

Preface

The Interferon field has its origins nearly 50 years ago with the discovery of an antiviral factor produced by virally infected chick cells. This factor, designated “The Interferon”, provided the first evidence that antiviral defence mechanisms could be triggered by secreted cellular factors. Since interferon (IFN) was found to protect against many viruses, scientific interest was high. A research dynasty was literally founded then that has actively pursued the characterization and potential clinical applications of IFN. Initially, the field was sustained by dedicated pioneering scientists trying to understand what IFN was and how it worked. At the moment when their research was beginning to pay off with the purification of IFNs to homogeneity and increasing knowledge of their biological activities, the field was catalysed by the advent of recombinant DNA technology. The Pharmaceutical Industry too was drawn in by the “promise” of IFN’s broad therapeutic activity against a range of tumours and viruses. Although the clinical success of IFNs proved to be much more limited than hoped for, the research that was generated in those heady times gave a tremendous boost to our understanding of the molecular structure of IFN’ genes and proteins, their cellular receptors, their mechanism of action and their biological activities, both *in vitro* and *in vivo*. Despite the sombre assessment of the clinical worth of IFNs two decades ago, they have come back as strong market leaders for the treatment of chronic hepatitis C virus infection (IFN-alpha) and multiple sclerosis (IFN-beta). Research studies within the IFN field from then on have proved invaluable to the elucidation of IFN’ induction and connected intracellular signalling pathways, cellular defence mechanisms, and the evasion mechanisms of viruses and tumour cells to IFNs.

The Interferons: Characterization and Application covers many aspects of our current knowledge of IFNs. This includes the structure and functions of all known IFN types, evolution and structure of their genes, their receptors and signalling pathways, their induction and biological activities and mechanisms whereby viruses evade their antiviral actions. In addition, coverage of the clinical applications of type I and II IFNs, together with methodologies to measure biological activities of IFNs and the antibodies that may develop against them as a consequence of IFN therapies, is provided. I believe there is a serious need for this publication, even in view of the vast amount of information available in the scientific literature and on the World Wide Web. I feel that there is no substitute to an up-to-date monograph

on the IFN field that embraces an integrated and well-selected approach to the subject. It is my hope this will provide a comprehensive foundation to the professional scientific and medicinal research community, especially newcomers to the field, and will promote further advances in the field.

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