

# Study sheds light into the nature of embryonic stem cells

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New insight into what stem cells are and how they behave could help scientists to grow cells that form different tissues.

A study at the University of Edinburgh has shown that embryonic [stem cells](#) consist of cells that switch back and forth between precursors of different cell types. This may be linked to their potential to become any cell type in the body.

The findings could help scientists catch embryonic stem cells at exactly the right point when they are primed to differentiate into cells that form specific tissues.

The study indicates that embryonic stem cells are not a single cell type as previously thought, but comprise a mixture of different cell types from the early embryo that can transform themselves from one type to another.

Scientists previously thought that embryonic stem cells were only able to become the embryonic precursors for adult cells, a property known as pluripotency.

The researchers have now found that they can also turn into cells associated with the [placenta](#). These cells - known as the primitive endoderm - form the yolk sac that helps provide nutrients to the early embryo.

The study, published in the journal [PLoS Biology](#), also shows that embryonic stem cells are able to alternate and transform themselves between cells that create the primitive endoderm and founder embryonic cells, which will go onto form tissues in the body.

Although cells in early embryonic development switch back and forth between these two different cells, signals received from surrounding cells and the embryonic environment allow them to quickly fix on becoming one specific cell type.

However, in the laboratory embryonic stem cells are grown in a dish away from the embryo and as a result exist in a captured state where their identity does not become fixed.

Scientists hope that better understanding of how embryonic stem cells change will enable them create an environment to encourage growth of specific cells.

Dr Josh Brickman, from the University's Medical Research Council Centre for Regenerative Medicine, said: "This study changes our view of what embryonic stem cells are and how they behave. Knowing that [embryonic stem cells](#) can switch between different founder cell types could help us isolate cells at a point in time when they are primed to become specific cells. This could improve the ability to produce specific cells in the laboratory."

Provided by University of Edinburgh

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