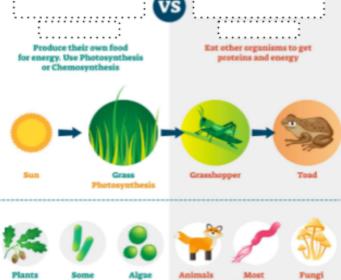
Bacteria Notes	Name	
Biology	Date	Hour
Bacteria Classification Organisms are classified based on: □ Cell, Cell, There are Domains and Kingdoms Differences □ Archaebacteria □ live in environment □ Co₂ free environment □ Most common	Nutrition, Behavior, Habitat	Domain (Domains) Kingdom (Kingdoms) Phylum (Phyla) Class (Classes) Order (Orders) Family (Families) Genus (Genera) Species (Species) © 2015 Encyclopædia Britannica, In
 Live in	in the cell's "	region"
───────────■ Heterotrophic (consumers)		• · · · · · · · · · · · · · · · · · · ·

- - Energy from eating other ___ (decomposers included!)



	SHAPES OF BACTERIA		
 Basic shapes 	::	1:	: : : : : : : : : : : : : : : : : : : :
 (bacillus)		::().;	
■ (coccus/ cocci)	Streptococcus pyogenes		
■ (spirillum)	pneumoniae Strep throat	(Bacillus anthracis) causes Anthrax	(Vibrio cholerse) causes Cholera
Bacterial Structure (continued)	Pneumonia		
o Specialized cell extensions	Micrococcus luteus causes armpits to stink	1	(Helicobacter pylori) can cause stomach ulcers
■ Flagella	Alexander 1	(Salmonella enterica) causes Typhoid	00.0
Whip-like that	Staphylococcus aureus		
allows some bacteria to	can cause sinus infections and food poisoing	(Clostridium botulinum) causes Botulism	(Treponema pallidum) causes Syphilis
——————— ■ Pili (pilus)			
 Hair-like structures that help bactor 	eria to	and ea	ich other
Sex pili aid in of		from one bac	terium to another or
from the environment!			
from the environment! O Plasmid			
	gle chromosome)		
o Plasmid		mple of	!)
○ Plasmid■ small of DNA (a sing		mple of	!)
 Plasmid small of DNA (a sing Responsible for 	(exa	Outer	
 Plasmid small of DNA (a sing Responsible for Cell walls 	(exa		!)
 Plasmid small of DNA (a sing Responsible for Cell walls , structural layer out 	(exa	Outer Membrane Cell Wall /	
 Plasmid small of DNA (a sing Responsible for Cell walls , structural layer ou membrane 	(exa	Outer Membrane Cell wall/ Peptidoglycan Layer	
 Plasmid small of DNA (a sing Responsible for Cell walls , structural layer ou membrane Gram Positive & Gram Negat 	(exa	Outer Membrane Cell Wall/ Peptidoglyca	
 Plasmid small of DNA (a sing	tside the cell cive corotective Gram-1	Outer Membrane Cell wall / Peptidoglycan Layer Cell Membrane -	

Bacterial Structure Below is an image of a typical bacteria. Color the bacteria according to the directions.

Bacteria consist of single cells lacking a nuclear envelope, referred to as prokaryotic. Prokaryotic cells also lack all the membrane bound organelles of eukaryotic cells. Like all other cells, prokaryotic cells have a **cell membrane** (red). In nearly all prokaryotes, there is a **cell wall** (green) outside the cell membrane. Many, but not all, prokaryotic cells have a jelly-like **capsule** (purple) or slime layer outside the cell wall.

A **pilus** (blue) or pili is a projection of the cell membrane through the cell wall that serves for attachment to either a host cell or another bacteria. Some bacteria have numerous pili, others have none. A **flagellum** (pink) or flagella is a whiplike appendage that bacteria can use to propel themselves. Some bacteria have no flagella, while others can have up to 100.

The interior of the bacteria is divided into two regions: nucleoid which contains the hereditary material and the **cytoplasm** (leave white) which contains all the other cell contents. NOTE: there is no membrane that separates these parts. The nucleoid consists of a single molecule of **DNA** (yellow) that is twisted and folded on itself to fit inside the bacteria. A **plasmid** (orange) is a small piece of DNA that is separate from the DNA. As in eukaryotic cells, there are lots of **ribosomes** (brown).

Name of Structure

1.

2.

3.

4.

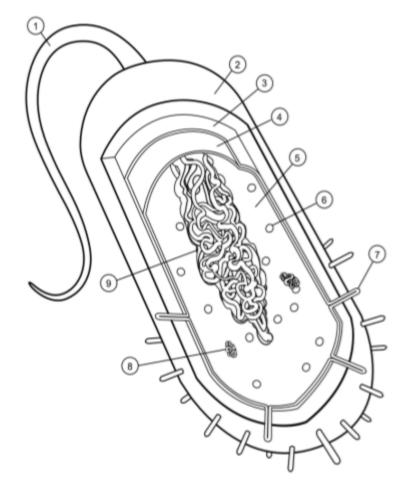
5.

6.

7.

8.

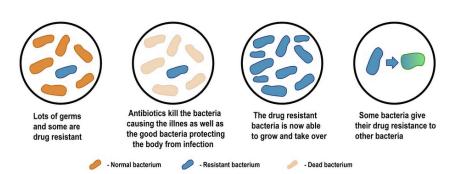
9.



Bacterial Adaptations	Oil-eating microbes
o Live in various habitats and have several	Naturally occurring microbes in the ocean feed on the hydrocarbons in oil. Scientists hope to speed up the process for the large spill in the Gulf of Mexico, where warm temperatures also aid the reaction.
adaptations:	Oil contains hydrocarbons, which are made up of Oxygen is needed for the chemical reaction, but can be sparse at great ocean them with oxygen to create C02
■ They can break down matter	are made up of varying amounts of carbon and hydrogen
which prevents of	ESSEPTIES H20
deceased material.	
■ Some can use chemica	but what is lost over is more daily
as food (ex	blooms, which starve the ecosystem of light and oxygen dispersed by currents and wind Source: Terry Hazen, Lawrence Berkeley National Lab Graphic: Miami Herald © 2010 MCT
 Humans have used these bacterial strain 	s to help clean up spills. This is called bioremediation
■ They can exist in extreme hot/cold (extremo)	Bevelopment of
High rate of mutualism	mucosal barrier
■ REVIEW: The betw	veen two species with system activation Synthesis vitamins
both getting	
■ EXAMPLE: The bacteria in your	help to
food faster.	Reduction in pH in large bowel Metabolism
Aerobic Bacteria	Production of
■ Need an env	rironment to survive.
■ Example: Tuberculosis – affects lungs	Bacterfum some
Anaerobic Bacteria	Chromo Chromo
■ survive in an oxygen-rich	environment.
Example: Botulism - food poisoning Pactorial Popped Letion & Life Cycle	Nobile Plasmid Mobile Plasmid Mobile Plasmid P
Bacterial Reproduction & Life Cycle	Onjugation Mobile, Plasmid Charles Plasmid Cha
 Asexual Reproduction →	
Reproduce by dividing into two	S Cells.
Can happen very	
 Sexual Reproduction →	SS Cell as Som
 One bacteria transfers or part (DNA) to another of 	in on the continuous teachers to the continuous teachers the continuo
that connects the two cells	cell through Name of the control of the con
<u> </u>	ris Carlot Carlo
Human Defense against Bacterial Infection	
 Antibiotics work by Stopping the creation (synthesis) of bacterial 	
 Stopping the creation (synthesis) of bacterial EXAMPLE: Penicillin (antibiotic) stops the formation of 	
Interfering with the important functions like	synthesis.
■ Preventing proper synthesis of or _	
o IMPORTANT: don't have cell wa	alls or ribosomes, so have
on them!	

0	Strains of bacteria that have adapted to antibiotics.		
0	Bacteria are gaining resistance to antibiotics through:		
	■,, and		
0	A bacterium may already have an gene (DNA) for antibiotic resistance on the		
0	A copy of the plasmid is transferred through		
0	Resistance spreads through many bacteria.		

HOW ANTIBIOTIC RESISTANCE HAPPENS



• Good and Bad Bacteria

- Good bacteria...
 - synthesize vitamins
 - boost _____
 - fight _____
 - create _____ (cheese,

yogurt, kimchi)

deal with _____

(bioremediation)

- Make up _____ of the cells in the gut (~95% of the total number of cells in the intestinal tract).
 - EXAMPLES. Lactobacillus acidophilus,
 Dehalococcoides ethenogenes
- o Bad bacteria...
 - Can cause life threatening diseases
 - Done by invading tissues or creating toxins
 - EX. E-coli and streptococci

Good and Bad Bacterial Flora

