Coming to Life: How Genes Drive Development

Christiane Nusslein-Volhard
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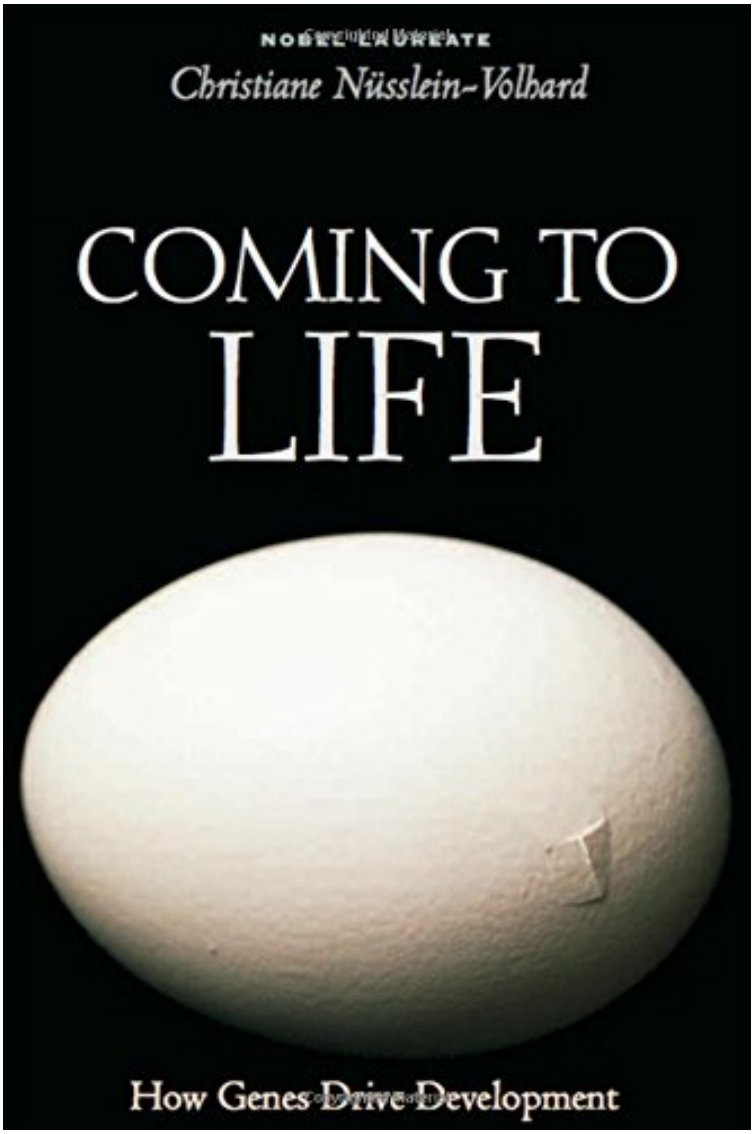

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Christiane Nusslein-Volhard : Coming to Life: How Genes Drive Development before purchasing it in order to gage whether or not it would be worth my time, and all praised Coming to Life: How Genes Drive Development:

0 of 0 people found the following review helpful. Developmental Biology -- Superb BookBy kumar vadapartyConsider this: When a fetus is growing -- and note there is no central nervous system yet -- how does the right limb-protrusion ensure that the otherside is going to produce left-limb protrusion ?How does head-side know that it is not leg-side (or, tail side)?Basically, how does the fetus determine the 3-dimensional axes? How does it keep that

way during the dynamic life of the mother?If these questions intrigue you -- you must read this book...How does non-central (no central nervous system) and reliable (mother's dynamic movements do not disturb fetal growth) communication happen in a fetus?This book by Nusslein-Volhard superbly captures the nature's secrets behind the above questions.She got a Nobel prize for that.Well -- if that's all that is there to it, it is cool enough.But she -hand-drew -- the pictures for this book. That shows the kind of commitment that is rare in these days.Must read.0 of 0 people found the following review helpful. This is a great book. The author is the brilliant scientist and ...By Alexei RudakovThis is a great book. The author is the brilliant scientist and you feel on every page that she understands what she is talking about to the fullest. No word is lost, each provides the important knowledge, each helps you to understand the genes, cells and the development of an organism more and more. It is wonderful introduction to the mystery of Nature and to the work of Science.22 of 23 people found the following review helpful. Concentration Gradients Govern the GenesBy The SpinozanatorIn 1923, Hans Spemann conceived an experiment that became famous. He transplanted cells from an early newt egg to an inappropriate spot in another newt egg. After the transplant, a second head and trunk section grew instead of stomach. Since the donor cells were a different color, it was easy to tell that the new head and neck did not form from the donor cells. Instead, the donor cells influenced the development of its native neighboring cells.Embryology is all about morphogens - chemicals secreted by organizer cells that influence genes in other cells by their concentration gradient. This is where our author has spent her life, becoming only the 11th woman in history to win a Nobel prize in science. She is among the key players who have brought embryology to the center stage of current research in biology.There have been major advancements in our understanding of evolution over the past twenty years. For example: Scientists expected a lot more human genes than 25,000 - that's not too many more than are in a worm. Embryologists began to study evo-devo - how the embryo changed into an adult. Genetic researchers (like Nusslein-Volhard) discovered "core genes" such as the Hox genes that direct body segmentation and the tinman genes that create hearts. Adjacent to the coding genes, "gene switches" were found in the junk DNA. These switches respond to the morphogens, rearranging the effects of the core genes, encouraging dramatic evolutionary change. It came as a surprise that virtually the same core (modular?) genes were found in diverse species - from fungi to humans.Most successful (nonlethal) mutations were found among the gene switches. Complexity and variety may be created by shuffling the patterns of control on the core control genes rather than by mutative changes in the core genes themselves. Constraints imposed by these core genes and deconstraint on the switches enhance the novelty that begged for more explanation.Many have wanted to find "something more" than evolution by genetic variation and natural selection. Gould and his group wanted "Punctuated Equilibrium." Creationists and IDer's just want evolution disrupted and they don't care how. Christiane Nusslein-Volhard in "Coming to Life" describes how these recently discovered processes produce dramatic change in evolution.In the last chapter, she discusses hot political topics - cloning, gene therapy, designer babies, stem cell research, and the moral status of the embryo. She explains, from the point of view of one who has spent her life in research, what is real, what is plausible, and what is utopian. Complete with her own hand-drawn illustrations and concise explanations, this book is a prize.

Nobel Laureate Christiane Nsslein-Volhard gives a concise and illustrative overview of genetics, cellular processes, and ethical issues in human biology. Coming to Life is a remarkable journey through the microscopic world of cells. Complete with the author's hand-drawn illustrations, readers are offered in understandable language a rare insight into a Nobel Laureate's passion for science.

About the AuthorChristiane Nsslein-Volhard is a German biologist. She won the Albert Lasker Award for Basic Medical Research and the Nobel Prize in Physiology for her research on the genetic control of embryonic development. She lives in Bebenhausen, Germany.