NEW BLOG
Neurogenesis Empowerment Workshop

# Neurogenesis:
# Adult Neuron Regeneration

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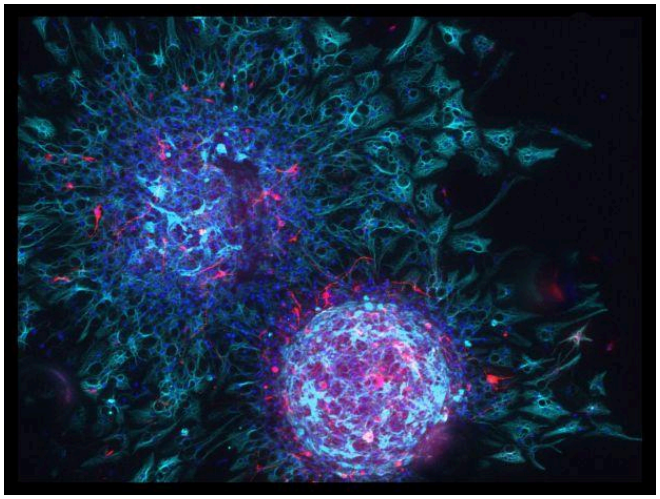


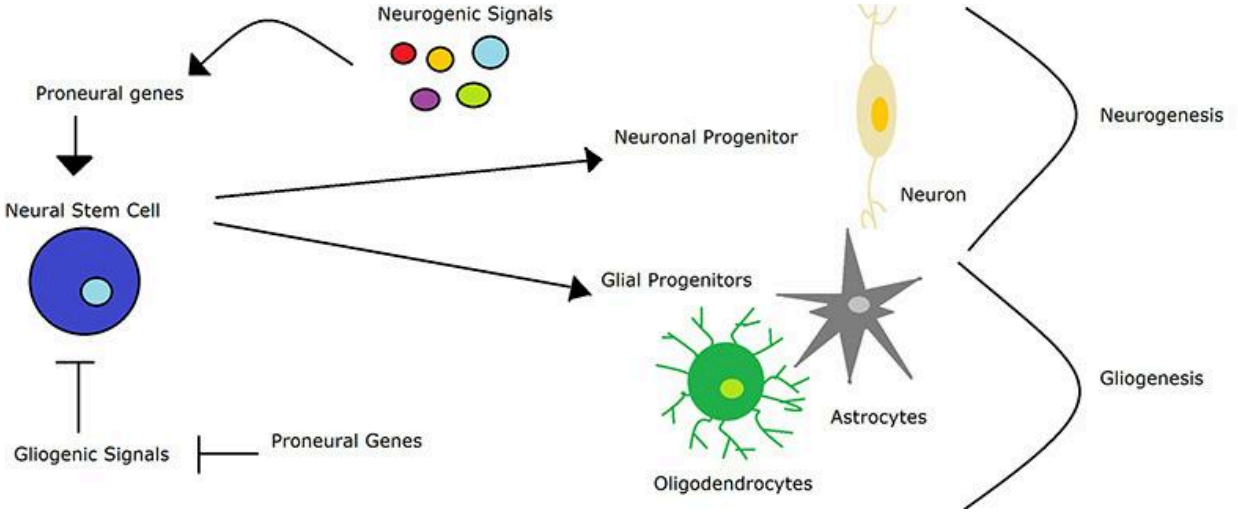
Image: https://qbi.uq.edu.au/brain-basics/brain-physiology/what-neurogenesis

## INTRODUCTION

Neurogenesis is made up of two root words “neuro” meaning relating to nerves or the nervous system and “genesis” meaning the generation or formation of something. Neurogenesis refers to the growth and development of  neurons. This process is responsible for the production of the brain’s neurons which is most active while a baby is still developing in the womb. For a long time, the nervous system was believed to stay relatively stagnant after a baby is born. However, around the 1960’s, researchers discovered that this might be the case. There was evidence that neurons do continue to form throughout an individual's lifetime. Around the early 1990’s, scientists discovered stem cells in adult mice brains which could differentiate or form into nerve cells. Fast forward a decade or so, neurogenesis was located in the hippocampus of the brain. This is very important because it allows us to distinguish between similar memories like where you placed your favorite trinket from one day to the next.  The neurons from adult neurogenesis in the hippocampus play crucial roles in regulating mood, memory and spatial learning.

Researchers have shown that exercise is a great way to increase the regeneration rate of neurons. There is some thought that increasing the production of neurons can help mediate cognitive decline, neurodegenerative diseases, and overall mental health.

## FROM STEM CELLS TO NEURONS

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The diversity of types of neurons in the brain result from regulated neurogenesis during embryonic development. During this process, neural stem cells differentiate to become any specialized cell type at specific times and locations in the brain. Stem cells can divide indefinitely to produce more stem cells, or differentiate to create more specialized cells. Neural progenitor cells differentiate into specific types of neurons. As seen in the diagram above, neural stem cells can also turn into glial progenitor cells, which give rise to glial cells such as astrocytes, oligodendrocytes and microglia. Understanding how different types of brain cells are formed is really important for understanding how our brains work. When we're developing in the womb, special cells called neural stem cells basically have the job of creating all the different kinds of cells in our brains. They can turn into different types of brain cells, like neurons (which help us think and feel) and glial cells (which support and protect neurons). This process gives our brains the ability to do lots of different things, like seeing, hearing, and thinking. If something goes wrong during this process, it can cause problems with how our brains work, like trouble with learning or memory. So, scientists study how these cells develop to try to find ways to keep our brains healthy and working well

## HOW DO YOU INCREASE YOUR OWN NEUROGENESIS?

1) Regular physical activity has been shown to increase the rate of neurogenesis in the brain. Exercise stimulates the release of growth factors and hormones that promote the growth of new neurons. Physical activity enhances blood flow to the brain, providing nutrients and oxygen necessary for neurogenesis.


2) Quality sleep is crucial for brain health and neurogenesis. During sleep, the brain consolidates memories and clears out toxins, allowing for optimal neuronal growth and repair. Establishing a regular sleep schedule and prioritizing sleep hygiene can support neurogenesis and overall brain function.
3) Engaging in activities that challenge the brain, such as puzzles, learning new skills, or playing musical instruments, can stimulate neurogenesis. These activities promote the formation of new connections between neurons, which enhances cognitive function and promotes synaptic plasticity.