

Internal Modification*		
dT-Alexa Fluor 610	Hd-A/Hd-C/Hd-G/Hd-U	dC-Alexa Fluor 594
dT-Alexa Fluor 620	IdA	dC-Alexa Fluor 647
dT-Alexa Fluor 633	IdT	dC-Alexa Fluor 680
dT-Alexa Fluor 700	ImA	dC-Alexa Fluor 610
dT-Alexa Fluor 750	ImU	dC-Alexa Fluor 620
dT-ATTO 425	InvAb	dC-Alexa Fluor 633
dT-ATTO 550	mIA	dC-Alexa Fluor 700
dT-ATTO 565	mIψ	dC-Alexa Fluor 750
dT-ATTO 594	m5C	dC-ATTO 425
dT-ATTO 655	m5dC	dC-ATTO 550
dT-ATTO 700	m5U	dC-ATTO 565
dT-ATTO RhoII	m6A	dC-ATTO 594
dT-Azide	m6dA	dC-ATTO 655
dT-BHQ1	mA/mC/mG/ml/mN	dC-ATTO 700
dT-BHQ2	MOE-5-Me-C	dC-ATTO RhoII
dT-Biotin	MOE-A/MOE-G/MOE-T/MOE-U	dC-Azide
dT-Chromeo 494	mP-mU	dC-BHQ1
dT-CY3	mS	dC-BHQ2
dT-CY5	mU	dC-Biotin
dT-CY5-M	NAG25	dC-Chromeo 494
dT-CY7	NAG37	dC-CY3
dT-DAB	PC Linker	dC-CY5
dT-DBCO	rArCrGrU	dC-CY5-M
dT-Digoxin	rl	dC-Digoxin
dT-FAM	SH	dC-FAM
dT-FITC	SPC 12	dC-FITC
dT-HEX	Spacer 18	dC-HEX
dT-Maleimide	Spacer 9	dC-Maleimide
dT-Methylene Blue	Spacer C12	dC-Methylene Blue
dT-Ferrocene	Spacer C3	dC-NH2
dT-NH2	Spacer C6	dC-Quasar 570
dT-Quasar 570	SS	dC-Quasar 670
dT-Quasar 670	TNA-A/TNA-C/TNA-G/TNA-T/TNA-U	dC-Quasar 705
dT-Quasar 705	Trebler	dC-ROX
dT-ROX	TAO	dC-SF670
dT-SF670	XEN	dC-TAM
dT-TAM	ψ	
dT-DNP	Phosphorothioate	
dT-TXR	ET-B/G/O/P/R/Y	
dU	dC-Alexa Fluor 350	
EVP-mA/EVP-mC/EVP-mG/EVP-mU	dC-Alexa Fluor 532	
F-dU	dC-Alexa Fluor 546	
GalNac	dC-Alexa Fluor 555	
GalNac-A	dC-Alexa Fluor 568	
GalNac-G	dC-Alexa Fluor 405	
GNA-A/GNA-C/GNA-G/GNA-T/GNA-U	dC-Alexa Fluor 488	

3' Modification*		
3'Alexa Fluor 350	3'BHQ2	3'HEX
3'Alexa Fluor 405	3'BHQ3	3'InvdT
3'Alexa Fluor 488	3'BIO	3'Joe
3'Alexa Fluor 532	3'BIO-TEG	3'Maleimide
3'Alexa Fluor 546	3'BKHFQ	3'Methylene Blue
3'Alexa Fluor 555	3'CI6	3'MGB
3'Alexa Fluor 568	3'C3-FAM	3'MGB-PLUS
3'Alexa Fluor 594	3'C7-NH2	3'PHO
3'Alexa Fluor 647	3'CHCH	3'QSY7
3'Alexa Fluor 680	3'Cholesteryl	3'ROX
3'Alexa Fluor 610	3'Chol-TEG	3'SF670
3'Alexa Fluor 620	3'-CT+Signal	3'SH
3'Alexa Fluor 633	3'CY3	3'SMCC
3'Alexa Fluor 700	3'CY5	3'SPC 12
3'Alexa Fluor 750	3'CY5.5	3'SPC 18
3'ATTO 425	3'CY5-M	3'SPC 9
3'ATTO 550	3'CY7	3'SPC C12
3'ATTO 565	3'DAB	3'SPC C3
3'ATTO 594	3'DBCO	3'SPC C6
3'ATTO 700	3'ddC	3'SS
3'ATTO RhoII	3'DIG	3'TAM
3'Azide(N3)	3'ECL	3'THL C6 SH
3'BHQ-650	3'Ferrocene	3'THS C6 S-S
3'BHQ0	3'FITC	3'TXR
3'BHQ1	3'GalNac	

Double Label Modifications		
CY3, BHQ2	HEX, MGB	TAM, MGB
CY3, MGB	HEX, TAM	TET, BHQ1
CY5, BHQ2	JOE, BHQ1	TET, BHQ2
CY5, BHQ3	JOE, BHQ2	TET, DAB
CY5, MGB	JOE, DAB	TET, ECL
CY5.5, BHQ2	JOE, MGB	TET, MGB
CY7, BHQ2	JOE, TAM	TET, TAM
CY7, BHQ3	JOE.ECL	TXR, BHQ2
FAM, BHQ1	PHO, FAM	TXR, DAB
FAM, BHQ2	Quasar 670, BHQ3	TXR, MGB
FAM, DAB	Quasar570, BHQ2	VIC, BHQ1
FAM, ECL	ROX, BHQ2	VIC, BHQ2
FAM, MGB	ROX, ECL	VIC, DAB
FAM, TAM	ROX, MGB	VIC, MGB
HEX, BHQ1	TAM, BHQ2	VIC, TAM
HEX, BHQ2	TAM, DAB	
HEX, ECL	TAM, ECL	

Standard RNA Modifications

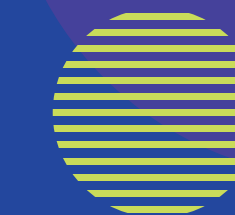
RNA Oligo	Product Type	Default Modification Method
miRNA	microRNA mimics/inhibitors	N/A
	antagomir/agomir	3' -Chol, 4 PS at 3'-end; 2 PS at 5'-end; full length 2'-OMe; agomir modifies the antisense chain
siRNA	siRNA Duplex	N/A
	In vivo siRNA	Duplex with G/U bases 2'-OMe modified, both strands with 3'Chol
	Drug siRNA (ESC)	2'-OMe + 2'-F + PS
	Drug siRNA (ESC-L96)	2'-OMe + 2'-F + PS + 3'GalNac (L96)
gapmer-ASO	Drug siRNA (ESC-2-O-C16)	2'-OMe + 2'-F + PS + 2-O-C16
	2'-OMe-ASO	First and last 5 bases with 2'-OMe, all PS
mixer-ASO	2-MOE-ASO	First and last 5 bases with MOE, all PS
	LNA-ASO	First and last 3 bases with LNA, all PS
	cEt-ASO	First and last 3 bases with cEt, all PS
	PS-ASO	First and last 5 linkages with PS
sgRNA oligo	2'-OMe-ASO	All bases with 2'-OMe and PS
	MOE-ASO	All bases with MOE and PS
	LNA-ASO	All bases with LNA and PS
	cEt-ASO	All bases with cEt and PS
crRNA	PS-ASO	All linkages with PS
	OPC/HPLC purification	First and last 3 bases with 2'-OMe and PS
	HPLC purification - highly modified	Bases 1-3 and 29-40 (5'-end) and base 32 (3'-end) with 2'-OMe, first and last 3 bases with PS
	Cas9 crRNA	First and last 3 bases with 2'-OMe and PS
crRNA	Cas9 tracrRNA	First and last 3 bases with 2'-OMe and PS
	AsCas12a crRNA	1 PS (5'-end), 2'-OMe, 2 PS at 3'-end
	LbaCas12a crRNA	1 PS (5'-end), 2'-OMe, 2 PS at 3'-end

Common modifications

Name	Modification	Function
PS	Phosphorothioate	Enhances stability against nucleases
2'-OMe	2'-O-Methyl	Improves stability and reduces immunogenicity
2'-F	2'-Fluoro	Increases duplex stability and enzymatic resistance
2'MOE	Methoxyethyl	Enhances target RNA binding and stability in ASOs
LNA	Locked Nucleic Acid	Significantly improves hybridization affinity
cEt	Constrained Ethyl	Enhances target binding and metabolic stability
3' -Chol	Cholesterol	Increases lipid solubility and cellular uptake
2' -O-C16	2'-O-hexadecanoyl	Enhances cellular uptake and in vivo stability via lipid modification
GalNac	N-Acetylgalactosamine	Targets hepatic asialoglycoprotein receptors

Degenerate Bases

B=G,C,T; V=A,G,C; D=A,G,T; W=A,T; H=A,C,T; Y=C,T; K=G,T; M=A,C; N=A,G,C,T; R=A,G; S=G,C



Oligo Synthesis

Synthesis right oligo, First time and Every time.



- Custom DNA Oligos
- Custom RNA Oligos
- NGS Oligos
- qPCR Probes
- siRNA
- ASO



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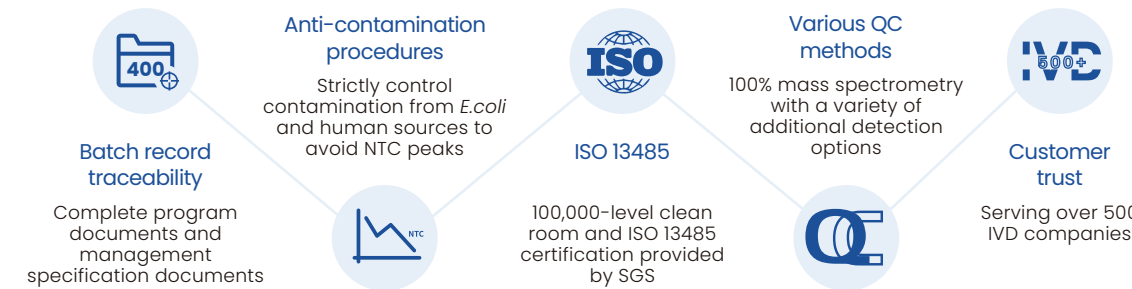
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Tsingke as a reliable partner, leads the way in offering life sciences services and products for global researchers. With a comprehensive industrial chain in nucleic acids synthesis. We provide many types of oligonucleotide products, including Custom DNA/RNA oligos, qPCR probes and NGS oligos, for your basic research and diagnostic applications.



Advantages



Services

· Custom DNA Oligos

Service name	Length (nt)	Purification	Price/turnaround time	Deliverable	Application
Common oligos	5-60	DSL/OPC/PAGE/HPLC	Inquire	· Tube or customized · Lyophilized DNA · COA report (electronic)	PCR/DNA sequencing
Long oligos	60+	PAGE/HPLC/Dual PAGE & HPLC			NGS, genomic research
Large-scale oligos	Customized	Customized			New drug screening, drug production
Modified oligos	10-120	DSL/OPC/PAGE/HPLC/Dual PAGE & HPLC			Various molecular biology research

· Custom RNA oligos

Service name	Length (nt)	Purification	Price/turnaround time	Deliverable	Application
Common RNA	3-180	OPC/HPLC	Inquire	· Tube or customized · Lyophilized RNA · COA report (electronic)	Gene function research
siRNA	20-25				RNAi
miRNA	20-25				Pathological research
sgRNA	97-103				CRISPR/CGT
crRNA	42				Nucleic acid drug
tracrRNA	64				
ASO	16-20				

· qPCR probes

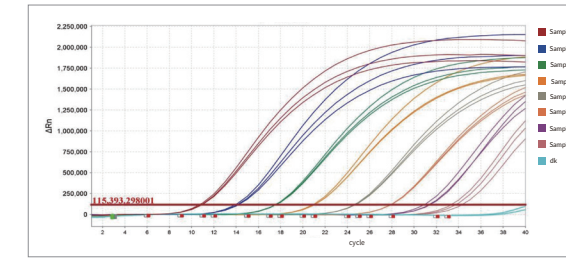
Service name	Length (nt)	Purification	Price/turnaround time	Deliverable	Application
qPCR probes	15-30	PAGE/HPLC/Dual PAGE & HPLC	Inquire	· Tube or customized · Lyophilized DNA · COA report (electronic)	The most commonly used types of qPCR experiments
MGB probes	13-25				For qPCR experiments with higher TM
Double-Quenched Probes	15-45				For qPCR experiments with longer probes
Molecular beacons	25-40				For qPCR experiments with extremely high sensitivity requirements
Other probes	Customized	Customized			Special application directions

· NGS oligos

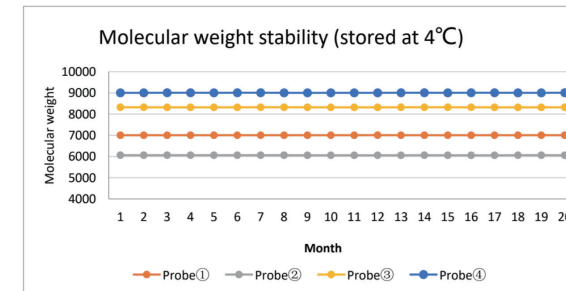
Service Name	Length (nt)	Purification	Price/turnaround time	Deliverable	Application
Adapter	15-80	HPLC/PAGE	Inquire	· Tube or customized · Lyophilized DNA · COA report (electronic)	NGS library construction
Blocker	Customized	HPLC			Blocked sample adapter sequence
Capture probes	80-120	HPLC/PAGE			Target area capture
Multiplex PCR oligos	15-120	HPLC/PAGE			Sequencing of specific target regions

Case Study

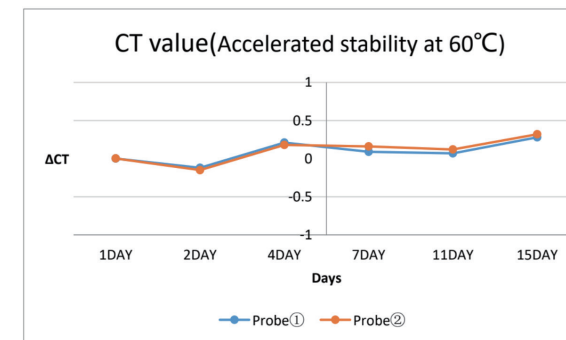
· qPCR Probe for SNP target gene quantification:



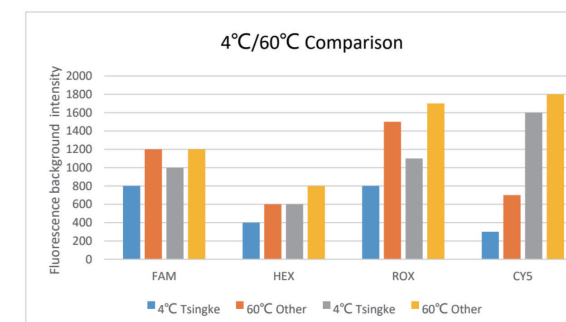
· Long-term stability:



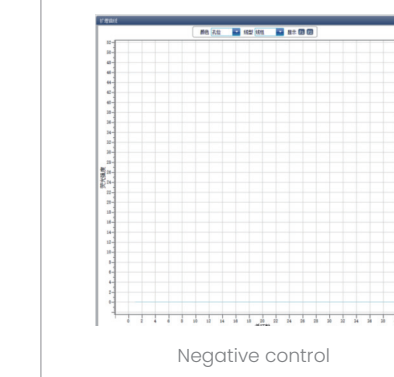
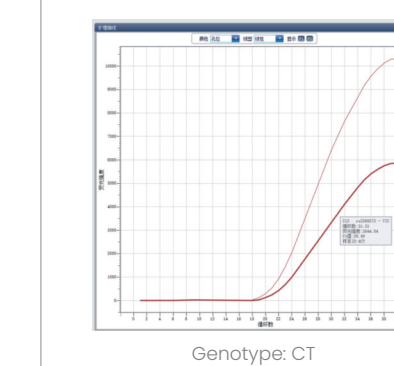
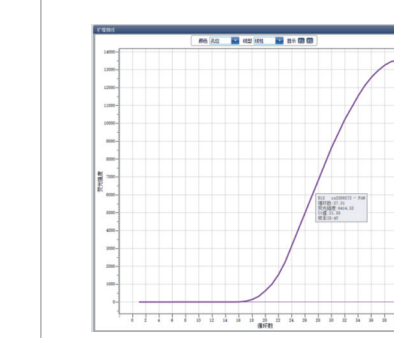
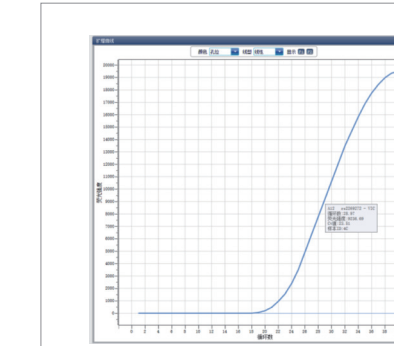
· Accelerated stability:



· Fluorescence modification stability:



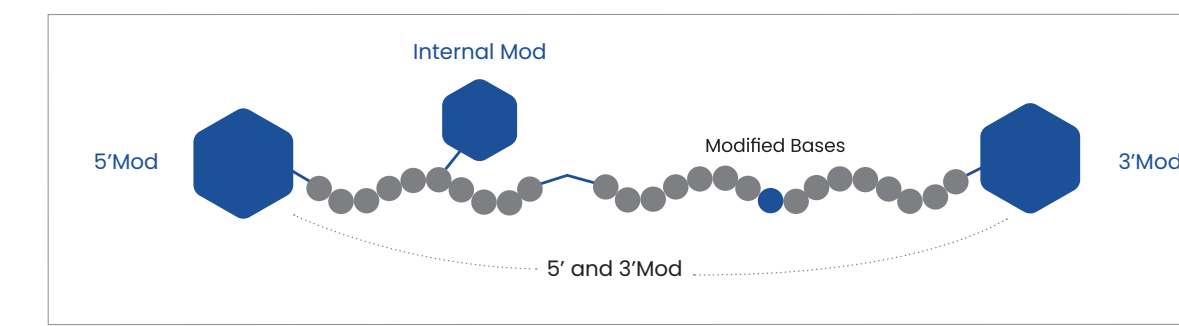
· MGB Probe for SNP detection:



Citations Database

Tsingke services and products have been used extensively by scientists worldwide to improve their research efficiency. Here, we present a portion of the citation representations for oligo synthesis for your reference.

Journal	IF	Title	DOI
Lancet Microbe	86.21	Human-to-human transmission of Chlamydia psittaci in China, 2020: an epidemiological and aetiological investigation	DOI: 10.1016/s2666-5247(22)00064-7
Nature Biotechnology	54.908	Engineered circular ADAR-recruiting RNAs increase the efficiency and fidelity of RNA editing in vitro and in vivo	DOI: 10.1038/s41587-021-01180-3
Nature	50.50	Human HDAC6 senses valine abundance to regulate DNA damage	DOI:10.1038/s41586-024-08248-5
Signal Transduction and Targeted Therapy	38.104	CBIR-stabilized NLRP3 inflammasome drives antipsychotics cardiotoxicity	DOI: 10.1038/s41392-022-01018-7
Cell Metabolism	27.287	Autonomous sensing of the insulin peptide by an olfactory G protein-coupled receptor modulates glucose metabolism	DOI: 10.1016/j.cmet.2021.12.022
Cancer Cell	26.602	Tumor-repopulating cells induce PD-1 expression in CD8+ T cells by transferring kynurenine and AhR activation	DOI: 10.1016/j.ccell.2018.02.005
Cancer Communications	20.10	Nicotinamide N-methyltransferase negatively regulates metastasis-promoting property of cancer-associated fibroblasts in lung adenocarcinoma	DOI: 10.1002/cac2.12633



Oligo Modification List

*Black: DNA/RNA Oligos Modification; *Green: DNA Oligos Modification; *Blue: RNA Oligos Modification.

5' Modification*		
5'Acrydite	5'C6-(PNP-PABC-VC-MC)	5'Methylene Blue
5'Alexa Flour 350	5'C6-MC	5'NED
5'Alexa Flour 405	5'C12-NH2	5'PET
5'Alexa Flour 488	5'C6-NH2	5'PHO
5'Alexa Flour 532	5'C7-NH2	5'Quasar 570
5'Alexa Flour 546	5'CHCH	5'Quasar 670
5'Alexa Flour 555	5'CHO	5'Quasar 705
5'Alexa Flour 568	5'Cholesteryl	5'RHO 101
5'Alexa Flour 594	5'Chol-TEG	5'ROX
5'Alexa Flour 647	5'COOH	5'SH
5'Alexa Flour 680	5'CY3	5'SMCC
5'Alexa Fluor 610	5'CY5	5'SPC 12
5'Alexa Fluor 620	5'CY5.5	5'SPC 18
5'Alexa Fluor 633	5'CY5-M	5'SPC 9
5'Alexa Fluor 700	5'CY7	5'SPC C12
5'Alexa Fluor 750	5'DAB	5'SPC C3
5'AMCA	5'DBCO	5'SPC C6
5'ATTO 425	5'DIG	5'SS
5'ATTO 550	5'DMT	5'SF670
5'ATTO 565	5'ET-ROX	5'TAM
5'ATTO 594	5'ET-TAMRA	5'TET
5'ATTO 700	5'FAM	5'THL C6 SH
5'ATTO Rho11	5'Ferrocene	5'THS C6 S-S
5'Azide(N3)	5'FITC	5'triple Biotin
5'BHQ1	5'GalNAc	5'triple SH
5'BHQ2	5'HEX	5'TXR
5'BIO	5'Inverted-dT	5'VIC
5'BIO-TEG	5'JOE	5'YakYel
5'Cl6	5'Maleimide	-

Internal Modification*		
+A/+C/+G/+T	5hmdC	dT-Alexa Flour 405
2AFA/2AFG/2AFU	C7-NH2	dT-Alexa Flour 488
2FA/2FC/2FG/2FU	cEt-5-Me-C	dT-Alexa Flour 532
3OMeP-C	cEt-A/cEt-G/cEt-T	dT-Alexa Flour 546
3OMeP-U	dA/dC/dG/dT	dT-Alexa Flour 555
8-oxo-dG	-CT+Signal	dT-Alexa Flour 568
bis	dl	dT-Alexa Flour 594
C12-SMCC	dSpacer	dT-Alexa Flour 647
C22	dT-Alexa Flour 350	dT-Alexa Flour 680