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## NEURAL PLASTICITY AND MEMORY ENGINEERING - BRAIN ANATOMY

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Neural plasticity helps our brain change. Learn new things throughout our life. It plays a role in learning getting better after an injury and improving our thinking skills. To make progress in areas like improving memory helping people recover from brain injuries and controlling thoughts we need to know more about the parts of our brain and how they work together to make these changes happen. As brain problems become more common and need treatments scientists are focusing on how our brains ability to change helps us form memories. This research is important in todays brain science. It might help us find new ways to improve, fix or rebuild how we remember things. Neural plasticity is really important for all of these things and scientists are studying it to help people, with brain problems.

I want to learn about the parts of the brain and how they work together to help the brain change and adapt. This is what we call plasticity. I also want to know how the brain helps us remember things and how we can make our memory better. The human brain is very good, at changing and adapting. It is able to do this because of the way its parts work together. Neural plasticity and memory are important things to understand about the human brain.

We want to look at the parts of the brain that are involved in how our brain cells and connections change. We need to understand how our brain cells and the tiny things, inside them help us remember things and make those memories stick. We have to see how well the current methods of changing memory and engineering the brain are working. We are trying to find out what is stopping us and what can help us improve memory in a targeted way by looking at the brains structure.

The study used a mix of methods. Looking at brain structures with MRI scans. Reviewing research on how brain cells work. Comparing brain stimulation techniques. Using computer models to understand brain changes.The information came from,Trusted science journals, Databases of brain scans, And recent studies, on brain engineering.

The hippocampal CA1–CA3 pathways and the dentate gyrus are really important for forming memories that happen in our lives. The prefrontal cortex is also important because it helps us remember things for a time. The amygdala is like a helper that makes sure we remember things that are emotional.When the cells in our brain talk to each other it is called plasticity. This talking is helped by things like NMDA and AMPA and something called CREB.

The brain has a thing called neural plasticity. This is because of how the hippocampal and cortical networksre connected. The brain keeps these connections strong with the help of changes in the synapses and molecules.We have learned some things about how memories are made. If we make changes to the right parts of the brain we can make memories stronger or change them. To really understand how to help people with memory problems we need to know more about the brain and how it works. We need to combine what we know about the brains structure with what we know about the molecules that make it work. This will help us make technologies that can safely and effectively help people with memory problems. This can change how we think about memories and how we can help people who have problems, with their memories.