Isolation, Characterization, and Utilization of T Lymphocyte Clones

Edited by

C. GARRISON FATHMAN

FRANK W. FITCH

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Preface

The complexity of cellular interactions which regulate an immune response may never be entirely understood. Efforts to reconstruct *in vitro* the immune responses that occur *in vivo* are subject to a variety of misconceptions at best. In an attempt to more readily understand cellular interactions, great effort has been devoted to the isolation of clones of immunocompetent cells which will allow one to study interactions between cells in a strict reductionist mode. Until recently, such approaches have been dominated by analyses of clones of "immunocompetent" neoplastic cells, particularly myelomas and lymphomas. Such neoplastic cells comprise relatively uniform cell populations, and many important contributions to an understanding of the immune system have resulted from studies of these cloned cell populations. Unfortunately, relatively few different kinds of functional lymphoid tumor cells exist, and the availability of cell lines depends on the chance occurrence of tumors. The limited variety of cell types which have become transformed has meant that there has been only a narrow "window of observations."

Recently, utilizing techniques of somatic cell fusion, it has been possible to create "hybridomas" which maintain many of the immunologically relevant properties of the normal parent cell. Valuable information has been obtained thanks to this technological breakthrough, but the usefulness of such hybridomas in model systems of immune responses in *in vitro* and *in vivo* has been limited because of their neoplastic nature. An alternative approach for obtaining large numbers of identical cells has been the isolation of clones of immunocompetent cells which maintain normal function. Such cells have been used to reconstruct models of normal immune responses *in vitro*.

The most remarkable aspect of our initial conversations when we met 4 years ago was the realization that we both believed that our techniques of cell culture would ultimately allow the type of reconstitution of normal immunological circuitry *in vitro* and *in vivo* that would allow us to dissect the cellular parameters involved in a normal immune response. Over the past 4 years, the number of

laboratories working on the isolation and characterization of clones of immunoncompetent T cells has increased greatly. This volume is addressed to the many workers who are currently contemplating joining or have recently joined the field of cloning of immunocompetent T cells. The questions to be addressed are legion and the results will have striking implications not only for the understanding of normal immunoregulation, but also for possible immunotherapeutic intervention. The insights gained from studies *in vitro* are now being applied in attempts to modulate immune responses *in vivo;* these approaches are essential to verify that the interpretations based on observation in culture actually do have relevance in animals.

We asked the contributors not to dwell on previously published data but to attempt to make this book an up-to-date, state-of-the-art treatise. We issue it as an invitation to young scientists interested in plunging into a new "sea" of basic research with potential clinical applications—come on in, the water is fine!

Clearly, this volume is a joint effort. The cooperation and prompt responses of the contributors eased our task. We wish to acknowledge our gratitude to Frances Mills for her invaluable secretarial help in preparing the final manuscripts. We appreciate the support and understanding of our families during the preparation of this book.

C. Garrison Fathman
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