Issue I **2016**

NEB expressions

a scientific update

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in this issue

NEW ENGLAND BioLabs®

Greening the Laboratory:
A roadmap to environmental action in the lab

The laboratory is a place of inspiration, curiosity, ingenuity, and – not infrequently – altruism. Researchers are, by and large, a thoughtful and deeply invested group, but the environment – and the ecological consequences of life science research – are not typically at the forefront of researchers' minds when planning their investigations. You can make your laboratory, and your life in the lab, greener by following a few common-sense tips.

We've all been there – after a long day in the cell culture hood, we unceremoniously dump the pile of used serological pipets, pipet wrappers, and empty media bottles into the lab waste collection bin. Who hasn't unlocked the lab door, after a long weekend, to find that the lights had been burning the whole time? We wouldn't behave this way at home; we're all experts at curb-side recycling and flipping the switch before we leave the kitchen. Why is it so hard to bring our eco-mindedness to the laboratory?

Some of the problem is a lack of awareness. You're one paragraph in, but you've probably already thought of several ways that you could green-up your act in the lab. There are a number of good ways to start the conversation with your labmates. Spreading the word can be as simple as navigating the lab computer to a green-labs-themed website; several have sprung up in the past few years. One site, Labconscious (see feature 1), began as a community of concerned life scientists, seeking to crowdsource solutions to the field's pervasive environmental challenges. "We've been really energized by the engagement we've seen with our blog and social network accounts," said Josh Resnikoff, contributing editor of Labconscious. "Life scientists are starting to take a critical look at the resources that their research demands, and they're starting to find smarter alternatives for a number of wasteful processes."

Once you've identified a few tactics for cutting your lab's footprint, share your newfound knowledge – volunteer to present at lab meeting, host a lunchtime discussion, or write a "top ten" list for the departmental newsletter. Post friendly reminders to turn the lights off at the end of the day, shut the biosafety cabinet when it's not in use, and combine autoclave loads. You may just be surprised by how receptive your coworkers are to your tips.

Another contributor to the problem is a lack of institutional buy-in. While some institutes and universities have realized the value of pro-environmental policies for the life sciences, others have been slower to adopt new processes. For instance, most universities offer basic recycling services, which collect paper products, beverage bottles and cans, but there are a number of specialized recycling methods that can address the various new streams of recyclables that are commonly used in life science research – polystyrene, polyethylene, and polypropylene, just to name a few.

Some of the problem is regulatory. Laboratory safety policies frequently dictate how certain types of laboratory waste must be treated, whether it's incineration, sterilization or neutralization. Each of these methods is associated with its own environmental concerns, but we're not advocating circumvention of hazardous waste policies! Instead, we're suggesting that you examine your methods. When possible, choose methods that don't require regulated disposal. When regulated disposal is required, as for certain chemicals, consider secondary treatment methods that can minimize the amount or volatility of disposable materials, like distillation. In some cases, greener chemicals can replace toxic chemicals; for example, one could consider replacing ethidium bromide, which is commonly used for staining DNA in acrylamide gels, with a safer stain such as gel red.

Labconscious is an open community for researchers to share ideas, protocols and best practices that help reduce the environmental footprint of bench science. Sponsored by New England Biolabs, it is our hope that Labconscious will become an educational platform and resource repository that will connect companies and brands with end users, and be used to identify greener processes and products. Together, we can try to make a better world with better labs.

Start the discussion at **labconscious.com**. Subscribe to the blog, follow the social channels and submit your ideas, stories and photos that relate to sustainability.

labconscious

NEB'S SHIPPING BOX RECYCLING PROGRAM

NEB established the first shipping box recycling program over thirty-five years ago. Still in practice today in the U.S. and in some locations internationally, the program diverts polystyrene from landfills. Customers are provided with a return address label, and simply seal the box with the label and return via their local mail provider. It couldn't be more simple!

WHY WAIT? GET A GREENER LAB STARTING NOW!

Here are a few common-sense guidelines for making your lab, your department, or your institution for that matter, greener. Whether you follow them all to the letter, or you discuss one of them at your next lab meeting, you're taking steps towards a greener laboratory.

Plastics:

Lab consumables are commonly made from plastics, as plastics are lightweight and extremely stable – two key attributes of disposable laboratory supplies. Of course, plastic's stability does not bode well for the environment, since plastic decomposes slowly – if at all. Therefore, recycling is the most responsible way of disposing of the copious amounts of plastic that are generated in the lab. Small things, such as using refillable tip boxes or storage boxes, can help reduce the amount of plastic used, but plastics are an unfortunate necessity in the lab. Nucleic acid purification, in particular, is notorious for generating large amounts of plastic waste in the laboratory. To learn more about how NEB is working to minimize the impact of nucleic acid purification on the environment, see pages 6–7.

Polystyrene: Many life science reagents require controlled temperature shipping, and expanded polystyrene (EPS) is the material of choice for protecting and insulating temperature-sensitive products. EPS is extremely stable, taking upwards of one million years to decompose in a landfill.

EPS recycling is available in a few locations, but an EPS reuse program, like NEB's shipping box recycling program (see feature 2) and Andrew Markley's Styrofoam® box recycling program at the University of Wisconsin is an even greener alternative. Andrew received one of NEB's Passion in Science Awards™ in 2014, and has since worked to spread his box reuse program to other universities (see feature 3). The same material, polystyrene, is used in the fabrication of disposable serological pipettes, commonly used in sterile cell culture techniques. Recycling of serological pipettes may be available near you, but there may be BioSafety Level (BSL) restrictions for their applications.

If your institution's recycling program isn't as expansive as your laboratory's appetite for plastics, a good first step is to speak with the local environmental health and safety officer. Learning what provisions are available for new recycling programs, or what chemical safety rules must be adhered to, will help to guide your search for next steps.

Water:

Life science research is extremely water-use intensive. Buffers are made with water. Autoclaves cool their exhaust with water. Water baths are used to incubate samples. Water is a precious resource that must be conserved, but life science research (and manufacturing) uses water as a matter of course. NEB's pledge to protect the environment extends to protecting the local watershed, so NEB has a unique solution for cleaning the water it uses and returning it to the ground (see feature 4). For those of you without a LEED®- certified laboratory facility, you'll need to get creative to conserve water (learn more about LEED certification in feature 5).

Plan ahead: When conserving water, you'll need to make a plan for water use – and stick to it. When making buffers, follow an SOP; dumping out batches of incorrectly made buffers wastes both time and water. If your lab uses a water flow vacuum system, consider investing in a small vacuum pump; you can choose a size that fits your lab's particular needs and available space. Washing glassware by hand can be highly water efficient, but it isn't a realistic option for certain labs; newer dishwashers can be connected to deionized and filtered water supplies, allowing for multiple rinses of important glassware. Choose recirculating water baths, when possible. Consider installing aerators or water misers to minimize the amount of water that pours out of the faucet; while this may be out of your hands, it is always worth suggesting to your environmental health and safety officer or facilities manager.

Energy use:

Many aspects of energy use are out of the hands of life science researchers. Some laboratories are equipped with "smart" lights, activated by motion sensors. Much of the climate control is determined by your Facilities Department. Still, there are several ways that every researcher can help to save energy in the lab; it will just take some small adjustments to your established routines.

Save the electrons: One of the major, researcher-related energy costs in the lab can be the easiest to avoid – skip the post-PCR hold. Plan your PCR to finish before you leave for the day. Your 4°C-hold step wastes significant energy.

Once you've made that adjustment, you'll be ready to start tackling smaller tweaks, like shutting the biosafety cabinet (tissue culture hood) sash. By shutting the sash, you stop the laminar-flow fan from running when it's not needed.

AN NEB CUSTOMER WITH A PASSION FOR RECYCLING

Expanded polystyrene (EPS, also known as Styrofoam) has a low consumer-recycling rate due to its high transportation costs. In 2012, Andrew had the idea of collecting EPS boxes on campus and reusing them locally. Together, with the University of Wisconsin (UW) Office of Sustainability, they applied for and received over $100,000 in EPA funding for an undergraduate team to set up this system. In a year, UW went from no campus EPS recycling to collection sites in 26 buildings, reusing or recycling close to a semi-truck load monthly. Now, the university resells EPS boxes (as well as packing peanuts and gel packs) through the campus surplus store, and provides boxes to local biotech companies for reshipment. The rest is delivered to a local EPS recycler. The hope is to use funds received by selling boxes to make campus EPS collection financially self-sustainable. Success with the UW program has led to Andrew replicating this program at two other universities.

AN INNOVATIVE METHOD FOR WASTEWATER TREATMENT

When NEB designed its facility in Ipswich, MA, one of the goals was to be more environmentally sound. As such, NEB chose to implement a Solar Aquatics® Wastewater Treatment System on its campus. Housed in a beautiful greenhouse filled with tropical plants, the system utilizes and accelerates the processes found in streams and wetlands to purify the water according to tertiary standards. While visitors may stop at the greenhouse to marvel at the beauty inside, many do not know it is treating the entire campus' wastewater for groundwater recharge.

To learn more about the water treatment process, visit **www.neb.com/aboutNEB**.

For example, the Office of Sustainability at Harvard University initiated a shut the sash program in 2008, and has seen a significant energy savings as a result. (For more information, visit **www.green.harvard.edu/programs/greenlabs/shut-sash-program**) Visit #shutthesash to see how other labs have adopted this philosophy. While we are talking about biosafety cabinets, you can also stop using the UV light to sterilize the cabinet; it doesn't really work. You'll save so much electricity by adopting these two practices that your PI might just spring for a pizza party!

After that pizza party, you'll have enough energy (kcal) to scrape down the gasket that seals freezer – any ice that has accumulated is keeping the gasket from doing its job, and its job is to keep the cold air inside the freezer chamber, where it belongs. You can also ensure that the coils on the rear of the freezer unit are free from dust and debris, which make the freezer have to work harder to achieve and maintain temperature. And while you are at it, you may want to take a few minutes to organize the freezer itself; if you know where everything is, open times will be shorter and less frequent.

Chemicals:

Chemicals, being chemicals, have unique properties that are required for certain laboratory uses. Specificity is key, and when an alternative is not available, efforts must be made to minimize and mitigate the impact of those chemicals inside and outside of the lab.

continued on page 4...

Learn more about sustainability in the latest episode of NEB TV

www.neb.com/NEBtv

Swapping, sourcing and re-use: As mentioned earlier, when safer options are available, efforts should be made to incorporate them into your lab's procedures/protocols. When safer options are not available, you should consider buying the smallest amount that will serve your purpose, or try to source your chemicals from a "shared" source. Find out if your institution has a shared chemical repository.

Equipment reuse:

As the old saying goes "one man's trash is another man's treasure". Perhaps you have changed your research focus and have equipment on your bench that you no longer need. Not to worry – designate a place in the building for equipment reuse. There is probably another researcher in the building that can use it, and you may find something you were looking for as well! For example, in 2013, the Harvard University Office of Sustainability piloted a "Reuse Room" where researchers can deposit specific items for recycling and reuse, including used equipment, glassware, NEB Styrofoam coolers and gel packs. This program has been very successful for them. To learn more, visit **www.laboratoryequipment.com/articles/2014/04/collaborative-sustainability**.

You've already taken the first step; you've educated yourself about a number of greener actions you can get started with. The next step is up to you, but we'd like to suggest that you keep learning – learn what your institution and local governance can do for you. Learn what's recyclable, learn what can be reused, and learn how to reduce your lab's waste profile. Then, help to raise awareness amongst your coworkers. Work together to come up with a plan, tailor that plan specific to your department and then work to get leadership support.

At NEB, we're certainly not experts in greener labs; we're just committed to reducing our own environmental footprint. That said, we are always open to suggestions as to how we can do better. We encourage you to share your ideas at **labconscious.com** or **labconscious@neb.com**, so that we can all benefit from each other's ideas, big or small.

Bringing your eco-mindedness into the laboratory can be easy; all it takes is a bit of research into your institution's policies, and a commitment to making life science research greener. Start small, question convention, and know that you can make a difference!

References:
www.LabConscious.com
www.labs21century.gov

WHAT IS LEED® CERTIFICATION?

Leadership in Energy and Environmental Design (LEED) certification is a distinction awarded based on a suite of environmentally focused standards. These include site sustainability, water efficiency, energy conservation and atmospheric protection, choice of building materials and resources, indoor environmental quality, innovation and building design. LEED certification can be awarded at the laboratory level, or for entire buildings.

NEB commissioned the building of a LEED-certified laboratory facility in Ipswich, MA. Many choices were made to optimize energy usage, choose responsibly-sourced building materials and conserve resources through building design. For a list of examples, visit **www.neb.com/environmental philosophy**.

What if you could...

- use up to **44% less plastic** for your nucleic acid purification*
- **recycle ALL** of your packaging and plastics
- AND, still recover the same **highly pure DNA**?

Now, you can.

• C

NEW PRODUCT

Monarch™

Nucleic Acid Purification Kits

It's time for change.

NEW Monarch Nucleic Acid Purification Kits from NEB

It's time to transform your DNA purification experience. NEB's Monarch Nucleic Acid Purification Kits are optimized for maximum performance and minimal environmental impact. Our unique thin-walled column design uses less plastic, prevents buffer retention, eliminates the risk of carryover contamination, and enables elution in smaller volumes. The result: high performing DNA purification for your downstream applications.

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

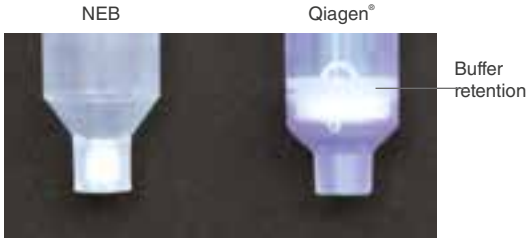
FEEL GOOD ABOUT CHOOSING MONARCH

- 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**
- Competitive pricing

Designed for performance



Designed for sustainability – Monarch kits*…

* *Visit NEBMonarchPackaging.com for details.*

** *In the US and select subsidiary locations. Contact your local distributor for shipping policies.*

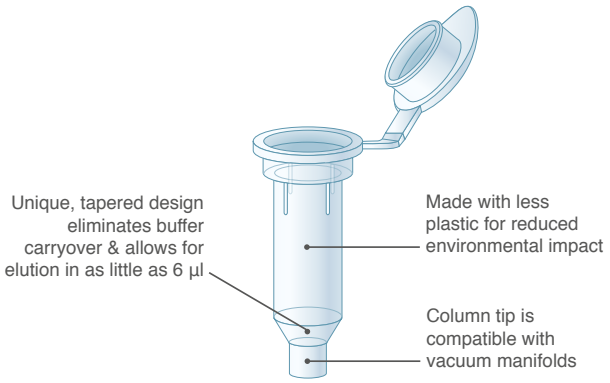
Monarch DNA Gel Extraction Kit

Rapidly purify up to 5 µg of concentrated, high-quality DNA from your agarose gels, with no need to adjust pH. Elute in as little as 6 µl for a more concentrated sample.

Monarch PCR & DNA Cleanup Kit (5 µg)

Purify DNA from a variety of enzymatic reactions, including PCR, restriction digestion, ligation and reverse transcription.

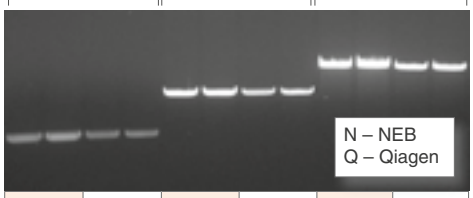
FIGURE 1: **Optimized design of the columns supplied with the Monarch DNA Gel Extraction and PCR & DNA Cleanup Kits**



Monarch Plasmid Miniprep Kit

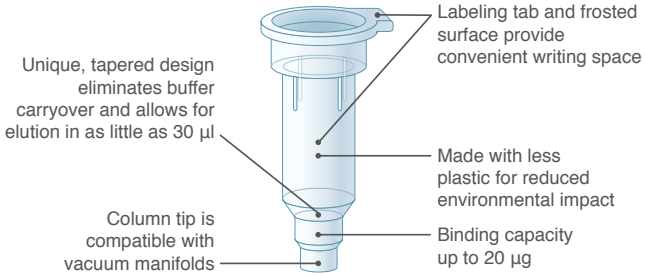
This kit employs familiar cell resuspension, alkaline lysis and neutralization steps, with the additional benefit of color indicators to monitor completion. Elute in lower volumes for more concentrated, highly pure DNA samples.

FIGURE 3: **Monarch Plasmid Miniprep Kits consistently produce more concentrated plasmid DNA with equivalent yield, purity and functionality as compared to the leading supplier**



	2.7 kb		5.2 kb		10 kb	
	N	Q	N	Q	N	Q
Conc. (ng/µl)	334.9	202.2	384.2	216.4	607.6	351.0
Total yield (µg)	10.0	10.1	11.5	10.8	18.2	17.6
$A_{260/280}$	1.9	1.9	1.9	1.9	1.9	1.9
$A_{260/230}$	2.4	2.3	2.4	2.4	2.3	2.4

FIGURE 2: **Optimized design of Monarch Miniprep Columns**



Request your free sample* and learn more: visit **NEBMonarch.fr**

NEW PRODUCT!

ORDERING INFORMATION:

PRODUCT	NEB #	SIZE	PRICE
Monarch DNA Gel Extraction Kit	T1020S/L	50/250 preps	**75 € / 325 €**
Monarch PCR & DNA Cleanup Kit (5 µg)	T1030S/L	50/250 preps	**88 € / 398 €**
Monarch Plasmid Miniprep Kit	T1010S/L	50/250 preps	**88 € / 398 €**

*Limited supply. As long as stocks last.

Test Monarch for free, give us your feedback and win an iPad 4 and more!

Step 1:
Request your preferred sample.

Step 2:
Test Monarch in your lab!

Step 3:
Share your experience with us & participate in our prize draw.

Win with Monarch!

Share with us your experiences with the Monarch Kit & be eligible to win valuable prizes. Once a month until 31.07.2016, we draw several winners among all relevant participants. In addition, one overall winner will receive an iPad mini 4.

More information? Please visit:

NEBMonarch.fr

NEBNext Ultra II

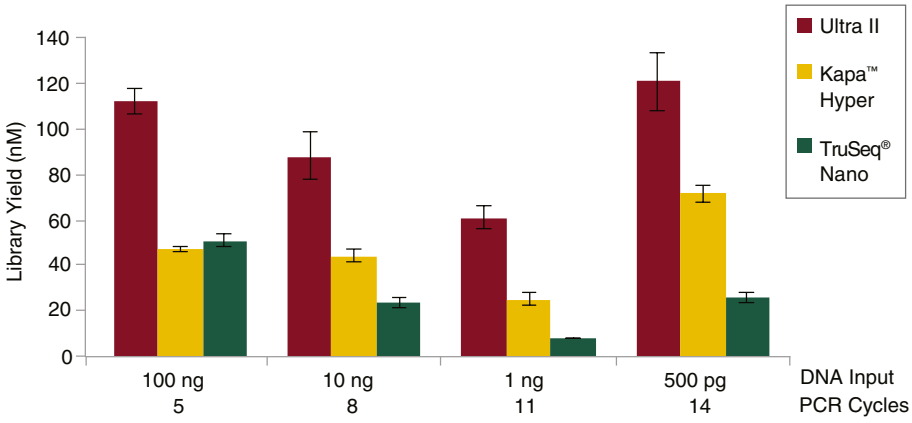
NEW NEBNext® Ultra™ II DNA Library Prep

Are you challenged with trying to get higher library yields using ever-decreasing input amounts? Each component in the NEBNext Ultra II DNA Library Prep Kit from NEB has been reformulated, resulting in a several-fold increase in library yield with as little as 500 picograms of input DNA. These advances deliver unprecedented performance, while enabling lower inputs and fewer PCR cycles. Get even more from less with NEBNext Ultra II.

An important measure of the success of library preparation is the yield of the final library. Optimization of each reagent in the library prep workflow enables substantially higher yields from the NEBNext Ultra II kit as compared to other commercially available kits. Achieving yields for high quality cluster generation and sequencing from very low input amounts can be challenging, a fact compounded by the preference to amplify the library using as few PCR cycles as possible. NEBNext Ultra II overcomes this challenge, and users can now obtain higher library yields with lower inputs, as shown below.

FIGURE 1: **The NEBNext Ultra II DNA Library Prep Kit produces the highest yield libraries from a broad range of input amounts**

Libraries were prepared from Human NA19240 genomic DNA using the input amounts and number of PCR cycles shown. Manufacturers' recommended protocols were followed, with the exception that size selection was omitted.



advantages

- Get more of what you need, with the **highest library yields**
- Use to generate high quality libraries, even when you have only limited amounts of DNA, with **inputs as low as 500 pg**
- Improved library complexity with **fewer PCR cycles**
- Prepare libraries from all of your samples, including **GC-rich** and **FFPE samples**
- Save time with **streamlined workflows, reduced hands-on time, and automation compatibility**
- Enjoy the **flexibility** of **kit or module format** products

Here's what customers are saying about NEBNext Ultra II:

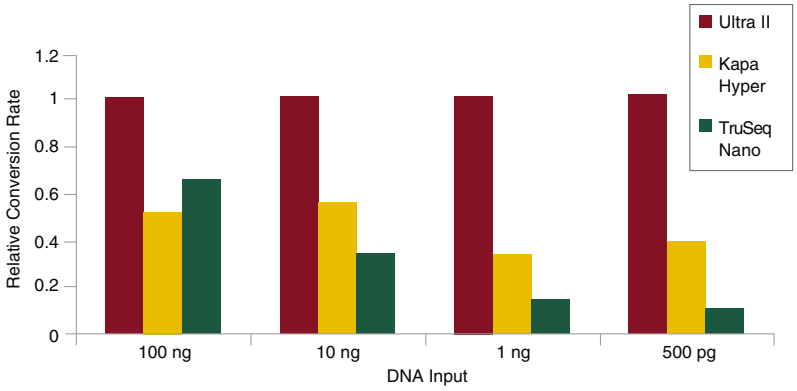
„The possibility to use the new NEBNext Ultra II DNA kit has provided us with a critical opportunity to process challenging low-input genomic samples. These samples otherwise didn't yield libraries of adequate complexity, required for exploring their genomes comprehensively. Using the NEBNext Ultra II DNA Kit has alleviated this problem and enabled us to deliver high quality, high content sequencing data that are relevant for our users."

Vladimir Benes, Ph.D., Head of GeneCore Facility, EMBL Heidelberg, Germany

The efficiency of the End Repair, dA-Tailing and Adaptor Ligation steps during library construction can be measured separately from the PCR step by performing qPCR quantitation of adaptor-ligated fragments prior to library amplification. This enables determination of the rate of conversion of input DNA to adaptor-ligated fragments, or sequenceable molecules. Therefore, measuring conversion rates is another way to assess the efficiency of library construction and also provide information on the diversity of the library. Again, NEBNext Ultra II enables substantially higher rates of conversion as compared to other commercially available kits.

FIGURE 2: **NEBNext Ultra II produces the highest rates of conversion to adaptor-ligated molecules from a broad range of input amounts.**

Libraries were prepared from Human NA19240 genomic DNA using the input amounts and library prep kits shown without an amplification step, and following manufacturers' recommendations. qPCR was used to quantitate adaptor-ligated molecules, and quantitation values were then normalized to the conversion rate for Ultra II. The Ultra II kit produces the highest rate of conversion to adaptor-ligated molecules, for a broad range of input amounts.



ORDERING INFORMATION:

PRODUCT	NEB #	SIZE	PRICE
NEBNext Ultra II DNA Library Prep Kit for Illumina	E7645S/L	24/96 reactions	**535 € / 2.045 €**
NEBNext Ultra II End Repair/dA-tailing Module	E7546S/L	24/96 reactions	**262 € / 835 €**
NEBNext Ultra II Ligation Module	E7595S/L	24/96 reactions	**395 € / 1.270 €**
NEBNext Ultra II Q5® Master Mix	M0544S/L	50/250 units	**99 € / 395 €**

Interested in learning more?

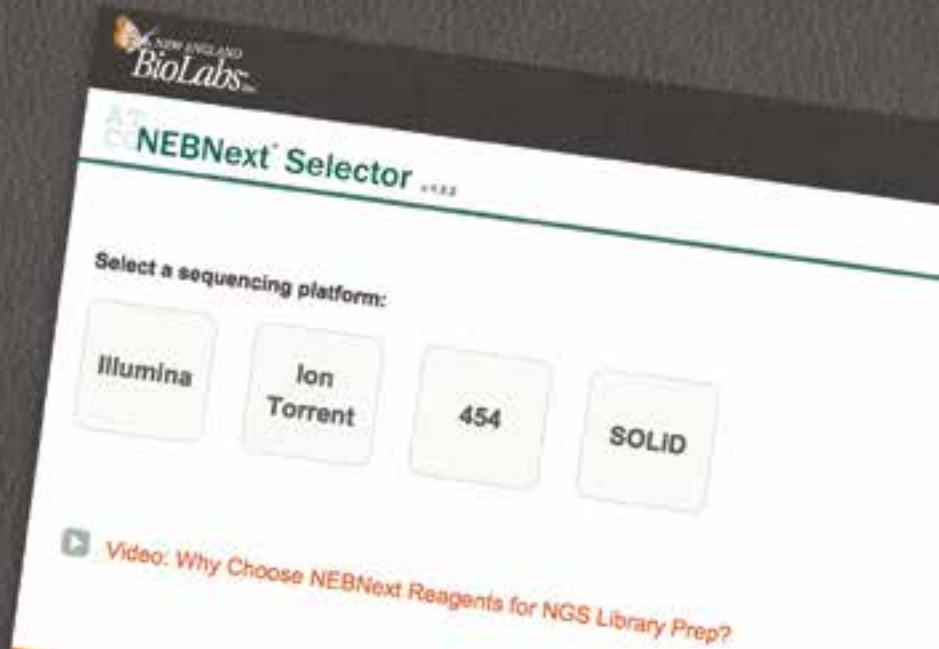
Visit **NEBNextUltraII.com** to learn more about how NEBNext Ultra II addresses low input amounts and challenging sample types. While you are there, you can also **download our technical note**.

Go to: **NEBNextSelector.neb.com**

FEATURED TOOL

AT CG NEBNext® Selector v1.0

- Find recommended NGS sample prep products easily for your **sample type** and **platform**
- **Easily identify** which **step** in the library preparation workflow reagents are suitable for
- Quickly find **additional resources** to help with successful library preparation
- Easy access to **neb.com** for ordering



Clone with confidence.

NEB 5-alpha Competent *E. coli* – new formats available

A versatile *E. coli* strain, NEB 5-alpha is a derivative of DH5α™ and has the same genetic features as this popular cloning strain. NEB 5-alpha offers high transformation efficiencies, convenient formats and value pricing. Whether you are doing routine cloning, subcloning or looking for a high efficiency (electrocompetent) format, NEB 5-alpha is the ideal strain for you.

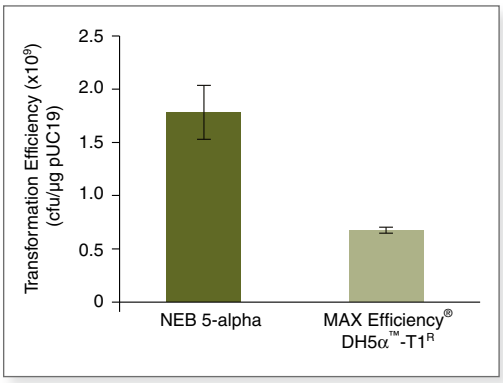


FIGURE 1: **Take advantage of the high transformation efficiency with NEB 5-alpha**

advantages

- First choice for regular cloning – DH5a strain derivative
- Free of animal products
- High efficiency, sub cloning and electrocompetent formats

NEW FORMATS AVAILABLE

384-well plate format

12x8-tube strip format

NEB 10-beta Competent *E. coli*

NEB 10-beta competent *E.coli* are especially recommended for the transformation of large plasmids and large NEBuilder HiFi and Golden Gate Assembly products. NEB 10-beta chemically competent cells are more efficiently transformed with large plasmids than NEB 5-alpha F´Iq cells, offer high efficiencies and are competitively priced.

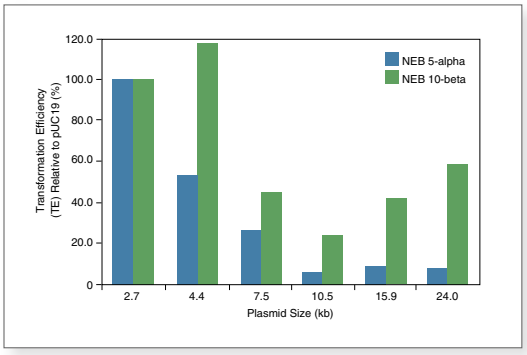


FIGURE 2: **NEB 10-beta chemically competent cells are more efficiently transformed with large plasmids than NEB 5-alpha cells.**
The difference in TE between the two cell lines increases with the size of the plasmid being transformed.

advantages

- Recommended host strain for cloning of larger plasmids (> 5 kb) or larger NEBuilder HiFi Assembly products
- Efficient transformation of methylated DNA derived from eukaryotic sources or unmethylated DNA derived from PCR, cDNA and many other sources
- DH10B™ derivative
- Value pricing

NEBuilder® HiFi DNA Assembly

NEBuilder HiFi DNA Assembly enables virtually error-free joining of DNA fragments, even those with 5´- and 3´-end mismatches. Available with and without competent *E. coli*, this flexible kit enables simple and fast seamless cloning utilizing a new proprietary high-fidelity polymerase. Make NEBuilder HiFi your first choice for DNA assembly and cloning.

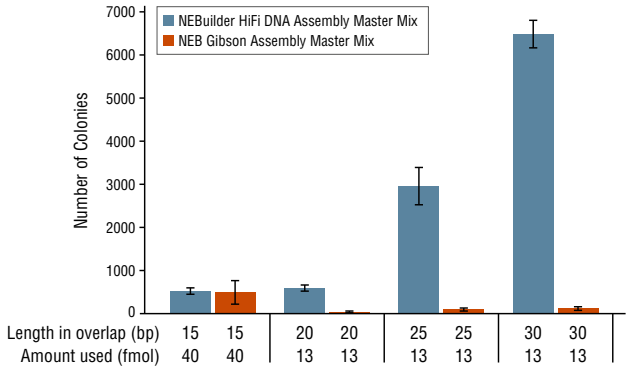


FIGURE 3:
NEBuilder HiFi DNA Assembly offers improved efficiency and accuracy with lower amounts of DNA by increasing overlap length

Reactions were set up in a 4-fragment assembly reaction according to recommended reaction conditions. Amount of DNA and size of overlap is shown.

For help with designing primers, try NEBuilder Assembly Tool at **NEBuilder.neb.com**

advantages

- Enjoy simple and fast seamless DNA assembly in as little as 15 minutes
- Screen fewer constructs, with virtually error-free high-fidelity assembly
- Use for both “standard-size” cloning and larger gene assembly products, from up to 12 fragments
- Use NEBuilder HiFi in successive rounds of assembly, because it removes 5´- and 3´-end mismatches
- Bridge two ds-fragments with a synthetic ssDNA oligo for simple and fast construction (e.g., linker insertion or gRNA library)
- Switch from other systems easily, as NEBuilder HiFi is compatible with Gibson Assembly- designed (and other) fragments
- No licensing fee requirements from NEB for NEBuilder products

Free Sample

Request a **free sample** and test in your lab!

www.neb-online.fr

Limited supply. As long as stocks last.

Visit **NEBuilderHiFi.com** and learn how NEBuilder HiFi DNA Assembly bridges dsDNA with a ssDNA Oligo

ORDERING INFORMATION:

PRODUCT	NEB #	SIZE	PRICE
NEB 5-alpha Competent *E. coli* (High Efficiency)	C2987P	1 x 96 well plate (20 µl/well)	**482 €**
	C2987R NEW	1 x 384 well plate (10 µl/well)	**1.080 €**
	C2987I	6 x 0.2 ml/tube	**150 €**
	C2987H	20 x 0.05 ml/tube	**192 €**
	C2987U NEW	96 x 50 µl/tube (12 x 8-tube strips)	**734 €**
NEB 10-beta Competent *E. coli* (High Efficiency)	C3019I	6 x 0.2 ml/tube	**175 €**
	C3019H	20 x 0.05 ml/tube	**227 €**
NEB 10-beta Electrocompetent *E. coli*	C3020K	6 x 0.1 ml/tube	**210 €**
NEBuilder HiFi DNA Assembly Master Mix	E5520S	10 rxns	**190 €**
NEBuilder HiFi DNA Assembly Cloning Kit	E2621S/L/X	10/50/250 rxns	**162 € / 648 € / 2.589 €**
NEBuilder HiFi DNA Assembly Bundle for Large Fragments, incl. NEB 10-beta Competent Cells	E2623S	20 rxns	**498 €**

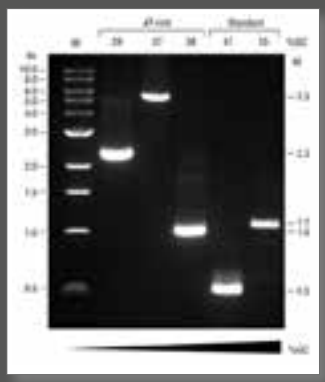
Test now & benefit from a special introductory price:

One*Taq* Quick-Load DNA Polymerase

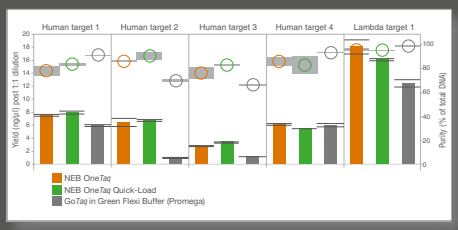
NEB's new One*Taq* Quick-Load DNA Polymerase is an optimized, ready-to-use blend of *Taq* and Deep Vent$_R$ DNA Polymerases ideally suited to "standard" PCR applications from a variety of templates, including pure DNA solutions, bacterial colonies and cDNA products etc. It is supplied with a density and tracking dye containing 5x One*Taq* Quick-Load Reaction Buffer for direct gel loading in addition to the regular "colorless" 5x One*Taq* Reaction Buffer.

advantages

- High and robust yields with minimal optimization making it the first choice for daily „Standard"-PCRs
- Includes „colored" Quick-Load reaction buffer that allows for direct gel-loading
- Value pricing



Robust performance of One*Taq* DNA Polymerase. Marker M is the 1 kb DNA Ladder (NEB #N3232).



Amplification of a variety of DNA targets demonstrates strong performance of the One*Taq* Quick-Load DNA Polymerase. Go*Taq* was cycled according to manufacturer's recommendations.

ORDERING INFORMATION

PRODUCT	NEB #	SIZE	LIST PRICE	INTRO PRICE
One*Taq* Quick-Load DNA Polymerase	M0509 S	100 units	~~20 €~~	**15 €**
One*Taq* Quick-Load DNA Polymerase	M0509 L	500 units	~~80 €~~	**60 €**
One*Taq* Quick-Load DNA Polymerase	M0509 X	2.500 units	~~375 €~~	**281 €**

Special introductory price*!

*Offer closes **July 31st 2016**, no further discounts apply.

Free Sample

Want to try first? Then request your free sample: www.neb-online.fr/onetaq
Limited supply. As long as stocks last.

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