Change Your Genes; Update Your Life
Kimberly Pelletier 2010-06-18 Our biology is in danger of becoming both a barometer and a barrier to our present generation of genetic scientists. Especially in the last twenty years, scientists have confirmed that the vast majority of our genes are not fixed, that they are not written in stone, but that they are also not likely to change overnight. Genes are made up of a string of chemical instructions that are read and interpreted by the body's cells. These instructions are encoded in DNA, a molecule found in every cell of the body that contains the information necessary to build and maintain living organisms. DNA is made up of a sequence of four building blocks, called nucleotides, the specific sequence of which determines the structure of proteins and other molecules. In order to be read and interpreted, DNA must be converted into messenger RNA (mRNA), which then carries the information to the ribosomes, the cell's manufacturing centers. At the ribosomes, the mRNA is translated into a sequence of amino acids that make up proteins, which in turn carry out the cell's functions. Each gene is a segment of DNA that codes for a specific protein. Changes in the sequence of nucleotides in a gene can alter the protein it codes for, potentially affecting the body's function or development. These changes are called genetic variations, or polymorphisms, and they can occur naturally or be caused by environmental factors such as diet, lifestyle, or exposure to toxins. The study of genetic variations is known as genomics, and it is a rapidly growing field that is helping to unravel the mysteries of disease, aging, and development. In recent years, researchers have made tremendous strides in understanding the role of genetics in health and disease, and this has led to the development of new treatments and therapies that target specific genetic variations. However, the complexity of the human genome and the interplay between genetics and environment means that many diseases are influenced by multiple factors, and that even small changes in genetic variations can have large effects. Therefore, it is important to consider the patient's overall health and lifestyle in addition to their genetic makeup when making treatment decisions. In this book, the author explores the latest research on the role of genetics in health and disease, and provides practical guidance on how to use this information to improve your health and well-being.