

Advances in
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Advances in Inflammation Research Volume 1

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ADVANCES IN INFLAMMATION RESEARCH
VOLUME 1

Advances in Inflammation Research

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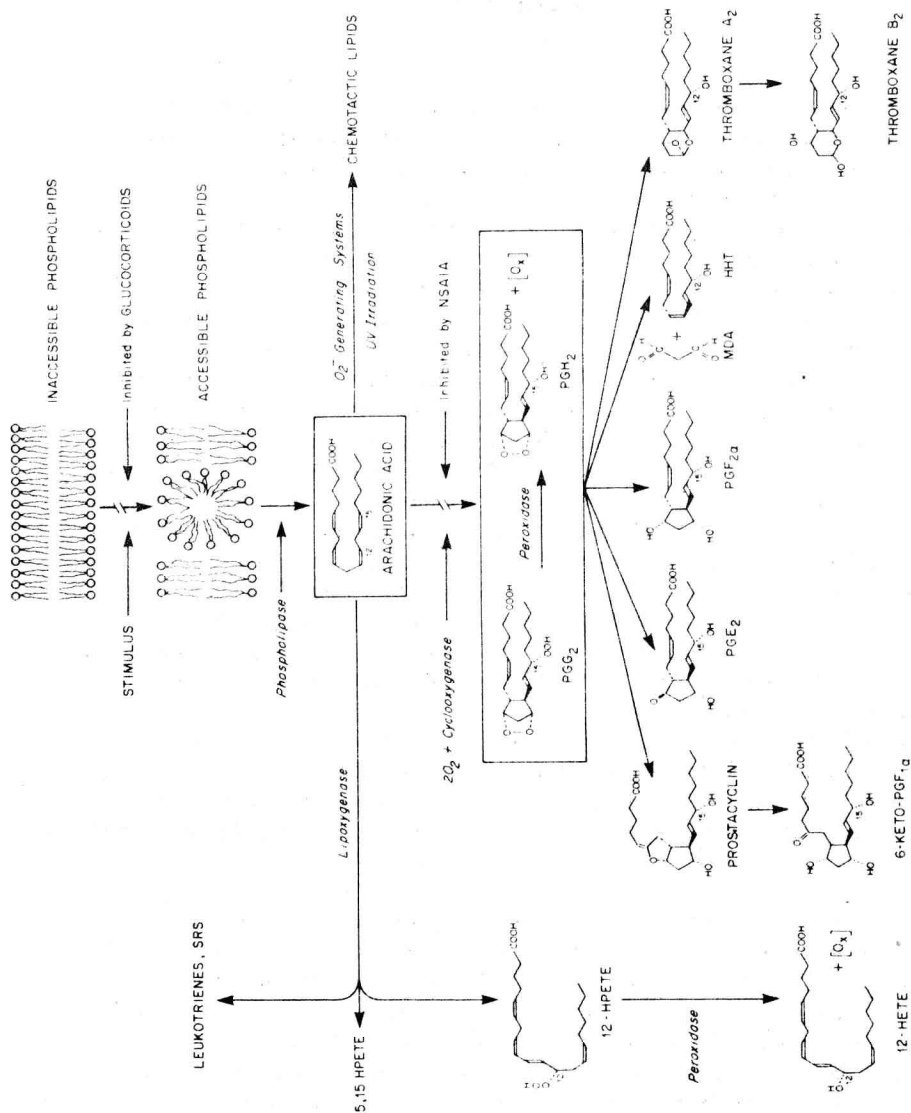
Preface

This volume constitutes, in part, the Proceedings of the First International Congress of Inflammation held in Bologna from October 31 to November 3, 1978. It emphasizes the broad interdisciplinary kind of studies that have been directed toward the problem of inflammation. Since inflammation may be viewed as a basic adaptive response of the organism to perturbation by a variety of environmental insults, it is not surprising that it has attracted the attention of biochemists, cell biologists, pharmacologists, pathologists, immunologists, and clinicians. Each group has made significant contributions to our understanding of this adaptive response, and the wide range of techniques employed, species studied, and solid knowledge obtained should therefore also not surprise us.

These Proceedings begin with discussions of the basic structure of biomembranes, how these respond to signals via transmembrane controls, and how intracellular messengers such as cyclic nucleotides and calcium transduce the message of injury. The micro- and macrovasculature are then described, with respect to their response in inflammation. We next find papers dealing with inflammatory cells: polymorphonuclear leukocytes, eosinophiles, basophils, platelets, and mononuclear phagocytes. Although these cells share many properties (movement towards a stimulus, release of inflammatory mediators, endocytosis and exocytosis, stimulus-secretion coupling, etc.), each cell type has its own unique cell biology, and it is useful to have differences as well as similarities detailed in one place.

Cells and tissues release a variety of mediators into the surrounding medium (complement, kinins, hydrolytic enzymes, oxygen-derived free radicals), and discussions of these mediators precede a section on mechanisms of immune tissue injury. Both humoral and cellular immune reactions are described, and it turns out that receptor/ligand theory is as applicable to these reactions as to simpler forms of cellular responses.

In this decade, it has become clear that many of the immune and nonimmune forms of inflammation are associated with the formation of biologically active derivatives of arachidonic acid, and that this critical unsaturated fatty acid is a constituent of cell membrane phospholipids. Examination of Fig. 1 and of the papers dealing with the derivatives of arachidonate will place the arachidonic acid cascade near the center of the inflammatory response. The preceding sections will have shown how the membranes of cells respond to injury, how cells interact with each other and with blood vessels, and how membrane perturbations can lead to the signals for the launching of the arachidonate cascade. Considerations of how steroidal and nonsteroidal antiinflammatory agents act on this pathway are dealt with in the following papers. It is also clear that although antiinflammatory agents have actions in addition to those indicated in Fig. 1, elucidation



The Arachidonic Acid Cascade

of their influences upon arachidonic acid pathways has been the most fruitful area of current research designed to discover new antiinflammatory drugs. Indeed, the convergence of investigations into oxygen-derived free radicals, endoperoxides, cyclic nucleotides, platelet-endothelium interactions, and cell-cell communication has taught us as much about general aspects of cell biology and immunology as it has about inflammation in general.

What began for Celsus as *Rubor et tumor cum calore et dolore* and led to Virchow's *Functio laesa* has grown into more than an analysis of five cardinal signs. At worst an industry, at best, on the leading edge of biological research, the study of inflammation in its broadest sense has produced results of compelling interest. The editors hope that some of the enthusiasm and excitement which attended the discussion of this research is as apparent to the reader of the Proceedings as to those who participated in the Congress.

Gerald Weissmann
Bengt Samuelsson
Rodolfo Paoletti

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