

Cellular ‘doughnut’ marks most important stage of human development

Embryos of many organisms grow from two cells to four, then eight, and so on until there are thousands in a kind of ball. Then sheets of cells start to make folds or furrows as the basic shape of the creature — fly or fish or human — begins to emerge.

The shape changing is no mere curiosity. Volvox embryos do it in two ways, and the one the Cambridge researchers studied is remarkably similar to something that occurs in the embryos of humans and other animals, when a ball of cells turns into a doughnut shape, with an inside and an outside. Although it's not immediately obvious, grown up humans are still kind of messy doughnuts, with arms, head, legs and most of our internal organs all part of the doughnut itself. The hole, in terms of geometry, at least, is the digestive system, from beginning to end.

That process is called [gastrulation](#), and it is enormously significant in the embryo's growth, the beginning of a crucial distinction between what's inside and what's outside. The paper in [Physical Review Letters](#) describing the new research begins with a quote from the embryologist Lewis Wolpert: “It is not birth, marriage or death, but gastrulation which is truly the most important time in your life.”

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Birth? Trivial Next to Cellular Doughnut-Making Process](#)