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Source: <http://wiseholding.net/dna-of-the-changemaker/>

Genetic Testing for Newborn Screening?

How Well Could Targeted Sequencing Detect Primary Newborn Screening Conditions?

The Recommended Universal Screening Panel (RUSP) is a list of conditions used in many states to guide newborn screening conducted via a heel stick; however, if genetic screening is to be used to expand newborn screening, a low cost method must be found to accomplish this task. Molecular Inversion Probes (MIPs) are being considered to complete this task, and have been designed for RUSP conditions. RUSP conditions currently have physiological tests available, and have already been vetted for return. This is why the evaluation of MIPs performance on the genes causing primary RUSP conditions was considered the first step in evaluating their use in newborn screening. To review the performance of MIPs the percent of pathogenic variants covered with at least 30X depth, read by the sequencer at least 30 times, as well as the percentage of pathogenic variants designed to be covered within a given gene was determined using the ClinVar database and the UCSC genome browser (hg38). It was found that for some genes, MIPs were capable of detecting corresponding pathogenic variants, while for other genes, MIPs would miss some variation of known pathogenic variants. A targeted search of which pathogenic variants were missed could help evaluate MIPs that need to be redesigned before using MIPs to supplement newborn screening, in order to validate this genetic test to try and optimize it for use in newborn screening. Our goal is to find an inexpensive method for genetic testing which may be used to expand newborn screening far beyond the scope of the RUSP conditions, and to provide a framework for integrating new gene-disease pairs as they are confirmed.