

PREFACE

Cell turnover is a fundamental feature of metazoan biology. Severe damage to cellular integrity usually causes passive, nonregulated cell death. In contrast, more confined disruption can lead to more deliberate cell elimination, through specific mechanisms of Regulated Cell Death. In these two volumes of *Methods in Enzymology*, we aim to highlight the current molecular understanding of the major processes of Regulated Cell Death and to illustrate basic and advanced methodologies to study them. Volume A focuses on the most extensively studied mode of cell death—apoptosis. Volume B covers several nonapoptotic mechanisms, including necroptotic and autophagic cell death. In Volume A, Chapters 1–4 cover various aspects of the cell-intrinsic apoptosis pathway, including the Bcl-2 protein family and mitochondria. Chapters 5 and 6 discuss death receptors and the extrinsic pathway. Chapters 8–14 cover caspases—the apoptotic protease machine. Chapter 15 highlights how apoptotic cells are recognized and cleared by other cells, while Chapter 16 features the zebrafish as a versatile genetic model organism for studying apoptosis. We hope these chapters will be conceptually informative and practically useful for readers interested in the current understanding and key open questions in each area as well as in experimental strategies and techniques to interrogate the many facets of apoptotic cell death including signaling, execution, and regulation.

AVI ASHKENAZI

JUNYING YUAN

JAMES A. WELLS