

Second Edition

Mechanisms of Morphogenesis

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How is biological form created? How do molecular machines cooperate to make structures that are much larger than themselves? How do embryos cope with random noise and unpredictability when making an accurate body plan? These are amongst the great questions that still lie at the heart of biology. A recent focus of effort in this area, from a loose coalition of developmental cell biologists, theoretical biologists, bioinformaticians and complex-system physicists, is beginning to yield answers.

Mechanisms of Morphogenesis presents an exciting account of the very latest research into the mechanisms that create biological form. Drawing on both theory and experimental results, it illustrates how embryos use a combination of self-assembly, feedback and adaptive self-organization to drive the morphogenesis of structures ranging from the sub-cellular through cells to large tissues. Each topic is well-illustrated with experimental data from real systems, with particular reference to gaps in current knowledge and pointers to future research.

Suitable for researchers and advanced students, this book provides a solid foundation in the new and emerging science of morphogenesis and self-organization.

Key Features:

- Includes an entirely new, three-chapter section on modelling
- Offers updated and expanded content on how planar cell polarity controls epithelial morphogenesis and orientated mitosis, collective cell migration and the formation and maintenance of boundaries
- Features a companion website with figures from the book



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