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To Rudolf Rott, on behalf of all BDV scientists, in appreciation of his foresight, devotion, and many contributions to modern BDV research, and
to my greatest mentor and supporter, my father, Paul P. Carbone (1931–2002), Lasker Award recipient, clinical researcher, and talented clinical oncologist, who provided the foundation for scientific careers for myself and many young researchers; from him I learned always to take the most interesting path, not the path of least resistance.
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Foreword

This book represents a singular event for all virologists, especially those interested in neuropathogenesis and virus-related neuropsychiatric disorders. The virus du jour is Borna disease virus (BDV), which is the etiological agent of Borna disease (BD). BD is a fatal neurological disease of horses that has been known for over 100 years and is now emerging as a disease in cats, dogs, certain birds, and possibly all warm-blooded animals, including humans. However, due to the difficulty of isolation and detection of BDV, there remains controversy about possible links between BDV and human neuropsychiatric disorders.

Kathryn Carbone and her colleagues have put together a definitive tome that examines real criteria for establishing a BDV infection and the pitfalls of overinterpreting highly sensitive assays. Twenty-five years ago, I was intently researching the assembly of murine and avian retroviruses, focusing on retroviral proteases. At the time, there was suggestive evidence that a human retrovirus might also exist; after several false starts, human T-cell leukemia virus type 1 was isolated and characterized as the etiological agent of adult T-cell leukemia and, later, tropical spastic paraparesis. About 10 years later, these findings and culture methods laid the groundwork for the classical isolation of human immunodeficiency virus type 1 as the etiological agent of AIDS. In some ways, links between BDV in horses and rats are awaiting a similar fate for a direct link to neuropsychiatric diseases in humans. As of now, there is a smoking gun but no definitive association. However, as with the retroviruses, it may only be a matter of time before an association is firmly established.

In closing, I thank Kathryn Carbone, as well as Jeff Holtmeier of ASM Press, for asking me to write a foreword for this important text in a new and emerging area of virology. I hope that the authors, by bringing BDV into the limelight, will spur greater activity in the field of viral neuropathogenesis.

Ronald Luftig
Preface

In the field of Borna disease virus (BDV) research, where each experiment reveals a new mystery more often than an answer, where the subject repeatedly refuses to play by the rules of traditional virology, where revelations of scientific interest in BDV often lead to responses of “What virus?” and where grant funding opportunities are difficult to realize, it is amazing and gratifying to see that worldwide interest in BDV has increased exponentially over the past 20 years. Despite the unique challenges of BDV research, or perhaps because of them, those in the field have always seen tremendous potential benefits from studying this agent. I acknowledge, first and foremost in the BDV field, Rudolf Rott of the Institute for Virology, University of Giessen, Giessen, Germany, who is considered the founder of modern BDV research. Virtually all BDV investigators trace the beginning of their experiences in BDV research to Rudolf Rott or to someone trained by him (see chapter 1).

Despite the increasing international interest in BDV research, the field is still young and controversial. I have tried to bring together BDV scientists whose stars are rising or have already risen to craft an encyclopedia of modern BDV research. Each chapter author was asked to present an overview of the data in the assigned area, to provide a critique of these data with a discussion of the controversies therein (and there are many), and, perhaps most importantly, to suggest the direction in which the future of BDV research should go. In a field where conflicting, unresolved issues tend to polarize, these accomplished BDV researchers have worked hard to provide a balanced view of up-to-date BDV knowledge for other scientists, clinicians, and the public, and I thank them for their selfless efforts and quality performance. It is also important to emphasize that the support and guidance of leaders in the American Society of Microbiology, such as Ronald Luftig, and the ASM Press staff, especially the director, Jeff Holtmeier, were the final common denominators in realizing the efforts of all the BDV scientists who worked diligently on this book.

From 1985 and my baptism in BDV research in Opendra Narayan’s laboratory at Johns Hopkins University, the first laboratory in the United States to take up BDV study, to my role in 2002 as editor of an exciting and up-to-date summary of modern BDV research, I remain enthusiastic about past discoveries and those we have yet to make in the BDV field. Working in an area considered obscure by some and groundbreaking by others, I am constantly reminded of a delightful letter to the editor of The Lancet by
J. Morris ("Originality: who is to judge?" [Lancet 342:930, 1993]): “If the work receives acclaim then it means that it is part of the conventional wisdom, and is not original. If rejected it might be original; if dismissed out of hand, it probably is.” Having worked in the field for almost 2 decades, I have seen all three outcomes in response to BDV discoveries, yet, by these criteria, I hope never to see new BDV research accepted without controversy. I am sure that BDV research will continue to surprise, frustrate, and delight scientists for decades to come.

Kathryn M. Carbone
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