Parasites and Parasitism

**Introduction**

What exactly is a parasite and parasitism? A parasite is simply described as an organism that takes host in another organism, obtaining all of its essential nutrients. With this being said, parasitism is a relationship between one organism living in or on another organism causing its host harm. Parasites are organisms that are very common in today’s environment, but not all of its life cycles are understood. These parasites can be found just about anywhere, but the most common type in the United States are found in our food. Parasites are more common than an individual might think, let’s learn more about their lifecycles and how they actually impact animal and humans.

**Parasites life cycle**

A parasites life cycle starts off with either asexual or a type of sexual reproduction where a fertilized embryo is formed. Followed by the cysts being ingested by its host. A cyst, is a strong capsule that protects the larva that is enclosed, these are used when the larva is in a resting stage. A parasite can have multiple hosts. In most cases a larva will spend its “child” stages in one host, which is known as the intermediate host. Followed by spending its “adult” life in a definitive host. These parasites have adapted their life cycle to where they get in the path of their host. This can occur by a fish getting infected by the parasite followed by a human eating undercooked fish. A majority of the parasites are very host specific, meaning that they can only survive in a few specific hosts. There are a couple of requirements for a parasite to pick its host. In order for the parasite to pick a good host, the host and the parasite would have to live in a similar environment. Next, the behavior of the host must expose it to the parasite. Finally, when the parasite invades its host, it must feel comfortable in its new surroundings, but also must recognize appropriate host cues. Some of these cues might include when the host is about to die, and the parasite needs to find a new home.

When a parasite only has a single host for its entire life cycle this organism undergoes a monoxenous life cycle. These types of parasites cannot hardly live in the open environment so they are “born” right into the path of their first and only host. Compared to a parasite having multiple hosts it would be living in a heteroxenous life cycle. An example of a parasite with only a single host would be the *Elimeria*. Once this parasite gets ingested by its host it is most likely going to stay there for its whole life. A well-known parasite that has multiple host would be the tick. The inside temperature of the host and the nutrients that are provided by the host are important to the survival the parasite. Some of the lifecycles that the parasites have are not as well understood. For example, there is a parasite that causes bovine besnoitiosis in cows. Somehow this parasite’s host is a cow, but its definitive host could be the bobcat. Since scientist are unsure about this type of parasite, it is difficult for them to find a way to interrupt the lifecycle and prevent this parasite from causing disease in cows.

**Types of parasites**

As it was earlier stated the most common types of parasites are found in food. These types of food could consist of undercooked fish, crabs, mollusks, meat, raw aquatic plants and raw vegetables that could have been contaminated by feces.

Protozoa is one type of parasite that starts off as trophozoites which are feeding, growing, motile, asexually and sexually reproducing forms of the protozoa. Because this type of parasite has the ability to reproduce sexually and asexually they reproduce very rapid. Since these larvae cannot live outside of its host very long, they form cysts, which are a protective shell to coat the larva so that they are able to shut down metabolically and survive long enough to find an appropriate host. The four main groups of protozoa are amoebae, flagellates, ciliates and sporozoa.

Metazoan parasites, both have male and female organs meaning that they are dioecious. This also means that they can reproduce sexually. This group of parasites mostly includes tapeworms and a majority of flukes. Reproduction of these parasites can occur in a few different ways, but they all start the same by the female producing a fertile egg which contains an embryo. Followed by developing into a larva after undergoing embryonation. Eventually these larvae will hatch when the conditions are right. The egg can also already be at its infective stage, or the larvae could develop in the outside world and wait for its potential host. Another possibility would be for the larvae to invaded a single or multiple intermediate hosts, until they have developed enough to invade their final definitive host. The significance of this group is that these parasites cannot multiply directly within its host. These parasites reproduce by excreting their larva which is followed by the larva being ingested by a host and that is where they start to grow. This group is very diverse in that it contains 33 different species of parasite, which belong to seven different taxa.

Parasites do not just live inside of its host but there are also parasites that live on the outside of its host these are called ectoparasites. Ectoparasites are simply species of parasites that live outside of its host that include fleas, louse, and ticks. These types of parasites do not need a specific host as an endoparasite would. Because of that the ectoparasite might be considered to be more successful since they do not have as many limitations to where they can be successful.

**Diseases**

Parasitism is a relationship between a host and a parasite, but the parasite has a negative impact on its host which will eventually cause illness or death. Parasitism is the proper word to describe parasitic diseases. The parasitic disease that is well known all around the world is malaria. This disease is most common in children from Africa and adults from Asia. Malaria is cause by the parasite *Plasmodium falciparum.* A major symptom is seizures that can either cause neurological deficits or eventually death. This malaria parasite is extremely resistant, so it is difficult for scientists to find a way to treat this parasite when it has invaded an individual. Another parasite that is well known would be *Ascaris lumbricoides* which is a hookworm and whipworm that are the cause of a lot of the parasitic diseases worldwide. The disease that these worms cause is very common in the Unites States; however, it tends to be more seen in third world countries since their sanitation is low. People that suffer from these worms tend to have none too few symptoms such as abdominal discomfort or a cough from them moving throughout the body. When the infections that this parasite causes gets out of hand it can cause blockages in the intestine and impair the growth in children. The positive thing is that these infections are treated by a doctor by simple medication. Swimmer’s itch, which is scientifically called Cercarial dermatitis, is cause by a parasite that is found in birds or other mammals since that is their natural host. Although, humans can also be mistaken as a host. This parasite will burrow into the skin, which could cause a rash or an allergic reaction. Swimmer’s itch is common within swimmers but with most circumstances the allergic reaction or rash will go away by itself.

**Conclusion**

Parasites are a part of our life if we like it or not. There is a lot that is still unknown about them such as their lifecycles and the reasons why they choose certain hosts and not others. This is needed so we can prevent disease. Parasites have a large variety of species that spread over multiple taxa. This makes it even more difficult to prevent them from invading the life of humans.

**References**

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