

Stem cells offer new research approach in autism

Today's new kind of stem cell may allow scientists to better study developmental disorders at their earliest stages and "has huge implications for regenerative medicine. This approach has produced remarkable findings about developmental differences in the brains of autistic children, says Dr Prabhu Mishra, CEO, StemGenn Therapeutics.



Autism spectrum disorder (ASD) is a devastating human condition, a lifelong developmental disability that is confounding both in life - where it seems to appear suddenly and without warning in young children - and in the lab, where it steadfastly defies straightforward



Dr. Prabhu Mishra



investigation and understanding. Numerous studies of family histories and twins show that some cases of ASD are clearly heritable. But a majority of ASD cases are not familial or heritable, but rather occur sporadically or idiopathically - without obvious reason. To find the causes of ASD - which usually precede any discovery of effective new treatments or preventive measures, let alone something resembling a cure - scientists currently rely on an imperfect toolbox.

Probing the brain

The simplest method of studying the human brain is to probe the living organ directly. For many reasons, however, that approach is not practical and desirable - at least not with current technologies. Sometimes, scientists are able to examine postmortem tissues. In fact, this approach produced remarkable findings about developmental differences in the brains of autistic children. But it also presents its own set of challenges, including that study materials are an extraordinarily scarce resource. Live-imaging techniques are improving, but they are still relatively blunt analytical instruments. More often, scientists turn to animal models, typically mice whose brains or behaviors have been modified to mimic aspects of ASD. In this sense, they are no different from the animal models used to study diabetes, cancer and many other human diseases. But as much as rodents and humans share certain basic commonalities, there are also inherent differences in their genetic backgrounds, immune systems and brain circuits. Furthermore, animal models cannot represent the individual differences inherent in human populations. Simply put, mice are not tiny people; humans are a different species, and those differences can be significant.

Stem cell to study early human cells

Scientists have found a new type

of stem cell, one that can develop into any kind of tissue in the body, that may make research on early cell stages easier - and could lead to new research opportunities for developmental disorders. The new human stem cells were injected into mouse embryos in the lab, leading to different early-stage tissues after 36 hours,

according to the paper published in Nature. That's in contrast to two types of conventionally used human stem cells, which didn't develop when injected into the non-viable mouse embryos. Today's new kind of stem cell may allow scientists to better study developmental disorders at their earliest stages and "has huge implications for regenerative medicine," says Prabhu Mishra, CEO, StemGenn Therapeutics and Secretary General of Stem Cell Society of India. With improvements in the technology, it may be possible to generate human cells, tissues, and organs in another species, like a pig - which can then be used for transplant, Mishra says. "Of course, the ethical implications behind creating a human-animal chimera for the purpose of obtaining human tissues and organs to save lives of millions need to be carefully evaluated," he said. Mr Mishra added certain services of StemGenn Therapeutics which include stem cell therapy for neurological diseases, anti-aging (total body rejuvenation), PRP therapy for hair restoration, bone marrow transplant, sports injury and tissue engineering for diabetic foot and dentistry.

What is Autism?
Autism is known as a complex developmental disability. Experts believe that Autism presents itself during the first three years of a person's life. The condition is the result of a neurological disorder that has an effect on normal brain function, affecting development of the person's communication and social interaction skills. People with autism have issues with non-verbal communication, a wide range of social interactions, and activities that include an element of play and/or banter.