

Preface

The word integrative is defined as “bringing together parts to make up a whole.” Hence, this book was designed to bring together viewpoints of scientists across a variety of disciplines, all relevant to women’s health. The invited authors have all published significant material on matters relevant to women’s health. Thus, it is expected that each author will provide the reader novel insight that might encourage new avenues of thought or research that would benefit women.

A common problem often faced when designing an experimental approach to test a hypothesis is that scientists will simplify the biological complexity that likely underlies the problem to more easily identify the mechanism. Often dragged into this methodology is the assumption that the mechanism will respond in a similar fashion across both sexes. However, numerous seminal investigations conducted over past few decades have clearly demonstrated that biological mechanisms often behave differently across the sexes. In other words, men and women are different. Although the statement is obvious, when you examine the statement solely from the cellular or the tissue perspective the mechanisms that explain these differences remain poorly defined. Unfortunately, this has often led us to assume that clinical approaches used for treating chronic disease will work with equal fidelity in both men and women. The evidence is mounting that these assumptions are often not true and are likely the result of mechanistic differences that exist between sexes.

A recent wave of scientific momentum has begun to develop where investigations are focusing on regulatory mechanisms specifically in women. The resulting data are often unique and in some cases challenge the previously defined dogma. The purpose of this book is to capture this momentum in the form of a collection of review-based chapters across a variety of biological areas. The book seeks to address the basic biology of women’s health across a number of tissues including cardiac muscle, bone, skeletal muscle, and brain while discussing critical questions from a physiological and metabolic perspective. In addition, the book was designed to have translational appeal in that chapters contained within the book discuss scientific results that were obtained utilizing a wide array of approaches including cell culture of animals or humans.

In order to develop appropriate treatment interventions for women, this critical knowledge gap in women's health research must be addressed. The former Deputy Director of NIH, Dr. Ruth Kirschstein, once stated, "Researchers must continue to make more intensive efforts to address the health needs of the whole woman." Overall, it is the hope of the authors of each chapter that the reader will be enlightened to the complex biological issues that are often presented in a unique fashion in women.

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