



After hybridization, the BeadXpress® Reader is used for microbead code identification and fluorescent signal detection. During scanning, a laser beam penetrates the digitally inscribed VeraCode microbead to generate a unique code image, which allows for rapid and highly specific detection. Data generated using the BeadXpress Reader can be analyzed with Illumina's GenomeStudio™ data analysis software, which performs automated genotype clustering and calling.

### Typical Results

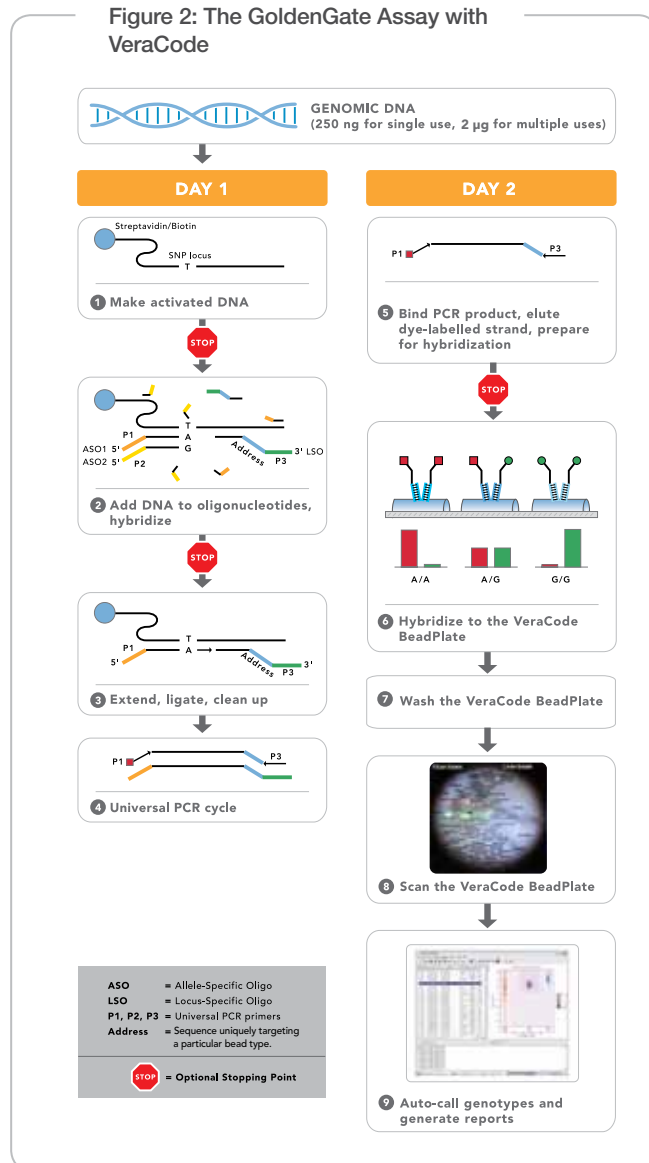
The GoldenGate Assay and the highly specific VeraCode technology exhibit superior consistency, reproducibility, and success rate. Results of laboratory testing of multiple plates at 96-plex and 384-plex scale are shown in Table 1.

**Table 1: Typical GoldenGate Assay Performance**

96-plex	
Call Rate	> 99.9%
Heritability	> 99.9%
DNA Success Rate	> 99%
Locus Success Rate	> 99%
384-plex	
Call Rate	> 99.9%
Reproducibility	> 99.9%
Heritability	> 99.9%
DNA Success Rate	> 99%
Locus Success Rate	> 98%

GoldenGate Assays at 48-, 144-, 192-, and 384-plex meet the same performance specifications.

**Figure 2: The GoldenGate Assay with VeraCode**



### GoldenGate Assay Controls

The GoldenGate Genotyping Assay includes 48 assay controls, lending a high level of confidence and the ability to troubleshoot errors such as PCR and hybridization failures (Figure 3). VeraCode microbead digital coding serves a dual role of enabling built-in assay controls as well as internal tracking controls. Illumina's GenomeStudio data analysis software provides a dashboard for simple viewing of controls performance.

### References

1. Fan JB, Gunderson KL, Bibikova M, Yeakley JM, Chen J, et al. (2006) Illumina universal bead arrays. *Methods Enzymol*, 410: 57–73.
2. The International HapMap Consortium. (2003) The International HapMap Project. *Nature* 426: 789-796.
3. Lin CH, Yeakley JM, McDaniel TK, Shen R. (2009) Medium- to High-Throughput SNP Genotyping Using VeraCode Microbeads. *Methods Mol Biol*. 496:129–42.
4. Kulathinal RJ, Bennett SM, Fitzpatrick CL, Noor MAF. (2008) Fine-scale mapping of recombination rate in *Drosophila* refines its correlation to diversity and divergence. *PNAS* 105(29): 10051–10056.
5. Cooper GM, Johnson JA, Langae TY, Feng H, Stanaway IB, et al. (2008) A genome-wide scan for common genetic variants with a large influence on warfarin maintenance dose. *Blood* 112(4): 1022-7.
6. Is Genetic Testing the Next Revolution in Agriculture? [http://www.illumina.com/emailers/icomunitySep08/iC\\_Sep08\\_GeneticTesting.pdf](http://www.illumina.com/emailers/icomunitySep08/iC_Sep08_GeneticTesting.pdf).
7. Using Genetics to Uncover Cat Secrets. [http://www.illumina.com/emailers/icomunitySep08/iC\\_Sep08\\_CatSecrets.pdf](http://www.illumina.com/emailers/icomunitySep08/iC_Sep08_CatSecrets.pdf).

