

## METHODOLOGICAL ISSUES IN RESEARCH INVOLVING GENE EXPRESSION WITH HUMAN ARTERIAL TISSUE

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**Purpose:** Gene expression research typically requires tissue samples for analysis of transcription (via mRNA levels). Bench research in this area focuses on tissue samples obtained from animals and tissue banks, and often involves laser capture microdissection. These may not provide feasible options when conducting research involving gene expression applicable to human disease. In a dissertation study examining gene expression differences between normotensive and hypertensive subjects for both the alpha1A- and beta 2-adrenoceptor genes, creativity was required in designing and implementing the study for the collection of human arterial tissue. The purpose of this poster is to describe the unique methodological issues in designing and implementing a gene expression study with human participants in which the samples cannot be de-identified, and to describe details involving collection of post-operative positive inotrope administration and hemodynamic variables in differing settings.

**Method:** This study is on-going. Sixty adult subjects between the ages of 21-70 who are scheduled to undergo coronary artery bypass graft (CABG) surgery are being recruited from the North Florida/South Georgia area. Specific aims are accomplished by: 1) Collecting internal mammary artery tissue remnants discarded from CABG patients and analyzing the tissue for differences in gene expression of the alpha1A- and beta2-ADR genes by race and diagnosis; and 2) Comparing post-operative total peripheral resistance averages from pre- and post-positive inotrope administration. All samples will be batch-analyzed. Real-Time (TaqMan) gene expression methods will be used and gene expression will be analyzed with the comparative C<sub>T</sub> (threshold cycle) method.

**Findings:** This study is on going. Current issues regarding collection of human tissue for gene expression research include those related to: 1) Research setting and scheduling; 2) IRB constraints; 3) Handling of the delicate samples; and 4) Subject-specific exclusion issues after consent. As data collection continues, more issues may arise and be presented in the poster.

**Discussion:** Research that takes science from the bench to the bedside is imperative. While animal research and preliminary human studies show promise, numerous methodological issues arise when studying the genetic basis of cardiovascular disease. Researching gene expression differences between groups has the potential to increase our understanding of the impact of transcription on phenotypic variance in HTN and adrenergically-driven vascular tone.

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