VeraCode® Assay Designer

The VeraCode Assay Designer software streamlines the development of low- to mid-plex assays using VeraCode technology. Simply import target-specific sequence information and the software outputs robust, multiplex designs ready for use with VeraCode Universal Capture Beads.

Highlights

- **Streamlined Interface**
  After simple target input, software automatically designs multiplex assays
- **Flexible Assay Design**
  Automatically incorporate capture bead sequence or choose to manually assign beadcodes
- **Customizable Design Parameters**
  Use pre-set criteria or manually select parameters for increased control

Introduction

Through automated or user-directed design, the web-based VeraCode Assay Designer generates multiplex assay designs compatible with VeraCode Universal Capture Beads. In addition to developing SNP genotyping assays, the software can target sequences containing insertions and deletions, complementing the open nature of the VeraCode platform. Easily export complete assay designs from the software, for a straightforward purchasing of consumables.

Streamlined Assay Design

The Assay Designer's user-friendly interface simplifies the multiplex primer design process from sequence targeting through assay finalization. Begin by importing sequence targets in either FASTA format or by dbSNP accession number (Figure 1). Then choose from three primary methods to complete assay development (Table 1). Available options include pre-defined or user-customized assay parameters governing a host of criteria for primer design, including melting temperature (Tm), GC content, repeat run length, and a variety of alignment rules. During parameter selection, users can automate beadcode assignments or manually assign targets to specific capture beads. Once the workflow mode and parameter settings are chosen, the software iteratively evaluates each multiplex component as it is added to the assay pool, minimizing the possibility of duplex and cross-reactivity issues. Completed assay designs are presented for user approval (Figure 2); files are generated and made available for download to simplify assay reagent ordering.

With the Assay Designer software, users can incorporate existing, proven primer sequences together with new sequence targets to generate multiplexed assay designs. In addition, secure accounts enable users to evaluate externally designed extension and PCR primers and access previous design runs and assay parameter settings.

Figure 1: Simply Input Your Target-Specific Sequence Information

Table 1: Choose from Three Primary Methods of Primer Design

Mode	Automation Level	Description
Batch	Complete	Assay design performed on the server; user is notified via email when design is complete
Express	Partial	Real-time monitoring of the design process with minimal input from user
Custom	Manual	Guided "hands-on" process allowing the selection of specific regions in the targeted sequences and combinations of extension and PCR primer designs

AGAATGATAACAGTAACACACTTCTGTTAACCTTAAGATTACTTGATCCACTGATTCAACGTACCGTAACGAACGTATCAATTGAGACTAAATATTAACGTACCATTAAGAGCTACCGTCTTCTGTTAACCTTAAGATTACTTGATCCACTGATTCAAC
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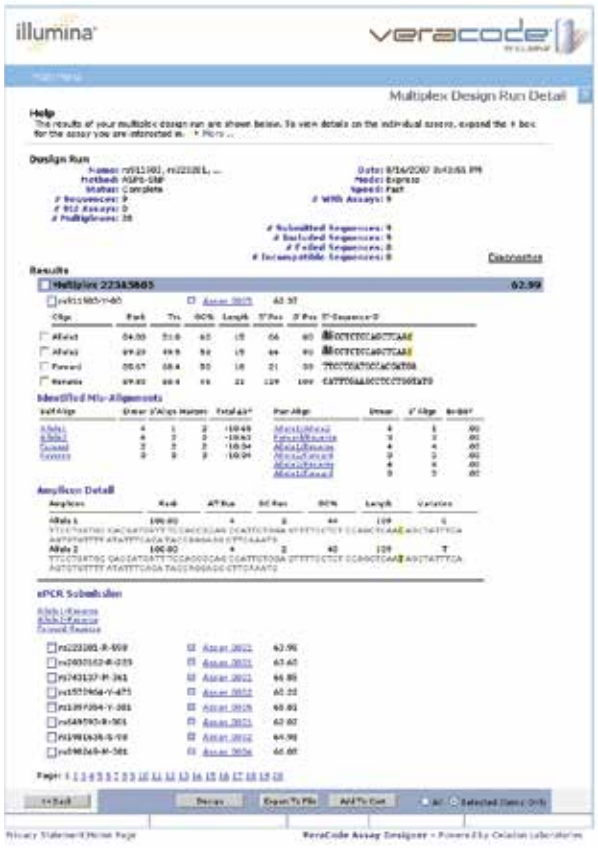
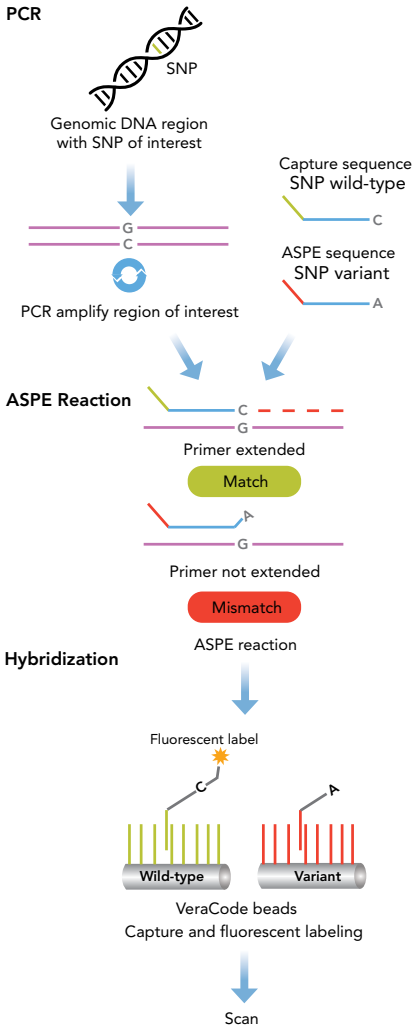
Figure 2: Primer Design Results



Example: Precise Genotyping Calls Made using ASPE on the VeraCode Platform



Each VeraCode Capture Bead contains a unique 23-mer oligonucleotide immobilized on its surface. Designing ASPE extension primers that include complementary sequences to these capture oligos allows exclusive targeting of specific beads. Primers that match the targeted sequence will extend preferentially. When a labeled target hybridizes with the complementary sequence on the assigned VeraCode microbead, the target is identified through the embedded holographic digital code.

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