Oligonucleotides

Eurogentec

Custom made solutions for life sciences

About Eurogentec

↖
DOWNLOAD THE ONLINE BROCHURE

10 000 m²
State-of-the-art facilities

ISO 9001 &
ISO 13485
Certified process

1985
Since

400+
Employees

3 Departments

Eurogentec's activities are spread over three business units to guarantee a smooth continuum from research to higher demanding applications.

RESEARCH PRODUCTS

DIAGNOSTIC SERVICES

THERAPEUTIC SERVICES

6 Life sciences product lines

We produce various biomolecules for a large panel of applications.

OLIGONUCLEOTIDES

qPCR & PCR

ANTIBODIES

PEPTIDES

PROTEINS

GENES

Eurogentec is a **biotechnology** company providing life sciences products and personalized services to academic, medical and industrial scientists **worldwide since 1985**.
We produce custom and catalog reagents, in different quality grades and scales.

We are also a trusted **CDMO** internationally recognized for the development and production of biopharmaceutical critical raw materials, vaccines and therapeutic molecules.
Based in **Belgium**, Eurogentec is a subsidiary of Kaneka Corporation.

Oligo grades

We can provide research, diagnostic and therapeutic grade oligonucleotides based on your specific application and needs.

Since 1985, we have been providing high-quality reagents and custom-synthesized oligonucleotides to scientists around the world.

Research grade

Our oligos range from the routine research primers to highly modified sequences.

We have multiple synthesizers operating in parallel to ensure continuous production of any nucleic acid sequences. Our chemists are experts in complex oligo synthesis such as: siRNA, Double Dye Probes and long oligonucleotides.

Eurogentec oligonucleotides are produced with state-of-the-art equipment, using only the highest quality reagents from trusted suppliers.

Our team of experts is committed to delivering quality products in accordance with the customers' request.

FOCUS

225
From 2 to 225 bases

300+
Modifications

ISO 9001
Certified process

LARGE RANGE
of chemistries

CUSTOM
fill & finish

From lab to
LARGE SYNTHESIS SCALE

MORE INFO

Diagnostic services

FROM RESEARCH TO COMMERCIALIZATION

We manufacture diagnostic grade oligonucleotides with increased levels of quality, traceability and adapted batch records.

We offer a range of services designed to meet your specific needs, ensuring the perfect fit for your requirements.

Track™ Oligonucleotides are reasonably priced and include documented traceability, often required for demanding projects. They are delivered with a quick turnaround time, and their production process is certified to comply with ISO 9001.

Pre-diagnostic and diagnostic grade oligos are produced in a controlled environment within our ISO 7 and ISO 8 cleanrooms in Belgium. Their production process is certified to comply with ISO 9001 and ISO 13485 standards.

We are also a registered manufacturer of Analyte Specific Reagent (ASR) oligonucleotides for use in *in vitro* application.

Additional Services

IP-FRIENDLY

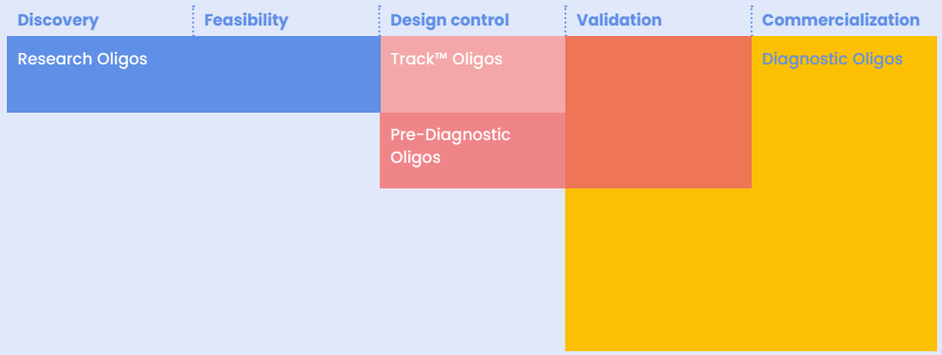
We offer IP-friendly solutions for Probes with our range of Access™ Dyes and Quenchers covering the full near blue to infrared spectrum.

INTEGRATED SOLUTION

Looking for an integrated solution for your diagnostic kit preparation? We have specified services for Molecular Diagnostic kit manufacturing or Lab Developed Test preparation.

↖ ASK A QUOTE

Oligo grade comparison & Development Process



Oligonucleotide Grades	● Research	● Track™	● Pre-Diagnostic	● Diagnostic
Process				
Dedicated Project Management	Option	✓	✓	✓
Customized Fill & Finish	Option	Option	✓	✓
Quality Management				
ISO 9001 Certified Process	✓	✓	✓	✓
ISO 13485 Certified Process	-	-	✓	✓
Qualification/Validation [Equipment & Method]	-	Partial	✓	✓
Control				
Quantification	Single	Dual	Triple	Triple
Stringent QC Tests [Validated]	-	✓	✓	✓
Traceability	Partial	Documented	Documented	Full Documented
Batch Record [Archived for 5 years]	-	-	Partial	Full
Classified Cleanroom	-	-	✓	✓
Certificate of Analysis [CoA]	-	✓	✓	✓

Therapeutic services

FROM DEVELOPMENT TO CLINICAL PHASES

Our services cover every phase, from research and discovery, including oligo screening libraries up to larger quantities needed for preclinical and early clinical studies.

We provide tailored and comprehensive solutions for the development, manufacturing, and testing of oligonucleotides. Whether you need help with custom oligo design or large-scale production, our commitment to providing the right features, quantity, and quality is backed by our extensive experience as a CDMO for biotech and pharma companies.

Various chemistries and modifications

We specialize in creating and synthesizing various oligonucleotides, such as antisense oligonucleotides (ASOs), siRNA, aptamers, and CpG oligos. Our extensive knowledge encompasses a wide array of chemistries (including 2'-*O*-Me RNA, 2'-*O*-MOE RNA) and modifications (such as fluorescent dyes, GalNAc, PEG, lipids), ensuring enhanced stability, binding affinity, specificity, and accurate site delivery of therapeutic oligonucleotides.

Equipped to provide quality

To achieve the required quality, we have a range of facilities up to ISO7 and ISO8 cleanrooms equipped with the latest technologies, to produce and purify your oligonucleotides. Moreover, for clinical oligonucleotides, we follow a validation approach that aligns with ICH guidelines, ensuring compliance with FDA, EMA, and other regulatory standards.

FOCUS

MORE THAN AN OLIGO SUPPLIER

Comprehensive project management

Our experienced project managers maintain clear communication, anticipate potential challenges, and implement strategic solutions to ensure smooth and efficient progress from start to finish.

Assistance through the testing process

We give you access to *in vivo* and *in vitro* preclinical studies prior to progress to clinical trials.

Administrative support

We assist you with the writing and review of CMC documents and provide comprehensive support for your IND file preparation, delivering documentation tailored to your specific needs.

ASK A QUOTE

Services Overview

	Research & Discovery	Preclinical development		Preclinical to clinical	Clinical trials
	Early Drug Discovery	*In vitro* testing	*In vivo* testing	Engineering batch	Early Clinical Phases
Quality standards	● RUO			● GMP	
Examples of Applications	Early Drug Discovery steps incl. screening libraries to lead compound	Drug Discovery: *In vivo* & *in vitro* studies; other high demanding application		GLP tox/safety	Early Clinical Phases
Quantity	From micrograms to several grams	From hundred of milligrams to several grams		From hundred of milligrams to several grams	From several grams to hundred of grams
Agreements					
Confidentiality agreement	✓	✓		✓	✓
Master Service agreement	On request	On request		✓	✓
Quality agreement	-	-		✓	✓
Dedicated Project Management	✓	✓		✓	✓
Quality					
Quality systems	ISO9001	ISO9001		GMP	GMP
Incoming Raw material specification & testing	-	-		✓	✓
Optimization of analytical methods	-	On request		✓	✓
Equipments/methods qualification	-	-		✓	✓
Validation work	-	-		✓	✓
Classified clean rooms	-	-		✓	✓
Retained samples	-	-		✓	✓
Stability studies	-	On request		✓	✓
Documentation					
QA documentation	CoA	CoA, Summary batch record optional		Summary batch record or BMR	BMR
Change Control Notification	-	-		✓	✓

Overview

We provide a large choice of oligonucleotides tailored to your specific application, ranging from unmodified primers to a diverse array of chemistries, modifications, specifications, and purification options.

Custom Parameters

A large choice of options including various backbones and over 300 modifications are available to help you design oligos with the appropriate properties.

We provide a wide range of modified backbones that grant different properties to your oligos.

Backbones

We offer classic DNA and RNA based oligos, but also modified backbones that grant different properties to your oligos.

LNA® backbones increase the affinity and specificity of the oligos. Indeed, their structure confers a very strong thermal stability towards complementary DNA and RNA template suitable for hybridization assays requiring high specificity and/or reproducibility.

Both 2'-*O*-Me RNA backbone and phosphorothioate linkages increase the affinity and specificity for the target, while boosting the resistance to nucleases.

2'-*O*-MOE RNA backbones are used to increase resistance to nucleases.

We also offer PNA backbones well suited for FISH studies. This artificial DNA/RNA analogue confers a higher specificity and sensitivity to the oligo. PNA are also known to be resistant to enzymatic degradation and stable over a wide range of pH, temperature, and salt concentrations.

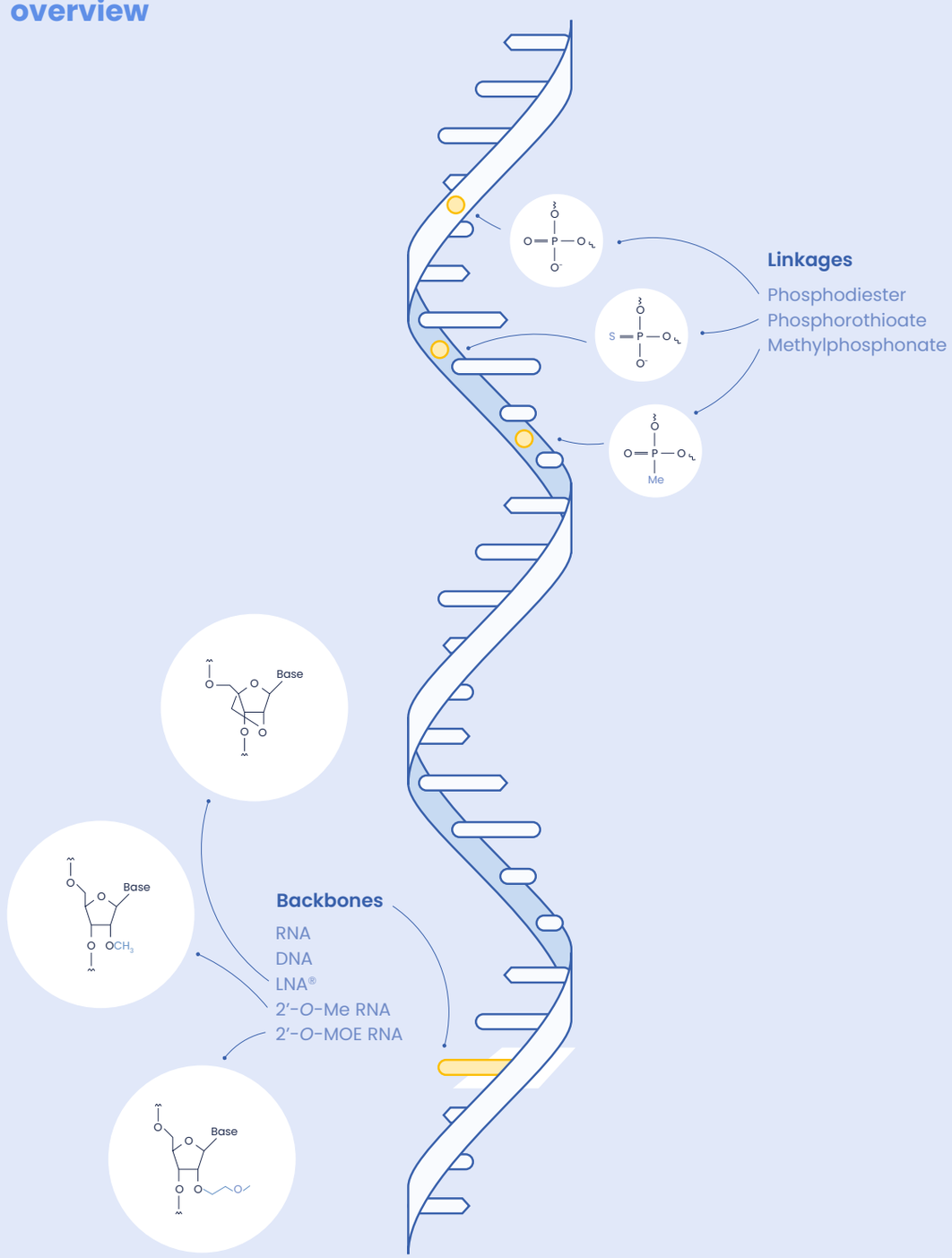
OUR PANEL OF LINKAGES INCLUDES

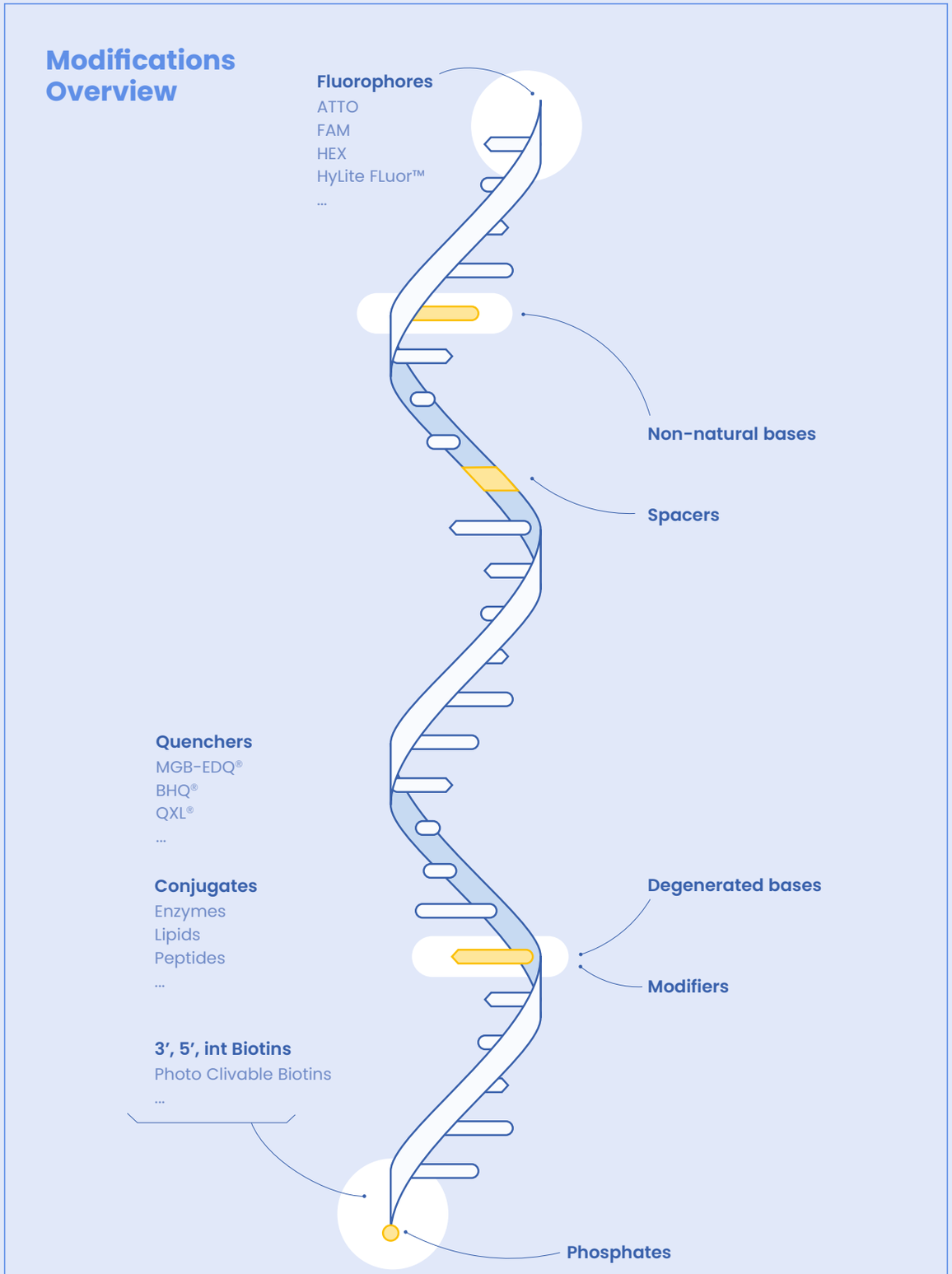
Phosphodiester bonds. They connect the 3′ carbon atom and the 5′ carbon of the sugar.

Phosphorothioate bonds possess an increased resistance against nucleases due to the substitution of non-bridging oxygen by sulfur.

Lipophilic bonds such as **methylphosphonate linkages** (only available for DNA bases) help the oligos cross the cell membrane. They are non-ionic nuclease resistant linkages. Methylphosphonate/RNA duplex are not recognized by RNaseH.

Backbones overview





Modifications

In addition to backbone chemistries, diverse additional modifications can also be incorporated to confer special characteristics to your oligos.

For instance, the ability to cross cell membrane can be obtained by adding cholesterol to the oligo, while increasing the affinity and specificity can be achieved with C-5 methylated pyrimidine deoxy-nucleosides, 2'fluoro RNA or methyl-dC, among others.

Oligonucleotides can be modified by direct incorporation during the synthesis or by post-synthesis labeling.

Direct incorporation

Since oligonucleotide synthesis happens from 3' to 5', 3' direct incorporation is not always possible. It depends on the availability of the solid support and compatibility with the chemistries used in the synthesis.

5' and internal modifications can be introduced using the phosphoramidites, but they need to support harsh cleavage-deprotection conditions.

Post-synthesis incorporation

Post-synthesis incorporations are used to introduce sensitive dyes or compounds that do not exist as phosphoramidites. It may influence the yield of the reaction. Indeed, a lower yield may result from poly-modifications and/or strong secondary structures.

All modifications are available in research, diagnostic and therapeutic grades.

300
Modifications

FOCUS

What are POCs?
POCs stand for **Peptide Oligonucleotide Conjugates** which serve many important roles as potential therapeutics.

Why using POCs?
POCs are frequently used for cell screening or *in vivo* studies thanks to the increase of the oligo membrane permeability. In therapeutics, one of the most interesting POCs applications is targeted drug delivery.

Our POCs can harbor specific modifications, either on the peptide or the oligonucleotide branch, to fit varied functionalities. Different conjugation strategies can be applied based on the sequences and customer requirements.

↖ FULL LIST OF MODIFICATIONS

From small to large scales to fit the needs of your application.

FROM
0.01 µMOL
TO
20 µMOL

Scales

We synthesize oligonucleotides from 10 nmol to 20 µmol scales according to the type of oligo, and even more on request.

When ordering an oligo, pay attention to the synthesis scale (*i.e.* the amount of raw material used to start the synthesis of oligonucleotides) and the yield of the final product recovered at the end of the manufacturing process.

The length, the sequence, the type/number of modifications and the purification, strongly influence the reaction yield. Based on that, Eurogentec has defined a minimum guaranteed yield in nmoles for all product categories.

[For more information consult p.52]

FOCUS

Large scale synthesis

Does your project require larger quantities of oligonucleotides? Our large scale synthesis service is the answer for your production.

Scales range from micrograms to hundreds grams.

Custom service to guarantee the best production conditions.

Customized oligos with various modifications available.

Purity reached by HPLC method.

Format in bulk, plates or vials, dried or in solution.

Support with a dedicated project manager.

Production grades suitable for Research, Diagnostic, or Therapeutic use.

Choosing the appropriate purification method is key to tailoring each oligonucleotide for your application.

Purifications

The aim of any purification step is to remove the by-products resulting from the removal of the protecting groups and other synthesis by-products.

Whether you are engaged in cutting-edge research, diagnostic development, or therapeutic innovations, ensuring the right quality and purity of your oligonucleotides is essential for reliable and reproducible results.

Various parameters should influence your purification choice. Those parameters are the oligo length, the presence and the number of modifications, the intended applications and the expected yield.

[Consult the "Synthesis scale vs Guaranteed yield" Table p.52 to select the appropriate synthesis scale.]

IN VIVO LIKE OLIGONUCLEOTIDES

The solution for your project before entering preclinical testing.

The *in vivo* like process is recommended for the production of antisense oligonucleotides or siRNA testing at research level before entering pre-clinical testing. Therefore, they are an ideal solution for your animal studies.

In vivo like **purification process** includes:

1. Ion exchange HPLC
2. Desalting
3. 0,2 µm filtration
4. Lyophilization

Thanks to this stringent purification process, endotoxins should remain undetectable using a chromogeniC LAL endotoxin assay.

It will give more than 85 % purity for oligos shorter than 45 bases.

Please note that oligonucleotides manufactured with the *in vivo like* process are not endotoxins free nor sterile certified RUO oligos.

FOR MORE DETAILS

Purification methods

SEPOP DESALTING

Up to 70% purity for ≤79 bases oligos.

Differential precipitation to eliminate the largest part of contaminants (truncated material < 10 bases).

For common applications such as primers for standard PCR.

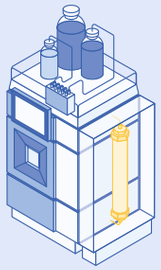
RP CARTRIDGE•GOLD

At least 70% purity for ≤45 bases oligos*.

Reverse Phase chromato-graphy based on differences in hydrophobicity.

Best compromise for most applications such as PCR, mutagenesis or cell culture (absence of residues).

*Possibility to order oligos up to 59 bases, but 70% purity is not guaranteed.



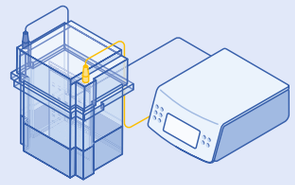
HPLC

At least 85% purity for ≤45 bases oligos*.

Reverse Phase (RP) or Ion Exchange (IEX) mode.

Default method for qPCR probes & antisense oligonucleotides.

* ≥ 80% for complex oligos shorter than 45 bases, ≥70% for longer oligos up to 59 bases



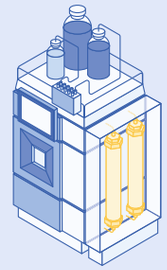
POLYACRYLAMIDE GEL ELECTROPHORESIS (PAGE)

At least 85% purity for ≤79 bases oligos*.

Separation based on the charge and mass of oligonucleotides, varying from only 1 base.

Recommended for long oligos starting from 60 bases.

* ≥ 75% for complex oligo shorter than 79 bases. Possibility to order oligos up to 139 bases, but 85% purity is not guaranteed.



DUAL HPLC

At least 85% purity for ≤45 bases oligos*.

Double purification: RP/RP-HPLC or RP/IEX-HPLC. The average purity will increase compared to simple HPLC.

Appropriate for antisense oligos or siRNAs, might be required for probes with post-synthesis coupling.

* ≥ 80% for complex oligo shorter than 45 bases, ≥70% for longer oligos up to 59 bases

Quality Controls

Quality Control (QC) is a crucial component of the oligonucleotide manufacturing process. All of our synthesizers are equipped with real-time trityl monitoring to ensure that each oligo meets our strict quality standards.

In addition to routine optical density (OD_{260}) measurement, which ensures you receive the correct quantity of oligos, we perform a range of automated quality control checks. These checks are tailored to the type and specifications of each oligo to ensure optimal performance and quality for your specific application.

Supplementary controls are available if required.

Default QCs

Oligo Type		MS	UHPLC
Custom Oligonucleotides	Unmodified	✓[1]	
	Modified	✓[2]	
qPCR Probes	Double Dye Probes	✓	✓
	Molecular Beacons	✓	✓
	MGB Probes	✓	✓
RNAi Oligonucleotides	siRNA Duplexes	✓	
NGS Oligonucleotides		✓	✓
Complex Oligonucleotides		✓	✓[3]
Calibration Oligos		✓	✓
Universal Primers		✓	✓

TABLE LEGENDS & NOTES

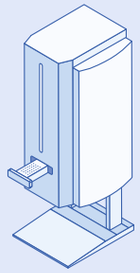
MS Mass Spectrometry;
UHPLC Ultra High Performance Liquid Chromatography.

[1] Randomized high throughput control.
[2] Except for SePOP desalted oligonucleotides.
[3] Optional.

For technical reasons this general rules may be adapted to provide you with the most suitable accurate oligonucleotide.

QCs Overview

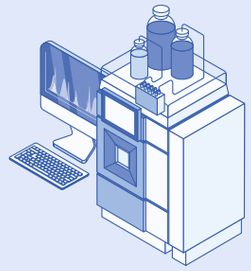
If the default QC is not sufficient for your application, you can request supplementary controls. We offer various options to perfectly meet your specific quality requirements.



MASS SPECTROMETRY

MALDI-TOF, ESI-TOF or LC-MS

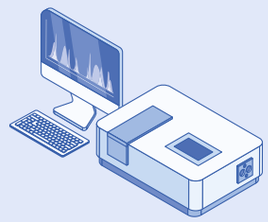
The most precise information about the length, deprotection-product, and the presence of labels for modified oligonucleotides over a broad range of lengths.



CHROMATOGRAPHY

Ion-Exchange UHPLC (IEX-UHPLC) or Reverse Phase UHPLC (RP-UHPLC)

UHPLC will give you quantitative information about the purity level of oligonucleotides.



FLUORIMETRY ANALYSIS

Non destructive physical analysis method.

Qualitative information about fluorescent oligonucleotides.

Formats

According to your specifications, oligonucleotides may be provided in various formats.

Dried is the default format (except for SePoP unmodified oligonucleotides from 15 to 39 bases).

In solution: Select the type of reconstitution buffer (H_2O or TE (pH=8)), determine its volume (ranging from 50 to 1000 µl), and/or specify the final oligonucleotide concentration (ranging from 5 to 250 µM).

Annealed: Oligonucleotides are annealed by a short treatment at 94°C followed by a progressive cooling to room temperature. siRNA or cloning linkers are annealed by default.

Mixed: Similar amounts of different oligonucleotides can be combined in a single tube.

Packaging

We provide various packaging options based on your preferences.

2 mL tube: By default, each oligonucleotide is provided in individual 2 mL tube. Higher volume can be delivered on request (15 mL, 50 mL*).

96-well plates: Cluster tubes, well plates and deep well plates are available for oligos up to 59 bases.

Aliquoting: All the oligonucleotides in solution can be split on request in small aliquots of accurate volume (from 50 to 1000 µl).

We also offer customized packaging to meet the specific requirements of your project.

HIGH THROUGHPUT SCREENING & DISCOVERY

From Oligo screening for *in vitro* testing in cell models to lead optimization. We produce up to a thousand sequences in small scale and deliver them simultaneously.

DESALTED OR HPLC PURIFIED

***IN VIVO LIKE* PURIFICATION PROCESS AVAILABLE**

DELIVERED IN PLATES OR TUBES

LYOPHILIZED OR IN SOLUTION

*Higher scales from 2.5 µmol may be delivered in 50 ml tubes by default.

Specific Oligo Types

We produce specialized oligonucleotides for specific applications, with preset parameters.

Various types of oligos such as custom probes, interfering RNAs, or oligos for NGS can be configured directly with our online configurators and even more upon request.

qPCR probes

We produce custom qPCR probes with a vast portfolio of fluorescent dyes and quenchers,compatible with every channel of any real-time thermocycler. Our fluorescent probes and quenchers are just as effective in digital PCR.

We have developed easy-to-use online configurators to order the custom probes you need. Watch the tutorial to get started or go directly to the appropriate configurator. [For more info consult p.59.]

Looking for a solution for commercial applications?

Our Access™ Dyes & Quenchers consist of IP-friendly efficient reporters & quenchers for dual labeled qPCR probes. Our selection of dyes for diagnostic tests covers the full visible spectrum, from blue to far-red-shifted wavelengths.

BHQ® QUENCHERS

Label your custom oligonucleotides and qPCR probes with the original BHQ® quenchers. They are license-free at Eurogentec for research, diagnostic and commercial use. BHQ® quenchers cover all qPCR channels and are compatible with most of the fluorescent dyes.

ATTO DYES

Improve your results with our extensive collection of IP-friendly ATTO dyes. Our selection covers the full visual spectrum, possesses strong absorption and high fluorescence quantum yield, and is well-suited for bioanalytical applications.

MOLECULAR BEACONS

Molecular Beacons are probes which contain a stem-loop structure, a fluorophore, and a quencher at their 5′ and 3′ ends, respectively.

We offer standard, wavelength-shifting and 2′-*O*-Me RNA Molecular Beacon probes.

Our custom Molecular Beacons are available with DABCYL or BHQ® non fluorescent quenchers, paired with compatible fluorochromes. Other dyes are available upon request.

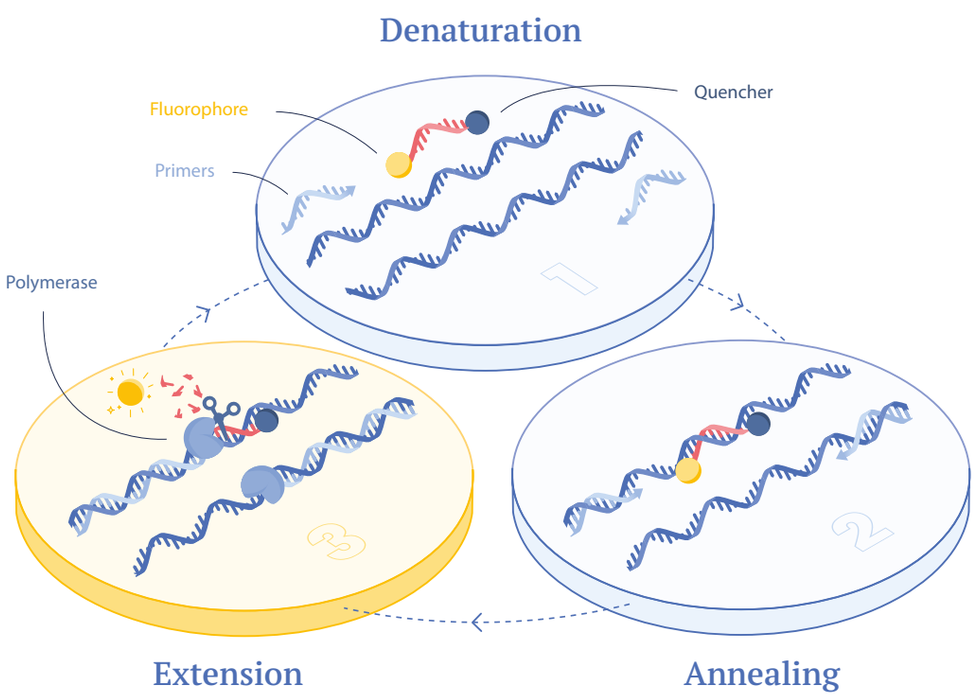
↖ CONFIGURE MB PROBES

NEED HELP TO DESIGN YOUR QPCR PROBES?

Our experts can help you design your probes and RNA oligonucleotides.

With our robust design software, we deliver optimized sequences, continuously updating it with the latest scientific advances and customers' feedback.

↖ LEARN MORE



Double-Dye probes

Double-Dye probes are labeled with a fluorescent reporter dye and a quencher at their 5’ and 3’ ends, respectively.

The probes are available with classic DNA backbone, but also Locked Nucleic Acid (LNA®), MGB for higher thermal stability, specificity and reproducibility.

We have a large choice of fluorophore/quencher combinations. Various fluorescent dyes are available according to the selected quencher *e.g.* FAM/BHQ®-1, ROX/BHQ®-2, HEX/MGB-EDQ, and ATTO/BHQ® couples.

[View the full list on the online configurator].

ADVANTAGES OF (LNA®) TAQMAN® PROBES

→ **THERMAL STABILITY**
Possibility to adjust Tm values of primers and probes in multiplexed assays.
→ **SPECIFICITY**
→ **REPRODUCIBILITY**

SPECIFICITIES

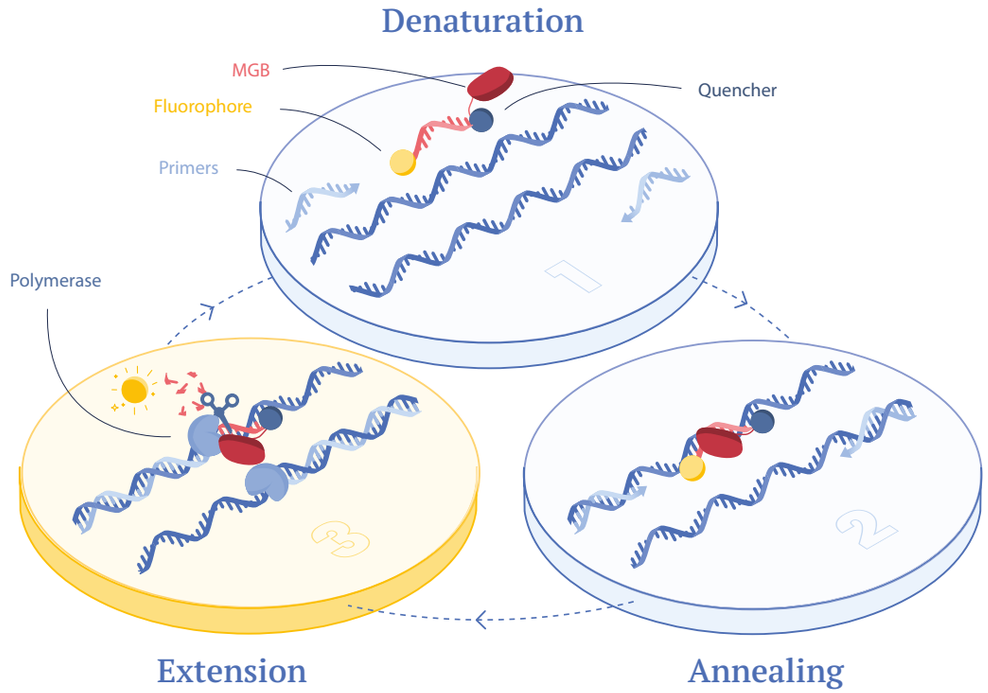
Length
from 8 to 45 bases

Purification
HPLC

Quality Control
MALDI-TOF MS + UHPLC

Format
Dried or in solution

↖ **CONFIGURE DOUBLE-DYES PROBES**



MGB probes

MGB probes are dual-labeled probes incorporating a Minor Groove Binder at their 3´end.

MGB Eclipse® probes ordered at Eurogentec are no longer limited by any licence, and can be used for any applications all around the world!

With our portfolio of fluorescent dyes for MGB Eclipse® probes, our offer covers all qPCR channels. It will allow you to increase the specificity, sensitivity and efficiency of your assay.

SPECIFICITIES

Length
from 8 to 30 bases

Delivered quantities
6 - 20 - 50 nmol

Purification
RP-HPLC

Quality Control
MALDI-TOF MS + UHPLC

Format
In solution (H_2O or TE); dried or dried aliquoted in 10 nmol on request

↖ **CONFIGURE MGB PROBES**

RNAi oligos

RNA Interference (RNAi) is a mechanism of gene silencing at the post transcriptional level, involving RNA molecules such as siRNAs and miRNAs.

siRNA

Synthetic siRNA duplexes are introduced into cells to cause RNA interference and inhibit the expression of a specific mRNA.

Custom siRNA synthesis

Typical siRNAs are 21-mer, with a core of 19 double-stranded RNA bases followed by 2 single-stranded DNA nucleotides in 3', usually Thymidine. Multiple options are available to customize your siRNAs.

Reach the level of purity needed by selecting the purification method among SePOP desalting, HPLC (RP or IEX), or our *in vivo like* purification process.

Negative and positive siRNA controls

No experiment is complete without proper controls. To monitor your experiment conditions, we provide you with siRNA control duplexes and kits including positive and negative siRNA controls. All siRNA control duplexes are IEX-HPLC purified, and 100 % MALDI-TOF Mass Spectrometry controlled. siRNA controls are annealed and shipped dried.

Positive controls: siRNAs targeting a range of endogenous and reporter genes. Each control contains one siRNA duplex.

Negative controls: siRNA with no homology with any known eukaryotic gene. The sequence is properly validated.

If needed, our experts will help you find the best design for your RNA oligonucleotides.

↖CONTACT OUR TECHNICAL SUPPORT

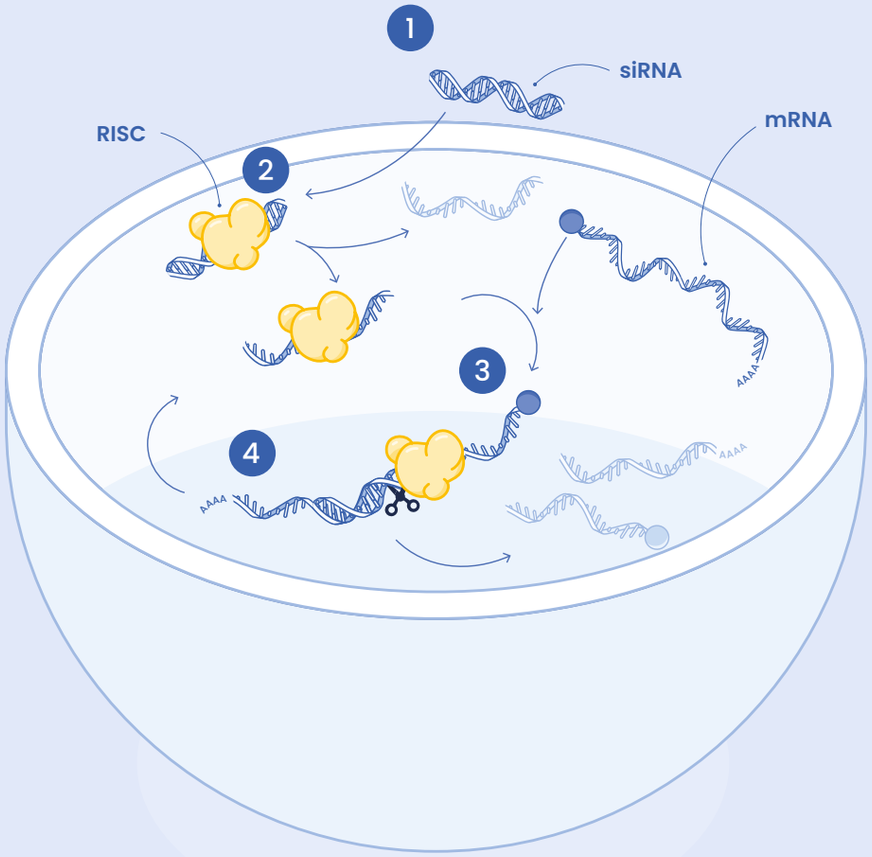
miRNA

miRNAs (for microRNAs) are small non-coding RNAs forming short hairpins. They are involved in gene expression regulation and RNA silencing mostly by inducing the active degradation of the targeted mRNA or by preventing its translation.

We provide custom synthesized miRNA mimics and inhibitors available with different labels which can be linked to cholesterol to increase cellular uptake. Other modifications are available on request, like covalently-bond peptides, modified bases, dyes and more.

↖CONFIGURE YOUR siRNA DUPLEXES

siRNA-mediated RNA interference mechanism of action



siRNA-mediated RNA interference mechanism of action.

1. The siRNA duplex enters the cell.
2. The double stranded siRNA is incorporated into a multiprotein complex, forming the RISC (RNA-induced silencing complex). The guide strand is loaded into the RISC and binds complementary target mRNA. The siRNA passenger strand is discarded.
3. The target mRNA is cleaved.
4. The RISC starts a new cycle.

Eurogentec can support your sequencing projects by offering dedicated NGS grade oligonucleotides.

NGS oligos

A specific production process to ensure a low cross-contamination (<0.1%) for your Next-Generation Sequencing oligos.

Next-Generation Sequencing (NGS) is a high-throughput technology allowing the massive sequencing of nucleic acids following a DNA library preparation. The NGS technology requires that adapter sequences added to fragmented nucleic acids have a high level of purity (no by-products) and ultra-low cross-contamination.

Eurogentec can support your sequencing projects by offering dedicated NGS grade oligonucleotides. Specially produced to avoid cross contamination, they reduce barcode misalignment during multiplex next generation sequencing projects.

NGS SPECIFICITIES

Quality
Low cross contamination (<0,1%)

Length
from 20 to 85 bases

Quantity
10 nmol minimum delivered

5' Modifications
5' Phosphate / 5' Biotin-TEG

Purification
HPLC or Cartridge

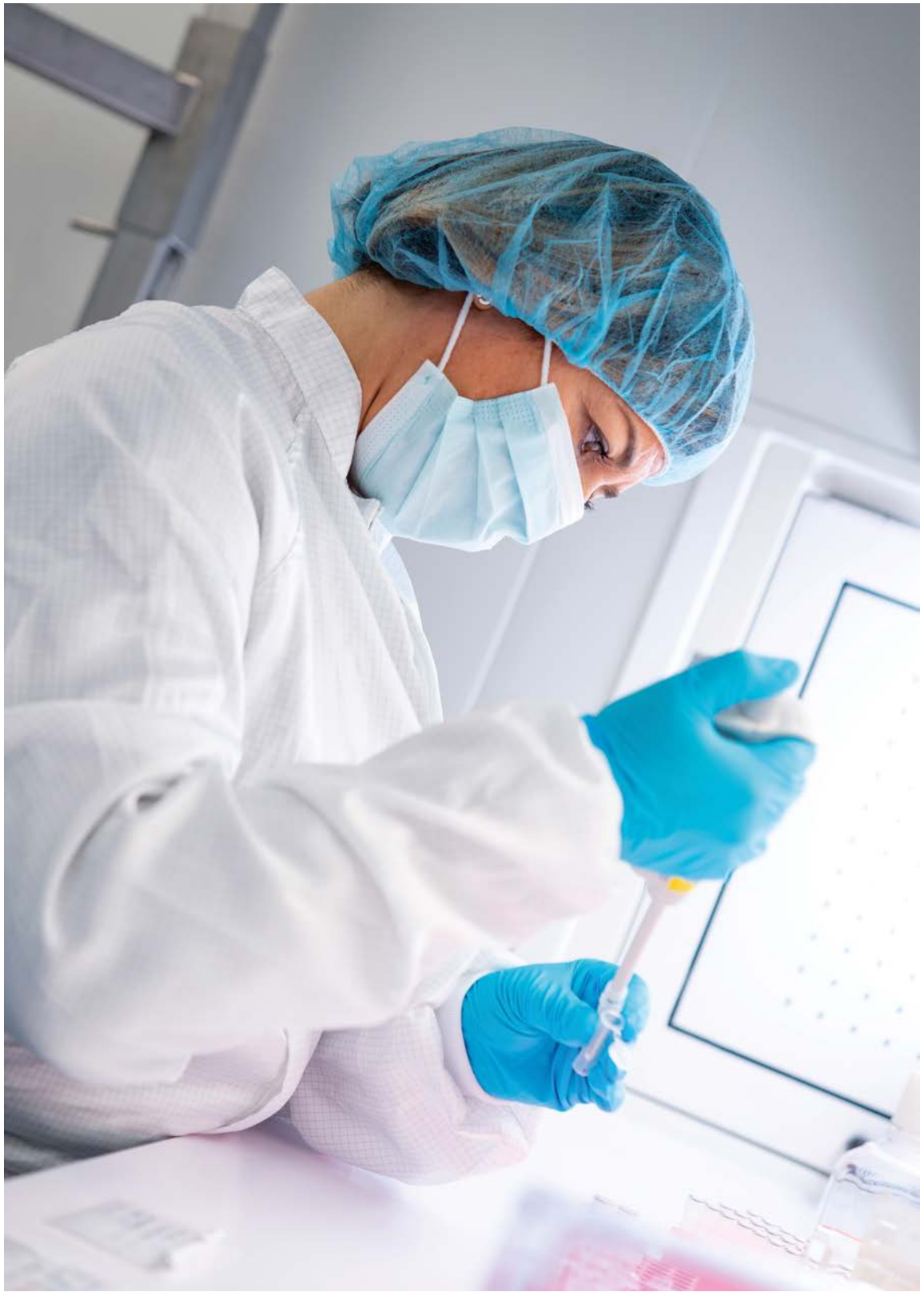
Quality Control
100 % Quality Control checked by Maldi-TOF MS

Format
Dried in tubes

Bases Option
Phosphorothioate bond

Wobble Bases
Available at no additional cost

↖ CONFIGURE NGS OLIGOS



We can produce subsequent large quantities of aptamers according to the setups defined during the development phase.

Aptamers

We collaborate with Novaptech, one of the world leaders in the development of oligonucleotide aptamers. They identify your ideal molecule, we synthesize it.

Aptamers are oligonucleotides that bind a specific target molecule, or molecule family, based on their tertiary structure. They are considered as an alternative to antibodies.

Novaptech identifies and optimizes aptamer candidates while Eurogentec is dedicated to synthesizing the final aptamer candidate, along with all oligonucleotides needed for your aptamer development process.

We provide high-value aptamer-related services which include the selection and production of custom optimized RNA and DNA aptamers for analytical, diagnostic, and therapeutic applications. Each aptamer can be provided in various quantities and delivered either unmodified or modified.

ANY TARGET – IN VARIOUS CONDITIONS

FAST & CONTROLLED PRODUCTION

GOOD ALTERNATIVE TO ANTIBODIES

Aptamers have shown similar, and even higher affinity and specificity compared to traditional monoclonal antibodies. They exhibit low immunogenicity and are chemically synthesized, requiring no animal or cell culture. Consequently, they overcome many limitations of antibodies and are well-suited for both diagnostic and therapeutic applications.

CONTACT OUR TECHNICAL SUPPORT

Catalog Reagents

We supply oligo synthesis reagents from Glen Research and ready-to-use nucleic acid sequences.

Easily order ready-to-use nucleic acid and oligo synthesis reagents from Glen Research.

Catalog oligos

In addition to our custom oligonucleotide synthesis service, we also provide ready to use nucleic acid sequences.

You can select Universal primers among our catalog. Those pre-designed primers are complementary to nucleotide sequences that occur very commonly in specific sets of DNA molecules and cloning vectors.

We also provide Dye-labeled Calibration Oligos used as a reference to calibrate real-time qPCR thermocyclers.

In addition, you will find in our catalog PNA-FISH probes for *in situ* hybridization and negative and positive siRNA controls.

No need to configurate those oligos. You can add your selected items directly to your cart.

GLEN RESEARCH SYNTHESIS REAGENTS

Eurogentec is **an exclusive distributor of Glen Research products** in most European countries. The Glen catalog includes many reagents and supports to synthesize DNA and RNA oligonucleotides.

- DNA & RNA nucleosides, analogs, and supports
- RNA synthesis
- Universal supports and synthesis supplies
- Modification and labeling
- Ancillary reagents
- Oligonucleotide purification supplies

Use the Fast Order option in your cart to order Glen Research product easily or contact us. [More infos about the Fast Order on p.62.]

LEARN MORE ON CATALOG REAGENTS

GLEN RESEARCH part of Maravai LifeSciences

DISCOVER OUR GLEN RESEARCH PRODUCT CATALOG

Oligo ordering guidelines

We guide you through your ordering journey, from helping you select the best options for your oligos to ensuring their optimal use in your lab.

Order settings

We provide guidance to guarantee that your oligos meet the quantity and quality necessary for your application.

Synthesis scale *vs* Guaranteed yield

The synthesis scale refers to the amount of raw material used to start the synthesis of oligonucleotides. The yield corresponds to the amount of final product recovered at the end of the synthesis and purification processes.

The length, the sequence, the type/number of modifications and the purification, strongly influence the reaction yield. Based on that, Eurogentec defined a minimum guaranteed yield in nmoles for all product categories (Refer to the table on the next page).

The minimum guaranteed yields represent only a reference because the delivered quantities may vary.

We can provide more than 20 µmol scale on request.

LIST OF THE POST-SYNTHESIS MODIFICATIONS

Post-synthesis modifications may yield 50% less than the next stated values

Alexa Fluor®
5′ Alexa Fluor® (350, 430, 488, 500, 514, 532, 546, 555, 568, 594, 610, 633, 647, 660, 680, 700 and 750)

ATTO
5′ ATTO (390, 425, 465, 488, 495, 520, 532, 550, 565, 590, 594, 610, 620, 633, 635, 647N, 655, 680, 700, 725 and 740)

BODIPY®
5′ BODIPY® (530/550, FL and TR)

Cascade Blue®
3′, 5′ and Cascade Blue®

Cy®
3′ and dT Cy® (3, 3.5, 5 and 5.5)

Digoxigenin
3′, 5′, dR and Digoxigenin

Dragonfly Orange®
5′ Dragonfly Orange®

DY
5′ DY-(681, 781 and 782)
6-FAMdR and HEX

HiLyte™ Fluor
5′ HiLyte™ Fluor (405, 488, 555, 594, 647, 680 and 750)

JOE
3′, dR and dT JOE

Marina Blue®
5′ Marina Blue®

Oregon Green®
5′ Oregon Green® (488 and 488 X)

Pacific Blue™
5′ Pacific Blue™

QXL®
3′ QXL®

Rhodamine
3′, 5′, dR and dT Rhodamine 6G

ROX
3′, 5′, dR and dT ROX

TAMRA
5′ TAMRA

TET

Texas Red®
3′, 5′, dR and dT Texas Red®

→ Notes (TABLE P. 53)

[1] Between 5 and 59 bases length single-modified oligonucleotides. Eurogentec does not provide minimum guaranteed yield for modified oligonucleotides longer than 59 bases. Post-synthesis modifications are not compatible with SePOP and RP-Cartridge•Gold™ purification. A lower yield may result from poly-modifications and/or strong secondary structures.

[2] Double-Dye probes only result from the combination of a 5′ fluorescent dye and a 3′ quencher.

[3] Except for oligonucleotides with GC-rich regions.

[4] Only available for Double-Dye FAM-TAMRA 10 nmol and FAM-BHQ1® 10 nmol.

[5] Non-modified siRNAs only include 3′ dTdT overhang.

[6] Please be aware that all purifications containing an IEX-HPLC are limited to a length up to 39 bases.

Range	Product	Length	Synthesis scale (nmol) 10	40	200	1000	2500	5000	10000	20000
Custom Oligonucleotides	Non-Modified (DNA only)	5-9	-	-	-	15	30	65	135	275	600
		10-19	5	4	-	20	40	80	175	350	750
		20-39	5	4	-	20	40	80	175	350	750
		40-59	3	2	-	10	20	40	90	180	375
		60-79	2	2	-	8	16	30	70	140	300
		80-99	-	-	-	8	16	30	70	140	300
		100-139	-	-	-	8	16	30	70	140	300
	Modified [1] (including DNA, RNA, 2′-O-Me RNA, 2′-O-MOE RNA, LNA® and phosphorothioate linkages)	5-9	-	-	-	15	30	65	135	275	600
		10-19	-	-	-	20	40	80	175	350	750
		20-59	-	-	-	20	40	80	175	350	750
		60-139	-	-	-	20	40	80	175	350	750
Real-Time qPCR Probes	Double-Dye probes [2]	8-45	-	-	<2 [4]	-	-	-	-	-	-
	Molecular Beacons	28-50	-	-	-	-	-	-	-	-	-
	MGB Taqman Probes	8-30									
NGS Oligonucleotides	RP-Cartridge purified RP-HPLC purified	20-85									
Universal Primers	-	15-38	-	-	-	-	-	-	-	-	-
			-	-	5	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-	-	-	-
siRNA RNAi Oligonucleotides	Duplexes Non-Modified and Modified [5] [1]	21-27	7	-	3	22	-	12	-	60	-	40	-	200	-	80	-	-
Unique Oligonucleotides	-	2-225	On request - please contact us at unique@eurogentec.com															

Minimum delivered quantity : 10 nmol

Delivered Quantity (nmol)

On Request

Minimum Guaranteed Yield (nmol)

← For notes see previous page.

Compatibility cycler channels *vs* fluorescent dyes

Table on the next page.

For complementary information, please refer to instrument manufacturer technical guide or contact us at **scientific.support@eurogentec.com**

LEGEND TABLE P.55

*perform a dye calibration for optimal results

Ch = Channel

YY = Yakima Yellow®

DFO = Dragonfly Orange™

TR = Texas Red®

● In black = Recommended by Eurogentec

● In blue = Available at Eurogentec

● In pale blue = Not available at Eurogentec

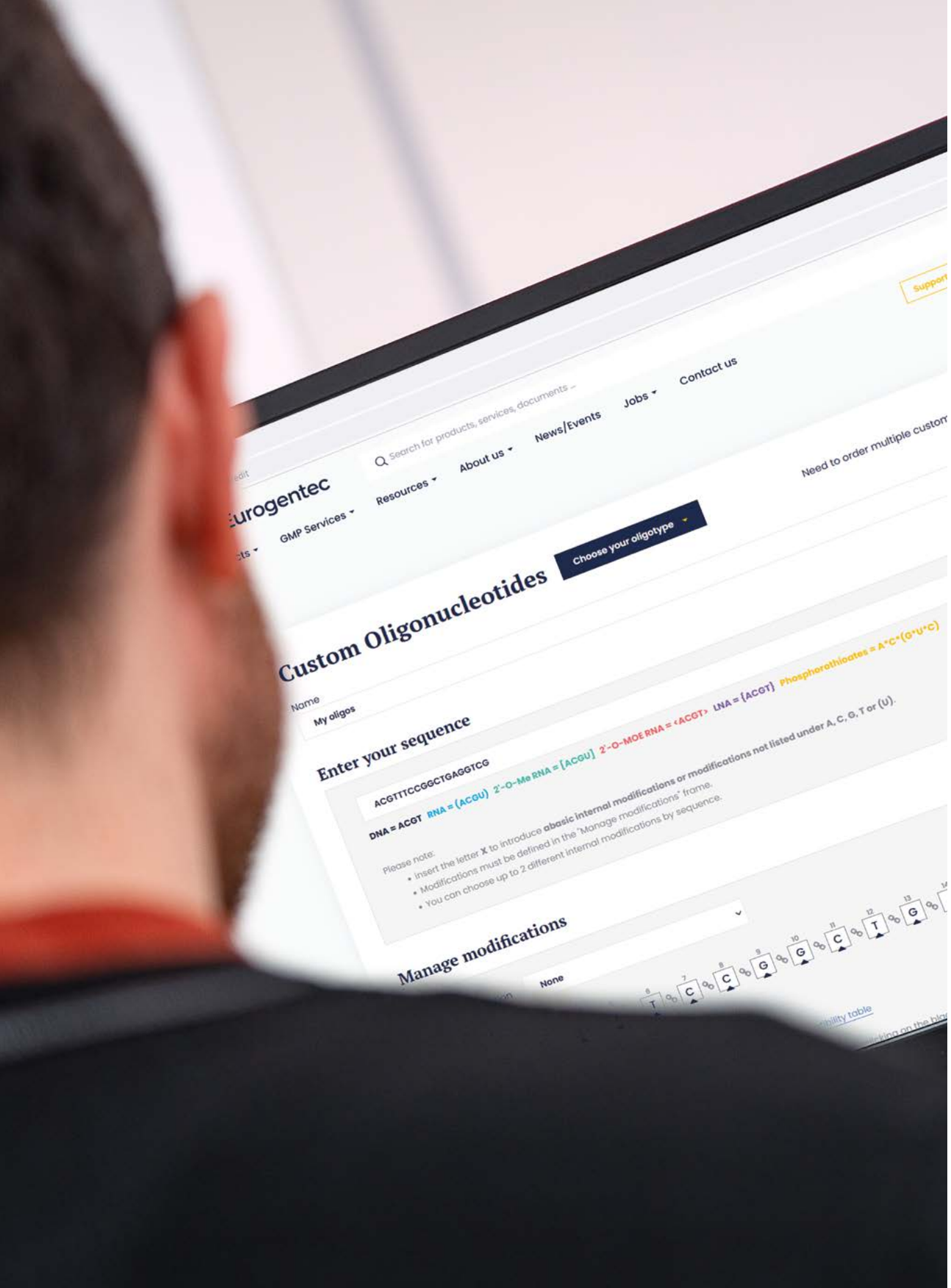
Thermocycler	Blue ch	Ch 1	Ch 2	Ch 3	Ch 4	Ch 5	Ch 6	Ch 7
Real-Time PCR Thermocyclers								
AriaMx & AriaDx (up to 6 filters)	ATTO 425	FAM	**HEX**	Cy®3	ROX	Cy®5		
qTOWER³		FAM	**YY/HEX/**JOE/VIC	DFO/TAMRA/NED	ROX/TR/Cy®3.5	Cy®5	Cy®5.5	
ABI Prism® SDS 7500		FAM	**YY*/HEX*/**JOE/VIC/TET*	DFO*/TAMRA/NED	ROX/TR	Cy®5/HL647		
ABI Prism® SDS 7900HT		FAM	**YY/**JOE/VIC/TET*	DFO*/TAMRA/NED	ROX	-		
QuantStudio™ 1		FAM	**YY*/HEX/**JOE/VIC/TET		ROX/TR			
QuantStudio™ 3		FAM	**YY*/HEX/**JOE/VIC/TET	DFO*/TAMRA/Cy®3/NED	ROX/TR			
QuantStudio™ 5 (384-W.) & 6 Flex/Pro		FAM	**YY*/HEX/**JOE/VIC/TET	DFO*/TAMRA/Cy®3/NED	ROX/TR	Cy®5/HL647		
QuantStudio™ 5 (96-W.) & 7 Flex/Pro & 12k Flex		FAM	**YY*/HEX/**JOE/VIC/TET	DFO*/TAMRA/Cy®3/NED	ROX/TR	Cy®5/HL647	Cy®5.5/ATTO 700	
StepOnePlus		FAM	**YY*/HEX*/**JOE/VIC/TET*	DFO*/TAMRA/Cy®3/NED	ROX	-		
ViiA7		FAM	**YY*/HEX/**JOE/VIC/TET	DFO*/TAMRA/NED	ROX/TR*	ATTO 633/LIZ	ATTO 680/Alexa Fluor® 680	
CFX Connect & CFX Duet		FAM	**YY*/HEX/**JOE*/TET		ROX/TR	Cy®5	Cy®5.5	
CFX Opus & CFX96 Touch		FAM	**YY*/HEX/**JOE*/TET		ROX/TR	Cy®5		
CFX384 Touch		FAM	**YY*/HEX/**JOE*/TET	DFO*/TAMRA/Cy®3/NED	ROX/TR	Cy®5		
iCycler iQ™		FAM	**YY*/HEX/**Cy®3/TET	DFO*/TAMRA/Cy®3/NED	ROX/TR	Cy®5	-	
iQ™5		FAM	**YY*/HEX/**JOE/VIC		ROX/TR	Cy®5.5		
QIAquant 96 & 384 5plex		FAM	**YY*/HEX/**JOE/VIC					
QIAquant 96 2plex		FAM	**YY*/HEX/**JOE/VIC					
RotorGene®6000 & Q		FAM	**YY/HEX/**JOE/VIC/TET	TAMRA/ROX/Cy®3.5/TR	Cy®5	ATTO 680		
LightCycler® 480 I	ATTO 425	FAM	**YY/HEX/**JOE/VIC	ROX/TR/LC Red 610	ATTO 620/LC Red 640	Cy®5		
LightCycler® 480 II	ATTO 425	FAM	**YY/HEX/**JOE/VIC	ROX/TR/LC Red 610	ATTO 620/LC Red 640	Cy®5/Cy®5.5		
LightCycler® 96		FAM	**YY/HEX/**VIC	TR/LC Red 610	Cy®5			
Digital PCR Platforms								
Naica® Prism3		FAM	**Cy®3/HEX/**VIC	Cy®5				
Naica® Prism6		FAM	**YY**	ATTO 550	ROX	Cy®5	Cy®5.5/ATTO 700	
Nio+		FAM	**YY**	ATTO 550	ROX	Cy®5	Cy®5.5	DY-521-XL
QX One ddPCR		FAM	**HEX/**VIC	Cy®5	Cy®5.5			
QX100 ddPCR		FAM	**HEX/**VIC					
QX200 ddPCR		FAM	**HEX/**VIC					
QX600 ddPCR		FAM	**HEX/**VIC	Cy®5	Cy®5.5	ROX	ATTO 590	
QuantStudio™ Absolute Q		FAM	**HEX/**VIC	TR/ABY	Cy®5/MUN			
QIAcuity Four/Eight (5plex)		FAM	**HEX/**VIC	TAMRA	ROX	Cy®5		
QIAcuity One (2plex)		FAM	**HEX/**VIC					
Digital LightCycler	ATTO 425	FAM	**HEX/**VIC	TR/CFR610/LC610	Cy®5/MA270/LC640	Cy®5.5		

Determine the right synthesis scale for PCR

*Please select in the minimum guaranteed yield table the synthesis scale corresponding to the desired minimum quantity.

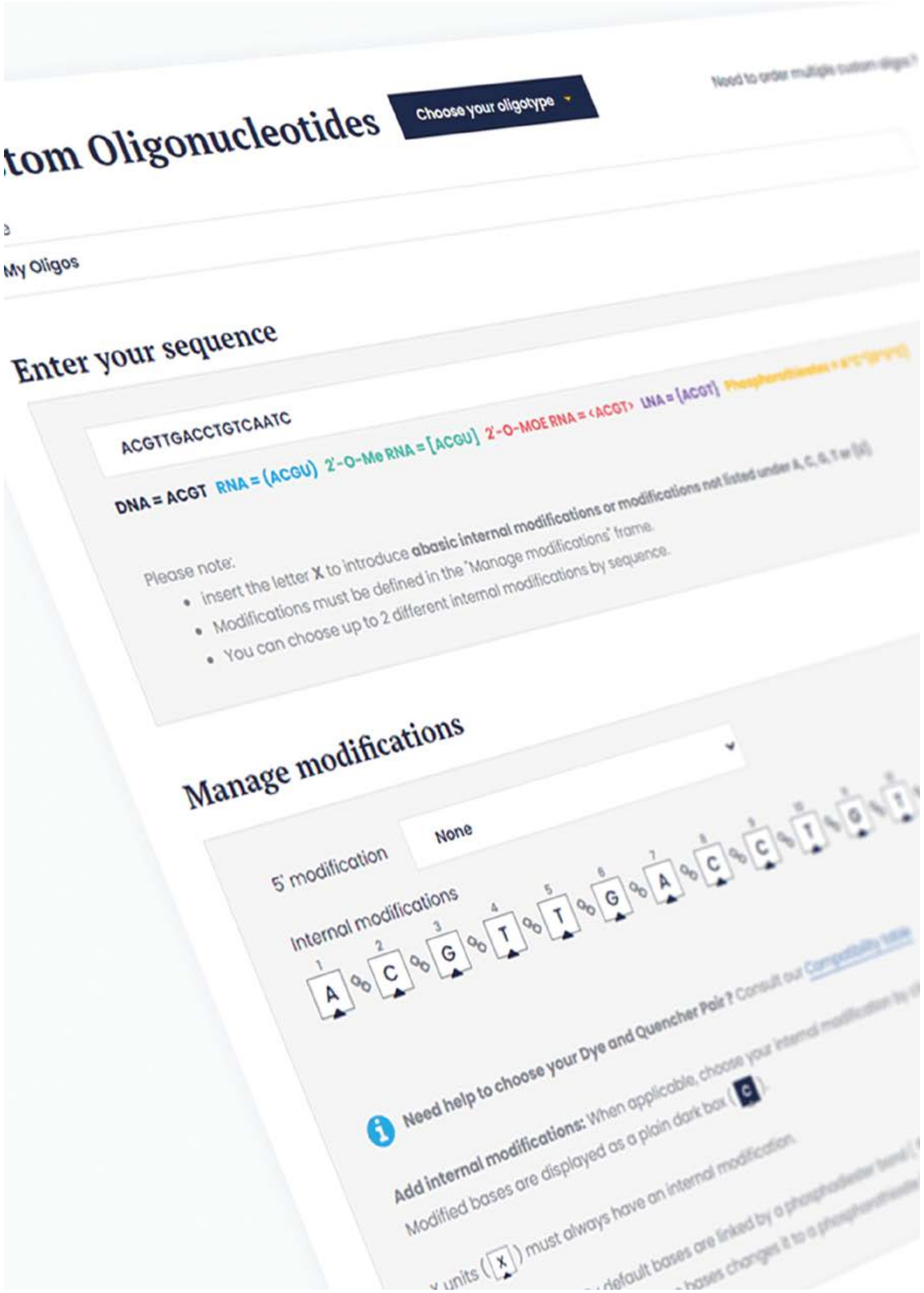
FINAL OLIGO CONCENTRATION

50 nM	150 nM	300 nM	600 nM	900 nM	
AVERAGE NUMBER OF REACTIONS (TOTAL VOLUME 100µL)					**MINIMUM QUANTITY TO ORDER***
100	30	15	8	6	0.5 nmol
1000	300	165	80	55	5 nmol
5000	1650	830	415	275	25 nmol
10 000	3300	1660	830	555	50 nmol
100 000	33 300	16 660	8330	5555	500 nmol



Order placement

We guide you step by step, simplifying your ordering journey to make it fast and effortless.



Order, save & manage your oligonucleotides easily with our online configurators.

Online configurators

Fast and easy for your research grade oligos.

Order, save, and manage your oligonucleotides easily with our online configurators for :

- Custom oligonucleotides
- Probes (Double-dye, MGB, Molecular Beacons)
- siRNAs
- NGS oligos

You can configure them one by one with our special tools, or order multiple oligos in a single batch thanks to our batch order.

NOMENCLATURE GUIDELINES TO WRITE YOUR SEQUENCE

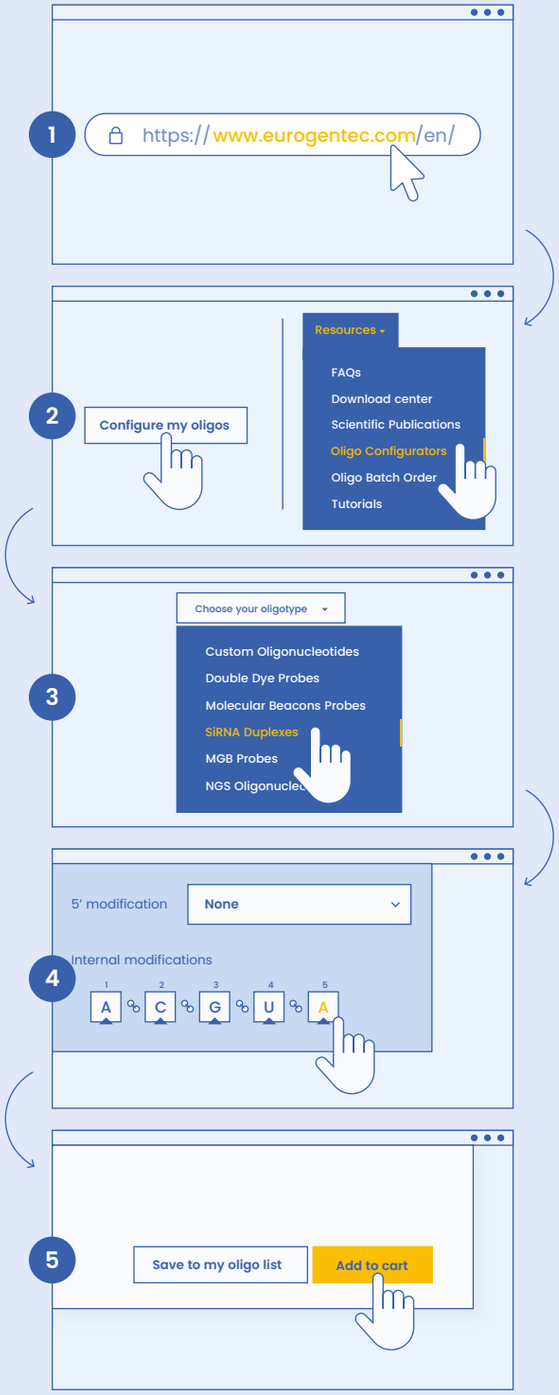
CODE	BACKBONE
ACGTA	DNA
(ACGUA)	RNA
[ACGUA]	2'-*O*-Me RNA
<ACGTA>	2'-*O*-MOE
{ACGTA}	LNA®
A*C*(G*U*)A	Phosphorothioate links

IUB code
Mixed bases (also known as degenerate or wobble bases) **follow the IUB codes :**

IUB CODE	MIXED BASES
D	A/G/T
M	A/C
H	A/C/T
I	Inosine = Universal base
W	A/T
R	A/G
Y	C/T
V	A/C/G
S	C/G
K	G/T
N	A/G/C/T
B	C/G/T

↖ WATCH TUTORIAL

Configure your oligos one by one



❶ Connect to www.eurogentec.com

❷ Go to the configurator page by clicking on the “Oligo configurators” in the “Resources” dropdown menu.

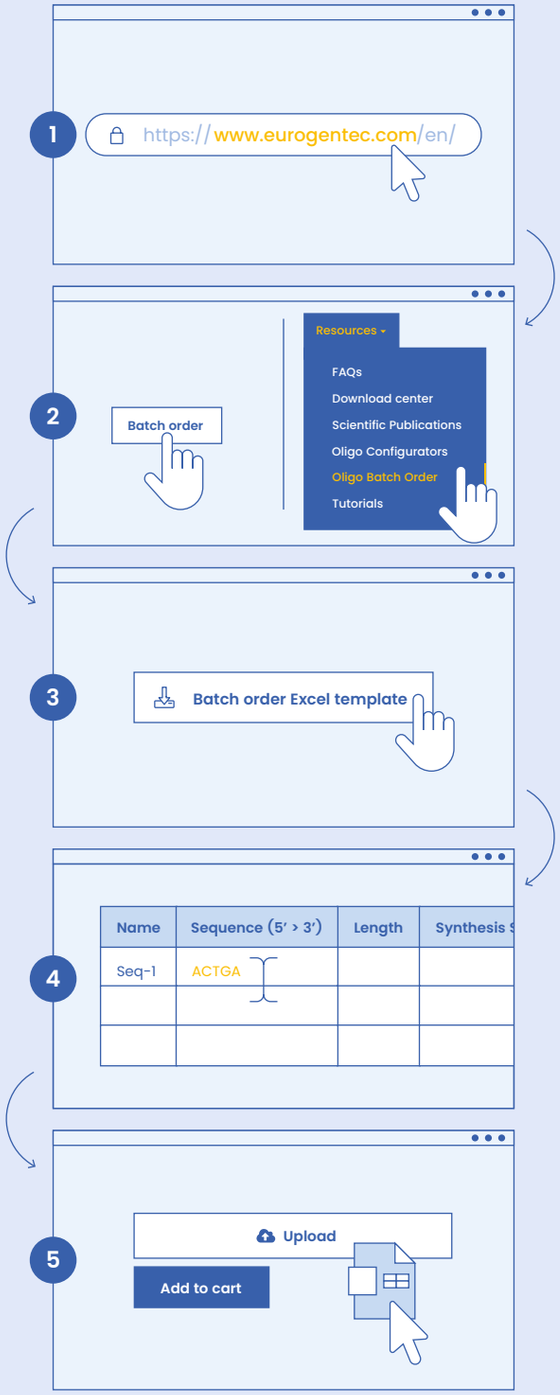
❸ Select the oligonucleotide type via the dropdown menu available on the configurator page.

❹ Fill in the configurator with your oligonucleotide specifications.

❺ Add your oligonucleotide into the cart and finalize your order.

WATCH TUTORIAL

Order oligos by batch



❶ Connect to www.eurogentec.com

WATCH TUTORIAL

❷ Go to the batch order section clicking on the “Oligo Batch order” link in the "Resources Menu".

❸ Download the batch order file.

NB : You need a spreadsheet software to edit the file.

❹ Fill in the file with your oligonucleotides.

❺ Upload the file and finalize your order.

CONSULT OUR FAQ

We synthesize your highly modified oligonucleotides even with specifications out of our catalog offer.

Ask a quote for your complex oligos

Each request is analyzed by our experienced chemists prior to drawing up any quotation.

We manufacture complex oligonucleotides with specifications out of our catalog offer, such as atypical chemistries, rare modifications, small or large scales, personalized labels and packages...

Contact us through the form on our website and receive all the information regarding technical feasibility, pricing and turnaround time.

Our complex oligonucleotides service will bring you a tailormade solution.

FAST ORDER

The Fast Order allows you to select products by entering either the product reference or name, adding them directly to your cart.

Here's how you can make the most of it :

1. Go to the Fast Order box in your cart.
2. Search for the desired product's reference or name in the Fast Order box.
3. Click on the product name, and it will be added to your cart.

↖ **LEARN MORE ABOUT FAST ORDER**

Order a personal quote

1. Connect to www.eurogentec.com

2. You can easily order your quotes from your account, in “My quotes” section or *via* the dropdown menu from the account icon.

3. Select the desired quote. You will see the details of the available products.

4. You can add one item by one item or send all items directly to the cart.

NB : Please note that you can’t add more than one quote to your cart per order and you have to go through this process to benefit the price from your quote. This is only available for catalog references.

MY OLIGOS TAB

In “My Oligos” section, you can create new oligonucleotides or select oligonucleotides in your saved sequences.

Each time you add an oligo to your cart, it will be added to your saved oligos in “My oligos tab” automatically.

↖ **ASK A QUOTE**

Payment methods

Our standard methods of payment

We offer different payment methods to best suit your needs: Visa, MasterCard, Bank Transfers, and FlxLab. All these methods meet high-security standards to protect your payments.

Credit cards

VISA

mastercard

Bank transfers (Payment on invoice)

Bank Transfer

FlxLab accounts

FlxLab

FLXLAB IS EUROGENTEC'S PREPAID SYSTEM

Place a defined amount on your FlxLab account, and use that amount over time. Please note that your account is credited only upon payment.

Only one invoice

A single invoice for multiple oligos orders over time.

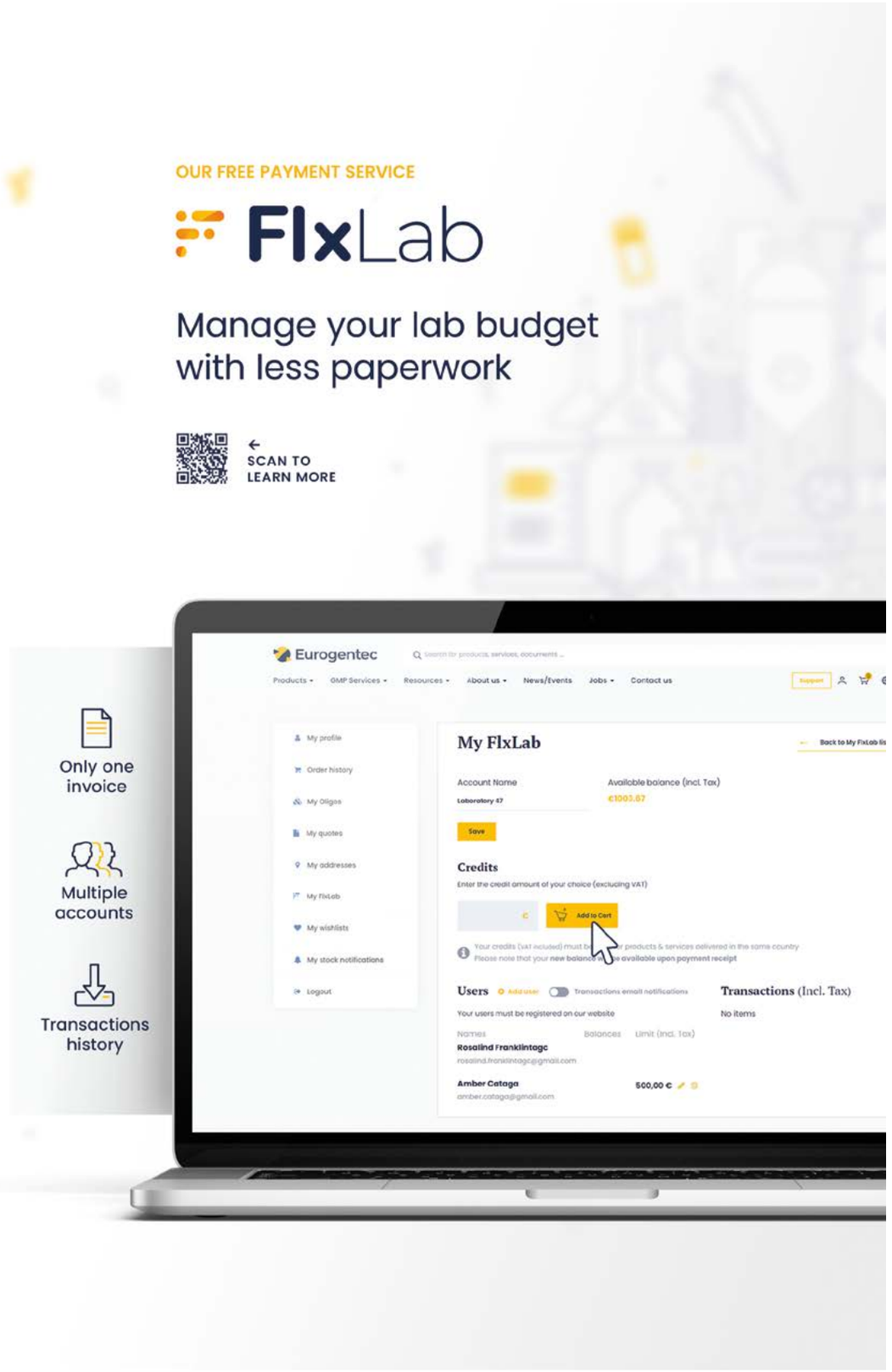
Multiple accounts

One administrator can give restricted access to multiple users in a single FlxLab account.

Transactions history

Keep tracks of your budget and order history.

LEARN MORE



Delivery

We focus on making the delivery process as simple and efficient as possible, ensuring that you receive everything you need on time.

Shipping methods

Express Delivery
Receive your oligonucleotides within 24 to 48 hours by international carrier.

Same day shipping Option

- Available on request (additional fees will be charged)
- For orders received before 10.00 AM (Central European Time)
- For custom oligonucleotides (max 24), 10/40 nmol scale, 5-30 DNA bases, unmodified, SePOP desalted or RP-Cartridge purified.

For large orders or unique oligonucleotides, please feel free to contact us at **oligo@eurogentec.com** to receive more details in terms of delivery schedules.

5'AP, BSA, HRP or SBP Conjugation: 3-5 Working Days Extra;

Additional Purification or Services: 2 Working Days Extra;

These values are indicatives.

Delivery times (in working days)

			Delivery time according to purification				
Range	Product	Length (Bases)	SePOP	RP-Cartridge•Go™	HPLC (RP or IEX)	PAGE	Dual HPLC
Custom Oligonucleotides	Non-Modified (DNA Only)	5-9	-	4-5	5	6	7
		10-39	2-3	4-5	5	6	7
		40-59	5	6	7	8	-
		60-79	-	6	-	8	-
		80-139	-	-	-	10	-
	Modified (including DNA, RNA, 2'-*O*-Me RNA , 2'-*O*-MOE RNA & LNA®)	10-39	5	7	7	8	9
		40-59	7-8	9-10	9-10	10-11	11-12
Real-Time qPCR Probes	Double-Dye Probes	8-45	-	-	7	-	-
	Molecular Beacons	28-50	-	-	12-15	-	-
	MGB Taqman Probes	8-30	-	-	5-7	-	-
RNAi Oligonucleotides	siRNA Duplexes	21-27	5-7	-	9-10	10-11	-
NGS Oligonucleotides	-	20-85	-	4-6	5-7	-	-
Universal Primers	-	15-38	-	-	2-3	-	-
Unique Oligonucleotides	-	2-225	On Request				

Provided documentation

Each oligonucleotide is provided with a technical data sheet. Other documentations could be added depending on the oligonucleotide type. All the documents are sent as pdf files to your shipping email address.

		TDS	MS[1]	UHPLC[2]
Custom Oligonucleotides	Unmodified	✓		
	Modified	✓	✓[3]	
Real-Time qPCR Probes		✓	✓	✓
RNAi Oligonucleotides	siRNA Duplexes	✓	✓[3]	
Universal Primers		✓	✓	
Unique Oligonucleotides		✓	✓	✓[4]
NGS Oligos		✓	✓	
Calibration Oligos		✓	✓	

TDS Technical Data Sheet; **MS** Mass Spectrometry; **UHPLC** Ultra High Performance Liquid Chromatography;

[1] Always provided up to 60 bases long Oligonucleotides.

[2] If applicable.

[3] Except for SePOP desalted oligonucleotides.

[4] Optional.

For technical reasons this general rule may be adapted to provide you with the most suitable and useful documentation.

Handling instructions

This resource offers all the information required to ensure the optimal use of your oligonucleotides.

Reconstitute your oligo

Refer to the dedicated technical data sheet for more information.

1. **Spin** the tube briefly to collect the pellet at the bottom of the tube.
2. **Add** the appropriate volume of recommended buffer.
3. Allow the tube to **stand** for a few minutes.
4. **Stir** the tube for 15 sec using a vortex shaker and **centrifuge** it briefly.

Oligo storage

Handling information

PRODUCTS	FORMAT	STORAGE[1]	STABILITY[2]
Custom Oligonucleotides	Dried	RT	18 months
	TE Buffer (pH 8)[3] or dH2O	-20 °C	24 months
Real-Time qPCR Probes	Dried	RT	18 months
	TE Buffer (pH 8)[3] or dH2O	-20 °C	24 months
RNAi Oligonucleotides	Dried	RT	18 months
	RNase-free Buffer (pH 7.5)	-20 °C	24 months
Catalog Primers	Dried	RT	18 months
PNA FISH Probes / Custom PNA	Dried	RT	18 months

[1] Oligonucleotides and especially dye-labelled oligonucleotides should be protected from light for optimal stability. Tolerance -20°C ± 5° C. For custom PNA we suggest to prepare workable samples. Store these samples at 4°C for up to one month and the remaining at -20°C.

[2] Please note that depending on sequences and modifications, the stability of the oligos may vary substantially versus the given values, which should therefore be considered as indicative. Although it is generally recommended to avoid freeze-thaw cycles, we did not observe negative effects in qPCR tests after 10 freeze-thaw cycles.

[3] Except for Cy® dye labelled oligonucleotides (pH 7)

Quantify your oligo

1. Concentration of your stock solution (C)

1. Prepare an aliquot of the resuspended oligonucleotides to 1ml final volume of distilled H_2O and spin briefly.
2. Measure the absorbance at 260 nm (A_{260}).
3. Calculate the concentration of your stock solution using this formula:

The formula is valid for absorbance $A_{260} \leqslant 1.2$

$$C(\mu g/ml) = A_{260} \times \text{dilution factor} \times \text{Weight per } OD_{260} \text{ of stock solution } (\mu g/OD)$$

OD_{260} measure

1 OD_{260}(Optical Density) unit is defined as the amount of oligonucleotide which, when dissolved in a volume of 1.0 ml, results in an absorbance of 1.0 when measured at 260 nm in a 1 cm path-length quartz cuvette.

1 OD_{260} unit corresponds to approximately 33 µg of single strand DNA. These relationships, however, can be inaccurate for short fragments of DNA, such as oligonucleotides. Base composition and even linear sequence will affect optical absorbance. Hence the precise value of the OD to mass relationship is unique for each oligonucleotide.

We carefully measure the OD value for your custom oligonucleotide by measuring the absorbance at 260 nm using UV spectrophotometer. This information is provided on the oligonucleotide Technical Data Sheet as the number of OD_{260} units. The amount of oligo expressed in nanomoles and micrograms is derived from the OD measurement. ➔

TECHNICAL DATA SHEET (TDS)

You will find the precise data of your oligo on the Technical Data Sheet sent with each oligo.

2. Convert OD_{260} into Nanomoles

This equation shows the relation between the oligo amount in nanomoles and the OD_{260} value.

$$\text{Nanomoles} = (OD_{260}/\varepsilon_{260}) \times 10^6$$

The molar extinction coefficient (ε_{260})

ε_{260} is the extinction coefficient at 260 nm.

$$\varepsilon_{260} = 2 \times \left(\sum_1 \varepsilon^{n-1}_{\text{Nearest Neighbour}} \right) - \sum_2 \varepsilon^{n-1}_{\text{Individual}} + \sum_1 \varepsilon^{n}_{\text{Modification}}$$

where $e_{\text{Nearest Neighbour}}$ is the nearest neighbour constant for a pair of bases, $e_{\text{Individual}}$ is the constant for an individual base, and n is the length of the oligonucleotide.

THE MOLAR EXTINCTION COEF (ε_{260})

Example:

1 OD_{260} unit of primer M13 Forward, 5′-GTA AAA CGA CGG CCA GTG-3′
Molar extinction coefficient (ε_{260}) = 182.800 L / (mole × cm)

Nanomoles = (1.0 / 182.800) × 10^6 = 5.47 nmoles

3. Convert Nanomoles into Micrograms

Use the following equation, using the nanomole value and the molecular weight of the oligonucleotide.

$$\text{Micrograms} = \text{Molecular Weight} \times \text{Nanomoles} \times 10^{-3}$$

The molecular weight (MW)

$$\text{Anhydrous MW (g/mol)} = \sum_{\text{Individual Base}} \text{MW} + \sum_{\text{Individual Mods}} \text{MW} - 63.98 + 2.016$$

For DNA bases: MW dA = 313.21; MW dC = 289.18; MW dG = 329.21; MW dT = 304.20; MW dU = 290.17; MW dI = 314.19
For RNA bases: MW DNA counterpart + 16

When determining the weight of Uracil (rU) start with dU and not dT

For LNA bases: MW DNA counterpart + 16 (+42 for dC)
For 2′-*O*-Methyl bases: MW DNA counterpart + 30.03

When determining the weight of mU start with dU and not dT

For phosphorothioated bases: MW DNA counterpart + 16.06

THE MOLECULAR WEIGHT (MW)

Example:

1 OD_{260} unit of primer M13 Forward,
5′-GTA AAA CGA CGG CCA GTG-3′

Molecular Weight = 5558.7

Micrograms = 5558.7 × 5.47 × 10^{-3} = 30.4 µg

Licenses & trademarks

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