

THE

GENETICS



OF A

GIANT PUMPKIN



EVER WONDER WHAT MAKES GIANT PUMPKINS SO BIG?

From Halloween television and movies to fall festivals and pumpkin contests, the giant pumpkin is an iconic symbol of the season. Many might wonder how pumpkins can grow to such impressive sizes. A combination of growing factors, genetic makeup, and selective breeding all play a crucial role in producing these massive gourds!

Explore Lab Science

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GROWTH FACTORS:



Growth factors are biological components that impact the development of an organism. In pumpkins, there are several growth factors that can impact the maturation of a pumpkin. Two key processes are cell division and cell elongation, which significantly influence natural growth. For pumpkins, cell division lasts for about 20 days, while cell expansion continues for around 55 days (1). This growth period is notably longer compared to many other fruits and vegetables. Additionally, hormones play a crucial role in pumpkin growth. Gibberellic acid, for example, is a hormone that stimulates cell growth and division, contributing to the impressive size of pumpkins.



<https://www.istockphoto.com/photo/giant-pumpkin-gm147068678-7486103>. (2)

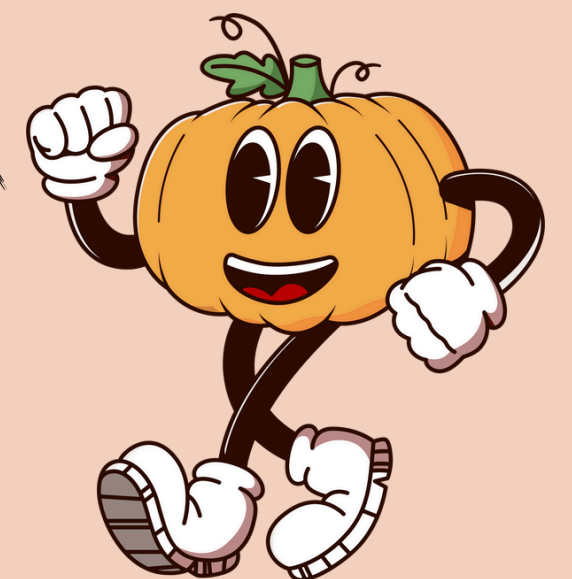
GENETIC MAKEUP:

Similar to growth factors, the genetic makeup of a pumpkin plays a vital role in its size. Genes provide the blueprints for proteins and their respective functions which in turn can determine an organism's characteristics. A variety of genes can determine size, shape, resilience and many other factors that influence growth. One of the most notable genes is the group of CmoMYB genes, which are responsible for regulating growth in response to non-living factors that cause stress on the organism (4).

SELECTIVE BREEDING:

Finally, selective breeding is an important factor that can influence how large a pumpkin can grow. Also known as artificial selection, this process involves carefully choosing parent plants to produce specific, desirable traits. This technique can help improve productivity and aid in experiments (3). By focusing on traits such as cell growth, shape, a larger phloem, and thicker walls, growers can select for a giant pumpkin, leading to impressive results!

[WANT TO SEE A
TIMELAPSE VIDEO
OF A PUMPKIN
GROWING? CLICK
HERE!](#)



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