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Introduction

THREE PREVIOUS meetings of *"Biological Therapy of Cancer—From Basic Research to Clinical Application"* have been organised in Innsbruck, Austria in 1991 and Munich, Germany in 1993 and 1995 by the Biological Therapeutics Development Group (BTDG) of the EORTC, the National Cancer Institute (NCI), the Cancer Research Campaign (CRC) and the Society for Biological Therapy (SBT).

Biological therapy is currently finding its place as a fourth treatment modality for malignant disorders besides surgery, chemotherapy and radiotherapy. Biologicals can have a broad spectrum of *in vivo* effects such as modulation of immune response, stimulation of haemopoiesis, direct regulation of cellular growth and differentiation, toxicity for tumour cells, action on tumour vascularisation, induction of apoptosis, etc. Furthermore, they not only exert numerous primary effects, but also induce cascades of secondary effects.

The idea behind the setting up of a further international cancer meeting was the fact that biological cancer therapy represents a completely new therapeutic approach and forces us to adapt our preclinical and clinical research procedures originally tailored to cytotoxic agents. For the latter agents, a variety of efficient test systems is available for preclinical investigation and experimental animal studies can supply us with sufficient data regarding mode of action and effects to be expected during clinical trials. These test systems, however, are of less efficacy in the investigation of biological agents, where predictions of likely antitumour properties are often inaccurate. Therefore, the lack of reliable predictive *in vitro* systems or animal models for many biological agents and the fact that promising candidates must proceed rapidly to the clinic implies that a drug's whole therapeutic potential can only be assessed following careful studies in man. The only valid information about immunomodulatory substances to be obtained from animal data is an indication of pharmacokinetics, bioavailability, potential antitumour activity by direct cytotoxic mechanisms, and toxicity data to start a human phase I trial.

Consequently, the effectiveness of clinical trials must be improved by closely relating them to research programmes utilising material from patients treated with biologicals for *"ex vivo"* research. Close co-operation among preclinical and clinical scientists is therefore required for rational development of biological antitumour therapy.

The opportunity to influence malignant processes by tools of "somatic gene therapy" provides preclinical and clinical scientists with a fascinating new challenge in the context of biological cancer therapy. Somatic gene therapy covers medical interventions which involve the modification of somatic cells and can be divided into transfer of naked or complexed nucleic acid, replication deficient viruses, or genetically modified somatic cells. In oncology, these methods include the transfer and functional expression of transferred genetic material in a target somatic cell population in order to generate tumour specific vaccines for therapeutic purposes.

We must be aware that we are only just beginning to understand the promising aspects of gene therapeutic approaches. This early developmental stage of gene therapy of cancer, however, provides a new opportunity for collaboration between preclinical and clinical scientists. Successful implementation of gene transfer into the clinic will require the co-ordinated development of a variety of new technologies and the establishment of unique interactions between investigators from basic science and medical disciplines.

Rational and well organised *in vitro* and *in vivo* development of biological tumour therapy will not only optimise cancer research and therefore benefit patients, but will also reduce development costs. Within the EORTC, the Biological Therapeutics Development Group (BTDG) is organising preclinical research and early clinical trials with biological antitumour agents by catalysing the exchange of knowledge among preclinical and clinical scientists in the field of biological therapy. The aim of the BTDG is the co-ordination of the preclinical evaluation of biological agents such as cytokines, antibodies, vaccines and therapeutic genetic approaches. Special emphasis is paid on the set-up of research programmes around phase I and II clinical trials which examined clinical efficacy and safety of biologically active agents, which have been developed as having potential value in the treatment of patients with malignancies. Furthermore, studies are designed and co-ordinated looking at the effects (other than safety, toxicity and antitumour response) of biologically active agents *in vivo* in patients with malignancies. Special emphasis is paid to effects on the immune system and to problems of targeting.

The fourth international meeting *"Biological Therapy of Cancer—From Basic Research to Clinical Application"* will again focus on stimulation of contacts among basic scientists and clinicians through discussion of clinical trials and the rationales for the development of biological cancer therapy.

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