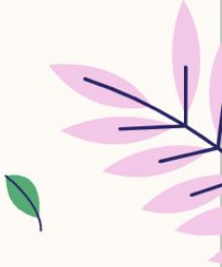


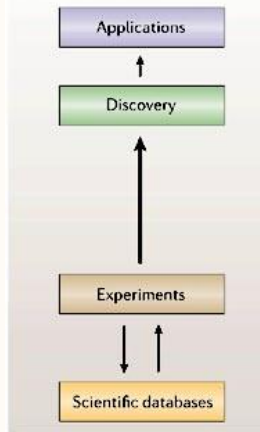
Introduction to Biology: Understanding Life



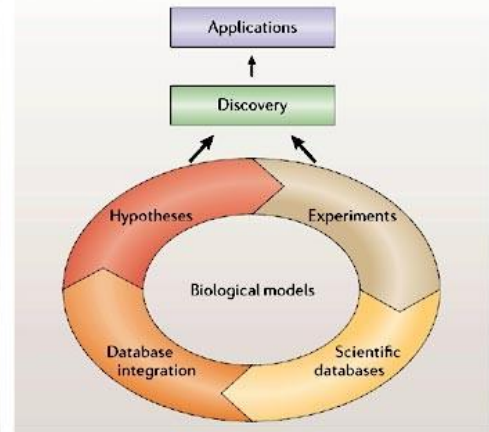
What is Biology?

- Biology is the study of life.
- It helps us understand living things and how they interact.
- We use biology to make medicines and learn about our world.

a Classical role of databases



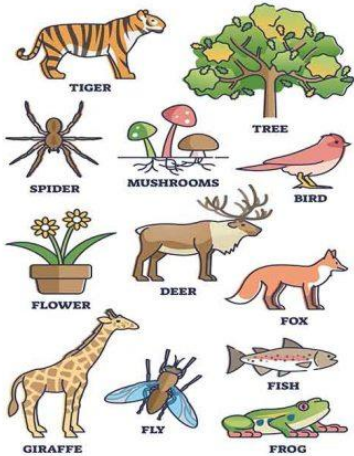
b New role of databases



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What is Life?

LIVING




NON-LIVING



- Life is a unique process that started 4 billion years ago.
- It includes everything from tiny bacteria to huge whales.
- Life is everywhere, even in the most unexpected places.



Characteristics of Living Things

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- Living things regulate their inner conditions.
 - They respond to their environment.
 - They reproduce and pass on genetic information.
 - They grow and develop.

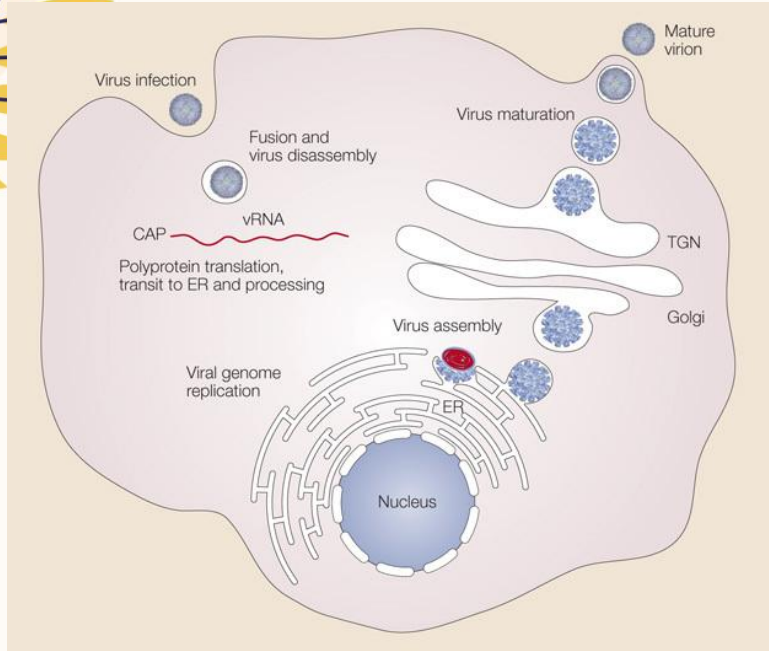


More Characteristics of Living Things

- Living things process energy to survive.
- They are organized from cells to tissues to organs.
- They have adaptations shaped by evolution.



Is a Virus Alive?



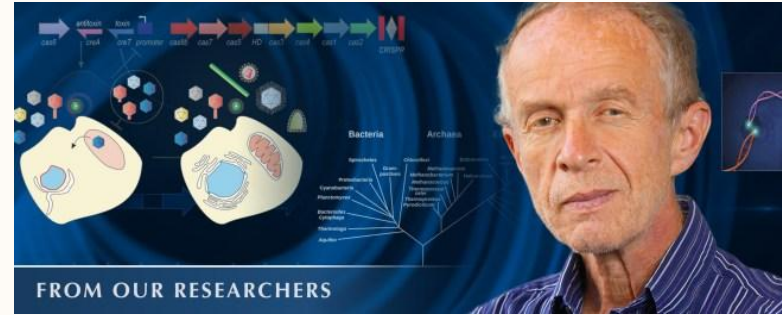
- Viruses are tiny bundles of genes in a protein coat.
- They can't reproduce or grow without a host cell.
- Most biologists say viruses aren't alive.
- They borrow life from the cells they infect.

Life Beyond Earth

- We don't know what life might look like outside Earth.
- Astrobiology studies extreme life forms on Earth to guess.
- Future discoveries might change our definition of life.

Interconnectedness of Life

- All living things share a common ancestor.
- Life is connected through evolution and biological processes.
- Our actions affect the environment and other living things.



Practical Uses of Biology

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REVIEW ARTICLE

Outbreak of chocolate products associated with *Salmonella* Typhimurium Sequence Type 34

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ABSTRACT:

On July 3rd 2022 in region of European Union , European Economic Area (EEA) and in UK several cases of outbreak concerning salmonellosis by bacterial strain of salmonella genus . Monophasic *Salmonella* Typhimurium type 34 infection was reported by ECDC. The case arise due to concerns in cocoa products specifically kinder products of Ferris Corporate plant in Arlon, Belgium. The authorities immediately took action and recall the production to prevent further infection cases. The most common age was target of 10 year old children or younger and females compared to male ratio (1:7). Frequently observed symptoms are bloody diarrhea, abdominal pain, vomiting and acute onset of fever. This review article provides the important points associating with monophasic *S* typhimurium , its epidemiology , comparison to other outbreak, preventative measure n control taken to reduce the chance of spreading.

KEYWORDS: Monophasic *Salmonella* Typhimurium, Rare Anti-microbial Isensitivity , Chocolate product, Food borne Outbreak.

CONTENT: Eman Jameel (Introduction, In what manner *Salmonella* gets in chocolate? And Occurrence of *Salmonella* Outbreak of 2022)

(*Salmonella* comparison with other outbreak, challenges, Current effort, Recommendation and Conclusion




INTRODUCTION:

According to the food borne outbreak reported in UK occurred in February 2022, caused by monophasic *Salmonella* typhimurium sequence type 34. *Salmonella* is a pathogenic microbes of family enterobacteriaceae species. The monophasic name indicated it has one phase of flagella antigen. Monophasic *salmonella* typhimurium exhibit resistance to a broad spectrum to six types

- Biology helps us make medicines and vaccines.
- It improves agriculture and food production.
- It helps us understand and solve environmental issues.



Big Questions in Biology

- What is life and how is everything connected?
 - How do cancer cells reproduce?
 - What are the effects of climate change on ecosystems?
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Why Study Biology?

- Biology helps us understand ourselves and our world.
- It connects us to every other living thing.
- It helps us create a better future for all life.

