# PROJECT SUMMARY

**Title:**  Marker Assisted Selection For Ascites Resistance In Broilers

**PD:**  Rhoads, Douglas D     **Institution:**  University Of Arkansas

**CO-PD:**  Anthony, Nicholas B     **Institution:**  University Of Arkansas

**CO-PD:**  Kong, Byung W     **Institution:**  University Of Arkansas

**CO-PD:**  Schmidt, Carl     **Institution:**  University Of Delaware

**CO-PD:**  PD/PI 5 Name (Last, First, MI)     **Institution:**

**CO-PD:**  PD/PI 6 Name (Last, First, MI)     **Institution:**

**CO-PD:**  PD/PI 7 Name (Last, First, MI)     **Institution:**

This project will determine how an ascites susceptibility region we identified on chromosome Z affects production traits and how genes in this chromosomal region interact with gene networks and pathways to result in ascites.  Ascites results from pulmonary hypertension in fast growing broilers with losses world-wide estimated at over \$100M/yr.  Current control is by feed restriction which reduces potential.  Marker-Assisted-Selection using the chromosome Z region reduced ascites in a hypobaric challenge from 66% to 32%.  The region contains several genes implicated in cardiac disease or development.  We do not know what affect selection for resistance will have on critical production traits for the broiler industry.  Our hypothesis is that this region can be used to increase ascites incidence but the cost may be in one or more production traits.  Specific objectives are: 1) Assess effects of this region production traits; 2) test the same markers in commercial broiler breeder parent stocks; 3) look for other regions that are of smaller effect; 4) look for copy number variations that contribute to ascites phenotype;  5) use RNAseq on hypertrophic vs normal hearts to identify pathway components.

Potential impact: This would be the first validated marker for selection for ascites resistance and the overall cost for selection for resistance will be known.  Identification of additional regions of lesser effect will allow lines to be developed that "stack" resistance in the broilers produced by selected crosses. Objectives 3 through 5 will be critical for identification and development of these additional loci for resistance.