

# Monarch<sup>™</sup> Nucleic Acid Purification



# Make the right choice and migrate to Monarch

Monarch kits provide fast and reliable purification of high quality DNA from bacterial cultures, agarose gels, and enzymatic reactions using best-in-class technology. Our unique column design offers elution in lower volumes than standard purification kits, providing concentrated, high quality DNA suitable for use in downstream applications such as DNA sequencing, PCR, restriction enzyme digests and other enzymatic manipulations. Our column design also eliminates buffer retention and the risk of carryover contamination, providing fast, worry-free DNA purification. Designed with sustainability in mind, Monarch kits use significantly less plastic and responsibly-sourced packaging.

## Optimize your results with our unique column design

- Improved recovery of concentrated, pure DNA
- Low volume elutions, resulting in highly-concentrated DNA
- No buffer retention, eliminating the risk of carryover contamination

## Enhance your DNA purification experience

- Fast, user-friendly protocols
- Columns designed for easy labeling and handling
- Improved buffer system for robust performance

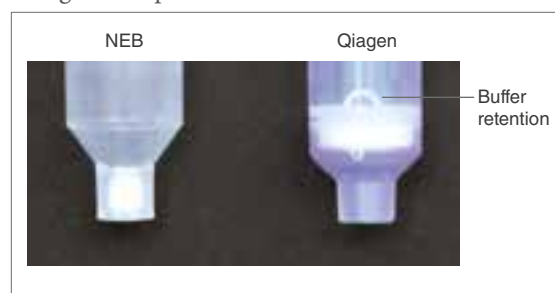
## Feel good about choosing Monarch

- Significantly less plastic in every kit
- Custom designed thin-walled columns and collection tubes
- Responsibly-sourced and recyclable packaging
- Packaging and protocol cards printed with water and soy-based inks
- Reusable kit boxes

## Choose Monarch kits for pure value

- Buffers and columns available separately
- No additional shipping or handling charges<sup>†</sup>
- No hazardous materials fees<sup>†</sup>
- Competitive pricing

### Designed for performance



### Designed for sustainability – Monarch kits\* ...

have up to **44%** less plastic

could eliminate **>140** tons of plastic each year



use **recyclable** packaging materials

use boxes made from **100%** post-consumer paper

<sup>†</sup> In the US and select subsidiary locations. Contact your local distributor for shipping policies.  
<sup>\*</sup> Visit [www.MonarchPackaging.com](http://www.MonarchPackaging.com) for details.

# Monarch Kits for your DNA cleanup

Monarch DNA Cleanup Kits rapidly and reliably purify up to 5 µg of concentrated, high-quality DNA. These kits utilize a bind/wash/elute workflow with minimal incubation and spin times. The columns provided with each kit ensure zero buffer retention and no carryover of contaminants, enabling elution of sample in volumes as low as 6 µl. Monarch Buffers have been optimized, and do not require monitoring of pH. Eluted DNA is ready for use in restriction digests, DNA sequencing, ligation and other enzymatic manipulations.

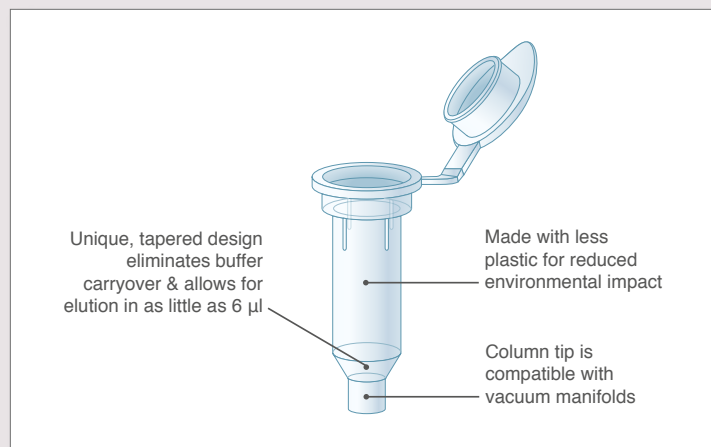
## Monarch DNA Gel Extraction Kit

The Monarch DNA Gel Extraction Kit can be used to quickly purify DNA from agarose gels. Unlike other kits, there is no need to add isopropanol to the melted agarose prior to loading on the column, saving you a step.

## Monarch PCR & DNA Cleanup Kit (5 µg)

The Monarch PCR & DNA Cleanup Kit (5 µg) can be used to purify DNA from a variety of enzymatic reactions, such as PCR, restriction digestion, ligation and reverse transcription. The DNA Wash Buffer provided ensures enzymes, short primers ( $\leq 25$  nt), detergents and other low-molecular weight reaction components (e.g., nucleotides, DMSO, betaine) are removed.

The improved design of the columns supplied with the Monarch Gel Extraction and PCR & DNA Cleanup Kits enables elution in as little as 6 µl, and eliminates buffer retention



### ADVANTAGES

- Elute in as little as 6 µl
- Prevent buffer retention and salt carryover with optimized column design
- Save time with fast, user-friendly protocols

### SPECIFICATIONS

- **Binding Capacity:** up to 5 µg
- **DNA Size Range:** ~50 bp to 25 kb
- **Typical Recovery:** DNA (50 bp to 10 kb): 70–90%  
DNA (11–25 kb): 50–70%
- **Elution Volume:**  $\geq 6$  µl
- **Purity:**  $A_{260/280} \geq 1,8$
- **Protocol Time:**  
Gel Extraction: 10 min of spin and incubation time.  
PCR & DNA Cleanup: 5 min of spin and incubation time
- **Compatible Downstream Applications:** ligation, restriction digestion, labeling and other enzymatic manipulations, library construction and DNA sequencing

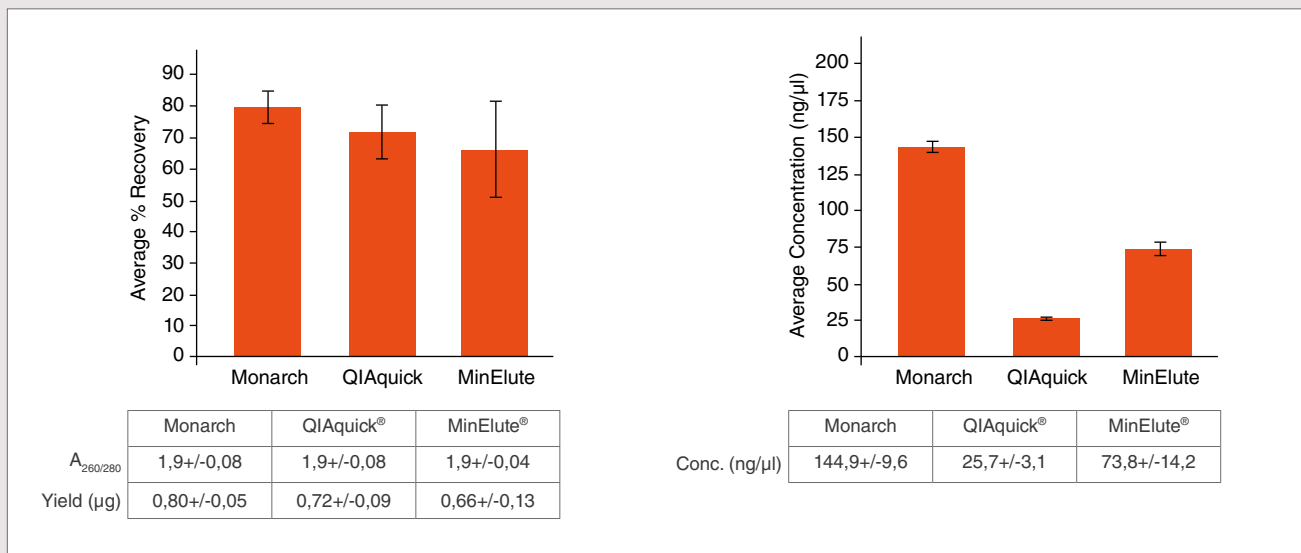
“ This is a great, easy-to-use, small footprint kit... it was great to elute in such a small volume while feeling confident that the elution buffer managed to get to all of the surface area of the membrane.

– Michelle, Principal Investigator, Central Michigan University, Mount Pleasant, Michigan

Visit [NEBMonarch.eu](http://NEBMonarch.eu) to request a sample.

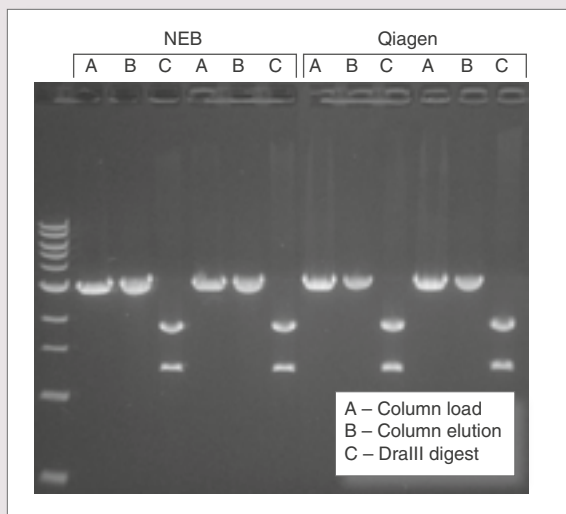
# and gel purification needs

DNA purified from the Monarch DNA Gel Extraction Kit is recovered with similar efficiency and purity as the leading supplier, but is more highly concentrated, facilitating its use in downstream applications



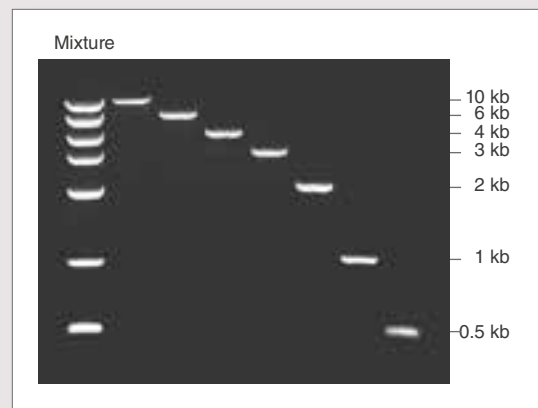
One microgram aliquots of a 3 kb fragment were resolved on a 1% w/v agarose gel, excised, and processed with different kits using manufacturer-specified minimum elution volumes. Values reported are the concentration and purity data determined by Nanodrop™ readings, as well as recovery calculations based on the eluted DNA concentration and recovered volume.

Monarch PCR & DNA Cleanup Kit (5 μg) performs equivalently to the leading supplier



Preps were performed according to recommended protocols. 1 μg of a 3 kb DNA fragment was incubated with 1 μM primers and OneTaq® Quick-Load™ 2X Master Mix (NEB #M0486). DNA was eluted in 20 μl (NEB) and 40 μl (Qiagen) Elution Buffer. Half of the total elution volume was digested with 5 units of DralIII-HF (NEB #R3510). The digest and the unused portion of the elution were resolved on a 1% w/v agarose gel along with a representative sample of the starting material.

Monarch DNA Gel Extraction Kit reproducibly recovers DNA over a broad range of molecular weights

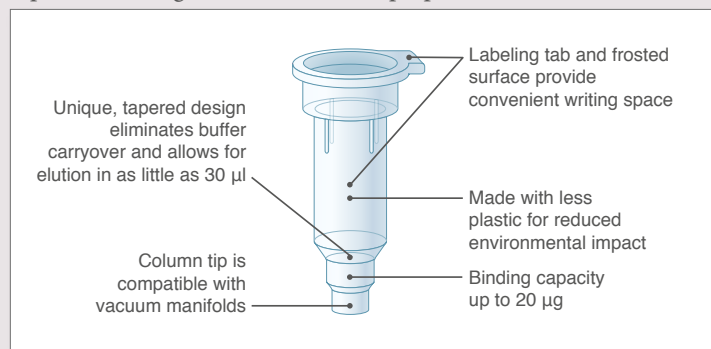


A mixture of 7 DNA fragments ranging from 10 kb down to 0,5 kb was prepared and one-half of the mixture was resolved on a 1% w/v agarose gel. Each fragment was manually excised from the agarose gel and processed using the Monarch DNA Gel Extraction Kit. The entire elution of each fragment was resolved on a new gel with the remainder of the original mixture for comparison.

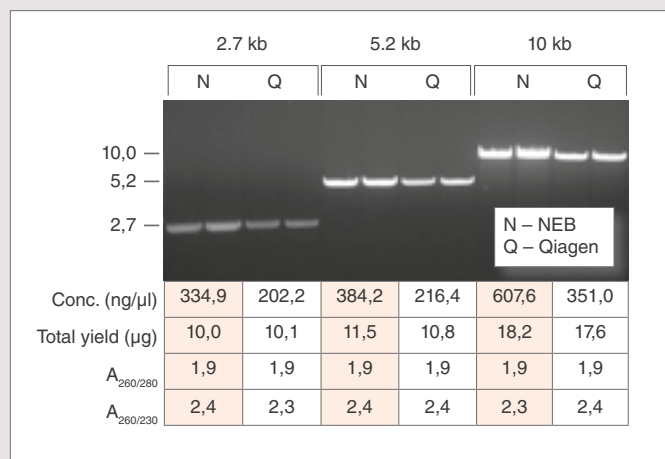
# Monarch Plasmid Miniprep Kit

The Monarch Plasmid Miniprep Kit is a rapid and reliable method for the purification of high quality plasmid DNA. This method employs standard cell resuspension, alkaline lysis, and neutralization steps, with the additional benefit of color indicators at certain steps to easily monitor completion. Unique wash buffers ensure salts, proteins, RNA and other cellular components are removed, allowing low-volume elution of concentrated, highly pure DNA. Protocols are fast and user-friendly. Elution in as little as 30 µl provides concentrated DNA for use in downstream applications, such as restriction digests, DNA sequencing, PCR and other enzymatic manipulations.

## Optimized design of Monarch Miniprep Columns



Monarch Plasmid Miniprep Kits consistently produce more concentrated plasmid DNA with equivalent yield, purity and functionality as compared to the leading supplier



Preps were performed according to recommended protocols using 1,5 ml aliquots of the same overnight culture. One microliter of each prep was digested with HindIII-HF (NEB #R3104) to linearize the vector and the digests were resolved on a 1% w/v agarose gel.

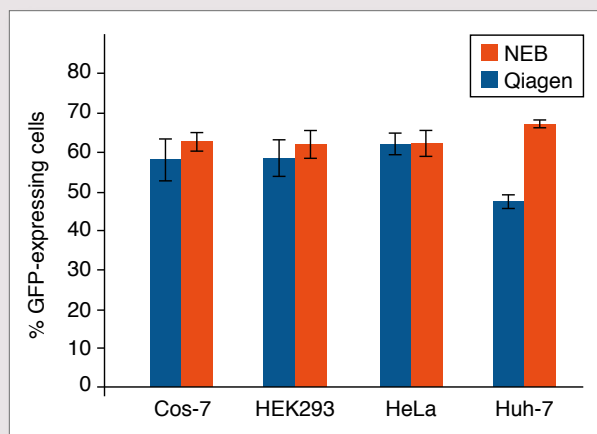
## ADVANTAGES

- Elute in low volumes
- Prevent buffer retention and salt carryover with optimized column design
- Reduce hands on time with faster protocols and less spin time
- Monitor completion of certain steps using colored buffer system
- No need to add RNase before starting
- Easily label columns using tab and frosted surfaces

## SPECIFICATIONS

- **Culture Volume:** 1–5 ml
- **Binding Capacity:** up to 20 µg
- **Plasmid Size:** up to 25 kb
- **Typical Recovery:** up to 20 µg. Yield depends on plasmid copy number, host strain, culture volume, and growth conditions.
- **Elution Volume:** ≥ 30 µl
- **Purity:** A<sub>260/280</sub> and A<sub>260/230</sub> ≥ 1,8
- **Protocol Time:** 10½ minutes of spin and incubation time
- **Compatible Downstream Applications:** restriction digestion and other enzymatic manipulations, transformation, transfection of robust cells, DNA sequencing, PCR, labeling, cell-free protein synthesis, etc.

Plasmid DNA purified using the Monarch Plasmid Miniprep Kit produces transfection efficiencies equivalent to or better than plasmid DNA purified using the Qiagen QIAprep® Spin Miniprep Kit



Plasmid DNA encoding constitutively expressed GFP (pEGFP-C2) was prepared using either Monarch Plasmid Miniprep Kit or Qiagen QIAprep Spin Miniprep Kit. Four different cell lines (Cos-7, HEK293, HeLa, and Huh-7) were grown to 80-90% confluence and transfected with 100 ng of each plasmid, in complex with 0,3 µl Lipofectamine 2000, and 10 µl Opti-MEM. Five replicates for each cell type were performed using both DNA preps. GFP expressing cells were counted by flow cytometry 48 hrs post-transfection with a minimum of 2000 events collected per well. Average percentage of cells expressing GFP from all replicates is graphed and used as a measure of transfection efficiency.



## Ordering Information

PRODUCT	NEB #	SIZE
Monarch DNA Gel Extraction Kit	T1020S/L	50/250 preps
Monarch PCR & DNA Cleanup Kit (5 µg)	T1030S/L	50/250 preps
Monarch Plasmid Miniprep Kit	T1010S/L	50/250 preps
<b>COLUMNS AVAILABLE SEPARATELY</b>		
Monarch DNA Cleanup Columns (5 µg)	T1034L	100 columns
Monarch Plasmid Miniprep Columns	T1017L	100 columns
<b>BUFFERS AVAILABLE SEPARATELY</b>		
Monarch DNA Cleanup Binding Buffer	T1031L	235 ml
Monarch DNA Wash Buffer	T1032L	25 ml
Monarch DNA Elution Buffer	T1016L	25 ml
Monarch Gel Dissolving Buffer	T1021L	235 ml
Monarch Plasmid Lysis Buffer (B2)	T1012L	2 x 27 ml
Monarch Plasmid Neutralization Buffer (B3)	T1013L	110 ml
Monarch Plasmid Resuspension Buffer (B1)	T1011L	55 ml
Monarch Plasmid Wash Buffer 1	T1014L	2 x 27 ml
Monarch Plasmid Wash Buffer 2	T1015L	30 ml

Visit [NEBMonarch.eu](http://NEBMonarch.eu)  
to request a sample.

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MONARCH – Version 1.0 – 01/16

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