

Difference Between Encystment and Excystment

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Key Difference - Encystment vs Excystment

The dormant stage of a microorganism is known as a [cyst](#). A cyst mainly facilitates the survival of a microorganism (bacterium or [protists](#)) under unfavourable environmental conditions such as insufficient nutrients and oxygen, high temperature, the presence of toxic chemicals and lack of moisture etc. The cyst is a thick-walled structure and is not considered as a reproductive cell. The sole intention of the cyst is to make sure the survival of the organism till the environmental conditions come back to normal and favourable levels. Encystment is the process where the internal [parasites](#) mostly in larval stages are enclosed within a cyst. Therefore, the encystment process helps the microorganism to be easily dispersed to a favourable environment or to move from one host to another. When the microorganism reaches a favourable environment after encystment, the wall of the cyst ruptures by a process called excystment. The **key difference** between encystment and excystment is, **encystment is the process of cyst formation whereas excitement is the process of escaping from the cyst.**

What is Encystment?

The cyst is a structure which forms to protect the certain organisms under unfavourable conditions. It is a resilient, quiescent phase of an organism. All the [metabolic activities](#) are shut down in the cyst phase. The cyst has a protective external covering that is resistant to harsh conditions such as heat, cold, dryness, chemicals, pH etc. The formation process of cyst is known as encystment. Under unfavourable conditions, encystment occurs when the stimulating factors are present as the result of environmental change. Some of the stimulatory factors are low oxygen level, [dehydration](#), changing pH, food deficiency etc.

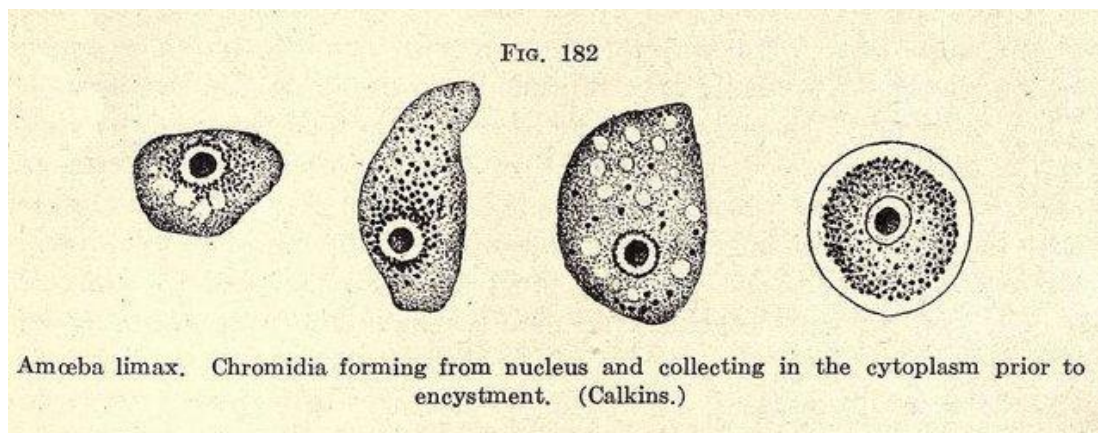


Figure 01: Encystment

Cyst formation is common in [bacteria and protozoa](#). During the encystment process, the internal parasites mostly in larval stages are enclosed within a cyst. Therefore, the encystment process helps the microorganism to be easily dispersed to a favourable environment or to move from one host to another. The [cell wall](#) composition of cysts is variable according to different microorganisms. The cyst wall of bacteria is thick due to the presence of peptidoglycan layers while the protozoan cyst walls are composed of [chitin](#).

What is Excystment?

When the microorganism reaches a favourable environment after encystment, the wall of the cyst ruptures by a process called excystation. The process which ruptures the cyst wall and escapes from it is known as excystment. Excystment occurs under the favourable conditions. Certain protozoan parasites are enclosed within the cysts outside the host. Once the cysts are entered into the correct host, they come out from the cysts and cause the harm to the host organism. To prevent diseases caused by this protozoan (e.g., [Amoeba](#), [Giardia](#)) the processes of encystment and excystment should block. It can be done by taking steps to interrupt their life cycles.

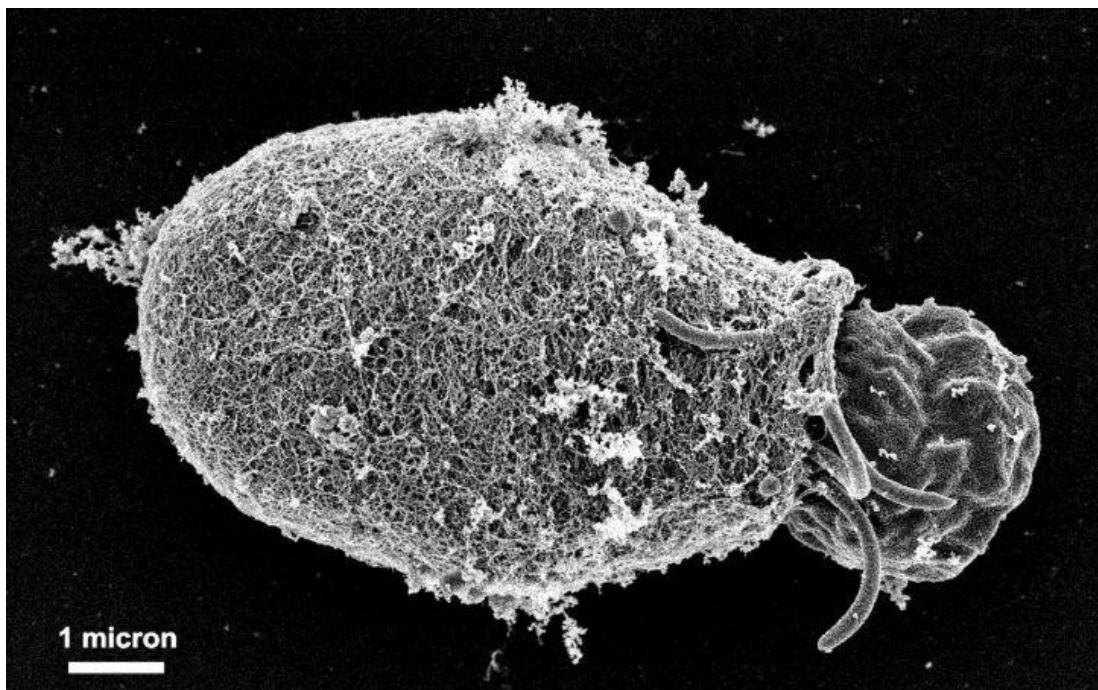


Figure 02: Excystment

Excystment is the antagonistic process of the encystment. It produces a [vegetative cell](#) that can again undergo growth and development stages.

What are the Similarities Between Encystment and Excystment?

- Both are processes related to survival of an organism. Those are two survival strategies used by organisms.
- Both processes involve the dormant structure called cyst.
- Both processes are genetically encoded.

What is the Difference Between Encystment and Excystment?

Encystment vs Excystment	
Encystment is the process of cyst formation.	Excystment is the process of escaping from the cysts.
Conditions	
Encystment occurs during the unfavorable conditions.	Excystment occurs during the favourable conditions.
Function	
Encystment helps for the survival under harsh environmental conditions.	Excystment helps for the coming out from the cyst and grow under favourable conditions.
Resulting Structure	
The encystment forms a dormant cell.	A vegetative cell emerges from the excystment.

Summary - Encystment vs Excystment

The cyst is a dormant stage of bacteria or protozoa that facilitates their survival during unfavourable environmental conditions. Cysts formation has greatly helped these organisms to adapt to environments. Encystment and excystment are two processes involved in this process. Encystment is the cyst formation process during the unfavourable conditions. Excystment is the rupture of cyst wall and escaping

from the cyst during the favourable conditions. This is the difference between encystment and excystment.

Reference:

1. Burton, Joshua. "Chapter 5 -- Protozoan Groups." Prezi.com, 13 Feb. 2013. [Available here](#)
2. "Microbial cyst." Wikipedia, Wikimedia Foundation, 7 Jan. 2018. [Available here](#)

Image Courtesy:

1. 'Amoeba limax encystment' by Aralyn! ([CC BY 2.0](#)) via [Flickr](#)
2. 'filamentous, nature, cyst, wall' by Dr. Stan Erlandsen, USDCDP (Public Domain) via [pixnio](#)

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