Vignettes: Coups d'État

For two centuries, nobody has been able to think of the era of the sciences without referring to what happened, albeit unseen, during the French Revolution, when the scientists quite plainly took power. An astronomer was Mayor of Paris, the inventor of topology was at the head of the Committee for Public Health, the scholars occupied the institutions before the people did and in their place, and a geometrician, although a minor, gained the title of Emperor. The nobility and the clergy collapsed, society no longer lived according to the same divisions or the same offices, scientists at last formed a class or a genus, replacing the clerics and forming a new Church.

—*Michel Serres*, in the introduction to *A History of Scientific Thought: Elements of a History of Science* (Michel Serres, Ed.; English translation, Blackwell)

Perhaps Roi Soleil (a.k.a. Louis XIV) would have called himself the Proton King or DNA King had he known about the nuclei of atoms or cells. Sexually he was surely the Alpha Baboon King.

—*Tyler Volk*, in *Metapatterns, Across Space, Time, and Mind* (Columbia University Press)

Phosphorylators

Protein Kinases. JAMES ROBERT WOODGETT, Ed. IRL (Oxford University Press), New York, 1995. xvi, 273 pp., illus. $85 or £55; paper, $46 or £29.50. Frontiers in Molecular Biology.

Since the discovery more than 40 years ago that enzyme activity could be regulated by phosphorylation, the protein kinase field continues to grow at a remarkable pace. In the early years attention was focused on regulation of specific processes with the sequential discoveries of phosphorylase, phosphorylase kinase, glycogen synthase, and pyruvate dehydrogenase phosphorylation. However, in the late 1960s the target for the ubiquitous second-messenger cyclic AMP was identified as a protein kinase with broad substrate specificity, ushering in what was regarded as an explosion of information on protein phosphorylation mechanisms and regulatory schemes involving a variety of cellular processes. By 1980 this field was composed of a relatively few, biochemically identified protein serine/threonine kinases. About 50 enzymic and nonenzymic proteins were reported to undergo phosphorylation-dephosphorylation reactions. Phosphorylation schemes involved contractile, membrane, ribosomal, nuclear, and cytoskeletal proteins in addition to metabolic pathways.

It turns out that this period could be better described as a pop than an explosion. With the recognition of a striking sequence similarity in the catalytic cores of both protein serine/threonine kinases and newly discovered protein tyrosine kinases, molecular cloning has led to the identification of more than 175 different kinase genes in the eukaryotic protein kinase superfamily. Additionally, investigations have shown that it borders on the unusual for a cellular protein not to be phosphorylated. Although a catalog of the basic properties of individual protein kinases has recently been completed, under the title *The Protein Kinase FactsBook* (G. Hardie and S. Hanks, Eds.; Academic Press, 1995), the identification of additional protein kinase genes is expected to continue at a brisk pace.

One aim of the book entitled *Protein Kinases* is "to create a manageable resource, a compilation of protein kinase information in an accessible form," and it includes eight chapters written by experts in their respective fields. In contrast to the *Protein Kinase FactsBook*, this book is not meant to be an encyclopedic database but "to take stock of this extended family before we are all overwhelmed by sheer complexity" by focusing on the general properties of the more prevalent families. Frankly, many of us already feel overwhelmed. The book takes good "stock" of the field, starting with a chapter on the biochemical properties and crystal structure of the catalytic subunit of cyclic AMP–dependent protein kinase, a prototypical kinase that has provided molecular insights into the operation of many members of the protein kinase superfamily. This chapter is followed by one on the structural aspects of substrate and pseudosubstrate interactions with the catalytic cores of cyclic AMP–dependent protein kinase and other kinases. The subsequent chapters deal with family members of the superfamily including protein kinase C, S6 and MAP kinases, cyclin-dependent protein kinases, receptor protein tyrosine kinases, nonreceptor protein tyrosine kinases, and genetic approaches to protein kinase functions in lower eukaryotes. In general the authors have succeeded in taking a valuable snapshot of these families, but because the literature was reviewed only up to 1993 the treatment of some areas is now out of date. Strengths found in most chapters include description of historical developments for particular families and liberal use of tables and figures to explain confusing terminology and nomenclature. A surprising theme to emerge in some chapters is how little we know about the regulation of many protein kinases in vivo and about the identity of physiologically important substrates for kinases that have been around for a long time. It appears that we are still in the exponential phase of the information growth curve on protein kinases.

There are a few things to quibble about in the presentations. It would have been useful to have a conclusion and perspective section at the end of each chapter. The shorter chapters are a bit too sparse and could have benefited from inclusion of more examples of regulation and substrate recognition in biological systems. However, the book certainly makes a significant contribution and will serve as a valuable resource for students, teachers, and investigators who have either a casual or vested interest in protein kinases.

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Books Received

Atoms, Whales, and Rivers. Global Environmental Security and International Organization. Peter J. Stoett. Nova, Commack, NY, 1995. x, 230 pp., illus. $67.

Constitutional Resistance to Infection. Cees M. Verduin *et al.*, Eds. Springer-Verlag, New York, and Landes, Austin, TX, 1995 (distributor, CRC Press, Boca Raton, FL). xvii, 191 pp., illus. $79. Medical Intelligence Unit.

Equivalence, Invariants, and Symmetry. Peter J. Olver. Cambridge University Press, New York, 1995. xvi, 525 pp. $39.95.

Five Golden Rules. Great Theories of 20th-Century Mathematics—and Why They Matter. John L. Casti. Wiley, New York, 1995. xiv, 235 pp., illus. $24.95.

Multisensory Control of Posture. T. Mergner and F. Hlavačka, Eds. Plenum, New York, 1995. xii, 358 pp., illus. $79.50. From a symposium, Smolenice, Slovakia, Sept. 1994.

Physical and Non-Physical Methods of Solving Crystal Structures. Michael Woolfson and Fan Hai-Fu. Cambridge University Press, New York, 1995. xii, 276 pp., illus. $69.95.

Rock Physics and Phase Relations. A Handbook of Physical Constants. Thomas J. Ahrens, Ed. American Geophysical Union, Washington, DC, 1995. viii, 236 pp., illus. $50; to AGU members, $35. AGU Reference Shelf, 3.

The Science of Personality. Lawrence A. Pervin. Wiley, New York, 1995. xxii, 471 pp., illus. $64.95.