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***Good and bad microbes: the
invisible around us!***

Benessere e Prospettive in medicina
Auditorium Palazzo Italia, 26 luglio 2015

Prof.ssa V.TULLIO

The Raft of the Lotus Roots



***Microbes:
friendly or unfriendly?***



Van Gogh made of Leek



What Are The Microbes?



They are organisms so small that a microscope is needed to study them



The Anatomy Lesson of Dr. Pickled Cabbage



**Who Are The
Microbes?**

Bacteria

**Microscopic
Algae**

**Yeasts and
Moulds**

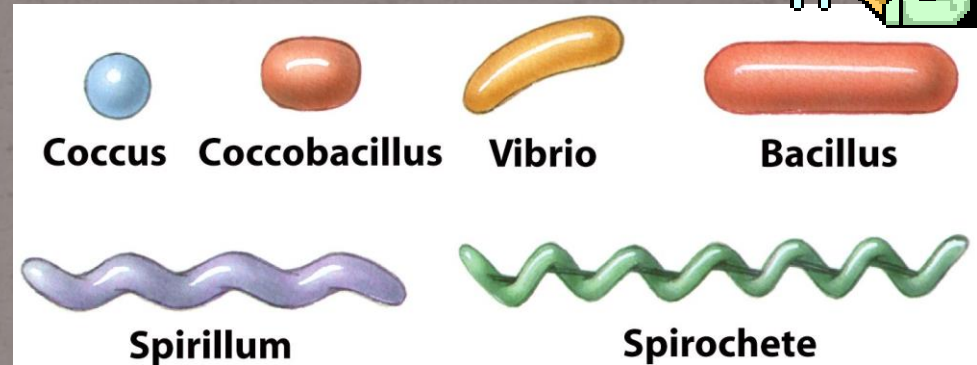
Protozoa

Viruses

Napoleon on Potatos



Bacteria Singular **Bacterium**

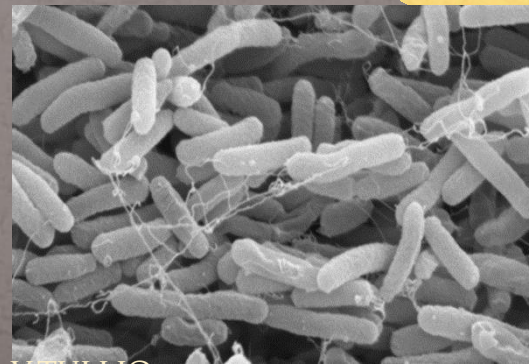
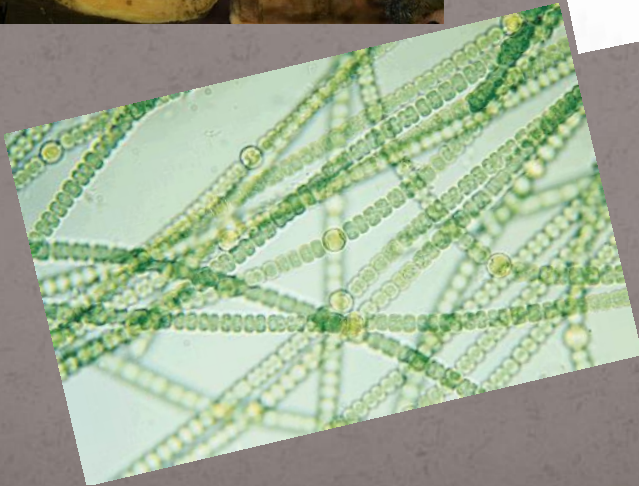


Bacteria are single-celled microbes with **spherical**, **rod**, or **spiral** shapes. They lack the nuclear membrane (Prokaryotic). Some are stationary and others move about. They range from 0.5 to 2.0 microns in diameter.

Napoleon on Potatos



Bacteria Colonies and cells



Napoleon on Potatos



Coccus/i



Bacteria

Streptococcus spp.

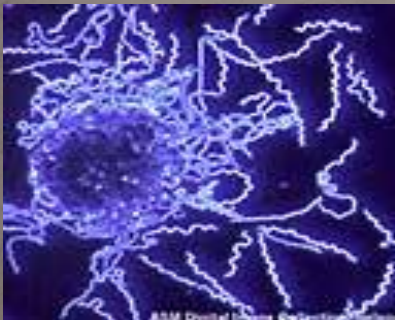
Staphylococcus spp.

Escherichia coli

Salmonella typhi



Spirillum/a



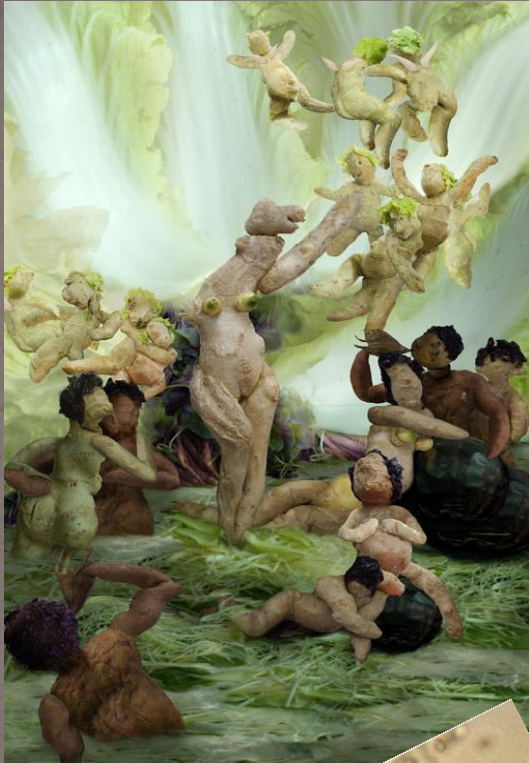
Bacillus/i

Treponema pallidum



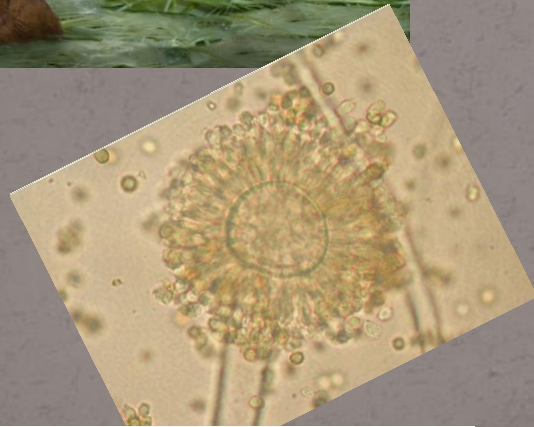
Vibrio cholerae

The Birth of the Gingerman



Fungi *Mycosis*

Ringworm (tinea)



Aspergillosis in
compromised patients

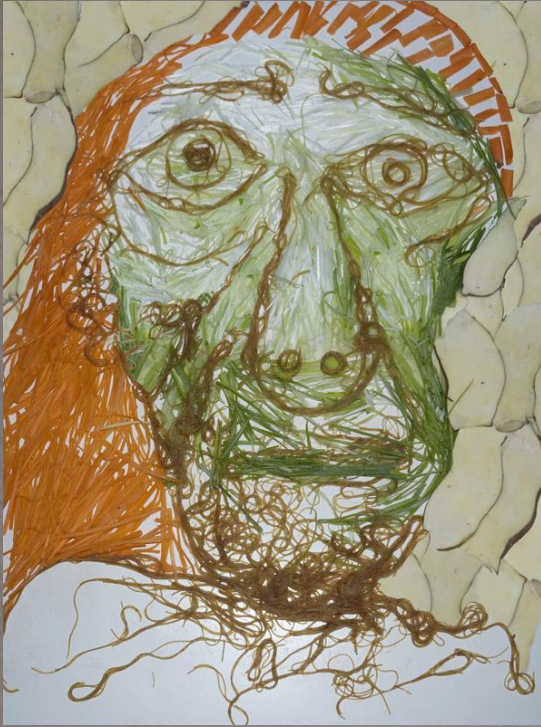


Oral candidiasis



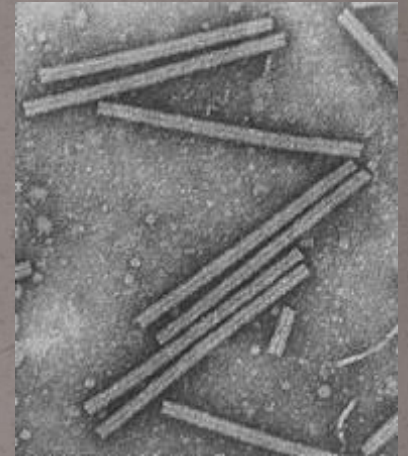
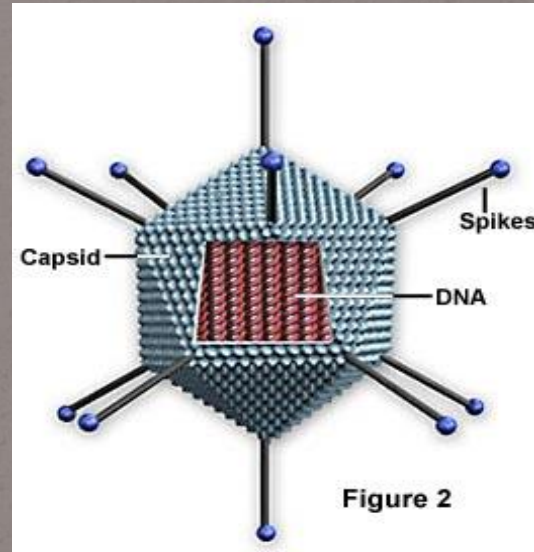
Zygomycosis

Picasso with Onions and Noodles



Viruses

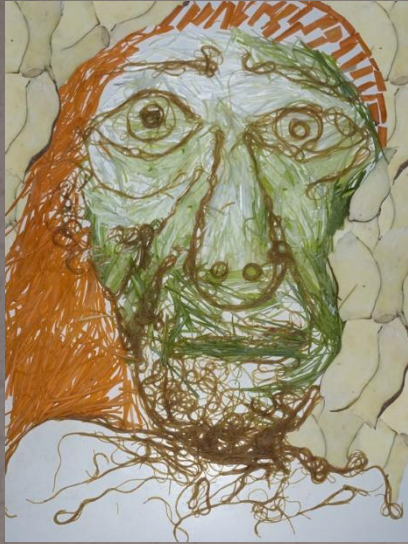
«a piece of bad news wrapped up in proteins»



They are acellular entities too small to be seen with a light microscope! Only two components: a nucleic acid (either DNA or RNA) and a protein capsid.

They replicate themselves only when they have invaded cells (animals, vegetals and bacteria) and cause disease!!!!

Picasso with Onions and Noodles



Viruses



Ebola

Measles, mumps

Mononucleosis «kissing disease»



Small-pox

Flu, cold

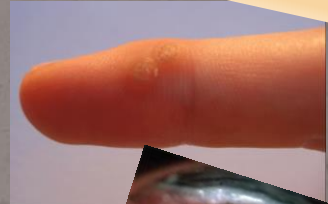
Hepatitis A,B,C,D,E

Herpes

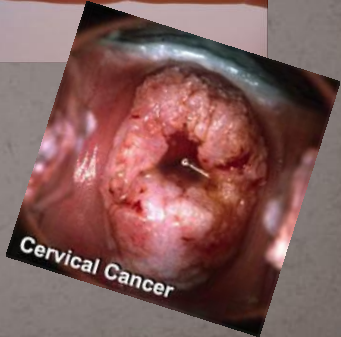


Varicella-Zoster

Papilloma



HIV-SIDA

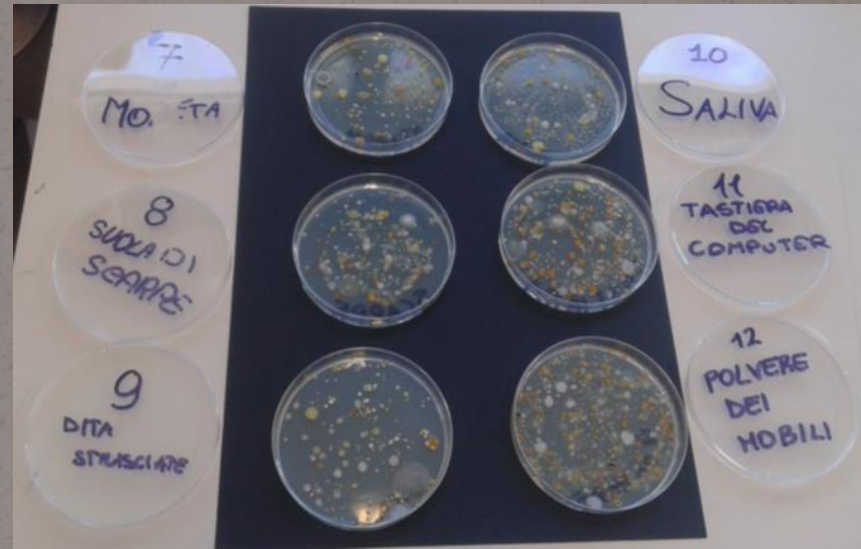


Cervical Cancer

The Kiss of the Radishes



Where Are the Microbes?



Everywhere: air, soil, water, toys, on objectives, PC, food, dust, animals, our body!!!

The Last Supper with the Gingermen



***We Are Not
Alone***

***Microorganisms have a close
association with humans.
They are IN US, ON US, and nearly
everywhere AROUND US***

Microbiome

Pickled Cucumber on the Volga



***We Are Not
Alone***



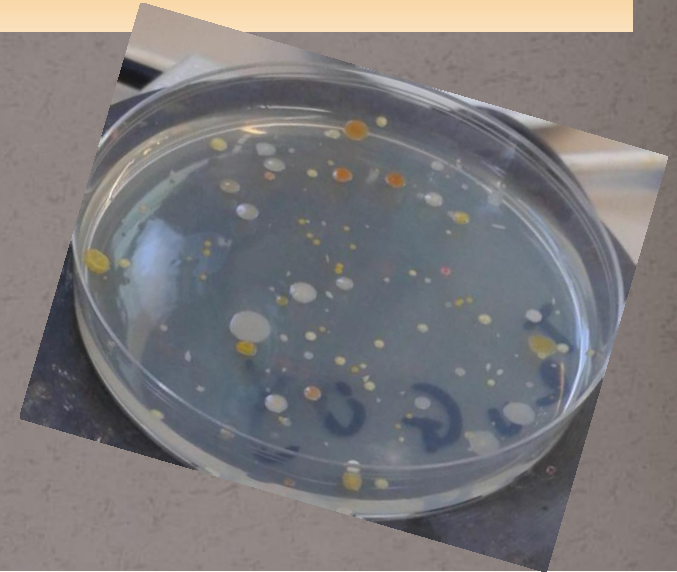
We are outnumbered.

The average human contains about 10 trillion cells. Microorganisms are about 10 times as many human cells, or 100 trillion microscopic beings...

The Sleeping Taroman



***We Are Not
Alone***



***As long as they stay in balance and
where they belong, they do us no harm...***

All for one...one for all

The Birth of the Radish



***Are microbes
useful?***

***Microbes are much
more our friends
than our enemies***

***Many of them provide some
important service to us.***

***Bacteria and fungi are very
important in the ecology of our
planet***

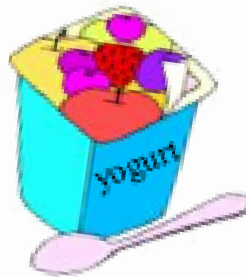
The Dream of the Tofu



Helpful or not?

Recombinant DNA technology: modification of bacterial cells to make substances useful to humans (interferon, insulin, human growth hormone, new vaccines)

Pollution control, cleaning waste from sewage water



***Lactobacillus spp.*
Bifidobacterium spp.
Probiotics**

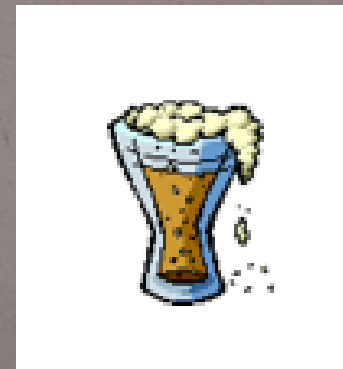
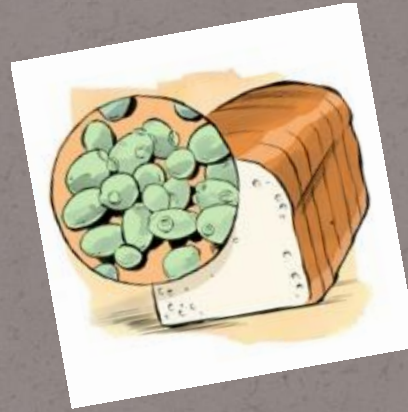
**Microbiome lactobacilli protect us
from pathogen microbes**

Mona Tofu



Helpful or not?

Yeasts and moulds



The Third of May 2008



Helpful or not?



Most are opportunists, who if given the opportunity of increasing growth or invading new territory, will cause infection!

Less than 1% of known microbes cause disease

Liberty Leading the Vegetables



How to fight off harmful bacteria, fungi and viruses that cause infections?

One of the new strategies is represented by essential oils. They have significant antibacterial, antifungal, antiviral activity



Cabbage Monroe

**Thanks for your
attention**