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Cellular Aspects of Pattern Formation: The Problem of Assembly by **G. W.** Grimes and K. J. Aufderheide. New York and Basel: Karger, 1991. pp. ix + 94. $75.60 Hardback, ISBN 3-8055-5382-X.

This is the heyday of molecular biology focused on nuclear DNA. Its practitioners possess the financial resources, the techniques, and the self-distributed reward systems to retain their dominant position in biology for years, perhaps for decades. They have not, however, been unchallenged. Even during the rise of nuclear molecular biology some dissidents, most notably Tracy Sonneborn, tried to draw attention to the essential role for living organisms of other elements in the cell besides the nucleus.

The present work derives from this deviant position. (Not surprisingly, one of the authors was a student of Sonneborn.) It presents data which point to the importance of the ambient cell in providing the conditions required for the activity of genes. The authors ask: How are the various elements of the cell put together in such a way as to facilitate the functioning of genes? They reply that the study of nuclear genes cannot by itself answer this question.

This is a short book. A brief historical introduction reminds readers of the aphorism — *omnis cellula e cellula* — of Rudolf Virchow, whose *Cellular Pathology* revolutionized 19th century medicine. The authors raise the question of whether cells assemble themselves ("self-assembly") or derive their structure from previous cells. They state: "... we will demonstrate that major cellular components are assembled and patterned under the direction of previously assembled structures" (p. 4).

The following chapter is entitled "Mechanisms of Assembly." Following it comes the largest part of the work, two chapters devoted to reports of experiments on *ciliophora* and *metazoa*, some by the authors, some by other experimenters. The experiments show how existing cell structures influence the further development of a portion of a protozoan (for example, a cortical unit) that is transferred to a receiving organism in an altered orientation. The occurring changes are heritable, and the authors state:

> The morphogenesis and inheritance of the inverted cortical regions are one of the most convincing bodies of evidence supporting the idea of a heritable mechanism significant to pattern formation acting in parallel with, and complementary to, the heritable mechanisms of nuclear gene expression. (p. 29)

The last section of the book, entitled "The Consequences," discusses the evolutionary aspects of directed assembly and ends with the authors' speculations. Some of these deserve quotation:

> To assemble a cell, an existing cell is a prerequisite. In order to have form and pattern within a cell, one must have an existing set of structures to direct the assembly and organization of the components of the new set of structures....
>
> An unexpected outcome of these analyses was the discovery that much of the localization depended upon processes separate from those involving DNA transcription and translation....
>
> Most of all, we want to remind the reader that once all the genes of a species are sequenced, and the assumed role of each gene and its expression products are known, the mechanisms by which the products are incorporated into the three-dimensional structure of a living cell would still remain to be understood.... The epigenetic revolution should be as exciting a time as the molecular genetic revolution.

I recommend this book to all biologists determined not to accept unthinkingly the dogma of current molecular biology which tells us that nuclear genes will be shown to control morphogenesis. I can recommend it also to historians of science interested in the question of how some concepts become hegemonic in science and often require decades before they can be superseded.

Do not be deterred by the price of the book. It was set by the publishers, not by the authors, I understand. If you think you cannot afford it for your own library, insist that your institution's library purchase it before it goes out of print.

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The Mask of Nostradamus: The Prophecies of the World's Most Famous Seer by James Randi. Buffalo: Prometheus Books, 1993,256 pp., $16.95 trade paperback, ISBN: 0-87975-830-9.

Each era produces its favorite seer. Jeanne Dixon continues to captivate Americans after more than a quarter century. This despite her prediction that a comet would obliterate the planet, and presumably all of her fans, sometime during Ronald Reagan's second term in office.

In prophecy as in politics, accuracy doesn't really seem to matter. What counts is having a loyal constituency. For seers this means followers willing to