

# SUPPORTING MOLECULAR DIAGNOSTICS

NGS- AND AMPLIFICATION-BASED SOLUTIONS



*be* INSPIRED  
*drive* DISCOVERY  
*stay* GENUINE

# IT'S TIME TO THINK DIFFERENTLY

The COVID-19 pandemic has elevated many of the challenges faced by clinical labs, requiring new and innovative solutions to address them. Technology development is happening faster than ever before, exposing weaknesses in diagnostic supply chains, increasing the need for innovation and thinking differently about how diagnostics should be developed, manufactured and deployed.

Many scientists know NEB as a trusted reagent provider to the life science community. What many do not know is that we also offer a portfolio of products that serve as critical components for a wide array of diagnostic products and services. Extensive molecular biology and enzymology experience provide NEB with the unique ability to help customers solve the challenges inherent in technology development and ultimately in scale-up and commercialization. The acquisition of Fluorogenics™ Limited (FGL) combines FGL's expertise in lyophilization with NEB's diverse product portfolio to offer lyophilized products that do not sacrifice the performance of their liquid counterparts. Learn more at [www.neb.com/MDx](http://www.neb.com/MDx).



## NGS-BASED MOLECULAR DIAGNOSTICS

Sequencing is enabling scientists to make rapid advances in epidemiology and surveillance, basic and clinical research, and diagnostics. A fast-growing number of methods are being developed to address whole genome, as well as targeted approaches. In all cases, streamlined workflows that result in high-quality, high yield libraries are critical towards optimizing your next generation sequencing (NGS) results. The table below summarizes some of the products available from NEB for diagnostic applications. Bulk and/or custom formats are available for all products, with more specific customization details included below:

APPLICATION	PRODUCTS	NOTES
DNA Sequencing	DNA library preparation with enzymatic DNA fragmentation <b>NEBNext® Ultra™ II FS DNA Library Prep Kit for Illumina®</b> (NEB #E7805) <b>NEBNext Ultra II FS DNA Module</b> (NEB #E7810) <b>NEBNext Ultra II Q5® Master Mix</b> (NEB #M0544) <b>NEBNext Adaptors and Primers</b>	<ul style="list-style-type: none"> <li>• Range of packaging options including 96-well plates</li> <li>• Component and kit customization</li> <li>• Kitting</li> <li>• Automation-compatible</li> <li>• Streamlined workflows</li> </ul>
	DNA library preparation for cfDNA or pre-sheared DNA <b>NEBNext Ultra II DNA Library Prep Kit for Illumina</b> (NEB #E7645) <b>NEBNext Ultra II End Repair/dA-Tailing Module</b> (NEB #E7546) <b>NEBNext Ultra II Ligation Module</b> (NEB #E7595) <b>NEBNext Ultra II Q5 Master Mix</b> (NEB #M0544) <b>NEBNext Adaptors and Primers</b> ( <a href="http://www.neb.com/oligos">www.neb.com/oligos</a> )	
RNA Sequencing	Depletion of abundant RNAs <b>NEBNext rRNA Depletion Kit v2 (Human/Mouse/Rat)</b> (NEB #E7400) <b>NEBNext Globin &amp; rRNA Depletion Kit (Human/Mouse/Rat)</b> (NEB #E7750) <b>NEBNext rRNA Depletion Kit (Bacteria)</b> (NEB #E7850) <b>NEBNext rRNA Depletion Core Reagent Set for customized depletion</b> (NEB #E7865)	
	RNA library preparation <b>NEBNext Ultra II Directional RNA Library Prep Kit for Illumina</b> (NEB #E7760) <b>NEBNext Ultra II RNA First Strand Synthesis Module</b> (NEB #E7771) <b>NEBNext Ultra II Directional RNA Second Strand Synthesis Module</b> (NEB #E7550) <b>NEBNext Ultra II End Repair/dA-Tailing Module</b> (NEB #E7546) <b>NEBNext Ultra II Ligation Module</b> (NEB #E7595) <b>NEBNext Ultra II Q5 Master Mix</b> (NEB #M0544) <b>NEBNext Adaptors and Primers</b>	
	Virus sequencing and detection <b>LunaScript RT SuperMix Kit</b> (NEB #E3010) <b>Q5 Hot Start High-Fidelity 2X Master Mix</b> (NEB #M0494) <b>NEBNext Ultra II End Repair/dA-Tailing Module</b> (NEB #E7546) <b>Blunt/TA Ligase Master Mix</b> (NEB #M0367) <b>NEBNext Quick Ligation Module</b> (NEB #E6056) <b>NEBNext Ultra II RNA Library Prep Kit for Illumina</b> (NEB #E7770) <b>WarmStart® LAMP Kit (DNA &amp; RNA)</b> (NEB #E1700)	

To inquire about custom formats, or GMP-grade reagent production, contact us at [custom@neb.com](mailto:custom@neb.com).



# AMPLIFICATION-BASED MOLECULAR DIAGNOSTICS

NEB has a long history in the development of reliable and convenient tools for amplification, and offers a large selection of products for PCR, qPCR, RT-qPCR and isothermal amplification. Our extensive expertise in this area has allowed us to develop optimized enzymes for a variety of applications, including incorporation into diagnostics. The table below summarizes some of the products available from NEB for diagnostic applications. Bulk and/or custom formats are available for all products, with more specific customization details included below:

APPLICATION	PRODUCTS	PRODUCT NOTES	CUSTOM FORMULATIONS AVAILABLE	
PCR APPLICATIONS	<b>DNA, Dye</b> <b>Luna™ Universal qPCR Master Mix</b> (NEB #M3003) <b>DNA, Probe</b> <b>Luna Universal Probe qPCR Master Mix</b> (NEB #M3004)	<ul style="list-style-type: none"> <li>Sensitive, reproducible and reliable performance</li> <li>Compatible with automation and reaction miniaturization</li> <li>Room temperature stable for ≥ 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>Blue-dye-free</li> <li>Lyo-compatible</li> </ul>	
	<b>RNA (1-step), Dye</b> <b>Luna Universal One-Step RT-qPCR Kit</b> (NEB #E3005) <b>RNA (1-step), Probe</b> <b>Luna Probe One-Step RT-qPCR 4X Mix with UDG</b> (NEB #M3019) <b>LyoPrime Luna™ Probe One-Step RT-qPCR Mix with UDG</b> (NEB #L4001) <b>Luna Universal Probe One-Step RT-qPCR Kit</b> (NEB #E3006) <b>Luna Probe One-Step RT-qPCR Kit (No ROX)</b> (NEB #E3007) <b>Luna SARS-CoV-2 RT-qPCR Multiplex Assay Kit</b> (NEB #E3019)	<ul style="list-style-type: none"> <li>Luna WarmStart RT paired with Hot Start <i>Taq</i> increases reaction specificity and robustness</li> <li>Compatible with automation and reaction miniaturization</li> <li>Room temperature stable for ≥ 24 hours</li> <li>High conc. ideal for viral targets (NEB #M3019)</li> <li>Includes carryover prevention (NEB #M3019)</li> <li>Lyophilized format (NEB #L4001)</li> </ul>	<ul style="list-style-type: none"> <li>Blue-dye-free</li> <li>Lyo-compatible</li> <li>Add primers and probes (NEB #L4001)</li> </ul>	
	<b>RNA (2-step)</b> <b>LunaScript® RT SuperMix Kit</b> (NEB #E3010)	<ul style="list-style-type: none"> <li>Novel thermostable RT</li> <li>Single-tube format</li> <li>13-minute DNA synthesis protocol</li> </ul>	<ul style="list-style-type: none"> <li>Blue-dye-free</li> <li>Primer-free</li> </ul>	
	<b>Master Mixes</b> <b>Q5® Hot Start High-Fidelity 2X Master Mix</b> (NEB #M0494) <b>Q5 High-Fidelity 2X Master Mix</b> (NEB #M0492) <b>Standalone Enzyme &amp; Buffer</b> <b>Q5 Hot Start High-Fidelity DNA Polymerase</b> (NEB #M0493) <b>Q5 High-Fidelity DNA Polymerase</b> (NEB #M0491)	<ul style="list-style-type: none"> <li>~280X fidelity of <i>Taq</i></li> <li>Consistent, fast, reliable performance</li> <li>Compatible with automation and reaction miniaturization</li> <li>Room temperature stable for ≥ 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> <li>Glycerol free</li> <li>Custom mixes</li> </ul>	
	<b>Hemo KlenTaq®</b> (NEB #M0332)	<ul style="list-style-type: none"> <li>Amplification direct from blood</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> </ul>	
	<b>Hot Start <i>Taq</i> DNA Polymerase</b> (NEB #M0495) <b>Hot Start <i>Taq</i> 2X Master Mix</b> (NEB #M0496)	<ul style="list-style-type: none"> <li>Unique aptamer-based enzyme control supports fast protocols</li> <li>Compatible with automation and reaction miniaturization</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> <li>Glycerol free</li> </ul>	
ISOTHERMAL APPLICATIONS	<b>WarmStart® Colorimetric LAMP 2X Master Mix (DNA &amp; RNA)</b> (NEB #M1800) <b>WarmStart Colorimetric LAMP 2X Master Mix with UDG</b> (NEB #M1804)	<ul style="list-style-type: none"> <li>Fast, clear pink-to-yellow visible detection of amplification</li> <li>Results in approximately 30 minutes</li> </ul>		
	<b>SARS-CoV-2 Rapid Colorimetric LAMP Assay Kit</b> (NEB #E2019)	<ul style="list-style-type: none"> <li>Simple, colorimetric detection of amplification of SARS-CoV-2 nucleic acid</li> <li>Automation-compatible when coupled with absorbance plate reader</li> </ul>		
	<b>WarmStart LAMP Kit (DNA &amp; RNA)</b> (NEB #E1700) <b>WarmStart Multi-Purpose LAMP/RT-LAMP 2X Master Mix (with UDG)</b> (NEB #M1708) <b>WarmStart Fluorescent LAMP/RT-LAMP Kit (with UDG)</b> (NEB #E1708)	<ul style="list-style-type: none"> <li>Master mix for LAMP and RT-LAMP workflows</li> <li>Supports multiple detection methods, including fluorescence and turbidity</li> <li>Automation compatible</li> </ul>	<ul style="list-style-type: none"> <li>Lyo-compatible</li> <li>High conc.</li> </ul>	
	<b>Bsf 2.0 WarmStart DNA Polymerase</b> (NEB #M0538) <b>Bsf 2.0 DNA Polymerase</b> (NEB #M0537)	<ul style="list-style-type: none"> <li>Improved reaction properties compared to wild-type <i>Bsf</i> DNA Polymerase</li> <li>Increased dUTP tolerance enables carryover prevention</li> </ul>	<ul style="list-style-type: none"> <li>Glycerol-free</li> <li>High conc.</li> </ul>	
	<b>Bsf 3.0 DNA Polymerase</b> (NEB #M0374)	<ul style="list-style-type: none"> <li>DNA binding domain fusion supports robust performance</li> <li>Significantly increased RT activity up to 72°C enables single enzyme RT-LAMP</li> </ul>	<ul style="list-style-type: none"> <li>Glycerol-free</li> <li>High conc.</li> </ul>	
	<b>WarmStart RTx Reverse Transcriptase</b> (NEB #M0380)	<ul style="list-style-type: none"> <li><i>In-silico</i> designed RT for RT-LAMP with reversibly-bound aptamer that inhibits activity below 40°C</li> </ul>	<ul style="list-style-type: none"> <li>Glycerol-free</li> <li>High conc.</li> </ul>	
	<b>Strand Displacement</b>	<b>Nt.BstNBI</b> (NEB #R0607)	<ul style="list-style-type: none"> <li>High purity, high quality nicking endonuclease</li> </ul>	<ul style="list-style-type: none"> <li>Glycerol-free</li> <li>High conc.</li> </ul>
	<b>Helicase-dependent Amplification</b>	<b>Tte UvrD Helicase</b> (NEB #M1202)	<ul style="list-style-type: none"> <li>Thermostable</li> <li>Improves specificity of problematic fluorescent LAMP reactions</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> </ul>
		<b>IsoAmp II Universal tHDA Kit</b> (NEB #H0110)	<ul style="list-style-type: none"> <li>Requires only two primers</li> <li>Produces short, discrete DNA products</li> </ul>	
	<b>Other</b>	<b>Bsu DNA Polymerase Large Fragment</b> (NEB #M0330)	<ul style="list-style-type: none"> <li>Enables low temperature isothermal applications</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> </ul>
		<b>T4 Gene 32 Protein</b> (NEB #M0300)	<ul style="list-style-type: none"> <li>Can increase yield and efficiency of amplification reactions</li> </ul>	<ul style="list-style-type: none"> <li>Glycerol-free</li> </ul>
		<b>Deoxynucleotide (dNTP) Solution Mix</b> (NEB #N0447)	<ul style="list-style-type: none"> <li>Highly pure</li> </ul>	<ul style="list-style-type: none"> <li>Custom conc.</li> </ul>
		<b>Antarctic Thermolabile UDG</b> (NEB #M0372)	<ul style="list-style-type: none"> <li>Unique thermolabile version is completely inactivated in typical isothermal and RT-qPCR workflows</li> </ul>	<ul style="list-style-type: none"> <li>High conc.</li> </ul>
		<b>Proteinase K, Molecular Biology Grade</b> (NEB #P8107)		
	<b>Thermolabile Proteinase K</b> (NEB #P8111)	<ul style="list-style-type: none"> <li>Unique thermolabile version is completely inactivated in typical isothermal and RT-qPCR workflows</li> </ul>	<ul style="list-style-type: none"> <li>Custom conc.</li> </ul>	

## USA

New England Biolabs, Inc.  
Telephone: (978) 927-5054  
Toll Free: (U.S. Orders)  
1-800-632-5227  
Toll Free: (U.S. Tech)  
1-800-632-7799  
Fax: (978) 921-1350  
info@neb.com  
www.neb.com

## AUSTRALIA & NEW ZEALAND

New England Biolabs  
(Australia) PTY  
Telephone: 1800 934 218 (AU)  
info.au@neb.com  
Telephone: 0800 437 209 (NZ)  
info.nz@neb.com

## CANADA

New England Biolabs, Ltd.  
Toll Free: 1-800-387-1095  
info.ca@neb.com

## CHINA

New England Biolabs (Beijing), Ltd.  
Telephone: 010-82378265/  
82378266  
info@neb-china.com

## FRANCE

New England Biolabs France  
Telephone : 0800 100 632  
info.fr@neb.com

## GERMANY & AUSTRIA

New England Biolabs GmbH  
Free Call 0800/246 5227 (Germany)  
Free Call 00800/246 52277 (Austria)  
info.de@neb.com

## JAPAN

New England Biolabs Japan, Inc.  
Telephone: +81 (0)3 5669 6191  
info.jp@neb.com

## SINGAPORE

New England Biolabs Pte. Ltd.  
Telephone +65 6776 0903  
sales.sg@neb.com

## UNITED KINGDOM

New England Biolabs (UK), Ltd.  
Call Free 0800 318486  
info.uk@neb.com

## Distributors

For a complete list of all NEB subsidiaries  
and distributors, please go to:  
[www.neb.com/international-support](http://www.neb.com/international-support)



One or more of these products are covered by patents, trademarks and/or copyrights owned or controlled by New England Biolabs, Inc. For more information, please email us at [gbd@neb.com](mailto:gbd@neb.com). The use of these products may require you to obtain additional third party intellectual property rights for certain applications.

Your purchase, acceptance, and/or payment of and for NEB's products is pursuant to NEB's Terms of Sale at [www.neb.com/support/terms-of-sale](http://www.neb.com/support/terms-of-sale). NEB does not agree to and is not bound by any other terms or conditions, unless those terms and conditions have been expressly agreed to in writing by a duly authorized officer of NEB.

© Copyright 2022, New England Biolabs, Inc.; all rights reserved.

