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**GEELECT1 – People and the Earth’s Ecosystem**

**MODULE 3**

**LESSON 4: CHANGES IN LIFE CYCLE OF VECTORS OR PATHOGENS**

**Activity:**

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| **WORD** | **DEFINITION (Dictionary)** |
| **1. Vector** | A vector is a quantity that has both magnitude and direction.​ In a biological context, it also refers to an organism (such as an insect) that transmits a pathogen from one organism or source to another. |
| **2. Virus** | A virus is a submicroscopic infectious agent that can only replicate inside the living cells of an organism. Viruses infect all life forms and are made up of genetic material (either DNA or RNA) surrounded by a protein coat. |
| **3. Bacteria** | Bacteria are ubiquitous, single-celled organisms that lack a distinct nucleus and constitute a large domain of prokaryotic microorganisms. They play vital roles in nutrient recycling and can be found in diverse environments. |
| **4. Fungi** | Fungi are a kingdom of eukaryotic organisms that includes microorganisms such as yeasts and molds, as well as mushrooms. Fungi are heterotrophic, acquiring their food by absorbing dissolved molecules through secreted enzymes. They are essential decomposers in ecological systems. |
| **5. Parasite** | A parasite is an organism that lives on or in a host organism and derives nutrients at the host's expense. This relationship often harms the host, and parasites can be found in various forms, including protozoa and helminths. |

**Analysis:**

A vector is an organism that can carry and transmit a virus, often acting like a syringe to inject it into another host. ​A virus cannot survive on its own and relies on a vector to spread, often affecting both the vector and the host it infects.​ Bacteria are living cells that can exist independently, unlike viruses, which need a host to replicate. Fungi and parasites can form harmful relationships with their hosts, with fungi sometimes acting as parasites that take nutrients from plants or animals, often damaging them in the process.

**Application:**

Yes, I agree that COVID-19 has a zoonotic origin, meaning it likely originated in animals before infecting humans. Studies, including one by the French National Centre for Scientific Research, suggest that bats are the primary hosts of the virus, with instances where it may have passed through another species, such as pangolins, before reaching people. This zoonotic transmission highlights the risks posed by close contact between humans and wildlife. ​Understanding how the virus spread from animals to humans is essential for preventing future pandemics.

**Assessment:**

1. True

2. Virus

3. True

4. Pathogen

5. High