

New discovery about the formation of new brain cells

November 23 2009

The generation of new nerve cells in the brain is regulated by a peptide known as C3a, which directly affects the stem cells' maturation into nerve cells and is also important for the migration of new nerve cells through the brain tissue, reveals new research from the Sahlgrenska Academy published in the journal *Stem Cells*.

Although the research has been carried out using mice and cultured cells, it could lead to a new medicine for human beings, which could be given to patients who have had a stroke or other disorders that damage or destroy the nerve cells.

"Our research findings show that it could be possible to use molecules that are similar to the peptide C3a to boost the formation of nerve cells and stimulate the replacement of nerve cells lost due to injury or illness," says senior lecturer Marcela Pekna who headed the research group at the Sahlgrenska Academy, Sweden.

The peptide C3a is generated through the activation of the complement system, a group of proteins in the blood that is essential for the body's [immune defence](#).

"Our research group was the first in the world to show that the complement system also plays an important role in the repair and regeneration of the [brain](#)," says Pekna. "This was a surprising discovery that opened up a whole new field of research."

New nerve cells are formed in the brain throughout our lives. The brain's stem cells are formed in the [hippocampus](#) and the subventricular zone, an area next to the fluid-filled cavities (lateral ventricles). Stem cells from the subventricular zone mature into nerve cells in the olfactory bulb, but can also migrate out into the brain to replace nerve cells that have been damaged or destroyed. By finding out more about how new nerve cells are formed and what controls their migration, stem cell researchers hope to find new ways of treating stroke, Parkinson's disease and other disorders that result from the [nerve cells](#) failing to function as they should.

More information: [Stem Cells](#), Title of the article: Complement-derived Anaphylatoxin C3a Regulates In Vitro Differentiation and Migration of Neural Progenitor Cells, Authors: Noriko Shinjyo, Anders St'hlberg, Mike Dragunow, Milos Pekny, Marcela Pekna

Source: University of Gothenburg ([news](#) : [web](#))

Citation: New discovery about the formation of new brain cells (2009, November 23) retrieved 20 April 2024 from

<https://medicalxpress.com/news/2009-11-discovery-formation-brain-cells.html>

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