

Difference Between Vegetative and Generative Cell

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Key Difference - Vegetative vs Generative Cell

[Angiosperms](#) are flowering plants that produce enclosed [seeds](#). Angiosperms contain flowers with male and female reproductive parts ([stamens and pistils](#) respectively). Stamens carry [male gametes](#) while pistils carry [female gametes](#) for [sexual reproduction](#). An [anther](#) is one part of the stamen, and it contains four [pollen](#) sacs. The process known as [microsporogenesis](#) forms Pollen grains. Pollen is not considered as a male gamete. It has both non-reproductive cells and reproductive cells. Non-reproductive cells within the pollen grain are known as vegetative cells. In most flowering plants, a single vegetative cell can be seen. The reproductive cell is known as a generative cell. Vegetative cell is responsible for the formation of pollen tube which goes through the style of the pistil. Generative cell divides and forms sperm cells which are male gametes of the flowering plants. The **key difference** between vegetative and generative cell is that **vegetative cell is non-reproductive while the generative cell is reproductive**.

What is a Vegetative Cell?

The larger cell of the pollen grain is known as a vegetative cell or the tube cell. Vegetative cell is non-reproductive, and it forms the pollen tube once the pollen settles on the [stigma](#) of a flower. When pollen lands on the stigma, it absorbs moisture and begins to germinate by making the pollen tube through the style towards the [ovary](#). Vegetative cell is important in delivering male gametes into embryo sac for the double [fertilization](#) occurs in flowering plants. Vegetative cell converts into an elongated tube-like structure. The vegetative cell contains [cytoplasm](#) and a [nucleus](#). It is larger compared to the generative cell. And the vegetative cell is surrounded by a thin, delicate wall known as intine.

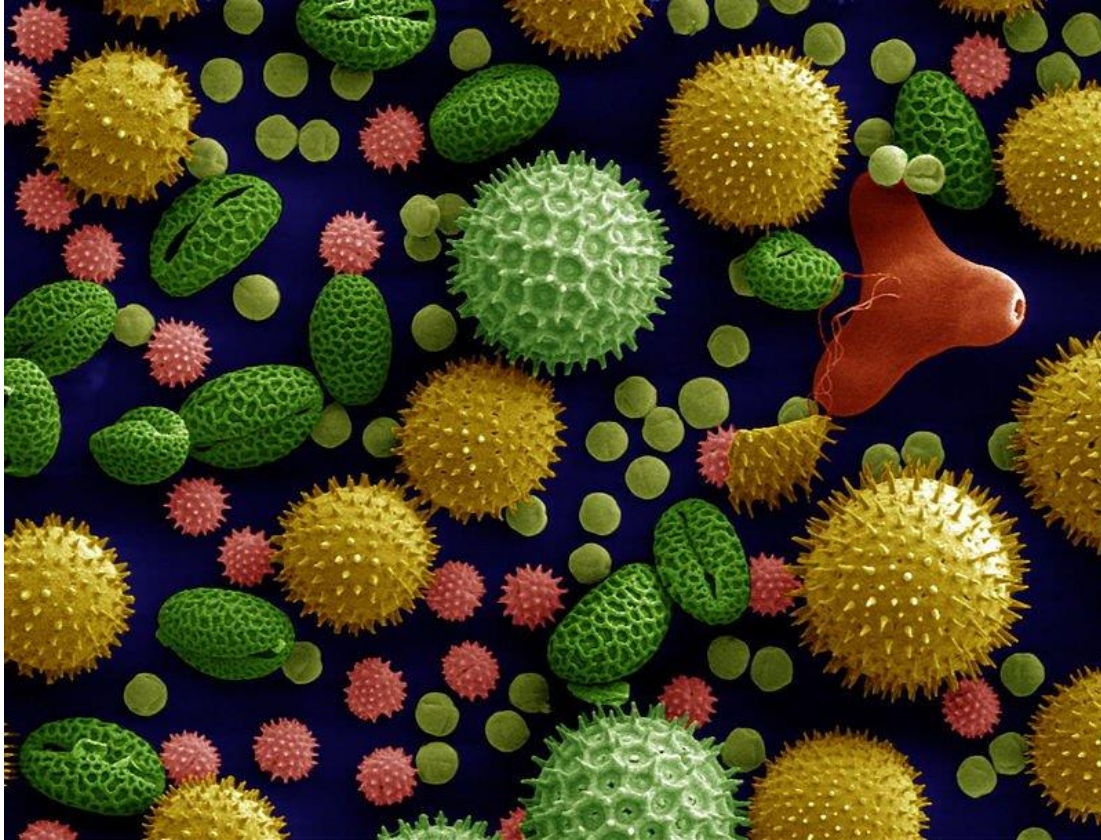


Figure 01: Pollen Grains

The pollen tube grows until it meets embryo sac and then releases the sperm nuclei for [syngamy](#).

What is a Generative Cell?

The generative cell is the smaller cell which resides inside the pollen grain. It is reproductive, and it divides by [mitosis](#) and produces two male gametes or two sperm cells. A thin wall known as intine separates the generative cell. In mature pollen grains, generative cell lies within the cytoplasm of the vegetative cell (generative cell passes into the vegetative cell to go towards the embryo sac for the fertilization).

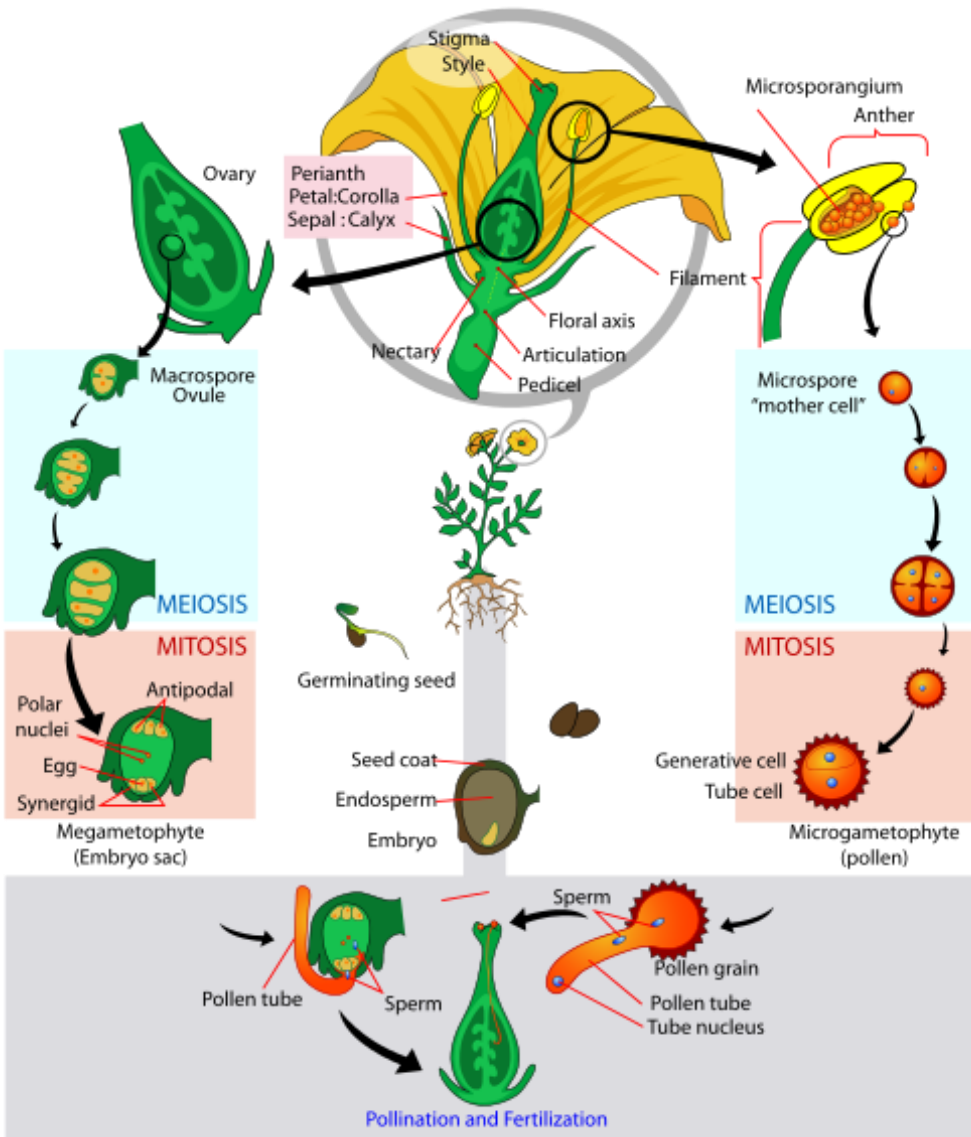


Figure 02: Generative Cell of the Pollen Grain

Once, sperm nuclei get into the megagametophyte, they become ready for the syngamy or the double fertilization to produce a [zygote](#).

What are the Similarities Between Vegetative and Generative Cell?

- Both vegetative and generative cells are cells of the pollen grains.
- Both cells are important for the sexual reproduction of flowering plants.
- Both cells contain a nucleus.
- Both cells develop during the microsporogenesis.

What is the Difference Between Vegetative and Generative Cell?

Vegetative vs Generative Cell	
Vegetative cell is one type of cell in pollen grains which is non-reproductive and responsible for pollen tube formation.	The generative cell is one type of cell in pollen grain which is reproductive and responsible for the formation of sperms.
Reproductive Ability	
Vegetative cell is non-reproductive.	The generative cell is reproductive.
Size	
Vegetative cell is larger than a generative cell.	The generative cell is smaller compared to the vegetative cell.
Function	
Vegetative cell forms a pollen tube to deliver male gametes to embryo sac.	Generative cell forms sperm cells or male gametes.

Summary - Vegetative vs Generative Cell

Microsporogenesis is the process which forms pollen grains and male gametes. During the first pollen mitosis, two unequal cells are produced inside the pollen. They are known as a vegetative cell and a generative cell. Vegetative cell is the larger cell which is non-reproductive. Smaller cell is the generative cell which is reproductive. Vegetative cell forms an elongated structure called pollen tube. Through the pollen tube, male gametes are delivered into embryo sac for the fertilization. Generative cell nucleus divides and forms two male gamete nuclei which unite with female gamete in the embryo sac. This is the difference between vegetative and generative cell.

Reference:

- 1.egg3. "Pollen Development." University of Leicester, 7 Oct. 2009. [Available here](#)
- 2."Double fertilization." Wikipedia, Wikimedia Foundation, 5 Jan. 2018. [Available here](#)
- 3."Plant Life." Angiosperm Life Cycle. [Available here](#)

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