Drug Dosage

The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

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New Methods in Radiological Diagnosis, Therapy Planning and Therapy of Metastasis
Preface

The majority of cancer patients who succumb to their disease die from metastasis. In most cases the primary tumor can be removed by surgery or local irradiation, but cells disseminated in the body may give rise, after variable time periods, to metastasis formation, unless they can be completely eradicated by specific treatments - the ultimate goal of metastasis research.

In order to improve prevention, treatment and cure of metastasis, the basic principles and mechanisms of this process need to be elucidated. However, the metastatic process is extremely complex. Although it was as early as 1889 that Paget published the «seed and soil» hypothesis of metastatic growth, a conceptual breakthrough at that time, progress was slow in this field, and it was only in the last three decades that metastasis research started to become one of the most rapidly growing fields in modern medical research, coincidently with progress in molecular and cell biology as well as immunology.

As many new aspects of metastasis research have been accumulated in recent years, the Dr. Mildred Scheel-Stiftung für Krebsforschung devoted the VIII. International Expert Meeting to this topic. These meetings are organized biennially by the Dr. Mildred Scheel-Stiftung in order to bring together internationally recognized scientists and clinicians from foreign countries and Germany for discussions of recent progress in a specific field of cancer research. The Dr. Mildred Scheel-Stiftung depends exclusively on private donations and provides support to innovative cancer research. The International Expert Meetings serve as a highly effective instrument to designate the most promising areas of future cancer research which require priority funding. The proceedings of the meetings are regularly published in «Contributions to Oncology» in order to give the scientific community a summary of the state-of-the-art in a special field of cancer research.

The metastatic process has many different facets. Malignant cells acquire the potential of leaving the primary tumor, invade by an active process
the surrounding structures and tissues, disseminate in the vascular system, withstand during this period adverse physical, cellular and humoral factors, adhere to and emigrate by active motility from vessels and infiltrate a target organ to give rise to metastasis in a highly selective pattern. The basic requirements of tumor cells for being successful during this complicated cascade, the «survival of the fittest» (Fidler), and the specific interaction of disseminated tumor cells and the new environment are being investigated in many laboratories that apply concepts and methods of molecular, developmental and cell biology as well as immunology and pathology. Although we still wait for a real breakthrough in prevention and treatment of metastasis, the interdisciplinary approach to the problem has considerably improved our knowledge. Various aspects are reported in detail in this book by leading experts in the field.

Important contributions have been made to the understanding of the mechanisms of invasion, particularly as regards specific molecules which mediate cell adhesion, motility-regulating factors, the role of extracellular matrix, specific enzymes involved in this process and inhibiting or promoting factors that take part in this first step of metastasis. The mode of vascular dissemination and organotropy of metastatic cells has been better understood. Specific adhesion processes appear to be involved in organspecific lodging some of which are similar or identical to those involved in physiological adherence of normal cells. Metastasis appears to develop in the frame of specific interactions of the disseminated tumor cells with local positive and negative growth factors which suppress or, sometimes after long «dormancy» periods, promote proliferation at specific sites of the body. Final growth of metastasis is dependent on angiogenesis in which again a variety of specific factors is involved. Knowledge of the specific components taking part in the process of metastasis opened new ways to study relevant genes, their putative aberrant regulation and possibilities of their modification aimed at reverting the metastatic phenotype. Detailed studies on the characterization of membrane alterations of metastasiscompetent tumor cells, mainly in melanoma, led to the production of monoclonal antibodies which have been used in experiments to interfere with organ-specific adherence and even growth of metastatic cells. Progress has also been reported in attempts to increase antigenicity of tumor cells and immune competence of the host, improving the basis for clinical immunotherapy of metastasis. New highly sensitive methods in radiology and nuclear medicine have been communicated in early detection of metastasis, an important prerequisite for early treatment, and in experimental
radio-immunotherapy.
When inviting the participants to the VIII. International Expert Meeting the organizers had in mind the interdisciplinary concept of metastasis research. It is obvious from the contributions compiled in this book that emergence of theoretical, experimental and clinical metastasis research remains essential for future progress in the attempts to come closer to prevention and effective treatment of metastasis.

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