

# iSWAB-Blood

## Blood Drop Collection Simplified



iSWAB-Blood is an efficient system for the concentration and long term room temperature stabilization of gDNA and analytes from blood drops. Investigation of metabolic genetic disorders has traditionally been performed by collecting several blood drops through a minimally invasive procedure called a heel prick. This technique involves spotting 5-6 blood drops on filter paper.

Despite its widespread use, there are several drawbacks to these sample collection methods:

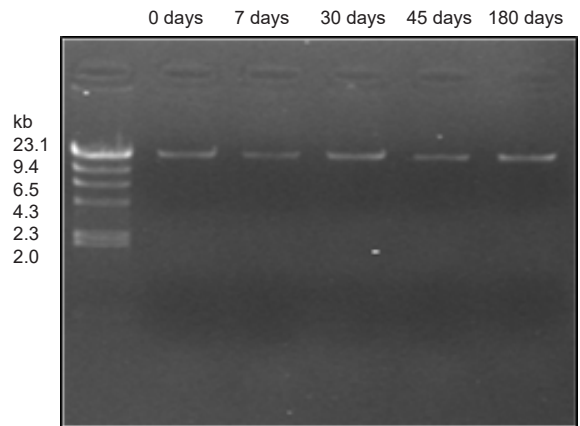
- Long drying time after collection (2-3 hrs)
- Proper collection requires the blood drop to go through both sides of the paper within a designated circle (30-40% resampling rate)
- Low yields and highly fragmented DNA (< 5 kb) unsuitable for NGS, epigenetics, or microarray analysis
- Laborious and time consuming sample processing including card punching and placement into a tube or 96-well plate

iSWAB-Blood overcomes the limitations of filter-paper based blood drop collection. The device is equipped with a squeezing insert to enable the efficient removal of blood from the swab, and into a proprietary DNA, RNA, and metabolite stabilizing solution for long term room temperature storage and transport.

## Features & Benefits

- Collect - Concentrate - Transport - Extract - Analyze - Store: All within a single tube: Reduce processing time, storage real estate
- Liquid blood collection: No drying time required, <5 min collection process
- Collected sample is ready for room temperature shipment and long term storage with no special conditions (i.e. humidity control or air tight envelopes)
- Unlike filter cards, extracting DNA or measuring blood analytes does not require any front end prep and/or card punching
- DNA extraction can be performed with a standard whole blood purification protocol, yielding 2- 8 µg of high MW gDNA)
- Easy access to the sample for screening and/or in depth analysis purposes (genomics & metabolomics) – reduces resampling and assay failures
- Manual and automation compatible with no pre-prep process
- LIMS-compatible unique barcodes included on each iSWAB device for efficient traceability, chain of custody, and storage purposes

## Real Time Stability Testing at Room Temperature



DNA extraction was performed with QiaAMP Blood Extraction Kit. Pooled iSWAB-Blood samples (n=24) was subjected to actual non-refrigerated airfreight sample shipping conditions, then stored at room temperature. An aliquate of 200 µL from the pooled sample was processed at each time point with QiaAMP Blood mini (whole blood protocol), then 2 µL of 100 µL elute was used for electrophoresis.

## M High Molecular Weight gDNA from iSWAB-Blood collected samples M



Agarose gel (0.8%) electrophoresis of gDNA samples isolated from 100 µL of Human blood collected with iSWAB-Blood Spot using QiaAMP Blood kit. 4 µL of 100 µL elute was used for electrophoresis. M: λDNA/Hind III+EcoR I

**iSWAB-Blood collected samples provide long fragment genomic double stranded DNA**

# iSWAB-Blood vs Dry Blood Spot Cards

Product	Average Yield <sup>1</sup>	Fragment Size	A260/280 <sup>2</sup>	Processing Time <sup>3</sup>	Applications	Storage Temp	Storage Condition Restriction	Transportation Temp and Restriction
ISWAB-Blood	3 µg	>20 Kb	1.85	45 min	PCR, QPCR, sequencing, microarray genotyping	Room Temp	None	Room Temp
EDTA-Blood	4 µg	>20 Kb	1.80	45 min	PCR, QPCR, sequencing, microarray genotyping	2-8°C or -20°C	Regulated temperature control	2-8°C
FTA/Guthrie Card	150 ng	<2 Kb	1.20	180 min	PCR, QPCR, DNA sequencing, genotyping	Room Temp or 4°C	Air tight, humidity free and regulated temperature control	Room Temp, airtight envelope with desiccant for humidity control
FTA-Elute Card	45 ng	<5 Kb	1.40	180 min	PCR	Room Temp or 4°C	Air tight, humidity free and regulated temperature control	Room Temp, airtight envelope with desiccant for humidity control
903 Card	80 ng	< 2 kb	1.20	180 min	PCR	Room Temp or 4°C	Air tight, humidity free and regulated temperature control	Room Temp, airtight envelope with desiccant for humidity control

1 Yields determined by Qubit: Average yield of volume equivalent of 250 µL volume of blood or dried blood spots were processed with a QIAamp Blood Mini Kit.

2 Measured by Nanodrop

3 Sample processing includes dry time and prepping before extraction / 96 samples

**iSWAB-Blood outperforms filter paper-based blood spot collection in all aspects**

**iSWAB-Blood collection technology is an efficient system for concentration and long term room temperature stabilization of gDNA and analytes from whole blood**

## References:

Stangegaard, M., Børsting, C., Ferrero-Miliani, L., Frank-Hansen, R., Poulsen, L., Anders J. Hansen, A. J., and Morling, N. Evaluation of Four Automated Protocols for Extraction of DNA from FTA Cards. *Journal of Laboratory Automation* 18(5) 404–410, 2013

Ghantous, A., Saffery, R., Cros, M. P., Ponsonby, A. L., Irschfeld, S., Kasten, C., Dwyer, T., Herczeg, Z., and Hernandez-Vargas, H. Optimized DNA extraction from neonatal dried blood spots: application in methylome profiling. *BMC Biotechnology*, 14:60, 2014

McClure, M. C., McKay, S. D., Schnabel, R. D., and Taylor, J. F. Assessment of DNA extracted from FTA® cards for use on the Illumina iSelect BeadChip. *BMC Research Notes*, 2:107, 2009

Beyan, H., Down, T. A., Ramagopalan, S. V., Uvebrant, K., Nilsson, A., Holland, M. L., Gemma, C., Giovannoni, G., Boehm, B. O., Ebers, G. C., Lernmark, A., Cilio, C. M., Leslie, R. D., and Vardhman, K. Guthrie card methylomics identifies temporally stable epialleles that are present at birth in humans. *Genome Research*, 22:2138–2145, 2012

Part No.	Product	Collection Volume
ISWAB-BL-250	iSWAB-Blood Collection Kit, 600 µL	600 µL
ISBL-T-250-R	iSWAB Blood Collection Tube Rack, 600 µL x 50	600 µL