

The Hughes Undergraduate Biology Program
Presents A Special Lecture:

MODIFICATION OF THE GENETIC LANDSCAPE OF THE HEART

DR. LESLIE LEINWAND

PROFESSOR, UNIVERSITY OF COLORADO, BOULDER
CHAIR, DEPT. OF MOLECULAR, CELLULAR, &
DEVELOPMENTAL BIOLOGY
HOWARD HUGHES MEDICAL INSTITUTE PROFESSOR

Friday, Nov. 7, 2008
4:10 pm – 5:00 pm
Reid Hall 108

Free & Open
to the Public!



Over the past decade, our laboratory has studied how cardiac and skeletal muscle adapt to a wide variety of stimuli, including exercise and disease, and how these adaptations are modified by diet, gender, and genetic background. The heart enlarges in response to both exercise and disease, but in the former case, this adaptation is beneficial and associated with improved cardiovascular conditioning whereas the latter is associated with poor cardiac function.

One of our goals is to understand which pathways are involved in these two types of cardiac adaptation. One of the diseases my group focuses on is hypertrophic cardiomyopathy, which is the leading cause of sudden death in young athletes. This is an autosomal dominant disease caused by mutations in sarcomeric proteins, including myosin heavy chain, the motor molecule of muscle. To understand the pathogenesis of this disease, we have used approaches ranging from biophysical analysis of mutant proteins to analysis in genetically manipulated mice.

Our major contributions have been 1) better understanding the role of gender in experimental models of heart disease and determination of some of the pathways leading to these differences, 2) determining that exercise uses distinct pathways from disease to modify muscle even though the endpoints in terms of increase in size are the same, and 3) establishing that diet has a profound effect on the heart and has a particularly important effect on the diseased heart.