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T Cell Clones

Editors

Harald von Boehmer

and

Werner Haas

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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

List of Contributors

ABRUZZINI, A.F. – The Jewish Hospital of St. Louis, 216 South Kingshighway, St. Louis, MO 63178, USA

ACUTO, O. – Division of Tumor Immunology, Dana-Farber Cancer Institute and the Department of Medicine, Harvard Medical School, Boston, MA, USA

ANDREW, M.E. – Department of Pathology, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, MO 63100, USA

ANICHINI, A. – Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455, USA

ASKONAS, B.A. – National Institute for Medical Research, The Ridgeway, Mill Hill, London NW7 1AA, UK

BACH, F.H. – Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Straat S.E., Minneapolis, MN 55455, USA

BENNINK, J.R. – The Wistar Institute of Anatomy and Biology, 36th Street at Spruce, Philadelphia, PA 19104, USA

BIEL, L.W. – Department of Laboratory Medicine and Pathology, University of Minnesota, Minneapolis, MN 55455, USA

VON BOEHMER, H. – Basel Institute for Immunology, Grenzacherstrasse 487, CH-4005 Basel, Switzerland

VIII

BRACIALE, T.J. — Department of Pathology, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, MO 63100, USA

BRACIALE, V.L. — Department of Pathology, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, MO 63110, USA

BRUNNER, K.T. — Department of Immunology, Swiss Institute for Experimental Cancer Research, Lausanne Branch, 1066 Epalinges s./Lausanne, Switzerland

CHEN, L.-K. — Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455, USA

DEFREITAS, E.C. — The Wistar Institute, 36th Street at Spruce, Philadelphia, PA 19104, USA

DOHERTY, P. — The Wistar Institute of Anatomy and Biology, 36th Street at Spruce, Philadelphia, PA 19104, USA

DORF, M.E. — Department of Pathology, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA

DUQUESNOY, R.J. — The Blood Center of Southeastern Wisconsin, Inc., 1701 West Wisconsin Avenue, WI 53201, USA

ECKELS, D.D. — Immunologic Oncology Division, Vincent T. Lombardi Cancer Research Center, Georgetown University School of Medicine, 3800 Reservoir Road, N.W., Washington D.C. 20007, USA

ENGERS, H.D. — Department of Immunology, Swiss Institute for Experimental Cancer Research, Lausanne Branch, 1066 Epalinges s./Lausanne, Switzerland

FELDMAN, A. — The Wistar Institute of Anatomy and Biology, 36th Street at Spruce, Philadelphia, PA 19104, USA

FUJITA, T. — Institute for Molecular and Cellular Biology, Osaka University, Yamadaoka, Suita-shi, Osaka 565, Japan

GERHARD, W. — The Wistar Institute of Anatomy and Biology, 36th Street at Spruce, Philadelphia, PA 19104, USA

HAAS, W. — Basel Institute for Immunology, Grenzacherstrasse 487, CH-4005 Basel, Switzerland

HAMURO, J. — Central Research Laboratories, Ajinomoto Co. Inc., Totsuka-ku, Yokohama 244, Japan

HERCEND, T. — Division of Tumor Immunology, Dana-Farber Cancer Institute and the Department of Medicine, Harvard Medical School, Boston, MA, USA

KAPLAN, D.R. — Department of Pathology, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, MO 63110, USA

KAPPLER, J.W. — Department of Medicine, Microbiology and Immunology, University of Colorado Health Sciences Center, Denver, CO, USA

KASHIMA, N. — Central Research Laboratories, Ajinomoto Co. Inc., Totsuka-ku, Yokohama 244, Japan

KAUFMANN, S.H.E. — Max-Planck-Institut für Immunobiologie, Stübeweg 51, D-7800 Freiburg-Zähringen, FRG

KISIELOW, P. — Institute of Immunology and Experimental Therapy of the Polish Academy of Sciences, Wrocław, Poland

KORNBLUTH, J. — Division of Research Immunology, Department of Pathology and Laboratory Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA

LAMB, J.R. — Human Tumor Immunology Unit, Imperial Cancer Research Fund, School of Medicine, University College Hospital, University Street, London WC1E 6JJ, UK

LOUIS, J.A. — WHO Immunology Research and Training Center, Institute of Biochemistry, University of Lausanne, CH-1006 Epalinges, Switzerland

MACDONALD, H.R. — Institut Ludwig de Recherches sur le Cancer, Division de Lausanne, CH-1066 Epalinges, Switzerland

MARRACK, P. — Department of Medicine, National Jewish Hospital and Research Center, Denver, CO 80206, USA

MATSUI, H. — Central Research Laboratories, Ajinomoto Co. Inc., Totsuka-ku, Yokohama 244, Japan

MEUER, S.C. — I. Medizinische Klinik und Poliklinik, Johannes Gutenberg-Universität, Langenbeckstrasse 1, D-6500 Mainz 1, FRG

MINGARI, M.C. – Ludwig Institute for Cancer Research, Lausanne Branch, CH-1006 Epalinges, Switzerland

MORETTA, A. – Ludwig Institute for Cancer Research, Lausanne Branch, CH-1006 Epalinges, Switzerland

MORETTA, A. – Ludwig Institute for Cancer Research, Lausanne Branch, CH-1006 Epalinges, Switzerland

MUELLER-HERMES, W.J.P. – Institut für Genetik, Universität Köln, Weyerthal 121, 5000 Köln 41, FRG

NISHI-TAKAOKA, C. – Department of Biochemistry, Cancer Institute, Japanese Foundation for Cancer Research, Toshima-ku, Tokyo 170, Japan

OHTA, N. – Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455, USA

PAIGE, C.J. – Basel Institute for Immunology, Grenzacherstrasse 487, CH-4005 Basel, Switzerland

PANTALEO, G. – Ludwig Institute for Cancer Research, Lausanne Branch, CH-1006 Epalinges, Switzerland

PAWELEC, G. – Immunology Laboratory, Department of Internal Medicine II, University of Tübingen, D-7400 Tübingen, FRG

PIERCE, C.W. – The Jewish Hospital of St. Louis, 216 South Kingshighway, St. Louis, MO 63178, USA

RADASZKIEWICZ, T. – Department of Pathology, University of Vienna, Austria

RAJEWSKY, K. – Institut für Genetik, Universität Köln, Weyerthal 121, 5000 Köln 41, FRG

REINHERZ, E.L. – Division of Tumor Immunology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA 02115, USA

REINSMOEN, N.L. – Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455, USA

ROEHM, N. – Department of Biochemistry, Biophysics and Genetics, University of Colorado Health Sciences Center, Denver, CO, USA

ROLINK, A.G. – Basel Institute for Immunology, Grenzacherstrasse 487, CH-4005 Basel, Switzerland

ROOPENIAN, D.C. – Department of Laboratory Medicine and Pathology, University of Minnesota, Minneapolis, MN 55455, USA

RUDDLE, N.H. – Department of Epidemiology and Public Health, Yale University Medical School, New Haven, CT, USA

SCHREIER, M.H. – Preclinical Research, Sandoz Ltd., CH-4002 Basel, Switzerland

SCHLOSSMAN, S.F. – Division of Tumor Immunology, Dana-Farber Cancer Institute and the Department of Medicine, Harvard Medical School, Boston, MA, USA

SHERR, D.H. – Department of Pathology, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA

SIDMAN, C.L. – The Jackson Laboratory, Bar Harbor, ME, USA

SMITH, F.I. – Institut für Genetik, Universität Köln, Weyerthal 121, 5000 Köln 41, FRG

SUMIDA, T. – Department of Immunology, School of Medicine, Chiba University, 1-8-1 Inohana, Chiba, Japan 280

TAKEMORI, T. – Institut für Genetik, Universität Köln, Weyerthal 121, 5000 Köln 41, FRG

TANIGUCHI, Masaru – Department of Immunology, School of Medicine, Chiba University, 1-8-1 Inohana, Chiba, Japan 280

TANIGUCHI, Tadatsugu – Institute for Molecular and Cellular Biology, Osaka University, Yamadaoka, Suita-shi, Osaka 565, Japan

TAYLOR, P.M. – National Institute for Medical Research, The Ridgeway, Mill Hill, London NW7 1AA, UK

TEES, R. – Preclinical Research, Sandoz Ltd., CH-4002, Basel, Switzerland

TESCH, H. — Institut für Genetik, Universität Köln, Weyerthal 121, 5000 Köln 41, FRG

TITUS, R.G. — WHO Immunology Research and Training Center, Institute of Biochemistry, University of Lausanne, CH-1006 Epalinges, Switzerland

USUI, M. — Department of Pathology, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115, USA

WEE, S.-L. — Immunobiology Center, Department of Laboratory Medicine and Pathology, University of Minnesota Medical School, Box 724 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455, USA

WIDMER, M.B. — Department of Laboratory Medicine and Pathology, University of Minnesota, Minneapolis, MN 55455, USA

YEWDELL, J.W. — The Wistar Institute of Anatomy and Biology, 36th Street at Spruce, Philadelphia, PA 19104, USA

YOSHIMOTO, R. — Central Research Laboratories, Ajinomoto Co. Inc., Totsuka-ku, Yokohama 244, Japan

ZEEVI, A. — Department of Pathology, University of Pittsburgh School of Medicine, Room 406 Scaife Hall, Pittsburgh, PA 15261, USA

ZUBLER, R.H. — Institut Suisse de Recherches Expérimentales sur le Cancer, Division de Lausanne, CH-1066 Epalinges s./Lausanne, Switzerland

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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

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

STEFAN C. MEUER, ORESTE ACUTO, THIERRY HERCEND, STUART F. SCHLOSSMAN AND
ELLIS L. REINHERZ

*Division of Tumor Immunology, Dana-Farber Cancer Institute and the Department of Medicine,
Harvard Medical School, Boston, MA, USA*

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-

Address correspondence to: S.C. Meuer, M.D., I. Med. Klinik u. Poliklinik, Johannes Gutenberg-Universität, Langenbeckstrasse 1, D-5500 Mainz 1, FRG.

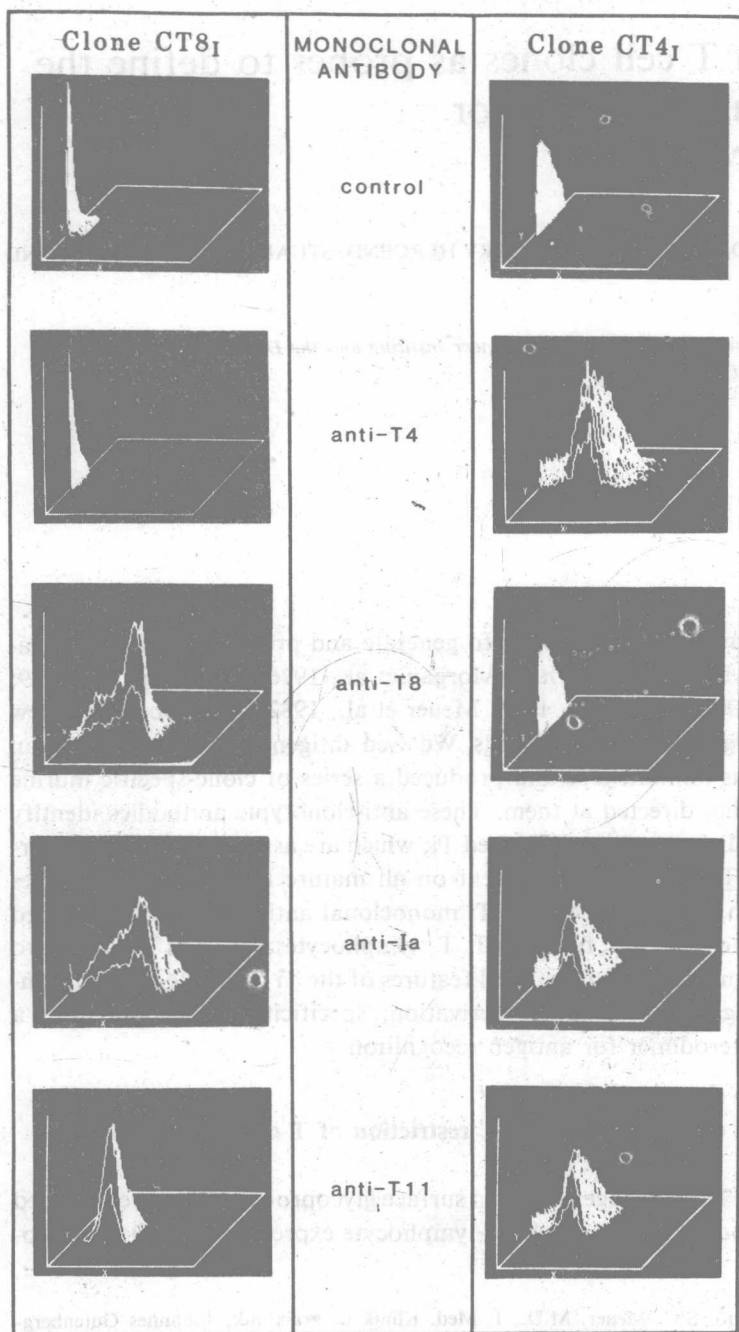


Fig. 1. Cytofluorographic analysis. Cytofluorographic analysis of two representative human T cell clones, CT8_I and CT4_I, using various monoclonal antibodies and indirect immunofluorescence on an Epics V cell sorter.