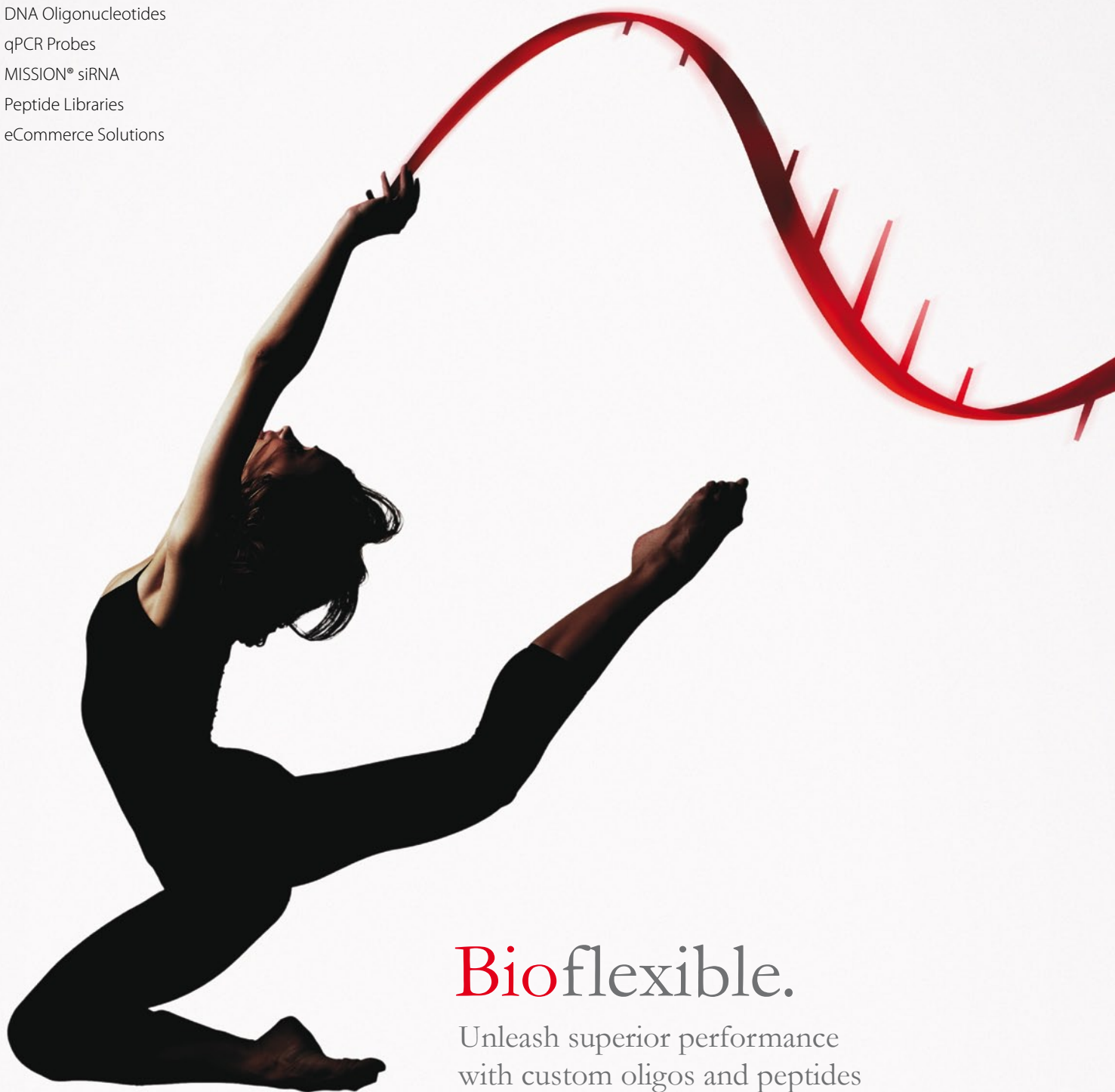


DNA Oligonucleotides
qPCR Probes
MISSION® siRNA
Peptide Libraries
eCommerce Solutions



Bioflexible.

Unleash superior performance
with custom oligos and peptides
from Sigma®.



Sigma® Provides a Custom Solution
For Every Project – Guaranteed!

Sigma's Custom Products

The Sigma Advantage

Sigma is the world's leading supplier of custom oligonucleotides and peptide libraries for the global life science research community. Along with cutting-edge technology, competitive prices and continuous investment in worldwide operations, we believe the following sets us apart:

- Expertise of our Scientists
- Outstanding Customer Service & Technical Support
- Commitment to Quality
- Global Manufacturing
- OEM and Contract Manufacturing

Expertise of our Scientists

With over 25 years experience in oligonucleotide synthesis, we have the expertise to meet your project requirements. Our scientists collaborate with researchers from around the world in developing new products and technologies. We meet customers' specifications, no matter how complex.

Outstanding Customer Service & Technical Support

Our dedicated staff of highly trained service specialists is available by phone and email to provide timely solutions to every inquiry. Sigma customers are provided with best-in-class service and support including:

- Primer & Probe Design Services
- Applications Support
- Troubleshooting Assistance
- Real-time Order Status

Our Commitment to Quality

We analyze both in-process and final product quality to meet and exceed the high standards of researchers. Sigma's state-of-the-art analytical instruments, coupled with a robust quality management system, enable Sigma to guarantee product performance through:

- Effective Quality Management Systems
- Document and Record Controls
- Effective External and Internal Audits, Corrective and Preventive Actions, and Training Programs
- Vendor Management

Global Manufacturing

Sigma has manufacturing sites in 10 countries – Australia, Canada, France, Germany, India, Israel, Japan, Singapore, UK, and USA. Our global customers receive consistent high-quality products, no matter where their research happens.

- Primers & Probes
- iScale Oligos™
- RNAi Oligos
- Peptide Libraries

OEM and Contract Manufacturing

Delivery, quality, expertise and reliability make Sigma a long-term, trusted partner for all oligonucleotide and PCR reagent needs.

- Project Management
- Product & Process Development Support
- Manufacturing
- Custom Formulations & Packaging



Custom Oligonucleotides

DNA

Oligonucleotides are at the foundation of modern life science research. Whatever your application, Sigma provides the breadth of product and superior quality and service enabling your next great discovery.

DNA Oligo Specifications	
Scale:	0.025, 0.05, 0.2, 1.0, 10 and 15 μ mole
Purification:	Desalt, Cartridge, HPLC, PAGE
Length:	10 – 110 bases
Backbone:	Phosphodiester / Phosphorothioate
Common Modifications:	Amine, Thiol, Phosphorylation, PEG Spacers, 2'-OMe-RNA, Biotin, etc.
Fluorescent Dyes:	Fluorescein, 6-FAM™, TAMRA™, JOE™, Rhodamine™ dyes, Texas Red®, WellRED (D2, D3 & D4), HEX™, TET™, Cy® dyes
Non-fluorescent Dyes:	BHQ1™, BHQ2™, Dabcyl
Quality Control:	MALDI-TOF MS, Electrospray Ionization MS, OD by UV Spectroscopy
Labels & Documentation:	Duplicate Labels, Technical Datasheet
Format:	Dry or In Solution (normalized)
Packaging:	2 mL - 50 mL Tubes, Microtiter Plates

Primers Made Easy

We offer a range of DNA oligonucleotides when the focus is speed, convenience and simplicity. These primers include technical datasheet documentation, extra product labels, and quick delivery.

Product	Purification	Length	Format (~15 nmoles)	Shipment
Fast Oligo™	Desalt	15-30 mers	100 μ M in water	Same Day ¹
E@sy Oligo™	Desalt	15-30 mers	100 μ M in water	Next Day
Pure & Simple	Cartridge	12-35 mers	Dry ²	Next Day

¹Shipment times may differ regionally—check with your local Sigma Customer Service team.

²Approximately 15 nmoles or 3 OD

Oligos in Plates for High Throughput Applications

Whether your application requires a few or more than 100,000 oligos, Sigma provides the format to best suit your application, automation and LIMS system. We conduct shipping validation studies on all plate and seal combinations. Let our experts recommend the right plate for your system. Options include:

Criteria	Options
Plates:	96 or 384 Deep well or shallow well Matrix plates Micronic plates Daughter plates (copies) for all formats
Plate Seals:	Peelable and pierceable heat seals
Concentrations & Volumes:	Variety of concentration options available with fixed or variable volumes
Formulations:	Single oligo per well Forward & reverse primers in a single well Complex formulations containing 2 – 20 oligos
Quality Control:	Plate position verification by mass spectrometry
Buffers:	Deionized water TE buffer Customer specified buffers
Labels & Documentation:	1-D or 2-D barcodes Customized Quality Assurance Datasheet

Sigma employs liquid-handling systems to normalize oligonucleotide concentrations within a narrow range. Our investment in automation enables quick delivery of customer-specified products, no matter how complex. Please contact your local Sigma office to discuss your project and request a quotation.

iScale Oligos™ DNA

iScale Oligos are perfect for *in vivo*, high throughput and diagnostic projects for which larger amounts are required.

- Amounts offered: 10 mg – 1,000 mg
- Purification: Desalt, RP-HPLC, IE-HPLC
- Quality Control: Mass Spectrometry including LC- MS, HPLC
- *In Vivo* Options: Dialysis, filtration, and endotoxin testing
- Modifications: Extensive offering of dyes & quenchers, amines, biotins, linkers, etc.

Sigma can provide a custom solution for every project – guaranteed!

qPCR Probes

Real-time qPCR Probes

Sigma offers the largest, licensed probe selection for your real-time qPCR needs. Our offering includes:

- Dual-Labeled Probes
- Molecular Beacons
- LightCycler® Probes
- Scorpions™ Probes
- Locked Nucleic Acids® (LNA®)-containing Probes

Sigma's probes are provided in a format to simplify your experimental planning.

Product features include:

- Lengths of 15-40 bases
- HPLC purification provided for all probes
- Stringent quality control including ESI mass spectroscopy
- Shipped in amber tubes to maintain dye integrity
- Custom formats available (normalization, special plates, etc.)

Guaranteed OD Yield	Approximate No. of nmoles	Approximate No. of µg	Approximate No. of reactions*
1	4	32	800
3	12	96	2,400
5	20	160	4,000
10	40	320	8,000

*Estimate is based on 4 nmoles or 32 µg for 1 OD and 200 nM in 25 µl reaction (5.0 pmol/reaction). Estimate is based on an average sequence length of 25 bases.

Real-time PCR Assay Design

OligoArchitect™ Primer and Probe Design Services

Sigma is pleased to offer OligoArchitect for all of your primer and probe design requirements. OligoArchitect includes both our complimentary online design tool and our unique consultative service.

OligoArchitect Online

For routine needs, improve your assay with our OligoArchitect online design tool powered by the industry standard Beacon Designer™ (Premier Biosoft). The user-friendly interface utilizes the latest algorithms, provides results in real time, supports templates up to 10,000 base pairs, and allows for the adjustment of input parameters such as homopolymer run/repeat maximum length, G/C clamp length, and maximum primer pair T_m mismatch.

All reported sequences, associated properties, and assay parameters are available for export to Excel and convenient ordering.

OligoArchitect Consultative

For more complex and demanding applications, utilize our consultative service to ensure the success of your assay. With personal consultation from our expert, technical support scientists, your request, including all sequences and data analysis, will be MIQE compliant and returned to you within 24 hours. If required, you will also receive follow-up assay optimization, data analysis assistance, and troubleshooting support.

To try our online design tool, visit wherebiobegins.com/probedesignonline

MISSION® siRNA

Sigma has an exclusive partnership with Rosetta Inpharmatics, a leader in advanced siRNA research, to use the proprietary Rosetta siRNA Design Algorithm to design its MISSION siRNA. The Rosetta siRNA Design Algorithm utilizes Position-Specific Scoring Matrices (PSSM) and knowledge of the all-important siRNA seed region to predict the most effective and specific siRNA sequences for your target gene.

The MISSION Design Guarantee

For all siRNA designed by Sigma, we guarantee that 2 out of 3 siRNA duplexes per target gene will achieve knockdown efficiencies of greater than or equal to 75%.

MISSION Predesigned siRNA

We've made ordering MISSION siRNA for single gene targets easy through Sigma's state-of-the-art web interface, Your Favorite Gene at wherebiobegins.com/yfg. Search your gene of interest by gene name, symbol, RefSeq, or Gene ID number to view the MISSION siRNA sequences available for your particular gene of interest.

YFG contains multiple siRNA sequences for every gene in the human, mouse, and rat genomes.

siRNA Nano Scale: A convenient, cost-effective, and small-scale siRNA screening option. You can now order predesigned MISSION siRNAs targeting kinase genes at the 0.25 nmol scale. Nano Scale duplexes are available in tubes (individual siRNA targets) or in plates (human kinase panel).

Universal Negative Controls: An essential component of any RNAi experiment, negative controls have no homology to known gene sequences.

Product	Description
SIC001	MISSION siRNA Universal Negative Control #1
SIC002	MISSION siRNA Universal Negative Control #2

MISSION siRNA Libraries: Sigma offers a variety of library options for high-throughput screening of human, mouse, and rat sequences.

To learn more about MISSION Predesigned and Nano Scale siRNA, controls, and siRNA libraries, visit

wherebiobegins.com/missionsirna

Custom MISSION siRNA

High quality and cost-effective custom siRNA sequences available in tubes or plates, dry or resuspended, and in duplex or single-strand format.

Free siRNA design service using the Rosetta algorithm is available – visit our design service on the web at wherebiobegins.com/sirmadesign

- Fast, simple design for human, mouse, rat and many other organisms
- The Rosetta algorithm provides increased specificity and reduces off-target effects

Sigma's custom design offering includes a wide range of modifications, purifications, and quantities tailored to your specific needs.

To learn more about our custom siRNA services, visit wherebiobegins.com/customsirna

MISSION *In Vivo* Quality and iScale Oligos™ siRNA

Intermediate to large-scale quantities of siRNA are available for both custom and predesigned sequences, with a variety of modification and purification options to facilitate the most demanding applications.

MISSION *In Vivo* Quality siRNA Specifications

- HPLC (≥90% pure)
- Dialysis of annealed product
- 0.22 µm sterile filtered
- Endotoxin tested: ≤1EU/mg

For additional specifications or product-related inquiries please contact your local Sigma sales representative or email us at RNAi@sial.com

To learn more about our MISSION *In Vivo* Quality siRNA and iScale Oligos, visit wherebiobegins.com/invivo

siRNA Specifications	
Amount:	NanoScale - 0.25 nmol (kinase targets only) Standard Synthesis - 10, 25 and 50 nmol iScale Synthesis - 3mg to gram quantities
Purification:	Desalt, Cartridge, HPLC, PAGE, <i>In Vivo</i> quality
Available Modifications:	2'-O-Methyl, 6-FAM, Amine, Biotin, Cy dyes, Fluorescein, Phosphate, etc.
Quality Control:	Simplex: Mass Spectrometry / Duplex: PAGE Gel
Additional Services Available:	Normalization and aliquoting in tubes. Picogram to gram quantity manufacturing

Custom Peptide Synthesis

PEPscreen® Custom Peptide Libraries

To accommodate the requirements of scientists for custom peptide libraries in a flexible format, Sigma has developed a proprietary, state-of-the-art synthesis platform. This enables parallel synthesis of small-scale, high-quality peptides; delivered fast.

PEPscreen Specifications	
Library Size:	24 peptide minimum
Peptide Length:	6 – 20 amino acids
Quantity:	0.5 – 2 mg or 2 – 5 mg
N-Terminal:	Free amine or acetylated
C-Terminal:	Free acid or amidated
Non-standard Amino Acids:	Any commercially available non-standard amino acid
Random Library:	Any mixture of commercially available amino acids
Chemical Modifications:	Cyclization, phosphorylation, biotinylation, PEGylation, acylation, etc.
Dye Labeling:	Fluorescein, FITC, Dansyl, Dabcyl, Dabsyl, TAMRA™, Lissamine, etc.
Peptide Form:	Dried film

Peptide Library Design

Sigma has created an online design tool for generating sequences for peptide libraries, with the ability to:

- Select the library type (Overlapping, Alanine Scanning, Truncation and Positioning Scanning)
- Select custom sequence parameters (peptide length and amino acid offset)
- Calculate hydropathy for each peptide sequence
- Color-code amino acids for visual reference of peptide sequence composition
- Format the sequence output
- Export the custom peptide library sequences to other programs (Microsoft Word, Excel, etc.)

To learn more and to design your PEPscreen custom peptide libraries, visit wherebiobegins.com/pepscreen

Custom AQUA Peptides™

Developed in collaboration with the Protein Quantitation Consortium, Sigma's AQUA Peptides enable accurate, efficient mass spectrometric quantitation of protein biomarkers.

- Analysis on significant protein biomarkers
- Accurately quantitate low abundance proteins
- Eliminate costly, time consuming stable isotope labeling steps
- Measure site-specific phosphorylation states
- Validate gene silencing at the protein level

AQUA Specifications	
Maximum Length:	30 amino acids
Purity:	>95% peptide purity by reverse-phase HPLC
Modifications:	Phosphorylated amino acids available
Quality Control:	ESI-Mass Spectrometry confirmed peptide content by AAA
Documentation:	HPLC-UV chromatogram indicating peptide purity and an LC-MS spectrum indicating observed molecular weight
Packaging:	5 x 1 nmol package sizes

AQUA Peptide Design

Selecting an optimal AQUA Peptide is key to your experimental success. Sigma utilizes a design and analysis tool for predicting the optimal AQUA Peptide sequence. We begin with your protein sequence of interest and then produce the list of peptides resulting from a tryptic digest. The tryptic peptides are then analyzed using a variety of optimization rules.

Quality

Custom AQUA Peptides are synthesized using fully labeled 98 atom% ¹³C and 98 atom% ¹⁵N enriched amino acids (one labeled amino acid per peptide) and are stringently tested to ensure high purity (HPLC), accurate molecular weight (ESI-MS), and specific peptide content (AAA).

To learn more about custom AQUA Peptides, visit wherebiobegins.com/aqua

eCommerce Solutions

Let Sigma® streamline your workflow

Our e-procurement solutions are all about business intelligence and the empowerment of automated workflow that will lead to increased productivity in your organization. Sigma offers three options to help everyone, from single labs to global organizations, save time while reducing both costs and errors.

The Simple Solution

Order Sigma's high-quality products simply, easily and securely by logging onto sigma.com.

- Perfect for small labs or organizations that are seeking an electronic ordering channel
- Reduce time, paperwork and errors by ordering all the products you need in one simple transaction
- Internet access is the only requirement—no software to install or maintain on your own systems
- End-users view contract pricing, promotions and online tools in addition to our standard web content
- Orders can be placed quickly and easily using a variety of payment options
- All transactions are secured by state-of-the-art security protocols
- Implementation time: 24 hours—simply visit sigma.com and register for a username

The Customized Solution

Sigma-Aldrich's PIPELINE™ hosted procurement solution supports various levels of procurement authorizations and approvals.

- Perfect for large and small organizations seeking to utilize existing business approval rules while reducing order cycle time, errors, duplications, and paper costs
- Can be instituted at lab level, building level, or organization level
- Supports up to 4 approval levels
- Approval hierarchy can change for different user groups within the same institution
- No limit to the minimum or maximum number of users
- Internet access is the only requirement—no software to install or maintain on your own systems
- All transactions are secured by state-of-the-art security protocols
- Implementation time: 2–6 weeks

The One-to-One Solution

Seamless system-to-system connectivity to your existing spend-management system.

- Perfect for any organization that wishes to leverage its existing e-procurement platform to increase ordering efficiency and allow better spend visibility and tracking
- Compatible with typical ERP systems such as SAP, Oracle and JD Edwards
- Hosted and punchout catalogs for major 3rd party e-commerce suppliers such as Ariba, SciQuest and Perfect Commerce
- Sigma's eCommerce team works with end-users to coordinate integration
- May require programming from end-user's IT staff
- Implementation time: 4–6 weeks

Contact your local sales professional for additional information.

Blanket Purchase Order Tracking

To supplement the e-procurement solutions, Sigma offers a tracking system for your blanket purchase orders.

- Manage your expenditures with convenient online tracking
- Free online registration
- Easy reference during order checkout
- Secure access with your own unique PIN

Web Features

We continually add features and improvements to our website. Some highlights include:

- Favorites: Store your sequences on our website for reordering convenience
- Order History: Review recent orders online
- Templates: Available to upload large orders
- Order confirmations: Receive order confirmation upon placing orders
- Calculators: Verify critical parameters, such as T_m , prior to submitting an order
- One-stop shopping: Order oligos along with your enzymes, buffers and other Sigma products

Visit our website for the latest information on new features and ordering tools!

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