320 MBIO
Microbial Diagnosis
Lab 2

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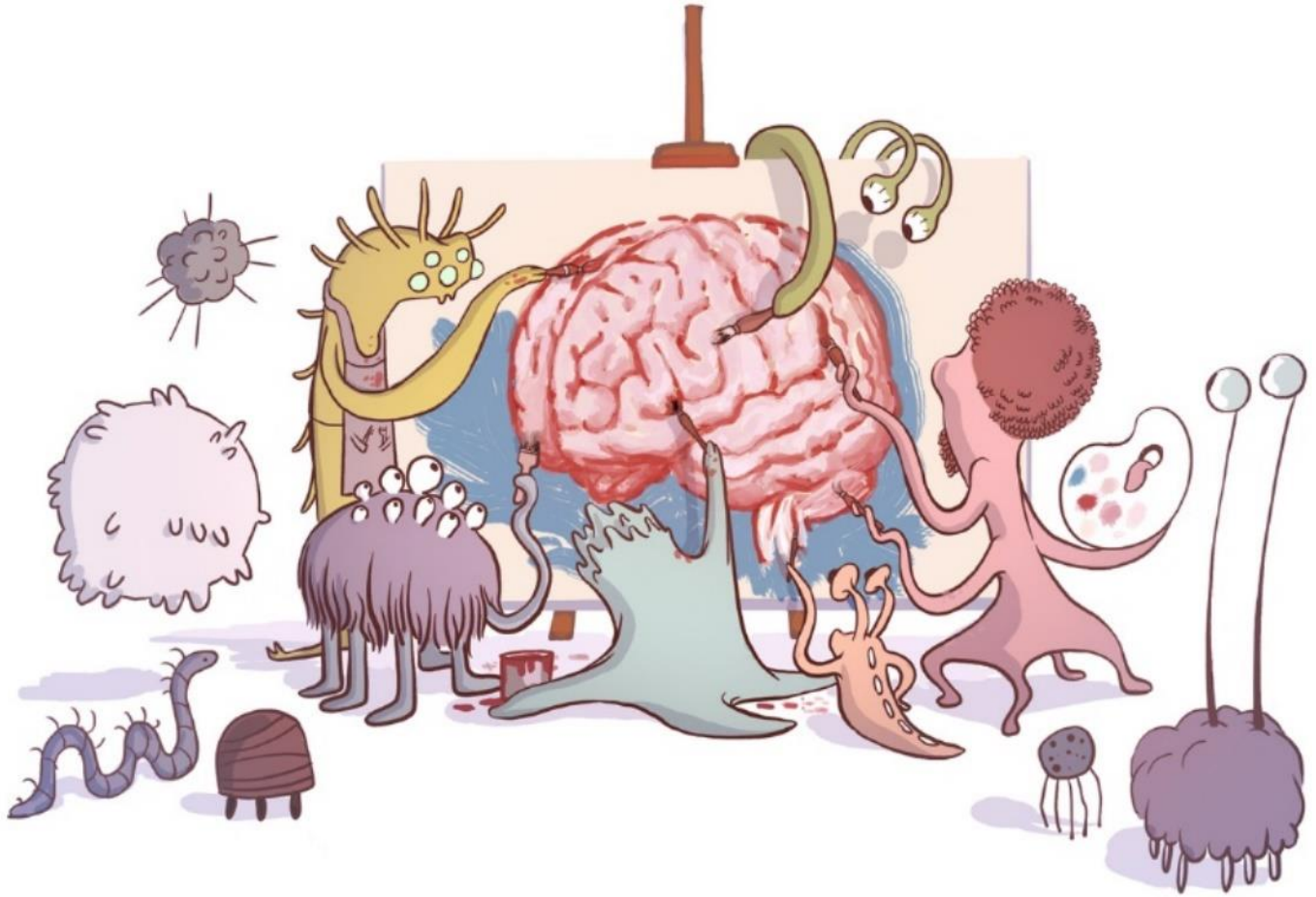
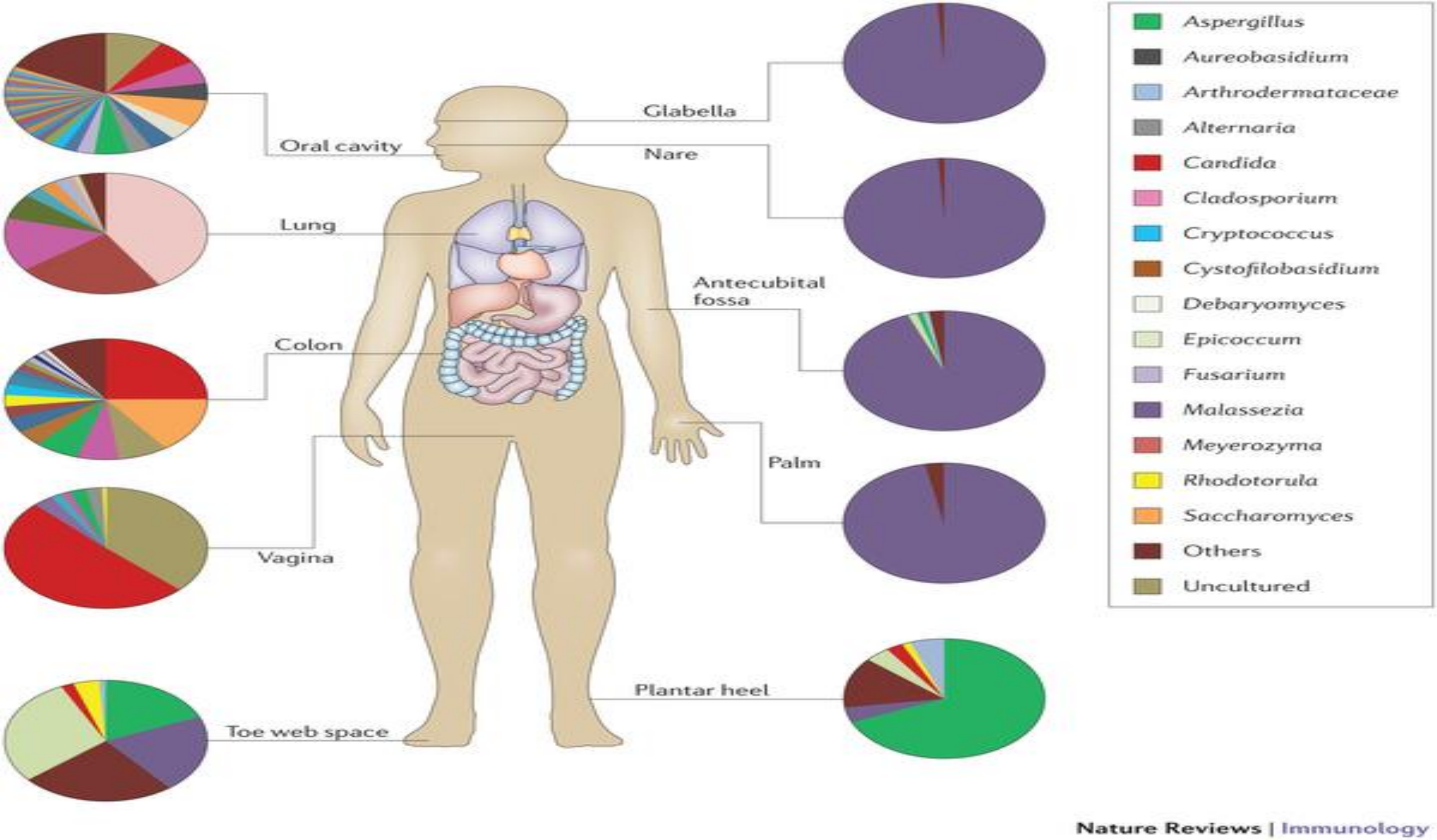
Human as habitats



- Microorganisms that inhabits our body make up our normal microbiota also known as normal flora.
- The normal microbiota does not harm us, but also in some cases can actually benefit us.

- Some normal biota protects us against the disease by preventing the over growth of harmful microbes, while other produce useful substance such as vitamin K and some B vitamins.


Oral cavity
Lung
Colon
Vagina
Toe web space
Glabella
Nare
Antecubital fossa
Palm
Plantar heel
Aspergillus
Aureobasidium
Arthrodermataceae
Alternaria
Candida
Cladosporium
Cryptococcus
Cystofilobasidium
Debaryomyces
Epicoccum
Fusarium
Malassezia
Meyerozyma
Rhodotorula
Saccharomyces
Others
Uncultured

GI flora

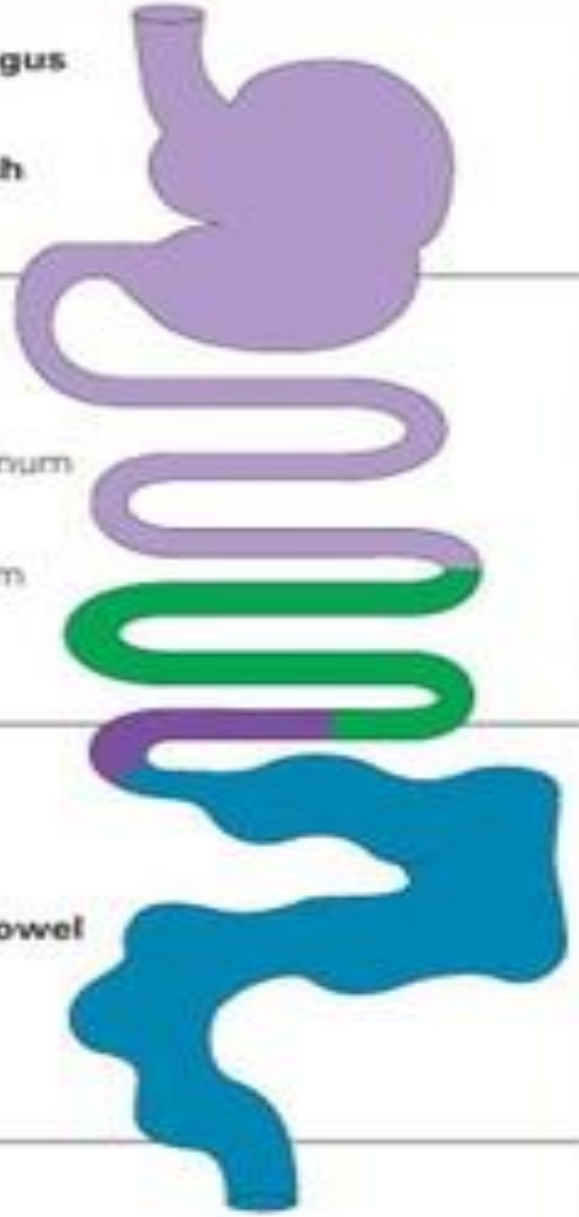
- Density in microorganisms increases from stomach to large intestine

frequency

- <10%
- 10–25%
- 25–75%
- 100%

density

- very low (10^3–10^5/g)
- low (10^5–10^8/g)
- medium (10^8–10^{10}/g)
- high (>10^{10}/g)

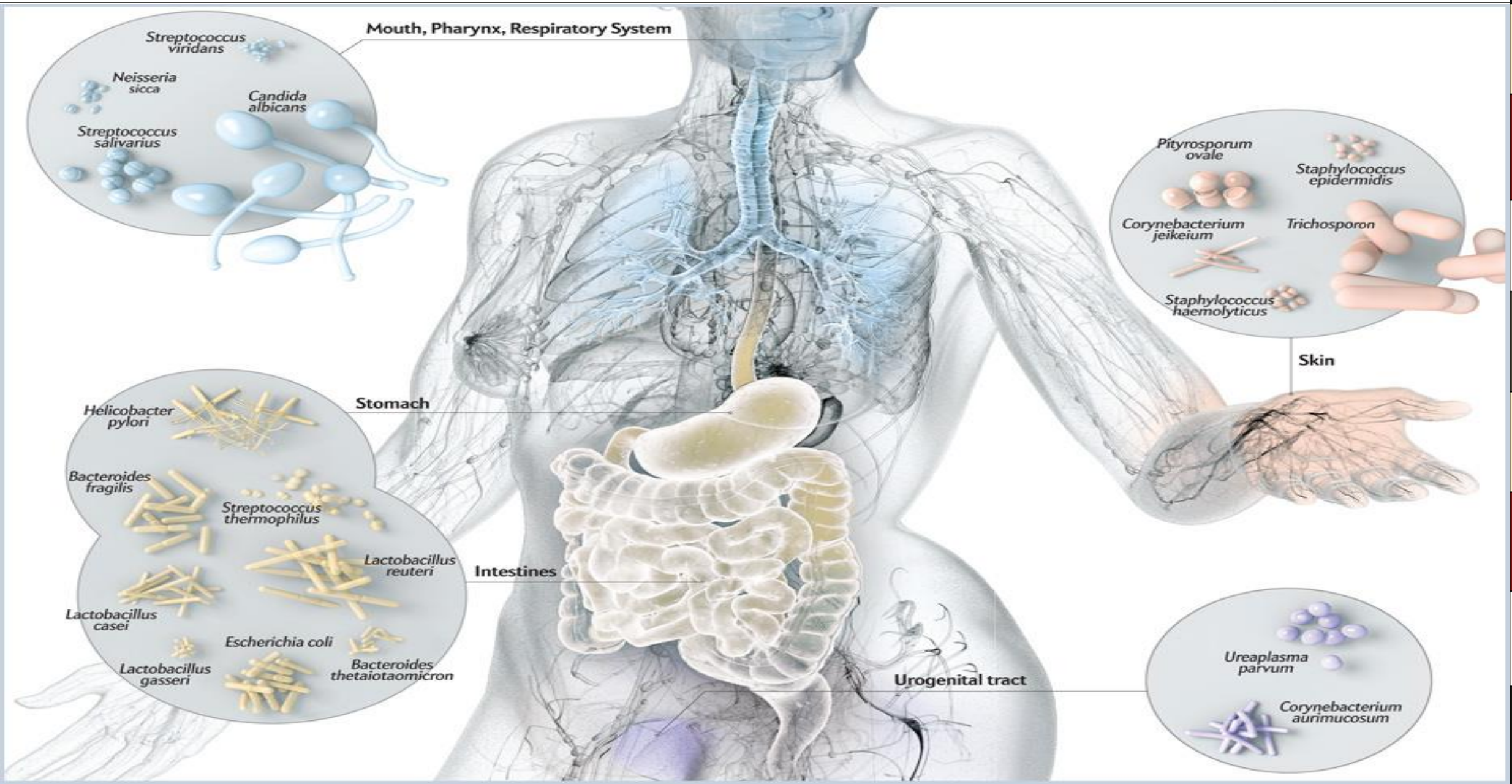


density	frequency of occurrence in population	
esophagus stomach	lactobacilli	
small bowel duodenum	lactobacilli streptococci	
jejunum ileum	enterobacteria *Bacteroides* spp.	
large bowel	*Bacteroides* spp. *Fusobacterium* spp. *Strep. faecalis* *Escherichia coli*	enterobacteria *Klebsiella* spp. eubacteria bifidobacteria
	lactobacillus *Staph. aureus* *Clostridium* spp.	streptococci *Pseudomonas* *Salmonella*
fecal material	*Bacteroides* spp. bifidobacteria eubacteria	coliforms *Strep. faecalis*

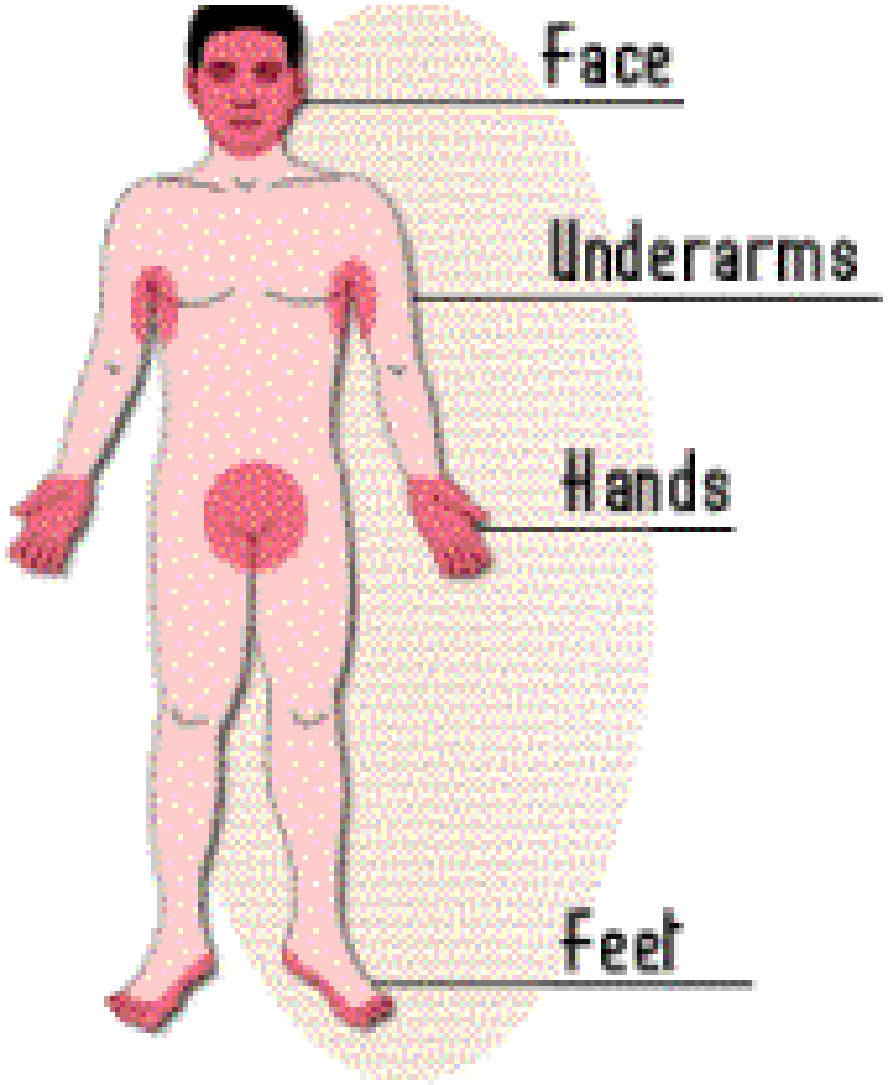
- Under some circumstances normal microbiota can make us sick or infect people we contact.
- For example, when some normal microbiota leaves their habitat they can cause disease.

❖ Distribution factors

- Any sites in the body that is accessible to microbes as long as the site has enough **moisture**, and **provides nutrients** can serve as an excellent habitat for a wide variety of microorganisms.
- The **skin** is a prime example and it has a several distinctive habitats for microorganisms. The outer layers of the skin, the epidermis, is too dry for most microorganism.


Mouth, Pharynx, Respiratory System
Streptococcus viridans
Neisseria sicca
Candida albicans
Streptococcus salivarius
Pityrosporum ovale
Staphylococcus epidermidis
Corynebacterium jeikeium
Trichosporon
Staphylococcus haemolyticus
Skin
Stomach
Helicobacter pylori
Bacteroides fragilis
Streptococcus thermophilus
Lactobacillus reuteri
Intestines
Lactobacillus casei
Escherichia coli
Lactobacillus gasseri
Bacteroides thetaiotaomicron
Urogenital tract
Ureaplasma parvum
Corynebacterium aurimucosum

- Microorganisms are commonly found associated with **apocrine glands** (in underarms, genital regions, nipples, and umbilicus) and **sebaceous glands** (hair follicles). These areas of our body provide plenty of **moisture and nutrients.**



- Another factor that affected the niche occupied by microbes indigenous to human is their **oxygen requirement.**
- It is clear that **the large intestine** is the home to a large number of anaerobic microbes, but anaerobes are also important members of the normal microbiota of the mouth and skin.
- One must not forget that certain areas in the mouth and skin are anaerobic.

❖ The Experiment

- In this exercise, you will characterize an isolate from the skin in terms of its cellular morphology and tolerance of certain environmental conditions.

Objective

- To learn about and observe microorganisms that make up our normal biota
- To isolate and characterize bacteria from different place on our skin

Materials

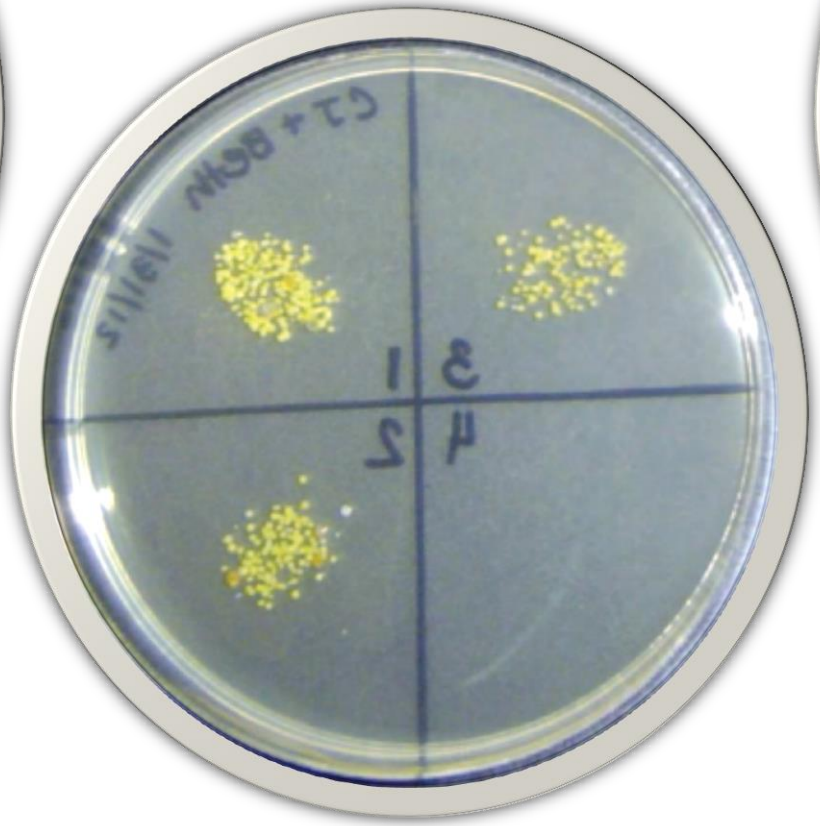
- Sterile swabs
- Tubes with sterile water
- Nutrient agar plates
- Incubators at 37°C.

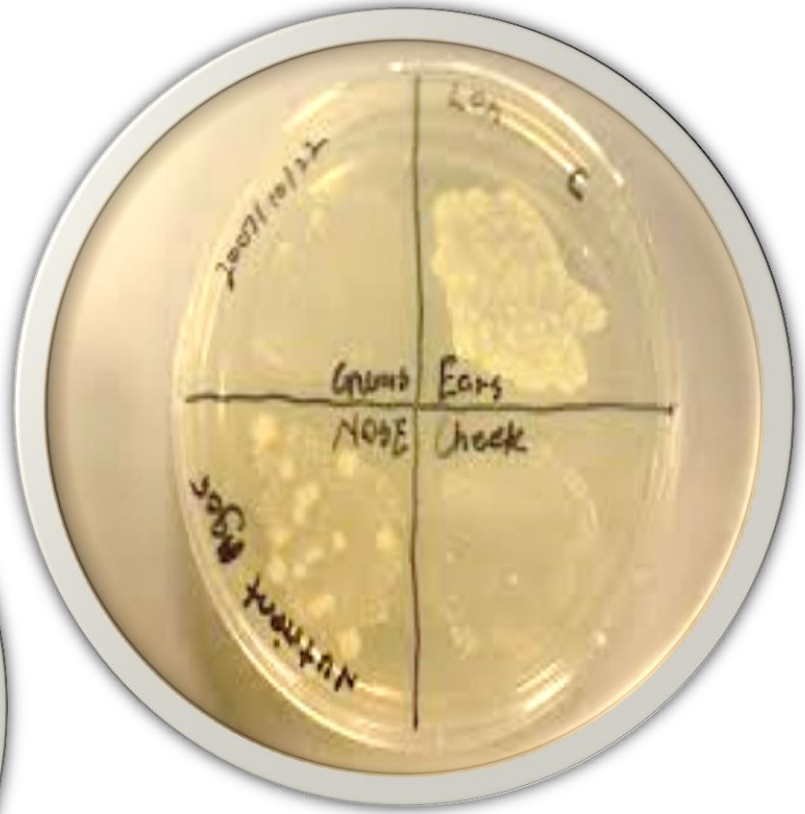
Procedure

- Choose two areas of the skin that differ in terms of moisture and degree of exposure to the outside environment.
- Swab these areas and isolate microorganisms from each site by streaking onto nutrient agar plates. Note: The swabs can be moistened in sterile water.
- Incubate the plates in incubator at 30°C for 24 hours.
- After 24 hours, Stain the bacteria, inoculate the bacterial colony on to nutrient agar with various salt concentration, then incubator at 30°C for 24 hours.
- Observe the characteristic of the bacteria: morphology, gram stain, environmental influences (pH and temperature level) to bacterial growth.

Result


unwashed hand from lab
hand stuck in soil (unwashed)




Gums
Ears
Nose
Cheek

Any Questions

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