



OEM
Oligonucleotides

Certification

Oligo Quality
Levels

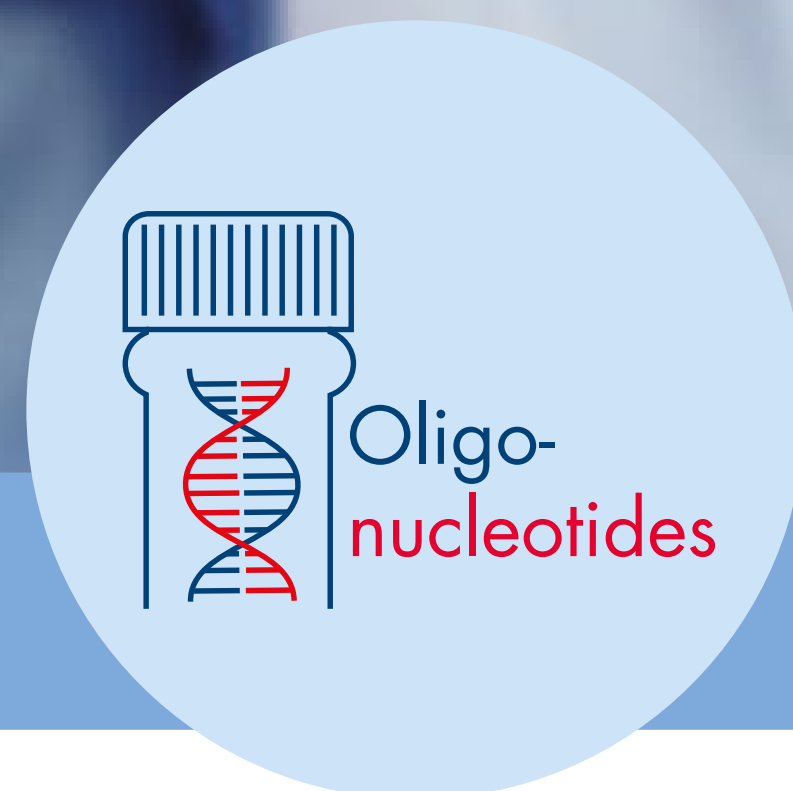
High Purity

Modifications

SCORPIONS

Additional OEM
Capabilities

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OEM by QIAGEN



High-Purity OEM Oligonucleotides for Reliable Molecular Assays

Sample to Insight



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Quality processes compliant with current standards and regulations

Synthesis processes of our oligonucleotides are optimized to meet the requirements of sensitive molecular assays, achieving high lot-to-lot consistency.

+35 years of
experience

IVD grade oligonucleotides

21 CFR Part 820

cGMP/QSR

ISO 9001:2015
certified 13485:2016
14971:2019

[➞ For more information, visit our website](#)

[➞ More certification information](#)



Oligonucleotide quality levels

One supplier for high-quality oligonucleotides from development grade for pilot testing to IVD grade for full-scale manufacturing requirements.

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	Fast track	Development-LC	Development-HPLC	IVD
Traceability	None	Partial	Partial	Full
Purification	LC/HPLC	LC	HPLC	HPLC
HPLC column	Non dedicated	N/A	Non dedicated	Dedicated
Clean room	None	Optional	Optional	Dedicated
Quality systems	ISO 9001	ISO 9001 ISO 13485	ISO 9001 ISO 13485	ISO 9001 ISO 13485 21 CFR Part 820
Quality control (QC)	Optional	Optional	Customized	In process/Final
Product release	Final QC	Technical release	Technical release	QA release
Documents provided	Compilation of results	Simplified CoA	Simplified CoA	Full CoA
Critical raw material control	Partial	Partial	Partial	Full
Environmental control	Yes	Yes	Yes	Yes
Manufacturing documents	None	Simplified production batch record	Simplified production batch record	Full production batch record
Synthesis scale* SS	0.04–0.1 µmol	0.15–60 µmol	1.0–60 µmol	1.0–60 µmol
Synthesis scale* LS	60 – 1000 µmol	60 – 1000 µmol	60 – 1000 µmol	60 – 1000 µmol

* Synthesis scale refers to the amount of starting material and not actual delivered yield (amount).



Why choose QIAGEN oligonucleotides

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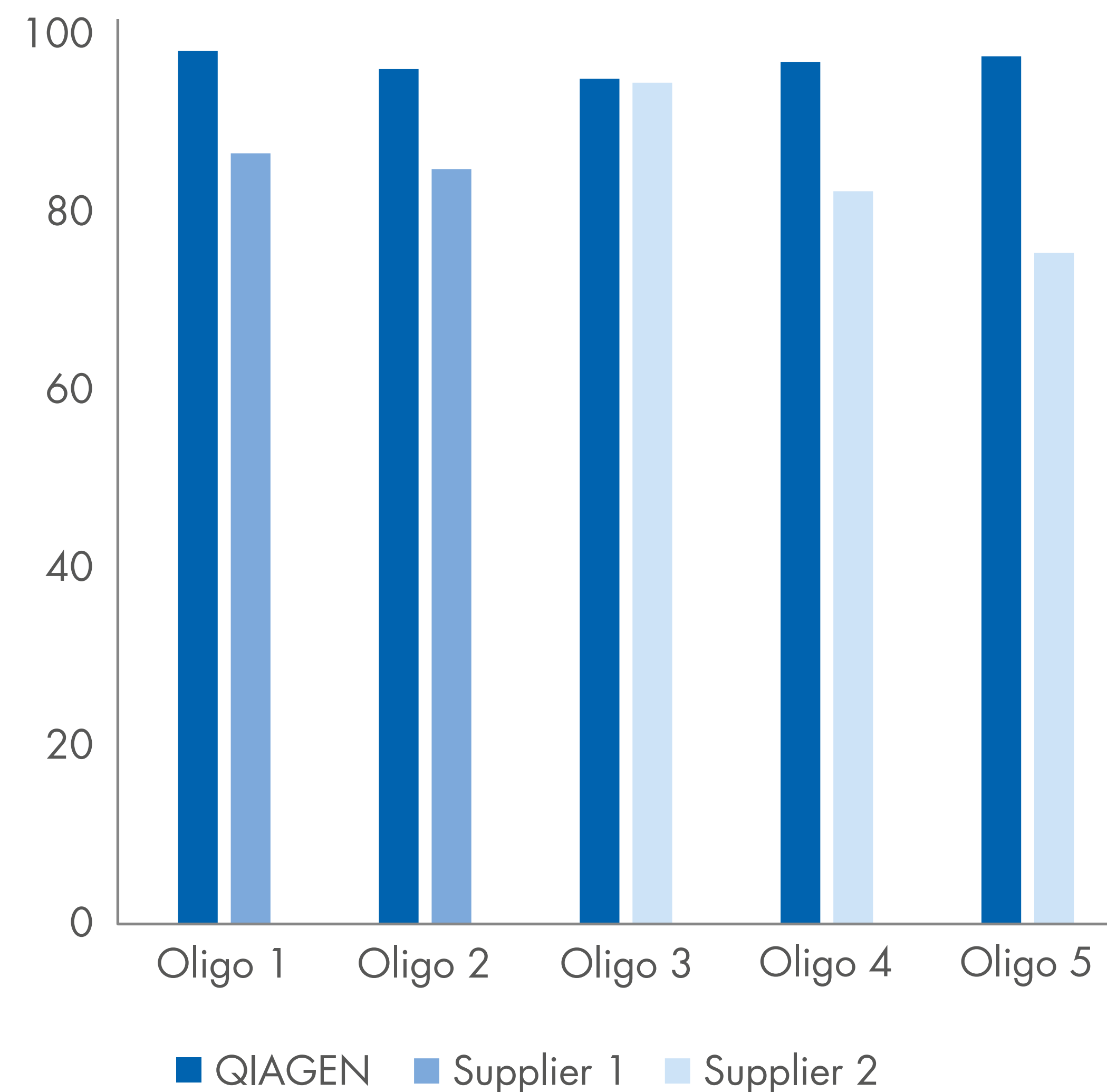
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- Premium high-quality, custom-made oligonucleotides for molecular and in-vitro diagnostics applications (ISO class 8/GMP class D)
- Worldwide customers, including many leading IVD companies
- Superb purification technology enables oligonucleotides in a superior purity
- Lot-to-lot reproducibility
- Non-contamination guarantee for IVD grade
- cGMP/QSR compliant, ISO certified

Superior quality, premium purity – a match to the customer's needs

- Primers: 85%, 90% or 95% (IVD min 90%) using HPLC
- Probes and SCORPIONS®: 85% (using UPLC technology)
- NGS adapters <60 bp: 85% (using UPLC technology)
- NGS adapters >60 bp: purity is variable depending on the technology and complexity of the sequence



Representative example of purity (%) for 5 different oligos
Comparison between QIAGEN, Supplier 1 and Supplier 2,
Oligo 1–3: Probes, Oligo 4 and 5: Primers



Modifications

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Oligonucleotide categories

- Primers
- Probes
- SCORPIONS
- Locked Nucleic Acid (LNA)
- NGS Adapters

Unmodified oligonucleotides

- Unmodified oligonucleotides up to 170 bases
- Homopolymers such as polyA and polyT

Modified oligonucleotides

- Fluorescent groups
- Fluorescent groups combined with Quenchers (double quenching technology available upon request)
- LNA[®] containing oligonucleotides
- MGB-Eclipse[®] Dark Quencher
- EBQ
- Superbases
- SuperA[®], SuperG[®] and SuperT[®]
- Biotin
- Phosphate
- Spacers
- Amino
- ... and more

- Large selection of modifications for various oligonucleotides
- Continually evaluating new dyes, quenchers and other modifications

➞ For more information, visit our website

Modifications 1

Modifications 2



Modifications: Dual-labeled probes

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Reporter			Quencher						
5' Reporter	Ex _{max}	Em _{max}	Dabcyl	EDQ	TAMRA	BHQ1	BHQ2	BBQ-650	BHQ3
Coumarin 047	387	470	Ab _{max} 478 nm Range 400-550 nm		Ab _{max} 557 nm Range 520-570 nm	Ab _{max} 534 nm Range 480-580 nm			
Chromis 500	495	506							
FAM	496	520							
DY510XL	519	530							
VIC	526	543							
JOE	521	546							
Yakima Yellow	530	549							
HEX	535	556	Ab _{max} 522 nm Range 390-625 nm				Ab _{max} 579 nm Range 560-670 nm	Ab _{max} 650 nm Range 550-750 nm	Ab _{max} 672 nm Range 620-730 nm
CAL fluor® Orange 560	538	559							
Chromis 530	529	561							
DY-530	539	561							
Cy3	547	563							
Quasar® 570	548	566							
ATTO 550	554	576							
TAMRA	557	580							
ATTO 565	564	590							
Texas Red	582	600							
ROX	585	606							
CAL fluor® Red	590	610							
Chromis 570	573	612							
Chromis 600	593	624							
Chromeo 494	494	628							
Chromis 630	629	646							
ATTO 647N	646	662							
Cy5	646	662							
Quasar 670	647	670							
Quasar 705	690	705							
Cy5.5	683	707							

We can guide you with assay design and dye assignment to match your target nucleic acid and controls.

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Modifications 1

Modifications 2



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SCORPIONS		Internal Quencher	
5' Reporter	Ex _{max} /Em _{max}	Dabcyl	BHQ
FAM	495/520	Ab _{max} 478 nm QR 400–550 nm	BHQ 1 Ab _{max} 534 nm QR 480–580 nm
DY495	493/521		
JOE	520/548		
Yakima Yellow®	530/549		
HEX	535/556		
CAL fluor® Orange	537/558		
DY530	539/561		BHQ 2 Ab _{max} 579 nm QR 560–670 nm
Quasar® 570	547/570		
TAMRA	557/583		
ROX	575/602		
Texas Red	583/603		
CAL fluor® Red	590/610		
Chromis 645	641/663		
Quasar® 670	644/670		

- Bi-functional oligonucleotides enable high analytical specificity and sensitivity
- To limit non-specific amplification, our oligonucleotides contain target-specific PCR primer covalently linked to a probe, with an extension blocker (HEG, hexathylene glycol)
- The unimolecular detection mechanism enables a rapid kinetic reaction and instantaneous generation of a high fluorescent signal
- Our oligonucleotides help ensure reliable and robust probing of the chosen amplicon
- OEM oligonucleotides are a valuable tool for rapid real-time PCR, end-point PCR, SNP detection, allele discrimination, gene expression analysis, pathogen detection and multiplexing
- For NGS adapters we manufacture these oligos at high quality and purity, using controlled annealing procedure to make sure that we have the right and specific duplex.
- OEM by QIAGEN manufactures NGS adapters that can be manufactured at diverse scales and qualities.



Additional OEM Services

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Formulation capabilities

- Concentration targeting
- Lyophilized and dried down or in the buffer of your choice
- Bulk or aliquots in tubes
- Custom mixing
- Custom labeling on the product vial

QC support*

- Reversed Phase HPLC (RP-HPLC)
- Reversed Phase UPLC (RP-UPLC)
- Anion Exchange HPLC (IEX-HPLC)
- ESI-TOF Mass Spectrometry
- Amino reactivity determination

Consulting service

- Implement tailored modifications and design
- Manufacturing performance analysis
- Modification evaluation
- Sequence design support
- Chemical stability studies
- Process and result documentation

* Analytical methods for troubleshooting or evaluation of third-party products.



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Allow us to be your trusted partner for accelerating
your assay component development

- Confidentiality and trust
- Quality at scale
- Innovation combined with expertise
- Portfolio breadth



Nucleic acid purification



Enzymes



Oligonucleotides



Master mixes

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BHQ®, CAL Fluor® and Quasar®

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High Purity

Modifications

Cy, CyDye

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SCORPIONS

BBQ 650

BBQ 650 is protected by patents and patent applications owned by Berry & Associates Inc. Use of BBQ650 labeled oligonucleotides may require a license from Berry & Associates Inc.

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