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Preface

Zebrafish (*Danio rerio*) play an integral role in biomedical research, enabling researchers to examine physiologic mechanisms and pathways relevant to human pathogenesis and its therapy. Zebrafish possess all major neurotransmitters, and their neuroendocrine system provides robust physiological responses to stress. Moreover, their low cost, easy manipulation, and short generational cycles have widely established the use of this model organism in neuroscience research.

In spite of their growing role as an animal model, a book that encompasses the various protocols using zebrafish in neurobehavioral research did not exist until the publication of "*Zebrafish Neurobehavioral Protocols*" (Vol. 51) last year. This first book was instrumental in addressing the growing need to compile these protocols into a single volume, enabling neuroscientists access to the most current protocols in this rapidly expanding field of research. However, with such an expansive field, a more comprehensive compilation was needed, in order to reflect a multitude of areas not yet covered in the first volume. This current volume will complement the first book, acting as an easily accessible reference for established zebrafish model protocols – but ones which can always be modified or refined by creative scientists as they enjoy their journey on the Train of Science.

Comprising protocols for both larval and adult models, the present book is written by the leading experts in the field of zebrafish research. Part I of this book takes advantage of the high-throughput nature of larval models, to offer protocols ideal for research requiring high output, easily manipulated screens. The protocols detailed in the second half of the book focus on the robust and sophisticated behaviors of adult zebrafish – suitable for the neurophenotyping of complex traits and multi-domain disorders. Importantly, these models complement each other, working together to provide researchers with valuable insights into neurobiology of normal and pathological behavior.

As the behavioral and other related zebrafish phenotypes become increasingly validated, their importance and translational relevance continues to emerge. High-throughput computer-based techniques coupled with in-depth behavioral analyses have begun to be applied to zebrafish, further advancing our understanding of brain pathogenesis and its mechanisms. Ultimately, this will allow researchers to discover novel associations between behavioral phenotypes and molecular pathways within an interdisciplinary systems biology approach. We hope that the protocols detailed here will aid researchers in achieving this goal. In addition to zebrafish investigators, the book will also be useful for graduate students, educators using zebrafish models in their classes, as well as for laboratories studying other aquatic species.

Where do we want to see our book? The answer to this question will best summarize the reasons why this book was written. We want to see this book on a desk in a lab. In other words, we want to see this volume in active use in research labs, and not proudly secured on a book shelf. Perhaps, the book will be covered with hand-written notes by researchers and students, or even may have pages warped as they were water-logged in zebrafish experiments. We hope that the book will find its place in many active, and really "wet", zebrafish laboratories.

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