

# Difference Between Ectoplasm and Endoplasm

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## Key Difference – Ectoplasm vs Endoplasm

Protozoa are single-cell eukaryotic organisms. They resemble animal cells and contain major organelles and the cell nucleus. Protozoan's cytoplasm has two distinct areas called ectoplasm and endoplasm. The outer layer of the cytoplasm is known as the ectoplasm. The inner layer is known as the endoplasm. The terms endoplasm and ectoplasm are used mainly to describe amoeba cytoplasm and how it helps feeding and locomotion. Amoeba is a single cell eukaryotic organism which is made up of a nucleus and cytoplasm. The cytoplasm of amoeba can be divided into the two layers: endoplasm and ectoplasm. **Ectoplasm is the clear outer cytoplasmic layer of amoeba while endoplasm is the inner granule-rich cytoplasmic layer of amoeba.** This is the key difference between ectoplasm and endoplasm.

## What is Ectoplasm?

Ectoplasm refers to the outer layer of the cytoplasm of a cell. It is not a granulated area. This part of the cytoplasm is watery and clear. Ectoplasm is located immediately adjacent to the plasma membrane. It is clearly visible in the amoeba cell.

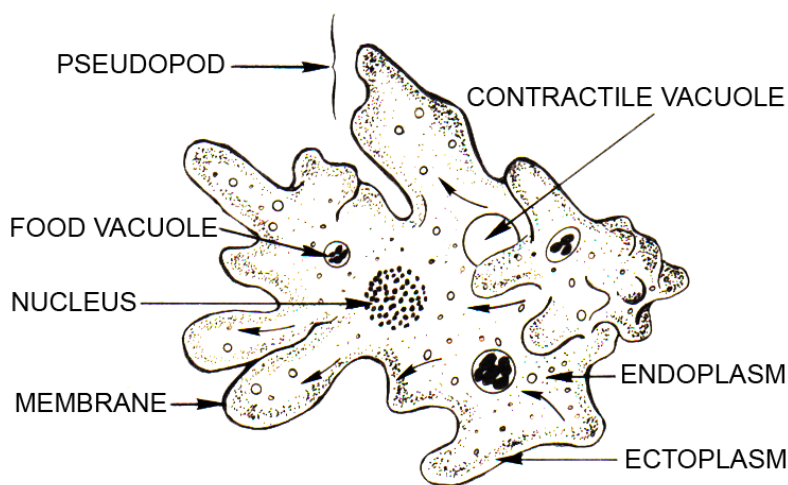
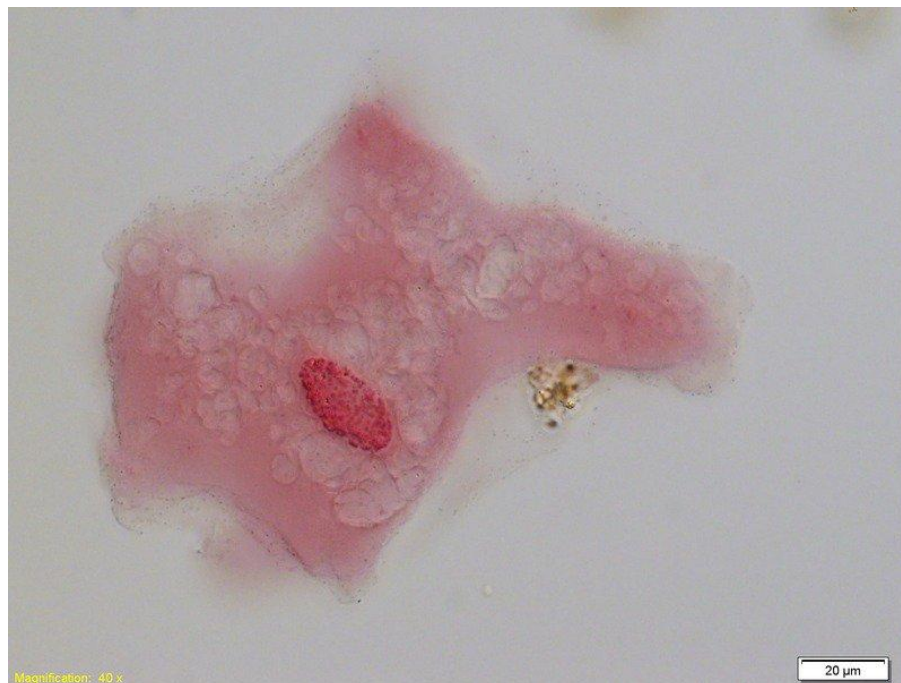


Figure 01: Cell Structure Amoeba

Amoeba cells locomote by pseudopodia formation. The ectoplasm of the amoeba cell is responsible for changing the direction of the pseudopodium. Location of the pseudopodium changes when the [alkalinity](#) and acidity of the water in ectoplasm are changed. A slight change in the acidity or alkalinity is enough for the flowing of cytoplasm which helps in [locomotion](#). Water concentration of the amoeba cell is regulated by the endoplasm. Endoplasm easily absorbs or releases water through the partially permeable membrane. Ectoplasm usually contains more actin filaments to support cell membrane for elasticity. Ectoplasm protects the cell since it is in the gel-like state.

## What is an Endoplasm?

Endoplasm is the inner part of the cell's cytoplasm. It is often granulated and dense. Endoplasm is located between ectoplasm and nuclear envelope. Endoplasm also contributes to the locomotion of amoeba through pseudopodia. The composition of the endoplasm is different from the ectoplasm. Endoplasm contains granules, minute structures, water, [nucleic acids](#), [amino acids](#), [carbohydrates](#), inorganic ions, [lipids](#), enzymes and other molecular compounds. Most of the metabolic processes including cell division occur in the endoplasm. Therefore endoplasm serves as the site of the cellular processes since it contains necessary compounds and organelles. All organelles are housed in the endoplasm.



**Figure 02:** In the above micrograph of an amoeba, the endoplasm is shown in light pink.

A cell needs necessary components for cellular processes. Hence, materials are synthesized and constantly degraded within the endoplasm.

## What are the similarities between Ectoplasm and Endoplasm?

- Endoplasm and ectoplasm are components of cell's cytoplasm.
- Both are fluids.
- Both parts help amoeba for locomotion.

## What is the difference between Ectoplasm and Endoplasm?

<b>Ectoplasm vs Endoplasm</b>	
Ectoplasm refers to the outer non-granulated layer of the cytoplasm of a cell.	Endoplasm refers to the inner, granulated layer of the cytoplasm of a cell.
<b>Nature</b>	
Ectoplasm is a clear gel.	Endoplasm is more fluid or watery.
<b>Granules</b>	
Ectoplasm is non-granulated.	Endoplasm houses the majority of the cell's granules and minute structures.
<b>Density</b>	
Ectoplasm is less dense.	Endoplasm is dense.
<b>Area</b>	
Ectoplasm occupies a small region of the cell.	Endoplasm makes up the bulk of the cell.
<b>Location in the cell</b>	
Ectoplasm is located adjacent to the plasma membrane.	Endoplasm is located more inside the cell.
<b>Cellular Processes</b>	

Ectoplasm is not the site for many cellular processes.

Endoplasm is the site of most cellular processes D.

## Summary – Ectoplasm vs Endoplasm

Cytoplasm of the amoeba cell can be divided into two distinct parts named ectoplasm and endoplasm. Ectoplasm is the outer part of the cytoplasm. It is located adjacent to the cell membrane and helps the membrane to maintain elasticity. It is less dense and not granulated. However, ectoplasm is responsible for locomotion of amoeba cell. Endoplasm is the inner part of the cytoplasm. It is composed of granules and various compounds. It is the site for most of the cellular processes. Endoplasm also contributes to the locomotion of the amoeba. Thus, the difference between ectoplasm and endoplasm is in their structure and role.

### References:

1. "Endoplasm." Wikipedia. Wikimedia Foundation, 25 June 2017. Web. [Available here](#). 06 July 2017.

### Image Courtesy:

- 1."Amoeba (PSF)" By Pearson Scott Foresman – Archives of Pearson Scott Foresman, donated to the Wikimedia Foundation (Public Domain) via [Commons](#) [Wikimedia](#)
2. "Collection Penard MHNG Specimen 40-1-4 Amoeba terricola" By Thierry Arnet – This document was created as part of the Pénard projectDeutsch ([CC BY-SA 3.0](#)) via [Commons](#) [Wikimedia](#)

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