

A close-up photograph of a person in a white lab coat and blue nitrile gloves. They are using a blue pipette to transfer a small amount of liquid into a clear vial. The background is blurred, showing a laboratory setting with other equipment and containers.

PRODUCTS AND SERVICES
GUIDE 2023-2024
**Custom Oligonucleotide
Synthesis**

Building the Bases of Discovery



2023/2024

Custom
Oligonucleotide
Synthesis

• **Biolegio has
over 25 years of
experience with the
synthesis of oligos**

Founded in 1996 in Nijmegen, the Netherlands, Biolegio has over 25 years of experience with the synthesis of oligos- with satisfied customers located all over the world. They use our products daily and benefit from our specialist knowledge within the field.

Over the years our product range has expanded from simple custom-made DNA oligos to highly modified and specialised oligos, for countless different life science applications.

These applications include Sequencing & NGS, PCR, Real-Time PCR, SNP detection, genotyping, gene expression and mutation detection.

Our entire product portfolio is available on small scale synthesis for your everyday research needs, through to high scale/bulk OEM & B2B services for large scale project or production requirements- all manufactured at the highest quality standards and traceability to meet the needs of every customer.

We pride ourselves on our quality, service, speed, flexibility, and communication and look forward to becoming your favourite Oligo supply partner.

Our core values

The key element in satisfying the needs and wants of our customers are our core values as described below. By operating according to these values we do everything we can to maximize customer satisfaction.



**Boundless
Innovation**

Optimized synthesis protocols, adopting new techniques and instruments result in key benefits: next day shipment, low pricing, consistent high-quality and oligos up to 200 bases.



**Approachable
Flexibility**

We take 'Custom oligo synthesis' to the next level. With our dispensing & packaging service you can have your oligo delivered in any format, quantity, concentration or combination.



Structured Efficiency

Biolegio's manufacturing facility is ISO 9001:2015 and ISO 13485:2016 certified. Reflecting strong product quality and manufacturing procedures and always striving for ongoing improvement in those areas.



**Successful
Partnership**

It is our pleasure to deliver the dedication and commitment that you expect from a successful partnership.

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• **Oligonucleotide synthesis facility**

Stringent quality control system ensures high quality oligonucleotides

- In-house built equipment with latest advanced techniques, designed with over 25 years of expertise.
- Minimal error due to fully automated production processes
- ISO 9001:2015 and ISO 13485:2016 certified quality management system



Chemistry

Biolegio uses optimized phosphoramidite chemistry and reagents of the highest quality. Order handling and oligo synthesis programs result in an average coupling efficiency above 99,5%. With this efficiency we are able to synthesize DNA oligos up to 200 bases. Synthesis is performed under low salt conditions, which avoids the need of additional purification for most basic molecular biology applications, such as PCR, sequencing, hybridization studies and antisense studies. Additional purification by HPLC or PAGE is available for more sensitive applications.

Backbones

We offer 4 distinct types of bases as backbones together with two different types of linkages.

Bases

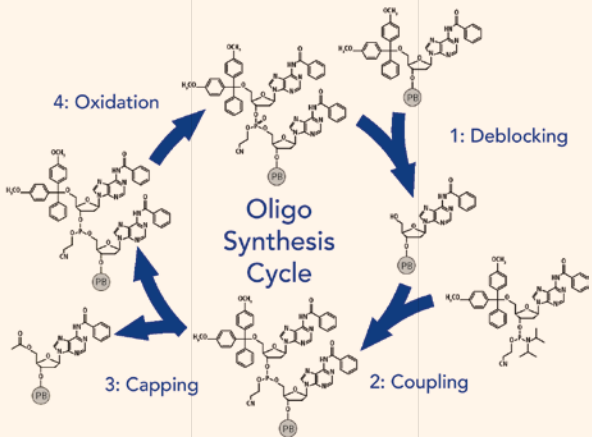
- DNA oligos
- RNA oligos
- LNA oligos
- 2'O-Me oligos

Linkages

Phosphodiester bonds, which is our default linkage is the linkage between the 3' carbon atom of one sugar molecule and the 5' carbon atom of another, deoxyribose in DNA and ribose in RNA. Phosphorothioate bonds substitute a sulphur atom for a non-bridging oxygen in the phosphate backbone of an oligo, making the oligo resistant to nuclease degradation.

Figure 1 | The oligonucleotide synthesis cycle

Oligonucleotide synthesis is carried out by a stepwise addition of nucleotide residues to the 5'- terminus of the growing chain until the desired sequence is assembled. Each addition is referred to as a synthetic cycle (figure 1) and consists of four chemical reactions: deblocking, coupling, capping and oxidation. At the end of the synthesis the oligo is released from the solid support and is eluted from the column or well.



Quality control

The reactions involved in coupling the nucleotides to form an oligonucleotide are not 100% effective. This is inherent to these reactions and causes failure sequences which, for some applications, could make a purification necessary. Biolegio only uses high quality chemicals and robust optimized protocols to ensure the best possible coupling efficiency.

A stringent quality control system ensures that you can expect the quality of our oligonucleotides to be of the highest standard. During the fully automated oligo synthesis, all steps of the synthesis are monitored by multiple control functions on our DNA synthesizers. Synthesis is followed by further quality controls to guarantee the quality of the oligos. All oligos are routinely analysed by capillary electrophoresis and optical density (OD) measurement.

In addition, subsets of oligos are randomly analysed Liquid Chromatography Mass Spectrometry (LCMS). If an oligo does not meet our requirement it's resynthesized. The result of our stringent QC process is a product of the highest standard. All oligos are delivered with our digital product specification sheet, which includes: % GC content, yield in nmol and µgram, OD, melting temperature and molecular weight (MW).

DNA oligonucleotide synthesis from 2 to 200+ bases



ISO quality management

Biolegio's manufacturing facility is ISO 9001:2015 and ISO 13485:2016 certified. Achieving these certificates ensures good, reliable and safe products as a result of strong product quality and manufacturing procedures and an ongoing development of our quality management system. This ongoing development empowers us to continuously strengthen our ability to identify and exceed the needs and expectations of our customers.



QUALITY MANAGEMENT SYSTEM

ISO 9001:2015 FM 701495

ISO 13485:2016 MD 701493



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Custom DNA synthesis

- Your choice of tubes, plate or strips for optimal flexibility in your laboratory
- DNA oligonucleotide synthesis from 2 to 200+ bases

Custom DNA synthesis in tubes

Oligos can be shipped dry or dissolved in a requested solution. They are usually packed in individual labelled micro centrifuge tubes.

Custom DNA synthesis in plates

For medium or high throughput applications Biolegio offers the possibility for the delivery of oligonucleotides in 96 and 384 wells plates. Biolegio offers a wide variety or plate brands and formats e.g. the deep well plate and the PCR plate. Delivery in cryotubes is also possible. To order your oligos in a 96 and 384 well format you can use our excel order form, which can be downloaded from our website. In the excel sheet (order form) please select the tab containing the format of your choice. Synthesis in plates starts from 48 oligos. Ordinarily, all oligos in PCR plate format are synthesized on a 10 or 40 nmol scale and are delivered in max. 100 µl water/buffer with a standard working concentration of 100 pmol/µl (= 10 nmol shipped). For larger volumes deep well plates or cryotubes are used.

Custom DNA synthesis in various formats and quantities

Other formats and working concentrations are available on request. Have a look at our oligo dispensing service (page 13).
With this service you can order your primers and/or probes premixed, in any format and quantity that suits your workflow, for instance in 2D barcoded tubes.

Delivery Schedule

- Custom oligos with maximum length 100 bases are shipped within 24 hours if ordered before 5:00 PM GMT.
- Purified & modified oligos are shipped within 3-4 business days.

Synthesis Scales

Biolegio offers four different synthesis scales for DNA oligos: 10 nmol, 40 nmol, 200 nmol and 1000 nmol. For each synthesis scale there are restrictions regarding the length of the oligo.

Maximum DNA oligo length in relation to synthesis scale	
Synthesis scale	Max. oligo length
10 nmol standard oligo	40 bases
40 nmol standard oligo	200+ bases
200 nmol standard oligo	200+ bases
1000 nmol standard oligo	200+ bases

Guaranteed yield for non-labelled, non purified oligos up to 40 bases	
Synthesis scale	Min. oligo yield
10 nmol standard oligo	10 nmol
40 nmol standard oligo	20 nmol
200 nmol standard oligo	95 nmol
1000 nmol standard oligo	400 nmol

(Oligos longer than 80-bases are synthesized with our B-pure protocol)

Bulk Scale synthesis

For large scale research applications or industry production requirements, Biolegio offers guaranteed delivered yields on DNA oligos and qPCR probes to meet you requirements. Our experience and collaborations have enabled us to optimise our large scale synthesis capabilities and this coupled with our focus on service ensure you can work with an oligo supply partner from R&D pilot studies through to commercialisation with solutions personalized to meet your precise needs.

For more information or to obtain a quotation for your Bulk Scale research or manufacturing oligo requirements, contact us today.

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Purifications

- Additional HPLC, PAGE or Cartridge purification available

Purifications

Biolegio offers three options for purifying your oligo: standard desalting, HPLC purification, and PAGE purification. Which kind of purification is selected largely depends on your demands concerning purity and yield of the end product. You must consider that purification results in less yield of the final product. PAGE purification, although resulting in a higher purity, generally gives lower yields than the HPLC purification. The kind of purification which is chosen also depends on the length of an oligo. For oligos with a length over 50 bases we recommend PAGE purification to guarantee purity of the final product.

Standard Desalt

During synthesis, nucleotides are protected from side reactions by so called 'protecting groups'. These protecting groups are removed from the oligo in a post-synthesis process called 'deprotection'. During this step, the protecting groups form salts with the deprotection reagents which can inhibit the application of the end-user. All oligo's synthesized by Biolegio receive a desalting step per default. The synthesis salts are removed by a propriety desalt process which has been extensively validated in sensitive applications like qPCR reproducibility assays and NGS sequencing efficiency assays.

HPLC Reverse-phase purification

Reverse-phase HPLC operates on the same principle as the reverse-phase cartridges, but typical yields a product of 90% purity. The capacity and resolving properties of HPLC columns are also much greater than cartridge devices. Therefore, HPLC is the method of choice for purifying larger quantities of oligos (i.e. $\geq 1 \mu\text{mol}$). As with cartridges, reverse-phase HPLC is usually not recommended for purifying oligos longer than 50 bases.

PAGE Purification

With the excellent resolution of PAGE a 95-99% purity can be achieved. The basis of the separation is charge and molecular weight. In most cases, a full length (n) oligo can be separated from oligos only one base shorter (n-1). PAGE is the recommended technique for purifying oligos over 50 bases long. Yields from PAGE are lower than from other methods due to the relative inefficient extraction of oligos from the gel.

Stringent conditions to prevent contamination during purification



For more information about ordering and shipping, please go to page 19.

Long oligo synthesis

Long oligo synthesis

Our B-Pure oligonucleotide synthesis protocol enables custom synthesis of affordable, high-quality oligonucleotides up to 200 bases. Oligonucleotides longer than 80 bases are synthesized automatically on this protocol. The B-Pure oligonucleotide synthesis protocol results in high-quality longmers for various applications. Please contact Biolegio to discuss your longmer needs and expectations.

Coupling efficiency

By using the B-Pure synthesis protocol we achieve a coupling efficiency up to 99.9% through an entire 200+ base synthesis reaction. A coupling efficiency of 99% or 98% seems to be very good, but on closer examination the full-length yield is only half for a 40 mer! For a 300 mer this will result in a crude yield of less than 5%, which is not acceptable. As demonstrated in figure 2, the only way to synthesize longmers up to 200 bases with an appreciable yield of full length material (>30%) is to have a coupling efficiency of more than 99.5%.

Purification

With our B-Pure protocol we can reach a maximum yield of full length products as you can see in figure 2. However, due to increasing length, the total yield decreases. Furthermore, the likelihood of building loops, hairpins or other secondary structures during synthesis increases. This leads to a higher presence of deletions in the oligonucleotide sequence, which makes a PAGE purification strongly recommended for long oligos. With PAGE purification you can reach purities between 97% to 99.9% depending on oligo sequence and structure.

Unmatched synthesis length: >200 BASES!

Figure 2 | Yield of full length product, depending on coupling efficiency and oligo length



Please contact us for oligo's longer then 200 bases.

Modified oligo synthesis

- Over 300 modifications available
- Available for different backbones (DNA, RNA, 2'-O-Me, LNA)
- Difficult/special designs, e.g. long hairpin oligo structures with 2 or 3 modifications

Overview

Oligos can be modified in several different ways by utilizing the active groups of the nucleotide or creating nucleotide analogues. We offer a wide range of modifications with new ones being added constantly.

FLUOROPHORES			
Modifications	5'	Internal	3'
6-FAM™	●		●
HEX™	●		●
TET™	●		
6-TAMRA™	●		●
Cyanine 3	●		●
Cyanine 5	●		●
ATTO™ Dye	●	●	●
Yakima Yellow™	●		
Dyomic™ Dyes	●	●	●
JOE™	●		●
Texas Red™	●		●
Quasar 570, 647, 705™	●		●
LC replacement Dye	●		●
NED™ Replacement Dye	●	●	●
PET™ Replacement Dye	●	●	●
VIC™ Replacement Dye	●	●	●
Alexa Fluor™ Dyes	●	●	●
Calfluor™ Dyes	●		
ROX™	●	●	●
Fluorescein dT		●	

QUENCHERS			
Modifications	5'	Internal	3'
Black Hole Quencher 1	●		●
Black Hole Quencher 2	●		●
Black Hole Quencher 3	●		●
Internal Black Hole Quencher 1		●	
Internal Black Hole Quencher 2		●	
Black Berry Quencher 650			●
Deep Dark Quencher 1			●
Dabcyl™			●
TAMRA™	●		●



More modifications on next page

More modifications are available, please contact us for additional information.



See website for complete overview of modifications

SPACERS			
Modifications	5'	Internal	3'
PC Spacer (Photocleavable)	•	•	•
Spacer C3/9/C12/18	•	•	•
d Spacer	•	•	•



Over 300 modifications available!

OTHER			
Modifications	5'	Internal	3'
Phosphorylation	•		•
Amino Modifier C6	•	•	•
Amino Modifier C12	•		
Amino Modifier C3/C7			•
Thiol Modifier	•		•
Thiol Modifier S-S	•		•
Biotin	•	•	
Biotin TEG			•
Biotin Photocleavable	•		
Uracil™	•	•	•
Inosine	•	•	•
2'-O-Methyl RNA	•	•	•
Phosphorothioation (S-oligos)		•	
DIG	•	•	•
Azide	•	•	•
Alkyne	•	•	•
Aldehyde	•		
Nitroindole	•	•	•
Methyl dC	•	•	•
DBCO-TEG	•		
Hexynyl	•		
Acrydite	•		

Probes for Real-Time PCR

- Highly sensitive, dual-labelled fluorescent oligonucleotides
- Specific probes for specific applications
- Wide variety of fluorophores - quencher combinations
- Alternative dyes available

Twice Dyed Probes

Twice Dyed Probes (TDPs) are highly sensitive, dual-labelled fluorescent oligos that are designed to be sequence specific. They can be modified with a wide variety of fluorophores. TDPs can be used with quantitative Real-Time PCR instruments and multiplex analysis systems.

XS-probes

In addition to our twice dyed probes, Biolegio is offering the XS-probe. XS-probes have comparable benefits as the Minor Groove Binder (MGB) moiety: it gives greater stability to the hybridized probe, by raising its melting temperature. As a result, XS-probes can be effective at lengths shorter than traditional dual-labelled probes. XS-probes can be labelled with the same modifications as dual-labelled probes.

Molecular beacons

Molecular beacons are highly sensitive, structured probes. They are used for sequence-specific detection in quantitative Real-Time PCR. Ideal for discriminating single nucleotide polymorphisms (SNPs).

LightCycler FRET Probes

A LightCycler FRET probe system is a pair of single-stranded fluorescently-labelled oligonucleotides (fluorescent acceptor probe and a fluorescent donor probe). They are sequence specific and highly sensitive.

Double Quenched MAX probes

For optimal Quenching characteristics, use the 2Q-probes with an additional internally positioned Quencher to lower background and increase signal detection.

Synthesis scales and yield

Biolegio offers three different synthesis scales for your probes: 40 nmol, 200 nmol and 1000 nmol. MAX probes are also available on custom scales.

YIELD FOR REAL-TIME PCR PROBES	
Synthesis scale	Yield*
40 nmol probe	5-10 nmol
200 nmol probe	20 - 25 nmol
1000 nmol probe	50 - 60 nmol

* Yield depends on sequence and label selection.



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Bulk Scale synthesis & OEM oligos

- Competitive pricing and fast delivery
- Quality, service, speed, flexibility and communication
- ISO9001:2015 & ISO13485:2016 Certified manufacturing
- Your specification, yield and format

For large scale research applications or industry production requirements, Biolegio offers guaranteed delivered yields on DNA oligos and qPCR probes to meet your requirements. Our experience and collaborations have enabled us to optimise our large scale synthesis capabilities and this coupled with our focus on service ensure you can work with an oligo supply partner from R&D pilot studies through to commercialisation with solutions personalized to meet your precise needs.

Oligo Supply Partnership

Our entire product portfolio is available on small scale synthesis for R&D, through to high scale/bulk OEM & B2B services for production requirements, all manufactured at the highest quality standards and traceability to meet the needs for clinical and molecular diagnostic products.

We pride ourselves on our quality, service, speed, flexibility, and communication and look forward to becoming your favourite oligo supply partner.

Competitive Pricing and Lead Times

Receive your oligos in as little as 10-15 working days.

Custom Yields, Specifications and Formats

Your specification, at the yield you need and delivered in a format to suit you. Bulk Scales are available from 100 nmol up to 100+ umol guaranteed yields for oligos and Probes.

Quality Assurance

Biolegio's production facility is ISO9001:2015 & ISO13485:2016 Certified.



For more information or to obtain a quotation for your Bulk Scale research or manufacturing oligo requirements, contact us.

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NGS Oligos

- NGS grade Oligos for a wide range of Library Prep applications

Over the last decade NGS oligo technologies have evolved at a rapid pace, and concurrently so has the demand for high purity - high quality associated products like oligonucleotides. At Biolegio we dedicated ourselves to develop a workflow for NGS oligo's which has proven itself for various NGS applications.

NGS Adaptors and Indexes

NGS oligonucleotides often contain specific Adaptor sequences for library fragment recognition by the NGS platform. Another key aspects in NGS is Sample Multiplexing which is enabled by Indexing strategies. With the throughput of sequencing platforms increasing, there have been several established indexing strategies to enable high levels of multiplexing.

Biolegio optimized Adaptor and Index use in collaboration with multiple customers. The high-quality oligo synthesis with mitigated cross-contamination performed at Biolegio will help you to achieve sequencing results you can rely on!

Mitigate cross-contamination

At Biolegio we offer two NGS oligonucleotide grades: NGS-Standard and NGS-Premium.

For both categories we give the same attention to the highest quality production workflow to achieve cross-contamination levels below 0.1%. Biolegio NGS oligonucleotides are synthesized in an environment which is monitored by externally executed qPCR assays using swaps of the facility, hardware and technicians.

Custom oligos for NGS

Biolegio participated in projects with a wide range of different library prep approaches. Contact Biolegio to discuss your NGS needs. Our product specialists would be happy to discover what we can synthesize for your specific application

Cross contamination levels below 0.1%

BIOLEGIO NGS OLIGOS OVERVIEW		
	NGS-S (Standard)	NGS-P (Premium)
Quality	Highest synthesis Quality Maximal reduced cross contamination	Highest Quality and Purity Maximal reduced cross contamination
Purification	Desalted	HPLC
QC	Standard	Standard + LCMS QC-Report included

• **Oligos dispensing service**

- No more cumbersome pipetting of primers and probes
- Your assay design - our synthesis and processing expertise
- All fluorophore - quencher combinations possible for Real-Time PCR purposes
- Reduce your batch-to-batch variation
- Minimize handling errors associated with manual reaction set-up
- Dried down, or in solution

Order your oligos premixed according to your specifications. The oligos may contain a variety of modifications. Ideal for simplifying your in-house (Real-Time) PCR assays and increasing your efficiency. Available in any format and quantity

that suits your workflow: i.e. tubes, strips, 96/384 wells plates, (2D) bar-coded cryotubes or snap-in tubes for the BD-MAX platform*. All fluorophore - quencher combinations are possible.



Order your oligos premixed according to your specifications

• **AMBeR Sequencing Primers**

- Advanced Mobility Better Resolution Sequencing Primers
- Dramatically improve your reads in the first 50 bases
- For when it's critical to read directly after the primer

A common challenge of DNA sequencing with the Sanger method is typically the poor read quality in the first 50 bases of the sequence due to primer binding and the nature of capillary electrophoresis physics and the optimal range of polymers utilised to sort by size. Utilising proprietary modifications within AMBeR primers to adjust and improve the mobility of the smallest fragments immediately following the primer, leading to better resolution of the first 50 bases in your sequencing chromatograms (figures 3 & 4).

Applications

AMBeR Sequencing Primers can be used for all different Sanger sequencing applications. Especially when it is critical to read directly after the primer.

Platforms

310, 3130, 3130XL, 3500, 3500XL, 3730 & 3730XL Genetic Analyzers.

Figure 3 | First bases of a sequencing chromatogram with a regular primer (Run with POP-7)

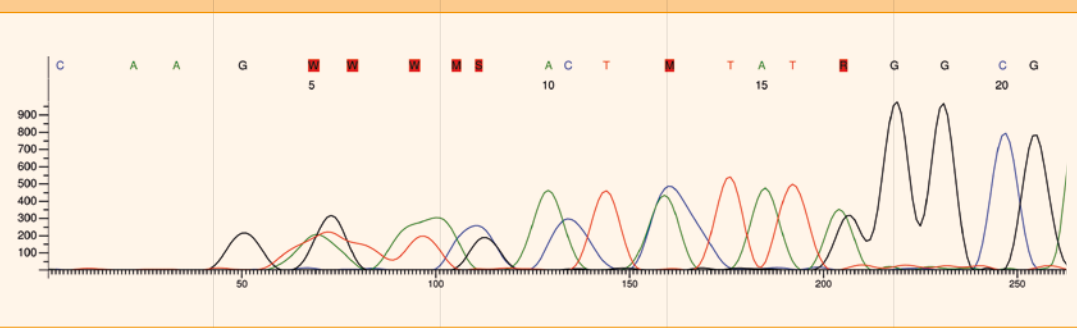
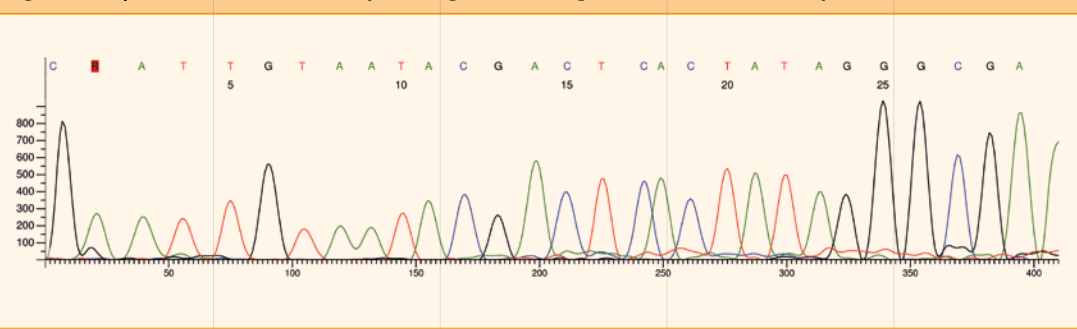


Figure 4 | First bases of a sequencing chromatogram with an AMBeR primer (Run with POP-7)



• **Custom RNA synthesis**

- Biolegio is proud to partner with Synthego, to offer our customers in Europe access to their outstanding range of CRISPR Genome Engineering products and World leading RNA chemistry and synthesis innovations.

RNA Synthesis from Biolegio and Synthego

Fast turnaround time

With Synthego's leading synthesis platforms your custom RNA products will be manufactured and ready to ship in as little as 2 working days.

Highest Quality

Economical access to fully synthetic RNA for high fidelity editing and increased precision in genome engineering.

Convenience

Order from your trusted DNA Oligo supplier and avoid concerns over currency, delivery costs, duties, taxes etc

• **Synthego- Synthetic sgRNA CRISPR Kit**

- High-efficiency guide RNAs for knockouts and knock-ins.

More Efficient and Consistent Editing
Highest Indel Frequencies- up to 99%
Available with site-specific chemical modifications

Best Reproducibility

Achieve up to 90% editing efficiency with the highest quality synthetic sgRNA in the market. Synthego through Biolegio are the first company to deliver a production scale, full length 100-mer synthetic sgRNA product at a practical price and volume. Unlike custom developed solutions that are expensive and can take weeks before transfection readiness, CRISPRvolution sgRNA ships up to 4X faster and 80% lower cost.

Working with stem cells or other difficult targets?
Try Chemically Modified Synthetic RNA.

Chemically modified sequences can provide additional RNA stability with improvements in editing efficiency for particular cell types (e.g. stem cells, K562, prokaryotic) and genomic targets that prove otherwise challenging to edit. For a chemically modified version of our synthetic RNA, we offer 2'-O-methyl analogs and 3' phosphorothioate internucleotide linkages at the first three 5' and 3' terminal RNA residues

sgRNA KIT OVERVIEW		
	sgRNA KIT	Chemically modified sgRNA KIT
Editing Efficiency	++++	+++++
Excellent Reproducibility	•	•
Cell Types and Applications	General Cell Types and Basic Applications	Primary and Stem Cells; Therapeutic Applications
Full Length 100-mer Single Guide	•	•
Your 17-20nt Target Sequence	•	•
No Annealing	•	•
Material for 10-20 Transfections	•	•
Quantity: 3 nmol by OD260 TE Buffer	•	•
Nuclease-free Water	•	•
Shipping	5-7 Business Days	7-10 Business Days

• **Synthego- Advanced RNA**

- Highest quality synthetic RNA with the flexibility and quality to achieve your goals. Up to 103nts in length.

Complete Flexibility

Flexibility in RNA length
Advanced RNA 50 - 20-50 nt Sequences
Advanced RNA 75 - 51-75 nt Sequences
Advanced RNA 100 - 76 -103 nt Sequences

Synthesize guide RNAs that are compatible with any CRISPR nuclease

Including all engineered versions of SpCas9, Cas12a (Cpf1), SaCas9 and Cas13a.
Also alter the secondary structure of the guide RNAs to your requirements

Advanced RNA 50

Custom RNA 50 is perfect for designing short guide RNAs for nucleases that don't require long sequences, such as Cpf1. You can use it to design your own Cas9 crRNA and custom 3' linker to a tracrRNA.

- ✓ Your 20-50nt Sequence
- ✓ Quantity: 5 nmol by OD260
- ✓ Modified RNA Optional

Advanced RNA 75

Custom RNA 75 is perfect for designing guide RNAs for nucleases that don't require guides as long as S. pyogenes Cas9. You can use it to design your own Cas9 tracrRNA and custom 5' linker to a crRNA.

- ✓ Your 51-75nt Sequence
- ✓ Quantity: 5 nmol by OD260
- ✓ Modified RNA Optional

Advanced RNA 100

Custom RNA 100 is perfect for designing full length sgRNA for CRISPR at a practical scale and price point. You can custom design your entire sgRNA sequence.

- ✓ 76-103 nucleotides
- ✓ Quantity: 3 nmol by OD260
- ✓ Modified RNA Optional



Please visit our website for a **complete and up to date overview** of all available CRISPR RNA synthesis.

MIPs: molecular inversion probes

- High Quality Target Enrichment Solution

An Introduction to MIPs

The advances in DNA analysis made a great leap forward with the emergence of Next Generation Sequencing (NGS). With these advances different target enrichment techniques have been developed to select the regions of interest for NGS analysis in a sensitive and cost-effective way. Amongst these techniques a solution phase “capture by circularization” method using “Molecular Inversion Probes” (MIPs) has gained increasing interest. Extensively used for research in Single Nucleotide Polymorphisms (SNPs) and Copy Number Variation (CNV), now MIPs have shown multiple advantages as a Genomic partitioning technique allowing enrichment for regions of interest at a scale that is matched by Next Generation Sequencing platforms. At Biolegio we have closely collaborated with customers to develop, optimize and validate our target enrichment solutions to introduce MIP assays of the highest quality and performance.

What is a MIP?

A Molecular Inversion Probe is a single stranded oligonucleotide containing two annealing arms complimentary to the target of interest with a sequence gap in between. This sequence gap can target a SNP or a larger region of interest. In between the annealing arms of the MIP binding sites, Universal primers are included and other functionalities like index sequences or digestion sites



can be incorporated depending on the experimental setup.

The MIP technology has been combined with the “single molecule tagging” approach resulting in “Single Molecule Molecular Inversion Probes” or “smMIPs”. These probes incorporate a stretch of random degenerate nucleotides creating probes with unique molecular tags enabling detection of low-frequency and sub clonal genetic variation. This resulted in an ultra-sensitive targeted sequencing method exhibiting the specificity and multiplexing advantage of the MIPs and the quantitation ability of the “single molecule tagging” approach.

These advantages combined with the practical workflow, flexible probe sequence / quantity adjustment and low per-sample costs, give science a valuable tool for future research.

MIPS KEY FEATURES		
Specifity	High specificity compared to other genome partitioning techniques	Biolegio offers high quality MIPs produced with robust and sublime coupling efficiency.
Multiplexing	Due to the high specificity MIPs are ideal for multiplexing reactions.	MIPs are produced in the NGS workflow where cross-contamination is eliminated.
Reproducibility	Multiple experimental repeats with a balanced pool of MIPs exhibits high reproducibility.	Order Biolegio MIPs at any custom concentration to facilitate your workflow.
Library prep	No need for fragmentation or PCR reducing bias.	Isolate your DNA, add the MIP pool and you are ready to go! Use our flexible dispense service to receive your oligo's in any concentration, pooled combination and any tube / plate format to optimize and standardize your workflow.
Easy of use	Straight forward and automatable workflow without the need of specialized instrumentation.	See above.

Ordering & shipping

- Easy online ordering in our webshop
- Integrate your in-house order system with our webshop
- Eliminate possible delays with our oligo prepaid service



Ordering

You can order our custom synthesized product by sending a completed order form to info@biolegio.com or order in our webshop at www.biolegio.com.

Webshop

Order your oligos quick and easy in our webshop. With your own account you can directly see your specific oligo pricing. Have direct access to your order history. All this is packaged in an easy-to-use on-line interface. We can integrate your in-house ordering system with our webshop by using a “punch-out” protocol.

Shipping and handling

Shipping and handling details are largely dependent on the shipping location. Please contact us for more information about shipping and handling.

Delivery schedule

- Standard oligos with maximum length < 100 bases are shipped within 24 hours, order before 5:00 PM GMT.
- Purified & modified oligos are shipped within 3-4 business days.
- Custom DNA probes are shipped within 5-7 business days.
- RNA oligos are shipped within 5-10 business days.

Oligo prepaid service

With our oligo prepaid service we make oligo ordering easy. Credit can be easily transferred to your account. Oligos can then be ordered immediately, eliminating possible delays due to purchase authorization. Please contact Biolegio for more information.

Customer support

It is our at aim at Biolegio to always offer the highest level of support to all our customers and partners. With over 25 years of operation and decades of accumulated knowledge amongst our team on phosphoamidite oligonucleotide synthesis, we are always available to assist and address any questions you may have pre or post synthesis.

We pride ourselves on providing open and honest discussion with our clients to ensure that we not only provide the highest quality product but also the most suitable solutions for their applicational needs. Our team actively enjoy applying their experience to help you solve your problems as swiftly as possible to meet and exceed your expectations and deliver a collaborative partnership for products that a central to your research or production needs.





**Order quick and easy:
www.biolegio.com
and go through our webshop**

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