Genomic DNA isolation to amplification in one well

ChargeSwitch® Direct 96 gDNA Kit

→ Obtain pure genomic DNA without reagents that can inhibit PCR

→ Isolate from very small samples—save precious samples for other applications

→ Isolate and amplify in one microplate—minimize contamination and sample loss

Why elute? Streamline your workflow and get ultrapure gDNA

No beads, no membranes, no centrifugation, no vacuum manifold—not even a transfer between tubes or plates. Get your results faster than ever by going directly from genomic DNA (gDNA) isolation to PCR in one well, with the ChargeSwitch® Direct 96 gDNA Kit. ChargeSwitch® Technology features a charged nucleic acid–binding surface that is switchable by changing the pH of the surrounding buffer. The microplates included in the ChargeSwitch® Direct 96 gDNA Kit are coated with this unique ChargeSwitch® surface. At low pH, the surface is positively charged and binds the negatively charged nucleic acid backbone, allowing proteins and other contaminants to be washed away. ChargeSwitch® Kits use aqueous buffers at every step and avoid the use of guanidine and ethanol that can inhibit downstream applications (Figure 1). The purified DNA can be subjected directly, in the same microplate wells, to multiplex PCR, qPCR, STR analysis, or sequencing.

The ChargeSwitch® Direct 96 gDNA Kit is automation compatible, and gDNA can be isolated from as little as 10 µl of whole blood or 1–2 × 10^4 cells per well. The semi-skirted microplates fit into most thermal cyclers and real-time cyclers.

Consistent, reliable isolation from animal blood

The ChargeSwitch® Direct 96 gDNA Kit has been tested on blood from a variety of species, including human, and with several anticoagulants (Figure 2). Amplification from gDNA isolated with the kit was consistent and reproducible with replicate samples. Starting samples included nucleated (chicken) blood and heparin-stabilized blood.

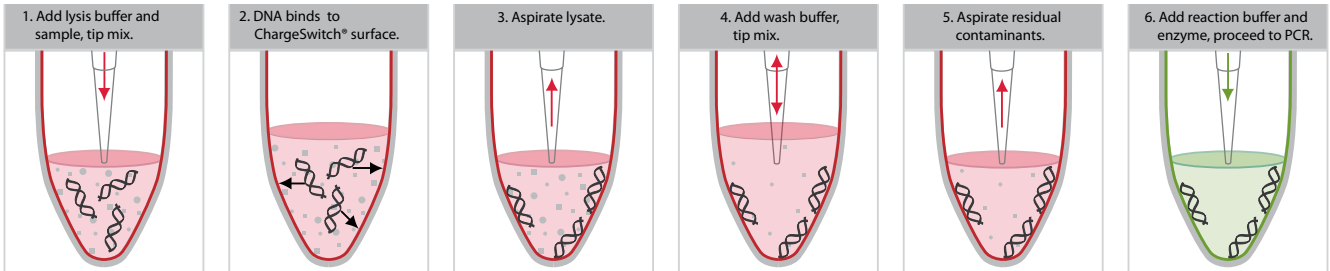

Figure 1—From sample lysis to PCR in just one well. Using the ChargeSwitch® Direct 96 gDNA Kit, you can lyse and purify gDNA from up to 96 samples in <45 minutes. Add PCR components directly to the wells of the same plate. The elimination of transfer steps means a reduced risk of contamination and sample mix-ups.

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Reproducible isolation from small samples

Cells cultured in 96-well plates pose significant challenges for extracting DNA quickly and in sufficient quantity and concentration. One example of this is when screening for stable transfectants or the integration of viral vectors in cultured cells. With as few as 10,000 cells per well lysed using the ChargeSwitch® Direct 96 gDNA Kit, targets were consistently amplified to comparable gel band intensities (Figure 3).

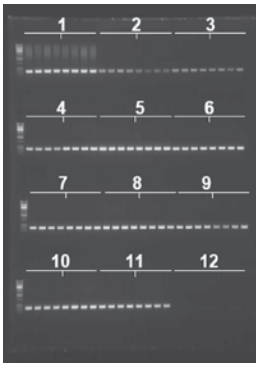

Figure 2—Amplification of gDNA from blood of various species. For each 10-µl blood sample, gDNA was isolated and then amplified using primers for the conserved 28S rRNA gene. For each source listed below, four different samples were tested, and each sample was tested in duplicate. Animal species (and anticoagulants):

1. Chicken
2. Guinea pig
3. Horse
4. Human
5. Mouse
6. Rabbit
7. Rat
8. Sheep (EDTA)
9. Sheep (heparin)
10. Sheep (citrate)
11. Sheep (Alsever's)
12. Control (no blood)

Reproducible gDNA templates for qPCR

Real-time quantitative PCR, which is highly sensitive to both the quantity and quality of DNA templates, was used to demonstrate the performance of the ChargeSwitch® Direct 96 gDNA Kit. Amplification and melting curves for eight different blood samples were tightly superimposed, indicating both the purity and consistency of gDNA isolated using the kit (Figure 4).

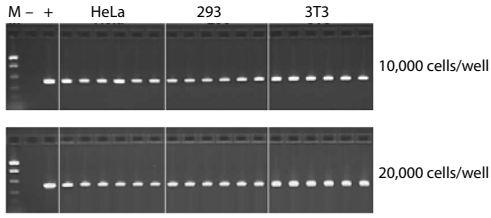

Figure 3—Consistent amplification of gDNA from small samples of mammalian cells. HeLa, 293, and 3T3 mammalian cells in the indicated quantities were resuspended in 10 µl of PBS, and gDNA was purified using the ChargeSwitch® Direct 96 gDNA Kit. PCR was carried out directly in the purification plate using primers for the 28S rRNA gene. First three lanes from the left are E-Gel® Low Range Quantitative DNA Ladder (M), negative control (–), and positive control 28S rRNA gene template (+), respectively.

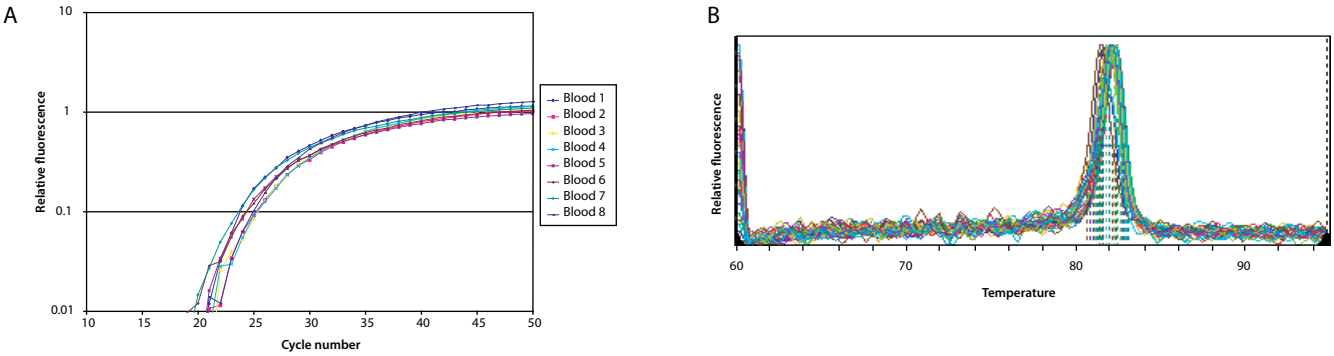

Figure 4—Real-time PCR performance of gDNA isolated using the ChargeSwitch® Direct 96 gDNA Kit. Quantitative PCR was carried out on the DNA Engine Opticon® 2 System (Bio-Rad Laboratories). **A.** Real-time PCR using gDNA isolated from eight different 10-µl human blood samples and amplified directly in the ChargeSwitch® Direct gDNA Plate. PCR was performed using the Certified LUX™ Primer Set for the 18S rRNA gene and Platinum® Quantitative PCR SuperMix-UDG. The eight samples had comparable threshold cycles (C_t). **B.** Melting curve analysis of the PCR products was consistent with the target amplicon's melting temperature of 82°C.

For more information, visit www.invitrogen.com/nap.

Product	Quantity	Cat. no.
ChargeSwitch® Direct 96 gDNA Kit	96 preps	CS11205
	960 preps	CS11206

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