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2001 Program  
Investigator Initiated (2-year project)

**Project Title:** Cytoskeletal basis of cardiac rhythm disorders in the elderly

**Project Summary:** The elderly show an increased risk of sudden cardiac death (SDS), probably caused by acute electrical heart disturbances. Chronic tobacco use is associated with the increased SDS risk. Tobacco-related disturbances of the cardiovascular system remain a major health problem, especially in the state of Florida with its large population of elderly.

This research tested the hypothesis that aging of the heart alters its intracellular structure and that nicotine accelerates these anatomical changes and the decrease in cardiac potassium movement that normally occurs as we age.

**Project Successes:** The molecular and cellular basis of cardiac aging has been thought to be similar to or parallel those (molecular, cellular and electrical remodeling) that occurred with pressure overload-induced hypertrophy. However, the findings from this research have clearly demonstrated that aging induced (hypertrophy, molecular, cellular and electrical) changes in the heart are very different from changes observed in pressure overload-induced hypertrophy rat model.

### **Publications from BRP funded research in Peer Reviewed Journals:**

Yang X, Salas PJI, Pham TV, Wasserlauf BJ, Smets MJD, Myerburg RJ, Hoffman BF, Gelband H. and **Bassett AL**. Cytoskeletal actin microfilaments and the transient outward potassium current in hypertrophied rat ventriculocytes. *J Physiol*. 2002; 541:411-421.

Pham TV, Patberg KW, Smets MJ, Myerburg RG and **Bassett AL**.  $I_{to}$  transmural gradient is diminished in senescent rat left ventricle. *Circulation*. 2003;108 (Suppl 4):1V-55.

### **Presentations from BRP funded research:**

Pham TV, Patberg KW, Smets MJ, Myerburg RG and Bassett AL.  $I_{to}$  transmural gradient is diminished in senescent rat left ventricle. *Circulation* 108 (Suppl 4) 1V-55, 2003.

Miller TE, Pham TV, Smets MJ, You I, Bassett AL, Baumbach-Reardon LL, Myerburg RJ, Bishopric NH. Novel mutation (S338F in cardiac  $K_vLQT_1$  S6 domain hinders  $K_vLQT_1$  coassembly. Accepted: *American Heart Association Meeting*, Nov. 2004.