SUPPLEMENTARY MATERIAL

Figure S1 – *Pfhrp2* assay performance using serially diluted *P. falciparum* 3D7 strain DNA. Elongation temperatures were varied as listed below. All other reaction conditions are specified in Table 1.
Figure S2 – Pfhrp3 assay performance using serially diluted *P. falciparum* 3D7 strain DNA. Elongation temperatures were varied as listed below. All other reaction conditions are specified in Table 1.
**Figure S3** – Representative agarose gel electrophoresis depicting unexpected spurious bands from Dd2 strain (pfhrp2-deleted) control DNA. PCR targeting pfhrp2 exon 1/2 (assay 1 outer) yielded a spurious ~300bp band from serial dilutions of pfhrp2-deleted Dd2 strain control DNA at all three elongation temperatures.
Figure S4 – Representative agarose gel electrophoresis depicting unexpected spurious bands from HB3 strain (pfhrp3-deleted) control DNA. PCR targeting pfhrp3 exon 1/2 (assay 5) yielded spurious bands at ~300, 400, and 800bp from serial dilutions of Dd2 strain control DNA using optimized elongation temperatures (Table 1).
Figure S5 – The sequence of pfhrp2 exon 1/2 (assay 1) PCR product aligns to pfhrp3, due to spurious PCR amplification of the Dd2 pfhrp3 gene. PCR was performed using 0.01ng/μL of 3D7 (pfhrp2-positive) and Dd2 (pfhrp2-negative) control DNA, respectively (see Figure S3), followed by Sanger sequencing of amplicons. Reference sequences from the consensus 3D7 (v3.0) genome for pfhrp2 and pfhrp3 are displayed on the top two rows (REF), from 5'-->3', with capital letters for coding regions and genetic coordinates in reference to the pfhrp2 gene. Identical bases are indicated by a period (·), missing bases by a dash (-), substitutions by the discordant base. PCR product sequence contigs are highlighted as follows: 3D7 control DNA (light gray); Dd2 control DNA (dark gray).
**Figure S6** – The sequences of *pfhr3* exon 1/2 (assay 5) PCR product align to *pfhrp2*, due to spurious PCR amplification of the HB3 *pfhrp2* gene. PCR was performed using 0.01ng/μL of 3D7 (*pfhrp3*-positive) and HB3 (*pfhrp3*-negative) control DNA, respectively (see Figure S4), followed by Sanger sequencing of amplicons. Reference sequences from the consensus 3D7 (v3.0) genome for *pfhrp2* and *pfhrp3* are displayed on the top two rows (REF), from 5’->3’, with capital letters for coding regions and genetic coordinates in reference to the *pfhrp3* gene. Identical bases are indicated by a period (.), missing bases by a dash (-), substitutions by the discordant base. PCR product sequence contigs are highlighted as follows: 3D7 control DNA (medium gray) and HB3 control DNA 300bp fragment (light gray), 400bp fragment (medium gray), and 800bp fragment (dark gray).