

The background is a light blue gradient with a faint image of a person in a white lab coat looking through a microscope. There are decorative elements: three golden spiral patterns in the top left and bottom right, and a large, faint circular pattern in the center. The text is overlaid on this background.

Klebsiella

Assistant prof. Buroooj M.R. Al-aajem

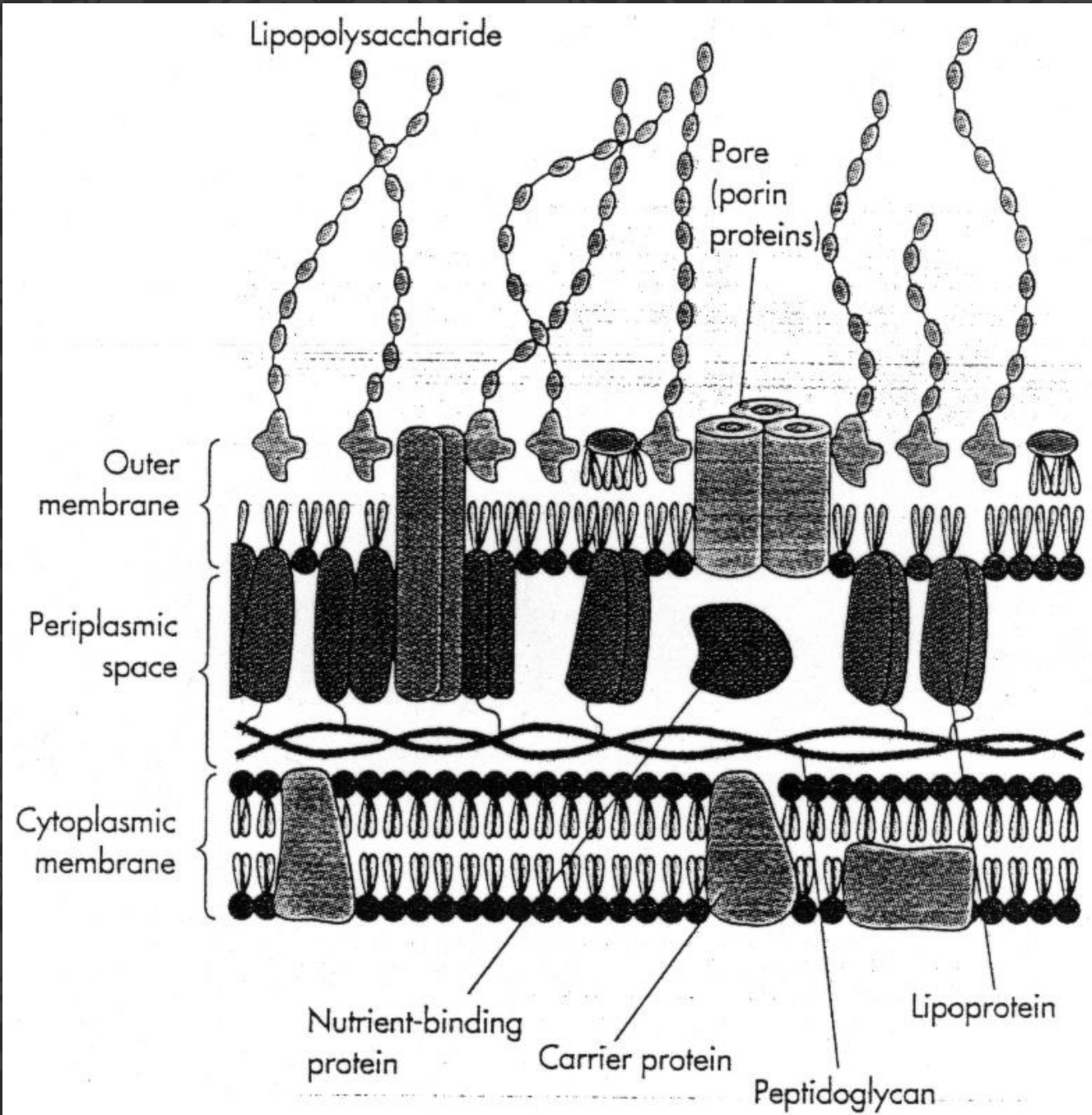
Department of Microbiology

College of Medicine

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- bacilli.

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, trimethoprim-sulfamethoxazole, aminoglycosides, piperacillin.