VeraCode® Universal Capture Bead Sets

Illumina's Universal Capture Bead Sets enable the development of flexible, multiplexed SNP genotyping assays. Bead sets with pre-coupled capture oligonucleotides provide convenience, speed, and ease of use.

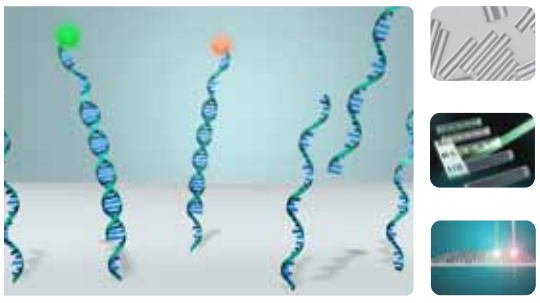
Highlights

- **Flexible Multiplex Assays**
  Unique VeraCode identifiers for each bead type
- **Convenient**
  High density capture oligonucleotides pre-immobilized on beads
- **Robust Capture Sequences**
  Capture sequences pre-screened to avoid cross-hybridization within the genome and for equivalent T_m
- **Flexible Design**
  Ideal for customized assay development with the BeadXpress® two-color detection system

Introduction

True flexibility in the development of multiplex SNP genotyping assays can now be achieved with VeraCode Universal Capture Bead Sets by Illumina. Using these highly stable, uniquely coded bead sets that are precoupled with capture oligonucleotides, researchers can develop their own assays based on desired multiplex and preferred assay methodology. The VeraCode Universal Capture Bead Sets with the BeadXpress Reader enable laboratories to quickly develop tests on a truly open platform.

Figure 1: VeraCode Universal Capture Bead Set



Oligonucleotide capture probes are covalently linked to cylindrical silicon microbeads for SNP genotyping assays (left). The insets (right) show actual microbeads taken using a light microscope (top) and rendered images of laser scanning (middle, bottom).

VeraCode Universal Capture Beads

Each Universal Capture Bead type employs a uniquely coded VeraCode microbead (Figure 1). The code, inscribed within each microbead, is used downstream to track the specific analyte or genotype of interest in the multiplex reaction.

Capture oligonucleotides are immobilized to the surface of each microbead at a high density. Each 23-mer oligonucleotide used for the VeraCode Universal Capture Beads was pre-screened for genome and capture-oligonucleotide cross-reactivity based on melting temperature (T_m).

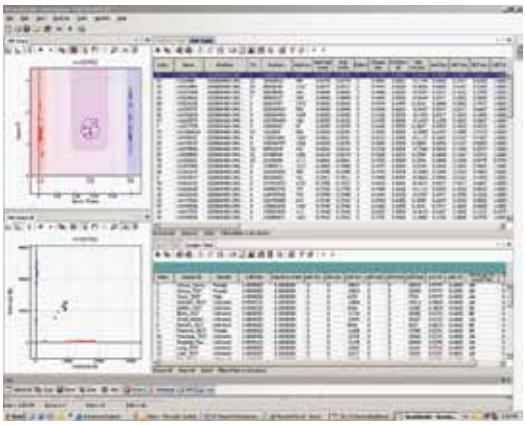
Assays developed with VeraCode Universal Capture Beads benefit from solution-phase kinetics and the ability to perform wash steps within the same plate, reducing hands-on time and ancillary consumables. Analytes can be labeled with standard fluorescent reporters such as Cy3, Cy5, or Alexa Fluor dyes. During analysis, the type of fluorescence and code inscription for each microbead are detected by the BeadXpress Reader. Data analysis for multiplexed genotyping assays is simplified with the GenomeStudio Data Analysis Software Genotyping Module (Figure 2).

Convenient Packaging and Kitting

VeraCode Universal Capture Bead Sets are conveniently packaged in 2.0 ml tubes containing sufficient beads to process a 96-well microplate with replicates of 30 beads per bead type in each well. Multiplexing is achieved by pooling bead types containing different codes: up to 144 bead types per well (Figure 3).

To minimize the hands-on time necessary to dispense the individually coded VeraCode Universal Capture Beads into microplates for multiplex assays, Illumina developed the VeraCode Bead Kitting System for rapid and accurate plating of microbeads. The VeraCode Bead Kitting System offers a unique approach to rapidly and accurately distributing VeraCode microbeads into standard 96-well microplates or stripwell plates. This workflow for virtually eliminates manual pipetting. Vials of uniquely coded VeraCode microbeads are pooled into the Bead Kitting System, mixed and distributed in just a fraction of the time it would take to manually pipette. Because VeraCode beads are highly stable, several plates can be kitted in advance and stored for later use. This is of particular benefit in high-throughput laboratories.

Figure 2: GenomeStudio Data Analysis Software



The GenomeStudio Data Analysis Software Genotyping Module simplifies data analysis by providing multiple tools for evaluating samples.

Figure 3: VeraCode Bead Kitting System

Universal Beads are distributed into 2.0 ml tubes for easy handling and rapid plating.

Product*	Capture Sequence	No. of Reactions	Catalog No.
VeraCode Universal Bead Set, Code 5440	TTTCGTAACCCGTGCGAAGTGCC	6 × 96 reactions	VC-301-5440
VeraCode Universal Bead Set, Code 5632	TACGATGGTACGGTCGCTGTGTA	6 × 96 reactions	VC-301-5632
VeraCode Universal Bead Set, Code 5634	TGGTTAGCGATCATACCGGCACT	6 × 96 reactions	VC-301-5634

*Please contact Customer Solutions for the complete list of the > 144 Universal Bead types available.

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Pub. No. 170-2007-003 Current as of 3 November 2010

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