



Meanings of the term "parasitism" in the field of life sciences

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Introduction. In the field of biology, the term "parasitism" can refer to several different concepts, depending on the context. We will present in this short note the various senses of the word "parasitism" across different biological domains.

Ecological parasitism. This is the most common and widely understood form of parasitism. It refers to a relationship between two different species where one organism (the parasite) benefits at the expense of another (the host) by deriving nutrients or other benefits from the host (Hasik & Siepielski 2022).

Zoological parasitism. This is a subset of ecological parasitism that specifically involves animals (zoological organisms) (Nogueira et al 2022). Examples include ticks on mammals, lice in human hair, or tapeworms in the intestines.

Botanical parasitism. This is a form of parasitism that occurs in plants. Some plants, known as parasitic plants, obtain some or all of their nutrients from other living plants (Watson et al 2022). Examples include mistletoe (*Viscum album*) and dodder (*Cuscuta europaea*).

Endoparasitism. In this form of parasitism, the parasite lives inside the host's body (Khalid et al 2020). This can occur in various organisms, including animals, plants, and even fungi.

Ectoparasitism. In contrast to endoparasitism, ectoparasites live on the outside of the host (Khalid et al 2020). Examples include fleas, ticks, and some mites.

Facultative parasitism. Organisms that can live independently but may occasionally adopt a parasitic lifestyle if the opportunity arises (Petrescu-Mag et al 2009). This is in contrast to obligate parasites, which must rely on a host to complete their life cycle.

Social parasitism. This occurs in some social insects (like ants, bees, and wasps) when a parasite species infiltrates a colony of another species and exploits the host colony's resources and workforce (Stoldt et al 2022).

Brood parasitism. This is a form of parasitism in which one organism leaves its eggs in the nest of another, often different, species. The host organism unknowingly raises the young of the parasitic species (Samaš et al 2021).

Cellular parasitism. This occurs at the cellular level. Some bacteria and viruses are considered cellular parasites because they rely on a host cell to reproduce and carry out their life processes.

Parasitoidism. While not strictly "parasitism" in the classic sense, parasitoids are organisms that lay their eggs on or in a host organism. The host is ultimately killed as the parasitoid's larvae develop (Garrido-Bautista et al 2020).

Parasitism in conjoined twins. In medical terminology, when conjoined twins share vital organs or blood circulation, one twin can be described as parasitic if it relies almost entirely on the other for survival (Petrescu-Mag et al 2011; see Figure 1).



Figure 1. Guppy (*Poecilia reticulata* Peters, 1859) conjoined twins, 5 days old. The atrophied individual, incapable of active life, lives for a while as a parasite on the active twin (original picture).

These terms describe various types of relationships in biology, and they can occur across a wide range of organisms, from plants to animals to microorganisms.

Conflict of interest. The author declares that there is no conflict of interest.

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