Gram Negatív Pyogen Coccusok és Coccobacillusok

Dr. Berek Zsuzsa

2008 Október 29

Neisseria, Haemophilus, Bordetella

1. Neisseria

Pyogen Coccusok GRAM -

Aerob: **Oxidase +**

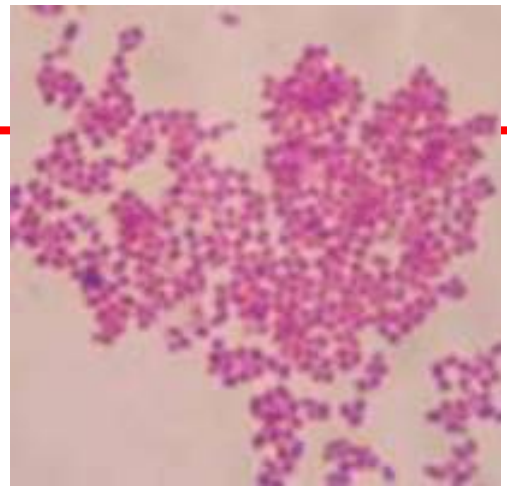
Neisseria **N. gonorrhoeae** **P**

N. meningitidis **P**

egyebek (N. sicca, N. subflava, N. flavescens és apathogen fajok)

Moraxella M. catarrhalis

Anaerob:

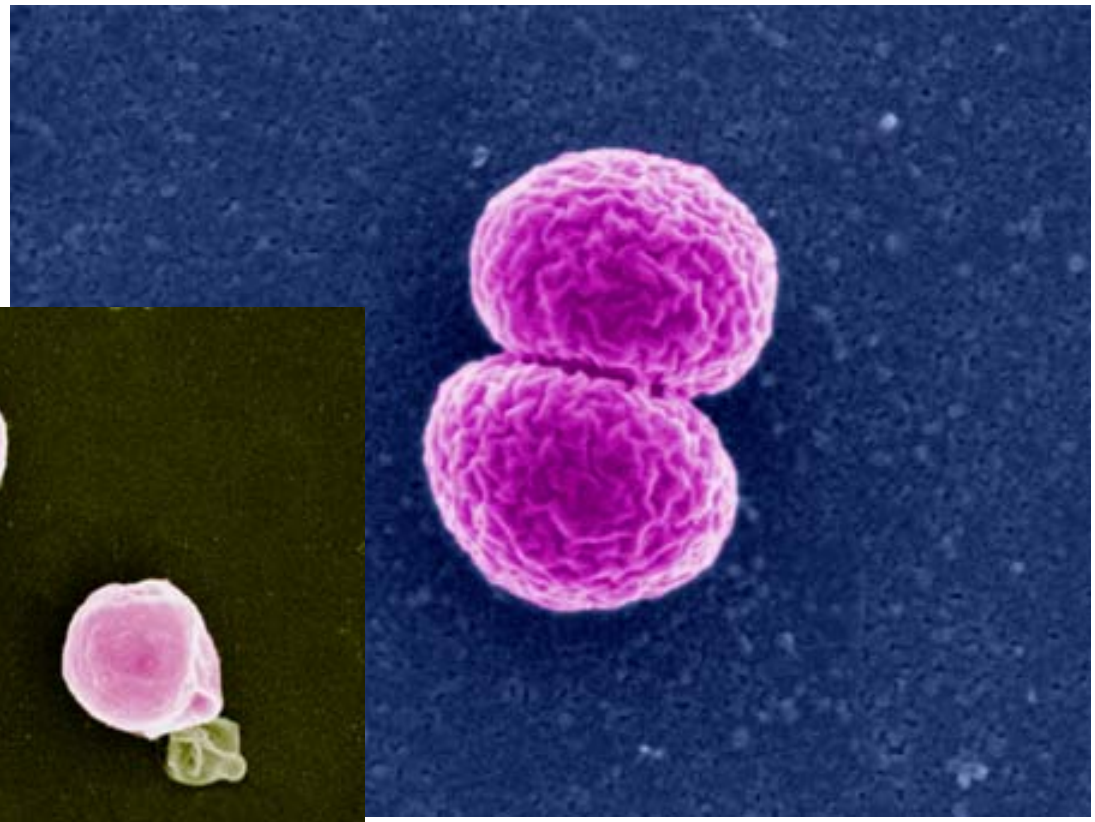


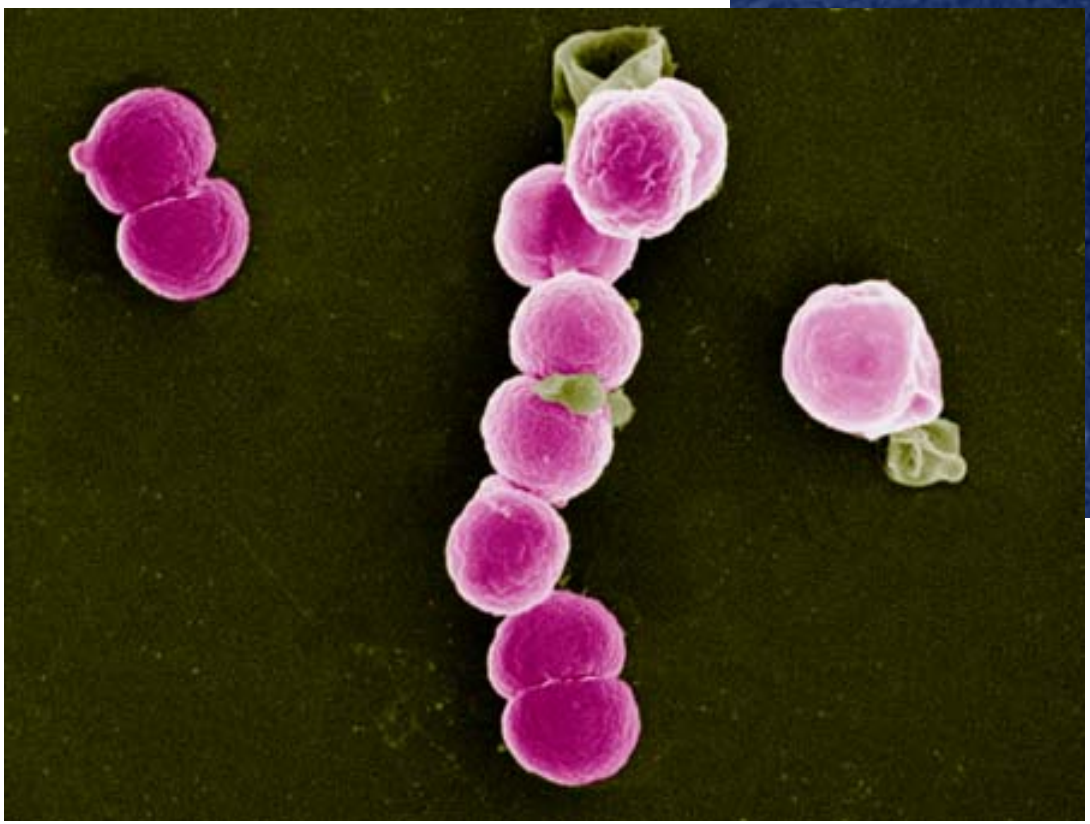
Veillonella spp.

Veillonellae

N. gonorrhoeae és N. meningitidis

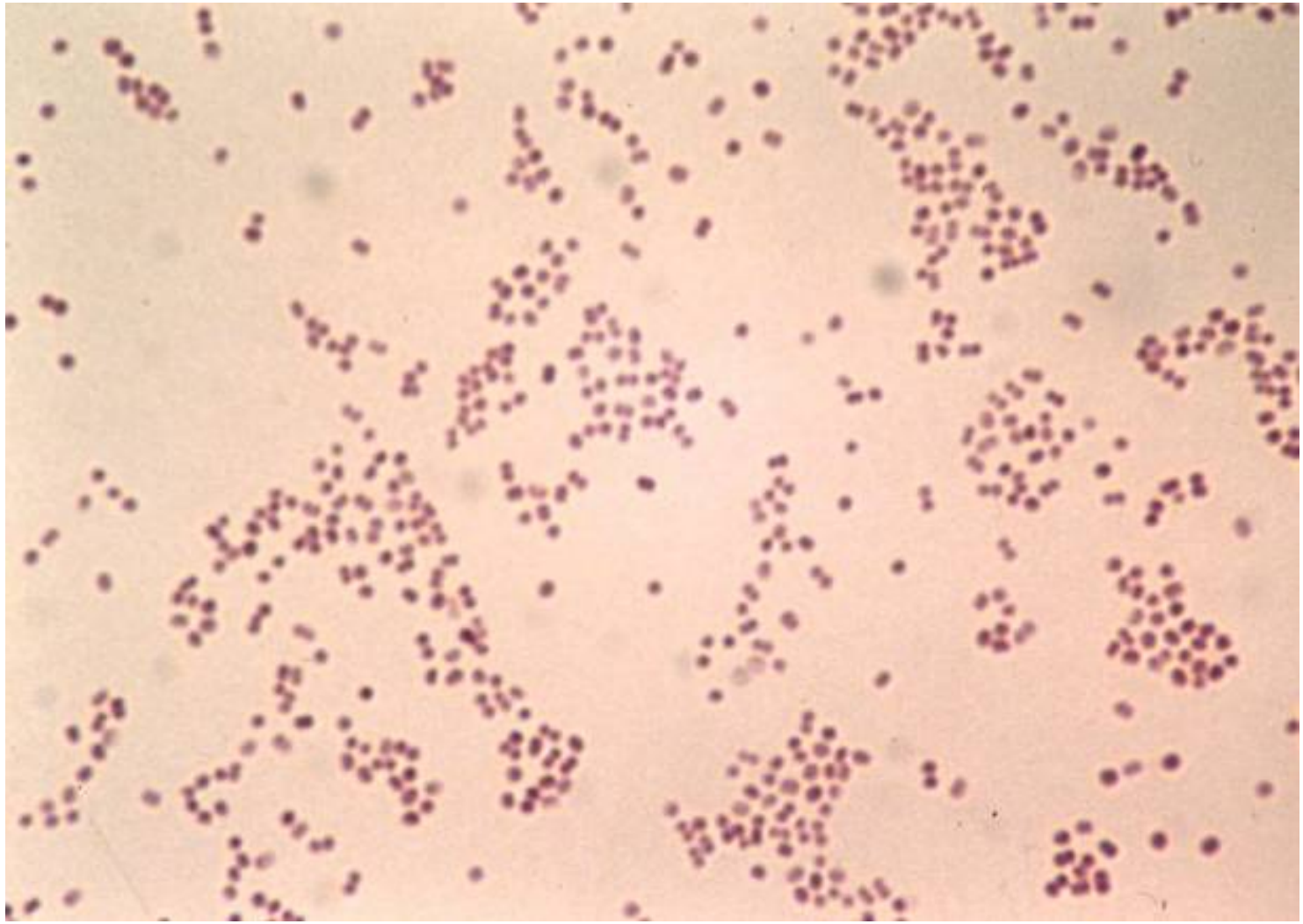
Morphologia
Gram negatív
Diplococcus





www.waterscan.co.yu/images

Gramnegativ Diplococcusok

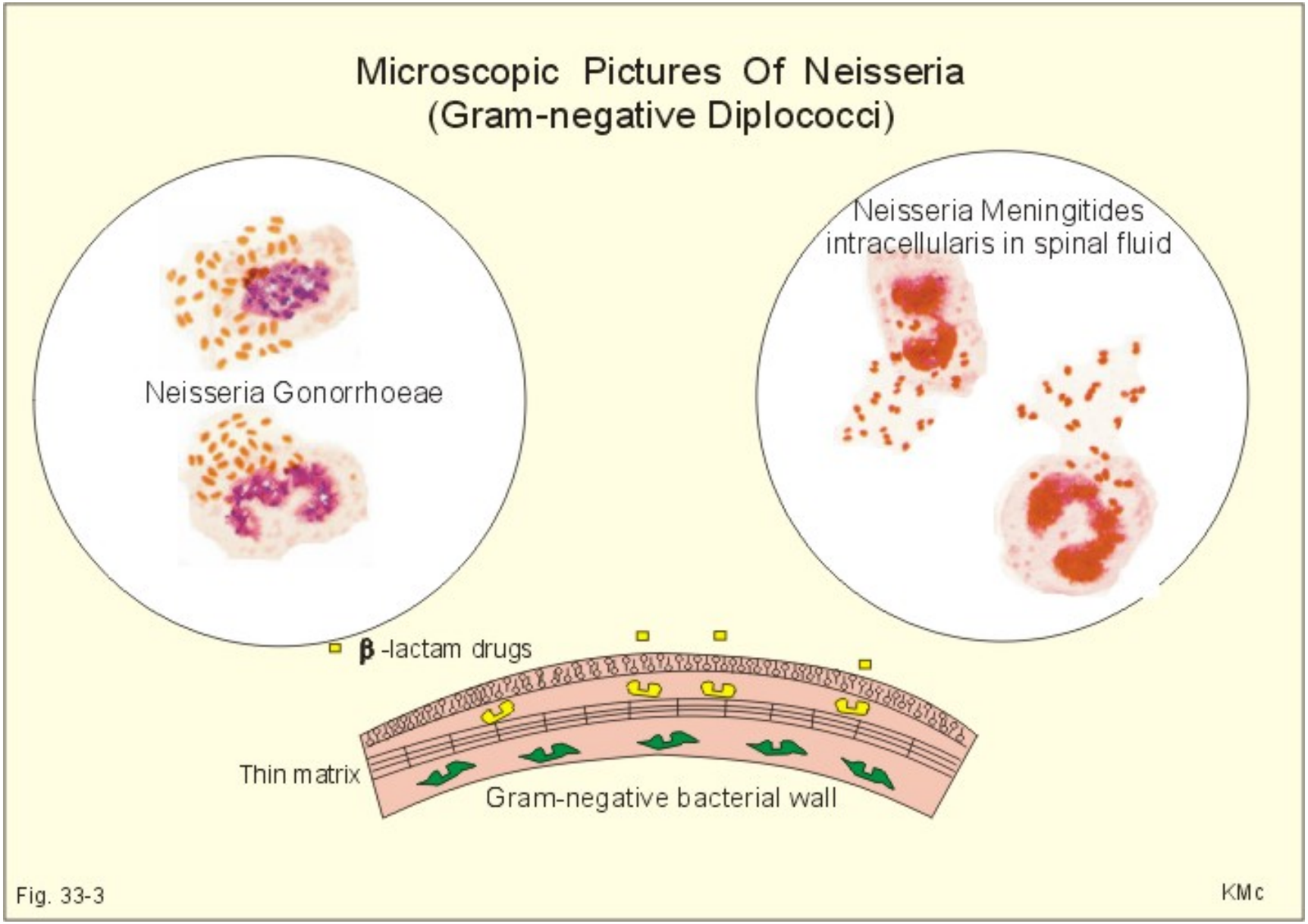


path.upmc.edu

N. gonorrhoeae és N. meningitidis

Tenyésztés:
Speciális, (Csokoládé agar, 5-10% CO_2)

Rezisztencia:
Érzékenyek, kiszáradásra, hőre, dezinficiensekre, antibiotikumokra



http://www.mfi.ku.dk/ppaulev/chapter33/images/33-3.jpg

N. gonorrhoeae = Gonococcus

Antigének és Virulenciafaktorok:

Pili/Fimbriae (Antigenvariációk!)

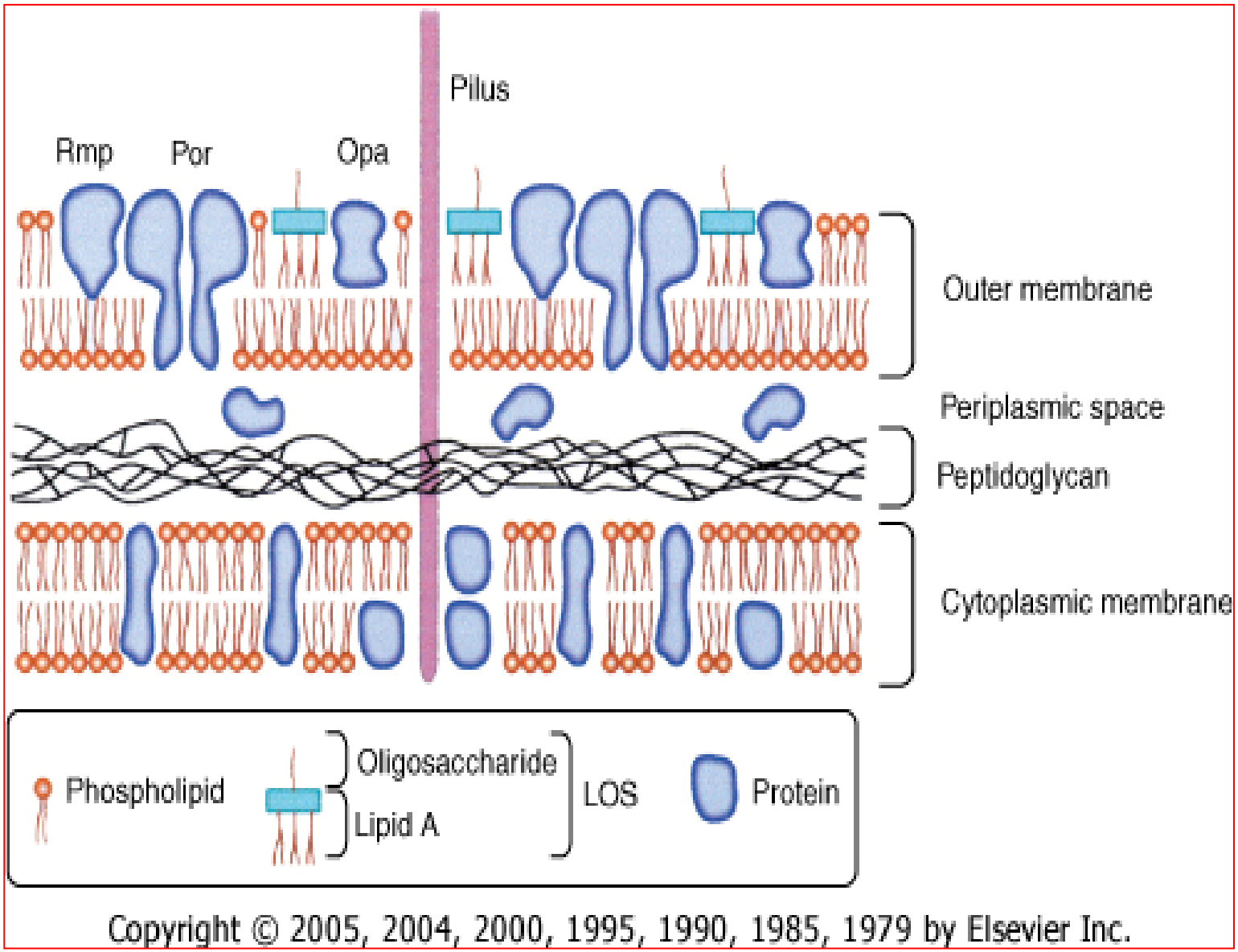
IgA-Protease-ok!

outer membrane proteins (OMP)
(Antigenvariációk!)

LOS (Mimikri!)

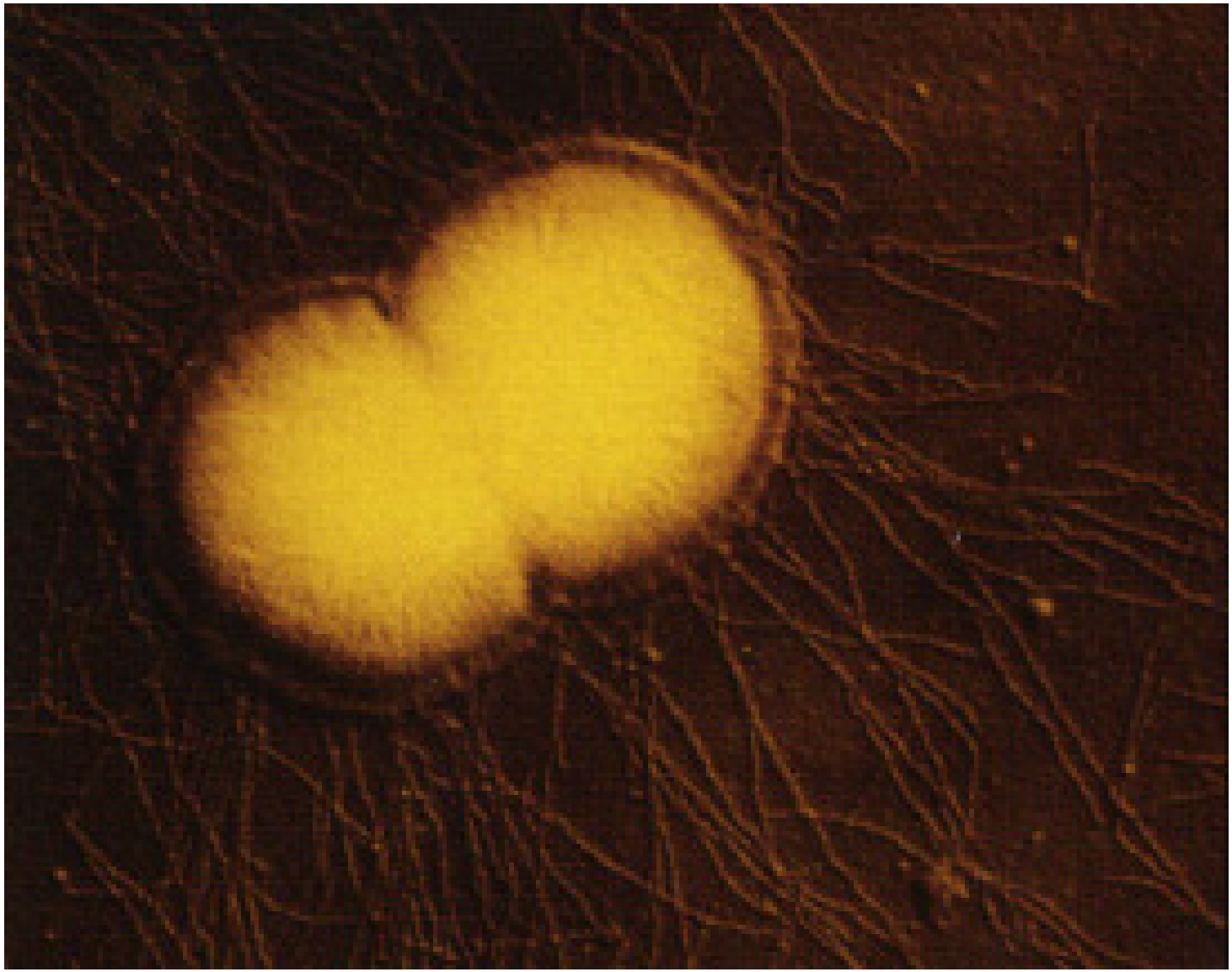
Sejtfal Peptidoglycan (Toxikus hatás)

N. gonorrhoeae = Gonococcus



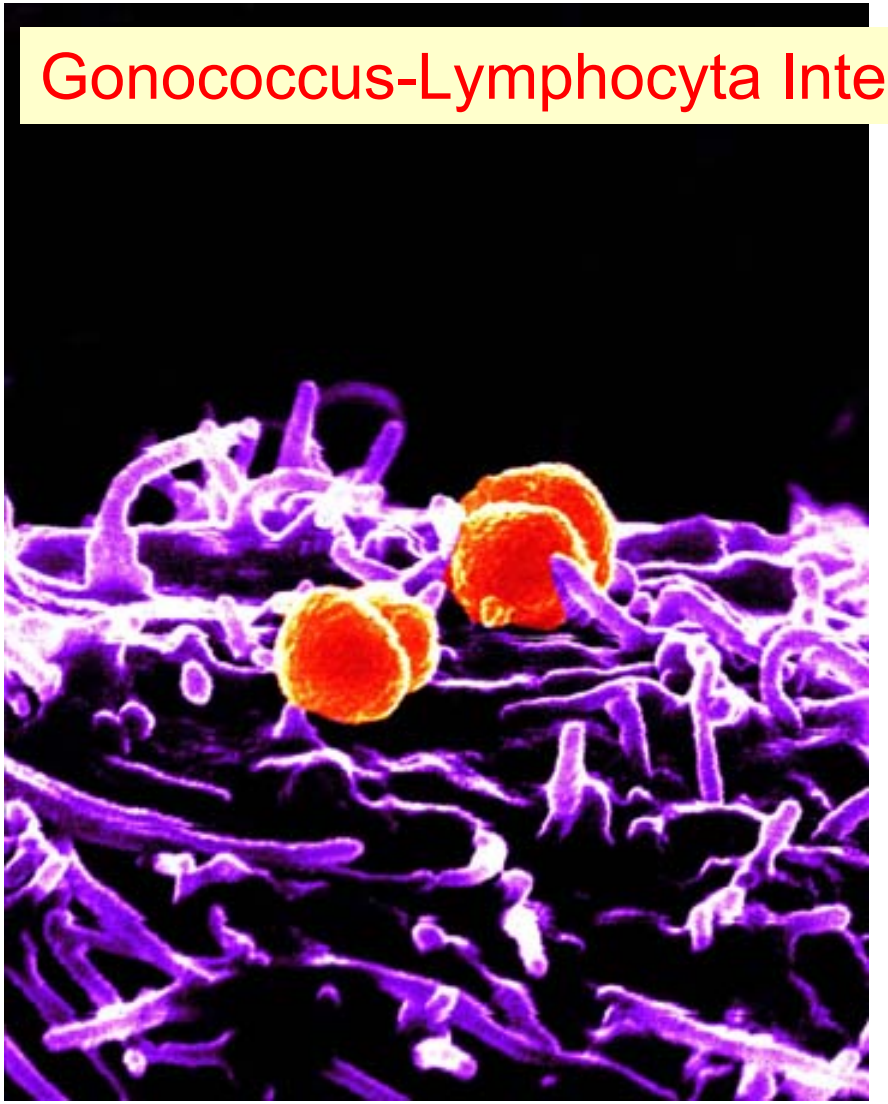
N. gonorrhoeae = Gonococcus

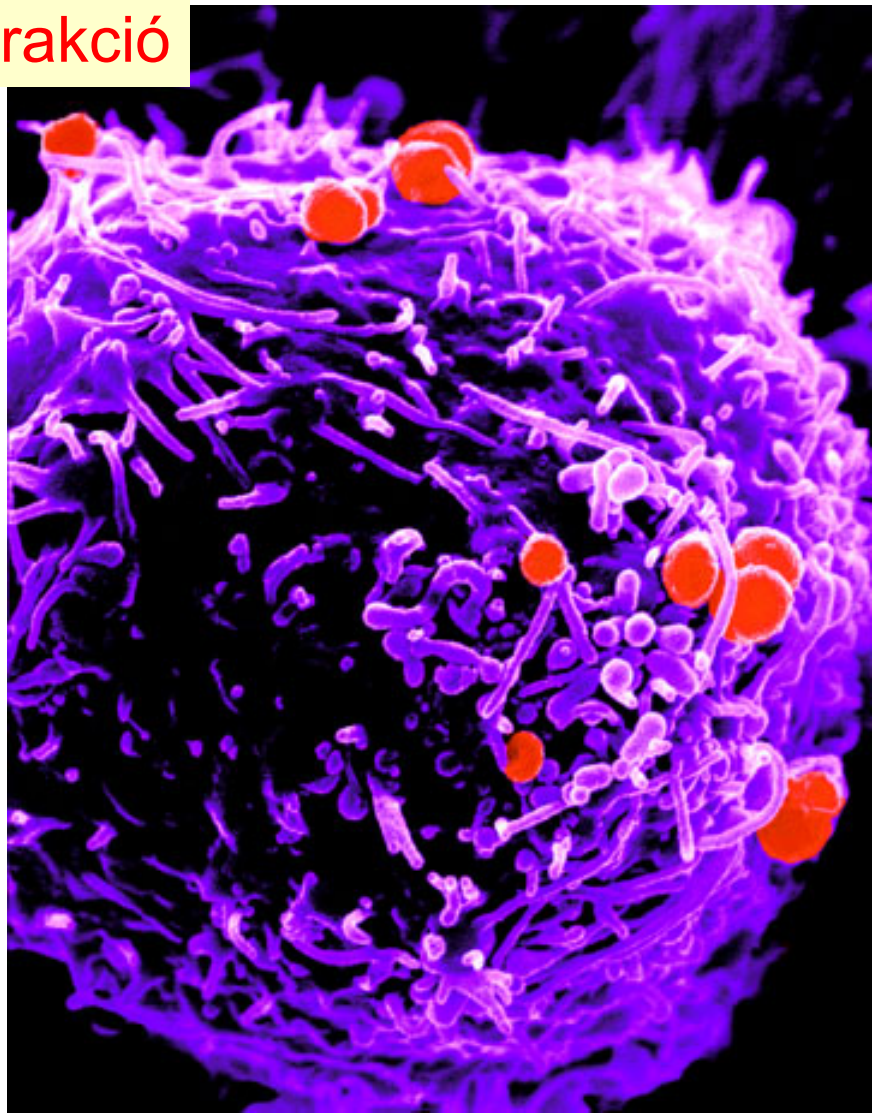
Pili



N. gonorrhoeae = Gonococcus

Gonococcus-Lymphocyta Interakció





neisseria.org/images/ng-lym2.jpg

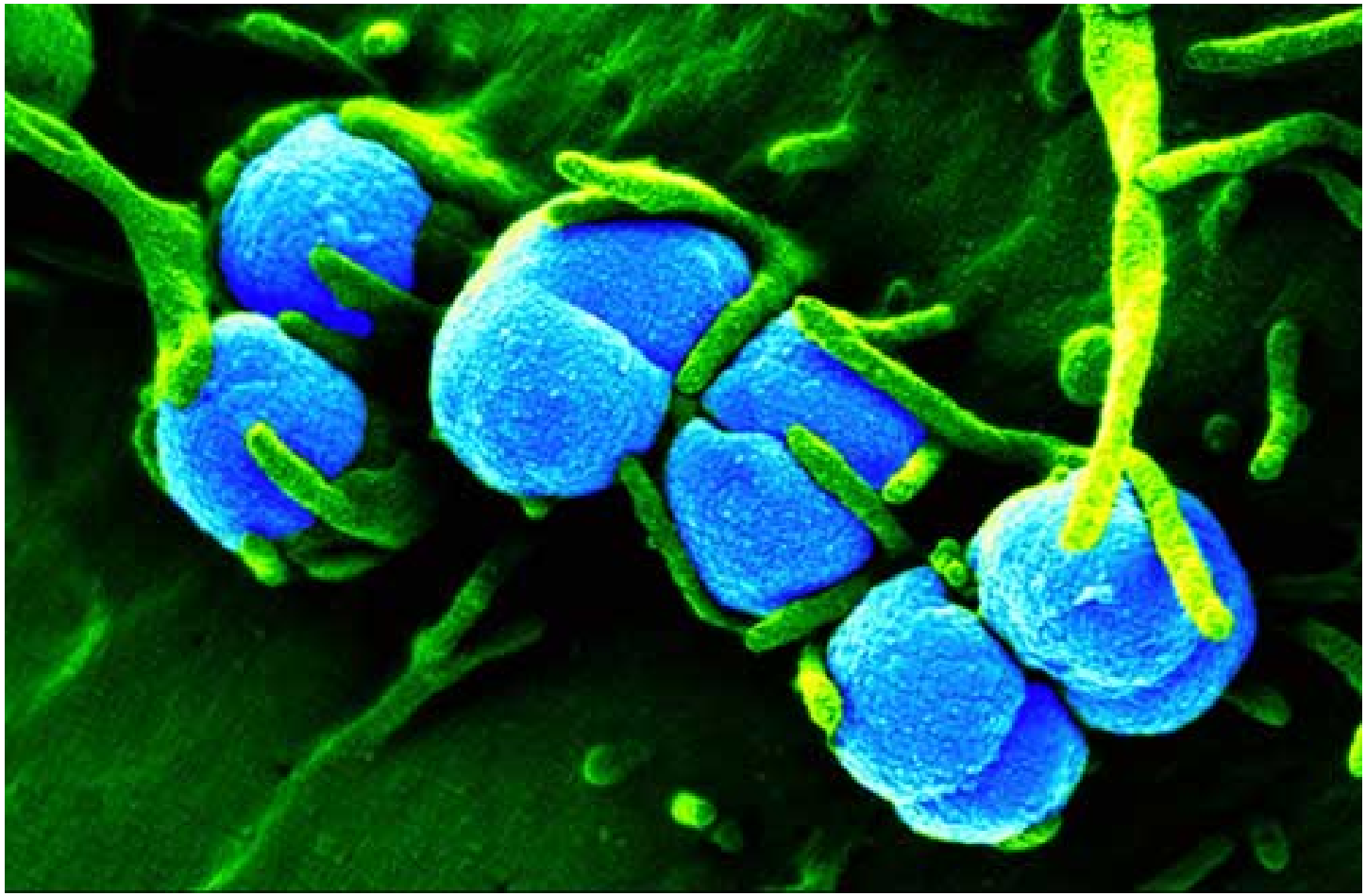
N. gonorrhoeae = Gonococcus

Fertőzés forrása
beteg emberek

Átvitel
- Direkt (szexuális) Kontaktus

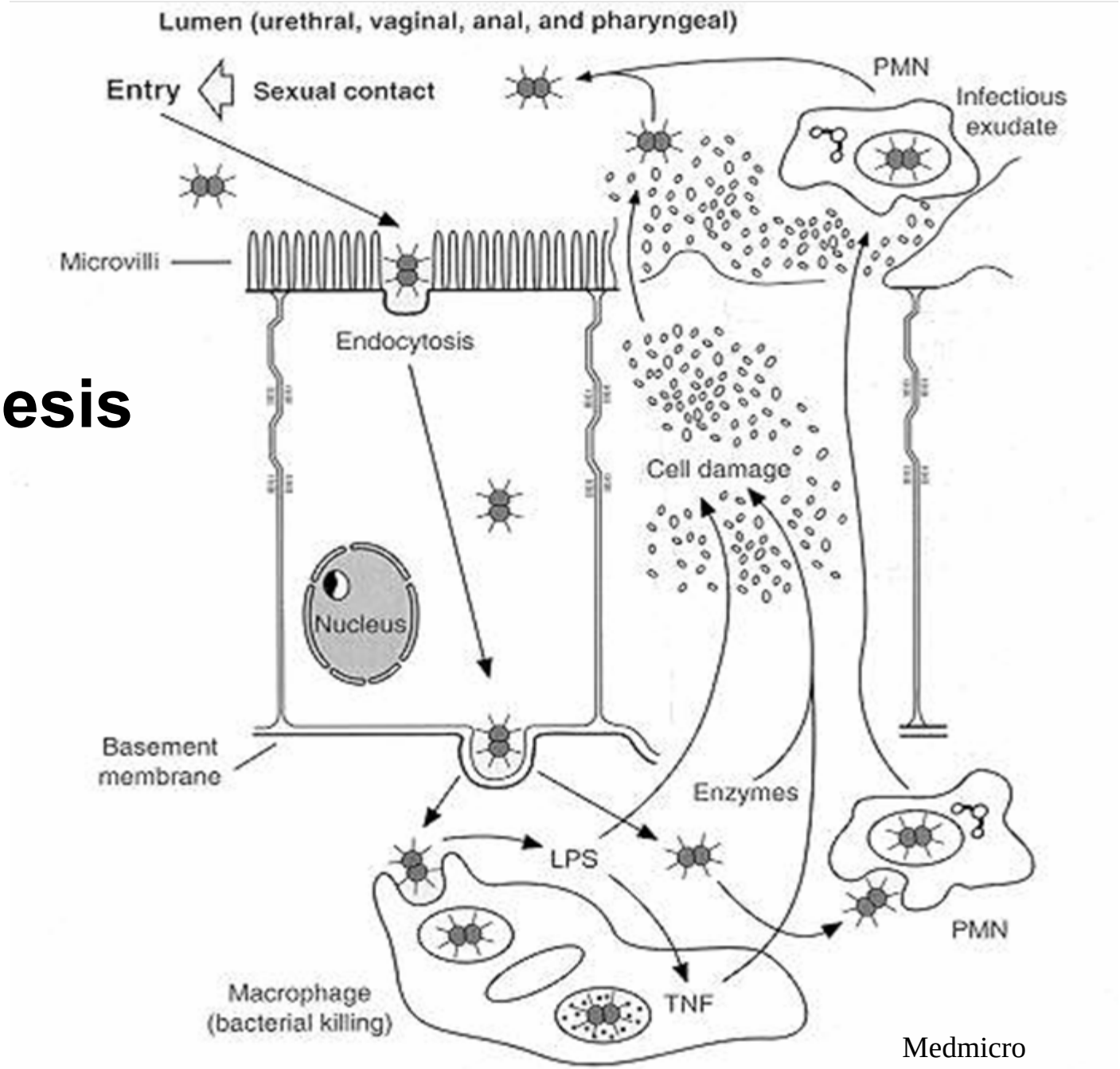
Kórképek
Gonorrhea = Kankó = Tripper
Ophthalmoblenorrhea neonatorum
Generalisatio 1%

NINCS IMMUNITÁS!
(Antigenvariációk!)



Die Erreger des Trippers (Neisseria gonorrhoeae, hier blau) werden von fingerförmigen Fortsätzen auf der Zelloberfläche (grün) umschlossen. Im weiteren Verlauf der Infektion dringen die Bakterien dann in die Zelle ein.
Max-Planck-Institut für Infektionsbiologie, Volker Brinkmann

Pathogenesis



Medmicro

Gonorrhea – akut Urethritis

www.boltonlgb.co.uk

www.stdservices.on.net

Gonorrhea – akut Urethritis

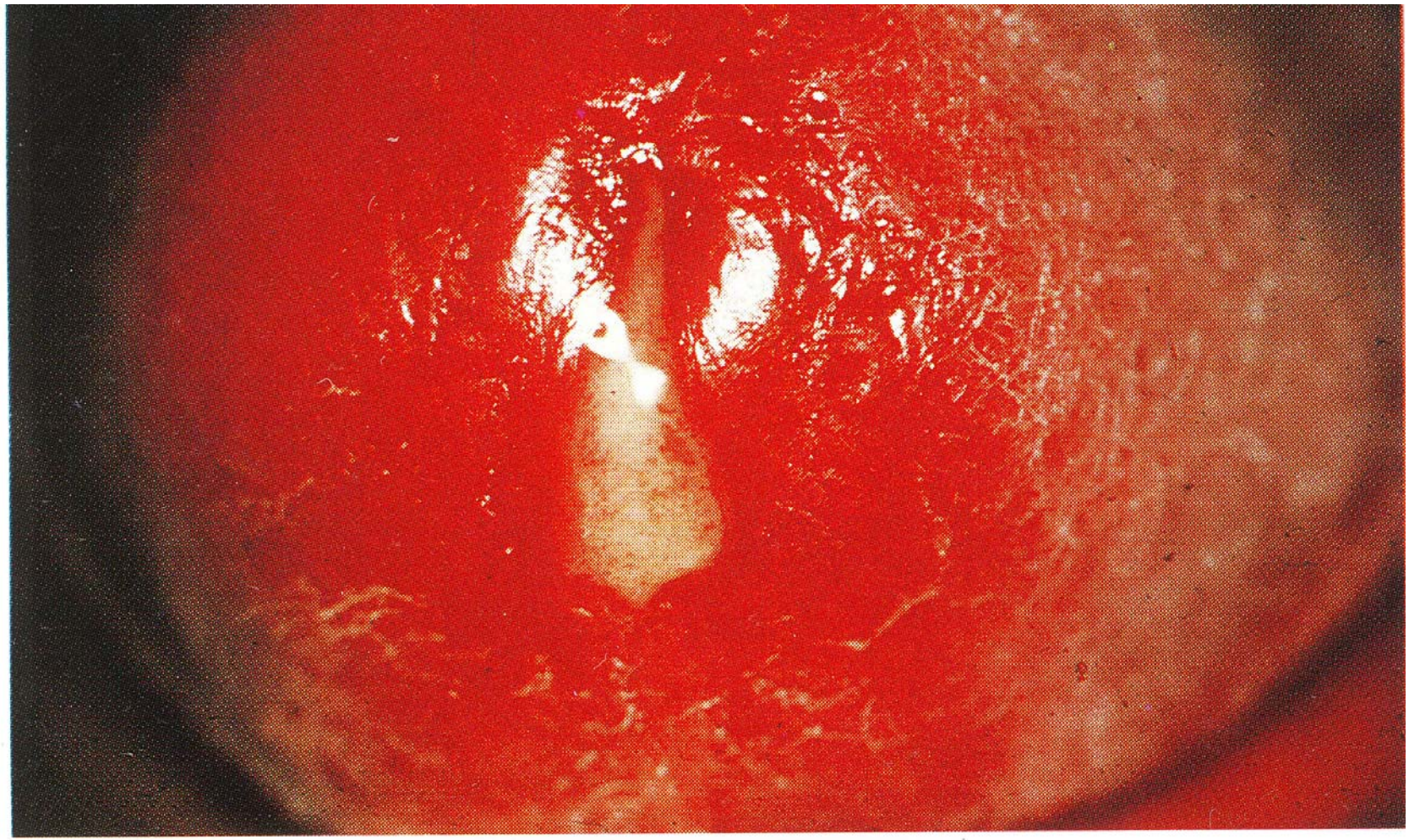
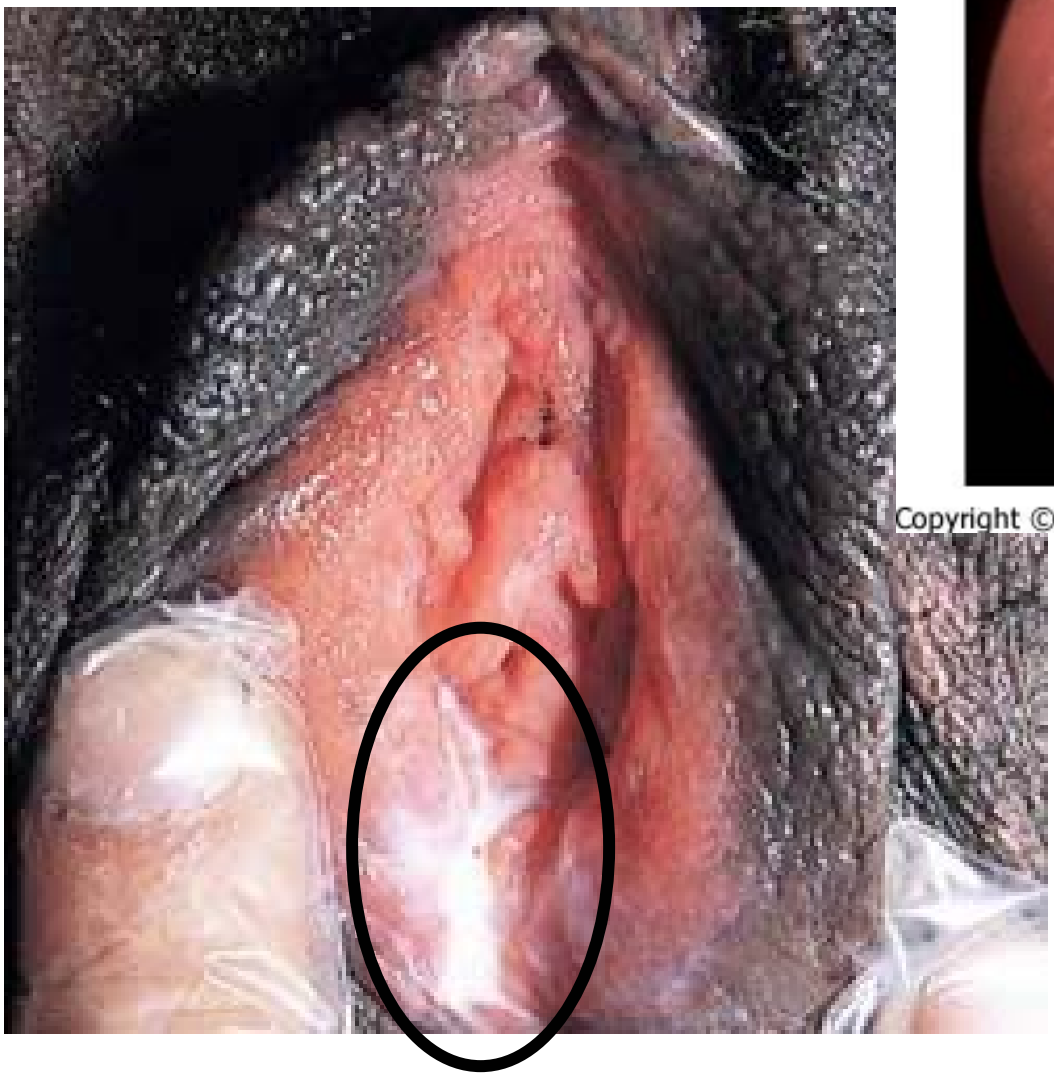


Fig. 78 Gonococcal urethritis. Typical purulent meatal discharge with inflammation of the glans. Symptomatic gonorrhoea in males is characterized by a spontaneous purulent discharge and dysuria. Courtesy of Dr J. Clay.

Gonorrhea – akut Cervicitis



www.boltonlgb.co.uk

Gonorrhea – akut Cervicitis

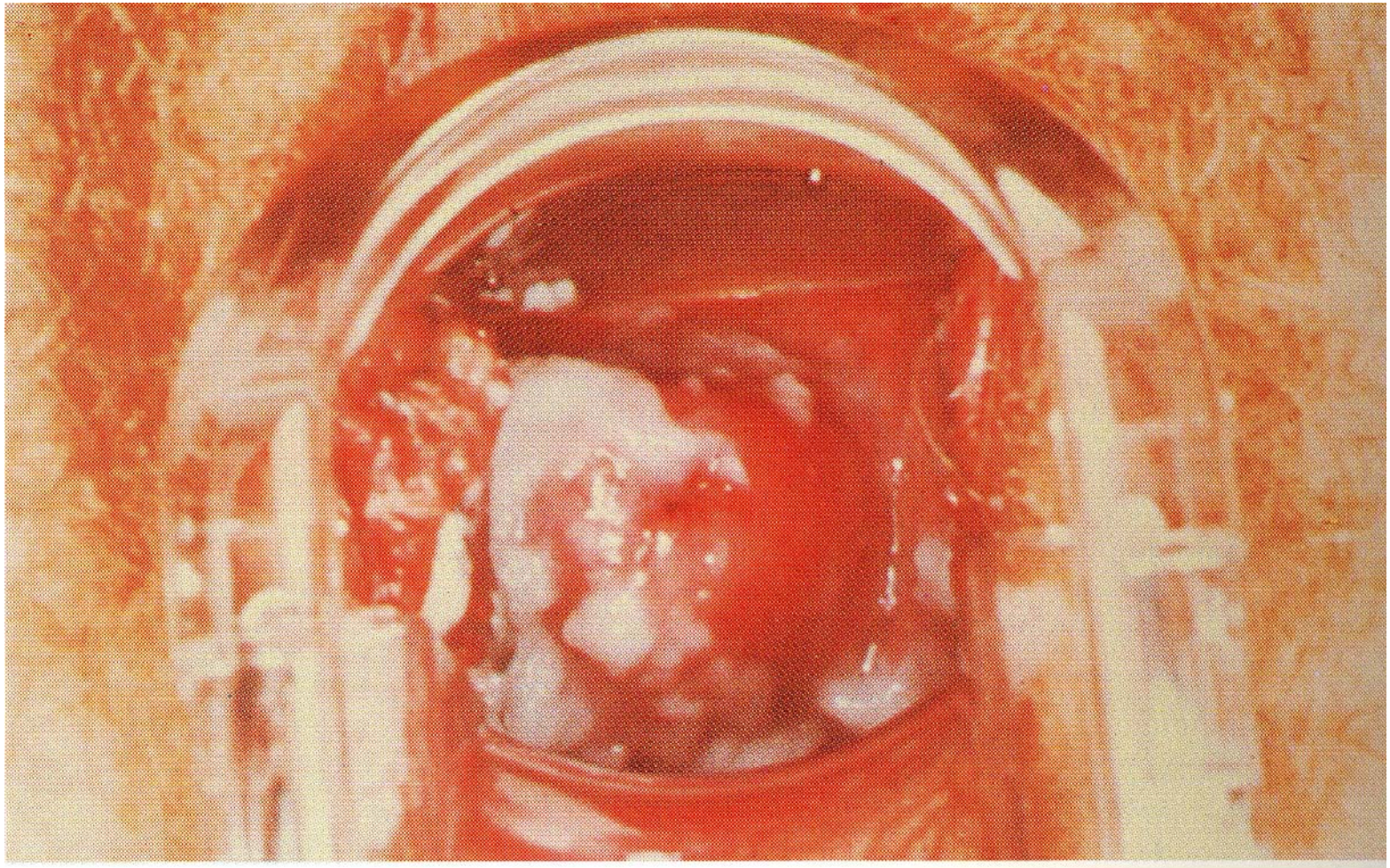


Fig. 79 Gonococcal endocervicitis. View through vaginal speculum showing reddened external os through which mucopurulent secretion is exuding. The most common manifestation of gonorrhoea in females is cervicitis, which is often asymptomatic. Courtesy of Dr S. E. Thompson.

Gonorrhea – akut Conjuctivitis
Blenorrhea neonatorum

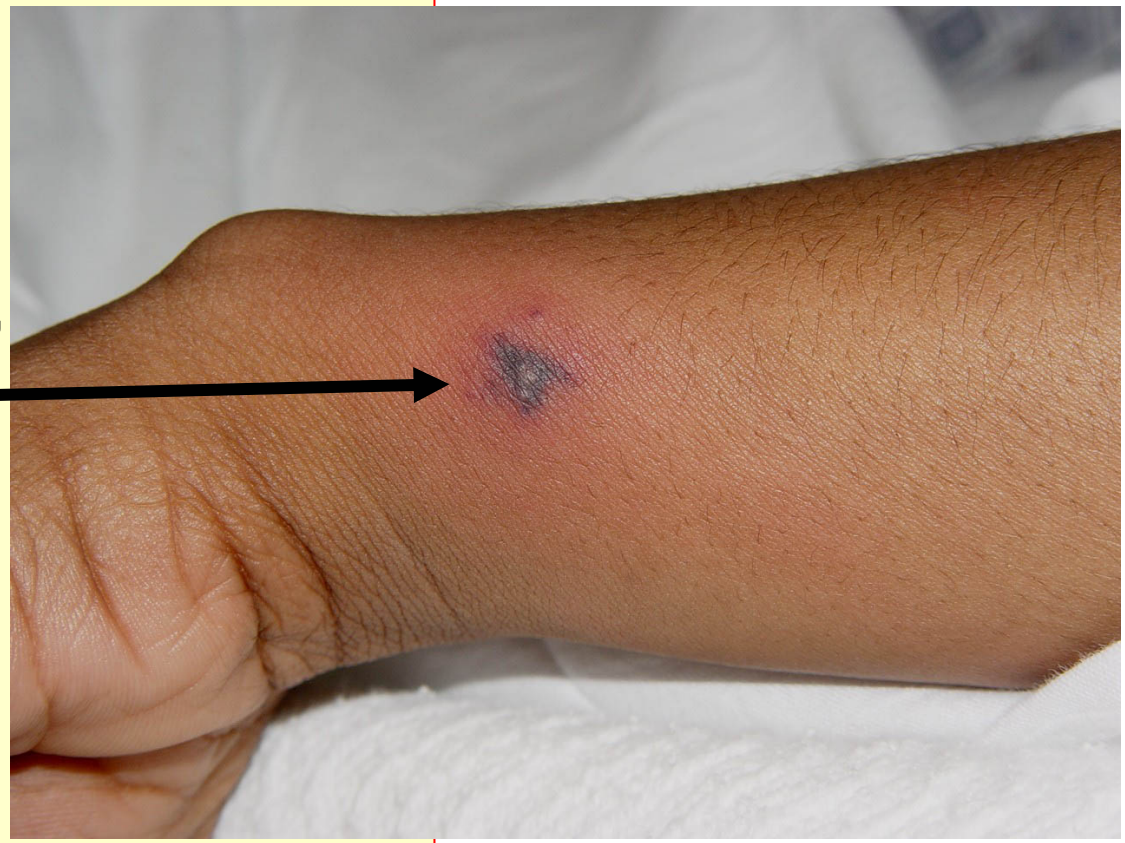
www.mc3.edu

Corneal ulcers due to gonococcus are very destructive and have a tendency to perforate the cornea.

www.slackbooks.com

Gonorrhea – Krónikus és disseminált forma

Endometritis,
Salpingitis,
Prostatitis
purulent Arthritis,
Vasculitis



FONTOS!
anorectalis Go és Pharyngitis
(„alternatív Genitáliák”)

Fig. 8.33 Gonococcal arthritis. Dactylitis secondary to gonococcal bacteriaemia. By courtesy of Dr. S.E. Thompson

Fig. 8.33 Gonococcal septic arthritis. Arthritis due to N. gonorrhoeae in a 24-year-old woman, showing marked erythema and swelling of the right ankle and leg. By courtesy of Dr. T.F. Sellers Jr.

Gonorrhea – Diagnosis – csak akut esetben!

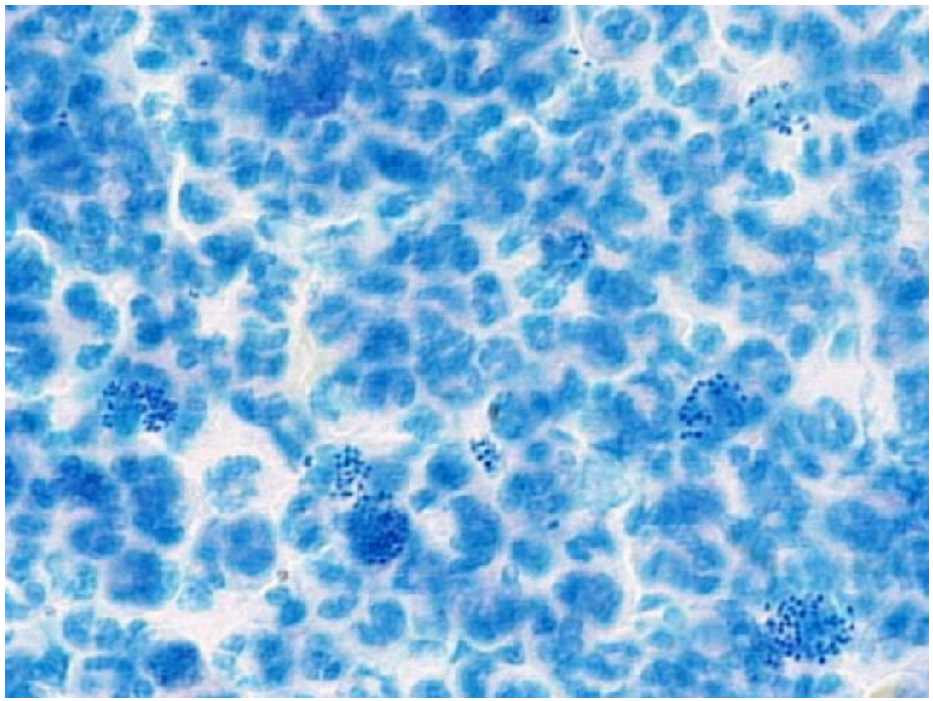
Mikroszkópos vizsgálat

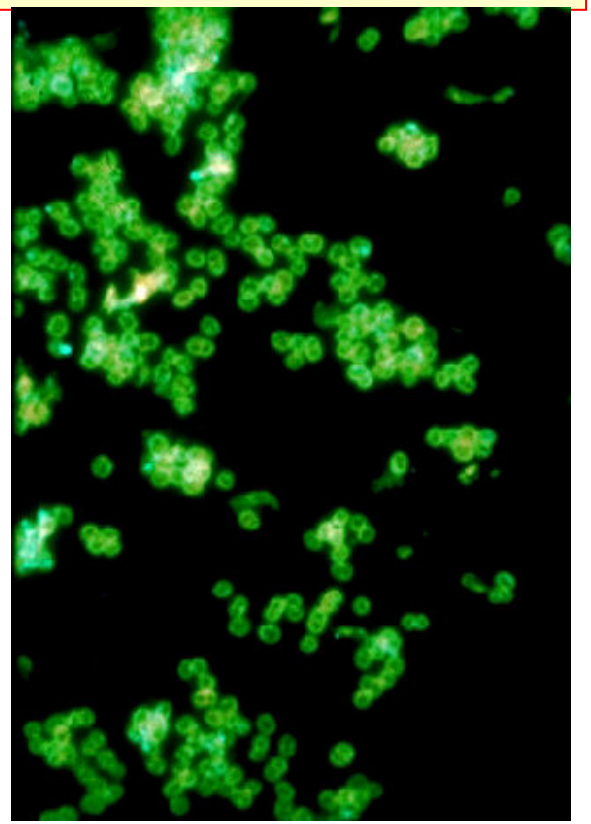
Kórokozó kimutatása

Gram festés

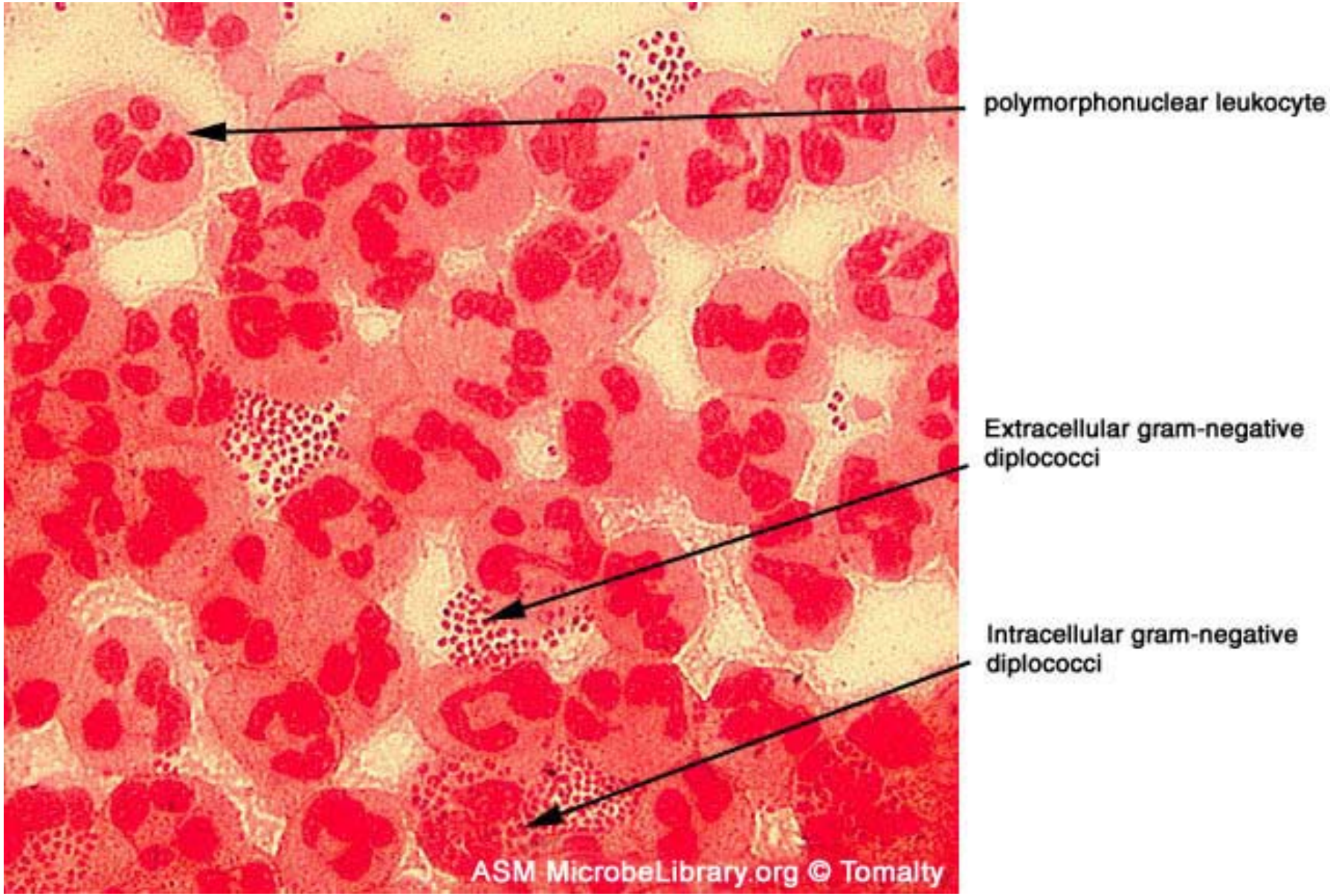
Methylenkék festés, Direkt Immunofluoreszcens (DIF)

www2.mf.uni-lj.si,
www.uni-ulm.de,
pathmicro.med.sc.edu

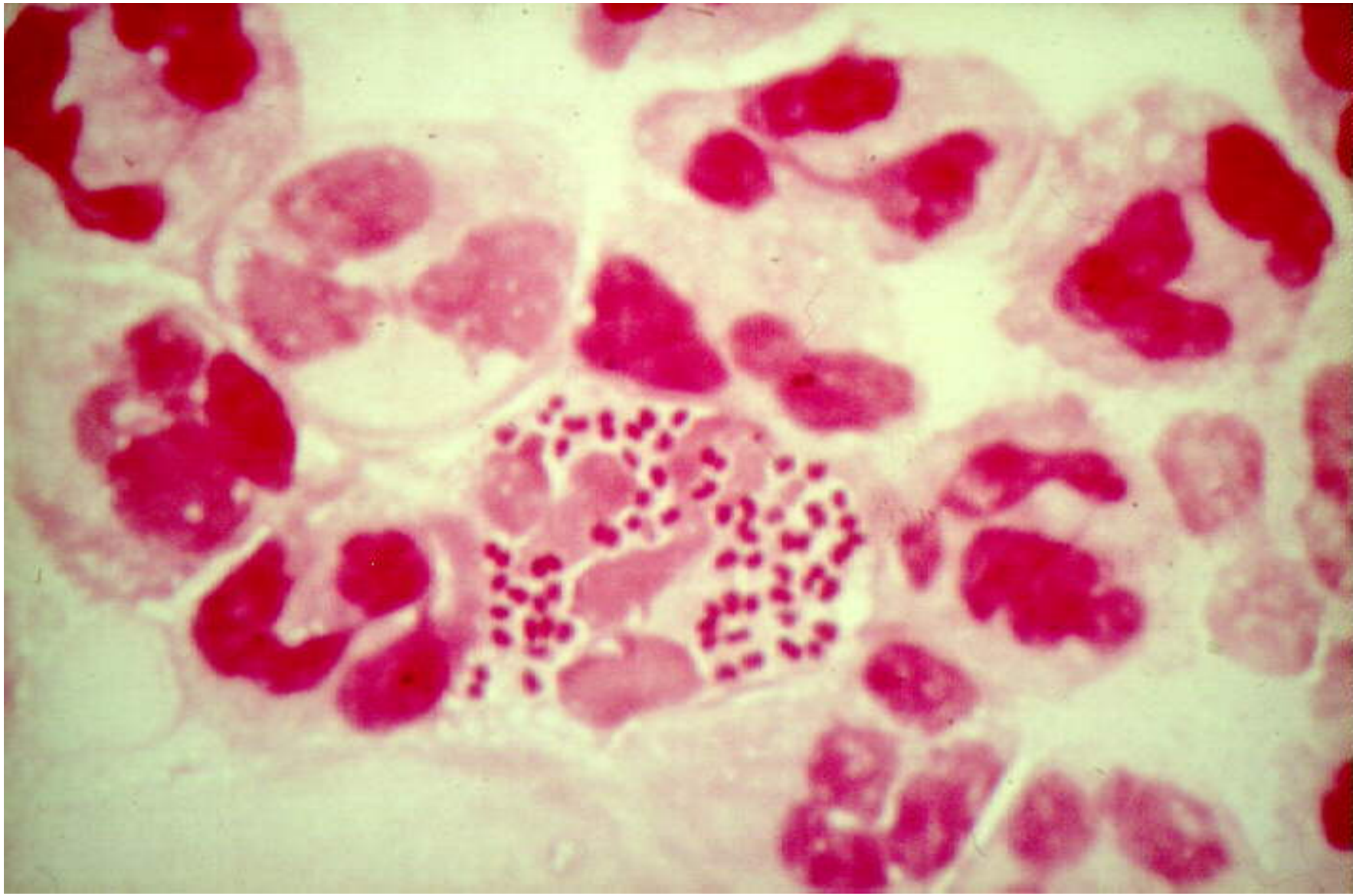




GO – Gram festés – előzetes eredmény!



GO – Gram festés – előzetes eredmény!



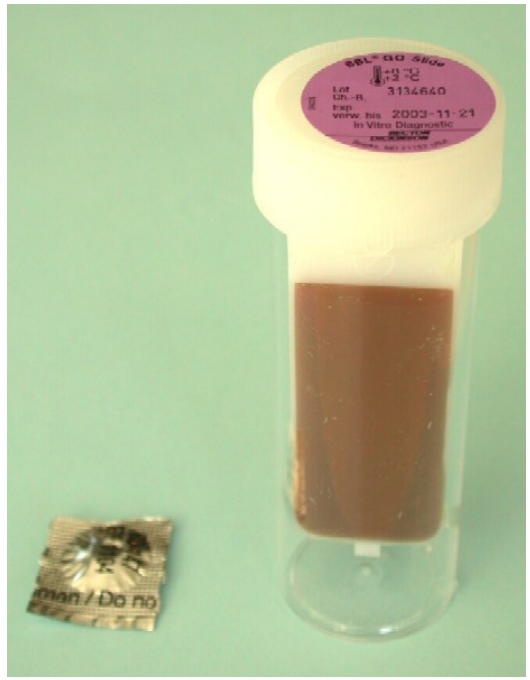
www.med.uni-giessen.de

Gonorrhea – Diagnosis

Tenyésztés:
„bedside” Thayer-Martin táptalaj
és Csokoládéagar, 5% CO2

Identifikálás: ox+, glu+, mal-

Antigénkimutatás:
Latex-agglutinatio



www2.mf.uni-lj.si,
www.uni-ulm.de,
pathmicro.med.sc.edu

Gonorrhea

www.tiscali.co.uk

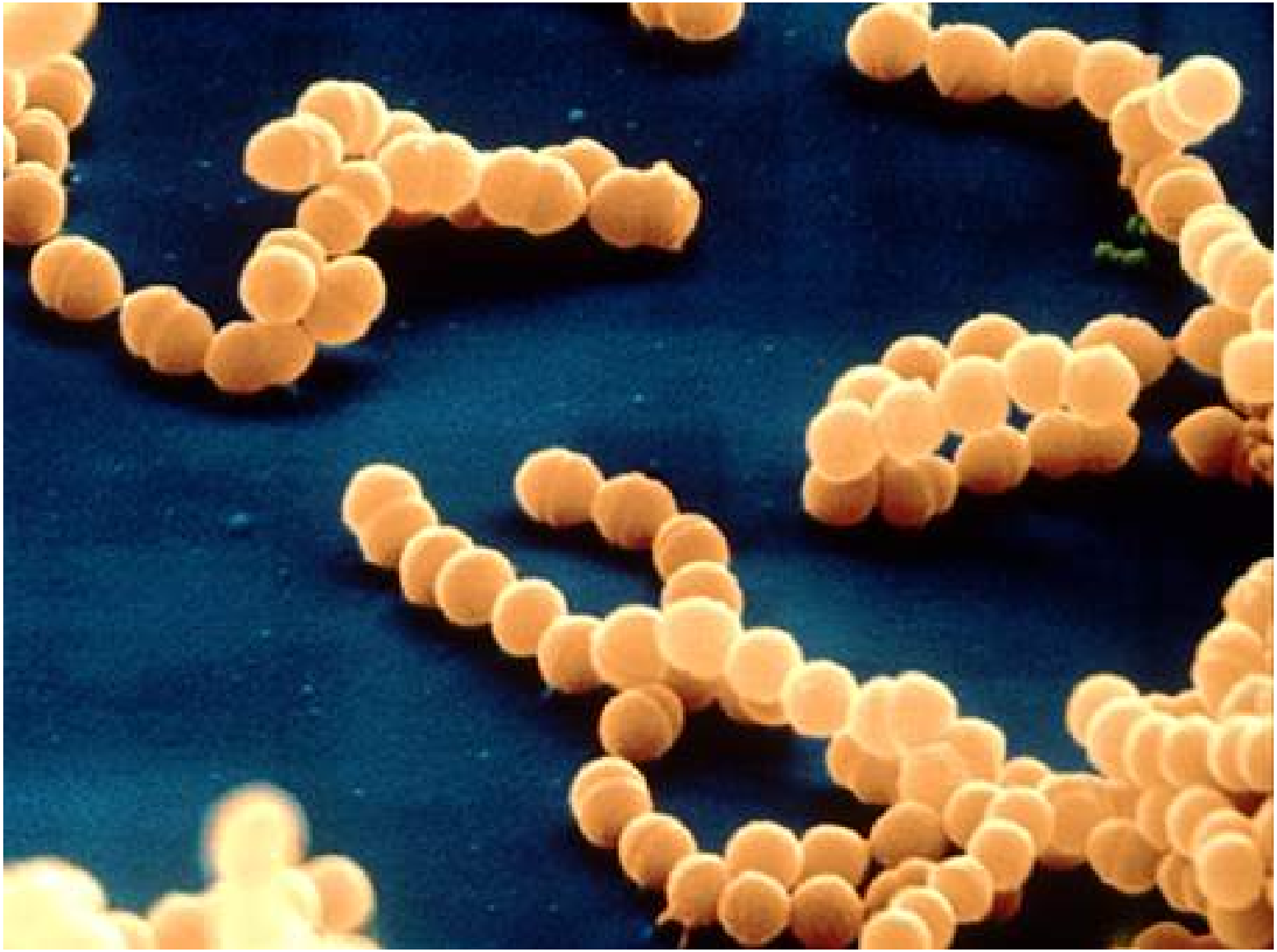
Therápia:
3. Generációs Cephalosporin (Ceftriaxone)
vagy Spectinomycin (Aminoglycoside)

Prophylaxis:
GO
- Nem megkapni! (safe sex)
- Lehetséges fertőző források, kontaktok felderítése
- Korai Diagnosis és kezelés

Ophthalmia neonatorum:
Credé szemcsepp 1% ezüst-acetát (-nitrát)

Védőoltás NINCS! (Antigenvariációk!)

N. meningitidis = Meningococcus



scanning EM

N. meningitidis = Meningococcus

Antigének és Virulenciafaktorok:

TOK – Polysaccharide

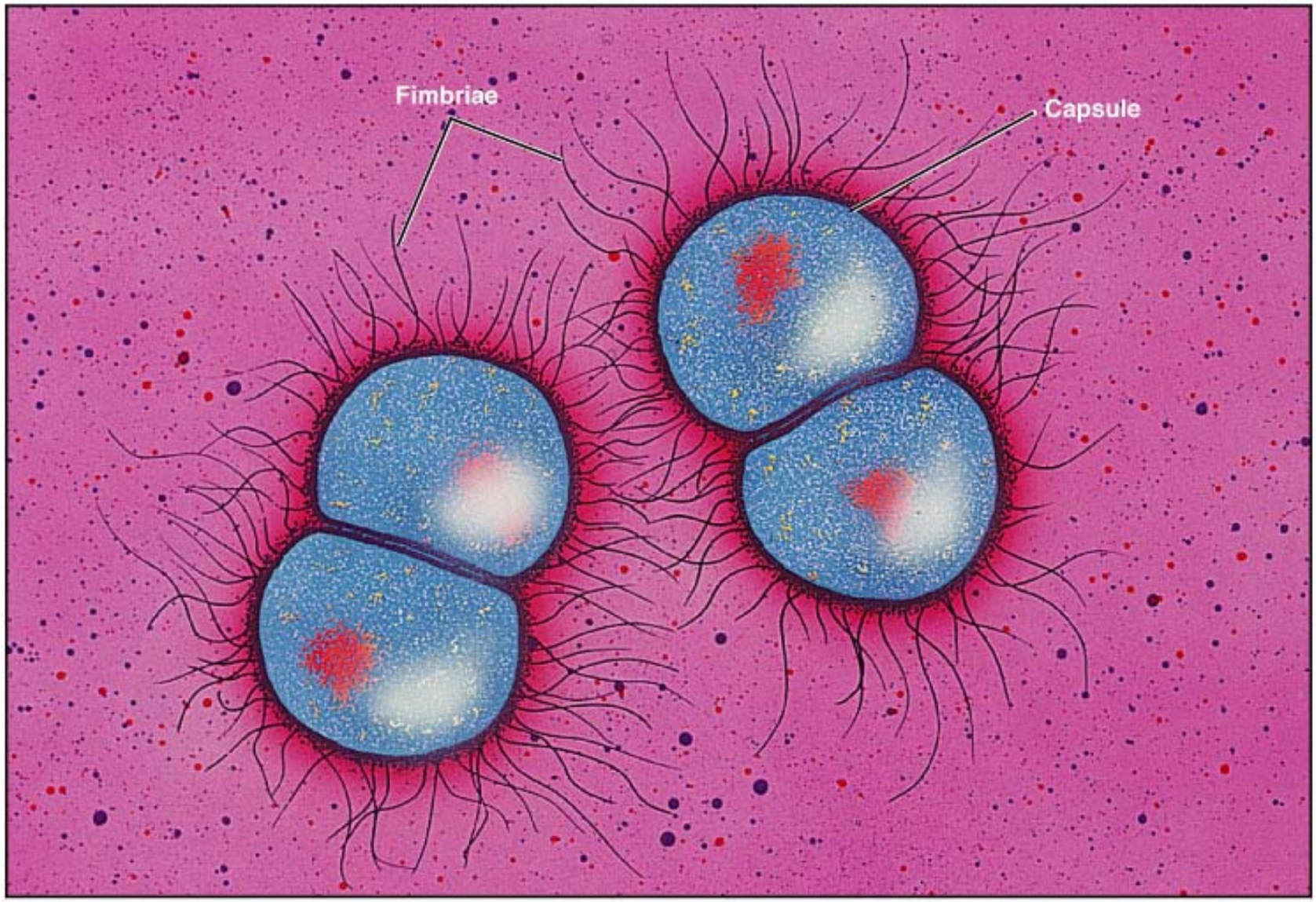
12 Serotypus (A, B, C, W135, Y!)

Pili/Fimbriae

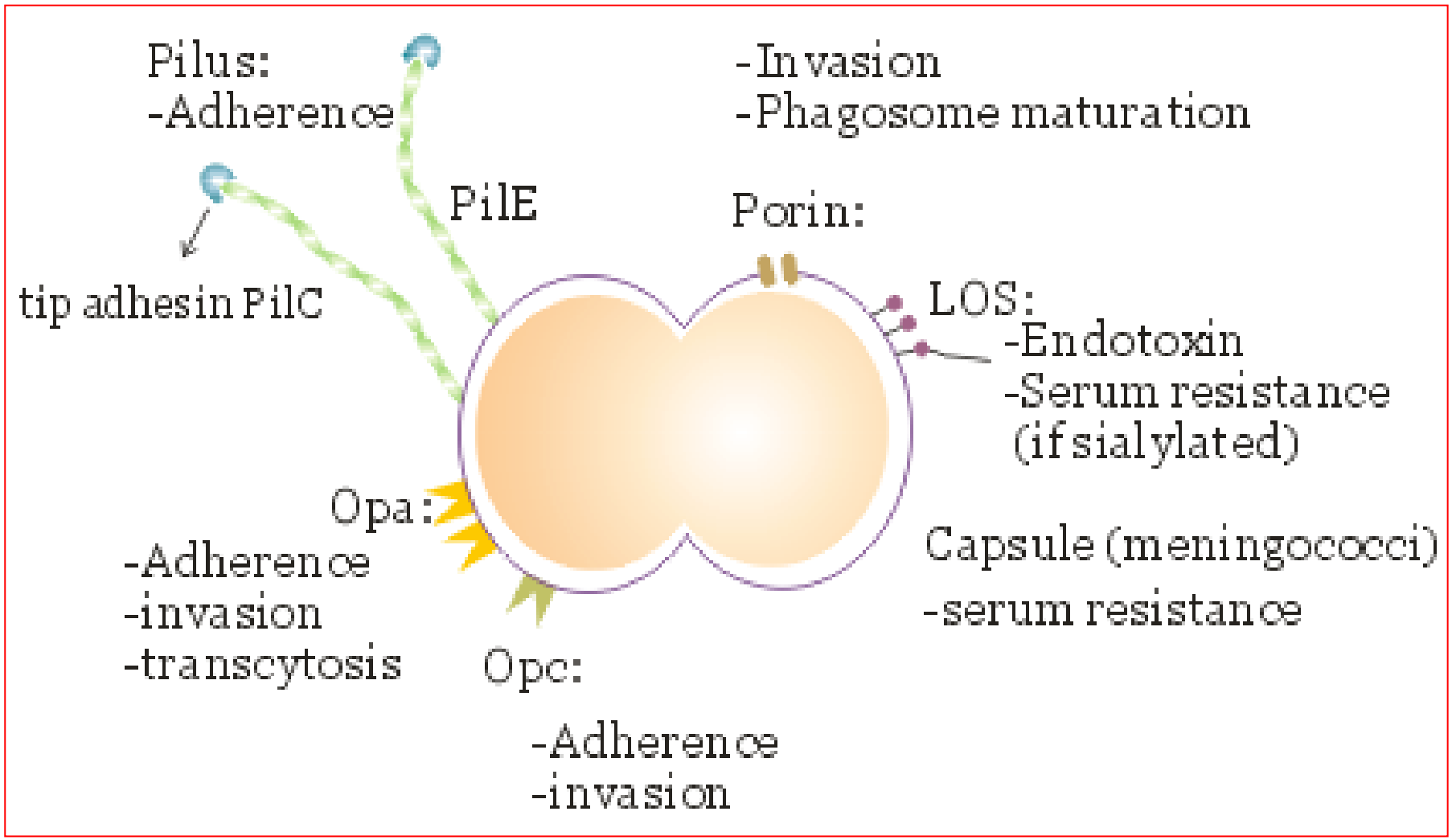
IgA-Protease!

Outer Membrane Protein-ek (OMP)

LOS (Mimikri, szializálva Serum-rezisztens!)



Meningococcus



N. meningitidis = Meningococcus

Fertőzés forrása
emberek – hordozók (betegek, egészségesek)

Átvitel, behatolás
- Direkt, cseppfertőzéssel
- Orrüreg, Torok

Kórképek
Pharyngitis
Meningitis cerebrospinalis epidemica
Sepsis = **Waterhouse-Friderichsen Syndroma**

Fig. 10.56 Acute meningococcaemia. Note the variable size of the lesions and their peripheral distribution. Some of the lesions are obviously purpuric, others macular or papular.

Fig. 10.60 Acute meningococcaemia. Petechia on bulbar conjunctiva.

Fig. 10.62 Acute meningococcaemia. Gangrene of the extremities following a near-fatal illness with hypotension.

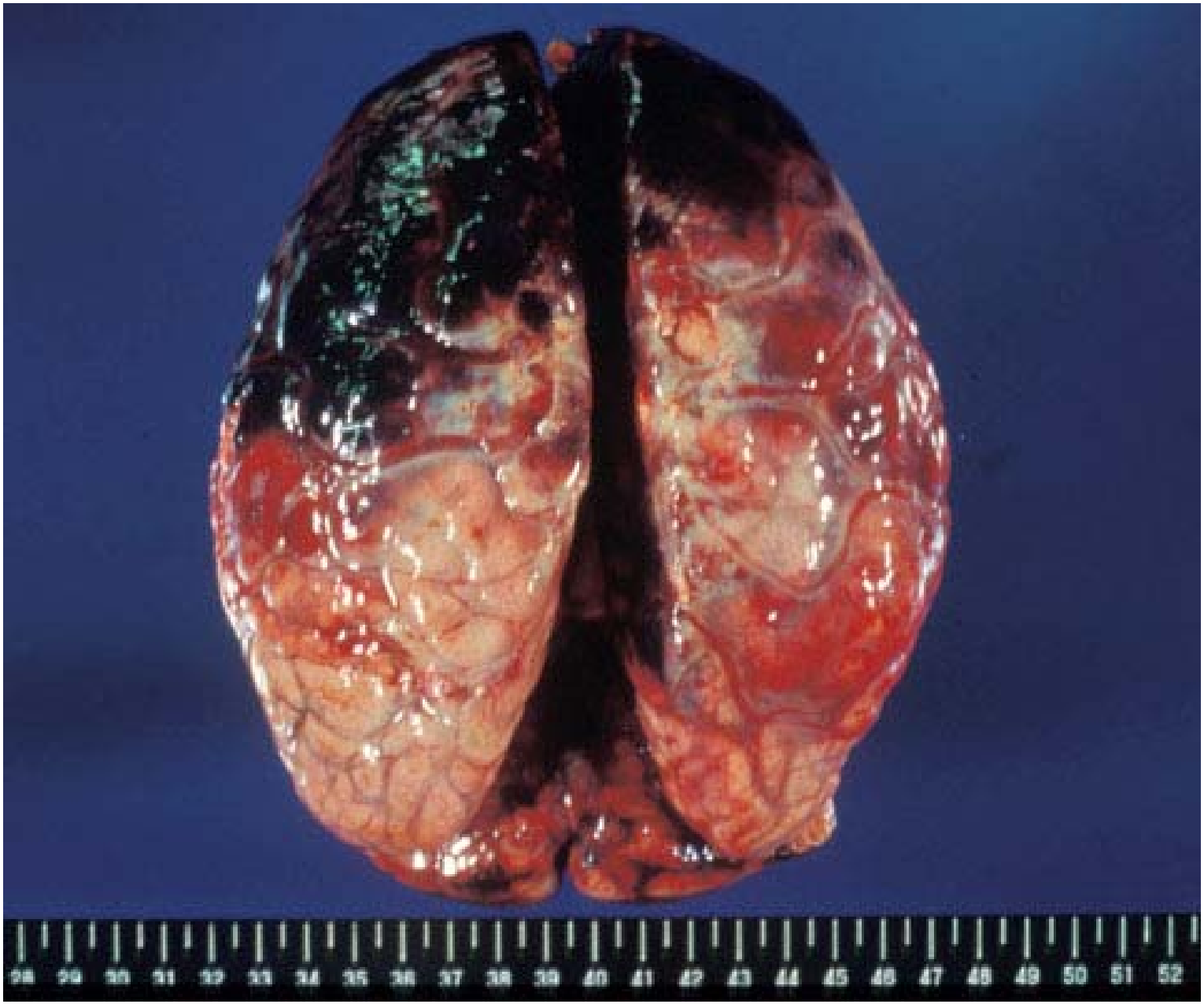
Fig. 10.63 Acute meningococcaemia. Gangrene of both legs in a black man with acute meningococcal infection. Bilateral below knee amputations were later required.

The characteristic skin rash of meningococcal septicaemia, caused by *Neisseria meningitidis*. (Courtesy of Wellcome Trust Photographic Library) srs.dl.ac.uk

Waterhouse – Friderichsen Syndroma - diagnosis

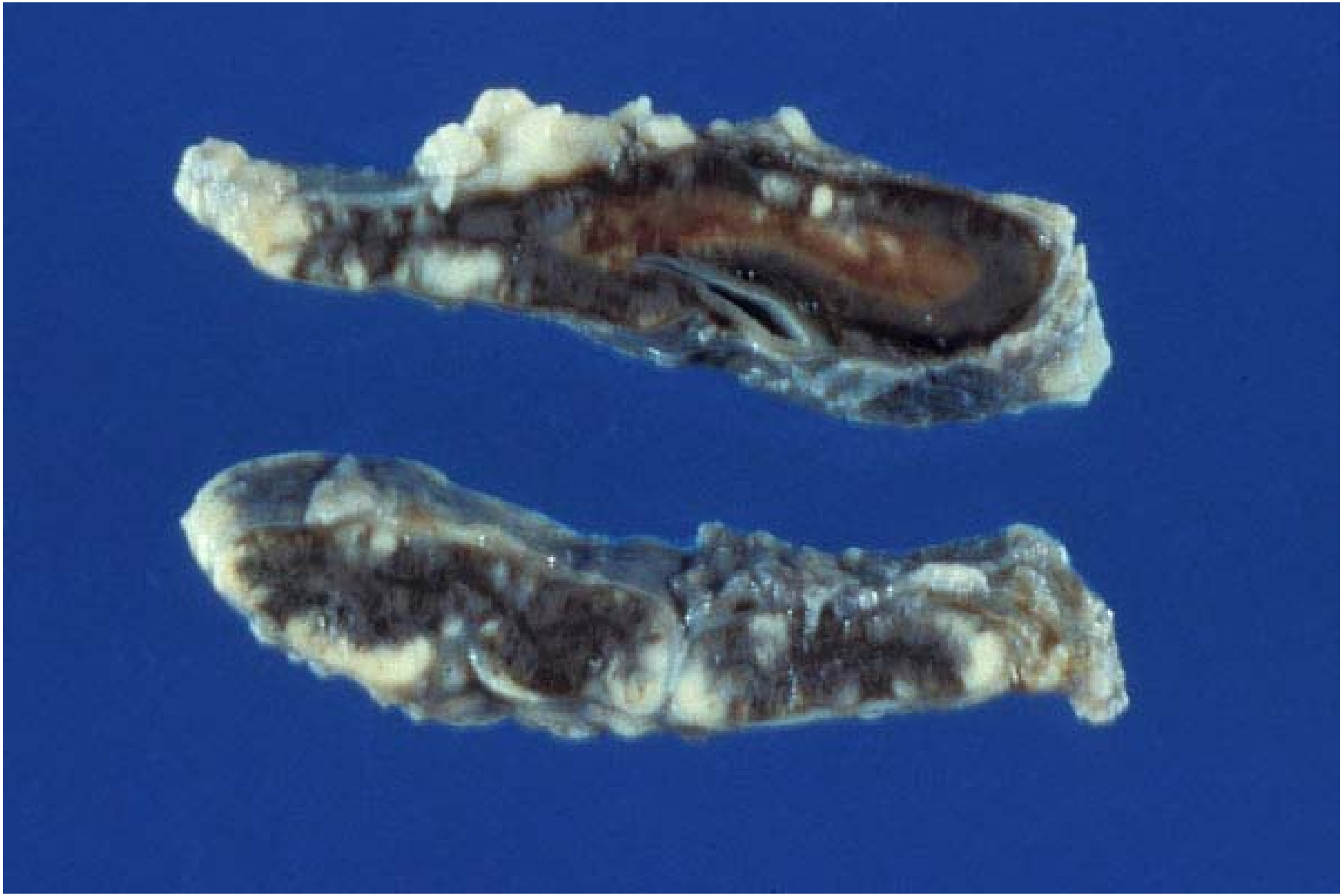
Waterhouse- Friderichsen Syndrome: schwere nekrotisierende Hautläsionen bei Meningokokkensepsis mit Verbrauchskoagulopathie (R. E. Rieger, Univ.-Kinderklinik Marburg).

The patient with Waterhouse-Friderichsen syndrome has sepsis with DIC and marked purpura.



pathy.fujita-hu.ac.jp

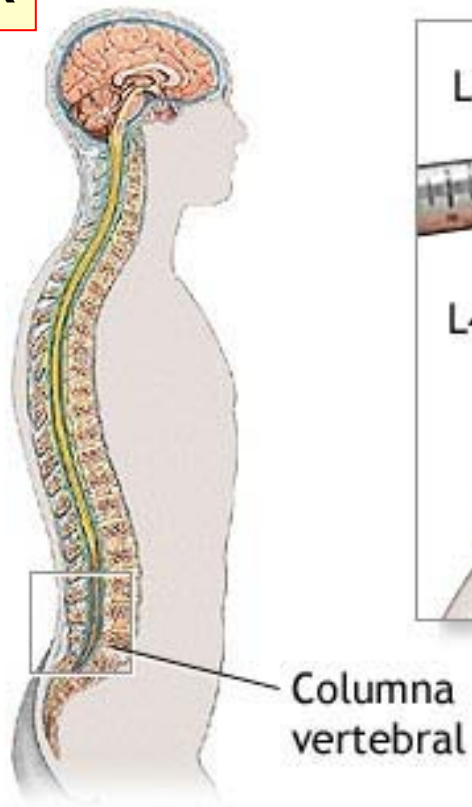
Purulent meningitis with hemorrhage in the frontal lobe (gross findings).

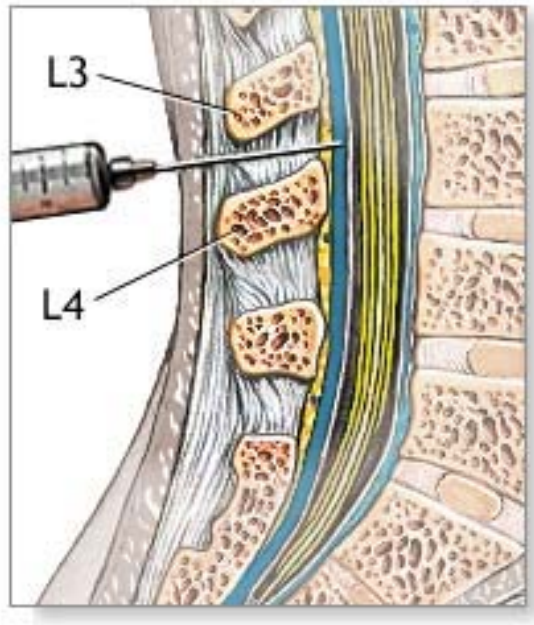


Acute hemorrhage in bilateral adrenals caused acute adrenal insufficiency (Waterhouse-Friderichsen syndrome).

Meningitis Diagnosis

Vizsgálati anyagok:
Liquor! - Lumbalpunctio
Vér
Hordozóktól: Torokváladék



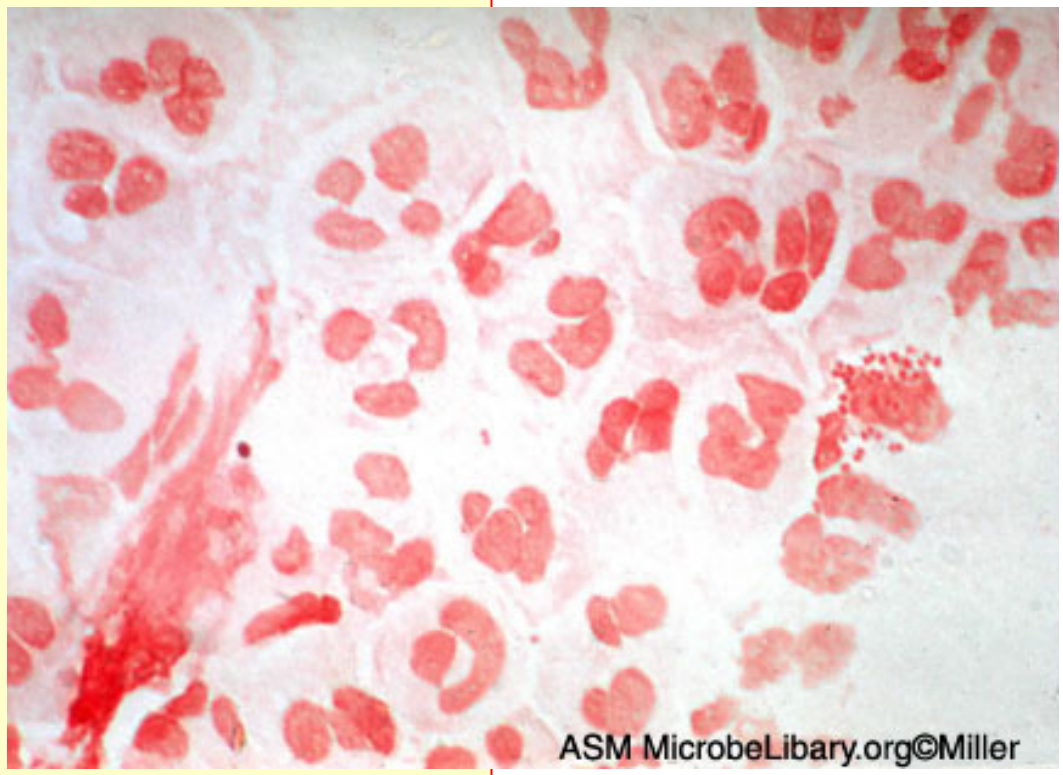


Meningitis Diagnosis

Kórokozó kimutatás

Mikroszkópos Vizsgálat

(Liquor, Haemokultura)



Tenyésztés

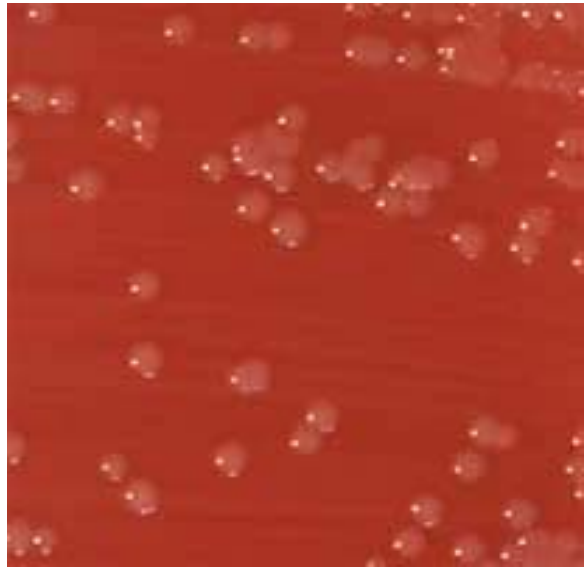
Liquor, Vér, Torok

Direkt Ag Kimutatás

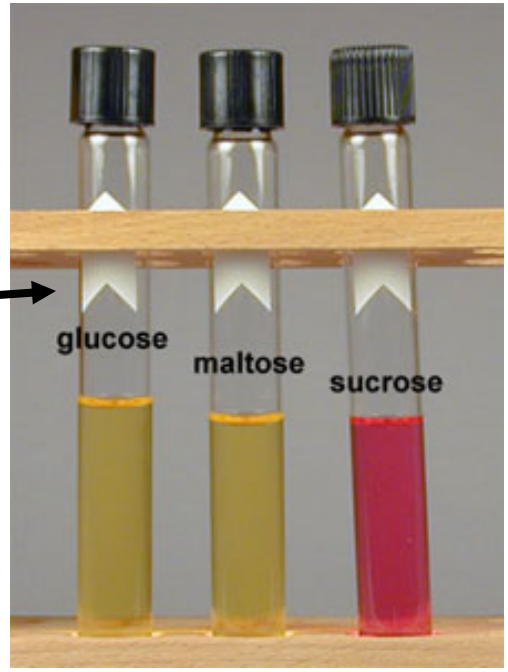
(Liquor) – Latex-agglutinatio

Diagnosis
N. meningitidis

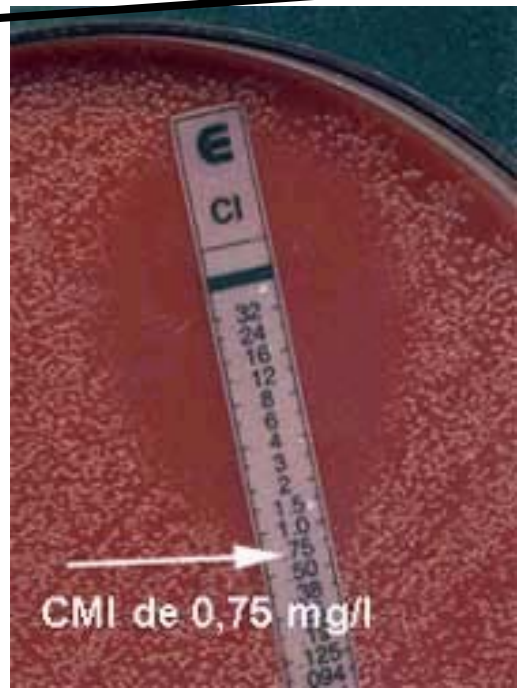
Tenyésztés:
Véresagar,
Csokoládéagar



Identifikálás:
glu+, mal+



MIC (E-test)



Meningococcus meningitis

Therapia:
Penicillinek és/vagy
Cephalosporin (III. Gen.)
Nincs Beta-lactamase termelés

Prophylaxis:
Aktív Immunizálás
Védőoltás:
- Rizikócsoportok
- Utazás!
(Meningitis övezet!)

Chemoprophylaxis:
Rifampicin (Kontaktok)

Meningitis övezet

Neisseria meningitidis - B

Európa!

NINCS Védőoltás!

Rifampicin

www.versapharm.com

Neisseria, Haemophilus, Bordetella

2. Haemophilus

Kicsi, Gram negatív pálcák/coccobacillusok

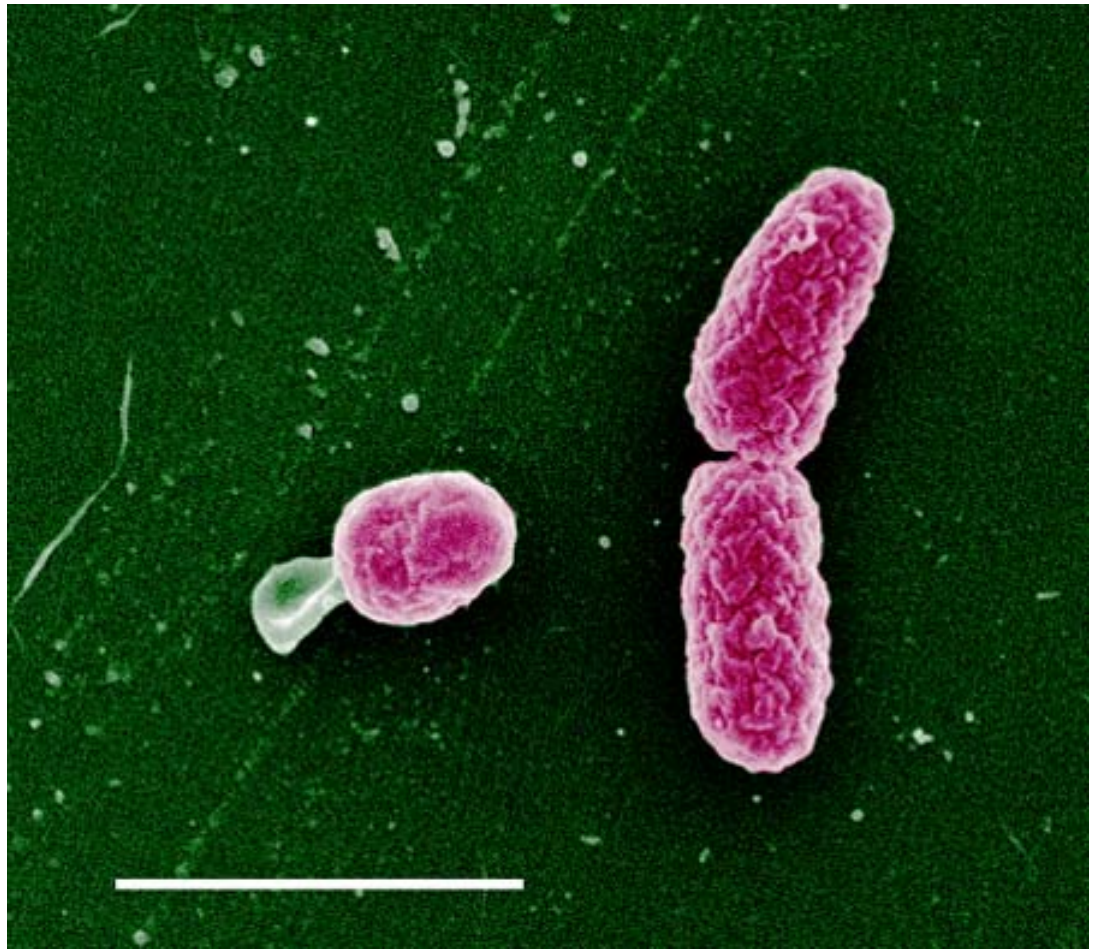
Genus	Faj
Haemophilus	**H. influenzae P**
	H. parainfluenzae
	H. aegyptius P
	H. ducreyi P
Bordetella	B. pertussis P
	B. parapertussis

P: Pathogen

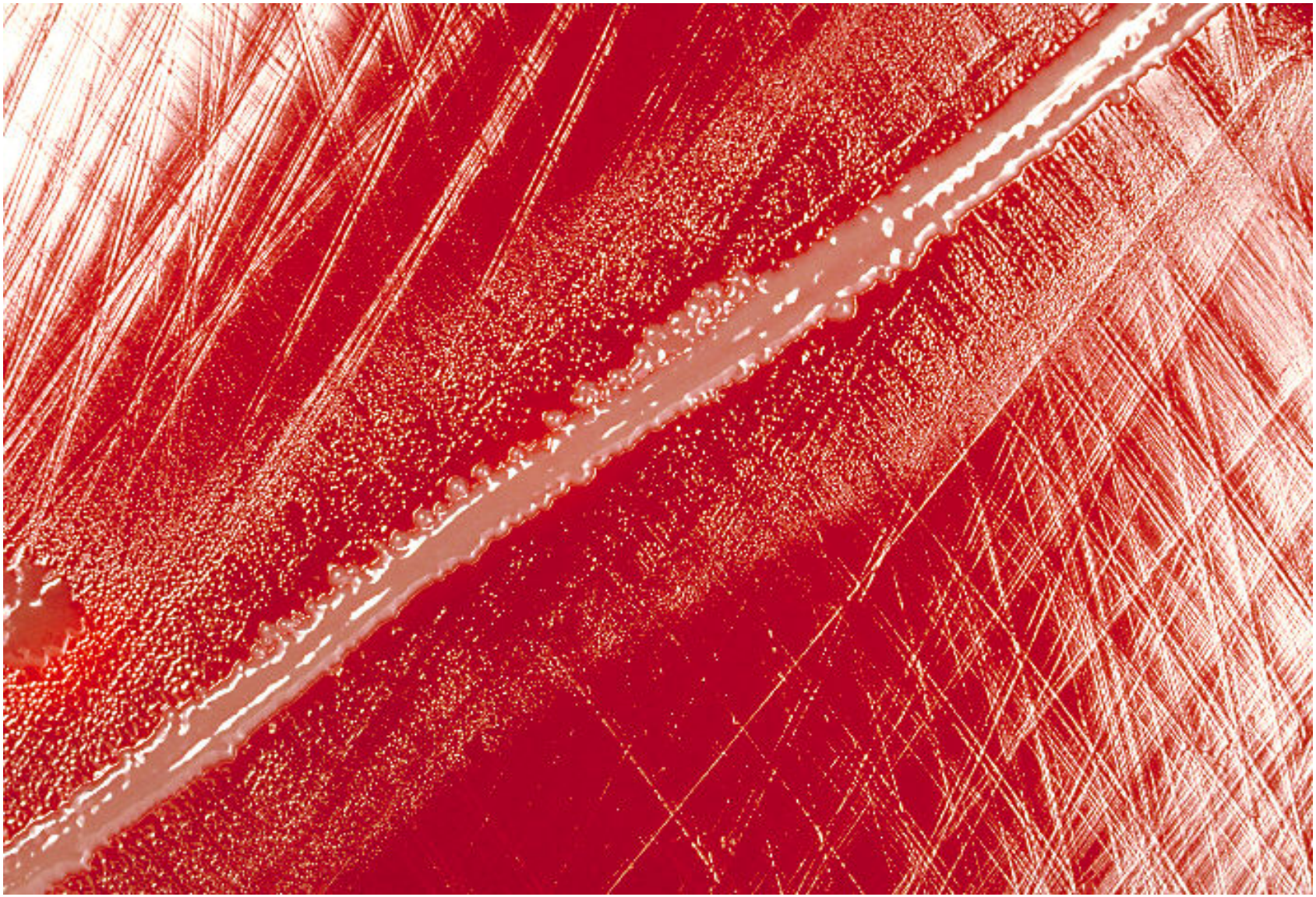
Haemophilus influenzae

Morphologia:
Gram - Coccobacillus,
ca. 1 μm

Tenyésztés:
Növekedési faktorok !
(Csokoládé agar,
X= Haem, V= NAD,
Szatellitizmus,
„Dajkajelenség”)



www.waterscan.co.yu/images



phil.cdc.gov

Blood agar plate culture showing Haemophilus influenzae satelliting around Staphylococcus aureus.

Haemophilus influenzae

Antigének és Virulenciafaktorok:

TOK – Polysaccharid

Typen: a, **b**, c, d, e, f (HiB!)

IgA-Protease!

Felszínen:

Outer Membrane Proteine (OMP)

LPS

Haemophilus influenzae Typ b (Hib)

www.soundmedicine.iu.edu

Haemophilus influenzae

Kórképek:
Meningitis, Sepsis

Cellulitis

Felső légutak:
Epiglottitis!, Nasopharyngitis, Sinusitis, Otitis media

Alsó légutak:
Bronchitis, Pneumonia

Haemophilus influenzae

Sepsis

An infant with severe vasculitis with disseminated intravascular coagulation (DIC) with gangrene of the hand secondary to Haemophilus influenzae type b septicemia - prior to the availability of the Hib vaccine.

-Image provided by: Visual Red Book on CD-ROM-

-(2000 Red Book: 25th Edition, Report of the Committee on Infectious Diseases)

Haemophilus influenzae

Periorbitalis cellulitis.

Haemophilus influenzae

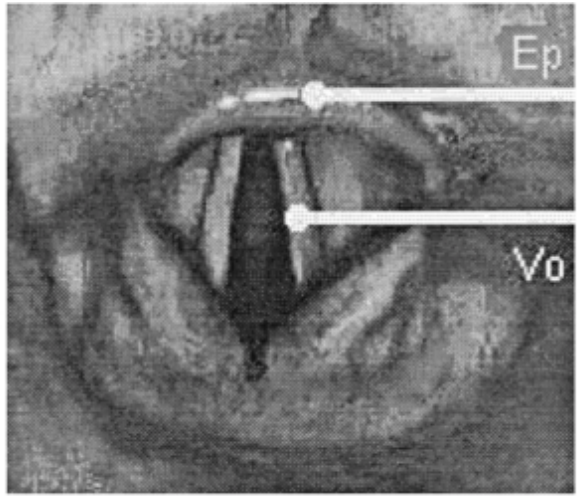
Kórképek:
Meningitis, Sepsis

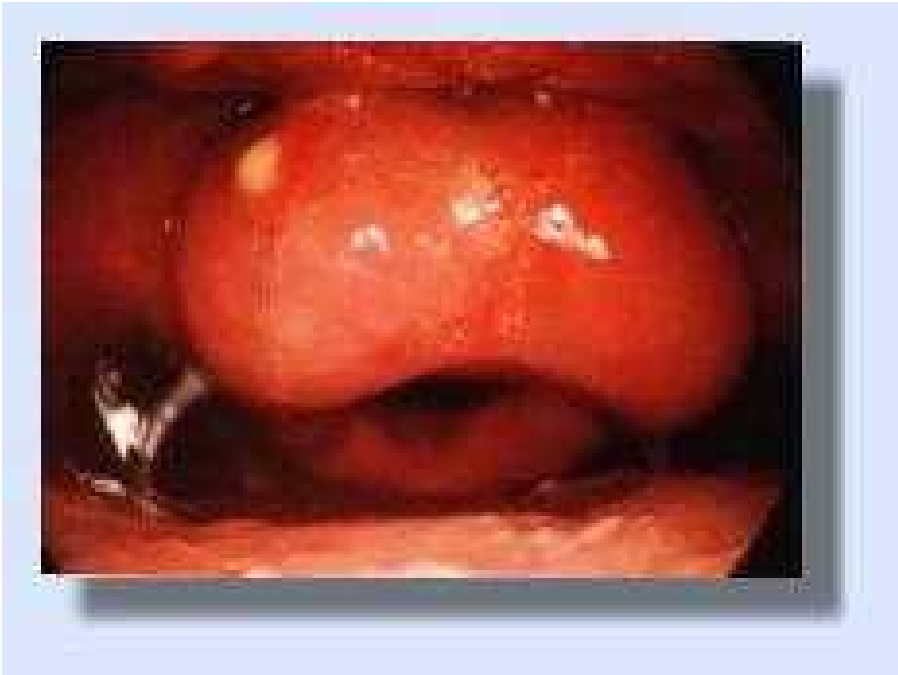
Cellulitis

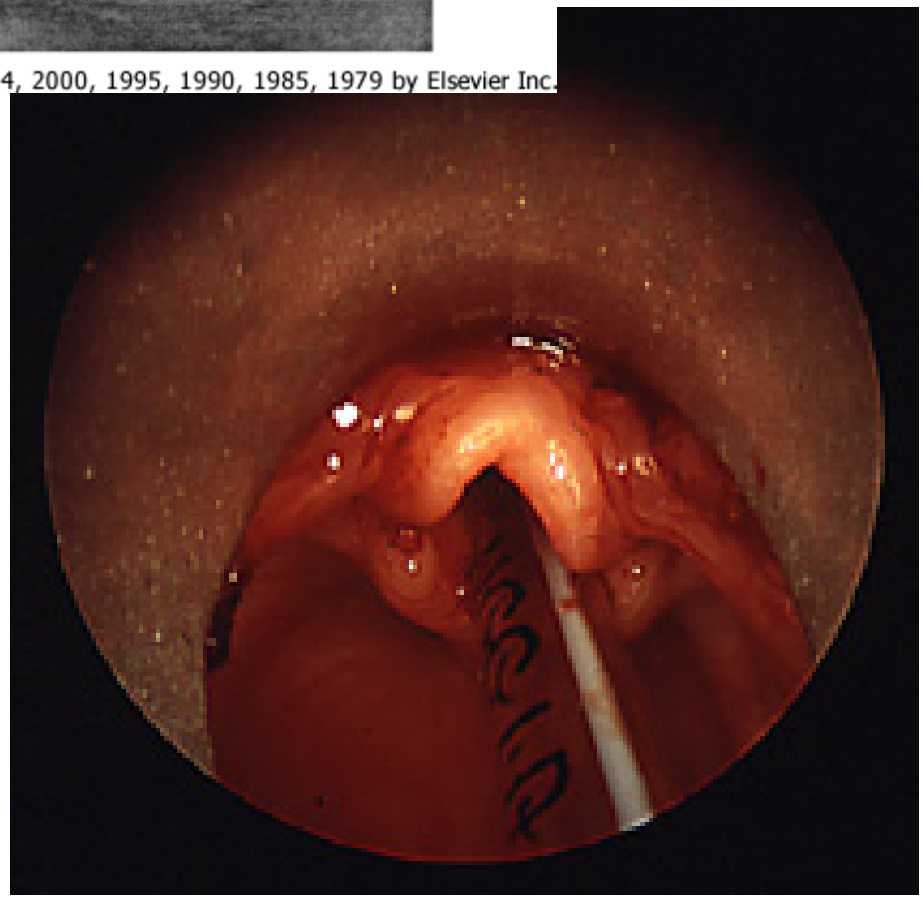
Felső légutak:
Epiglottitis!, Nasopharyngitis, Sinusitis, Otitis media

Alsó légutak:
Bronchitis, Pneumonia

HIB-epiglottitis







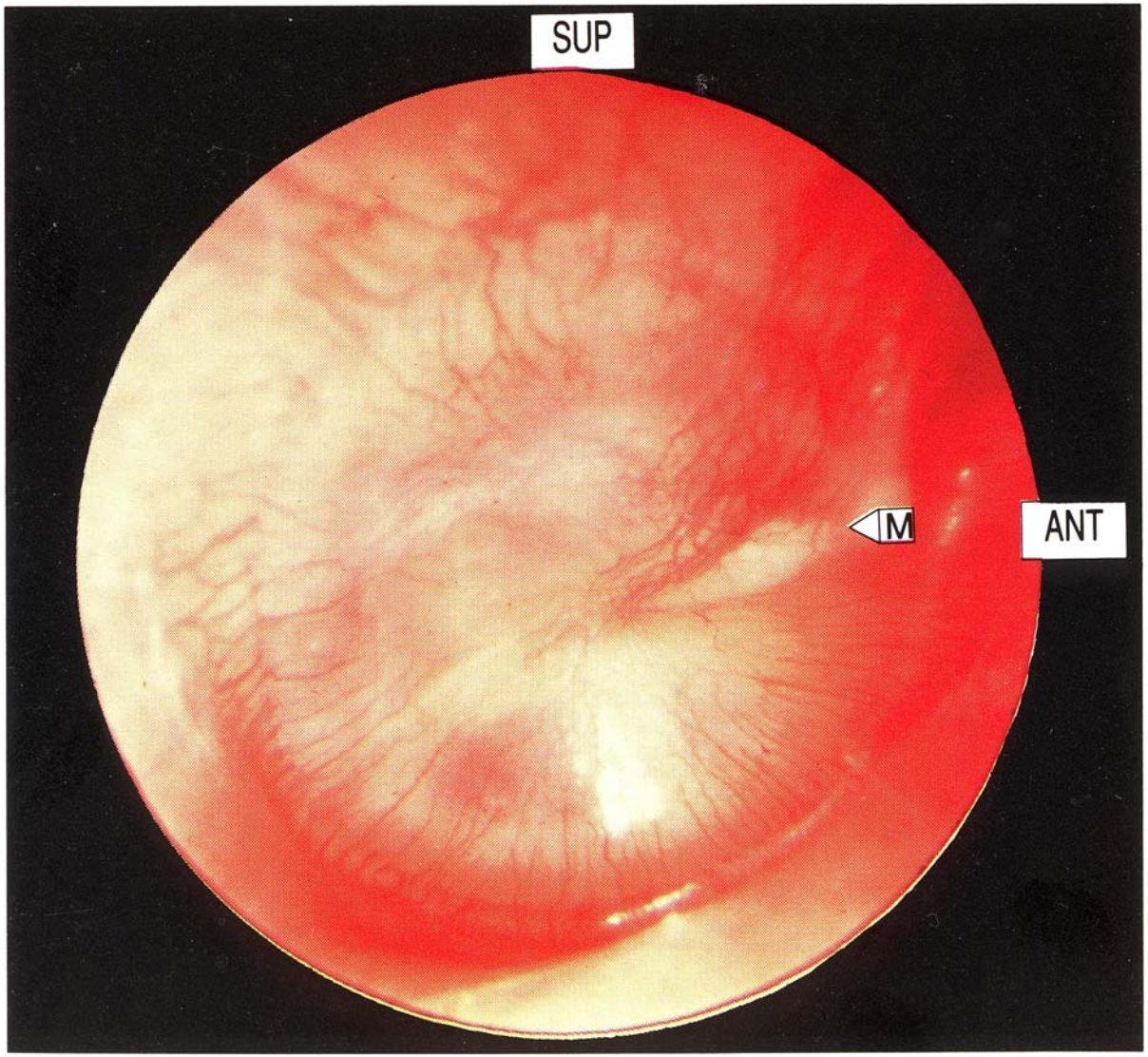


Fig. 10 Acute otitis media. Early stage showing mild injection of the drum, especially in the region of the malleus (M). The most common bacterial causes are *Streptococcus pneumoniae* and *Haemophilus influenzae*, with a smaller proportion of cases caused by *Streptococcus pyogenes* or *Branhamella catarrhalis*. Courtesy of Dr M. Chaput de Saintonge.

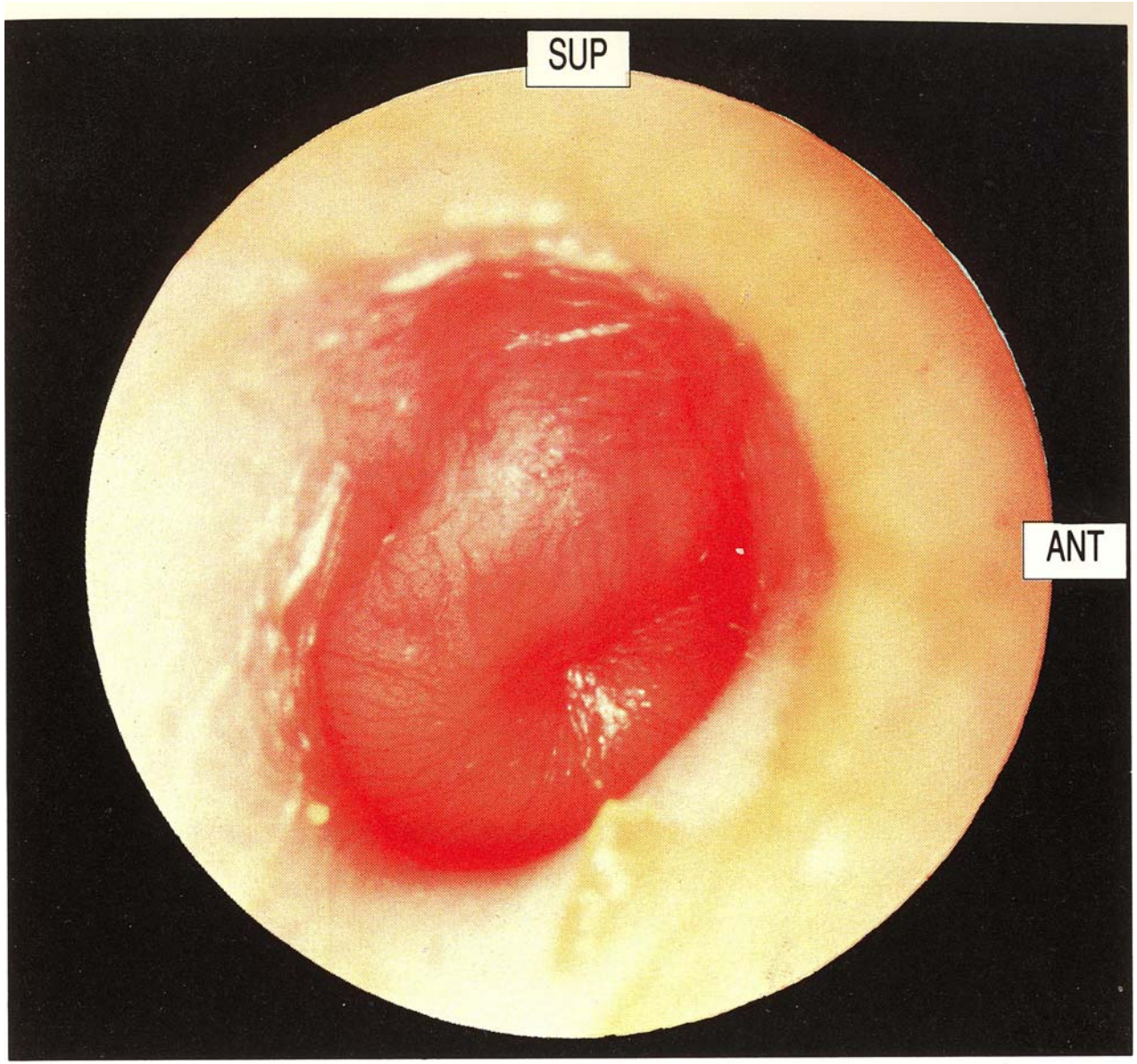


Fig. 11 Acute otitis media. Advanced stage showing bulging of the drum on both sides of the malleus, which is obscured. These features are seen just before the drum perforates. By courtesy of Dr M. Chaput de Saintonge.

Haemophilus influenzae

Diagnosis:

Vizsgálati anyagok

- LIQUOR! (CSF)
- Minták a fertőzés helyéről (orr, torok, köpet stb.)

Kórokozó kimutatás:

Mikroszkópos vizsgálat, Tenyésztés,

Tok Ag kimutatás (Latex-agglutinatio)

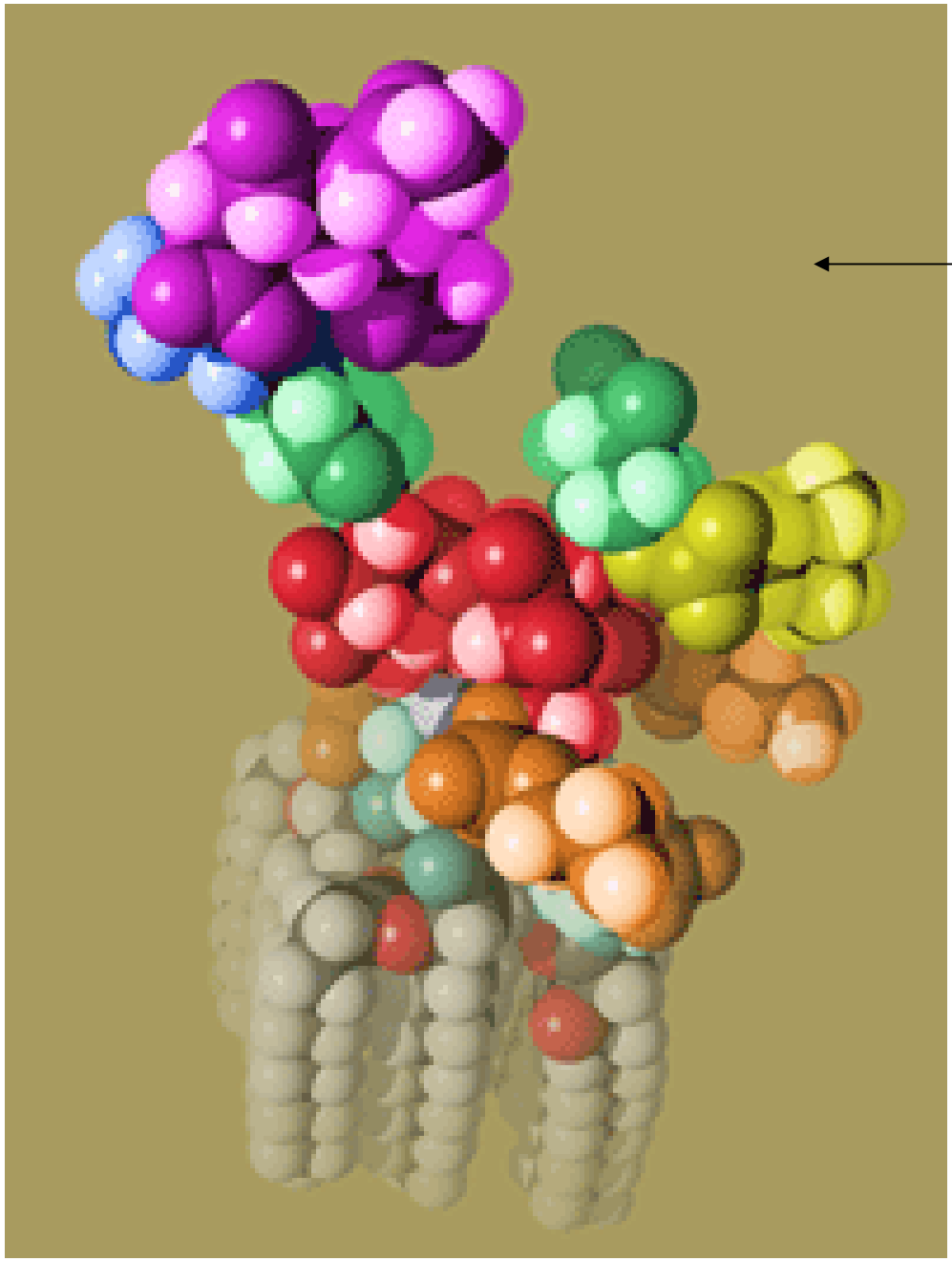
Therapia:

1. Ampicillin + III. gen. Cephalosporin
2. Ampicillin + Aminoglycoside

Prophylaxis:

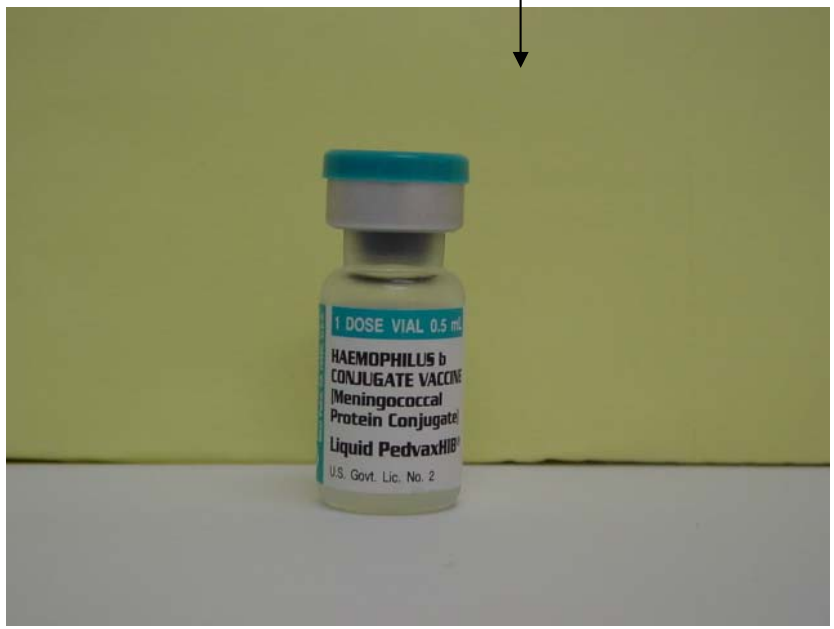
Aktív Immunizálás - **HiB Konjugált-Védőoltás**

(Polysaccharid + Protein)



Lipopolysaccharid
Extrakt - Vakcina

ibs-isb.nrc-cnrc.gc.ca



www.kmhk.kmu.edu.tw

Haemophilus ducreyi

Kórkép:
Ulcus molle = Chancroid = lágy Schanker/fekély

Haemophilus aegyptius

Kórkép: Brazíliai purpurás láz

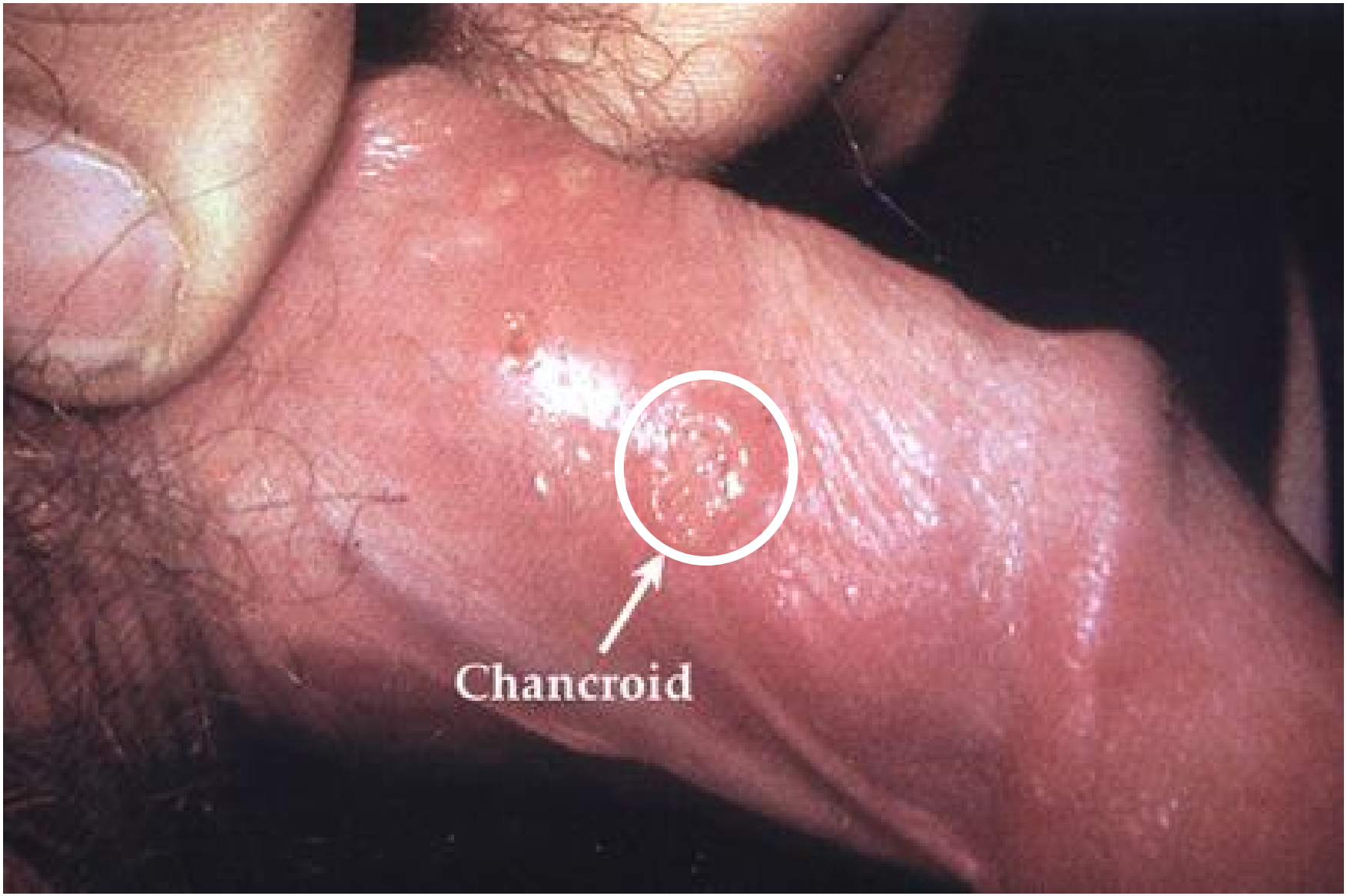
Haemophilus parainfluenzae

Pharyngitis, Endocarditis, Conjunctivitis

Ulcus molle


ACADEMIAE FRIDERICO ALEXANDRINAE SICILIAM
http://dermis.net

Ulcus molle



Chancroid in female

Neisseria, Haemophilus, Bordetella

3. Bordetella

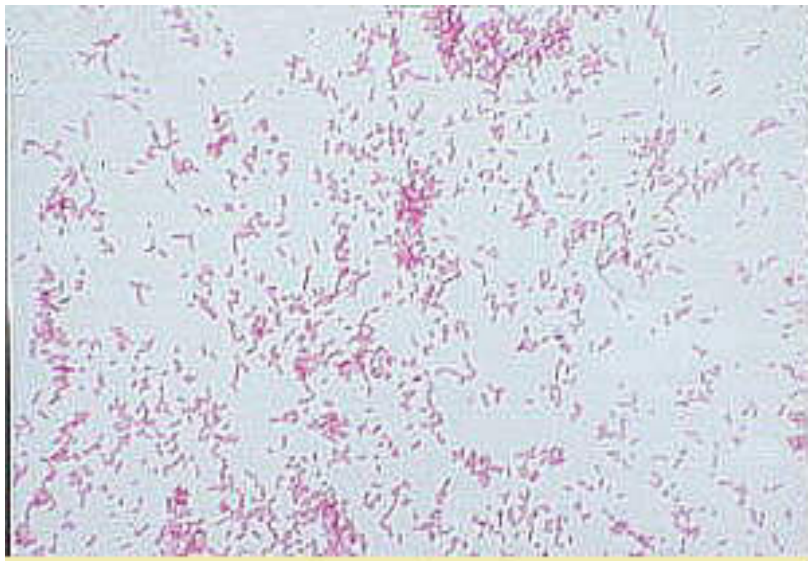
Kicsi, Gram negatív pálcák/coccobacillusok

Genus	Faj
Haemophilus	H. influenzae P
	H. parainfluenzae
	H. aegyptius P
	H. ducreyi P
Bordetella	**B. pertussis P**
	B. parapertussis

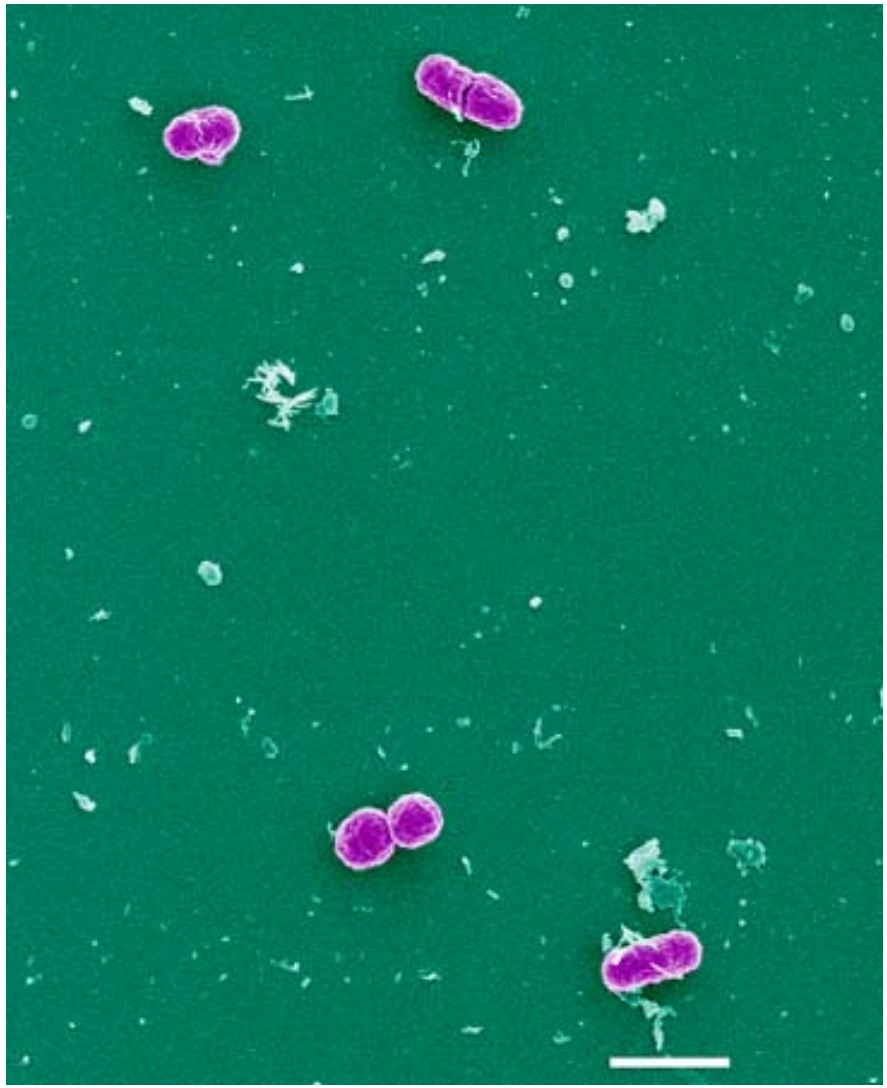
P: Pathogen

Bordetella pertussis

Morphologia:
Gram negatív
Coccobacillus,
ca. 1 μm



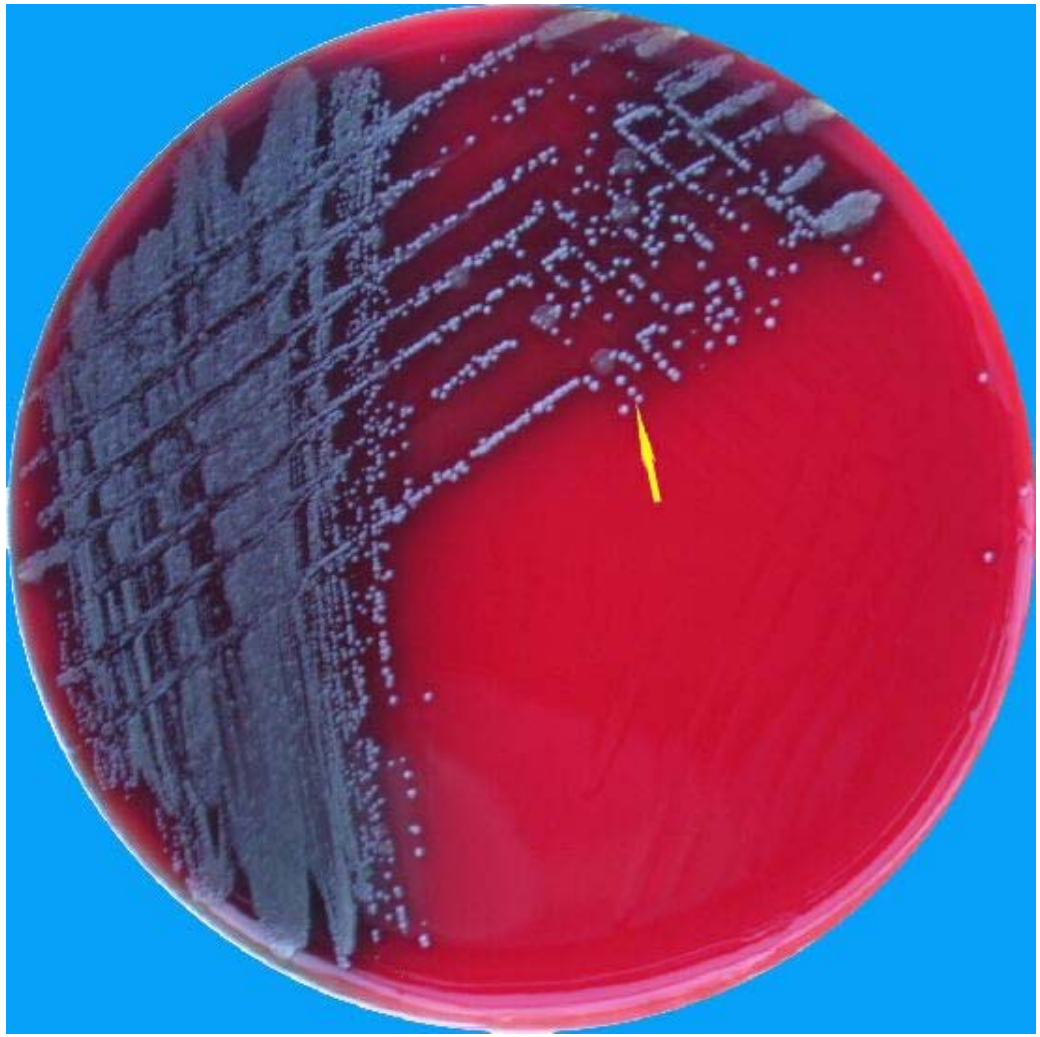
Gram stain of *B. pertussis*



www.waterscan.co.yu/images

Bordetella pertussis

Tenyésztés:
Speciális
Bordet – Gengou



nobelprize.org

www.szu.cz

Bordetella pertussis

Antigének és Virulenciafaktorok:

Tok

Fimbriák, filamentózus Haemagglutinin

Outer Membrane Proteine (OMP)

LPS

Pertactin

Extracelluláris Toxinok:

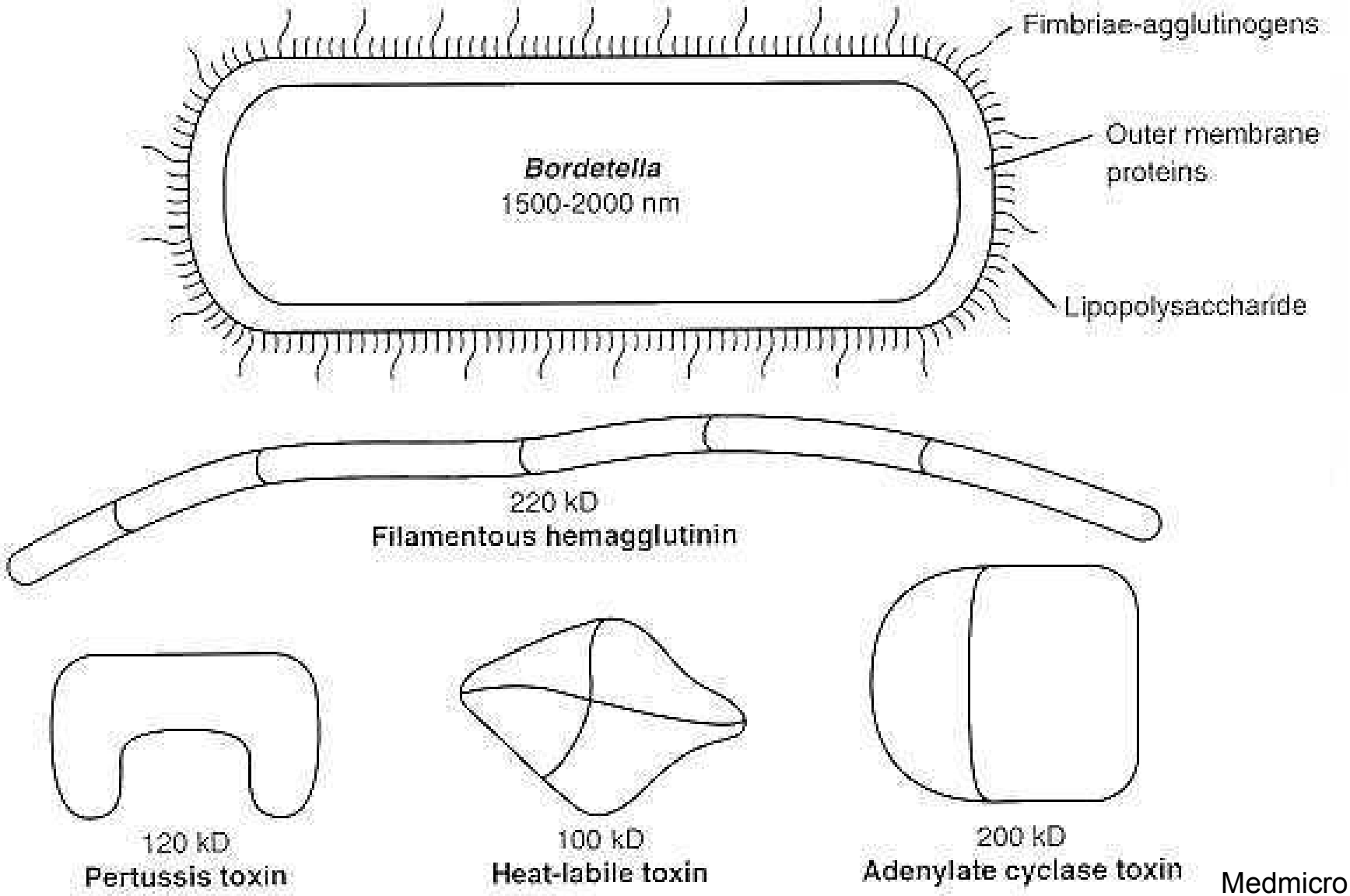
Pertussis Toxin (AB toxin)

Adenylatcyclase Toxin

Trachealis cytotoxin

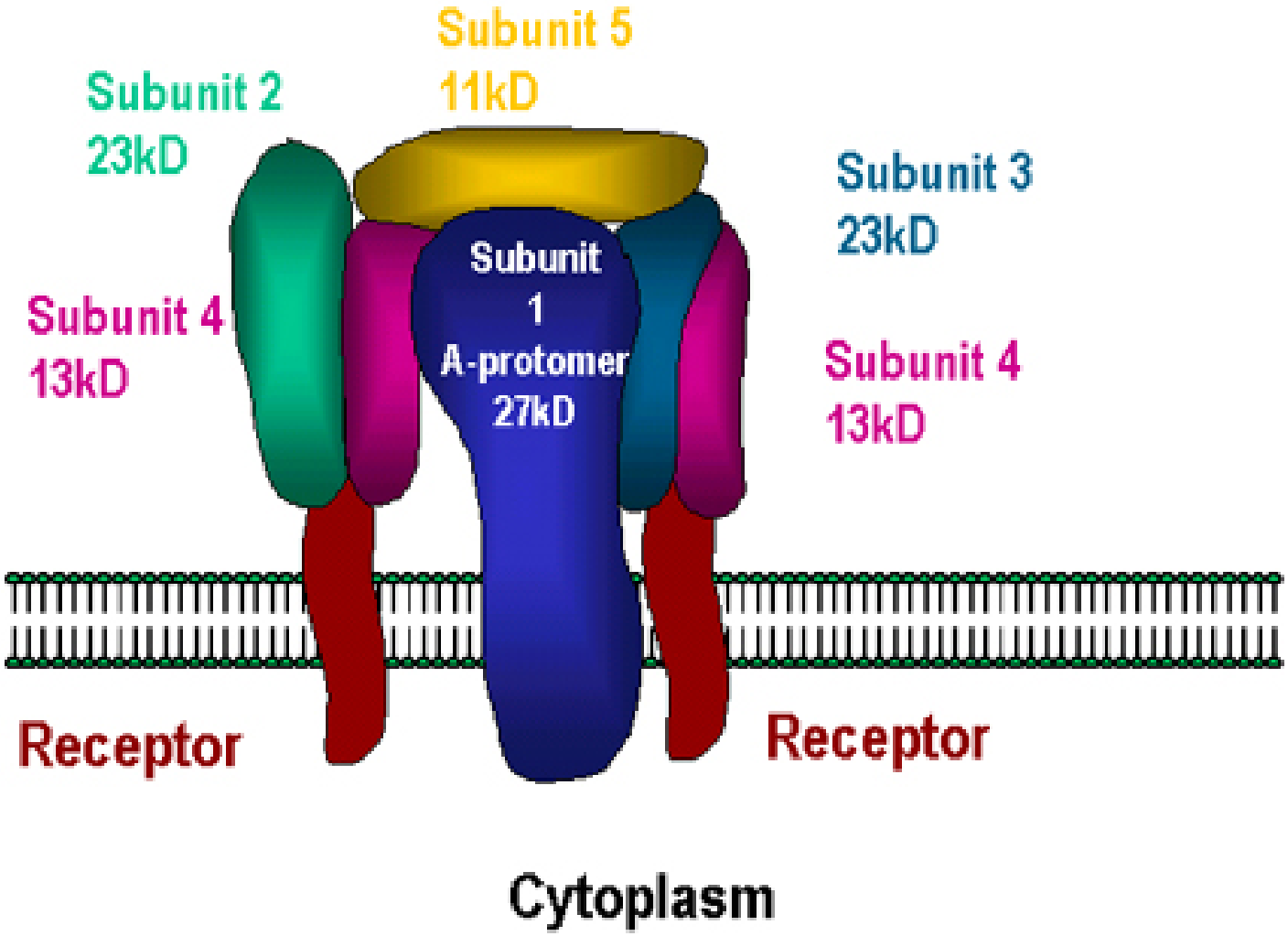
Dermatonecrotikus Toxin

FIGURE 31-2 Virulence factors of *B pertussis*.



Medmicro

Pertussis toxin



Bordetella pertussis

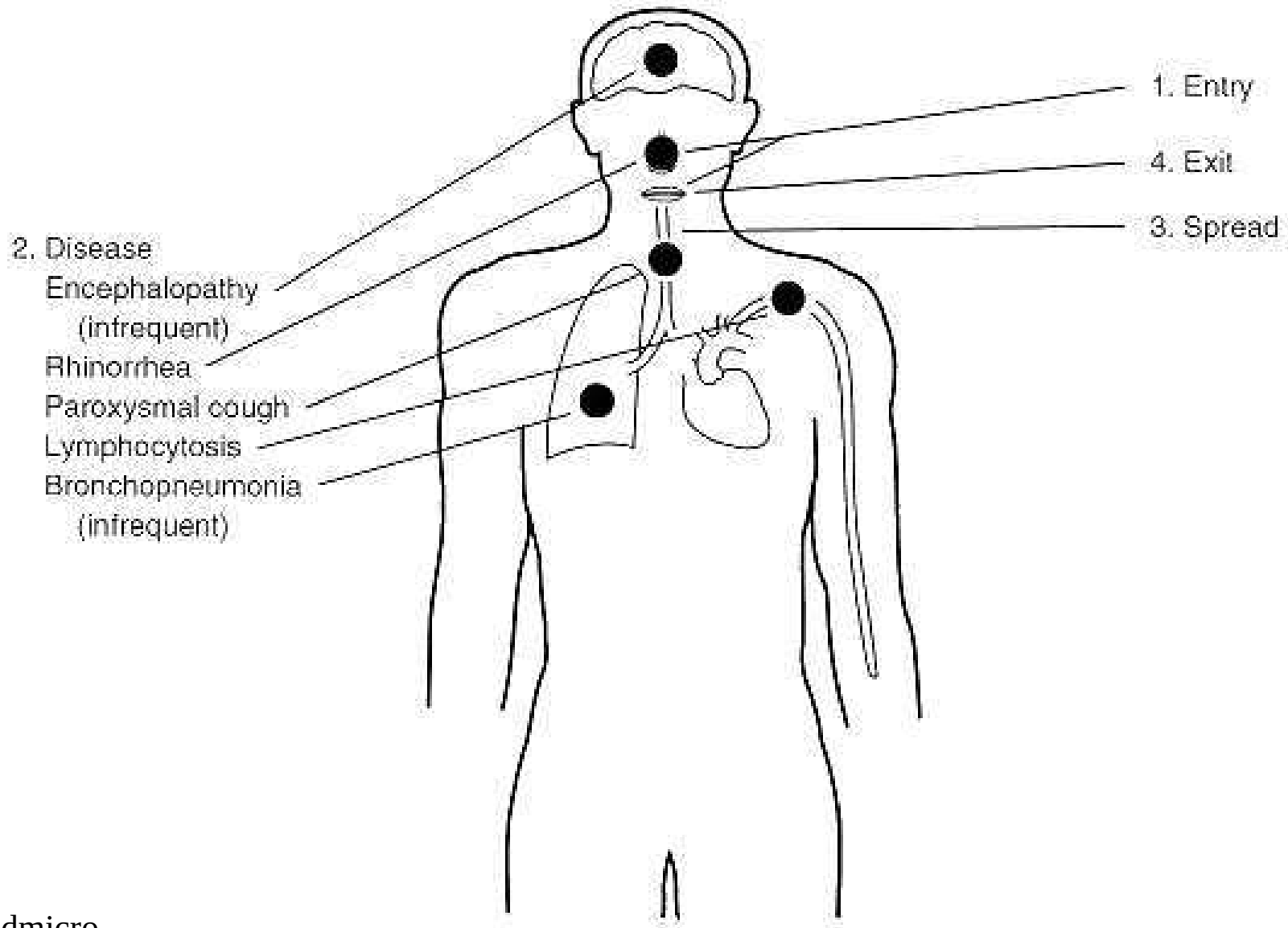
Pathogenesis, Fertőzés:

Fertőzés forrása: Betegek – prodromalis és katarrhalis Stadiumban

Behatolási kapu: Légzőtraktus

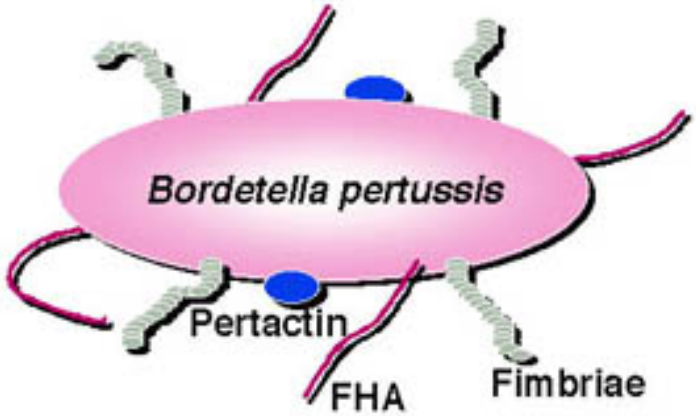
Átvitel: Cseppfertőzés → ÉRZÉKENY!
55°C; 30’

FIGURE 31-1 Pathogenesis of whooping cough.



Medmicro

Pathogenesis of *Bordetella pertussis*



Adherence to ciliated respiratory epithelial cells, and multiplication

Systemic intoxication
- Pertussis toxin
- Adenylate cyclase toxin
- Tracheal cytotoxin
- Dermonecrotic toxin

Local mucosal damage; paroxysmal cough

Entry

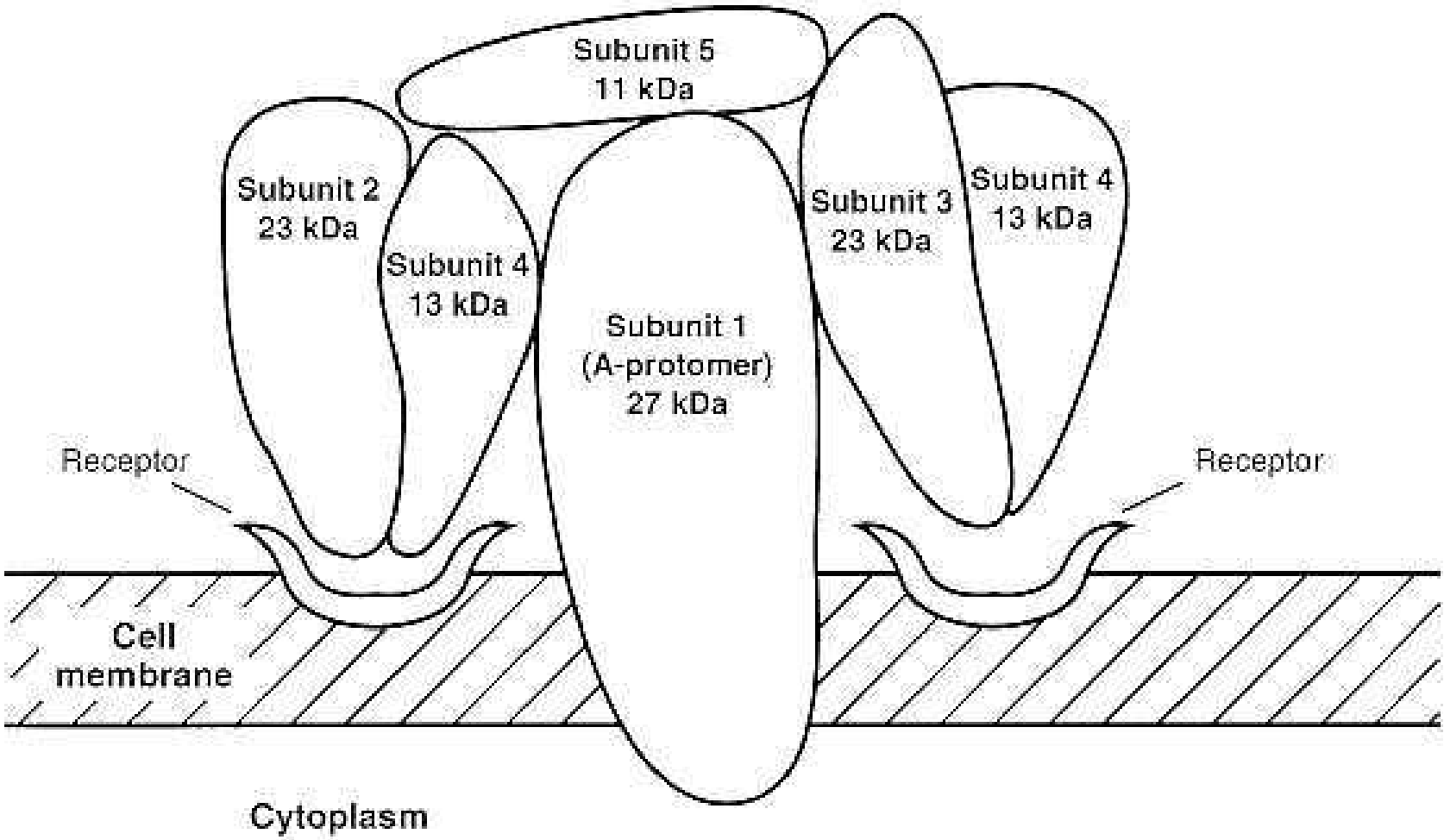
Persistence ?

Transmission

Interaction with immune effector cells

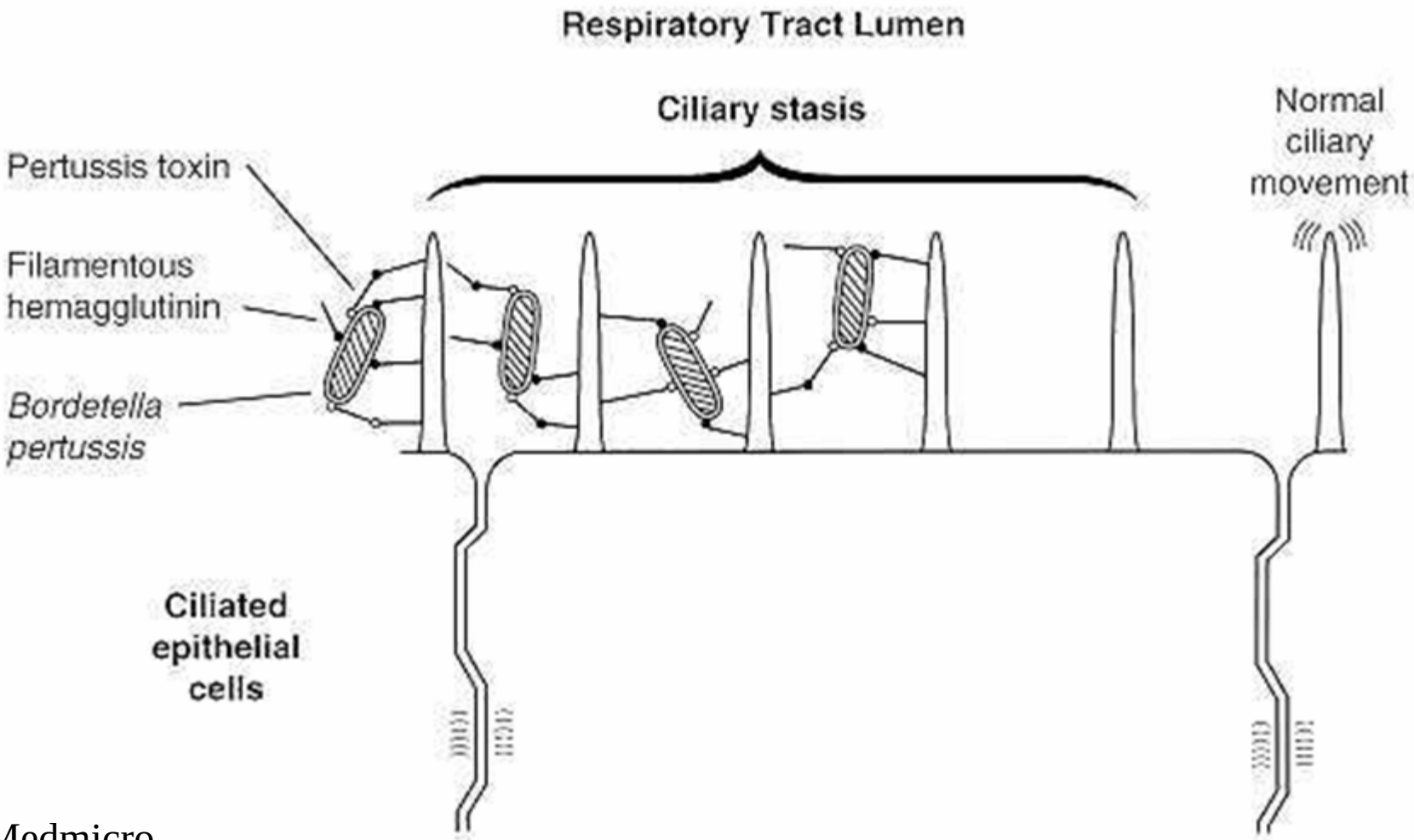
Entry, survival within macrophages

FIGURE 31-3 Binding of pertussis toxin to cell membranes.



Medmicro

FIGURE 31-4 Synergy between pertussis toxin and the filamentous hemagglutinin in binding to ciliated respiratory epithelial cells.



Bordetella pertussis

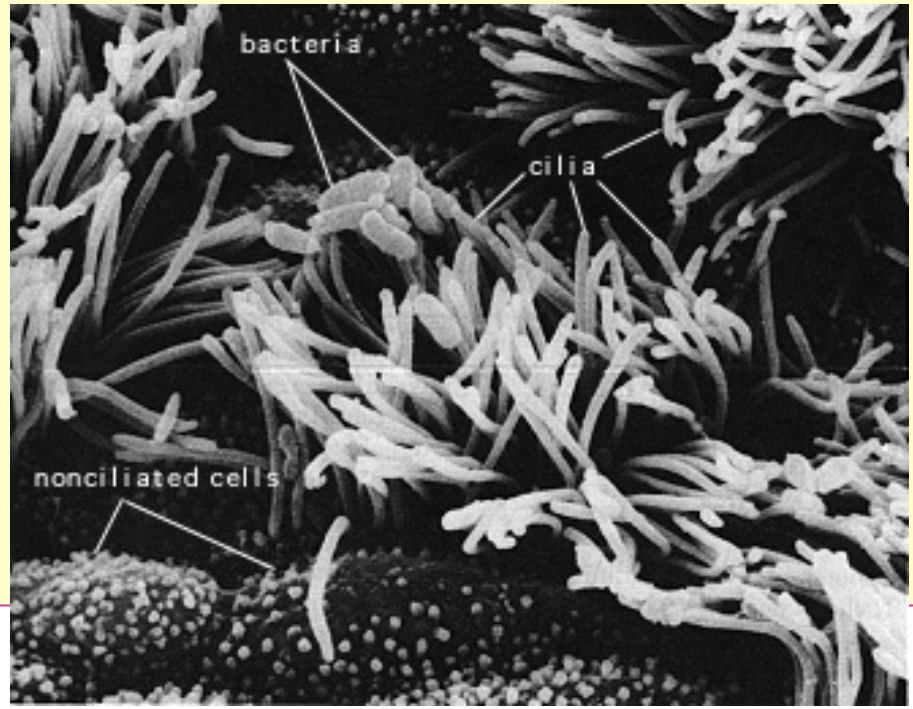
Kórkép:

Szamárköhögés / Pertussis

(Peribronchialis gyulladás, Intersticiális Pneumonia)

4-Phasis:

Prodroma,
Katarrhalis,
Paroxysmalis,
Rekonvalescens



Colonization of tracheal epithelial cells by *B. pertussis*

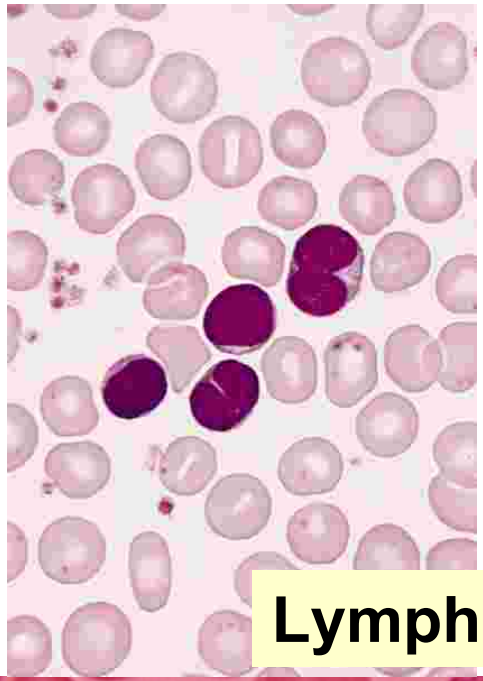
web.umr.edu/~microbio

Pertussis – paroxysmalis Phasis

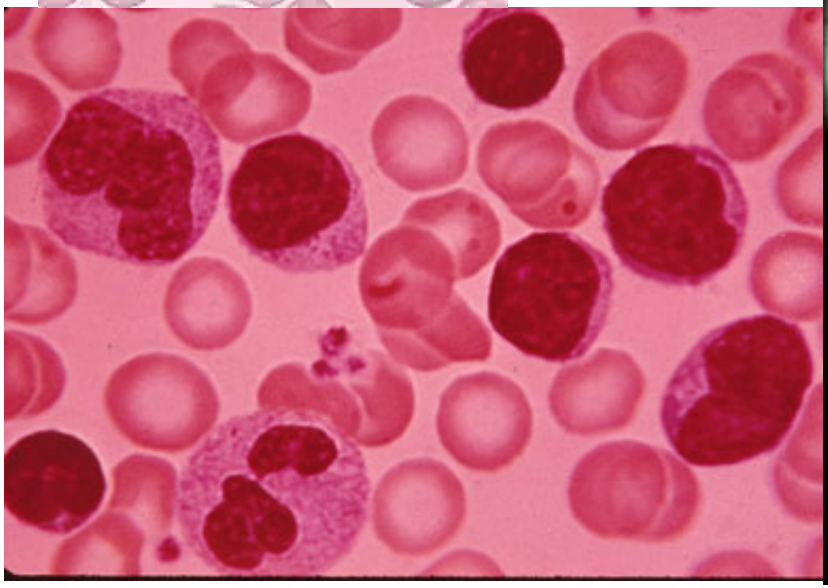
www.gesundes-kind.de,
www.vaccineinformation.org

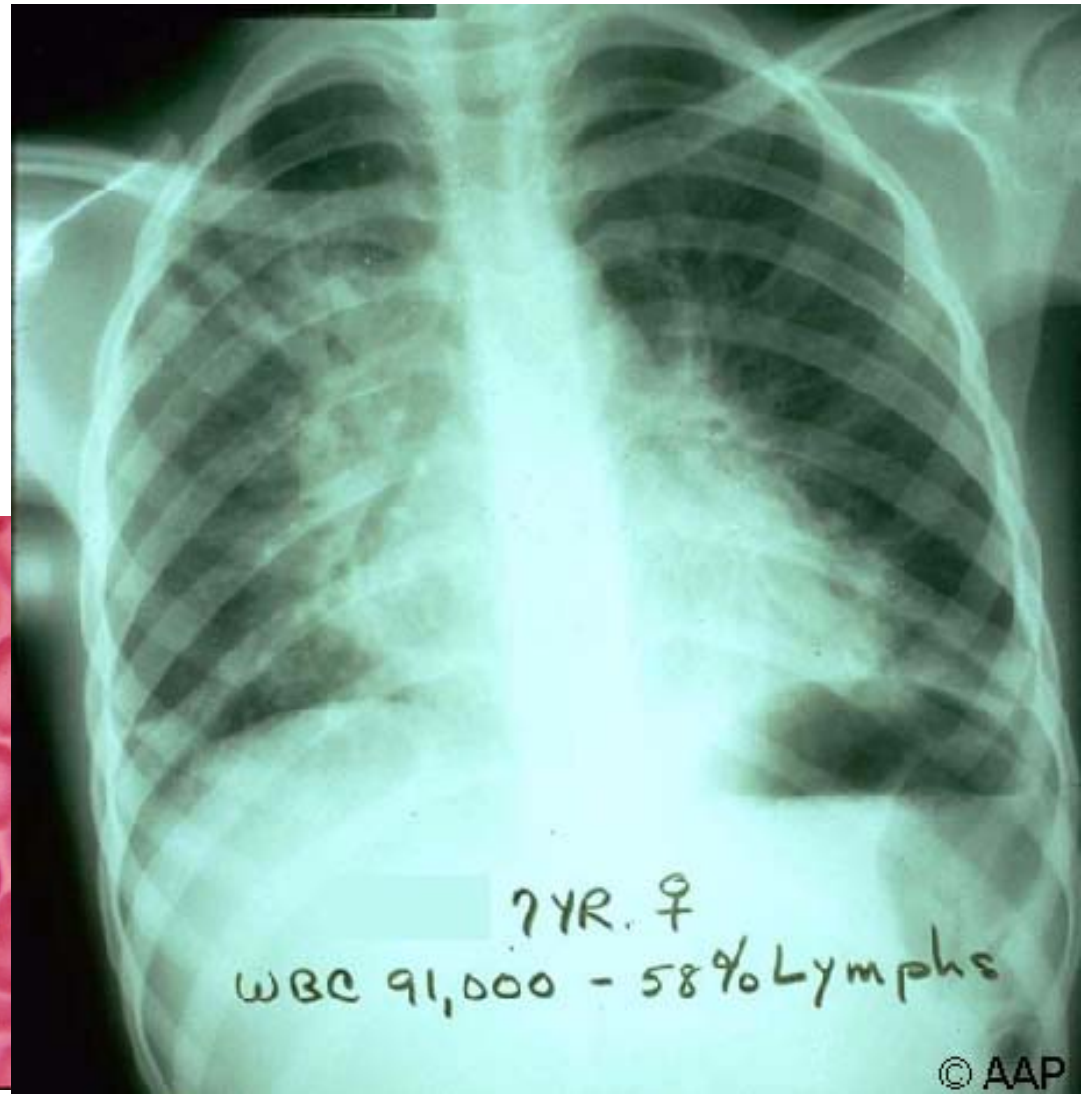
www.med.sc.edu

Pertussis - Diagnosis



Lymphocytosis



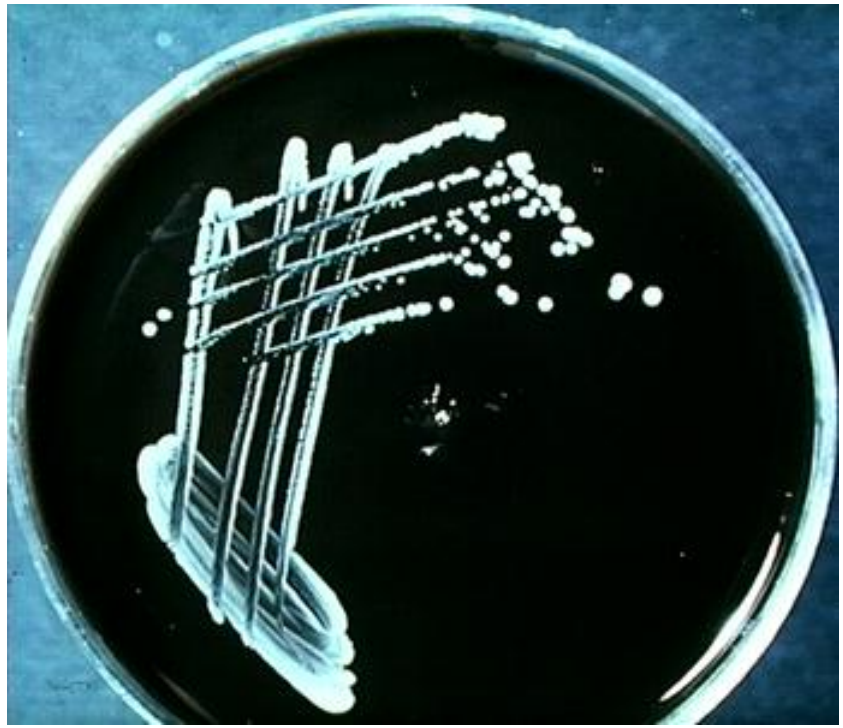


Bordetella pertussis

Diagnosis

<u>Tenyésztés:</u>
Bordet – Gengou
Direkt ráköhögni!

Charcoal Medium →



medinfo.ufl.edu

Szerologia:

IgM, IgA, IgG kimutatás

PCR

Bordetella pertussis

Therapia:
Makrolid

Prophylaxis:
Aktív Immunizálás – acelluláris oltóanyag **DaPT**, benne:
Toxoid
FH/Pilus
Pertactin

DiPerTe – elölt B. pertussis baktérium


Korfu, 2006
VÉGE