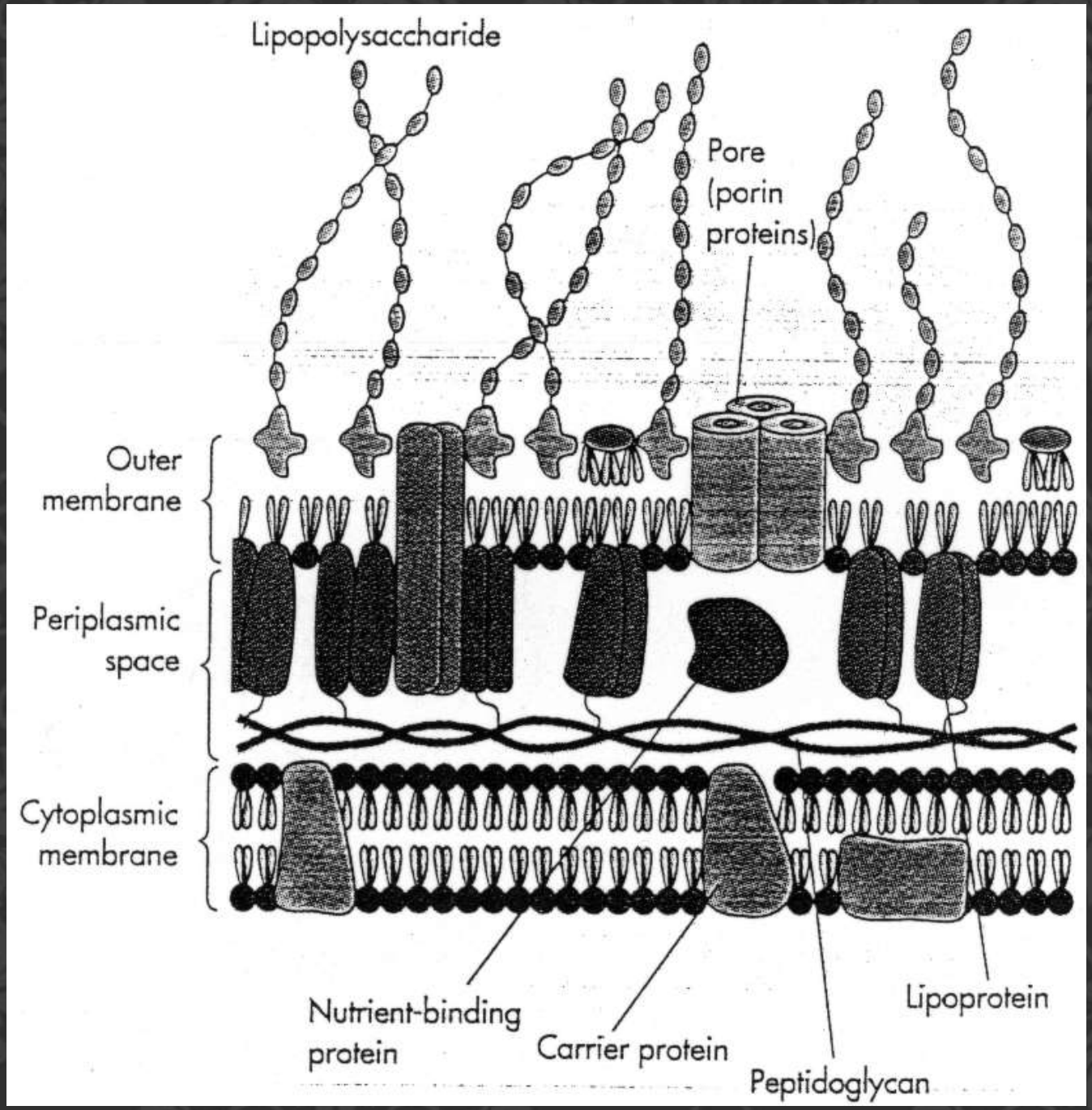
Klebsiella

- Nonmotile, short stout rods
- Capsule may be seen even in Gram staining
- Grow on ordinary media (mucoid colonies)
- Occur as commensals in intestine and as saprophytes in soil & water
- Capsular types 1-6 occur most frequently in the respiratory tract

Antigenic structure

- About 80 capsular (K) antigens
- 5 somatic O antigens
- Capsular antigens are detected by ‘Capsule swelling’ reaction
- Also by ELISA

Gram-Negative Cell Wall



Pathogenic species

- *Klebsiella pneumoniae*
- *Klebsiella ozaenae*
- *Klebsiella rhinoscleromatis*

Klebsiella pneumoniae

(Friedlander's bacillus)

- Second most common member of aerobic bacterial flora of human intestine
- Causes pneumonia, UTI, pyogenic infections (abscess, meningitis etc.), septicaemia and rarely diarrhoea
- Important cause of nosocomial infections

Pneumonia: in middle aged & older persons with predisposing factors – bronchopulmonary diseases, alcoholism. Massive mucoid inflammatory exudate with necrosis and abscess formation. Blood culture positive in 25% cases.

- *Klebsiella ozaenae* - Cause ozena (disease with foul smelling nasal discharge)
- *Klebsiella rhinoscleromatis* – Cause rhinoscleroma (granulomatous hypertrophy of nose) .

Virulence factors:

- Capsule
- Adhesions
- Iron capturing ability

UTI:Strains resistant to antibiotics
Diarrhoea:•Strains produce plasmid mediated enterotoxin (similar to E. coli).

Laboratory Diagnosis tests:

Specimens:sputum,urine,pus,blood.
Staining :G- bacIli.
Capsule test:swelling reaction test(Quellung reaction)
Culture:specimens are plated on blood agar,MaCconkey agar(pinkish ,mucoid colonies).
Biochemical tests:

- GLSM: + + + +
- IMViC: - - + +
- Urease positive

Treatment

Cephalosporin,trimethoprime-sulfamethaxazole,aminoglycosides,pepiracillin.