Bill Schaus

Genetics is the fundamental science of all health and disease. All of us are born with genetic variations that can eventually lead to a disease state if they are not nurtured properly. What that means is that our lifestyle matters to our overall health - how and what we eat, drink and breathe, our sleep patterns, whether we exercise regularly, and how well we handle the many stressors in our lives. The stressors in our lives can be categorized as psychological, biochemical, environmental and structural but it is easier to just think of them as nurture while your genetic/genomic status is nature.

During the 20th Century, the scientific argument was which was more important nature or nurture. It is now very apparent that they both matter so the phrase "Nurture your Nature" or "Nurture your Genome" will become the 21st Century's new medical mantra.

The sequencing of the human genome in 2003 placed genomics in the spotlight in our search for disease cures but in the past decade a "second genome" has been uncovered. The microbiota, all the bacteria, viruses and other forms of microbial life that live on and in us, is being considered a "forgotten organ" a "second genome."

The greatest concentration of microbes is in our gut which contains as many or quite possibly more cells than we think of as "us" and that is about 37 trillion. Approximately 500 – to 1500 bacterial species, comprising about 8 million genes referred to as the microbiome – interact with "our" genome creating a complex ecosystem. During the past couple of decades' researchers have come to realize that microbes constitute part of who we are biologically, not just life forms that live within us.

During the past century, humans have changed our internal ecosystem more rapidly and extensively than in any comparable period in human history. This society-wide shift, driven by what we eat and the quantity and type of microbes we're exposed to in our daily lives, looks to be increasing our vulnerability to chronic disease. This imbalance is a

major area of research and along with genetic predispositions may be one of the underlying causes challenging our sick care system. A thought I'd like to leave you with is that maybe we need to start thinking of ourselves as ecosystems and that a major aspect of disease is that system being out of balance.