The Children’s Oncology Group (COG), a collaboration of more than 220 leading children’s hospitals, universities, and cancer centers from across the globe, is partnering with the National Cancer Institute (NCI) to plan a precision oncology clinical trial for children with relapsed and refractory solid tumors, lymphomas, and histiocytoses. Children with cancers that have not responded to standard therapies for whom a tumor sample is available for analysis from the time of relapse will be eligible for the Pediatric MATCH (Molecular Analysis for Therapy Choice) study. As on the adult NCI-MATCH trial, which opened in August 2015, DNA and RNA sequencing will be used to identify children whose tumors have a genetic abnormality for which either an approved or investigational targeted therapy exists. The results of the clinical tumor sequencing will be reported back to each child’s primary oncologist in order to help guide the family’s treatment choices and assign a Pediatric MATCH study therapy if a relevant tumor mutation is identified. In addition, procedures are being developed to analyze, interpret, and report any potential germline (inherited) cancer susceptibility mutations that are revealed by this testing. NCI and COG are actively working with numerous pharmaceutical companies to identify top drug candidates for the trial and to make these agents available for the study. The study will open with at least five arms (each with a different agent) and the flexibility to add new agents over time. Pediatric MATCH is a high priority for both the NCI and COG, with study investigators working toward the goal of launching the trial in 2016. If there are specific questions regarding the Pediatric MATCH trial, Dr. Parsons may be contacted at dwparson@txch.org