At the beginning of the 21st century, a microorganism which was visible under the microscope, could be Gram-stained and had been considered a bacterium for several years was identified as Mimivirus, the largest virus known at the time. This opened up the world of giant viruses which are today considered to represent a fourth domain of microbes.

In this special issue of *Intervirology*, recent findings on two new families of giant viruses, Marseilleviridae and Mimiviridae, are presented. The data confirm that both groups of viruses may be found in the environment (soil, water, insects) and in humans (blood, stool). New techniques to culture, purify and isolate these viruses are also reported. These new findings show that the world of giant viruses is expanding, and challenge the traditional classification of microbes into three domains (bacteria, archaea and eukaryotes) based on size and ribosomal genes. A new classification of microbes into four branches – giant viruses (Megavirales), bacteria, archaea and eukaryotes – is postulated which reflects more realistically our current knowledge of the microbial world.

Anyone interested in this revolution in virology should read this publication which may contribute to the discovery of further giant viruses that are as yet unknown.

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The Journal of Innate Immunity is a bimonthly published journal that aims to cover all aspects within the area of innate immunity, including evolutionary aspects, pathogen-host cell molecular interactions, host response and inflammation, complement and coagulation, microbial corruption of innate immunity, molecular genomics, development of vaccines and immune therapies. The journal features original papers (Research Articles, Clinical Investigations), Reviews/Mini Reviews, Letters to the Editors, Rapid Communications and Short Communications.

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Angiogenesis, Lymphangiogenesis and Clinical Implications

Editors
Gianni Marone
Francescopaolo Granata

Angiogenesis, the formation of new blood vessels, is fundamental for physiological processes such as embryonic and postnatal development, wound repair, and reproductive functions. Angiogenesis plays a major role in tumor growth and in several autoimmune and allergic disorders. Lymphangiogenesis, the formation of new lymphatic vessels, is also important for tumor growth, the formation of metastasis, and chronic inflammatory diseases. Judah Folkman, a pioneer in the study of angiogenesis, first proposed that macrophages and mast cells could be a relevant source of angiogenic factors. Since then, much effort has gone into the elucidation of the role of immune cells in the modulation of angiogenesis and lymphangiogenesis. There is now compelling evidence that several components of the innate and adaptive immune system are implicated in inflammatory and neoplastic angiogenesis and lymphangiogenesis. Articles in this volume deal with the emerging, intriguing possibility that immune cells are both a source and a target of angiogenic and lymphangiogenic factors. Therefore, cells of the immune system might play a role in inflammatory and neoplastic angiogenesis/lymphangiogenesis through the expression of several angiogenic factors and their receptors and co-receptors.

The important new findings in this volume will be of special interest to vascular biologists, basic and clinical immunologists, oncologists and to specialists in allergic and immune disorders.

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Our understanding of the complex innate immune response is increasing rapidly. Its role in the protection against viral or bacterial pathogens is essential for the survival of an organism. However, it is equally important to avoid unregulated inflammation because innate immune responses can cause or promote chronic autoinflammatory diseases such as gout, atherosclerosis, type 2 diabetes or certain aspects of the metabolic syndrome.

In this book leading international experts in the field of innate immunity share their findings, define the ’state of the art’ in this field and evaluate how insight into the molecular basis of these diseases could help in the design of new therapies. A tremendous amount of work on the innate immune response has been done over the last fifteen years, culminating in the 2011 Nobel Prize in Physiology/Medicine awarded for the discoveries of Toll genes in immunity in flies, membrane-bound Toll-like receptors in mammals, and dendritic cells as initiators of adaptive immunity.

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The traditional view of biology divides living organisms into two major groups, the eukaryotes and the prokaryotes, the former having membrane-bound organelles, the latter lacking them. However, recent research has revealed that this view is bluntly in error. A surprising diversity of organelles occurs in bacteria. Even the prokaryotic workhorse, Escherichia coli, can produce intracellular membrane structures and bleb off extracellular vesicles. Photosynthetic bacteria have chromatophores which house the photosynthetic apparatus of the cell, while magnetotactic bacteria have magnetosomes that contain strings of membrane-enclosed iron crystals for sensing the Earth’s magnetic field. Planctomycetes species may contain double membrane-surrounded nuclei as well as organelles called ammoxosomes for the oxidation of ammonia. Acidocalcisomes, once thought to be unique to eukaryotes, have also been identified in bacteria. Extracellular vesicles serve functions including communication and protection. The articles presented in this JMMB written symposium bring the reader up to date on research concerning these structures and functions.

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Intervirology covers progress in both basic and clinical virus research, and aims to provide a forum for the various disciplines within virology. Issues publishing original papers alternate with timely reviews, research reports and controversy discussions outside their own area of interest. In addition to original papers, regular issues publish short communications and letters to the editor to provide readers with a forum for the exchange of ideas and comments. The scope encompasses work on the molecular biology of human and animal viruses, including genome organization and regulation, and the structure and function of viral proteins. The pathogenesis, immunology, diagnosis, epidemiology, and prophylaxis and therapy of viral diseases are considered.

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Involvement of Complement Receptor in Thymosin α1-stimulated phagocytosis. Confocal microscopic image of Thymosin α1-treated human macrophages that had internalized fluorescent zymosan particles opsonized with complement (red hue) or with IgG (green hue). Image kindly provided by Francesca Pica, Department of Experimental Medicine and Surgery, University of Rome ‘Tor Vergata’, Rome, Italy.