

NEWS on diagnostics

2023 Volume 4



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MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.

Welcome to the fourth volume of News on Diagnostics in 2023. This issue will cover how we can support your diagnostic research and manufacturing via our oligonucleotide and phosphoramidite portfolio.

Oligos & qPCR probes

As a pioneer and leading supplier to the global life science industry of custom oligonucleotides, we possess cutting-edge technology, competitive prices, and continuous investment in worldwide operations. Manufacturing custom oligos for more than 35 years, our ability to guarantee quality and performance is directly related to our comprehensive understanding of bioinformatics, various synthesis chemistries, and proprietary in-house engineered platforms. Our scientists collaborate with researchers from around the world in developing new products and technologies that meet unique customer specifications.

Our comprehensive portfolio of predesigned and custom products is manufactured in five countries – UK, USA, India, and Israel. The wide availability of the oligo primers and qPCR probes offered are made to your specifications, with rigorous quality control, delivery, and reliability for use in a variety of applications, including PCR, cloning, DNA sequencing, and gene expression.

Product areas include:

- DNA & RNA Oligos
- Predesigned Primers & Custom qPCR Probes
- Next-Generation Sequencing Oligos
- RNAi Oligos
- Custom Peptides

We provide customers with high-quality products and best-in-class service including primer & probe design services, applications support, troubleshooting assistance, and real-time order status.

Our state-of-the-art analytical instruments, robust quality management systems, effective audits, training programs, and vendor management keep our production in compliance.

Custom Oligos & qPCR Probes Online Tools

OligoArchitect™ Primer and Probe Design Tool

We are pleased to offer OligoArchitect for all your primer and probe design requirements. OligoArchitect is complimentary and includes both our online design tool and our consultative service. We can support:

qPCR assay designs for SYBR® Green I, Dual-Labelled Probes, Molecular Beacons, LightCycler® Probes and Scorpions® Probes. LNA® design is included.



To try OligoArchitect™ Online v4.0, visit <http://www.oligoarchitect.com/LoginServlet>

OligoEvaluator™: our online Oligo Analyzer Tool for Tm Calculation & Primer Analysis

We are pleased to offer OligoEvaluator™, our online oligonucleotide sequence calculator that provides primer analysis values for PCR:

- Base count
- Molecular weight
- Extinction coefficient
- Oligo type
- µg/OD at 260 nm
- Length (base pairs)
- Primer melting temperature Tm (°C)
- GC content %
- GC clamp
- Run length (bp)
- Secondary structure
- Primer dimer check
- BLAST sequence link

Our OligoEvaluator™ is easy to use, just select DNA or RNA, paste your sequence, and click calculate.

All reported properties are available for export to a convenient Excel template. We also offer sequence analysis (molecular weight, melting temperature, primer dimer / hairpin search, etc., resuspension guidelines and dilution guidelines).

Visit <http://www.oligoevaluator.com/LoginServlet> for access to this essential tool.



Custom Oligos for Commercial Use

We offer custom DNA Primers, qPCR Probes, and

Next-Gen Sequencing Oligos for Life Science Research Tools, Molecular Diagnostics, and Laboratory Developed Tests. We can also perform component or complete kit manufacturing, including custom formulations, packaging, and private labelling. Learn about our manufacturing capabilities or request a consultation to determine which type of product best fits your needs. Watch the video and complete our consultation form at

SigmaAldrich.com/compliantoligos

Quality

Our ability to guarantee performance is directly related to our comprehensive understanding of

oligonucleotide chemistry and synthesis platforms,

our analytical systems, and our experience in method development.

Quality control is integrated into the entire manufacturing process. Key checkpoints of quality control include:

- Starting materials & chemistry
- Instrumentation & synthesis
- Sequence identity verification by mass spectrometry
- Purify verification by analytical HPLC
- Quantification by UV spectroscopy
- Final inspection

Next-Gen Sequencing Oligos

We offer a portfolio of NGS library preparation tools designed to simplify workflows and facilitate the preparation of high-quality DNA or RNA libraries that accurately represent sample complexity while reducing bias for whole genome sequencing (WGS), whole transcriptome analysis (WTA), total RNA sequencing, and miRNA and small RNA sequencing applications.



Our Next-Gen Sequencing Oligos have:

- Custom universal and index (barcode) adapter oligos for major sequencing platforms
- Suitable purity (percent full-length sequence) to maintain sequence read integrity.
- Low levels of cross-contamination to facilitate proper sequence assembly.

[Learn More at SigmaAldrich.com/nextgenoligos]

Proligo® Phosphoramidites and Reagents for Oligonucleotide Synthesis

Let us support your entire oligonucleotide production workflow, from synthesis, cleavage and deprotection, through to desalting, purification and QC analysis. Many of our oligo synthesis columns and reagents synthesiser (ABI 3900, 39X, Expedite, MerMade, AKTA® and A® OligoPilot®) from R&D to production. Our nucleic acid chemistry experts provide innovative solutions tailored to your specific challenges. We can meet your most demanding DNA and RNA synthesis requirements.



Our regional facilities and warehousing provide increased flexibility throughout manufacturing, packaging, and distribution. We provide the industry's broadest offer of reagents for Oligonucleotide synthesis, including standard and specialty phosphoramidites, solid supports, columns, linkers and liquid formulations.

To find out more, or take a virtual tour of our Hamburg manufacturing facility at [\[https://www.sigmaaldrich.com/GB/en/technical-documents/technical-article/genomics/pcr/manufacturing-facility\]](https://www.sigmaaldrich.com/GB/en/technical-documents/technical-article/genomics/pcr/manufacturing-facility)

Locked Nucleic Acid® (LNA)

phosphoramidites are nucleic acid analogs that impart superior hybridization characteristics and enhanced bio-stability to oligos, compared to natural #DNA and RNA nucleosides. Get excellent binding specificity, even under low salt and in the presence of chaotropic agents.

LNA oligonucleotides can be applied to almost all platforms that employ synthetic oligonucleotides including probes (e.g. hybridization, capture, padlock, ISH, etc), antisense/siRNA, and therapeutic applications.

Find your **reagents**.



Custom cGMP Oligos

Part of our Custom Oligos for Commercial Use offering

- Molecular Diagnostics
- Laboratory Developed Tests
- Preclinical Research



The foundation of Custom cGMP Oligos, available with custom specifications, is our manufacturing suite with three laboratories: Synthesis, Purification, and Quality Control

The following applies:

- Manufactured in accordance with US GMP (21 CFR 820)
- Filled in classified cleanroom ISO 14644-1:2015 Class 8

Benefits of oligos made under these quality and manufacturing systems include:

- Controlled & validated processes.
- Extensive materials traceability
- Batch-to-batch consistency
- Reproducible results
- Bulk amounts

To learn more about this addition to our portfolio, please visit SigmaAldrich.com/cgmpoligos



@The Lab Bench

An IVD R&D focused discussion series

In this series of informal discussions with research and development scientists we aim to illuminate some of the not so obvious tips, trick, and insider information on developing novel IVD molecular assays.

Upcoming topics include:

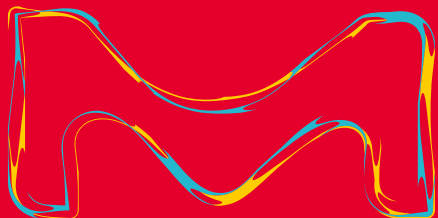
- Selecting a reverse transcriptase enzyme
- Master mixes
- Oligo design for PCR and LAMP assays

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watch now!

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SigmaAldrich.com/newsdiagnostics

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MS_BR12935EN Ver. 1.0 51963 10/2023