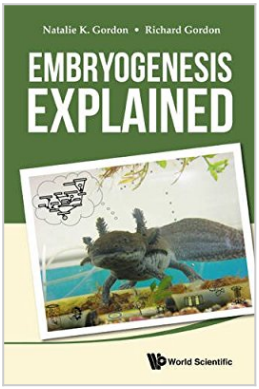

Embryogenesis Explained

By Natalie K Gordon, Richard Gordon

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The greatest mystery of life is how a single fertilized egg develops into a fully functioning, sometimes conscious multicellular organism. *Embryogenesis Explained* offers a new theory of how embryos build themselves, and combines simple physics with the most recent biochemical and genetic breakthroughs, based on the authors' prediction and then discovery of differentiation waves. They explain their ideas in a form accessible to the lay person and a broad spectrum of scientists and engineers. The diverse subjects of development, genetics and evolution, and their physics, are brought together to explain this major, previously unanswered scientific question of our time.

As a follow up on *The Hierarchical Genome*, this book is a shorter but conceptually expanded work for the reader who is interested in science. It is useful as a starting point for the curious layman or the scientist or professional encountering the problem of embryogenesis without the formal biology background. There is also material useful for the seasoned biologist caught up in the new rush of information about the role of mechanics in developmental biology and cellular level mechanics in medicine.

Readership: General public and professionals interested in developmental biology.

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Embryogenesis Explained By Natalie K Gordon, Richard Gordon Bibliography

- Rank: #2809579 in Books
- Published on: 2016-07-31
- Original language: English
- Number of items: 1
- Dimensions: 9.00" h x 6.00" w x 1.25" l, .0 pounds
- Binding: Hardcover
- 250 pages

Editorial Review

Review
excerpts from: ***Morphomechanics of Development.*** Igamberdiev, A.U. (2016). Book Review: Springer International Publ. *BioSystems*, In press.
Web: sciencedirect.com/science/article/pii/S0303264716302532

The title of the book is based on the belief of the authors that the fundamental phenomenon first described by them forms the basis for a profound explanation of the phenomenon of embryogenesis and represents a "right theory" of individual development of biological organisms. Thus the book provides an expanded explanation of this new theory of how embryos build themselves using the phenomenon of generation of differentiation waves. The background given for the theory combines simple physical principles with the most recent breakthroughs in genetics, biochemistry, and biophysics. Despite a huge amount of detail and experimental data, the book is accessible to a broad audience including not only embryologists but also biologists of different profiles, researchers working in many fields of science, teachers and students.

This book by Natalie and Richard Gordon represents an important development in the field of developmental biology and in the foundations of theoretical biology. Its clear presentation and style makes it a perfect complementary textbook for teaching embryogenesis and related courses. It is strongly recommended to everybody who is interested in the problems of embryogenesis and, in general, in foundations of biological organization. In the end, after reading this book, we are convinced that the concept of differentiation waves explains the mystery of embryogenesis. Further elaboration and strengthening of the experimental basis of research related to the phenomenon of differentiation waves may provide new further evidence in support of this great concept.

From the Author
This book began with Dick's original work *The Hierarchical Genome. HG* was a broad and somewhat technical exploration of how differentiation waves can explain and unify many puzzling aspects of genetics, embryology and evolution. It soon became clear that *HG* was hard for people without a background in all these fields to absorb. Those who were not biologists by training came to us asking for succinct explanations of what was known about how embryos worked so they could apply their unique skill sets from diverse fields like bioinformatics, computer science, physics, engineering and mathematics to embyrogenesis. These repeated background explanations eventually became a set covering anatomy, genetics, and biochemistry. I gave these explanations as a series of eight lectures in a course trying to bring *HG* to an audience of scientists with no background in biology. Dick gave supplemental lectures on the implications of our work for evolution and physics. The course grew until it became an official "for credit" graduate course with Wayne State University in Detroit. The material also became the basis for *Embryogenesis Explained*.

Biology is not an easy science for those who don't have the background. When reading biological literature one finds there is a lot jargon and vocabulary specific to the field and there are concepts that are simply accepted as factual without explanation and a rich history behind the vocabulary and concepts that can appear incomprehensible and even nonsensicial to an outsider. (They actually named a gene *Sonic Hedgehog?*) As an undergraduate student learning this stuff I was given the book *Recombinant DNA* by James D. Watson which gently and thoroughly took me from the basics of DNA structure right through to understanding the latest breakthroughs in the field. Reading that book was such a pleasure compared to the typical biology textbook that I decided that if I ever wrote a biology book I would try my best to do in that style. Dick worked so hard on it with me because of how important it is to really understand and explain

embryogenesis. If you started this book with no formal training in biology and you find you can finish it appreciating the wonder, beauty and glory of embryology, then we will have succeeded.

From the Inside Flap
The greatest mystery of life is how a single fertilized egg develops into a fully functioning, sometimes conscious multicellular organism. Embryogenesis Explained offers a new theory of how embryos build themselves, and combines simple physics with the most recent biochemical and genetic breakthroughs, based on their discovery of differentiation waves. The authors explain their ideas in a form accessible to the lay person and the broad spectrum of scientists and engineers. Readers are prompted to question whether existing concepts of explanation in molecular developmental biology are adequate to the task. The book examines the history of the belief that there is something special about life that is either outside the realm of science or requires new laws of nature. The different subjects of development, physics, genetics and evolution are unified to explain the major unanswered scientific question of our time.

Users Review

From reader reviews:

Lacey Clements:

Now a day people that Living in the era just where everything reachable by match the internet and the resources inside can be true or not need people to be aware of each facts they get. How individuals to be smart in getting any information nowadays? Of course the correct answer is reading a book. Reading a book can help individuals out of this uncertainty Information specifically this Embryogenesis Explained book since this book offers you rich information and knowledge. Of course the information in this book hundred percent guarantees there is no doubt in it you know.

Derek Winter:

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Donald Foster:

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