

# Epigenesis Encyclopedia Article

## Epigenesis

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# Epigenesis

Epigenesis is development from an embryo with the sequential appearance of tissues and organs. The tissues and organs differentiate from a population of equivalent (undifferentiated) embryonic cells which in turn descended from a single cell, the zygote. The concept holds that a relatively formless egg gives rise to the highly structured adult organism. Epigenesis is to be distinguished from preformation, which is the notion that organisms are fully formed but minuscule in the sex cells. Curiously, some preformationists were animalculists who thought they saw a fully formed human in the head of a sperm cell. Others, known as ovists, believed that eggs contain the miniature human. To be logical, the fully formed "homunculus" that existed in either the egg or sperm must have had within it sex cells with even more tiny formed humans. And those tiny humans must have had all future generations encased in their sex cells as ever more tiny "homunculi". Obviously, this was nonsense. Both animalculists and ovists were completely in error. With the development of the light microscope, it became obvious that egg cytoplasm was devoid of tissues and organs and, of course, the head of a sperm was comprised almost entirely of the nucleus. Actually, early observers were epigenetic. Aristotle (384-322 B.C.) and William Harvey (1571-1657) looked at the developing chick. They did not see a chicken in the egg. Rather, they saw a developing embryo that gradually became more complex with time. These early observers clearly reported the epigenetic development of chick embryos.