

# quality starting material for your downstream applications

DNA extraction | whole-genome amplification (WGA)

deCODE offers DNA extraction as a complement to our genotyping and sequencing services or as a stand-alone service. With our services you can rely on an experienced, world-class research team dedicated to the highest quality standards and customer service.

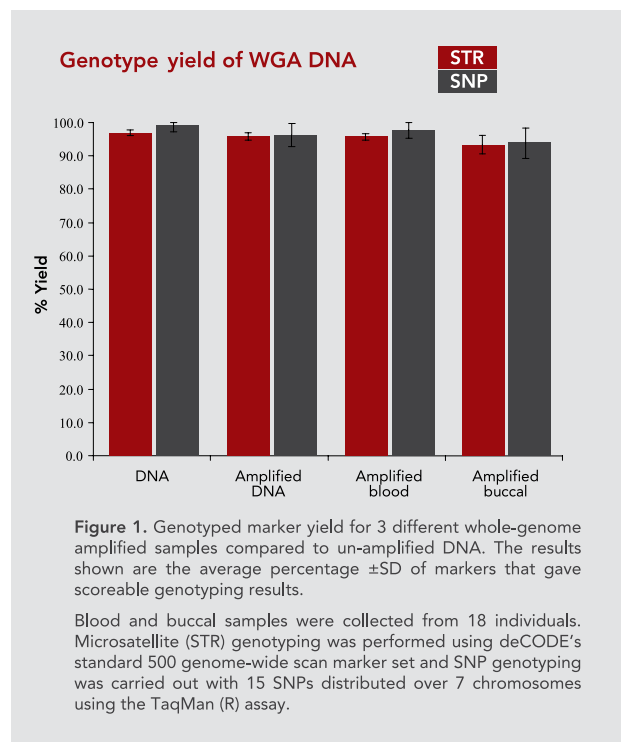
## Extracting DNA from your tissues

Our genomic DNA extraction services are designed to meet your demands for high-quality DNA suitable for several downstream applications, including PCR, RT-PCR, genotyping, sequencing, Southern blot and more.

deCODE has isolated DNA from over 650,000 blood samples and has an efficient sample tracking system. deCODE has stored and tracked over 1,700,000 blood and various tissue samples through its sample database. Samples, plates, tubes, instruments, and human operators are labeled with barcodes allowing performance tracking and preventing potential errors in sample handling.

We accept various types of samples for DNA extraction. The most common ones are whole-blood and buffy coat samples. DNA is routinely extracted from 5-10ml whole-blood or buffy coat isolated from 4-10ml blood. Different sample sizes can be processed upon request.

For DNA extraction from whole-blood, we use an in-house semi-automated high-throughput protocol based on DNA Blood purification technology from Qiagen and/or the chemagic DNA Blood Kit special from Chemagen. For DNA extraction from buffy coat samples, we apply the Chemagen kits.



The typical yield is 50-300 $\mu$ g genomic DNA depending on the sample size and quality. We provide a DNA quality report with each sample, including the A260/A280 ratio and DNA concentration measured by OD. The standard concentration delivered is 100ng/ $\mu$ l in TE buffer.

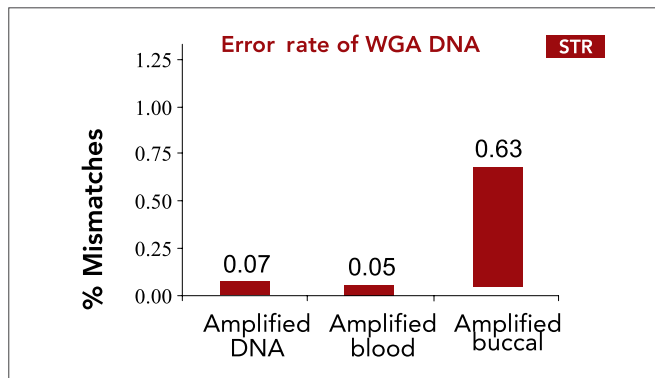
## A solution to the problem of scarce DNA

Our whole-genome amplification (WGA) services use an in-house optimized high-throughput protocol based on Multiple Displacement Amplification (MDA), which amplifies genomic DNA in an isothermal reaction.

The method uses the Phi29 DNA polymerase, a unique, highly progressive enzyme with excellent strand displacement activity, which in combination with random-sequence hexamer primers is able to amplify DNA.

Our whole-genome amplification (WGA) services are designed to enable our clients to rescue precious samples with limited amount of DNA.

The average size of the amplified product is >10kb with minimal amplification bias across the genome. Phi29 is a high-fidelity DNA polymerase with an error rate of only 1 in  $10^6$ - $10^7$ . We have validated our protocol for both microsatellite and SNP genotyping to ensure it produces high-quality DNA for genotyping (Figure 1 and 2).



**Figure 2.** Mismatches between genotypes in un-amplified DNA and whole-genome amplified DNA from 3 different sample types. The results shown represent the percentage of mismatch genotypes detected among all scoreable genotypes generated for the 3 different WGA sample types as compared to un-amplified DNA.

We provide tubes, plates, barcode labels, and boxes for shipping your samples and comprehensive instructions on how to prepare your samples. We perform a quality check by genotyping 10 highly informative microsatellite markers, distributed over 10 chromosomes including chromosome X.

We offer 3 different scales; 10µg, 40µg, and 100µg; from various starting materials, including genomic DNA, blood, buccal swabs, and more. For genomic DNA, we need as little as 80ng for 10µg and 40µg reactions and 175ng for a 100µg reaction.



#### DNA extraction

- High-quality genomic DNA extraction from whole-blood or buffy coat samples
- Production of high-quality DNA free of contaminants and inhibitors for reliable downstream applications
- Rapid turnaround based on our semi-automated high-throughput DNA extraction platform

#### Whole-genome amplification

- Obtain micrograms of high-molecular-weight DNA from nanogram amounts of starting material
- Highly uniform amplification – minimal amplification bias across the whole genome
- Produces high-quality DNA for several downstream applications, including microsatellite and SNP genotyping
- Scalable service - 10µg to 100µg from a variety of starting materials
- Comprehensive quality control report with each sample – permitting reliable prediction for the success of downstream application
- The DNA returned is quantified using the PicoGreen method
- Rely on an experienced, world-class research team dedicated to the highest quality standards and customer service