Supplementary information

Visual SNP Genotyping using Asymmetric PCR and Split DNA Enzymes

1. Investigating the optimal target length

Procedures: 1X in-house PCR buffer (10 mM Tris-HCl pH 8.3, 40 mM NaCl) were added to the visual genotyping assay. Target DNA contains 1 μM of rs2304682-G (34mer, 50mer or 80mer). All tubes were tested with 1μM of both α and β C-probes followed by addition of hemin (125nm), H_2O_2 (1mM) and ABTS (1mM) to a total volume of 60 μL.

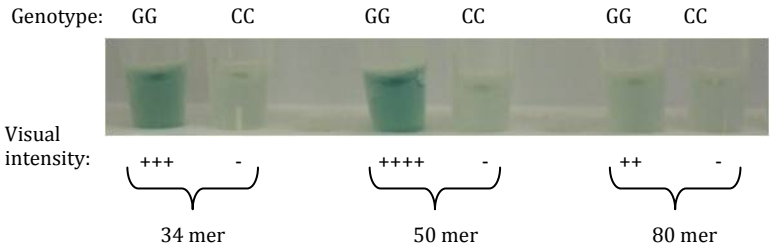


Fig S1. Visual assay tested with different target lengths.. 1 μM of 34-mer, 50-mer & 80-mer of rs2304682-G (Sample 1, 3 & 5) and Rs2304682-C (Sample 2, 4 & 6) in reaction buffer consisting 1 μM of both α and β C-probes respectively, in the presence of 20 mM of KCl.

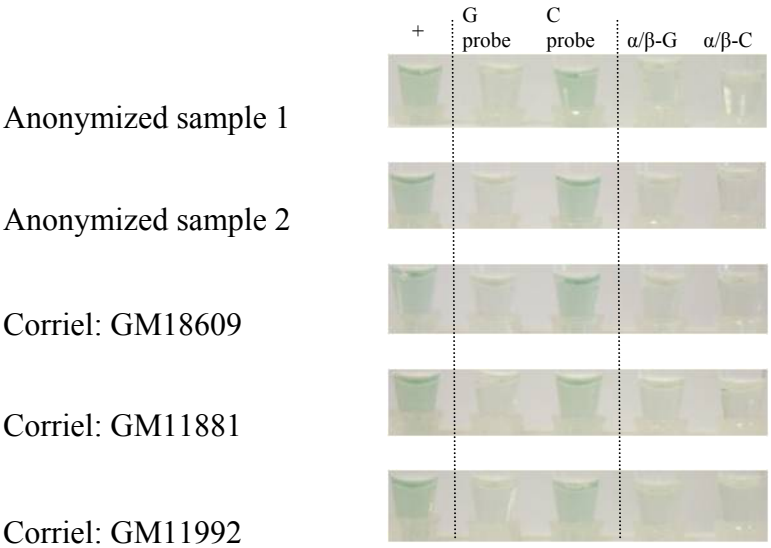
2. Table of Oligonucleotide Sequences used in study.

Table S1: Oligonucleotide sequences used in this study. The base at the SNP site is highlighted and underlined.

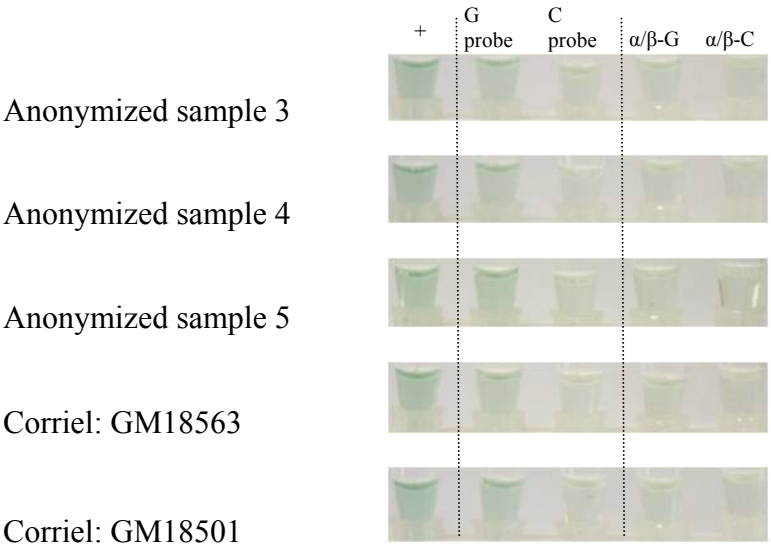
Identity	**Sequences**
Left primer	5' – TCT GCT GAG GCT CTC CTG TT – 3'
Right primer	5' – CTG CTT TGA AGT CCA CGT AGC – 3'
α probe	5' – CTC TCC TGT TG-$(OCH_2CH_2)_3OPO_3$-G GGT AGG G – 3'
β C-probe	5' – GGG TTG GG-$(OCH_2CH_2)_3OPO_3$-T GCT cGG T – 3'
β G-probe	5' – GGG TTG GG-$(OCH_2CH_2)_3OPO_3$-T GCT gGG T – 3'
rs2304682-G, 34mer	5' – TCC ACG TAG CAC CgA GCA CAA CAG GAG AGC CTC A – 3'
rs2304682-C, 34mer	5' – TCC ACG TAG CAC CcA GCA CAA CAG GAG AGC CTC A – 3'
rs2304682-G, 50mer	5' – GAA GTC CAC GTA GCA CCg AGC ACA ACA GGA GAG CCT CAG CAG ATG TTT GC – 3'
rs2304682-C, 50mer	5' – GAA GTC CAC GTA GCA CCc AGC ACA ACA GGA GAG CCT CAG CAG ATG TTT GC – 3'
rs2304682-G, 80mer	5' – CTT GAT ACC CCA ATT CCT GCT TTG AAG TCC ACG TAG CAC CgA GCA CAA CAG GAG AGC CTC AGC AGA TGT TTG CTG AGT GA – 3'
rs2304682-C, 80mer	5' – CTT GAT ACC CCA ATT CCT GCT TTG AAG TCC ACG TAG CAC CcA GCA CAA CAG GAG AGC CTC AGC AGA TGT TTG CTG AGT GA – 3'
Intact DNAzyme/ Positive Control	5' – GGG TAG GGC GGG TTG GG – 3'

3. The image results of 15 human DNA samples used in this study. (7 in house consented samples with DNA extracted from blood, and 8 samples from Corriel laboratories extracted from immortalized cell lines)

A) GG Samples



B) CC Samples



C) GC Samples

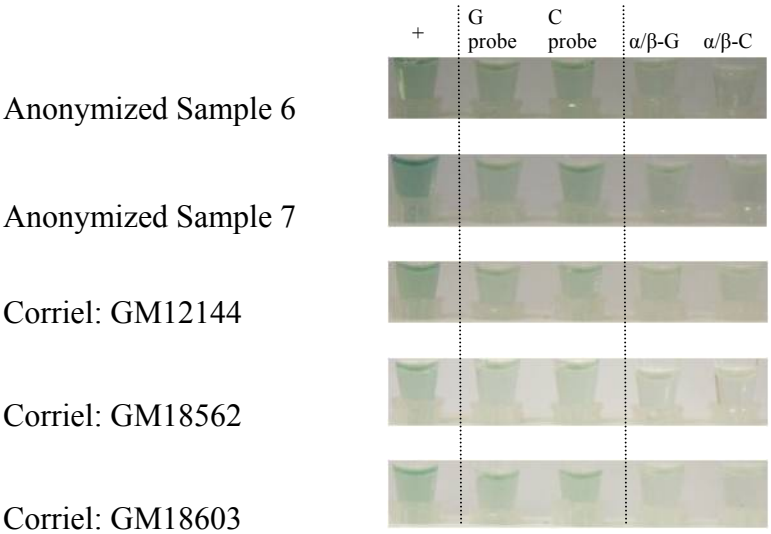


Fig S2. Visual SNP genotyping for SNP rs2304682, across 15 different samples representing all three possible genotypes, **A)** GG, **B)** CC and **C)** GC. The intact peroxidase-like DNAzyme was used as a positive control, at a concentration of 0.15 μM. All PCR samples started with genomic DNA and were tested in presence of either β-'G' probes or β-'C' probes. Negative controls comprised split aptamers α and β-G probes or β-C probes in absence of target DNA. The absorbance readings of this dataset is presented in the maintext, Figure 4b.