**Biology and the Olympics - Hand Out Lesson One**

In Rio de Janeiro, Brazil, the 2016 Olympic games will be held. Brazil has a population of 208.9 million people. The urban areas are densely populated and this close contact can lead to the transmission of infectious diseases. Recently there has been a rise in the dangerous \_\_\_\_\_ virus.

A virus is a small, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that can only \_\_\_\_\_\_\_\_\_\_\_\_ inside the living cells of other organisms. It is made up of a core of genetic material, either \_\_\_\_ or \_\_\_\_. A protein coat, called a \_\_\_\_\_\_\_\_\_, protects the virus. Viruses can infect all types of organisms, including animals and plants as well as bacteria.

**A virus life cycle contains 5 mains stages:**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is where the viral DNA attaches to host DNA.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is where the virus injects its nucleic acid into the host cell.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is where the host replicates viral DNA or RNA.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - new virus particles are assembled by the host.
5. \_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_ - host cells burst open and viruses are released.

The Zika Virus originated in \_\_\_\_\_\_\_\_\_ in \_\_\_\_\_. Caused by a virus \_\_\_\_\_\_\_\_\_\_\_\_ by *\_\_\_\_\_\_\_\_* mosquitoes. These are daytime active, unlike *Anopheles* mosquitoes which are predominantly night active. Zika virus can have damaging effects on pregnancy. One serious side effect in pregnancy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which cause the brain and head size to be underdeveloped.

Work by initiating a mild \_\_\_\_\_\_\_\_ response to a particular disease. Enough of the \_\_\_\_\_\_\_\_\_\_\_\_ pathogen is given to stimulate an immune response but not enough to make the person ill. \_\_\_\_\_\_ \_\_\_\_\_\_ \_\_\_\_\_ respond to the presence of pathogens. Upon \_\_\_\_\_\_\_\_\_\_\_\_\_\_ infection of a particular pathogen, the immune response is quicker.

Some people are ineligible for a vaccination. The \_\_\_\_\_\_\_\_\_\_\_, babies, and the immune-compromised are often not given the vaccine and are therefore left \_\_\_\_\_\_\_\_\_\_\_\_\_ against the disease. They are not given the vaccine because it is a \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(weakened) version of the pathogen.

\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a phenomenon by which some unvaccinated individuals are \_\_\_\_\_\_\_\_\_\_\_\_ by the rest of the vaccinated population. It works on the principle that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diseases cannot be spread by person-person \_\_\_\_\_\_\_\_\_\_. If the majority of the population are \_\_\_\_\_\_\_\_\_\_ against Measles, infected individuals will not be able to \_\_\_\_\_\_ the disease onto vaccinated individuals.

*N.B If you need any help filling in the gaps, feel free to ask. We are here to help.* ☺