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## Preface

Neuroimmunologists deal with the nervous system and the immune system, both of which are giant, complex communication networks. One would think that we would be excellent communicators ourselves, but we have not communicated well with individuals outside our field. This is very unfortunate because the field of neuroimmunology is more dependent than most on input from fields outside its own. Researchers in basic neuroscience, basic immunology, clinical neurology (to name just a few) have much to contribute and these contributions would be enhanced if those researchers had a better understanding of neuroimmunology. This book is an attempt to provide a basic understanding of some of the neuroimmunological diseases to individuals who are not neuroimmunologists.

Who should use this book? I have lofty ambitions for this book in that I think it can be helpful to a large number of people, such as basic scientists in both neuroscience and immunology, neurologists, and motivated individuals in pharmaceutical companies who are neither PhDs nor MDs. Like Icarus, who had to navigate a path not too close to the sun nor too close to the sea, I tried to be basic enough to be understood by neophytes yet having enough depth so that it would not lose the attention of more-educated readers. Time will tell whether I succeeded.

Why now? There are many reasons. One reason is that the most common neuroimmunological disease, multiple sclerosis, covered in five chapters in this book, is attracting increasing interest from pharmaceutical companies as a therapeutic target. “Unmet need” is an understatement when it comes to improving our therapy of this prevalent disabling disease of the young. Another reason for the need now for this book is that there has been a paradigm shift in our understanding of the immune response within the nervous system. Far from being an “immune-privileged” tissue, haughtily excluding itself from any immune functions, the nervous system is actively involved in immune responses; it is simply that it participates using its own rules which are actively being researched but remain to be fully elucidated. A third reason for the need for this book is that increasingly, diseases thought to have a “degenerative” etiology, such as stroke or Alzheimer’s, have a component related to the immune system. This subdivision within neuroimmunology, discussed briefly in Chap. 15, will likely grow substantially in the near future.

How could I possibly cover neurology, immunology, neuroimmunology, and neuroimmunological disease in a short book? The short answer is that I can’t.

However, this is a primer, not a complete textbook. It will help the reader most as an introduction, and as a guide to what areas to pursue in the literature. It is customary for an author to lament about how large his subject is, and how many corners needed to be cut, and I will certainly adhere to the custom. But I tried to make the field of neuroimmunology understandable to a wide audience without being too lengthy.

Have I been too cynical about the state of our knowledge and the efficacy of available therapy? One of the physicians in the field who reviewed some of the chapters thought so. He felt I was “riding roughshod” and being too “curmudgeonly” and wished me to “explain the various drugs with great enthusiasm.” I apologize to him, and to those who wanted this book to be more upbeat. I did not intend to have any part of the book interpreted in a way that in any way is negative about the field of neuroimmunology or those practicing this subspecialty. I have been a neuroimmunologist for 30 years and love the field and the people who work in it. However, I also adhere to the tenet, “*primum non nocere*” (the first rule is to do no harm), and I feel that the benefit/risk considerations should be clearly weighted toward benefit prior to recommending a therapy. Unfortunately, the trend in the field is to move in the other direction, toward therapies that are increasingly risky with questionable benefit to show for it. It is possible that in a future of evidence-based medicine and increasing accountability, we will have better tools to measure benefit/risk ratios in order to avoid major side effects and to maximize benefit.

What’s in the future for neuroimmunology? I see the partnership between basic neuroscience and neuroimmunology becoming stronger, and advances in our understanding leading to further major advances in diagnosis and therapy. We will benefit from advances toward neuroprotective therapies in other parts of neuroscience to provide clues to ameliorate neurodegeneration in neuroimmunological diseases. Ultimately, our understanding of MS will increase and we will identify more and more effective therapies. From my mouth to God’s ears...

I could not have written this book without a great deal of help. Steve Kamin, the chairman of our department of neurology at UMDNJ—New Jersey Medical School, was very supportive and allowed me to take sabbatical time. Susan Goelz, Lew Fredane, David Lagunoff, Norm Kachuk, Steve Kamin, and Stuart Selonick edited chapters, and aligned my frequently muddled efforts. The staff at Springer were extremely helpful, especially Andy Kwan and Richard Lansing. My daughter, Anna, helped considerably with image issues. And of course my long-suffering wife, Barbara, who had to put up with my periods of both mania and depression, was always there for emotional support.

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