Spring/Summer 2025

NEB expressions

a scientific update

IN THIS ISSUE

BEYOND THE NEB CATALOG

Over 40 years of supporting customers with customized solutions

Since 1974, NEB has proudly supported scientists with high-quality reagents to advance their molecular biology research. We have had the opportunity to support many of our customers as early as graduate school, and have been able to build relationships throughout their successful careers. We have done so with an expanding catalog portfolio that supports both existing and emerging applications and workflows, coupled with outstanding service and technical support. We recognized long ago that our customers' needs sometimes extend beyond the traditional list of products found in our catalog. For over 40 years, we have employed a collaborative approach to discover, plan, and ultimately deliver custom products that fit these customers' unique requirements. From larger quantities of existing products, to custom packaging and labeling, or even custom formulations and formats, we are here to help.

LARGE FORMATS FOR NEB PRODUCTS

The most frequent request we receive is for larger quantities of our catalog products. Over the years, we have expanded our production capabilities and can easily support these requests. In fact, this capability became even more important during the COVID-19 pandemic, during which we were able to support customers developing diagnostics and vaccines. Large volume requests can be fulfilled in a single vial, bottle or plate for high-throughput applications, or dispensed into pre-determined aliquot sizes to meet your specific need.

CUSTOM FORMULATIONS AND PRODUCT QUALITY

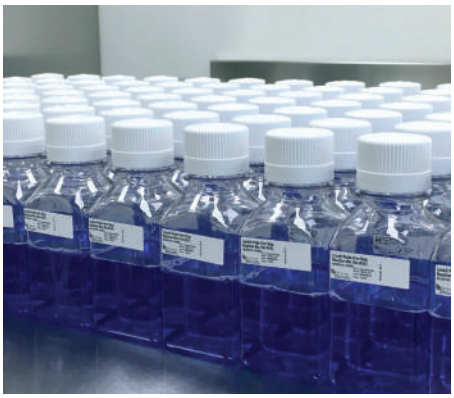
A common question we receive from customers is whether we can supply an alternative formulation of an enzyme or product to better meet their needs. The answer is often yes – in fact, we have extensive experience successfully modifying enzyme or product formulations. Some modifications are relatively easy to make, such as providing an enzyme at a higher concentration. Others, such as removing glycerol, detergents, or other components from a formulation can also be done, but require more time to asses stability and ensure we can provide a robust product with complete confidence. In all instances, our team will work with you to understand your needs and provide honest feedback regarding technical feasibility and timelines to develop and optimize a custom product formulation.

In addition to formulation changes, some customers have alternative quality requirements. While our products undergo extensive quality control testing, these customers require additional testing and/or documentation. In this case, we would transition you from our research products to our GMP-grade* formulations, which are discussed below.

In today's global regulatory landscape, compliance and risk tolerance are central themes for customers who source critical materials from us. For example, the ability to modify formulations to be compliant with local regulations (e.g., EU REACH Regulations) has become increasingly important. We understand the scrutiny you face and will work with you to identify alternate product formulations and/or documentation to reduce, or mitigate risk, when using our products.

As with any product that you purchase from us, the reagents and products that we supply through our Customized Solutions Team are manufactured in compliance with our Quality Management System. Our Quality team utilizes a two-tiered approach to ensure product quality. Tier one is a focus on compliance, specifically our ISO 9001 and ISO 13485 certificates. The second tier incorporates a variety of cutting-edge quality controls which assess a product's physical attributes, performance, and purity. We are committed to achieving the highest level of product quality regardless of whether you purchase a product from our catalog or through our Customized Solutions Team.

** "GMP-grade" is a branding term NEB uses to describe products manufactured or finished at NEB's Rowley facility. The Rowley facility was designed to manufacture products under more rigorous infrastructure and process controls to achieve more stringent product specifications and customer requirements. Products manufactured at NEB's Rowley facility are manufactured in compliance with ISO 9001 and ISO 13485 quality management system standards. However, at this time, NEB does not manufacture or sell products known as Active Pharmaceutical Ingredients (APIs), nor does NEB manufacture its products in compliance with all of the Current Good Manufacturing Practice regulations.*



In all of these situations, our Customized Solutions Team is ready to help, and serves as a bridge to the support and resources you need to ensure your success. We will work with you to understand your formulation and performance requirements, as well as your packaging needs. In doing so, we may put together a cross-functional team that includes our scientific staff, to work collaboratively with you and to help troubleshoot problems that may arise during development. You can be sure that we will work with you to develop a solution that fits your needs both now and in the future.

PRIVATE LABELING AND KITTING

Our Customized Solutions Team also supports customers who are looking to include our reagents as drop-in components in their own kits and solutions. In this situation, we offer private labeling and options to build custom kits, all of which would be included as part of an OEM contract. This conversation begins with a member of our Customized Solutions Team, who will assemble the appropriate cross-functional team to swiftly address your needs. As with all of our services, we will work closely with you and provide the best option that fits your requirements.

EXPANDED CAPABILITIES AND DISTRIBUTION NETWORK

Since NEB was founded 50 years ago, we have consistently invested in our capabilities to meet specific needs of our customers. This includes expansion of our Research and Applications and Product Development teams, as well as our manufacturing capabilities, quality control testing, and global distribution. In 2004, NEB moved its headquarters to Ipswich MA, USA, and built a LEED-certified, state-of-the-art research and production facility. Since then, NEB has expanded its footprint to several locations nearby its main campus. Approximately 15 minutes away, our production facility in Rowley, MA, is designed to serve the needs of customers in regulated markets and is used for manufacture of GMP-grade products. Also in Rowley, our packaging facility is responsible for kitting and packaging a selection of NEB products. We also have two locations in Beverly, MA which are approximately 20 minutes from our main campus. Our Beverly Organic Synthesis Facility is an ISO compliant laboratory responsible for synthesis and manufacture of oligonucleotides, modified nucleotides, and affinity beads/resins. Our R&D facility, also in Beverly, houses many of our Research and Application & Product Development groups. Most recently, we have completed a state-of-the-art expansion on our headquarters in Ipswich that expands our manufacturing capabilities and quality control labs. All of these facilities are ISO 9001- and ISO 13485-certified and take into account sustainable building design.

All of these updates have been made with the end users in mind – we want to be able to support you both now and in the future, but we want to do this in a sustainable way that is best for our customers and for the environment. For our customized solutions customers, this means our level of support has improved to include expanded fermentation capabilities, improved quality control testing, faster turnaround, and more comprehensive documentation – all in an environment you can feel good about.

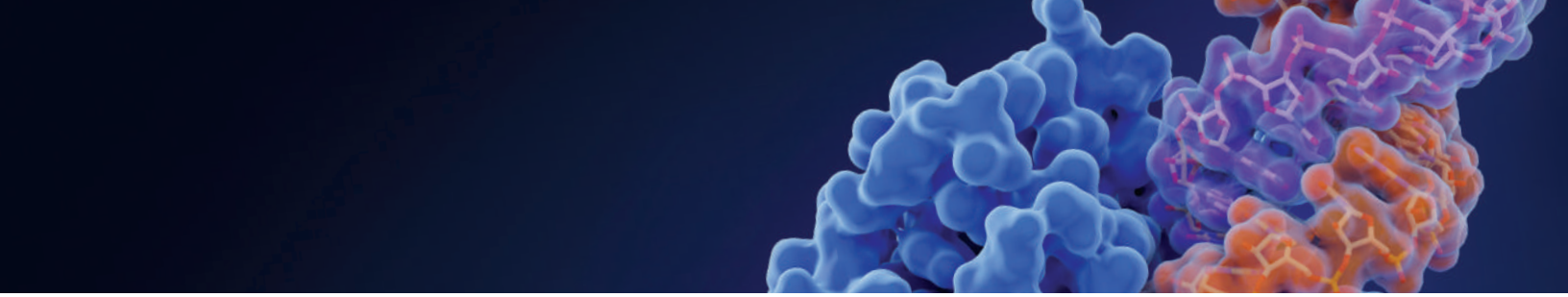
We have 10 subsidiaries worldwide, making shipping and warehousing product across the globe seamless. We are expanding our operational capabilities outside of the U.S. with planned 2024 openings of a new Experience Center in Suzhou, China, which has dedicated space for formulating and kitting, a QC laboratory, and local warehousing. Additionally, we have a dedicated lyophilization development and manufacturing facility in Oxford, UK.

LYOPHILIZATION AND AMBIENT SHIPPING

More recently, the market has experienced an increase in demand for ambient-stored, lyophilized enzymes and reagents. We are excited to support these needs with our new, dedicated 30,000 sq. ft. lyophilization development and production facility in Oxford, UK. This site allows us to transition key wet enzyme and reagent formulations to ambient-stable, lyophilized products in multiple formats (beads and cakes). Ambient storage and shipping reduces shipping costs, the need for cold-chain access, and importation difficulties. We have the unique ability to match our innovative enzymology experts with our lyophilization experts, and can work with you to develop an optimized lyophilized product that meets your requirements and performance specifications. Contact our dedicated Customized Solutions Team today to discuss your project and how we can help bridge your project gaps.

For 50 years, we have researched, developed, and manufactured innovative enzymes and reagents for the scientific community and have served as a bridge that connects scientific innovations and workflows. Our Customized Solutions Team is privileged to support incredible customers like you and our mission is to equip you with products and support that will shorten your path to success. Our global network of OEM Business Development Managers are excited to meet and discuss how our custom products can support your goals.

To learn more about NEB's custom capabilities or to contact our Customized Solutions Team, visit:
www.neb.com/customized-solutions



Navigating amplification workflows for robust diagnostic assay development

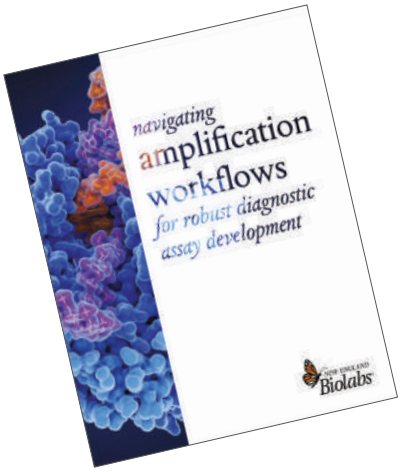
Knowledge of amplification techniques and optimization tactics is crucial to driving innovation in molecular diagnostics (MDx). During the COVID-19 pandemic, the number of molecular diagnostic assays incorporating amplification technologies increased significantly to meet public health needs. This expansion was enabled by years of workflow optimization, broader access to enhanced reagents and design tools, and the deployment of common equipment and automation worldwide. Molecular diagnostic workflow improvements led to substantial time savings and critical quality metrics – from the point of sample collection to the result. With diligent planning, the accuracy, sensitivity, and specificity of an assay can be effectively established for the successful implementation of any molecular diagnostic.

The pandemic also broadened the scope of amplification methods validated for sensitive and robust molecular diagnostic tests, putting isothermal protocols into use alongside qPCR (the 'gold standard'). Isothermal amplification methods, such as Loop-mediated isothermal Amplification (LAMP) were adopted for their simplicity and speed, which permitted at-home testing. The ability to collect a sample, perform a molecular assay, and read the results at home offered many advantages over traditional testing scenarios. The standard testing paradigm required a visit to a hospital or clinic for sample collection, after which the test itself was performed in a central laboratory. Subsequently, a healthcare provider would contact the patient with the results. This process could take several hours, or even days, before the results were available for clinical decision-making. If instead tests and results could be provided at the point-of-care or even at home, this timeline could be accelerated significantly. These efforts have necessitated a shift to supply reagents as lyophilized or dry versions of the assays. These efforts are leading to an increased demand for lyophilized formats.

Despite these advances, many goals remain the same for MDx assay developers: determining the appropriate amplification method, optimizing assay components, and selecting a reliable supply partner who will provide support from early development all the way through to large-scale manufacturing.

How can NEB support your diagnostics development efforts?

Integrating scientific expertise with a global presence, NEB can support your amplification reagent needs for small-scale research projects through to large-scale manufacturing and commercialization. Setting the standard for an effective partner, we provide personalized technical and commercial support throughout a project's entire life cycle. We are committed to your success.



Download our latest eBook, featuring:

- Comparison of PCR and isothermal amplification technologies
- Examination of assay design optimization parameters
- Considerations for assay lyophilization
- Testimonial from Anne Wyllie, Ph.D., Research Scientist in Epidemiology of Microbial Disease, Yale School of Public Health

Register here
to receive your copy of the eBook.

Contact our Customized Solutions Team today to find out how we can support your next MDx development project at
www.neb.com/customized-solutions

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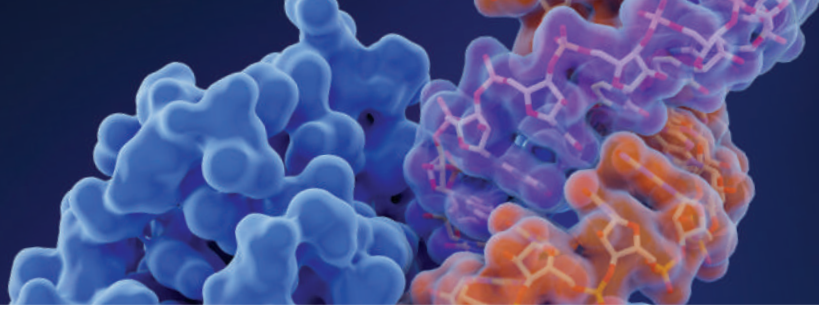


Why glycerol-free reagents matter in molecular diagnostics

By Joanne Gibson, Ph.D, New England Biolabs

Precision and reproducibility are paramount in molecular testing. Even minor components in reagent formulations can significantly impact diagnostic assay development and testing outcomes. Glycerol, a common cryoprotectant in many enzyme formulations, is valued for its protective properties when storing liquid reagents in a freezer, as it prevents ice crystal formation. However, the limitations of glycerol – such as its potential to complicate lyophilization (freeze-drying) workflows and challenge automated processes – have become increasingly apparent. To navigate these challenges, our eBook "Navigating Amplification Workflows for Robust Diagnostic Assay Development" offers in-depth insights and practical solutions.
Transitioning to glycerol-free reagents offers a way to overcome these obstacles, paving the way for more accessible and accurate diagnostic workflows. Read on to learn how glycerol-free alternatives are transforming the landscape of molecular biology.

Benefits of glycerol-free reagents for molecular diagnostics

Lyophilization compatibility, long-term stability, and global reach

Glycerol is incompatible with the lyophilization process, which is crucial for creating stable, dry reagents that do not require refrigeration. The drying process in lyophilization requires the sublimation of water (converting solid to vapor without passing through the liquid phase). The presence of glycerol can hinder this process because it retains moisture, making complete drying challenging. Consequently, formulations intended for lyophilization should be glycerol-free to ensure successful drying and long-term stability.

Lyophilized formulations can be stored at room temperature, eliminating the need for cold-chain shipping and cold storage. This is particularly beneficial for point-of-care or field diagnostics, especially in regions with limited access to cold-chain logistics.

By simplifying distribution and ensuring reliable performance across diverse climates and conditions, glycerol-free, lyophilized reagents in molecular diagnostic assays support global health equity in regions that typically lack sufficient healthcare resources.

Automation accuracy

Glycerol's high viscosity can pose challenges in automated systems commonly used in diagnostic laboratories. These systems rely on precise and reproducible pipetting, and the viscous nature of glycerol-containing solutions leads to slower flow rates during pipetting. While several best practices are typically used when pipetting viscous liquids (e.g., reverse pipetting, liquid class development), glycerol can still cause inaccuracies in volume dispensing, clogging of pipettes, and difficulty achieving reproducible results. The slower aspiration and dispensing rates necessitate adjustments to protocol parameters to minimize liquid loss, ensure accurate pipetting, and provide adequate mixing, which complicates the automation workflow.

However, glycerol-free reagents effectively overcome these pitfalls by reducing solution viscosity, allowing for faster, more precise pipetting. This improvement enhances the accuracy and reliability of automated high-throughput systems while shortening the overall turnaround time. This makes glycerol-free formulations helpful for maintaining the reproducibility required in molecular diagnostics.

Making an assay reagent glycerol-free

Making a product glycerol-free involves several key steps to ensure the reagent remains stable, functional, and compatible with various applications, particularly in molecular diagnostics. The process begins with evaluating and selecting alternative stabilizers that can provide the necessary protective effects without the drawbacks of glycerol. Following this, the product is carefully reformulated, and concentrations and conditions are fine-tuned to ensure the glycerol-free version performs as effectively as the original. Rigorous testing, including shelf-life assessments and freeze-thaw cycle stability, is conducted to confirm the product's robustness. Finally, any necessary adjustments to the manufacturing process are made to accommodate the new formulation, ensuring consistent quality, even at larger production scales.

Offering comprehensive support for glycerol-free products

NEB offers extensive support for scientists transitioning to glycerol-free reagents, including those developing molecular diagnostic assays. We provide a range of glycerol-free enzyme formulations specifically designed to meet the demands of advanced diagnostic assays, including PCR and isothermal amplification.

Our glycerol-free products are available in various concentrations and formats, tailored to fit your workflow. For those requiring further customization, our Customized Solutions Team is ready to assist in developing glycerol-free reagents to meet your unique requirements. These options are especially beneficial for those looking to improve the compatibility of their reagents with lyophilization processes, enhance automation in high-throughput systems, and ensure reliable performance across diverse conditions.

We also offer technical support and consultation to help labs validate and optimize their protocols when switching to glycerol-free formulations, ensuring a smooth and effective transition.

View a list of
glycerol-free reagents

Migrate to the better choice

Monarch Nucleic Acid Purification Kits are the perfect complement to many molecular biology workflows, offering exceptional value for a range of budgets. Recover pure, intact DNA and RNA in minutes with our fast, user-friendly protocols and optimized buffer systems, and focus your time on the experiments that will drive your research forward. The Monarch nucleic acid purification portfolio can serve your needs, whether you are isolating nucleic acids from biological samples, cleaning up DNA and RNA from enzymatic reactions, extracting DNA fragments from gels, or purifying plasmids.
Monarch kits are all designed with sustainability in mind; kits and spin column components are made with significantly less plastic than leading suppliers, and are packaged with responsibly-sourced, recyclable packaging.

Top 5 reasons to choose Monarch:

1

Highly pure:

Monarch purification kits are designed to provide the purest nucleic acids with minimal contaminants. This is crucial for downstream applications and reliably ensures higher cloning efficiency and accuracy.

2

Highly concentrated:

Precision-engineered spin columns uniquely allow for low elution volumes, for highly concentrated nucleic acids to be used in downstream workflows.

3

Fast protocols:

The protocols for Monarch kits are optimized to be quick and user-friendly, ensuring that your nucleic acids are ready for use without extensive preparation.

4

Kits for the whole workflow:

NEB has all your workflow needs covered with kits for plasmid purification, gel extraction, PCR and DNA cleanup, and genomic DNA extraction.

5

Sustainability and value:

Monarch kits are designed for industry-leading sustainability, using less plastic and recyclable packaging. Feel good about helping the environment without compromising on performance or price.

Explore the Monarch portfolio:

Monarch Spin Plasmid Miniprep Kit (NEB #T1110)

- Easily purify plasmids from bacterial cultures
- Monitor your progress with our convenient colored-buffer system

Monarch Spin PCR & DNA Cleanup Kit (NEB #T1130)

- Purify DNA in 5 minutes and elute in as little as 5 µl
- A modified protocol enables the purification of small DNA fragments and oligos

Monarch Spin DNA Gel Extraction Kit (NEB #T1120)

- Quickly extract highly-pure DNA from gels with excellent yields
- Elution in as little as 5 µl and prevents buffer carryover

Monarch Spin gDNA Extraction Kit (NEB #T3010)

- Purify high-quality, genomic DNA from several sample types
- Achieve excellent DNA yields with fast, user friendly protocols

Monarch HMW DNA Extraction Kits (NEB #T3050 and #T3060)

- Quickly and easily extract ultra-high molecular weight DNA
- Available for cells & blood as well as tissues, bacteria, and other samples

Monarch Mag Viral DNA/RNA Extraction Kit (NEB #T4010)

- Hands-free extraction of viral DNA and/or RNA using a magnetic bead-based protocol
- Compatible with automated high-throughput workflows on a variety of platforms

Monarch Spin RNA Cleanup Kit (NEB #T2030, #T2040, #T2050)

- Obtain clean RNA in minutes with fast and simple protocols
- Select from 3 binding capacities: 10 µg, 50 µg and 500 µg

Monarch Spin RNA Isolation Kit (Mini) (NEB #T2110)

- Purify total RNA from multiple sample types (blood, cells, tissues, and more) with a single kit
- Effectively purify RNA of all sizes, including small RNA (<200 nt)

Monarch: Designed for sustainability and value

Reduced lab waste

Significantly less plastic as compared to leading supplier
Monarch kits still deliver high yields, purity, and performance

Thinner-walled columns
Reduction in total plastic without affecting performance

Buffer bottles
Carefully designed to minimize plastic usage

Flexible purchasing options

Buffers and columns sold separately
Purchase only what you need and avoid wasted materials

Same performance, design, and formulations
Standalone products are the same components that are included in complete kits

MONARCH® Sustainability

No excessive packaging

Sturdy, reusable boxes at just the right size
Carefully designed to eliminate empty space, versatile Monarch boxes can be reused anywhere

Concise protocol cards replace printed manuals
Both cards and manuals are available online as PDFs

Sustainable & recyclable packaging

Sourced for recyclability
All components are purposefully sourced for recyclability

Instructions for recycling kit components
Can be found on product packing or online

Recycled paper
Used to make the kit boxes, inserts. and paper materials

Eco-friendly printing
Printing of boxes and packaging powered by green sustainable sources such as wind

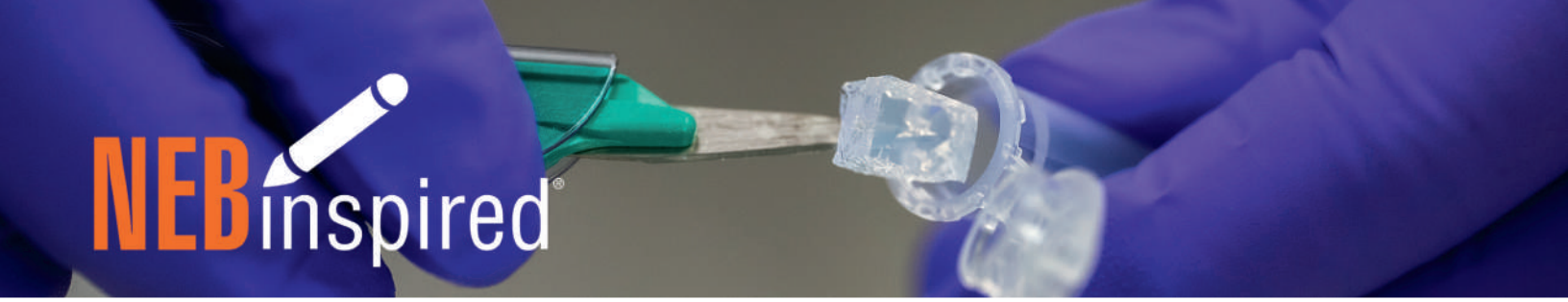
Ordering Information

PRODUCT	NEB #	SIZE
Monarch Spin Plasmid Miniprep Kit	T1110S/L	50/250 preps
Monarch Spin DNA Gel Extraction Kit	T1120S/L	50/250 preps
Monarch Spin PCR & DNA Cleanup Kit	T1130S/L	50/250 preps
Monarch Spin gDNA Extraction Kit	T3010S/L	50/150 preps
Monarch HMW DNA Extraction Kit for Cells & Blood	T3050S/L	5/50 preps
Monarch HMW DNA Extraction Kit for Tissue	T3060S/L	5/50 preps
Monarch Mag Viral DNA/RNA Extraction Kit	T4010S/L/X	100/600/3×600 preps
Monarch Spin RNA Cleanup Kit (10 µg), (50 µg), (500 µg)	T2030S/L, T2040S/L, T2050S/L	10/100 preps, 10/100 preps, 10/100 preps
Monarch Spin RNA Isolation Kit (Mini)	T2110S	50 preps

Take part in the NEB Spring Game by collecting the Monarch Cards!
More Details on page 16

For more information, visit
NEBMonarch.com

Interested in giving Monarch a try? Request a free sample from at
NEBMonarch.com

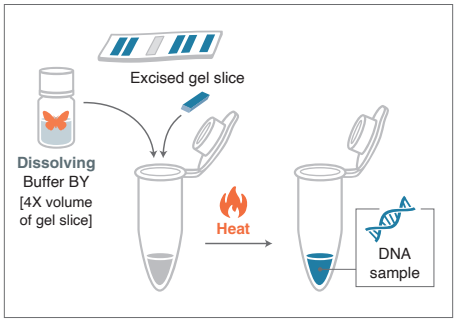


Essential tips for successful DNA gel extraction

Extracting DNA from agarose gels is a crucial step in many molecular biology workflows. A gel extraction kit offers a streamlined process, ensuring high recovery and purity of DNA by eliminating buffer retention and carryover contamination. The following steps are part of the Monarch Spin DNA Gel Extraction Kit workflow, but they are general best practices that can be applied to most gel extraction protocols. Here are some pointers to help you get the most out of your gel extractions.

Dissolve your gel slice completely

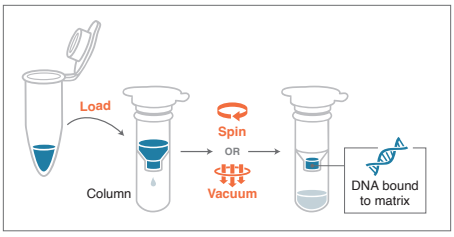
Dissolving the gel completely is essential for high DNA recovery, as incomplete dissolution can lead to clogging of the column. Agarose gels using standard laboratory grade or low-melt agarose are compatible up to concentrations of 4%. Tris-Acetate-EDTA (TAE) buffer is a commonly used running buffer, especially if you're planning to use the DNA for downstream experiments; however, Tris-Borate-EDTA (TBE) buffer can also be used.



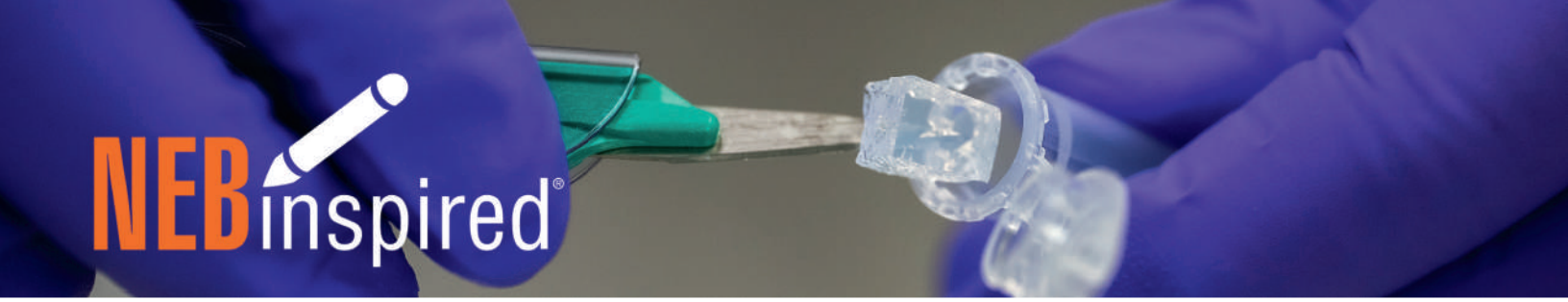
- ✓ Use a clean, sharp blade to make precise cuts in the gel.
- ✓ Trim the excess gel as much as possible! Minimizing the gel surrounding your band will reduce the volume of binding buffer required and increase your DNA yield.
- ✓ Minimize the duration of DNA exposure to UV light, as prolonged exposure can damage the DNA.
- ✓ Ensure the gel is fully submerged in the buffer and incubate at 50°C for 5–10 minutes. Vortexing the tube occasionally can help accelerate the melting process.
- ✓ Extend the incubation time if a lower temperature and/or higher concentration of agarose gel is used (>2%) to ensure complete dissolving of the gel.
- ✓ Extend the incubation time for particularly large or thick slices to ensure complete dissolution.
- ✗ Don't store the gel slice for long periods before extraction. The gel slice can be stored in a closed microfuge tube at 4°C for up to 3 days; however, the best results will be achieved if you extract your band immediately following excision.

Bind your DNA efficiently

To improve the binding step, closely monitor your column capacity, centrifugation time, and temperature.



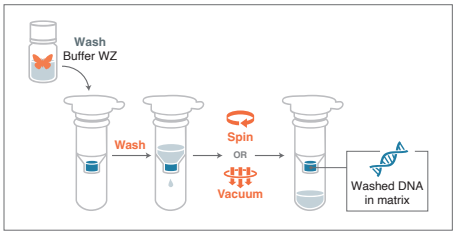
- ✓ Let the solution cool to room temperature before proceeding.
- ✓ After loading the dissolved gel and buffer mixture on the column, spin it at 16,000 x g for a full minute to ensure the DNA binds effectively to the column matrix.
- ✗ Don't overload the column by adding more than 800 µl or >5 µg. If using the Monarch Spin DNA Gel Extraction Kit (#T1120), the maximum binding capacity of the column is 5 µg of purified DNA. The size recovery of DNA ranges from 50 bp to 25 kb.



Wash your DNA thoroughly

Thorough washing is key to achieving high-purity DNA.

- ✓ Use the provided wash buffer to rinse the column twice to ensure efficient removal of any residual salt carry over.
- ✓ Follow each wash with a full-speed spin to remove any residual contaminants.
- ✗ Don't let the tip of the column touch the flow-through. If in doubt, spin again to remove all residual wash buffer.

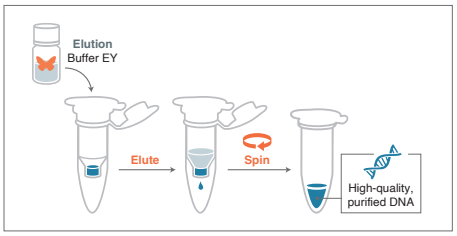


Elute carefully

Elution is a critical step in the recovery of your DNA. The optimal range for elution volume is 5-20 µl of elution buffer.

- ✓ Use the elution buffer in the kit and pre-warm it to 50°C to increase yield.
- ✓ Ensure the column is free of residual wash buffer.
- ✓ Apply the buffer directly to the center of the column matrix.
- ✓ For long-term storage of the DNA, we recommend the supplied elution buffer.
- ✓ Use modified elution methods to increase the recovery of longer DNA, such as a heated elution buffer (50°C) or incubating at room temperature for 5 minutes after adding elution buffer. Longer DNA fragments bind tighter to the matrix, which may result in inefficient elution without these modifications.
- ✗ Don't shorten or skip the incubation - incubate for a full minute.
- ✗ Don't store the sample for an extended amount of time if you have eluted it in water rather than an elution buffer.

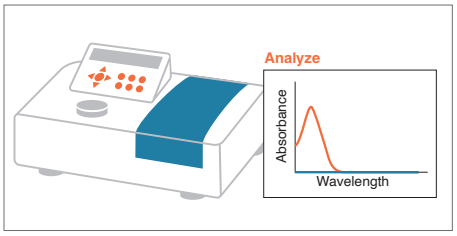
Note: If eluting in water, for maximum elution efficiency, ensure the water is nuclease-free and has a pH between 7 to 8.5. Milli-Q™ water is often slightly acidic, requiring pH adjustment before it can be used for elution.



Monitor your yield and purity

After elution, you can use a spectrophotometer to measure the concentration and purity of your DNA. This ensures that your sample is ready for downstream applications without any contaminants that could interfere with your experiments.

Carried-over salts will be indicated by a low A260/230 ratio, which is why the column tip must not touch the flow through.



If you're having any problems with your DNA gel extraction, our technical support team is always available to help.

NEBinspired is a science blog designed to share inspirational stories about trends in the life sciences, lab tips to help you save time, and life lessons to reflect on. Browse our collection of science stories, or filter to find a topic that you are passionate about. From groundbreaking discoveries to sustainable lab techniques and helpful online tools that will aid your experimental design, we have something for everyone. And if you can't find what you're looking for, not to worry – simply send us a message about topics you would like to see covered.

This Article is a shortened version of the NEBinspired blog post. You can find the full article and an audio version at

www.neb.com/NEBInspired-Blog

Streamlined for Speed

NEBNext UltraExpress

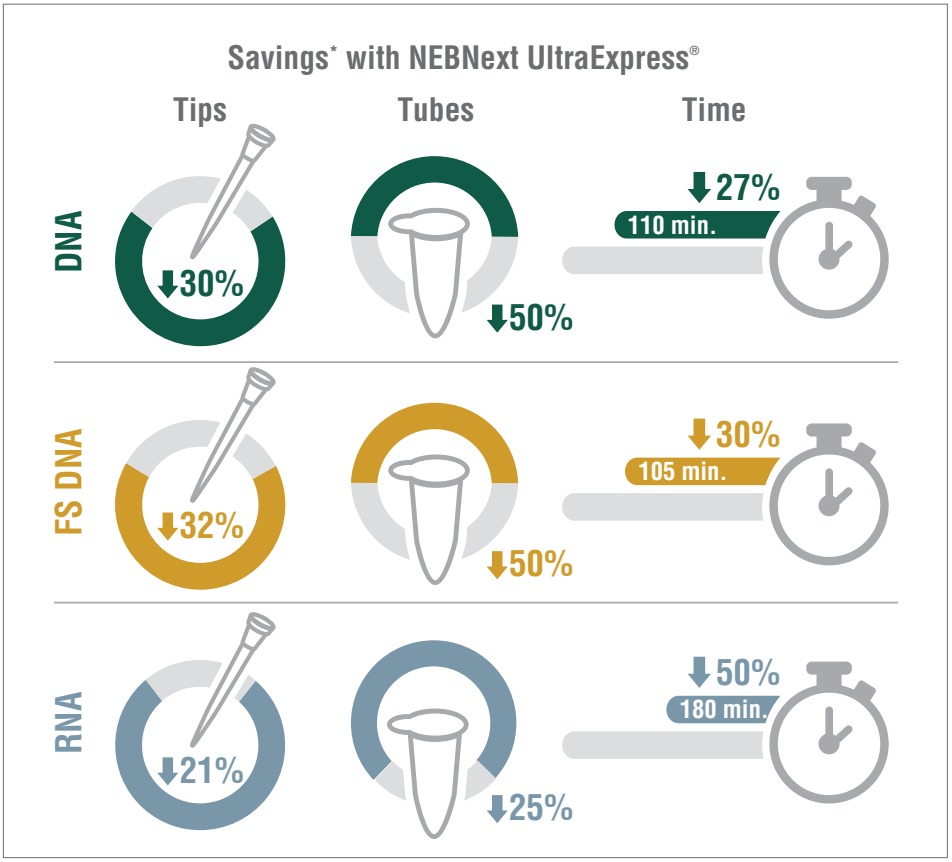
Save time, have fewer steps, and reduce consumables

Sometimes speed is required to set you apart from the pack. The NEBNext UltraExpress DNA and RNA Library Prep Kits have been carefully optimized for speed, while providing the high yields and high quality that you've come to rely on. Each kit has a single-condition protocol, with fixed universal adaptor concentration and number of PCR cycles, for the ultimate in streamlining.

With fewer workflow and cleanup steps and automation friendly transfer volumes, the kits were built for ease of use and automation compatibility. And, they do this all while reducing consumables waste, making your discoveries at the bench greener.

Top 5 reasons to choose NEBNext UltraExpress

1. Fast workflow
2. High quality libraries from a wide input range
3. Single protocol for all input amounts
4. Fewer steps, consumables, and cleanups
5. Automation friendly



** As compared to NEBNext Ultra II*

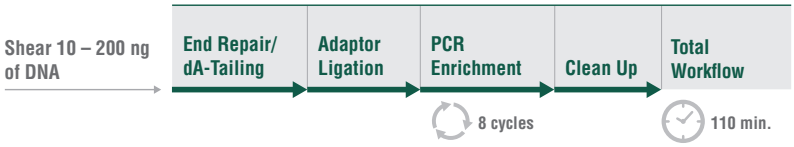
What users are saying:

"Protocols designed to save time usually only save 20 - 30 minutes. The NEBNext UltraExpress RNA Library Prep protocol saved us just over an hour in processing time. This is quite significant. We were especially impressed with the new cleanup approach that resulted in squeaky clean libraries."

– Director,
Large Sequencing Core

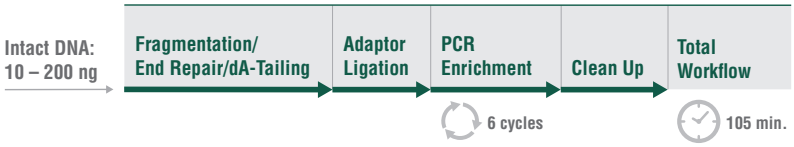
NEBNext UltraExpress DNA Library Prep

The NEBNext UltraExpress DNA Library Prep Kit features a fast, streamlined workflow that enables the creation of high yield, high quality libraries in under 2 hours. The workflow incorporates master mixed reagents, reduced incubation times, and fewer cleanup steps, all conducted in a single tube, which minimizes plastic consumable waste. With simplicity at the forefront, the kit includes a single protocol for all input amounts, making it well-suited for all throughputs.



NEBNext UltraExpress FS DNA Library Prep

The NEBNext UltraExpress FS DNA Library Prep Kit offers a fast, streamlined workflow, including enzymatic fragmentation, end repair, and dA-tailing with a single enzyme mix in under 2 hours, suited for all throughputs.



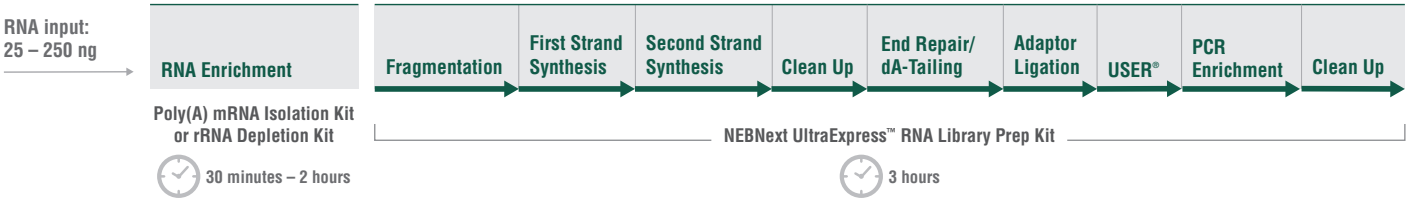
TOOLS & RESOURCES

Visit NEBNext.com to find:

- The full list of products available
- Video protocols & workflow animations
- Online tutorials to help with product selection, general handling tips, and more
- Access to NEBNext Selector Tool, our online tool for help with selecting the right NEBNext product
- Over 30,000 NEBNext citations
- Protocols & FAQs
- Refer to NEBNext Automation Compatibility Selection Chart for details about successful kit automation

NEBNext UltraExpress RNA Library Prep

The NEBNext UltraExpress RNA Library Prep Kit is the latest generation of NEBNext RNA library prep, with a fast, streamlined workflow. The kit is compatible with mRNA isolation and rRNA depletion workflows and a wide range of sample types. With a 3 hour library prep protocol, the kit enables creation of high quality RNA libraries in a single day, in conjunction with mRNA or rRNA depletion kits.



Ordering Information

PRODUCT	NEB #	SIZE
DNA		
NEBNext UltraExpress DNA Library Prep Kit	E3325S/L	24/96 rxns
NEBNext UltraExpress FS DNA Library Prep Kit	E3340S/L	24/96 rxns
NEBNext Magnetic Separation Rack	S1515S	24 tubes
RNA		
NEBNext UltraExpress RNA Library Prep Kit	E3330S/L	24/96 rxns
NEBNext Poly(A) mRNA Magnetic Isolation Module	E7490S/L	24/96 rxns
NEBNext rRNA Depletion Kit v2 (Human/Mouse/Rat)	E7400S/L/X	6/24/96 rxns
NEBNext High Input Poly(A) mRNA Magnetic Isolation Module	E3370S	24 rxns
NEBNext Magnetic Separation Rack	S1515S	24 tubes

Learn more at
www.NEBNext.com

The NEBNext Multiplex Oligos Selection Chart simplifies the process of selecting the appropriate indexing primers and adaptors for your sequencing applications. Visit
www.neb.com/oligos

The Heart of the Matter

NEBNext Ultra II

High flexibility for a wide range of input amounts and applications

The NEBNext Ultra II workflow lies at the heart of NEB's portfolio for next generation sequencing library preparation. It is ideal for those needing high flexibility, high yields, and performance for a wide range of input amounts, even for challenging samples like FFPE DNA or for special applications like Methyl-seq. The Ultra II workflow is available in a convenient kit format, or as separate modules – it is easily scalable and automated on a range of liquid handling instruments.

NEBNext Ultra II DNA Library Prep Workflow:

End Repair/ dA-Tailing → Adaptor Ligation → Clean Up/ Size Selection → PCR Enrichment → Clean Up

Module #E7546 | Module #E7595 | component of #E7103 | Module #M0544 | component of #E7103

NEBNext Ultra II DNA PCR-free Library Prep Kit for Illumina (#E7410)

NEBNext Ultra II DNA Library Prep Kit for Illumina (#E7645)
Ultra II DNA input amounts:
500 pg – 1 µg pre-sheared DNA

with Sample Purification Beads (#E7103)
Ultra II DNA PCR-free input amounts:
250 ng – 1,000 ng pre-sheared DNA

- Hands on time:* <15 mins
- Total time:* ~2 hrs 30 min – 3 hrs

NEBNext Ultra II FS DNA Library Prep Workflow:

Enzymatic DNA Fragmentation & End Repair/ dA-Tailing → Adaptor Ligation → Clean Up/ Size Selection → PCR Enrichment → Clean Up

Module #E7810

NEBNext Ultra II FS DNA PCR-free Library Prep Kit for Illumina (#E7430)

with Sample Purification Beads (#E7435)

NEBNext Ultra II FS DNA Library Prep Kit (#E7805)
Ultra II FS DNA input amounts:
100 pg – 0.5 µg intact DNA

with Sample Purification Beads (#E6177)
Ultra II FS DNA PCR-free input amounts:
50 ng – 500 ng intact DNA

- Hands on time:* <15 mins
- Total time:* ~2 hrs 30 min hrs

*Including PCR

What users are saying:

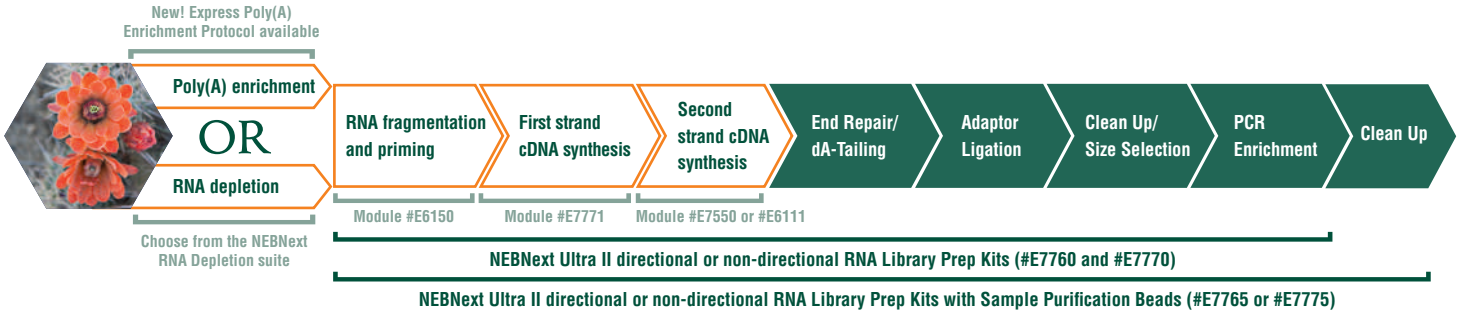
"We've been testing EM-seq on a variety of inputs, platforms, and samples, and it shows more even coverage across CpG islands, the whole genome, and also greater detection of CpG sites across the genome vs. WGBS."

– Christopher Mason,
Weill Cornell Medical School
New York

"NEBNext Ultra II FS performance is exceptional. The possibility to start with higher DNA concentrations allows for less consumption of reagents for initial QC. Obtaining the desired fragment length and less hands-on time are also key factors when preparing genomic libraries and NEBNext Ultra II FS can provide that. The use of fewer PCR cycles also decreases the bias associated with the PCR step."

– João Anes, Ph.D.,
NGS specialist in Food Safety,
UCD-Centre for Food Safety, Dublin, Ireland

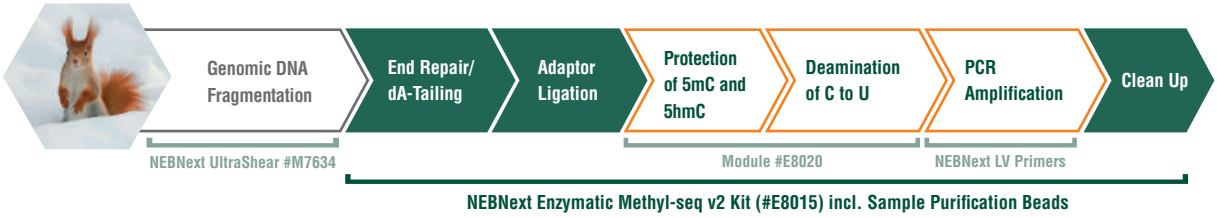
NEBNext Ultra II Directional RNA or Non-directional RNA Workflow:



Ultra II RNA input amounts:
10 ng – 1 µg total RNA (RNA depletion)
10 ng – 1 µg total RNA (poly(A) mRNA)

- Hands on time: <30 mins
- Total time: ~ 5 hrs 30 min – 6 hrs 30 min

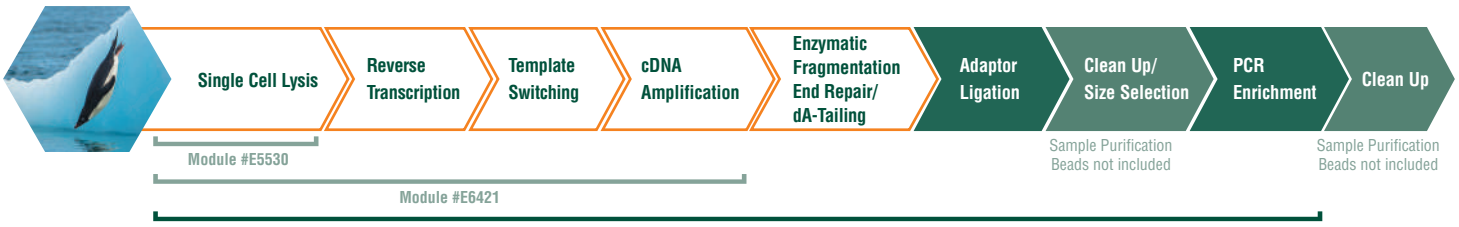
NEBNext Enzymatic Methyl-seq v2 Workflow:



EM-seq v2 input amounts:
100 pg – 200 ng

- Total time: 6 – 7 hrs

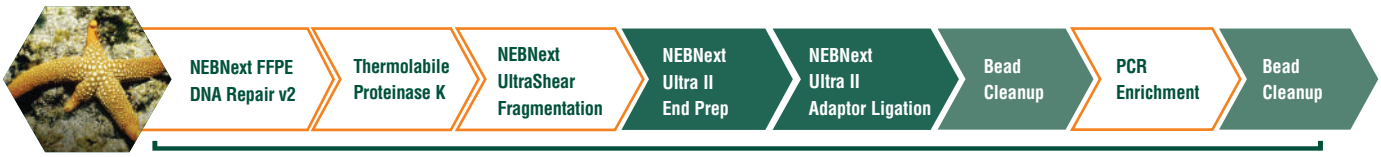
NEBNext Single Cell/Low Input RNA Workflow:



Single Cell/Low Input RNA input amounts:
2 pg – 200 ng total RNA

- Hands on time: <30 mins
- Total time: 6 – 7 hrs

NEBNext UltraShear FFPE DNA Library Prep Kit Workflow:



DNA input amounts:
5 ng – 250 ng

- Hands on time: <1 hr
- Total time: 3 – 4 hrs

2024 PASSION IN SCIENCE AWARDS RECIPIENTS

We are excited to announce the winners of our fourth Passion in Science Awards, which acknowledge scientists for their innovative work that goes above and beyond the boundaries of pure science to make a profound impact on other fields, including the arts, humanitarian service, environmental stewardship, and science mentorship. On October 9th and 10th, 2024, we hosted award recipients from around the world at our headquarters in Ipswich, MA. In a truly inspiring event, the award recipients received their awards, shared their personal stories of success, and participated in group discussions and creative brainstorming sessions with the NEB community. As part of our 50th anniversary celebrations, winners of our recent Golden Butterfly Grand Prize competition, which involved researchers from around the world seeking out golden butterfly icons hidden on our website and product literature, also attended the festivities.

The full list of Passion in Science Awardees is as follows:

Category: Science Mentorship and Advocacy Award

- Rogelio Hernández López (Stanford University, Stanford, CA, USA): Co-founder of the Clubes de Ciencia Program, which hosts hands-on STEM workshops for high school and college students in Latin America. To date, the program has hosted 19,000 students in nine countries.
- Anne Madden (The Microbe Institute, Yarmouth, ME, USA): Founder of the Microbe Institute, a nonprofit dedicated to fostering microbial discovery for a better tomorrow through participatory art, research, and education projects.
- Samuel Ogunsola (University of Manitoba, Winnipeg, Canada): Founder of Shaping African Women in STEM (SWIS Africa), an initiative aimed to celebrate, promote, and shape women in STEM in Africa. To date, the program has organized 10 training programs with over 1,000 women participating.
- Alyssa Paparella (Howard Hughes Medical Institute Inc., Chevy Chase, MD, USA): Launched Disabled in STEM, a program that connects individuals with disabilities across STEM fields with mentors. To date, the program has connected 380 individuals.
- Don Spratt (Clark University, Worcester, MA, USA): Launched the ClarkU STEM Outreach Program, which provides an opportunity for underrepresented groups to be exposed and inspired to pursue careers in STEM.

Category: Environmental Stewardship Award

- Jim Chadwick (University of Oxford, Oxford, UK): Conducted a grassroots study to raise awareness among scientists about their energy usage and its impact. He also established a community allotment and wildflower garden at the institute to improve the mental health of graduate students.
- Martin Farley (Sustainable Science Leader and LEAF founder, London, UK): Founder of the LEAF (Laboratory Efficiency Assessment Framework) program - which helps laboratories conserve plastics, water, energy, and other resources - and a lifelong advocate of sustainability.

Category: Humanitarian Duty Award

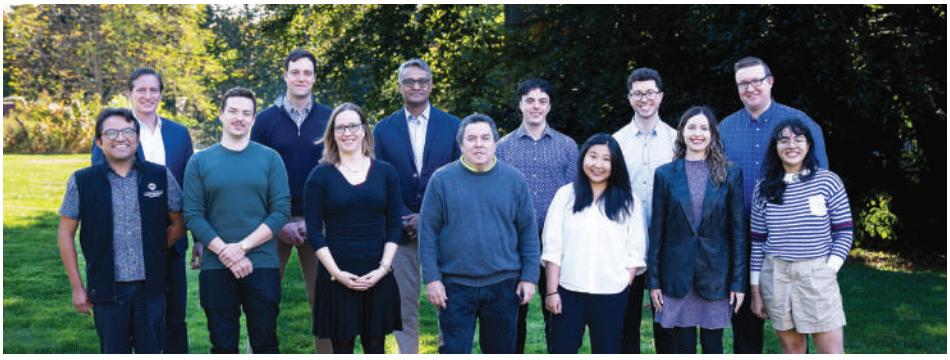
- Adewunmi Akingbola (King's College, Cambridge, UK): Founder of HealthDrive Nigeria, which combats viral hepatitis in Nigeria through awareness, free hepatitis B surface antigen and HCV antibody tests, and subsidized vaccinations for underserved communities. The program has screened >15,000 and vaccinated >10,000 individuals.
- Dylan Pillai (University of Calgary, Alberta, Canada): Founder of the LAMPREG project, which has screened >2,500 women in Ethiopia for malaria using LAMP, to determine whether asymptomatic detection improves pregnancy outcomes.

Category: Arts and Creativity Award

- Ji Hyun (Sally) Kong (Rockstar Games, Brooklyn, NY, USA): Creator of Mitos – Handweaving My Ancestral DNA, a data physicalization project of handwoven patterns generated from the artist's own mitochondrial DNA sequence.
- Sam Siljee (Gillies McIndoe Research Institute, Wellington, New Zealand): Created the "The Sound of Science", an innovative method of engaging with mass spectrometry data by generating a unique tone for every spectrum in the raw data.
- Michael Weiner (Abbratech, Branford, CT, USA): Creates art from recycled lab consumables, including a DNA sculpture made from microtiter plates and portraits using pipette tips.

> *"Our 2024 Passion in Science Awards recipients truly embody the values which have been embraced by NEB for the past five decades – passion, humility, and being genuine."*
>
> – Salvatore Russello, Chief Executive Officer at NEB

More information on the winners can be found at **www.neb.com/passioninscience**



2024 Passion in Science and Golden Butterfly grand prize winners.

The bridge to your success

NEB's Customized Solutions Team is here to help, and serves as a bridge to the support and resources you need to ensure your success.

Creating the right partnership is essential when pioneering a new life science product. Every aspect of development – technical expertise, reagent optimization, manufacturing scale, turnaround time, reagent quality, and comprehensive logistical support – is vital for achieving your objectives.

And in the regulated markets landscape, these challenges magnify, demanding an even more specialized approach.

Your bridge to successful innovation:

- Leverage NEB's 50 years of experience in enzymology and reagent manufacturing
- As an extension of your team, we prioritize a deep understanding of your objectives, work with you on an optimal solution, and help to anticipate your future needs
- Benefit from our ISO 9001- and ISO 13485-certified processes and commitment to quality, as well as our GMP-grade* production facility, and specialized lyophilization facility for the highest quality production standards
- Access unparalleled support from our dedicated account managers, program managers, technical scientists, and production teams, all through a single point of contact
- We work closely with you on inventory management and global distribution through our network of NEB-owned subsidiaries, to ensure successful commercialization

NEB's Customized Solutions Team will help you access novel products, meet quality specifications, speed time to market, and streamline your supply chain, allowing you to focus more on what matters most – innovation.

Ready to start the discussion? Learn more at
www.neb.com/customized-solutions

** "GMP-grade" is a branding term NEB uses to describe products manufactured or finished at NEB's Rowley facility. The Rowley facility was designed to manufacture products under more rigorous infrastructure and process controls to achieve more stringent product specifications and customer requirements. Products manufactured at NEB's Rowley facility are manufactured in compliance with ISO 9001 and ISO 13485 quality management system standards. However, at this time, NEB does not manufacture or sell products known as Active Pharmaceutical Ingredients (APIs), nor does NEB manufacture its products in compliance with all of the Current Good Manufacturing Practice regulations.*

Migrate to Monarch:

Ce printemps, attirez les papillons NEB dans votre labo !

Tentez de gagner l'un des nombreux packs goodies exclusifs et peut-être l'un des grands prix !

Comment participer ?

Du 1er avril au 21 juin 2025, une carte de jeu Monarch sera glissée dans chacun de vos colis NEB France. Vous pourrez aussi en trouver sur nos stands et auprès de votre responsable secteur.

Trois chances de gagner !

1. Scannez simplement le QR-code ou rendez-vous sur la page indiquée pour testez votre code et tentez de gagner l'un des packs exclusifs de goodies.
2. Collectez les trois cartes de couleurs différentes et partagez avec nous votre collection pour recevoir l'un des pack goodies.

3. Tous les participants seront inscrits à un grand tirage au sort pour gagner des peluches, des laboratoires miniatures Lego et des plants de lavande papillon.

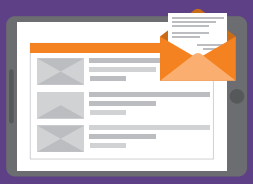
Une peluche WWF®

Un Lego® Set NEB

Un plant de lavande papillon

(au choix pour tous les heureux tirés au sort)

**Limité à un pack par personne. Termes et conditions à consulter sur www.NEBMonarch.fr*



Pour rester au courant de toutes nos actus (promotions, jeux, nouveaux produits, invitations et bien plus), abonnez-vous à notre newsletter !

www.neb-online.fr/news

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