Preface

Could there be a better time to be a life scientist? In the past two decades, a host of new techniques have been added to the tool chests of biochemists and molecular biologists. A wonderful benefit of the basic scientific research that fueled the advances in these fields is the wide variety of direct applications in agriculture and medicine. Even with all of these advances, and with the accompanying explosion in computer and information technology, it is clear that the depth of our ignorance vastly exceeds the breadth of our knowledge about complex organisms at the molecular level. Any new techniques or materials that allow us to extend our research-based knowledge should be welcomed and utilized to their fullest potentials. With the cloning of the green fluorescent protein (GFP) from *Aequorea victoria* in 1992, another valuable tool was added to the arsenal. In *Green Fluorescent Proteins: Applications and Protocols* examples of how GFP can be utilized in a variety of fields are presented. Although the text has chapters that emphasize different areas of specialization, it is not meant to send molecular biologists to one section, botanists to another, and clinicians to still another. Perhaps the most valuable exchange for people in any discipline will come from seeing how others have been able to apply GFP in fields outside of their immediate areas of expertise.

GFP from *Aequorea victoria* is a fluorescent marker protein, and there are certainly other useful fluorophore markers. The wild-type GFP is not generally used by researchers today. In fact, the acronym GFP has become somewhat misleading because so many spectral variants are now available. All of the work described in this volume takes advantage of the mutant GFPs with altered spectral characteristics or with great cellular expression. It is also noteworthy that the first two chapters describe technique applied to other fluorescent markers: DsRed and other fluorescent proteins cloned from Anthozoans, and *cobA* and *CysG*, genes encoding for enzymes producing soluble red fluorescent markers. Although using the GFP marker to locate biomaterials remains the most often utilized application because of the advantages inherent in using GFP and the versatility offered by the many GFPs available, many more elegant methods have emerged, and several of these are demonstrated in this volume. Like all volumes in the Methods in Molecular Biology series, the text is designed to aid researchers who understand broad aspects of a topic to gain expertise in some narrow experimental portion of that topic. It might be most useful to postdoctoral researchers or graduate students who are actually per-

forming the experimental work at the bench. In each chapter, methods with detail that go far beyond what is currently printed in most journals are provided and could aid in spreading GFP techniques to new laboratories.

Several groups and individuals deserve special attention for getting this text completed. Although the majority of the figures in the text are in black and white, I urge readers to take full advantage of the accompanying CD-ROM that was generously sponsored by Universal Imaging Corporation. The CD-ROM includes color figures and videos from over half of the chapters in this book. I would like to thank Dr. John Walker for allowing me the opportunity to edit this volume and further my own understanding of life science, which also allowed me to make research contacts with some fantastic people around the world utilizing autofluorescent proteins. Finally, I would like to thank my students at the US Air Force Academy for continuing to challenge me to stay abreast of the rapidly advancing discipline of biochemistry.

Barry W. Hicks

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