The Promise of Genomics and Epigenetics Studies in Exercise Research

“Growth in childhood and adolescence is unique among mammals and is a dynamic process regulated by an evolution of hormonal and inflammatory mediators, age-dependent progression of gene expression, and environmentally modulated epigenetic mechanisms. Many of these same processes likely affect molecular transducers of physical activity. How the molecular signaling associated with growth is synchronized with signaling associated with exercise is poorly understood. Recent advances in “omics”—namely genomics and epigenetics, metabolomics, and proteomics—now provide exciting approaches and tools that can be used for the first time to address this gap. A biologic definition of “healthy” exercise that links the metabolic transducers of physical activity with parallel processes that regulate growth will transform health policy and guidelines that promote optimal use of physical activity”-(Pediatric Exercise Science, 2016, 28, 194 -201)