Optimisation of HaloPlex PCR technology for low input DNA resequencing

Abstract
A great future application for targeted resequencing is diagnostics for which the amount of isolated DNA are typically very low, such as after a biopsy. A difficulty is that cancer cells are mixed with normal cells so the frequency of mutation by sequencing is often low. Therefore, a more sensitive method is needed to avoid missing any information and to be able to distinguish sequencing errors from actual mutations. In this study, I have developed and optimised a new faster version of the HaloPlex Target enrichment technique that allows the implementation of molecular barcodes used to increase the sensitivity for rare alleles and reduce errors in sequencing data.

Keywords
PCR, next-generation sequencing, target enrichment, HaloPlex, molecular barcodes, rare allelic variants, protocol optimisation, cancer