sbeadex Lightning Cell DNA Kit

Simple and high-speed DNA purification from cells

The new sbeadex Lightning Cell DNA Kit has been developed to facilitate rapid and simple purification of high-quality DNA from cells. The kit is suitable for DNA isolation from ≤1 × 10^6 cells per reaction. Workflows that require screening of numerous cell culture samples, such as quality control of gene editing events, will greatly benefit from this innovative Lightning technology.

sbeadex™ Lightning uses superparamagnetic microparticles and a novel binding mechanism that allows for simultaneous binding and washing of DNA. Combined with a single water washing step, this unique process removes unpleasant wash steps with hazardous ethanolic or high chaotropic salt buffers. Impurities and potential inhibitors are efficiently removed leading to pure and high-quality DNA, ready for downstream applications such as qPCR and NGS. In summary the unique 4-step protocol (including lysis) reduces time for DNA purification from cells to 11 minutes* while offering all benefits of a conventional magbead-based kit including high quality DNA, scalability and easy automation.

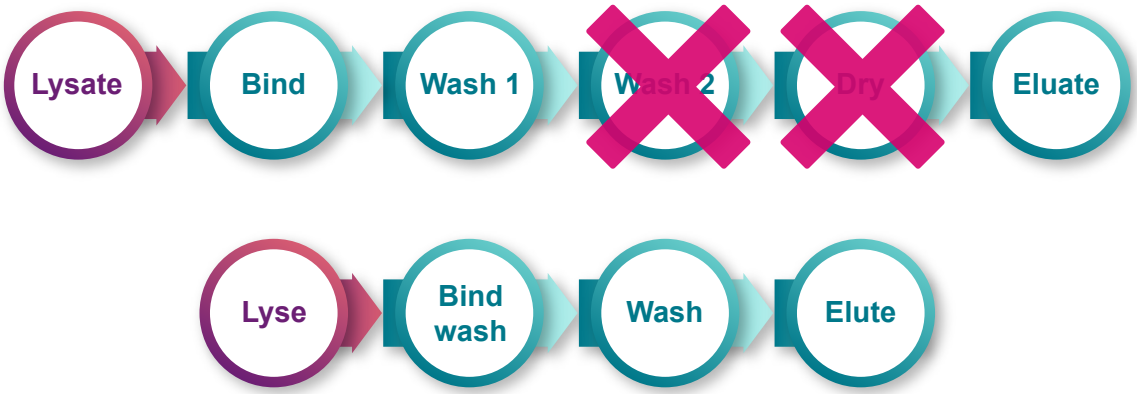

Figure 1. The shortened sbeadex Lightning workflow.
The upper workflow represents a typical magnetic bead-based DNA purification protocol.
The lower workflow illustrates the innovative sbeadex Lightning protocol.

* refers to incubation times only and includes cell lysis

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Figure 2 demonstrates that the chemistry is applicable over a range of cell counts making it versatile for a range of different applications.

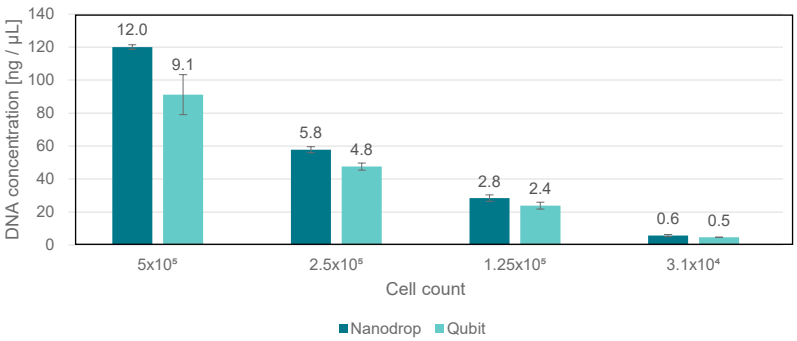

Figure 2. sbeadex Lighting Cell DNA Purification Kit is applicable over a range of cell counts. Linear DNA yields were achieved for HEK293 cells up to a cell count of 5 x 10^5. DNA was quantified via fluorescence measurement on the Nanodrop and using the DNA-specific Qubit. Values at the top of bars represent total DNA yield (µg). All samples were eluted in 100 µL. For each cell count n=2. Error bars represent standard deviation.

Figure 3 demonstrates the quantity and quality of DNA that can be purified with sbeadex Lightning when compared to market-leading competitor kits.

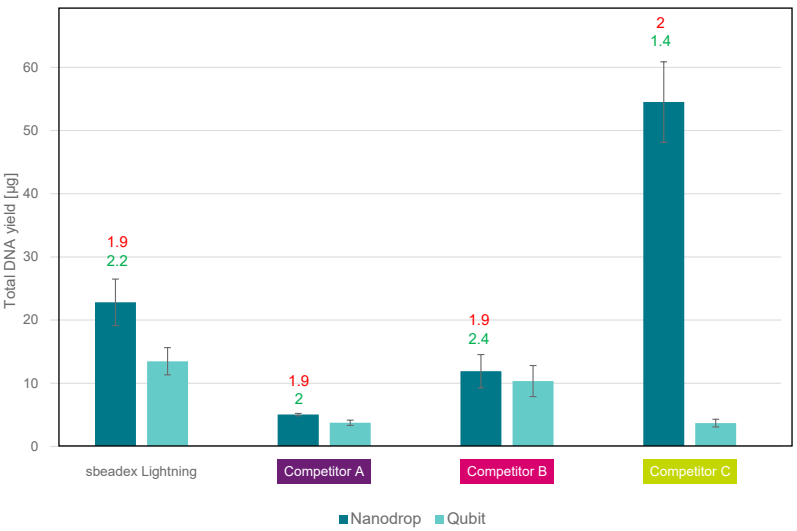

Figure 3. Mean DNA yield and purity measurements achieved for samples following purification of HEK293 cells using the sbeadex Lightning cell DNA purification kit. Yield was quantified via fluorescence measurement, and using the Qubit, and DNA purity measurements estimated via mean absorbance ratios (mean absorbance values:red = $A_{260/280}$, green = $A_{260/230}$). Elution volumes as follows: sbeadex Lightning (100 µL); Competitor A (200 µL), Competitor B (100 µL), Competitor C (600 µL). Values normalised for 1 x 10^6 cells. For each kit presented, n=2 biological replicates (two technical replicates of each). Error bars represent standard deviation.

DNA purified using sbeadex Lightning is also of high molecular weight, as illustrated in figure 4. High integrity DNA is important for a range of downstream applications including long-read sequencing.

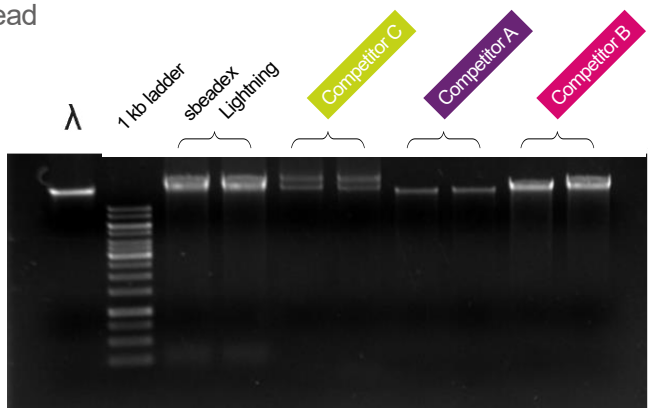

Figure 4. Agarose gel illustrating high molecular weight DNA obtained using sbeadex cell chemistry. For each sample, 2 µL eluate was diluted in 8 µL 10 mM Tris (pH 8) and loaded with 2 µL loading dye. Gel run at 80 V for 30 minutes and ethidium bromide stained post-run. λ DNA = 200 ng input, 1 kb ladder = 4 µL SM0311 (Fermetas/ThermoFisher). DNA eluates shown: sbeadex Lightning cell DNA purification kit (n = 2), Competitors C (n = 2), A (n = 2) and B (n = 2).

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sbeadex Lightning saves not only time and labour but also other cost factors associated with plastic consumables, waste disposal, shipping and storage. By significantly reducing liquid and hazardous waste as well as plastic consumption and energy for transportation and instrumentation (and thus CO_2 emissions), sbeadex Lightning is more environmentally friendly than other comparable kits in the market.

Ordering information

Components	Part code
sbeadex Lightning Cell DNA Kit (10)	Order sample kits via the link below
sbeadex Lightning Cell DNA Kit (96)	NAP40-033-01
sbeadex Lightning Cell DNA Kit (960)	NAP40-033-10

Environmental impact and efficiency compared to competitors

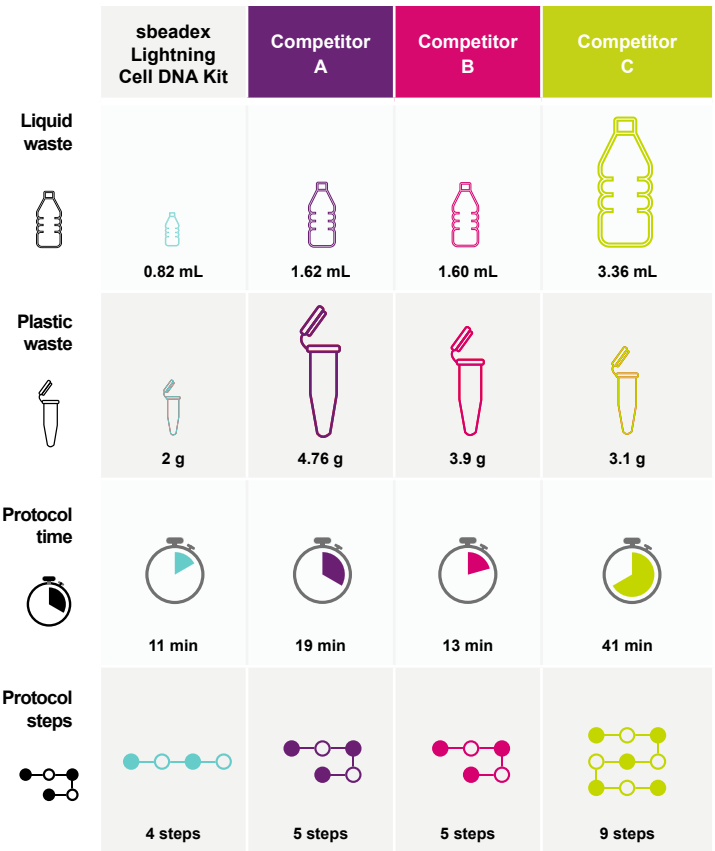

Figure 5. Summary of the key savings for the sbeadex Lightning Cell DNA Kit compared to market-leading competitors. This schematic illustrates the savings in protocol time, protocol steps, plastic consumables and liquid waste per sample. Values are based on processing HEK293 cells. Protocol time per sample (minutes) refers to incubation times only and includes cell lysis. Number of protocol steps includes lysis. Liquid waste (mL) excludes elution volume.

Learn more about the sbeadex Lightning Cell DNA Kit and order your test kit:

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