Preface

This book is a guide to a series of laboratory exercises in neuroanatomy. It evolved from several years of teaching neuroanatomy together with neuroscience to Harvard Medical students. It covers the fundamental topics found in a traditional course on neuroanatomy utilizing a series of exercises that we hope will bring the anatomy of the brain to life. The book is intended for use by medical students, dental students, students of the health sciences, graduate students in the biological sciences, as well as professionals in the neurosciences who wish to brush up on their neuroanatomy.

We believe that the key to learning neuroanatomy is by engaging it. With this in mind, our book is highly interactive. Each chapter starts with a short discussion section, which is followed by a series of exercises designed to develop and reinforce the material. The activities are wide ranging, and include identification of structures and pathways, correlations with radiological images, examination of histological tissue, analysis of pathological brains, interpretation of physiological experiments and model building. All of the exercises are accompanied by complete answer sets. We have emphasized three themes throughout the book: clinical correlations, experimental results and radiological approaches. We use clinical correlations to develop the structure/function relationships. Experimental approaches are discussed to introduce the intellectual basis for neuroanatomy. Finally, we supplement the examination of brain specimens with radiological imaging in order to familiarize the reader with the type information that is most commonly utilized.

This manual can be used in several ways. It can best serve as a blueprint for a laboratory course in neuroanatomy that utilizes brain specimens, histological slides and other materials. With this in mind, we have provided a materials list in one of the appendices. Our book can also be used as a stand-alone guide. We have provided high-resolution images of all the necessary anatomical, histological and radiological material, and there is a short atlas located in the appendices. In addition, high-resolution, color images are available on the publisher’s website. However it is used, it’s essential that the reader participate. The key to learning is doing and committing yourself to an answer. Complete the exercises and attempt the questions before consulting the answer keys. You will learn a great deal more by attempting to answer a question (whether you get it right or wrong) than by reading straight through to the answer.

Many fine neuroanatomy textbooks and atlases provide the necessary background for our interactive approach. In the course that we have taught using this manual, we have found John Martin’s Neuroanatomy, John Nolte’s The Human Brain, and Woolsey et al.’s The Brain Atlas, to be wonderful resources. In addition, there are many fine digitally based neuroanatomy atlases and interactive programs. We are particularly fond of Washington University’s Digital Anatomist, which is available on the World Wide Web.

ACKNOWLEDGMENTS

We would like to acknowledge several of our colleagues whose efforts were critical to this book. First we thank Richard Sidman, who created the laboratory course from which this book subsequently arose. Richard has been a mentor, a teacher and a friend for many years. Changiz Geula and David Dawson made major contributions to sections of this book, including initial drafts of several chapters,
and were extraordinarily generous in providing materials as well as guidance for many of the exercises throughout the manual. Several other people provided significant assistance. Edison Miyawaki helped in the early stages of this project and has given us numerous useful suggestions as we have implemented it. Ellen Grant provided much of the neuroimaging presented in the book. Clifford Saper, Jean-Paul Vonsattel, Christopher Wright, Reisa Sperling, and Tessa Hedley-Whyte also provided us with key materials. Our laboratory manager, Sheila Salomone has been a fabulous support in all of our teaching efforts. She has demonstrated unreasonable tolerance in putting up with some of our unconventional approaches to teaching. Finally, we thank our Harvard Students who have used this text in its embryonic state and have provided many helpful suggestions.