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Short Communication

Short note on Developmental Biology

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Developmental biology is the study of how a number of interconnected mechanisms result in an organism's diverse shapes, sizes, and structural features as it progresses from embryo to adulthood, or more broadly over a life cycle. It is a model of contemporary experimental biology, focusing on phenomena that have perplexed natural philosophers and scientists for over two millennia. Because of the possible importance of developmental biology [1] for understanding evolution, the theme of reductionism in genetic theories, and increased attention to the specifics of specific research projects, such as stem cell biology, developmental biology has piqued the interest of philosophers of biology. Developmental biology exhibits a diverse set of content and philosophical practices that can be scrutinized in order to better comprehend the theoretical rationale used in experimental life science. This entry briefly summarizes some key ontogenetic phenomena before delving into four domains that represent the importance and potential of philosophical reflection on developmental biology epistemology.

The majority of the properties that developmental biologists try to understand are structural, not functional. A developmental biologist, for example, is more concerned with how tissue layers fold or shape is generated than with what the folded tissue layers do or how the shape works. The ontogeny of feature, at all levels of organization, is a part of developmental biology, but it is often overlooked due to the preponderance of concerns about the ontogeny of form or structure.

In growth, cell differentiation [2] is the mechanism by which different functional cell types emerge. Differentiated cells include neurons, muscle fibers, and hepatocytes (liver cells), for example. Differentiated cells typically produce large amounts of a few proteins that are needed for their particular purpose, giving them the distinctive appearance that allows them to be distinguished from other cells. In order to enable gene expression, their chromatin structure is typically very open, allowing transcription enzymes access, and unique transcription factors bind to regulatory sequences in the DNA.

The capacity to re grow a missing part is referred to as regeneration [3]. This is especially common in plants that grow continuously, as well as colonial animals like hydroids and ascidians. The regeneration of parts in free-living animals has piqued the interest of developmental biologists. Four models, in particular, have received a lot of attention. Hydra, which can planarian worms, which can normally regenerate both heads and tails, are the only two that can regenerate entire bodies regenerate any portion of the polyp from a small fragment, and planarian [4] worms, which can normally regenerate both heads and tails, are the only two that can regenerate entire bodies.

Both of these examples have a constant cell turnover fed by stem cells, and at least some of the stem cells have been shown to be pluripotent, at least in planarian. The other two versions only display distal appendage regeneration. The legs of hemimetabolous insects like the cricket and the arms of urodele amphibians are examples of insect appendages.

Plant growth refers to the mechanism by which a plant's structures emerge and evolve as it develops. Plant anatomy and physiology, as well as plant morphology, are all studied. Throughout their lives, plants develop new tissues and structures from meristems located at the tips of organs or between mature tissues. As a result, embryonic tissues are still present in a living plant.

REFERENCES

1. Gilbert SF, Bolker JA. Ecological developmental biology: preface to the symposium. Evolution & Development. 2003; 5:3-8.
2. Altman GH, Horan RL, Martin I, Farhadi J, Stark PR, Volloch V, et al. Cell differentiation by mechanical stress. The FASEB Journal. 2002; 16:1-3.
3. Brockes JP, Kumar A. Comparative aspects of animal regeneration. Annu. Rev. Cell Dev. Biol. 2008; 24:525-49.
4. Reddien PW, Alvarado AS. Fundamentals of planarian regeneration. Annu. Rev. Cell Dev. Biol. 2004; 20:725-57.

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