Custom Oligonucleotide Synthesis and Products

The Modified Nucleic Acid Experts™
For 20 years, TriLink has been an industry leader synthesizing high quality oligonucleotides for research, diagnostics, OEM and therapeutics.

Our oligo scientists and production staff have over 150 years of collective experience with oligonucleotide chemistry and methods development. We are known throughout the world for our ability to successfully synthesize difficult and unusual constructs. We offer a wide selection of DNA, RNA, modified and specialty oligonucleotides in scales from 0.2µmol up to multiple grams. We also offer diagnostic and therapeutic cGMP manufacturing of oligonucleotides.
Partnering with You to Help Advance Innovation

We understand first hand how important reliable, high quality products are to your business. That’s why we’ve put robust programs in place to provide the best customer service and technical support in the industry, including:

— A dedicated technical support representative to personally oversee and communicate with you about your project
— Access to our expansive team of modified nucleic acid experts with decades of experience
— Personal consultation to determine the scale, QC and level of documentation needed for your current and long term project goals
— Evaluation of your molecular construct and recommendations for efficient transition to commercialization

Personalized Support

When you partner with TriLink as your trusted supplier, you’ll maximize your budget and resources with our:

— Expertise in oligo design and processing
— Decades of experience designing and synthesizing difficult constructs
— Remarkably high success rates synthesizing complex oligos
— Unparalleled product purity and performance

For complete information about our oligonucleotide products and services, please visit www.trilinkbiotech.com/oligos.
Whether you’re looking for basic DNA oligonucleotides or working with complicated sequences and modifications, we can synthesize your oligos at the scale and purity that you need. Our standard synthesis scales are 0.2, 1.0, 5.0, 10 and 15 µmol, and we’ll custom synthesize oligos at any scale up to multiple grams.

We offer a variety of custom DNA oligonucleotides, including:

- cGMP oligos for ASR, IVD and LDT
- Molecular beacons
- Randomer (wobble) oligos
- UNA and TINA oligos
- Light-activated oligos
- Chimeric oligos

**Modifications**

Our expertise, combined with an extensive selection of modifications and conjugates, offers you virtually endless possibilities for your oligonucleotide synthesis. In fact, we offer over 300 modifications and almost 40 million possible synthesis combinations. Our extensive options for modifications are unparalleled in the industry and include:

- Backbone modifications
- Modified & inverted bases
- Linkers & spacers
- Fluorescent dye labels & quenchers
- Biotin & other non-fluorescent conjugates
- Terminal phosphates & 5’ terminal caps
- Dimer & trimers

Find out more about our DNA oligos and modifications at www.trilinkbiotech.com/DNAoligos.
RNA Oligonucleotides

Over the past 20 years, we’ve used our expertise manufacturing high quality nucleic acids to optimize the synthesis and purification of RNA oligonucleotides. We specialize in highly modified oligos and derivatives such as 2’ O-Methyl RNA, 2’ Fluoro RNA, phosphorothioate RNA, and conjugation to molecules such as PEG and cholesterol. We are one of the most trusted suppliers of specialty constructs including:

- Long RNA synthesis
- siRNA and UsiRNA
- microRNA
- Aptamers
- RNAi
- RNA sequencing primers
- Chimeric oligos

RNA Oligos as Therapeutic Research Tools

Over the last two decades, there has been significant progress in the development of oligonucleotides as therapeutics. RNA and RNA/DNA chimeric oligos have been used as antisense inhibitors, aptamers, CpG immunostimulatory molecules, molecular decoys, and as RNA interference (RNAi) triggers.

Antisense therapeutics and oligonucleotide based RNAi, as well as microRNA mimics and inhibitors, are all showing great promise as powerful research tools and are evolving as a new class of potential therapeutics.

For more information about all of our RNA oligonucleotides, including details about our extensive options for modifications, please visit www.trilinkbiotech.com/RNAoligos.
Since 1996, we’ve been collaborating with our customers at the forefront of scientific discovery to enable everything from exploration to commercialization. To support researchers and scientists working on the cutting edge of nucleic acid development, we offer a number of specialty oligos and modifications.
Randomer (Wobble) Oligos

Randomer oligos have become an essential tool in diagnostic research. They can help identify a gene that codes for a protein of interest when the specific sequence is unknown, or they can amplify a genetic target to generate a pool of all available sequences. TriLink has done extensive research and development to ensure consistent base composition and minimal lot to lot variability for ultimate performance in the most sensitive assays.

Molecular Beacons

Molecular beacons are a diagnostic tool that can report the presence of specific nucleic acids. These oligos offer a non-radioactive approach to detecting specific nucleic acid sequences, and are often used in real-time and multiplex PCR, SNP detection, allele discrimination and identification, and diagnostic assays.

UsiRNA: A Revolution in siRNA Technology

UsiRNA (UNA modified siRNA) has been shown to reduce off-target events by greater than 10-fold over standard siRNA, significantly improving siRNA efficacy and offering potent gene silencing.

TINA Modified Oligonucleotides

First described in literature in 2005, Twisted Interca- 
lating Nucleic Acid (TINA) modified oligonucleotide primers can be placed at either terminus or internally between two bases. The resulting oligo can have an enhanced duplex Tm of up to 9 degrees if modified at both the 5’ and 3’ termini, or 3-4 degrees with a single terminal modification. TINA modified oligonucleotides have also been shown to improve triplex formation, making these a versatile tool.

For complete details about our specialty oligos and modifications, please visit www.trilinkbiotech.com/oligos.
Mid-Scale Synthesis

TriLink specializes in mid-scale synthesis (50 mg to multiple grams) of both DNA and RNA oligonucleotides. Our mid-scale oligos are available with phosphodiester (PO), phosphorothioate (PS) or PO/PS combination backbones. We offer an extensive selection of modifications such as linkers, spacers, dyes and modified bases. We can do mid-scale synthesis for almost any modification you may need.

Our standard mid-scale oligos are typically purified by HPLC and analyzed by PAGE, HPLC and mass spectroscopy. Process development, cGMP/QSR manufacturing and unpurified, desalted oligos are also available.

Pricing for Mid-Scale RNA Oligonucleotides

Purity and yield for mid-scale RNA oligonucleotides are highly dependent on sequence, therefore set pricing is not available. Please contact us and we’ll be happy to provide a quotation for your RNA oligo.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
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<tbody>
<tr>
<td>50 mg</td>
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<tr>
<td>100 mg</td>
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</tr>
<tr>
<td>1.0 gram</td>
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Unusual sequence compositions such as a poly-G stretch or those causing secondary structure formation, may affect pricing. If you have specific requirements for purification and or processing, please contact us for a custom quote.
Quality

TriLink operates cGMP laboratories and has ISO9001. 2008 certification. We also have comprehensive quality programs and quality systems for document control.

Every oligo we synthesize is deprotected and desalted. Each oligo is also quantitated by UV spectrophotometry and undergoes quality control analysis by PAGE, mass spectrometry and/or HPLC. Should your research or manufacturing have specific purity requirements, we offer a variety of additional purification methods including:

- AX-HPLC, RP-HPLC or double RP-HPLC
- RP-cartridge
- Ion pairing HPLC
- Size exclusion

Packaging and Processing Services

For your convenience, we offer a range of aliquoting and final-fill options, including specific concentration formulations, oligo mixes, and custom packaging and labeling. We also provide a number of special processing services including mixed bases and annealing.

How to order

For DNA oligos 15µmol and less, and RNA oligos <100 bases, you can obtain pricing and submit an order through OligoBuilder®, our secure online ordering system, at www.trilinkbiotech.com/oligobuilder. If you’re looking for highly modified oligos or scales larger than 15µmol, please contact us for a quote.
Diagnostic and Therapeutic GMP Manufacturing

We’ve combined our expertise in nucleic acids with a new state-of-the-art GMP production facility to now offer therapeutic GMP manufacturing. With nine dedicated manufacturing suites and two support labs, TriLink can deliver your therapeutic material quickly and at an affordable price.

We offer a wide range of manufacturing scales enabling you to specify the exact amount of material for pre-clinical IND toxicology studies or early phase clinical trials. TriLink delivers consistent quality API on schedule and on budget. In addition to drug substances, we’ll provide all the required supporting documentation to streamline the IND submission process and carry you through to clinical trials, making the process efficient and cost effective.

Our GMP suites feature:

- FDA 21 CFR 820 compliance
- Compliance with ICH Q7, CFR 210, and other phase-appropriate guidelines
- Validated ISO Class 7 and Class 8 clean rooms
- Single-pass, HEPA filtered air system
- Validated (IQ/OQ/PQ) processes and equipment
- Routine monitoring of temperature, pressure, humidity and particle count

For complete detail about our GMP services, please visit us at www.trilinkbiotech.com/GMP.