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Lymphokines and interferons:
from molecular biology to clinical trials

Edited by
C. Peschle and U. Testa

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LYMPHOKINES AND INTERFERONS:
FROM MOLECULAR BIOLOGY TO CLINICAL TRIALS

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Istituto Superiore di Sanità, Rome, Italy
Contents

LYMPHOKINES AND INTERFERONS: FROM MOLECULAR BIOLOGY TO CLINICAL TRIALS
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PREFACE ........................................................................................................................................... p. 225

Spectrum of biological activity of interferons - A. Battistini, E. Affabris, G. Fiorucci
E.M. Coccia, G. Romeo, G. Marziali and G.B. Rossi ................................................................. » 227

Biological activity of gamma interferon - F. Dianzani, G. Antonelli and M.R.
Capobianchi ................................................................................................................................ » 255

Interleukin 1, a prototypic pleiotropic lymphokine - P. Ghezzi and A. Mantovani .......... » 263

Human interleukin 1: structure-function relationship - D. Boraschi and A. Tagliabue ......... » 273

Interleukin 2 in cancer therapy - U. Testa, E. Montesoro, D. Bulgarini, P. Samoggia,
R. Masciulli, D. Habetswaliner, A. Carè, G. Mariani, G. Giannella, G.
Boccoli, S. Scalzo, E. Rocca, G. Sonsini, G. Salvo, E. Tritarelli, A.M.
Cerio, A. Gengaro, G. Mastroberardino, A. Camagna, F. Calabresi, G.
Isacchi and C. Peschle ............................................................................................................. » 283

The biology of human natural killer cells - T.L. Whiteside and R.B. Herberman ............... » 335

Human lymphocytes expressing a TCR gamma/delta - E. Ciccone, C.E. Grossi, W.
Malorni, G. Arancia, M.C. Mingari, S. Ferrini, A. Moretta and L. Moretta ......................... » 349

Molecular studies on LAK cells - M. Fagiolli, A. Carè, E. Ciccone, L. Moretta, A.
Moretta, U. Testa, B. Falini, F. Grignani, C. Peschle and P.G. Pelicci ......................... » 357

Cellular mechanisms of lymphocyte-mediated lysis of tumor cells - G. Arancia, W. Malorni
and G. Donelli ......................................................................................................................... » 369

Role of biological response modifiers in immunochemotherapy of solid tumors and retroviral-
induced leukemia - M.P. Fuggetta, C. D’Onofrio and E. Bonmassar ................................. » 385

Perilymphatic injections of cytokines: a new tool in active cancer immunotherapy. Experimental
rational and clinical findings - G. Forni, M. Giovarelli, C. Jemma, M.C. Bosco,
P. Caretto, A. Modesti, A. Santoni, M. Forni, G. Cortesina, A. De
Stefani, G.P. Cavallo, E. Galeazzi, P. Musiani, E. De Campora, S.
Valitutti, F. Castellino, C.V. Calearo, G. Fontana and G. Sesia ................................. » 397

Local/regional recombinant interleukin 2 (rIL-2) immunotherapy of tumors. Intra-arterial
continuous infusion of rIL-2 in bladder cancer patients: a phase I study - F. Velotti, A.
Tubaro, A. Stoppacciaro, A. Pettinato, S. Morrone, P. Bossola, T.
Napolitano, L. Miano, L. Ruco, M. Piccoli, L. Frati, C.R. Francks, P. Palmer, C.N. Pourreau and A. Santoni ................................................................. » 411

Adoptive immunotherapeutic treatments with interleukin 2 and lymphocytes in a mouse colonic adenocarcinoma model - M. Rodolfo, C. Salvi, C. Bassi, M. Sensi and G. Parmiani ........................................................................................................................................................................ » 423

Susceptibility of multidrug-resistant human T-lymphoblastoid CEM cell line to cell-mediated cytolysis - C. Ramoni, M.L. Dupuis, C. Cenciarelli, F. Ciccolini and M. Cianfriglia ........................................................................................................................................................................ » 433

Experimental design for the evaluation of the antitumor action of cytokines - V. Ciolli, P. Sestili, M. Brigato, L. Gabriele, F. Varano, C. Locardi and F. Berardelli..... » 441

Receptors for interleukin 4, interleukin 5 and interleukin 6 - J. Banchereau and J.P. Galizzi . » 453
Immunotherapy is usually divided into two overlapping categories, active and passive. Active immunotherapy aims to stimulate host antitumor cellular or humoral immunity. This can be accomplished directly and specifically by using tumor vaccines to generate an immune response to tumor associated-antigens. Non-specific antitumor immunity may be evoked by compounds such as bacillus Calmette-Guérin (BCG). Passive immunotherapy relies on the administration of biological agents with antitumor activity, such as antibodies against growth factor receptors. The complex immune circuits activated by these therapies allow an imperfect, but nonetheless useful division into active and passive immunotherapy approaches.

Immunotherapy has proved effective in a variety of animal models, and therefore has been utilized to treat human cancers in the past few decades.

In the '60s and '70s clinical trials both nonspecific immunostimulants, including BCG, and specific allogeneic/autologous vaccines were evaluated with early promising reports. Unfortunately, none of these approaches was effective in subsequent controlled trials.

During the past decade, renewed interest in immunotherapy has been stimulated by availability of large amounts of pure recombinant cytokines ("biologic response modifiers"), including interferons, interleukins, tumor necrosis factor, as well as hematopoietic growth factors (colony stimulating factors). In parallel, hybridoma technology allowed production of murine monoclonal antibodies directed against tumor-associated antigens.

This monographic issue of the Annali dell'Istituto Superiore di Sanità reviews some of the recent, exciting discoveries in these areas. Attention has been thus devoted to interferons and interleukins, including their structure, production mechanisms at cellular and molecular level, receptors and intracellular signalling pathways. Furthermore, particular interest has been focused on interleukin-2, in view of its extensive recent applications in cancer immunotherapy.

The Editors

C. Peschle and U. Testa