**Introduction:**

Neuroscience is the in-depth study of the nervous system, it’s structure, function and behavior through a series of scientific and technological experiments and tests. Neuroscience was originally a part of biology, but with significant advances in science and technology over the past few decades, Neuroscience has emerged as a field of its own dedicated to the study of the nervous system.

The nervous system encompasses the brain and the spinal cord. Research and development in Neuroscience ranges from understanding the nervous system at the cellular and molecular level all the way to human behavior. For this reason, Neuroscience is a highly interdisciplinary field and involves a multitude of subjects, ranging from the pure sciences such as Chemistry, Biology, Physics to medical studies such as Anatomy and Physiology to engineering and technology.

**Significant developments in Neuroscience**

Rapid advances in science, engineering and technology over the past few decades has brought about significant breakthroughs in the study of the nervous system. Following are some of the most significant developments in the field of Neuroscience over the past few years

Neuroplasticity: One of the most significant achievements in the development of Neuroscience was the discovery of neuroplasticity, the ability of the brain to rewire itself by forming new neural connections throughout life. Before the discovery of neuroplasticity, scientists were under the assumption that once the brain reaches a certain age, it ceases to develop (or rewire) new neural connections. However, a series of experiments by a team of renowned scientists proved that the brain rewires itself by forming new neural connections and neural pathways in response to injury and changes in the environment.

Computational Neuroscience, Imaging and Genetics: The past few decades have seen rapid advances in computer science, engineering and technology that has significantly advanced research and development in Neuroscience. Neuroscientists are now able to study the nervous system in great precision and depth in real time, thanks to advanced super power imaging machines . The genomics revolution has brought about the ability to analyze the genes and proteins of the nervous system and understand their structure, function and role in diseases. Computational neuroscience is another area of neuroscience that has progressed rapidly over the past few years. Computational neuroscientists use theoretical techniques such as data analysis, quantitative and mathematical modeling to understand and predict how the nervous system works..

The field offers both medical and non-medical career options. From being a neuro surgeon, neuro physician or neurologist, neuro anesthetist, neuro pathologist, neuro ophthalmologist, neuro radiologist – interventional and non interventional, neuro physiologist, psychiatrist, clinical psychologists, physio, rehab and occupational therapists with Masters in Neurophysiotherapy, or even speech therapists once has a specturm of options to choose from. Allied medical career options also include radiographers trained in CT, MRI, Cathlabs doing Interventional Neuroradiology work. Researchers in neurophysiology, neuropharmacology and basic neurosciences including biomedical engineers and scientists serving the ever expanding equipment needs in the field are the non-medical career options.

**Various branches of Neuroscience:**

Computational Neuroscience

Behavioral Neuroscience

Cognitive Neuroscience

Clinical Neuroscience

Developmental Neuroscience

Neuroengineering and many more

**Scope in India and Abroad:**

India: Research in Neuroscience is upcoming in India and there are a couple of premier institutions that are doing great work in Neuroscience. However, the opportunities are severely limited when compared with countries such as UK and USA. This is because of the high population and limited seats available in prestigious institutions for Neuroscience programs. If you are unable to get into any one of the premier institutions such as IISc and NBRC for higher studies in Neuroscience, then your best bet would be to get a higher degree from abroad.

Abroad: USA and UK are at the forefront of research in Neuroscience. Therefore, opportunities in these countries are immense for students interested in pursuing a research career in Neuroscience. Since this is a highly research oriented field, a PhD is imperative to climb up the ladder at work. Most of the Neuroscience jobs are in universities, research centers and labs. Industry type jobs are also available in technology and biomedical engineering companies that do R&D in Neuroscience. Apart from USA and UK, Canada, Germany and Australia are also doing very well in Neuroscience. This resource will give you a list of nations that are producing high quality research in Neuroscience.