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Volume 8

T Cell Clones

Editors

Harald von Boehmer

and

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Members of the Basel Institute for Immunology

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Preface

Six years ago T cell clones were obtained by several investigators. Studies concerned with T cell clones have since progressed in many directions: analysis of antigen-specific receptors and of receptors for lymphokines, lymphokine secretion, utilization of T cell clones to study cell cooperation *in vitro* and *in vivo* and use of T cell clones for tissue typing. This book contains a collection of brief articles which represent the various aspects of work on T cell clones. Our aim has been to obtain diversity rather than reports confirming each other. It is evident from the contributions that T cell cloning has helped to overcome the stagnation in our understanding of the specificity and function of T cells. Many questions remain to be answered, but it appears that the necessary tools are available.

We thank the contributors and hope that the readers will benefit from this progress report.

Harald von Boehmer and Werner Haas

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Contents

SECTION A:

Antigen-specific molecules

Chapters:
1. Human T cell clones as probes to define the T cell antigen receptor
2. The antigen-specific, major histocompatibility complex restricted receptor on T cells
3. Use of suppressor cell hybridomas to dissect T cell interactions
4. Regulatory T cell interactions mediated by antigen-specific suppressor T cell factors

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A1. Human T cell clones as probes to define the T cell antigen receptor

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1. Introduction

The recent development of technologies to generate and propagate clonal populations of human T lymphocytes in vitro (Morgan et al., 1976; Kurnick et al., 1979; Bonnard et al., 1980; Sredni et al., 1980; Meuer et al., 1982a) has provided a new basis to identify antigen receptors of T cells. We used antigen-specific cloned human T cell populations as immunogens and produced a series of clone-specific murine monoclonal antibodies directed at them. These anti-clonotypic antibodies identify a novel class of 90 kD heterodimers, termed Ti, which are associated at the cell surface with a 20 kD T3 glycoprotein present on all mature human T lymphocytes (Meuer et al., 1983b, 1983c). Since anti-Ti monoclonal antibodies were generated against individual clones of functional T lymphocytes, it was possible to characterize both structural and functional features of the Ti molecule. Each T lymphocyte studied, regardless of subset derivation, specificity or function uses a T3-associated Ti heterodimer for antigen recognition.

2. The T cell subset derivation and MHC restriction of T cell clones

A number of human T cell lineage restricted surface glycoproteins have been defined by monoclonal antibodies. Each mature T lymphocyte expresses a 20 kD glycopro-

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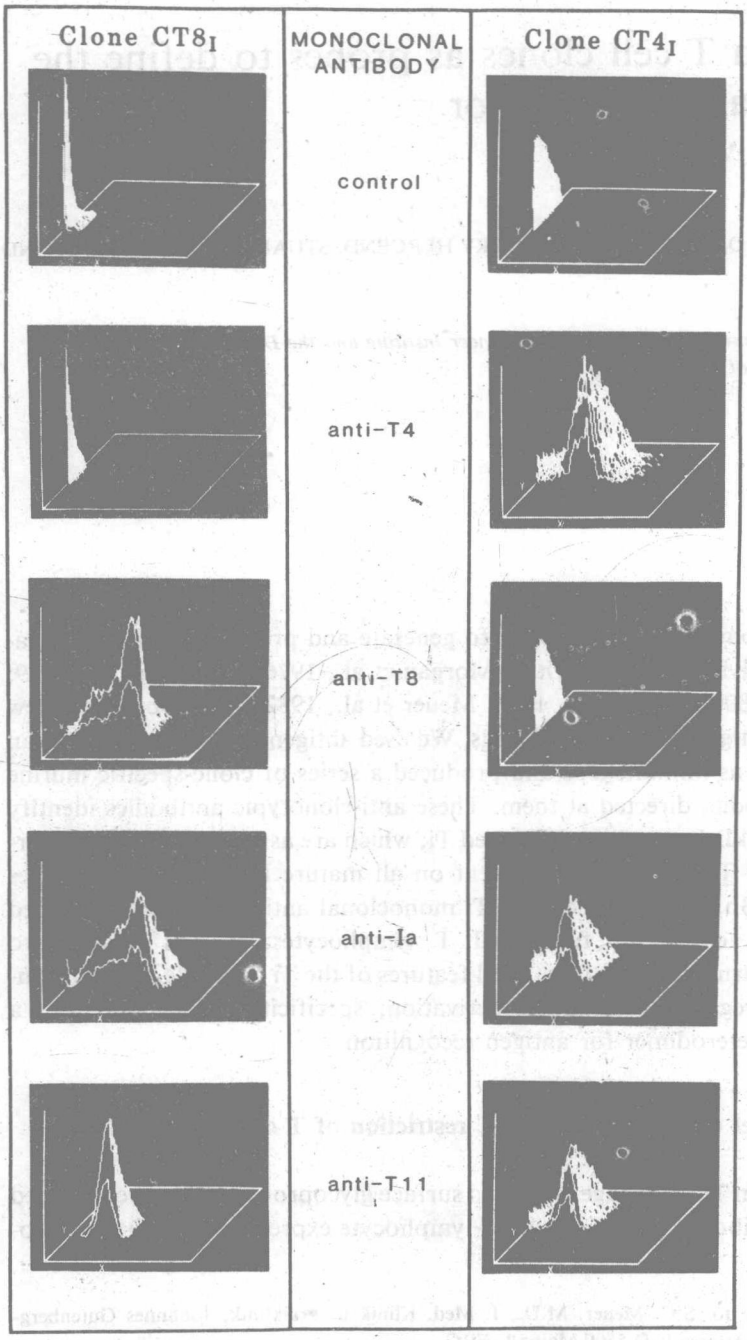

Fig. 1. Cytofluorographic analysis. Cytofluorographic analysis of two representative human T cell clones, $CT8_I$ and $CT4_I$, using various monoclonal antibodies and indirect immunofluorescence on an Epics V cell sorter.