PREFACE

Heme biology aims to provide a cohesive understanding of the fundamental regulatory and signaling roles of heme in life and disease processes, as well as the underlying chemical and molecular basis. Heme is arguably the most ubiquitous and unique molecule in the human body. It gives our blood the distinctive color and plays key roles in the proper functioning of all cells. This book provides an in-depth analysis of the roles of heme in three types of human tissues, reticulocytes, brain and liver, on which heme exerts crucial effects.

Heme biology links human function and diseases to the molecular and cellular events occurring in cells, as well as the structural and chemical features of heme. It describes how heme is made, how its level is regulated in various tissues, and what kinds of diseases ensue when the heme level becomes dysregulated. It describes in detail key protein macromolecules with which heme can interact with and thereby control their activities. It also sheds light on how altered interactions between heme and proteins can lead to dysregulated molecular and cellular processes, which in turn cause human diseases. This book includes information about how the chemical properties of heme and heme analogs can be applied to cancer therapy. Overall, this book can be informative and insightful to both the general curious readers and advanced researchers interested in heme biology.