



**Figure S2. MIP accuracy and efficiency were tested on a range of samples.** (A) The false positive rates of MIPs were investigated using a series of probes targeting 172 genomic loci. A mean raw false positive read rate of  $0.0651\% \pm 0.0696\%$  was observed with a maximum of 0.543%. By filtering reads at the SNV site for quality scores of Phred  $\geq 30$ , the false positive rate was decreased to a mean of  $0.0122\% \pm 0.0129\%$  with a maximum value of 0.0785%. (B) MIP capture and library preparation produces a high concordance of sequence reads vs. UMIs. Using 24 sets of MIP capture reactions with the same 89 MIPs, the observed mean rate of UMI duplication via PCR is  $1.011 \pm 0.003$ . The ratio of reads per tag was not correlated to the total reads per MIP when analysing the same 24 sets by total read count on a per MIP per capture reaction basis.