
Preface

Soon after the first description of monoclonal antibodies in 1976, there was enormous interest in the clinical application of antibodies, especially in the context of cancer. Antibodies appeared to offer the “magic bullet” that would allow the specific destruction of neoplastic cells. However, many years’ effort resulted in very few cases of successful immunotherapy with antibodies. As a result there was a major backlash against antibody therapy, and the field lost a considerable amount of popularity.

Fashion, in science as well as in other things, tends to be cyclical. Antibody-based therapy is once again attracting scientists and clinicians. There are several reasons for the renewed optimism; certainly the experience of the last two decades has provided a wealth of information about problems associated with antibody therapy, and possible solutions to these problems. Recombinant antibody engineering has rejuvenated the field, allowing both the modification of antibodies to improve their *in vivo* properties and the isolation of novel antibody molecules by such techniques as phage display. The results of recent clinical trials have demonstrated unequivocally the benefit of antibody therapy in a number of settings, and, finally, more careful consideration has been taken of the types of disease best treated using this approach.

The result is a more realistic climate of opinion, one in which antibody therapies are seen to have a role to play in the clinical management of patients, but are not seen as the panacea for all disease. *Diagnostic and Therapeutic Antibodies* is, therefore, especially timely, and is aimed at a new generation of clinicians and scientists who are entering the field and need to know both the background to the subject and also gain real competence in the basic techniques that they will be using. The book covers both theoretical and practical aspects of the clinical use of antibodies. It also looks at the *in vitro* diagnostic application of antibodies, an area where the impact of monoclonal antibodies has been enormous and con-

sistent.

To that end the book is divided into four sections. The first acts as a short introduction to the basic science of the antibody molecule, including its structure and how to generate antibodies. The second section is a series of reviews looking at different applications of antibodies in the clinic (including clinical laboratories). Such a section might seem unusual for a book in the *Methods in Molecular Medicine* series, but as every reader will have in mind a different in vivo application, this will allow them to get a picture of how antibodies can be used in varied clinical settings. It will also allow a certain degree of cross fertilization between different clinical disciplines. The third section covers the interaction between industry and the basic scientist. Such interaction is vital for the scientist to understand; if researchers have any ambitions to see their antibody in wide-scale clinical use, they will need to involve pharmaceutical and/or biotechnology companies. If they are to do this, then the nature of the intellectual property and the practicalities of its management need to be considered. This section consists of two chapters, one outlining the essentials of intellectual property and the second giving the case history of one antibody, CAMPATH-1, and the disasters and triumphs that accompanied its progress to the marketplace.

The final section contains a series of protocols that will be of use to people new to the field. The first set gives methods for producing and purifying antibodies, as well as the quality control procedures that are needed in preparing material for the clinic. The second set describes how to modify antibodies for clinical application, and how to measure the affinity and immunoreactivity of the molecules. The use of antibodies in a variety of in vitro assays and staining procedures is then given. Finally, a pair of chapters outline basic protocols for the early stages in antibody engineering.

The antibody is an extremely versatile molecule, with a myriad of potential applications. We trust that in *Diagnostic and Therapeutic Antibodies* we have collected together a series of chapters that will both inspire readers to explore some of the possibilities, and give them the basic theoretical and practical tools to start this task. We are extremely grateful to all the authors who have given their time, expertise, and energy to this project.

Finally, we would like to dedicate this book to Philippa, who was born as we started this project and without whom it would have been completed much sooner.

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