



EDITORIAL

Welcome to 'Genes and Immunity'

The degree to which antigens induce an immune response varies considerably between individuals. Much of this variation is determined by the combination of antigen presentation by the individual's MHC and the range of T cell receptor structures present. Together, these determine whether and how well that individual's immune system will see any particular antigen. These aspects of the immune system have formed the backbone of the science of immunogenetics. However, more recent studies have shown repeatedly that other aspects of the immune system also vary markedly between individuals and the science has moved forward into a period that might be described as 'post-HLA' immunogenetics. It is now clear that almost every aspect of the immune system contains genetically defined variation, whether it be in the rate or degree of cytokine secretion, the affinity of a particular Fc receptor, or other regulatory mechanisms that determine the strength of an immunological response or inflammation. It is equally clear that this variation is likely to impact on all theatres of immunological activity, from the daily response to minor environmental pathogens, through infectious and autoimmune diseases to malignancy and extreme man-made immunological insults such as organ transplantation.

Immunology, and particularly immunogenetics, is an expanding field. First, as sequence differences are discovered in promoters and coding regions of immunologically relevant genes (such as cytokines and their receptors, adhesion molecules and components of the various intracellular signalling pathways) the breadth of immunogenetic variation between individuals has become apparent. Second, as genome scans of autoimmune, malignant and infectious diseases define loci of pathogenic importance, specific genomic regions automatically become of interest in immunogenetics, even though they may not contain any obviously immunological candidate genes. Third, although normal variation in the immune system is important in disease development in the presence of contributing factors, certain rare mutations can themselves be fundamental in causing disease. Such variations might be associated with susceptibility to certain diseases or contribute to severity and progression. In addition, the same disease may have different contributing immunogenetic factors in one ethnic group compared with another.

The launch of *Genes and Immunity* therefore comes at a critical point in the evolution of the understanding of immunology and immunogenetics. Recent technological developments in genotyping have brought the ability to conduct candidate gene studies within the scope of almost every laboratory; that would have been inconceivable 5 years ago. The same is becoming true for analysis of gene expression in which hundreds (if not thousands)

of genes can be examined using DNA microchip technology. Undoubtedly, future developments, including the completion of the human genome project as well as development of technical and analytical tools to examine genetic diversity and genetic and environmental interaction in complex disease, will accelerate the process. This is an exciting prospect, because the ensuing datatorm will force those of us working in this area to focus not only on which alleles are associated with given diseases in any particular ethnic population, or the description of particular gene expression patterns, but also on the somewhat more difficult question of what these mean.

At present, publications in this new area are scattered throughout the cellular immunology and disease speciality literature, demonstrating how it underlies many aspects of human health and disease. *Genes and Immunity* has been conceived to provide a unified forum for this important, developing aspect of immunological science. The full title, *Genes and Immunity—genetics, genomics and function* describes the basic premise: the study of immunology can no longer be prosecuted without a consideration and understanding of the consequences of genetic variation in all aspects of the immune system, irrespective of the field. The title also lays plain the ambition of the Journal—*Genes and Immunity* intends to be pivotal in emphasising this point. With success in this venture, basic and clinical scientists from a diverse range of immunological disciplines will find in the Journal material which they can apply to their own research.

Genes and Immunity will give preference to studies that demonstrate genetic and/or functional variation in the immune system and assist our understanding of how the basic control of the immune system varies from one individual to another. Topics covered will fall across a broad spectrum including (but not limited to): novel genes and loci associated with the immune system, new allelic variants and other demonstrations of natural variation in genes associated with the immune system and immune-mediated disease, functional studies which illustrate such variation and demonstrate the role of gene products in immune-mediated disease, the relationship between alleles, gene function and the contribution of genetic variation to disease susceptibility, severity and progression, the recognition of and response to pathogens and the organisation of genes and gene clusters relevant to the immune response in health and disease. The Journal will accept the best full original papers and brief communications but also, importantly, concise descriptions of novel allelic variations in immune system genes because these are the fundamental tools of our trade. High-quality review articles will also be represented, as well as occasional invited editorials.



We, the Editors and the Editorial Board members, all believe that the Journal *Genes and Immunity* will bring a new focus to the genetic aspect of immunology. For our readers, *Genes and Immunity* will be accurate, timely and relevant, and the on-line edition will be at the forefront of accessibility and integration with other web tools. For our authors, *Genes and Immunity* will meet today's

demands for efficient, expert peer-review and short publication times. It goes without saying that we want investigators to contribute their best work to *Genes and Immunity* and to send it here first.

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