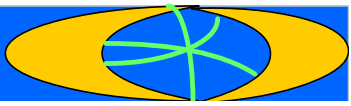
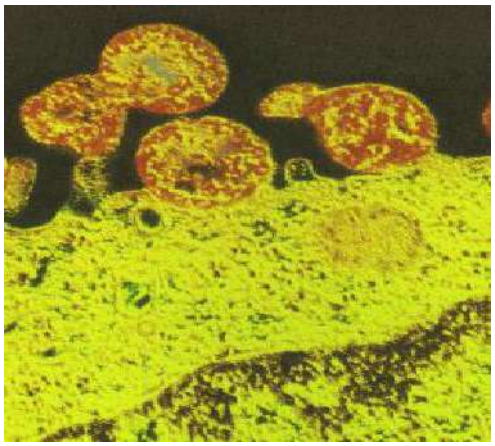
第19章 支原体

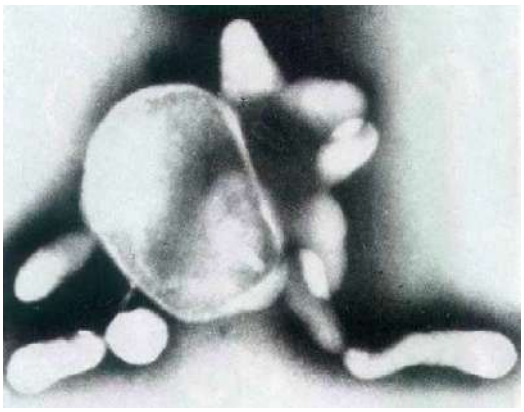
Mycoplasmas



Definition

Mycoplasmas are the smallest prokaryotic organisms without cell wall and can reproduce in cell-free media.





> 150 speties.

Human origin > 15 species.

Important:

***Mycoplasma pneumoniae*—pneumonia,joint**

***M. hominis*----postpartum fever**

uterine tube infections

***Ureaplasma urealyticum*---non-gonococcal urethritis**

***M. genitalium*----urethral infections**

Characteristics

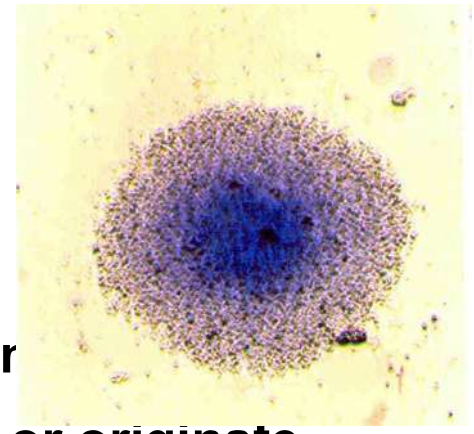
They have the following characteristics（生物学特性）:

1. The smallest mycoplasmas:125~250nm.

2. pleomorphic, because they lack a rigid cell wall and instead are bounded by a triple-layered“unit membrane”.

3. resistant to penicillin 对青霉素耐药
sensitize to tetracycline 对四环素敏感

Characteristics



4. “fried egg” colony（油煎蛋菌落）
5. Growth is inhibited by specific ar
6. Mycoplasmas do not reverse to, or originate from,bacterial parental forms
7. Mycoplasmas have an affinity for mammalian cell membrane.

一、生物学性状—生化反应

支原体	葡萄糖	精氨酸	尿素	吸附细胞	致病性
肺炎支原体	+	—	—	红细胞	肺炎、支气管炎
人型支原体	—	+	—	—	泌尿生殖道感染
生殖器支原体	+	—	—	—	泌尿生殖道感染
穿透支原体	+	+	—	红细胞	条件感染
				$CD4^+$T细胞	多见于艾滋病
				巨噬细胞	
溶脲脲原体	—	—	+	—	泌尿生殖道感染
					流产及不孕不育

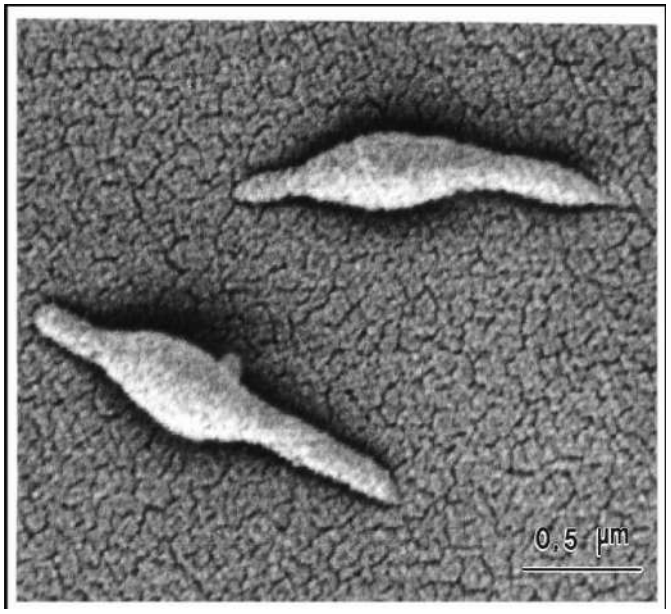
支原体与细菌L型的异同点

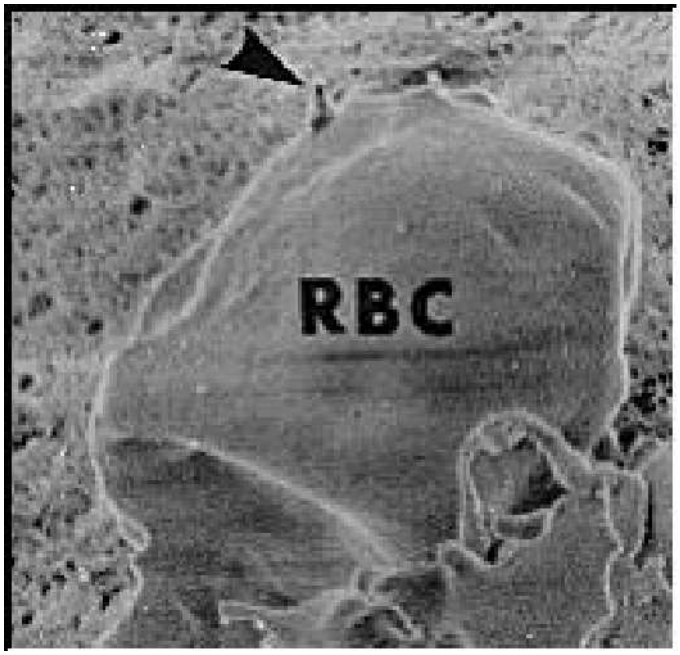
不同点：

鉴别点	支原体	细菌L型
细胞壁缺失原因	在遗传上与细菌无关	与原菌相关，可以回复细胞膜
含高浓度固醇	细胞膜不含固醇	培养特性 需要胆固醇
大多需要高渗培养		
菌落大小	生长慢，菌落小	菌落稍大（ 0.6-1.0) 液体培养
液体培养混浊度极低	有一定混浊度，可附壁	

1. many pathogenic Mycoplasma have flask-like or filamentous shapes and have specialized polar tip structures （顶端结构）that mediate adherence to host cell. These structures are a complex group of interactive proteins, adhesins, and adherence-accessory proteins.

Mycoplasmas





2. adhesin proteins（粘附素蛋白）.

The P1 Adhesin localizes at tips of the bacterial cells and binds to sialic acid residues on host epithelial cells.The nature of the adhesins in the other species has not been established. Colonization of the respiratory tract by *M. pneumoniae* results in the cessation of ciliary movement.

3. direct cytotoxicity（直接细胞毒性）：

hydrogen peroxide； superoxide radicals

cytolysis mediated by antibody reactions

- Immunopathogenesis（免疫病理）：most children are infected from 2 - 5 years of age but disease is most common in children 5-15 years of age.

*Atypical pneumonias*非典型肺炎

Transmitted: from person to person.

M. pneumoniae RT ⟶ attachment of it's tip(specific adhesin proteins P1) to receptor on the surface of respiratory epithelial cell

Clinical finding（临床结局）:

Asymptomatic infection ⟶ serious pneumonitis, occasional neurologic and hematologic (hemolytic anemia), skin lesion.

Mycoplasma pneumoniae

Susceptible易感性：5-20 years of age

Incubation period：1～3weeks

Symptoms症状：lassitade, fever, headache,
sore throat and cough.
Blood-streaked sputum, chest pain.

Pathology病理：interstitial and peribronchial pneumonitis and necrotizing bronchiolitis

Superantigen:超抗原
Death is very rare.

1. ELISA,CF,PCR.

2.冷凝集试验(cold hemagglutination test)

s + group O human erythrocyte→1:64(IgM)

(cold agglutinins are IgM autoantibodies against type O red blood cell that agglutinate these cell at 4℃ but 37℃).

Ureaplasma urealyticum

Urogenital infection in men:

non-gonococcal urethritis (NGU),非淋菌性尿道炎

pyelonephritis（盆腔炎）.

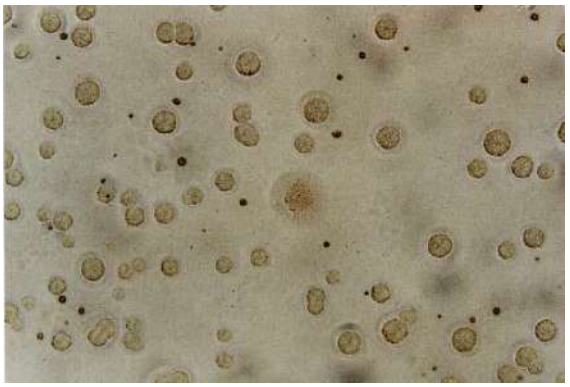
Reproductive tract disease in women:

Pelvic inflammatory disease (P I D).盆腔感染性疾病

Ureaplasma urealyticum

Laboratory diagnosis

1. isolation
2. PCR



Treatment

Tetracyclins四环素

Erythromycin四环素, **lincomycin**林可霉素

Azithromycin 阿奇霉素