Interpretation & Validation of the Results

Science and technology have made it possible to isolate and identify specific base pair substitutions on an individual's DNA. But the hard part is not yet done. In reality, it is only just beginning. A set of human chromosomes contains literally billions of base pairs in which substitutions can occur. The majority of these substitutions make little or no detectable difference. Of the ones that do make a difference, that effect may be very subtle or only have an effect under certain conditions.

With complex characteristics, such as your weight or response to various exercises, the influence of a gene may be only one of multiple factors that have an impact on the global picture. For example, someone could have a genetic configuration that is found with a high frequency in elite and Olympic level endurance athletes. Yet, if that individual never had the opportunity to develop those skills, never received the encouragement to do so, never had the self-discipline instilled to adhere to the training required and never had access to the necessary resources to progress, that person would likely never become an elite athlete. Such a genetic profile could be compared to a Ferrari. If it has the opportunity, it is likely to win many races. However, if it is never driven and is continually exposed to the elements, it may end up no better than a rusty bucket of bolts! Similarly, the world's fastest, most amazing super-computer is not going to make any breakthroughs if it is simply used for posting to Facebook™.

To determine the significance of various base pair substitutions in DNA, requires clinical research. Every month, hundreds of articles are published in peer-reviewed medical research journals, exploring clinical correlations to various base pair substitutions. Often the research begins with what is known as a genome-wide association study (GWAS). In a GWAS, a large number of genes are analyzed in a sufficiently large population. Then using various statistical programs, a search is done for any characteristic that is found with a higher than average frequency with certain genetic configurations. This allows researchers then to design specific trials to explore the impact of specific base-pair substitutions. Literally, hundreds and even thousands of associations or expected associations have been identified and more are suspected or confirmed every month. There are a number of examples where this has led to some very interesting and significant associations. It was found certain substitutions on the MTHFR gene are associated with certain birth defects. A specific genetic profile on two genes, PPARD and PPARGC1A, is never found in top level endurance athletes, but is found with a greater than normal frequency in top level power athletes. Various other substitutions have been identified that are seen with significantly increased frequency in individuals who are obese, have diabetes or have increased risk of high blood pressure. Other profiles are associated with what foods people prefer to eat.

Hundreds of genes and DNA base pair substitutions have been studied in order to select those that have the greatest impact on health and fitness. The information revealed in your report can indicate where your greatest strengths are so you can focus your efforts in those areas that will give you the greatest benefit for the energy you invest in your health and fitness. Also, your individualized report is just as likely to indicate where your greatest challenges lurk, allowing you to more effectively target those areas most likely to hold you back from attaining your maximum potential.

In order to maintain the maximum accuracy and greatest value of your Diet-DNA and Fitness-DNA reports, Molecular Testing Labs® carefully follows the research in this rapidly developing new field. The goal is to promptly incorporate findings, as new research reveals new genes and new genetic associations with all aspects of health, nutrition and fitness. The objective, of course, is to empower you to optimize your diet and training routines in order to maximize your overall health, wellness and athletic performance.