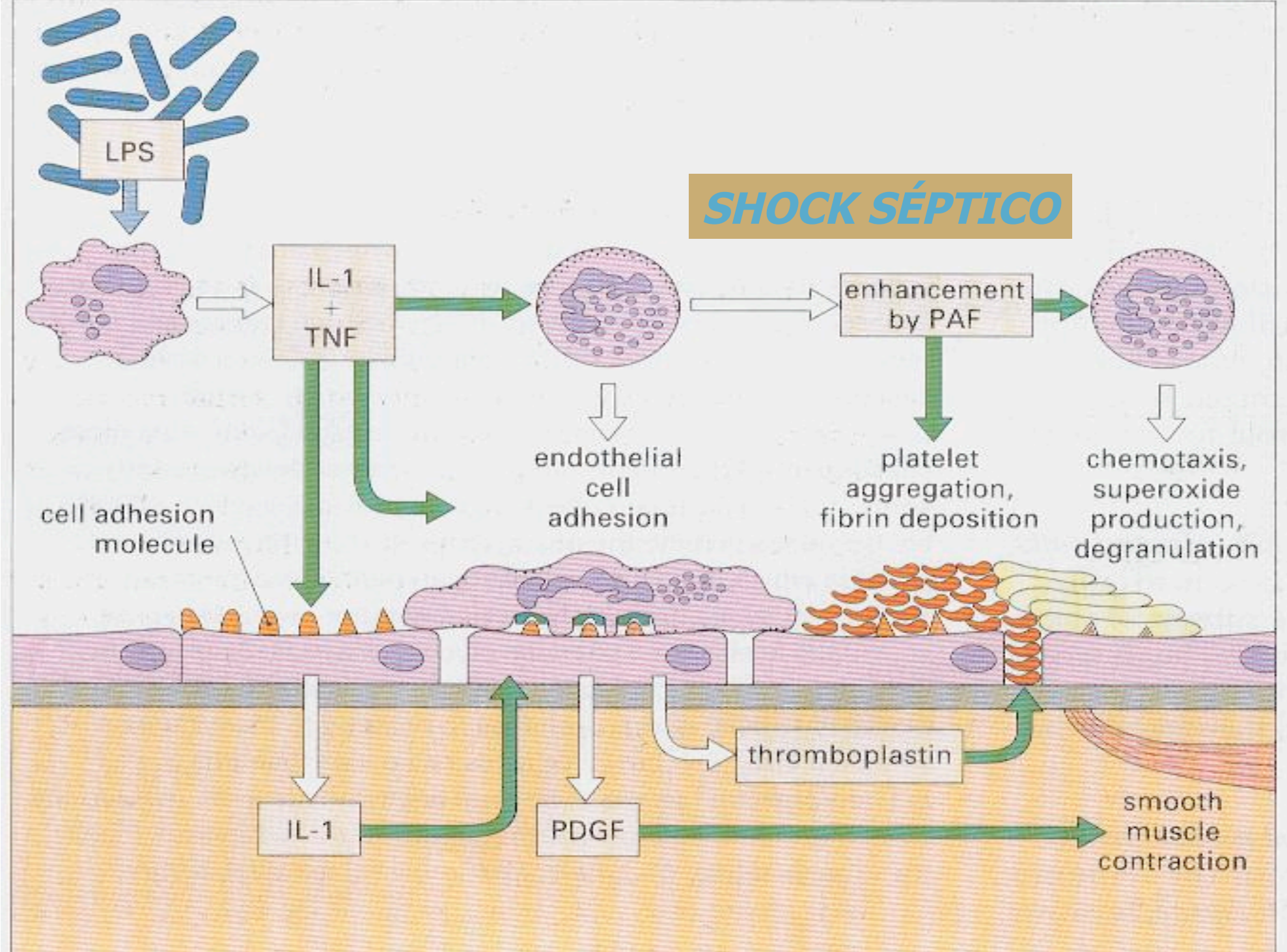
Oxidant stress

Coagulation cascade

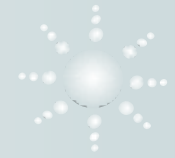
Microvascular damage



SHOCK SÉPTICO

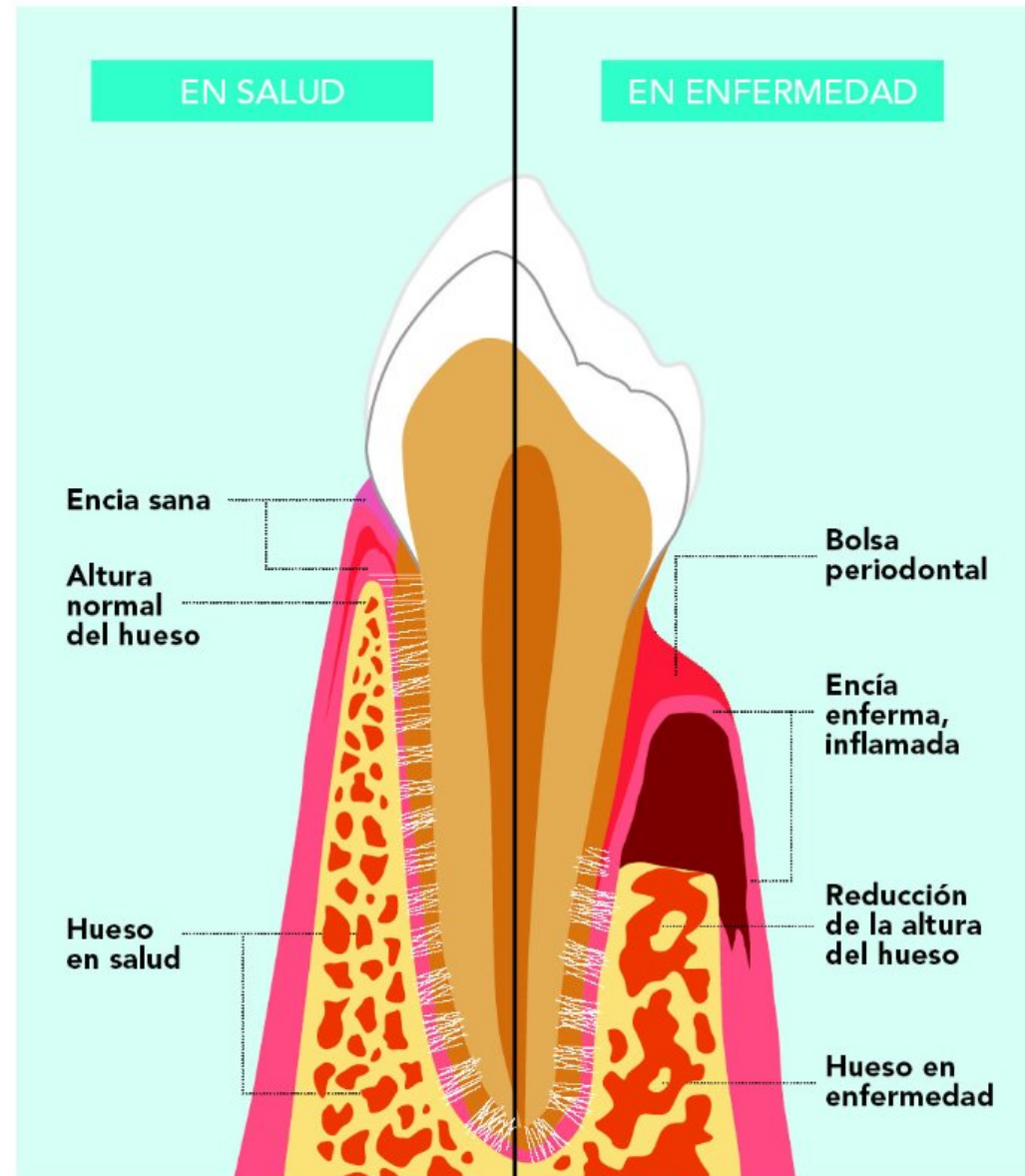
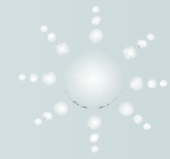


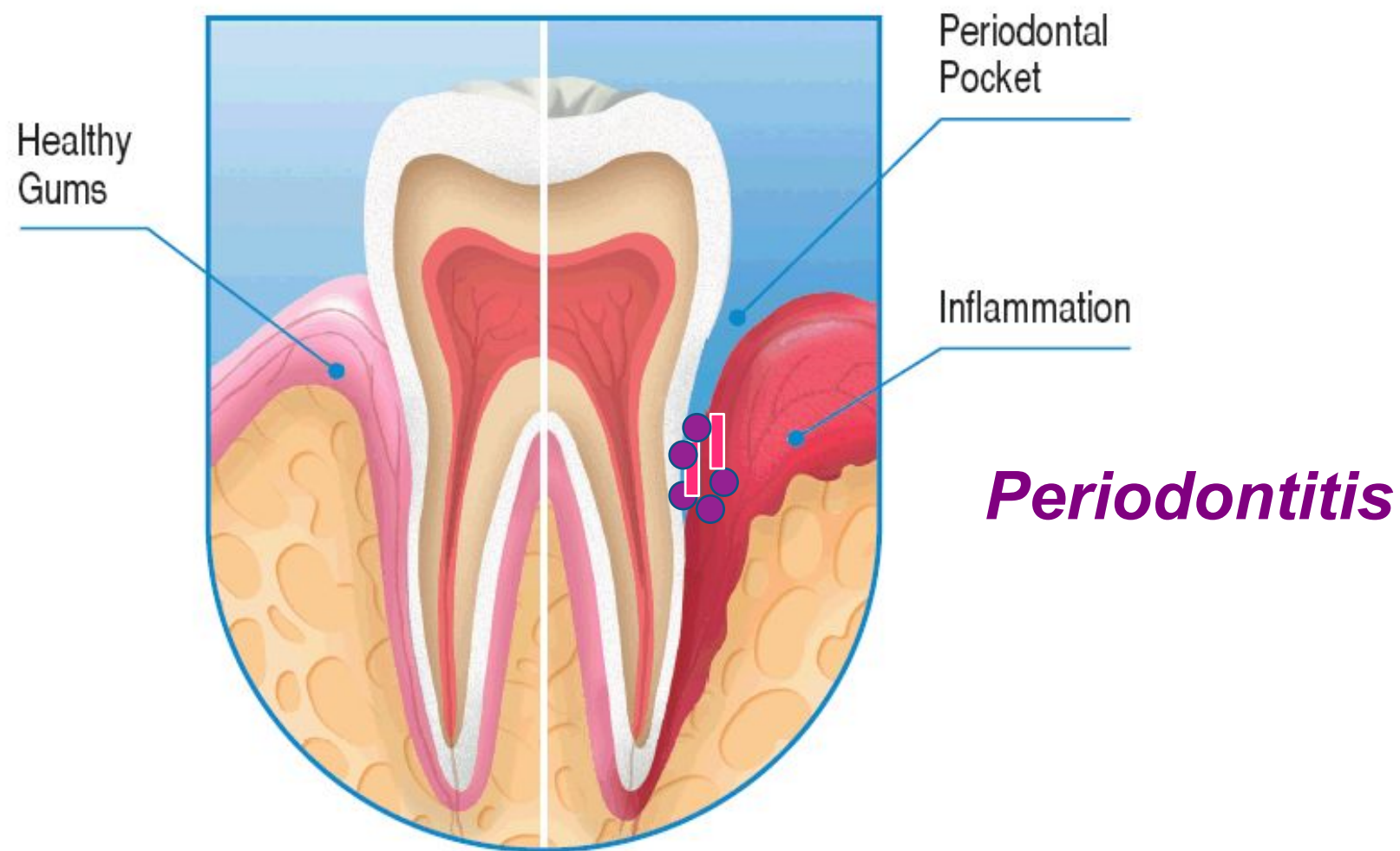
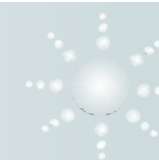
Shock Séptico

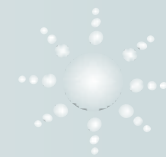


- ❖ LPS estimula a macrófagos a secretar citoquinas
- ❖ TNF- α e IL-1
Estimulan la inflamación aguda, actúan en células endoteliales y leucocitos
- ❖ Esto produce la formación de trombos, coagulación intravascular diseminada, daño endotelial, hemorragia

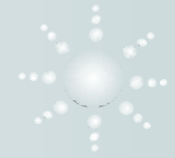
LPS de la pared







Toxinas



❖ *Endotoxinas*

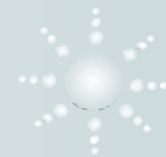


❖ **Exotoxinas**

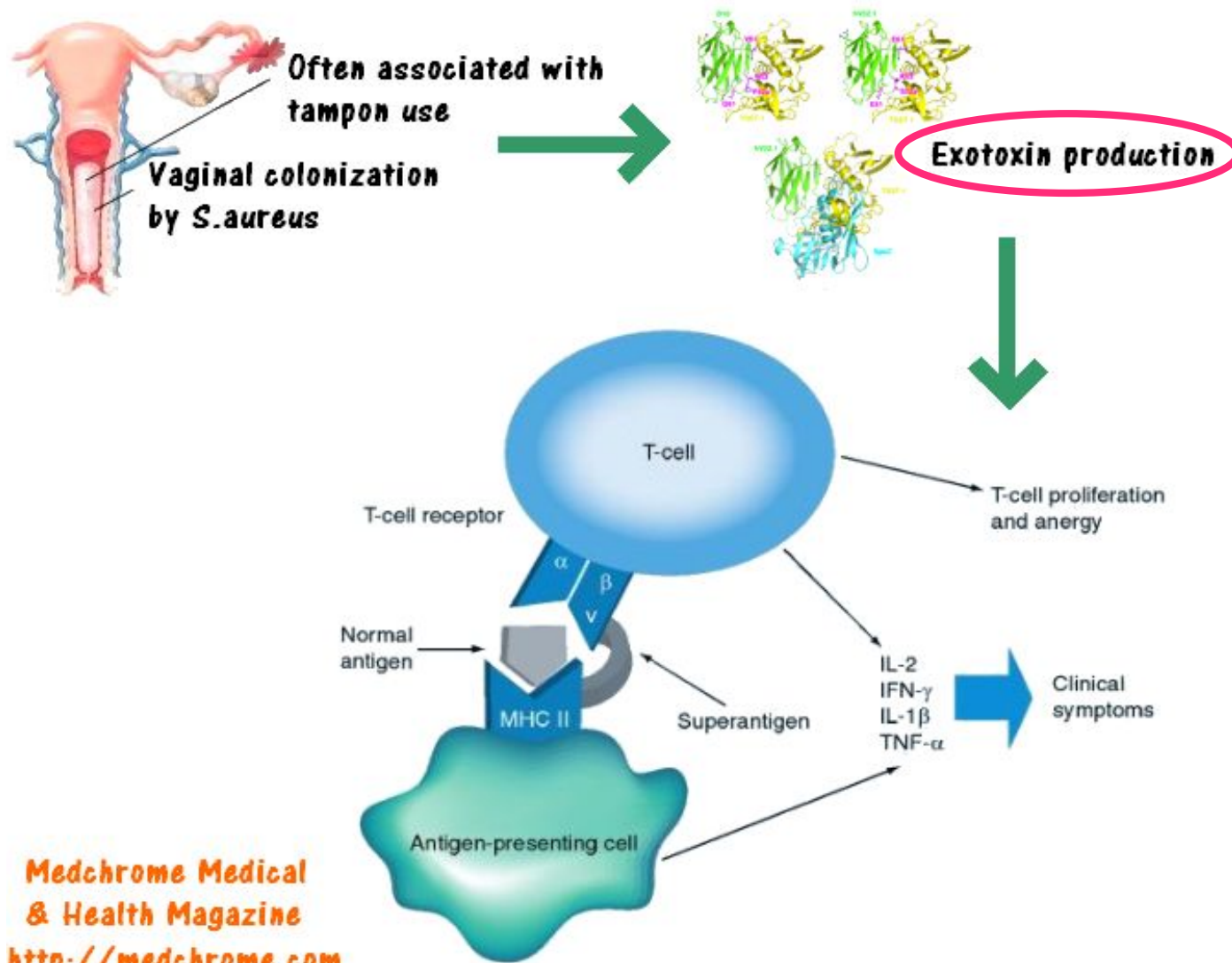
Son sintetizadas y liberadas al medio a medida que crece el microorganismo

Ej: Toxina tetánica
(Neurotoxina)

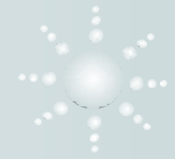
Tétanos



Síndrome del shock tóxico (TSST-1)



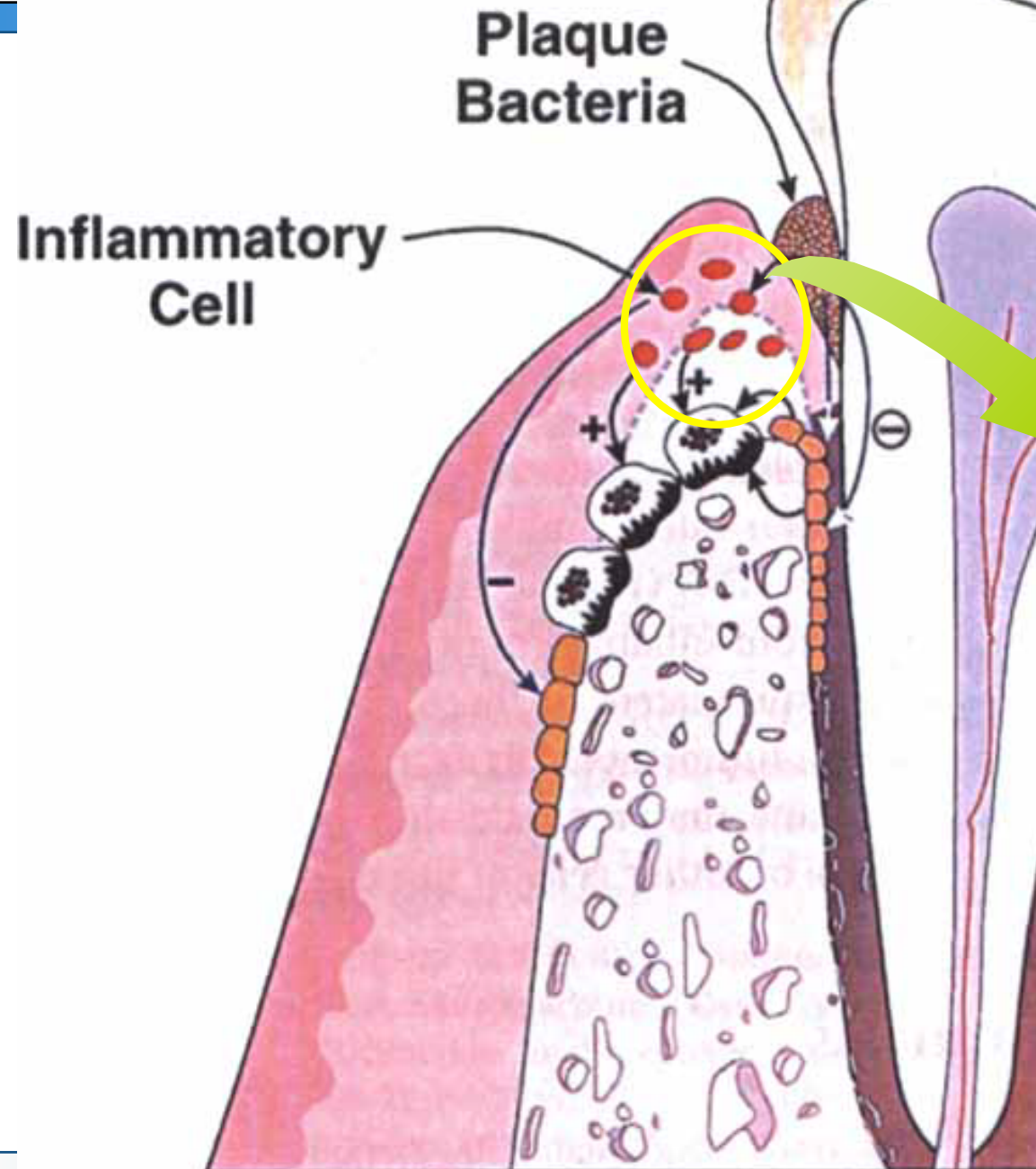
Producción de enzimas



- ❖ **Coagulasa** 
Staphylococcus aureus
- ❖ **Proteasas** 
Porphyromonas gingivalis
- ❖ **Hialuronidasa** 
Clostridium perfringens

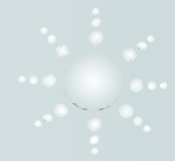


S. aureus



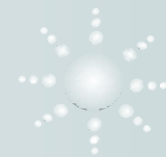
Proteasas

Contribuyen a la destrucción de los tejidos de soporte del diente

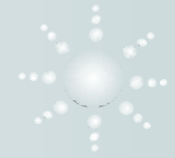


C. perfringens

Infección diseminada



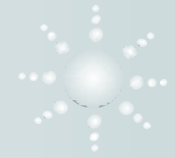
Producción de enzimas



❖ ***β – Lactamasas***

Sintetizadas por algunas especies,
destruyen el anillo β - lactámico de las
penicilinas

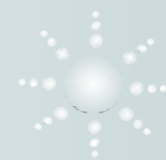
Metabolitos tóxicos

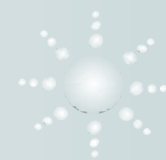


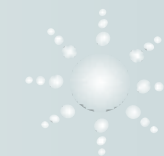
- ❖ Son derivados del metabolismo de las bacterias

Ej:

- ❖ Ácido sobre superficies dentarias
- ❖ Indol, escatol, mercaptanos; actuando sobre los tejidos de soporte de los dientes







Halitosis

***Compuestos volátiles
sulfurados***



Mecanismos de virulencia de virus

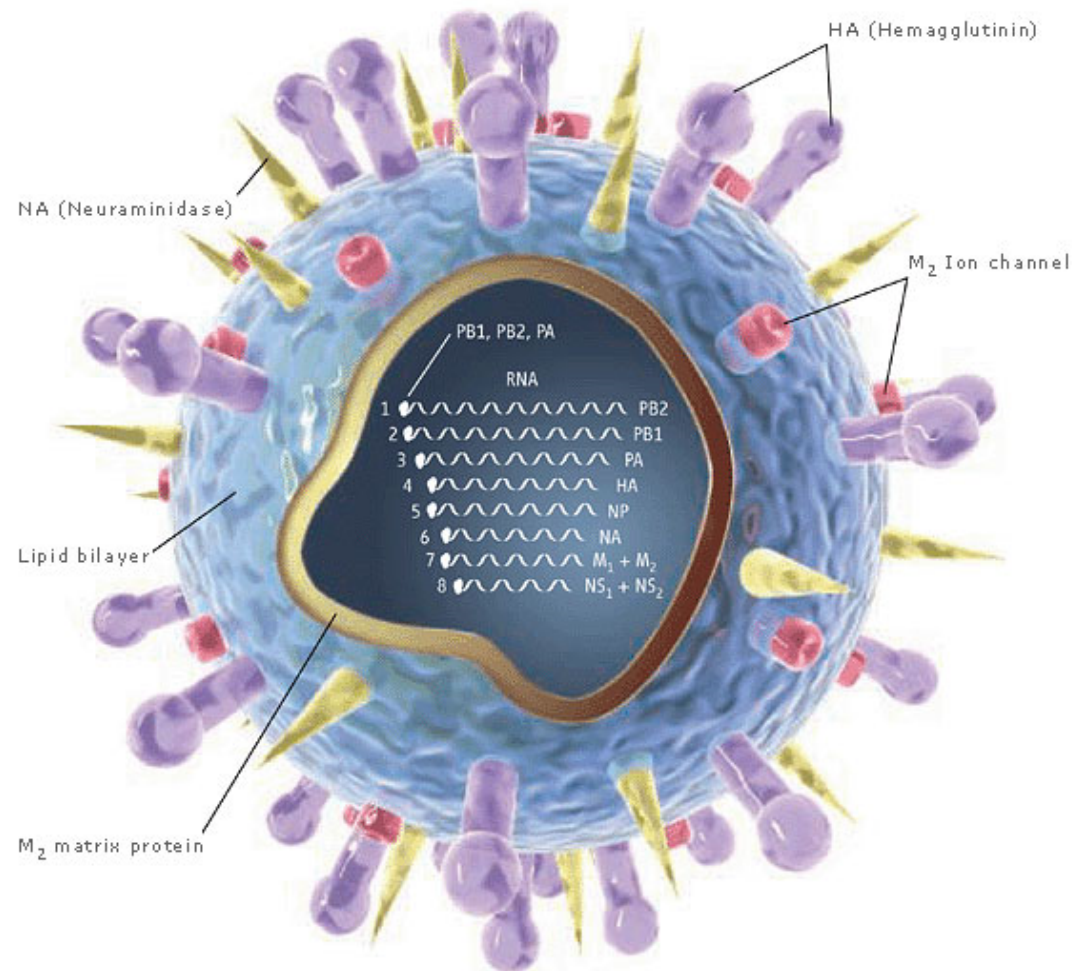
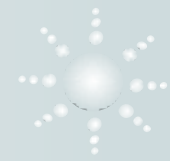
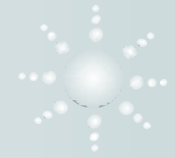


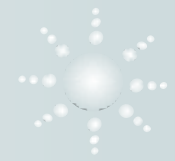
Illustration: Chris Bickel/Science. Reprinted with permission from Science Vol. 312, page 380
(21 April 2006) © 2006 by AAAS

Mecanismos de virulencia de virus

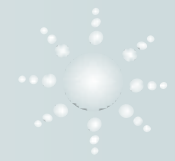


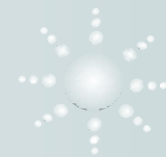
- ❖ Multiplicación viral
- ❖ Variación
- ❖ Destrucción de las células defensivas

Parotiditis



Herpes simple

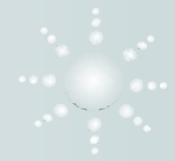




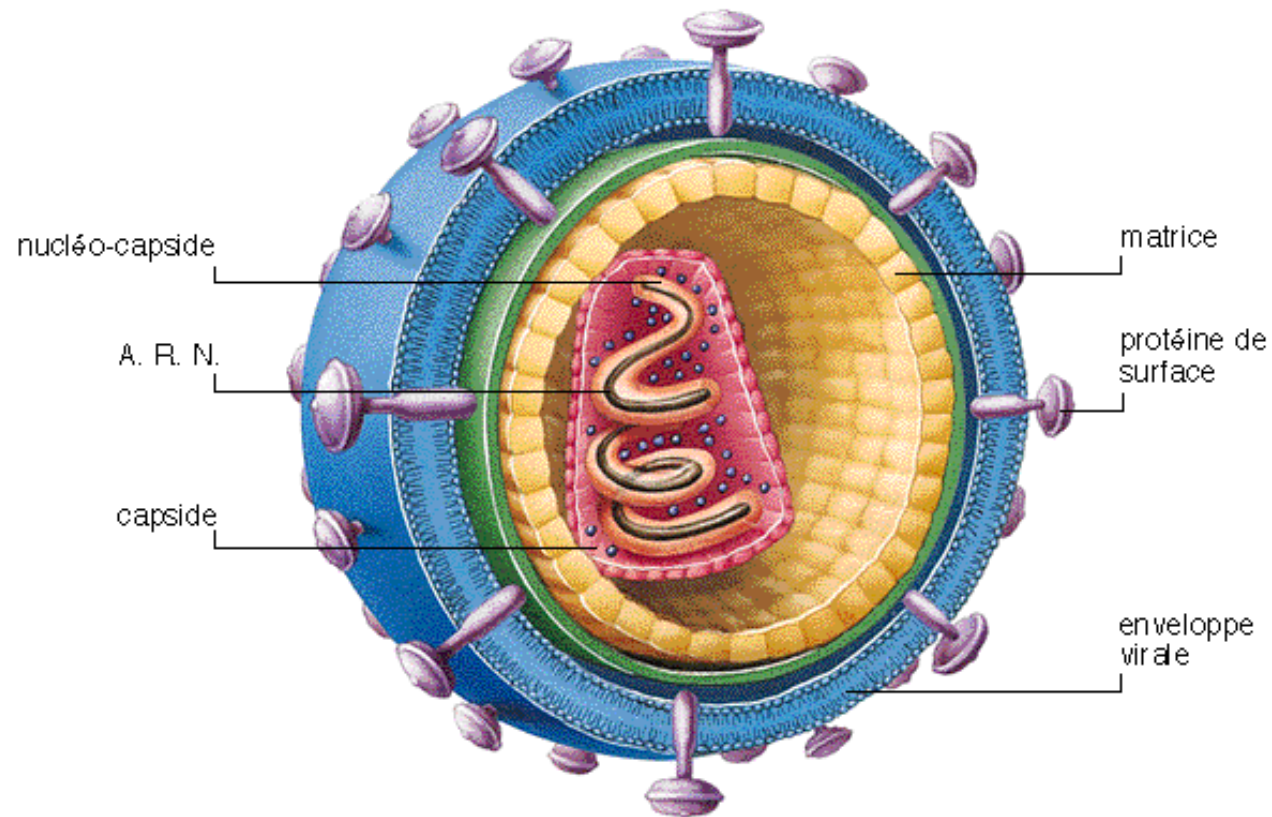
Influenza Aviar



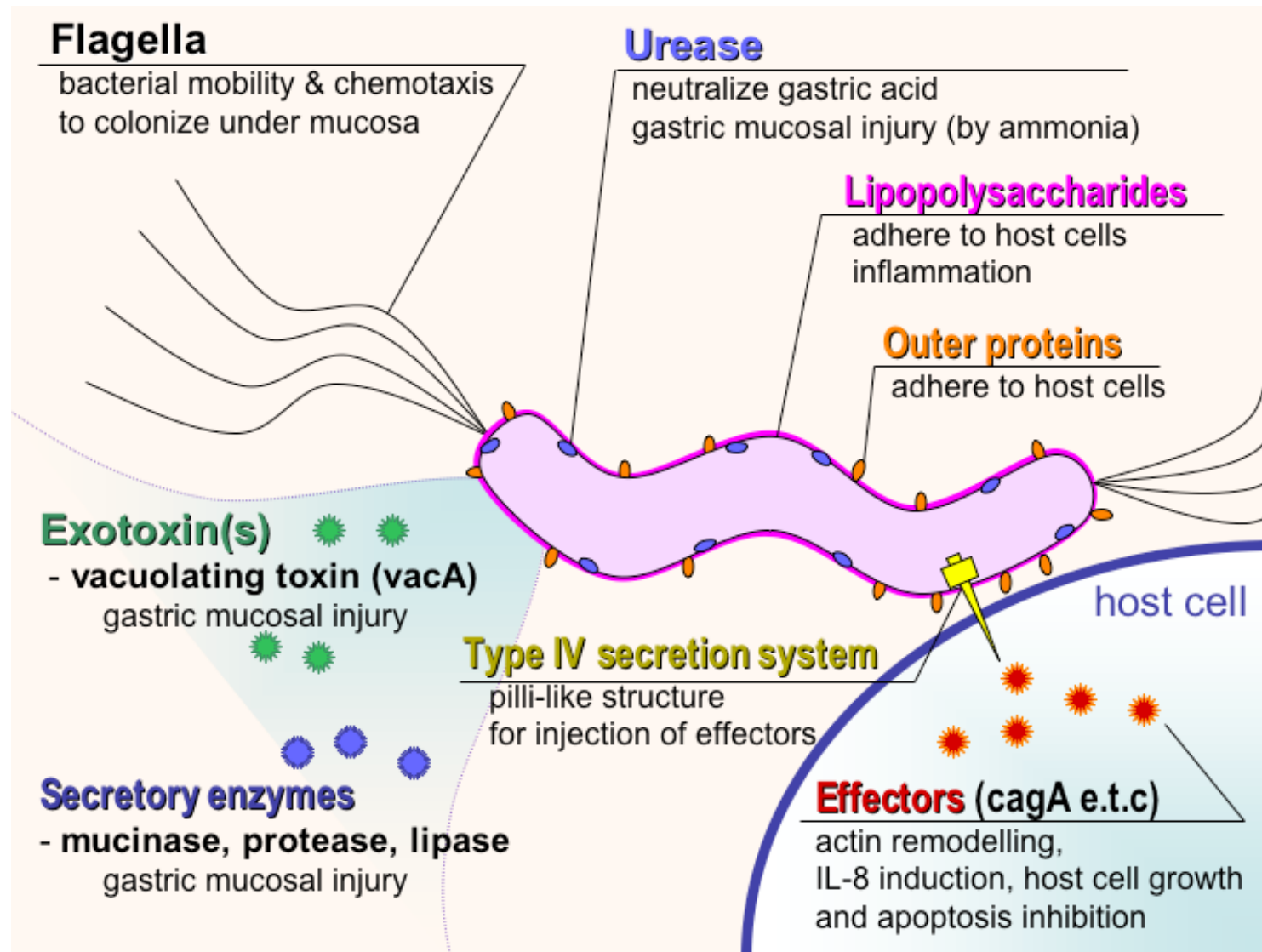
Virus VIH

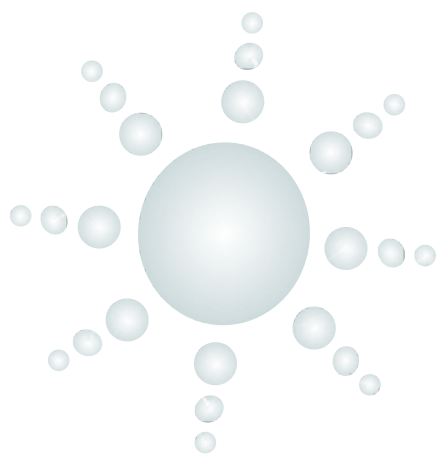


Destrucción de células del sistema inmune del hospedero



Resumen mecanismos de virulencia





Fin de la Clase