

## **ALLEN HACKER, Ph.D.**

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### **Research Interests**

Dr. Hacker's primary area of research is the molecular and cellular-pathophysiology of the vascular wall. Studies in his laboratory have demonstrated a major role for the amino acid arginine in the development of pulmonary hypertension. Arginine is a precursor for several pathways in the cell. These include the formation of nitric oxide, polyamines and proline, a precursor for collagen synthesis. Recent studies in his laboratory suggest that excessive nitric oxide formation and increased polyamine biosynthesis play a major role in vascular remodeling, including the development of rarefaction (destruction of microvessels) in the reduced renal mass model of hypertension. Current studies are directed at understanding the mechanisms by which nitric oxide and polyamines regulate vascular remodeling, including angiogenesis and programmed cell death. A variety of experimental approaches are utilized in these studies, including biochemical, molecular and physiological techniques in whole animals, isolated tissues and cultured cells. The ultimate goal of these studies is to provide new knowledge which can be utilized for the development of improved therapy for cardiovascular disease.



### **Research Publications/Presentations**

Madden JA, Keller PA, Effros RM, Seavitt C, Choy JS, Hacker AD: Responses to pressure and vasoactive agents by isolated pulmonary arteries from monocrotaline-treated rats. *J Appl Physiol* 76:1589-1593, 1994.

Schapiro RM, Ghio AJ, Effros RM, Morrisey J, Almagro UA, Dawson CA, Hacker AD: Hydroxyl radical production and injury in the rat lung following silica or titanium dioxide instillation in vivo. *Am J Respir Cell Mol Biol* 12:220-226, 1995.

Madden JA, Keller PA, Choy JS, Alvarez T, Hacker AD: L-Arginine dependent responses to pressure and vasoactive agents by isolated pulmonary arteries from monocrotaline-treated rats. *J Appl Physiol* 79:589-593, 1995.