Biology Seminar

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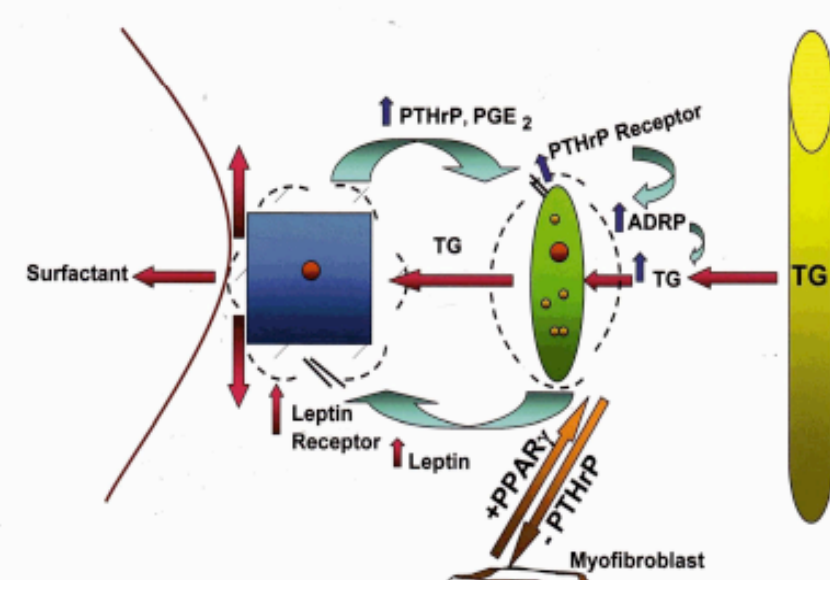
On the Evolution of Physiology from Cells to Systems, or *Bio-Logic*

The overarching purpose of this lecture is to make the audience aware that we need a sea change in biology and medicine, and how they can participate. In the post-genomic era the consensus is that genomics has given us the 'book of life', when in reality we have the nouns, but we don't have the verbs or the syntax. Without 'action words' and syntax, nouns provide no logical context. The contemporary way in which genomic information is being organized is termed Systems Biology, which is a superficial way of reintegrating the genomic information to resemble biology. The fundamental problem with this approach is that the biologic context of the genetic information is lost during the processing. In order to understand the biologic relevance of the genomic data, the function of the genes must be determined. Scientists who use this approach attempt to get around its inherent problem by showing associations between the genes of interest and phenotypes in biology and disease. The fundamental problem with this approach is that experimental evidence to show causality (referred to as functional genomics) is lacking. Without such data, these associations are like Kipling's "Just So Stories". By contrast, this lecture will describe a paradigm-shifting approach to understand the generative relationships between evolutionary biology and physiology, and will show the audience how to implement this new way of thinking in their own research.



Friday Nov 6, 2009 **2:00 PM** **ENV125 (EESAT)**