

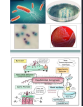
**Pseudomonas aeruginosa**

- Gram (-) rod
- oxidase (+)
- motile
- resistant to many antibiotics

- most virulent  
 - Green pigmentation  
 - Gram stain in wet mount  
 - Gram stain in 24h old culture (greenish blue color)  
 - Gram stain in 48h old culture (black color)  
 - Green pigment → pyocyanin and pyoverdine  
 - Reddish pigment → pyoverdine  
 - Blue black colonies  
 - swarming motility

**Virulence factors**

- Pili → attached to host cells
- Capable → form in culture from pili (light filament)
- Exoenzyme → multiple enzymes
- Pigments → production of brown film in hot water storage tanks
- Pyocyanin → exoenzyme → color from not just it itself bacteria
- Pellicles → color from shape of hole bottom vessel
- Phospholipase C → hemolysis
- Elastin A → cause some animals to damage tissues (yellowish brown appearance)



**Pathogenesis**

- Widely distributed in nature (not normally in hospital)
- Pathogenic organisms introduced into nosocomial or mixed infection
- ↑ Production of more virulence factors
- ↑ Ability to colonize catheters
- ↑ Exoenzymes (cause damage)
- ↑ Hemolysin & other toxins produce
- Exoenzyme in some & hemolysin
- ↑ Adhesion & invasion the mouse udder mammary
- ↑ cause lung & prostate infections (diarrhea & septicaemia)
- ↑ Resistance to many antibiotics
- ↓ Strains which are susceptible to bacteriophages of the animal farm are favored

**Clinical disease**

- infection of wound & burn (blue-green pus)
- in patients with recent burn may develop into bacteremia
- ↑ otitis & ear infection
- ↑ meningitis (color introduced by these bacteria)
- ↑ pneumonia infection → pneumonia → pleural effusion → emphysema → abscess → rupture into bronchus → hemorrhage
- ↑ eye infections
- ↑ ear infection → conjunctivitis → cornea → perforation → globe rupture
- ↑ ureteric obstruction of the gut
- ↑ urinary tract infections
- ↑ bacteriemia infection
- ↑ sepsis

**Micrococcus luteus**

- Gram (+) cocci & Diplococci
- non motile
- aerobic
- growth in white colonies with yellow pigment when grown by 4-8
- Hydrolytic pink sign in
- Oxidase (+)
- Catalase (+)
- Non sugar fermenter
- Produce  $\beta$ -lactamase
- Dipase (+)

**Biochemical Reaction**

**Clinical infection**

- Pruritic
- Skin infections
- Infected media (stool culture)
- Eye, ear, throat infection

**penicillin**

- Adapted eye
- immunodeficiency
- Mechanism

**Bacillus anthracis**

**Pathogenesis**

- Disease of herbivores (sheep, cattle, horses) - humans are easily affected
- In animal → point of entry is mouth & gut tract
- In human → scratches to the skin (95% of infection), ingestion or inhalation (5%)
- Spores germinate in the tissue at the site of entry & growth of vegetative form results in abscess in skin & respiratory
- Bacteria spread via lymphatics to the blood & other tissues

**Clinical disease**

- Inhalation anthrax (cutaneous disease) → high mortality (death in 6 days or less)
- prolonged incubation: lymph node (Charlton's edema) or mediastinal lymph nodes
- body fluid effusion (petechiae & meningitis) (eye infection) → fatal if untreated (100%)
- Cutaneous anthrax (most frequent) → papule-pustule ulcer with black eschar surrounded by erythematous edema
- Cutaneous anthrax (conjunctivae) → swelling pain & blindness

**Multistatin** made in reference lab by direct fluorescent Ab test against capsule polysaccharide or PCR test

**Serological tests** → Detection of Ab to lethal toxin & edema toxin

**Treatment** → Anti-toxin therapy

**Virulence factors**

- capsule → survival from spore
- Exotoxin (A-B toxin) → survival from another organism
- edema factor (EF) → inhibits enzyme (adenylyl cyclase) → cyclic AMP → inhibits phagocytosis → increases permeability → edema
- lethal factor (LF) → produces AB toxin (lethal factor (LF) + edema factor (EF)) → cell death & inhibition of the release proinflammatory cytokines

**Biochemical Reaction**

- Proteinase
- Starch
- Gelatinase
- DNAse
- RNAse
- Caseinase
- Urease
- Hydrolytic pink sign in