

# INTRODUCTION TO ORAL MICROBIOLOGY



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# MICROBIOLOGY

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- **Micros** = Small
- **Bios** = Living → **Small living science**
- **Logos** = Science

- **Discuss**

## **Microorganisms;**

**-features,**

**-relationship of other complicated livings  
and each other**

**-laboratory diagnosis**

# Microbiology areas

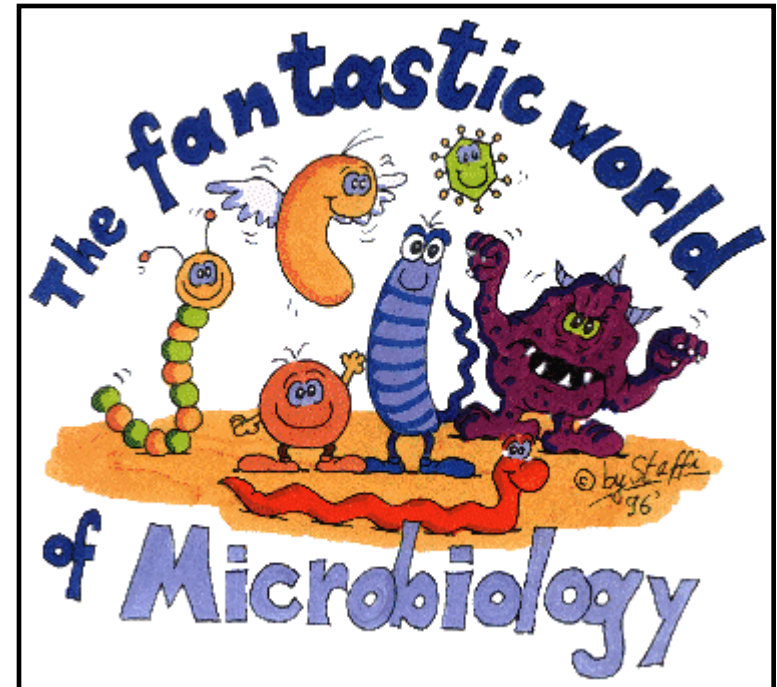
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- **Agricultural microbiology**
- **Nutrient microbiology**
- **Space microbiology**
- **Medical microbiology**

# Medical Microbiology

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- **General microbiology**
- **Bakteriology**
- **Virology**
- **Immunology**
- **Mykology**
- **Parazitology**



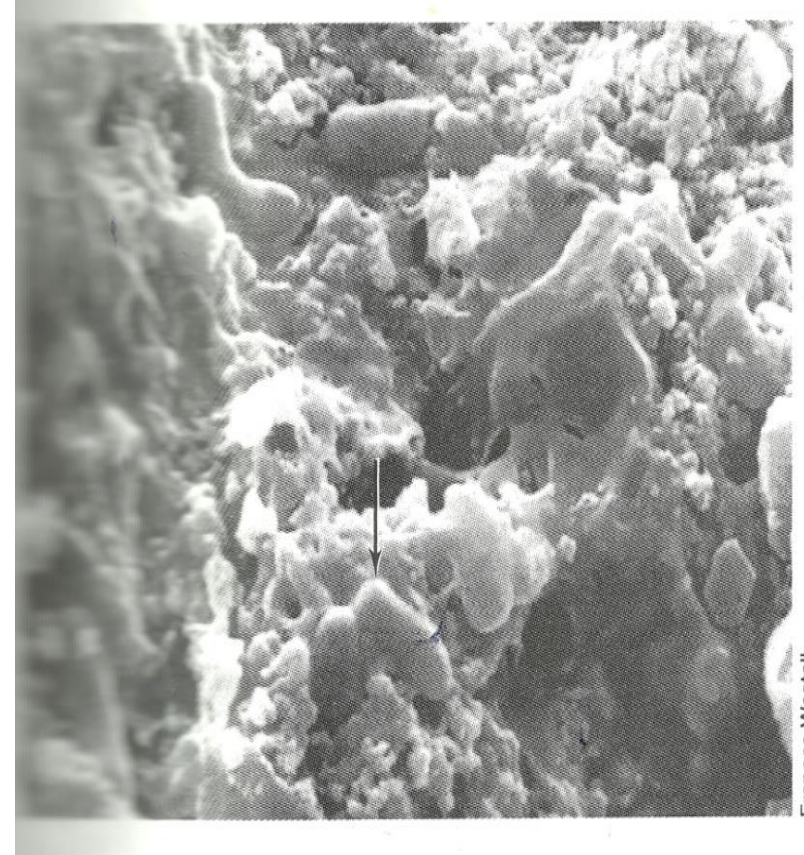
# In begening ...

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Question: How old is the oldest microorganism?

# In begening...

- 3,5 billion age
- *Stromatolit*
- *South Africa primitive rocks*
- *Bacteri fossils*



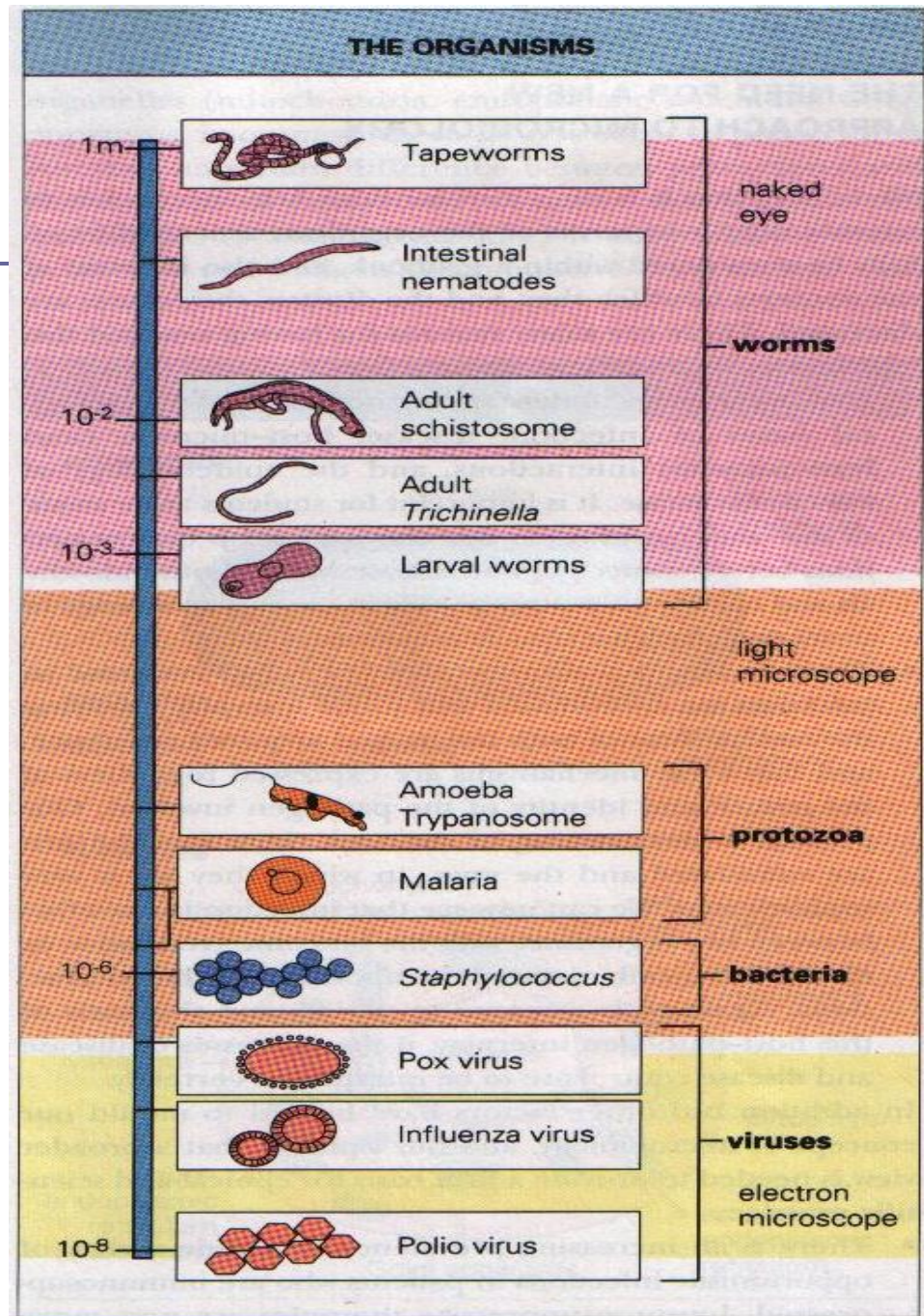
Şekil. Antik mikrobiyal yaşam <sup>6</sup>

# In begening...

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Question: Which one is the smallest/biggest microorganism?

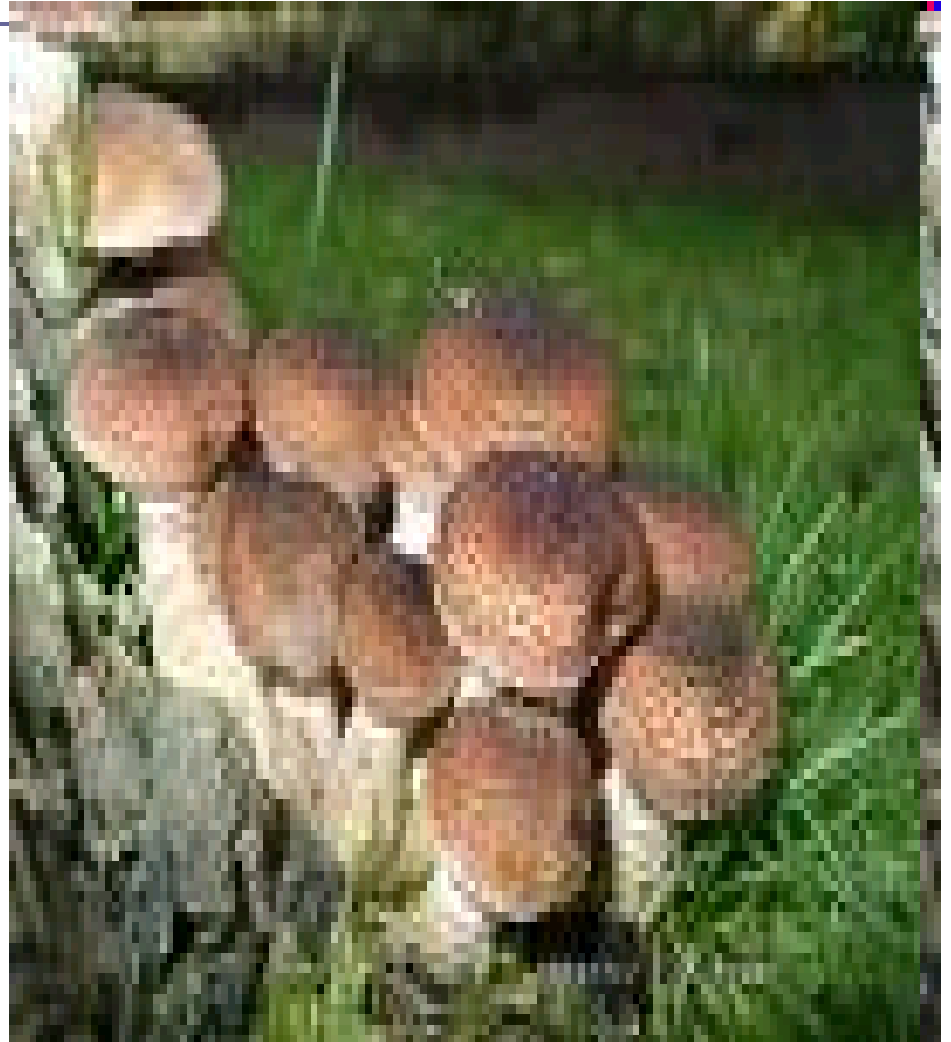
# In begening...





# *Armillaria osteyae*

- Fungi
- 2000-8000 years old
- Honey fungi
- 890 hectar (8.9 km<sup>2</sup>)
- Under soil
- Mycellium ball
- One piece
- one M.O.



# In begening...

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Question: Which event/factor and who kills mostly?

# In begening...

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## □ Mosquito

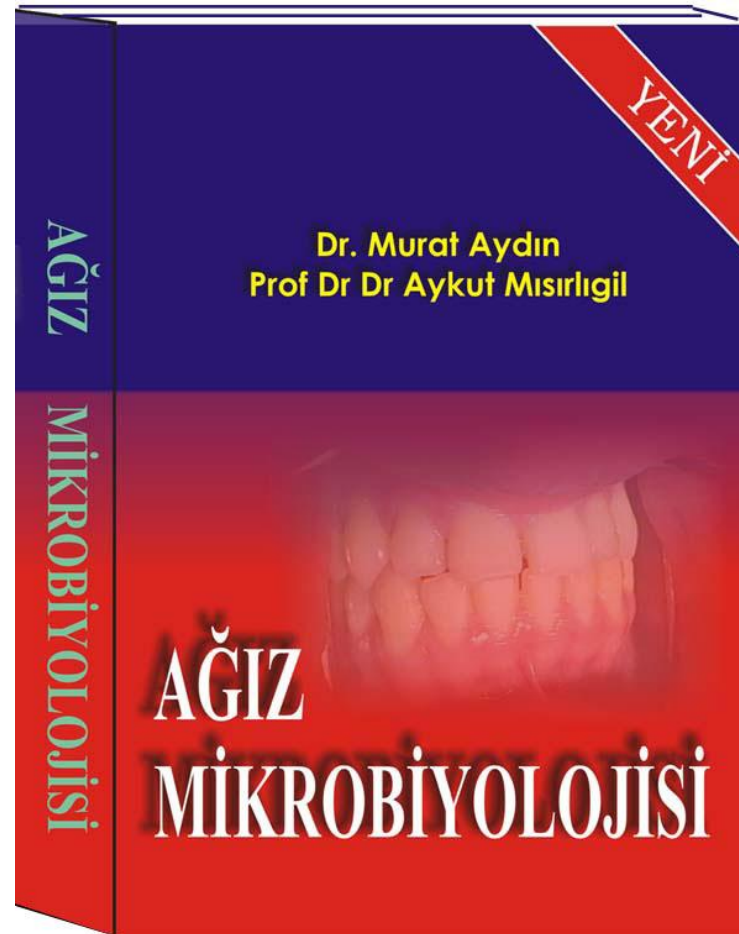
- Half of the death up to now (45 billion)
- “female Mosquitos”



# Oral Microbiology Lecture

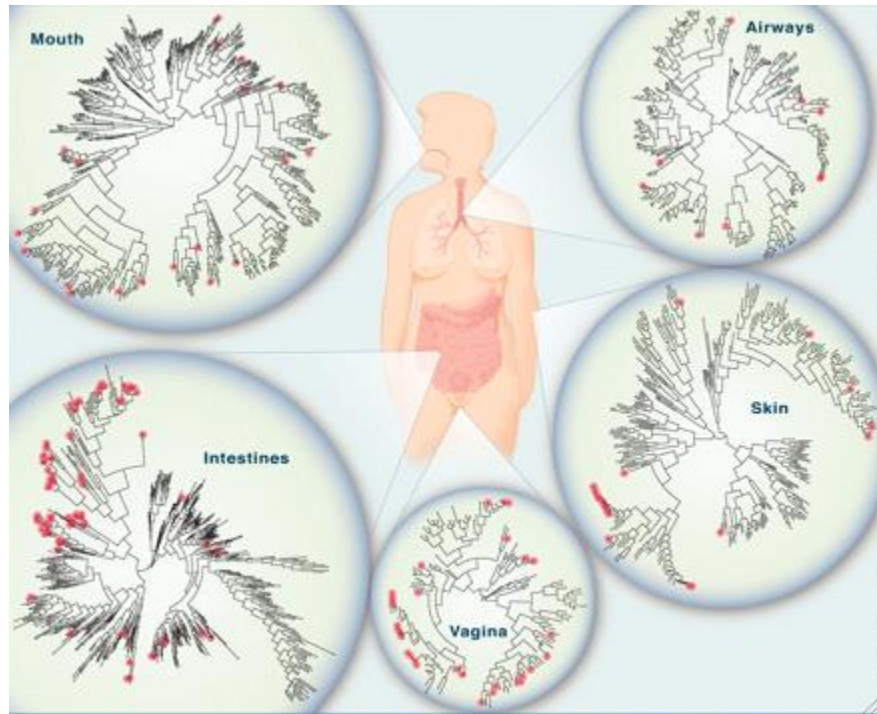
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## □ Source



# Oral Microbiology

## □ General and ve Basic Microbiolog



# History

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## First age...

### □ First written works in İlk yazılı eserler Mesopotamia

#### ■ BC 5000

□ Tooth decay → wolf eating teeth

### □ Roman Galien (BC 106-43)

#### ■ Dental pulp

### □ El-Razi (866-923)

#### ■ Gingiva infections



# History

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## □ Ebul Kasis (936-1013)

- Cleft lip Treatment and tooth implantation
- Prosthesis and filling from animal teeth to human
- Advice use of Miswak

## □ İbn-i Sina (980-1037)

- Bukhara philosopher doctor
  - 100'den fazla Tıp kitabı
  - Tooth anatomy, tooth decay, gingiva infections, oral malodor etc.

# History

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- **surgion from amasya Şerafettin Sabuncuoğlu**
- **Fatih Sultan Mehmet period**
  - **First Turkish dentists work**
  - **Periodontal, conservative, prosthetic and surgical teeth treatment and desenfection**





# History

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- **Musa Bin Hamun**

- **Kanuni Period (1550)**

- **Teeth infections and inflammation in Turkish written book**
- **Tooth order and anatomy is close to today**
- **Drugs given to Gingiva and pulp infections are similar to nowadays**
  - **Treatment with music**



# History

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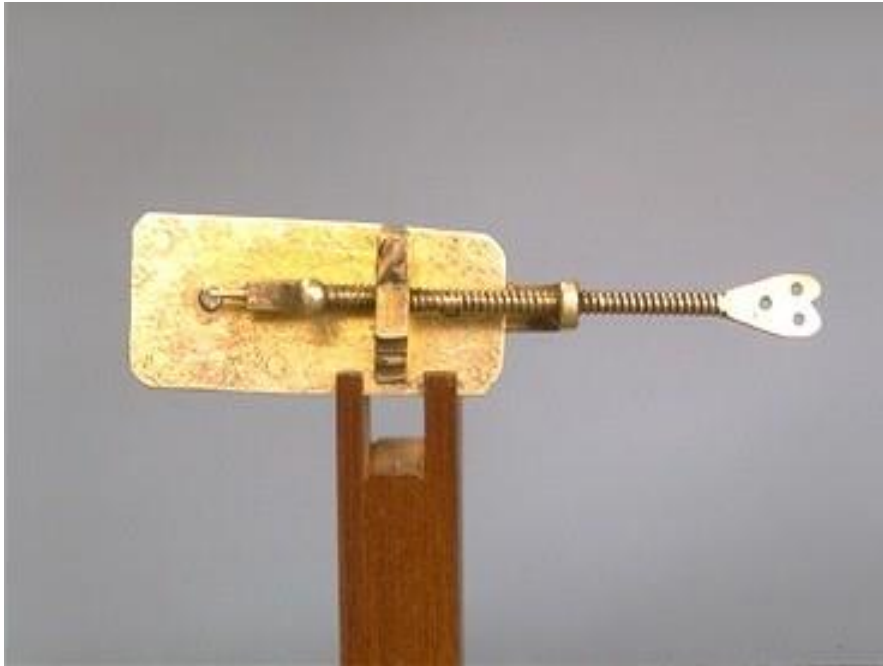
- **First age toothbrush invention**
- **1796 dentist in Boston**
- **1806 Use in Europe and America**
  
- **Oral Microbiology and dentistry**
  - **Start point middle east (Turkish-Arabic-Iran)**
    - **XV. Century spread to west**



# History

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- Invention of microscope
- Holland, 1632



**Antony van Leeuwenhoek**

# Development of microscope

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- **Antony van Leeuwenhoek**, tradesman and amateur lens producer in Holland
- First written **“Oral Microbiology”** work
- More than 200 document about oral microbiology
- Give a name **‘animacule’** to small livings

# History

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- **Dayton Miller (1853-1907)**
- **Worked with Robert Koch**
- **164 articles**
  - **“Die Mikroorganisma der Mundhöhle-Microorganisms of mouth”**
    - **Father of oral microbiology**



# Germ theory in diseases

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- **Koch and Pasteur corrected germ theory in 1870 and 1880**
  - **Charbon**
  - **plague**
  - **Canine madness**
  - **cholera**
  - **tuberculosis**
  
- **Pasteur – father of Modern medicine**  
**Founder of diagnostic microbiology**

# Luis Pasteur

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- Vaccine practices



- *Hiç kuşku yok ki; bilim ve barış cehalet ve savaşı yok edecektir. Ulusların yıkmak, yok etmek için değil, yaşamı yüceltmek için birleşeceğine, geleceğimizi bu yolda uğraş verenlere borçlu olacağımıza inanıyorum.*

L. PASTEUR

His invention helped to Robert Koch's work

# Robert Koch (1843-1910) – Foundation of Bacteriology

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## □ German doctor

- **Charbon basilli (1877)**
- **Tuberculosis basilli(1882)**
- **Cholera basilli (1883)**
- **Nobel Prize(1905)**



## □ Koch postulates (theorems)

- 1) Diseases occur due to certain factors
- 2) Agents should be isolated and produced as pure
- 3) Should produce disease when gine to healty experimental animals and
- 4) Should be produced as pure culture from animals again



# History

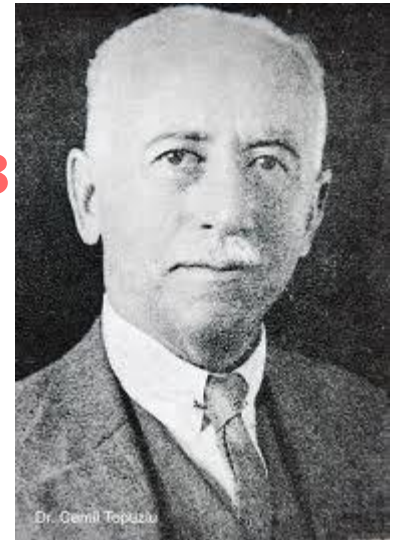
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## □ Dr. Gas Guillot

- Gave odontology lectures in faculty of medicines
- First dental school in 21 October 1881

## □ Prof. Dr. Cemil topuzlu

First dental school in our country in 1908



# Today

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- **In many countries over the world**
- **At the faculty of dentistry**
- **“Oral Microbiology” or “Oral Microbiology and Immunology” departments**
- **In our country;**
  - **Oral microbiology lectures started in 1970**
  - **But not to much attention after 1980**

# Oral Microbiology

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## Definition

Study of infectious diseases observed in the mouth and/or symptoms in the mouth

# Oral Microbiology

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- Over 300 bacterial species in the mouth
- Dominants are “anaerobics”
- Viruses cannot infect pulpa
- Fungal infections except *Candida* species are very rare
- **oral microbiology=anaerobic bacteriology**

# Oral Microbiology

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- 1. Tooth decay**
- 2. Endodontic infections**
- 3. Periodontal infections**
- 4. Oral-denture-gingiva infections**
- 5. Head-neck infections**

# Oral Microbiology-Importance

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- **Some of systemic infections show signs**
- Ex. Lichen.. **Hepatit C**
- **Viral oncogenesis in oral cancers aetiology**
- **Like Pemfigus, aft degenerative diseases**
  - MO. allergy or mg with immune dysfunction
- **Mechanism of Infections observed in mouth and other infections are different**
- Ex: **neurogenic inflammation in pulpa**, periodontal **hard tissue losses** etc.

# Oral Microbiology-Importance

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- **Treatment is not with antibiotics although all of them is infection**
- **Dentists;**
  - Treatment strategy of Endodontic and periodontal infections are special
  - **“Microbiology” knowledge is efficient**
  - General and Basic Medical Microbiology and Oral Microbiology should be educated
  - **AIDS, hepatitis B, Tbc etc. Should know microbiology in order to protect himself and his patients**
  - **Should know about Antibiotics and desenflectants (dosage, duration,usage, combination, newapplications)**

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Thank you