Adv Exp Med Biol. 2001;502:13-20. Links

Genes, environment, and exercise.

Booth FW, **Vyas DR**.

Department of Veterinary Biomedical Sciences, University of Missouri, Columbia, USA.

The definition of the term "environment" has broadened in the past 40 years to include knowledge generated from sequencing genes.

Studies on animal responses to the environment have expanded to include selective lifestyle behaviors.

Environmental lifestyle components interact with susceptibility genes to pass a threshold of biological significance such that a disease requires clinical treatment.

Examples of environmental-gene interactions producing cystic fibrosis and asthma are described.

The contributing role of physical inactivity to the epidemic of type 2 diabetes is presented with some of its underlying effectors.

A lack of contractile activity by skeletal muscle is associated with less GLUT4 protein in the sarcolemma and a lower glucose uptake into the muscle.

The pathways by which contractile activity signals an increase in glucose uptake differs from insulin signaling, but is remarkably similar to how hypoxia stimulates muscle to increase its glucose uptake.