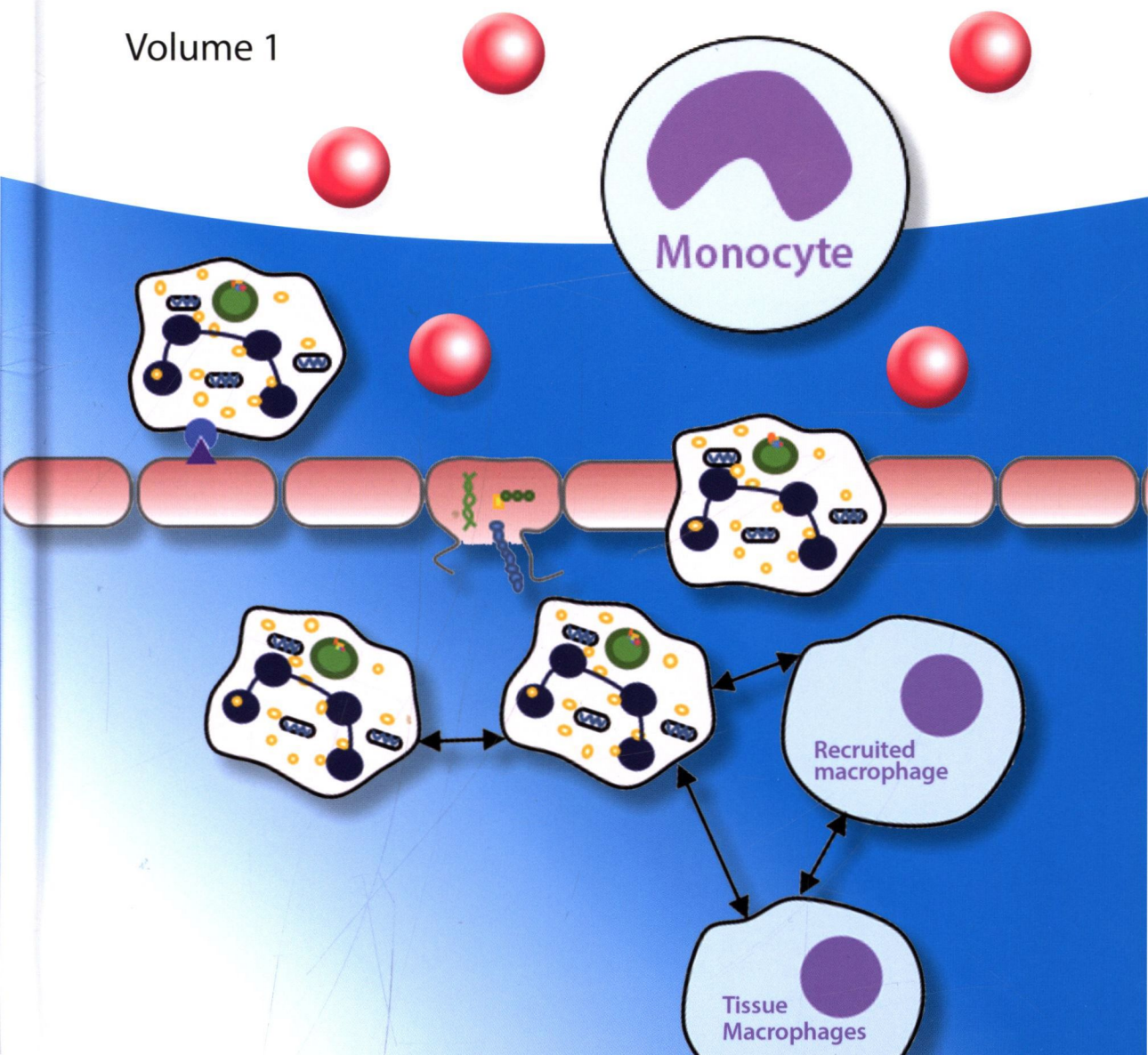


Edited by Jean-Marc Cavaillon  
and Mervyn Singer

# Inflammation

From Molecular and Cellular Mechanisms  
to the Clinic

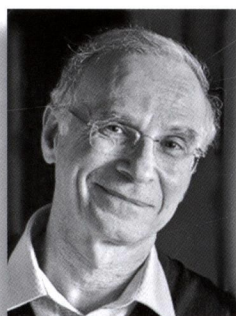
Volume 1



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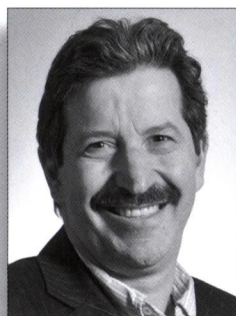
The editors are among the most respected researchers in inflammation worldwide and here have put together a prestigious team of contributors. Starting with the molecular basis of inflammation, from cytokines via the innate immune system to the different kinds of inflammatory cells, they continue with the function of inflammation in infectious disease before devoting a large section to the relationship between inflammation and chronic diseases. The book concludes with wound and tissue healing and options for therapeutic interventions.

A must have for clinicians and biomedical researchers alike.



**Jean-Marc Cavaillon** is professor and was Head of the Unit "Cytokines and Inflammation" at Institut Pasteur (Paris). He has been President (1998-2000) of the "International Endotoxin and Innate Immunity Society", and President of the "European Shock Society" (2016-2017). He is member of the Editorial Boards of few journals including *Shock*, *Journal of Infectious Diseases*, and *International Journal of Inflammation*, and has been Associate-Editor of "Cytokine" (2002-2009). He has an extensive expertise in inflammation, innate immunity, particularly on cytokines, bacterial endotoxins and other Toll-like receptors agonists, endotoxin tolerance, activation of monocytes/macrophages and neutrophils.

He made major studies deciphering the altered immune status in sepsis and SIRS patients, and contributed to define the reprogramming of circulating leukocytes of these patients. He is the author of a book in French on Cytokines (Masson, 1993 & 1996), and the co-author of a book "Sepsis and non-infectious inflammation: from biology to critical care" (Wiley VCH, 2009).



**Mervyn Singer** is Professor of Intensive Care Medicine at University College London. His primary research interests are sepsis and multi-organ failure, infection, shock and haemodynamic monitoring. Funding for these activities primarily comes from the Wellcome Trust, Medical Research Council and National Institute for Health Research.

He developed an oesophageal Doppler haemodynamic monitor that is now in widespread use worldwide, the use of which has been shown in multiple studies to improve outcomes after major surgery and reduce length of stay. He has led on a number of important multi-centre trials in critical care. He has authored various papers and textbooks including the *Oxford Handbook of Critical Care*, now in its 3rd Edition, and is a Council member of the International Sepsis Forum. He was the first UK intensivist to be awarded Senior Investigator status by the National Institute for Health Research, and to be invited to give plenary lectures at the European and US Intensive Care Congresses.

Volume 1 of 4

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Inflammation

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# Inflammation

From Molecular and Cellular Mechanisms to the Clinic

*Edited by Jean-Marc Cavaillon and Mervyn Singer*

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Verlag GmbH & Co. KGaA

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*Edited by*  
*Jean-Marc Cavaillon and*  
*Mervyn Singer*

**Inflammation**



## Preface

Inflammation is older than humanity itself. Indeed, the earliest signs of inflammatory processes can be found on the bones of dinosaurs. Inflammation has always been integral to humans as the key process that protects against sterile or infectious insults. By the end of the eighteenth century, John Hunter was among the first to define inflammation as a salutary function, a concept endorsed 100 years later by Elie Metchnikoff. To limit the side effects of inflammation, the use of herbal anti-inflammatory was introduced in China (2800 BC) and Egypt (1520 BC), well before Hippocrates. Bloodletting was another therapeutic approach widely supported for some 2000 years. While natural products remain an important source of new anti-inflammatory drugs, bloodletting has been recognized to be powerless!

Nowadays, the beneficial effects of inflammation are well recognized when associated with the overlapping innate immune response. In recent years, molecular and cellular players have been well characterized and their precise interactions better understood. New molecular mechanisms have been deciphered such as the inflammasome and epigenetics. However, the word inflammation remains mainly associated with disease. Indeed, many chronic inflammatory disorders have been identified as severe debilitating diseases that may even favor the emergence of certain cancers. Deciphering the molecular and cellular events underlying inflammation has enabled development of new drugs that have revolutionized treatment and outcomes of some of these disorders.

Major achievements have been made in the last few decades allowing new understanding of the cross-talk between immune and nonimmune cells (e.g., cytokines, neuromediators, and eicosanoids) and in the resolution of inflammation (e.g., control by the neuronal system, new lipid mediators). Well-recognized



leaders in the field have contributed their specific expertise to this book, thus making it most comprehensive overview of inflammatory processes and associated diseases.

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