Karen La“Shea” Posey, PhD, Assistant Professor in the Pediatric Research Center joined the faculty at the University of Texas Medical School at Houston in September 2007. Dr. Posey is also a member of the Graduate School of Biomedical Sciences and lectures on sequencing methods in the GSBS current methods course.

Dr. Posey is a Biochemist and Molecular Biologist whose research focuses on characterizing protein interactions and pathological pathways that contribute to the dwarfing condition, pseudoachondroplasia. Pseudoachondroplasia, and the allelic disorder, Multiple Epiphyseal Dysplasia, are caused by mutations in cartilage oligomeric matrix protein (COMP), an extracellular matrix protein that functions in collagen fibrillogenesis and extracellular matrix interactions. Using the MT-COMP mouse model, that recapitulates the clinical and cellular pathology, the natural history of pseudoachondroplasia has been defined. We made found that an inflammatory process occurs in the growth plate and articular cartilage chondrocytes secondary to intracellular stress processes. This is a novel observation not previously appreciated and suggests treatment interventions. Using FDA approved drugs, over-the-counter medications and nutraceuticals, we show that the chondrocyte pathology can be decreased and restores normal chondrocyte physiology. Other approaches to decrease intracellular mutant and wild type COMP by different delivery systems are being tested. These important and novel observations will be tested in clinical trials to determine their effectiveness in the human condition.

Other areas of interest are using this mouse model to study the factors leading to osteoarthritis with the aim towards improving healing of cartilage after joint injury and the events involved in early stage osteoarthritis. Joint injury and osteoarthritis are very common painful conditions that have been largely refractory to treatment.

The long-term goal of my research is to understand these processes from the molecular level in order to optimize the timing and method of treatment interventions.