

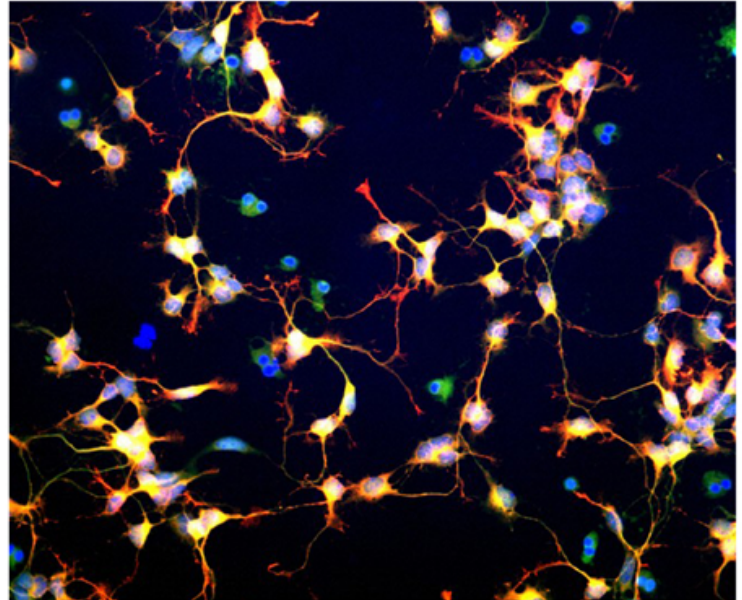
Cerebral Palsy: how could stem cells help?

What do we know?

Cerebral palsy is a group of physical and mental disabilities that are caused by damage to a child's developing brain during pregnancy or shortly after birth. In many cases the exact cause of brain damage is not known.

Patients with cerebral palsy often have difficulties speaking, moving, eating, and controlling eye movements; some patients also have learning disabilities. There is no cure for cerebral palsy.

Therapies focus on helping patients deal with symptoms and improving communication. Some medications are available to help patients relax stiff muscles and address feeding problems in babies.



Neural precursor cells can differentiate (or specialise) to form several different types of cells found in the nervous system - neurons, oligodendrocytes, astrocytes. Image: Nina Callard. Wellcome Images

What are researchers investigating?

Studies are only in very early stages of examining how stem cells might be used to treat cerebral palsy.

There are currently no approved stem cell treatments for cerebral palsy.

Researchers think neural (brain) stem cell treatments might help to restore some function to patients. Transplants of neural stem cells or drugs that activate natural neural stem cells could repair and replace neurons and other supporting brain cells.

Mesenchymal stem cells (MSCs) cannot make new brain cells, but some preliminary studies suggest MSCs release substances that promote natural brain repair processes.

What are the challenges?

Each case of cerebral palsy is unique, making understanding the causes and implications of this disability very difficult.

The developmental process of the brain in humans and animals are incredibly different. This makes studying and testing new treatments for brain developmental disorders exceptionally difficult and results found in animals may not translate to humans.

Using stem cells to rebuild the brain of cerebral palsy patients will be incredibly challenging because new cells and neurons will have to be correctly wired into complex networks of thousands of other neurons in the brain.