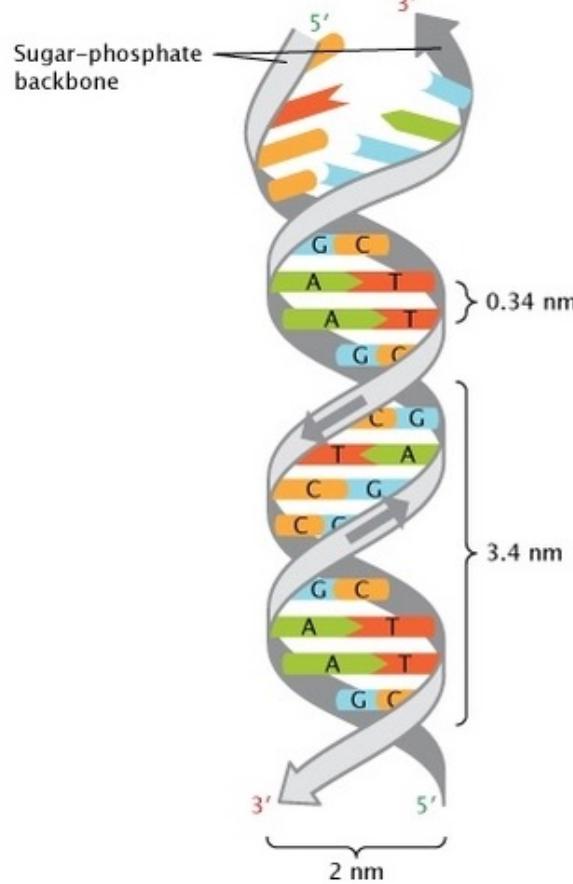


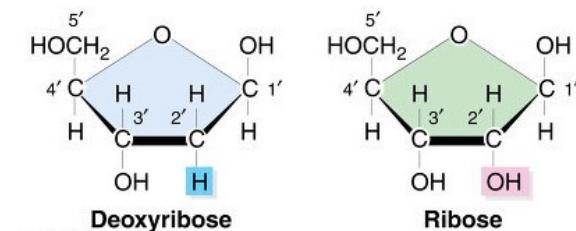
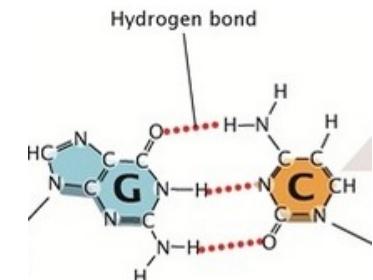
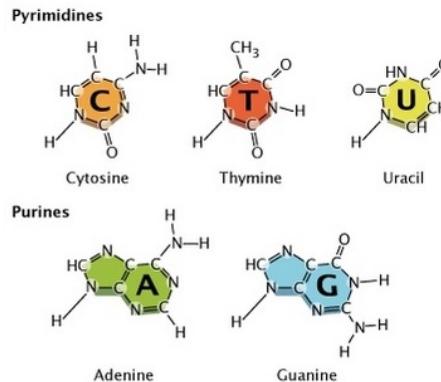
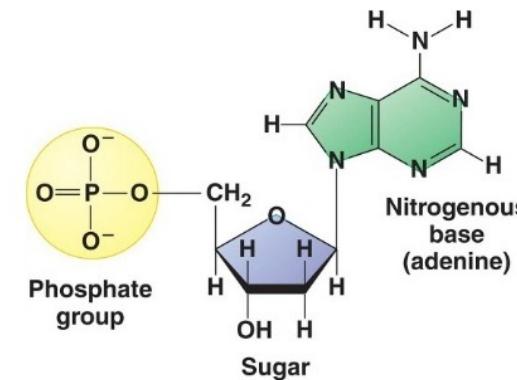
Quantitative PCR, Primers, Standard DNA, & Ordering Process

GERMS Lab

Deoxyribonucleic Acid (DNA)



- Phosphate group, sugar, and nitrogenous base
- Double-stranded helix (two strands connected by hydrogen bonds)
- Chargaff's rule
- Anti-parallel (the 5'-end of one strand is paired with the 3' end of its complementary strand)



History of DNA amplification and detection

No. 4356 April 25, 1953 NATURE

equipment, and to Dr. G. E. R. Deacon and the captain and officers of R.R.S. *Discovery II* for their part in making the observations.
 1 Young, P. B., Gerard, H., and Jevons, W., *Phil. Mag.*, **40**, 149 (1920).
 2 Longuet-Higgins, M. S., *Mon. Not. Roy. Astro. Soc., Geophys. Suppl.*, **6**, 1 (1960).
 3 Von Arx, W. S., Woods Hole Paper in Phys. Oceanogr. Meteor., **11** (3) (1960).
 4 Elman, V. W., *Arkiv. Mat. Astron. Fysik* (Stockholm), **2**(11) (1908).

MOLECULAR STRUCTURE OF NUCLEIC ACIDS

A Structure for Deoxyribose Nucleic Acid

We wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

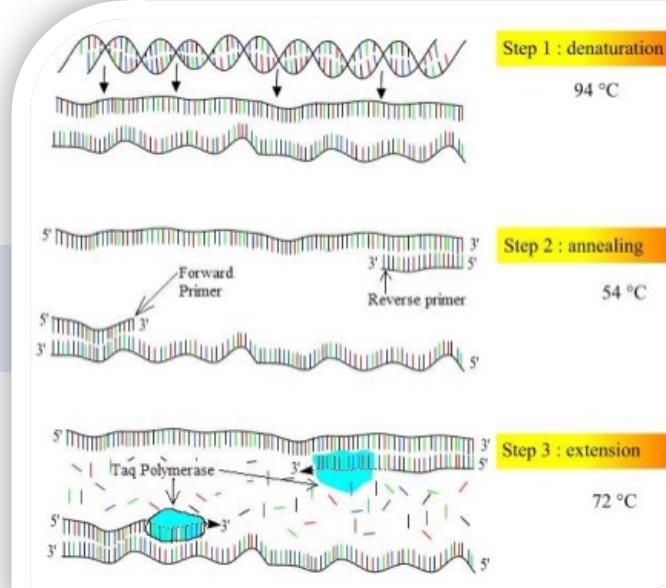
A structure for nucleic acid has already been

is a residue on each chain every 3-4 Å. in the z-direction. We have assumed an angle of 36° between adjacent residues in the same chain so that the structure repeats after 10 residues such that, that is, after 34 Å. The distance of a phosphorus atom from the fibre axis is 10 Å. As the phosphates are on the outside, cations have easy access to them. The structure is an open one, and its water content is rather high. At lower water contents we would expect the bases to tilt so that the structure could become more compact.

The novel feature of the structure is the manner in which the two chains are held together by the purine and pyrimidine bases. The planes of the bases are perpendicular to the fibre axis. They are joined together in pairs, a single base from one chain being hydrogen-bonded to a single base from the other chain. The positions of the bases are given in z-coordinates. One of the pair must be a purine and the other a pyrimidine for bonding to occur. The hydrogen bonds are made as follows: purine position 1 to pyrimidine position 1; purine position 6 to

Discovery of DNA Structure

Watson and Crick, 1953



Invention of PCR

Mullis, 1985

Proc. Natl. Acad. Sci. USA
Vol. 86, pp. 9178-9182, December 1989
Biochemistry

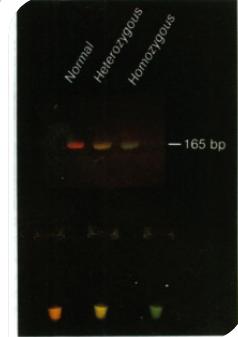
Detection of specific DNA sequences by fluorescence amplification: A color complementation assay

(polymerase chain reaction/fluorescein/rhodamine/fluorometry/color complementation)

FARID F. CHEHAB*† AND Y. W. KAN‡

*Applied Biosystems, Research and Development, Foster City, CA 94404; and ‡Howard Hughes Medical Institute, University of California, San Francisco, CA 94143

Contributed by Y. W. Kan, August 21, 1989



First ancestor of probe-based detection

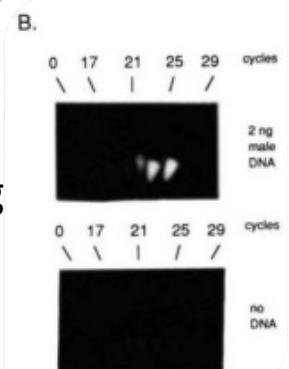
Chehab and Kan, 1989

SIMULTANEOUS AMPLIFICATION AND DETECTION OF SPECIFIC DNA SEQUENCES

Russell Higuchi*, Gavin Dollinger¹, P. Sean Walsh and Robert Griffith
Roche Molecular Systems, Inc., 1400 53rd St., Emeryville, CA 94608. ¹Chiron Corporation, 1400 53rd St., Emeryville, CA 94608. *Corresponding author.

We have enhanced the polymerase chain reaction (PCR) such that specific DNA sequences can be detected without opening the reaction tube. This enhancement requires the addition of ethidium bromide (EtBr) to a PCR. Since the fluorescence of EtBr increases in the presence of double-stranded (ds) DNA an increase in fluores-

"carryover" false positives in subsequent testing¹¹. These downstream processing steps would be eliminated if specific amplification of the target DNA took place simultaneously with the PCR reaction in a single reaction vessel. Assays for detection of specific DNA sequences have been termed the nested PCR assay has been developed by Higuchi et al.¹², developed a PCR



First ancestor of DNA-binding dye-based detection

Higuchi et al., 1992

History of DNA amplification and detection

Kinetic PCR Analysis: Real-time Monitoring of DNA Amplification Reactions

Russell Higuchi*, Carita Fockler, Gavin Dollinger¹ and Robert Watson

Roche Molecular Systems, Inc., 1145 Atlantic Ave., Alameda, CA 94501. ¹Chiron Corporation, 1400 53rd St., Emeryville, CA 94608.
*Corresponding author.

We describe a simple, quantitative assay for any amplifiable DNA sequence that uses a video camera to monitor multiple polymerase chain reactions (PCRs) simultaneously over the course of thermocycling. The video camera detects the accumulation of double-stranded DNA (dsDNA) in each PCR using the increase in the fluorescence of ethidium bromide (EtBr) that results from its binding duplex DNA. The kinetics of fluorescence accumulation during thermocycling are directly related to the starting number of DNA copies. The fewer cycles necessary to produce a detectable fluorescence, the greater the number of target sequences. Results obtained with this approach indicate that a kinetic approach to PCR analysis can quantitate DNA sensitively, selectively and over a large dynamic range. This approach also provides a means of determining the effect of different reaction conditions on the efficacy of the amplification and so can provide insight into fundamental PCR processes.

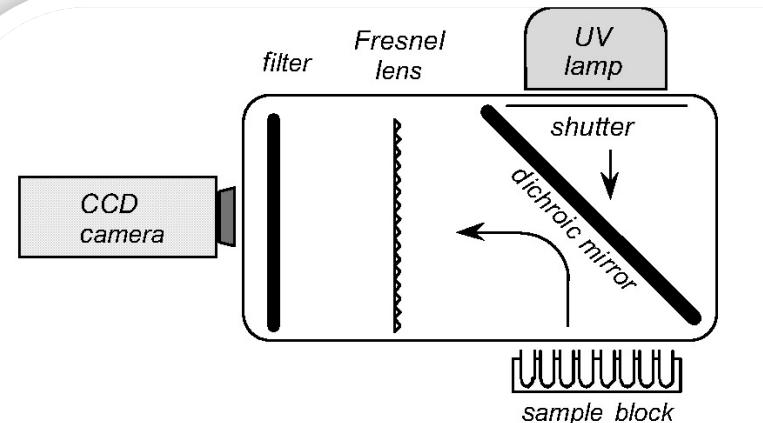
Test experiments

Higuchi et al., 1993

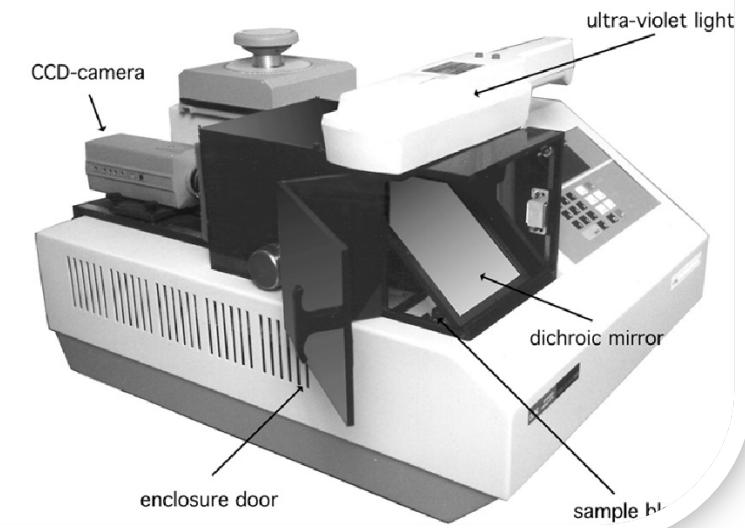
Kinetic PCR Analysis Using a CCD-camera and without Using Oligonucleotide Probes

Russell Higuchi and Robert Watson

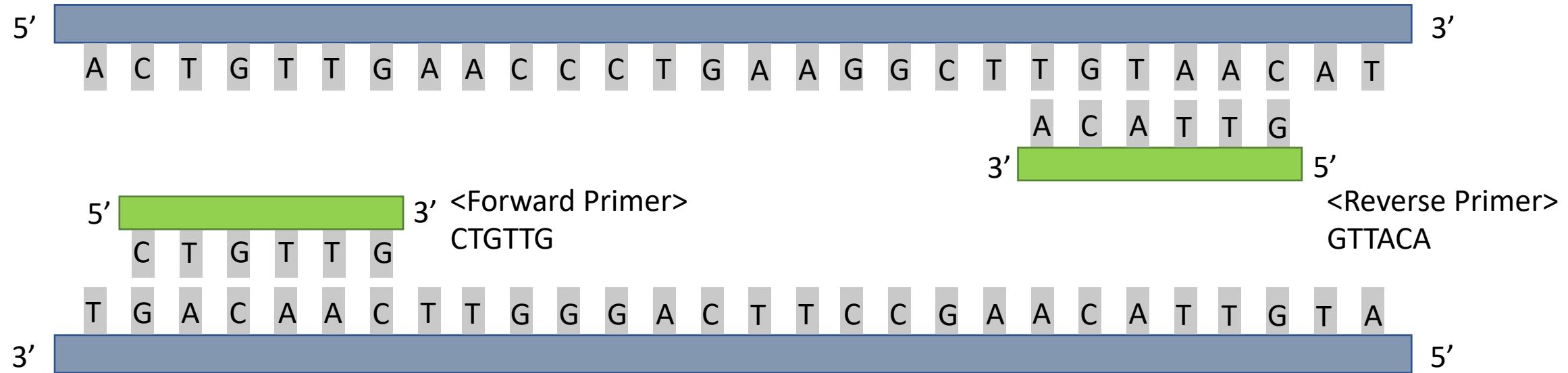
Prototype of Quantitative PCR machine
Higuchi and Watson, 1999



B



Reverse Complementary



<Reverse Complementary Sequence>
ATGTTACAAGCCTTCAGGGTTAACAGT

Primers, Target sequences, Standard DNA sequence

<967F>
5'- CAACCGAAGAACCTTACC -3'

GGAAGGTGGGGATGACGT

<1194R>
5'- ACGTCATCCCCACCTTCC -3'



3'- CCTTCCACCCCCTTGCA -5'

<Partial 16S rRNA gene sequence>

5'- TCGAAAGCGTGGGAGCAAACAGGATTAGATAACCTGGTAGTCCACGCCGTAAACGATGTCGACTT
GGAGGTTGTGCCCTGAGGCCTGGCTTCCGGAGCTAACGCGTTAAGTCGACCGCCTGGGAGTACG
GCCGCAAGGTTAAAACCAAATGAATTGACGGGGGCCGCACAAGCGGTGGAGCATGTGGTTAAT
TCGATE~~CAACCGAAGAACCTTACCT~~GGTCTGACATCCACGGAAGTTTCAGAGATGAGAATGTGC
CTTCGGGAACCGTGAGACAGGTGCTGCATGGCTGTCGTAGCTCGTGTGAAATGTTGGTTAAG
TCCCGCAACGAGCGCAACCCTTATCCTTGTGCCAGCGGTCCGGCCGGAACTCAAAGGAGACTG
CCAGTGATAAACTGG~~AGGAAGGTGGGGATGACGT~~CAAGTCATCATGGCCCTACGACCAGGGCTAC
ACACGTGCTACAATGGCGCATACAAAGAGAAGCGA -3'

Target length: 228 bp

Standard DNA length: 500 bp

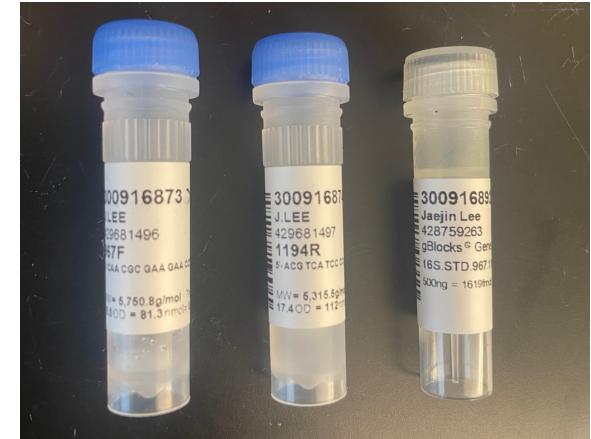
When you receive primers and standard DNA...

- You can store those until use at -20°C (or -80°C for longer storage).
- Primers: Check the name, sequence, and molecular weight as mol
For example, in the picture, 967F has 81.3 nmol and 1194R has 112 nmol.
- We usually use 100 μM primer stock and work with 10 μM working solution.
So, resuspend the dried primer to the concentration of 100 μM by adding sterile H₂O to each vial as much as (the written mol x 10 μL).

Vortex and spin down THOROUGHLY after adding H₂O or buffer.

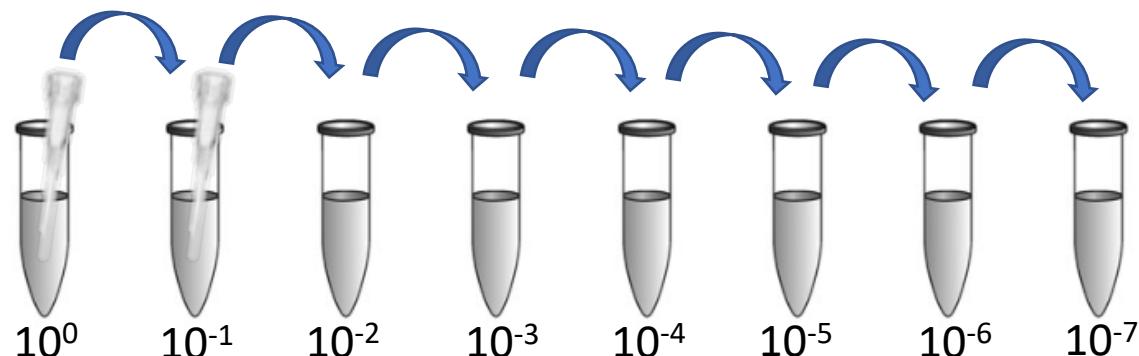
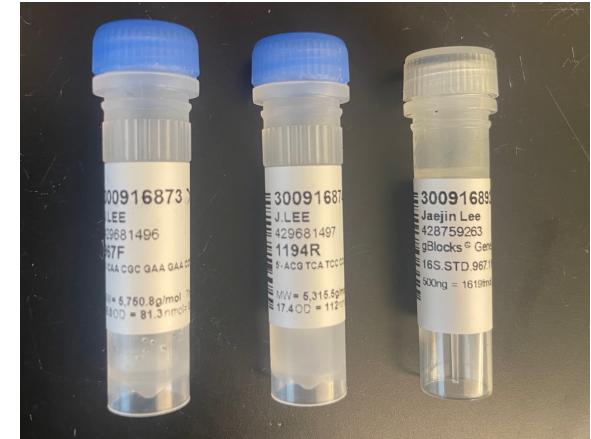
$$\frac{\cancel{81.3 \text{ nmol}}}{\cancel{813 \mu\text{L}}} \times \frac{\cancel{10^6 \mu\text{L}}}{1 \text{ L}} \times \frac{1 \mu\text{mole}}{\cancel{1000 \text{ nmol}}} = 100 \text{ μmole/L} = 100 \text{ μM}$$

- To make a 10 μM working solution of primer, dilute the 100 μM stock into sterile H₂O in a sterile 2 mL tube with a ratio of 1:9.
For example, to make 100 μL of a working solution of primer, fill the sterile 2 mL tube with 90 μL of sterile H₂O and add 10 μL of the primer stock directly into the 90 μL of H₂O.
(In case of 50 μL, 45 μL of H₂O + 5 μL of the 100 μM primer stock.)
- **Before and after dilutions, vortex the tubes for at least 10 seconds and spin down for at least 10 seconds!!**



When you receive primers and standard DNA...

- In the case of the standard DNA, you can see the amount (weight) of the dried DNA fragments on the tube. As we usually order 500 bp fragments, you will see 500 ng.
- The concentration of the standard DNA stock is 10 ng/ μ L. Thus, you need to add 50 μ L of sterile H₂O into the tube.
Vortex and spin down THOROUGHLY after adding H₂O or buffer.
- The concentration of the working standard DNA solution is 1 ng/ μ L. In a sterile 2 mL tube, add 45 μ L of sterile H₂O and add 5 μ L of the standard DNA stock into the H₂O to make a 1:10 dilution. Let's call it "STD 10⁰".
- In the exact same way, you are going to make a serial dilution down to "STD 10⁻⁷".
Vortex and spin down THOROUGHLY! Be consistent and precise.



* You can use the working standard DNA solutions (i.e., 1 ng/ μ L) multiple times, but try not to use the diluted standards over 3 times or over a week.

Gene copy calculation

$$\text{gene copies} = (\text{DNA concentration [ng}/\mu\text{l}]) \left(\frac{1 \text{ g}}{1,000^3 \text{ ng}} \right) \left(\frac{1 \text{ mol bp DNA}}{660 \text{ g DNA}} \right)$$

$$\times \left(\frac{6.023 \times 10^{23} \text{ bp}}{\text{mol bp}} \right) \left(\frac{1 \text{ copy}}{\text{genome or plasmid size [bp]}} \right)$$

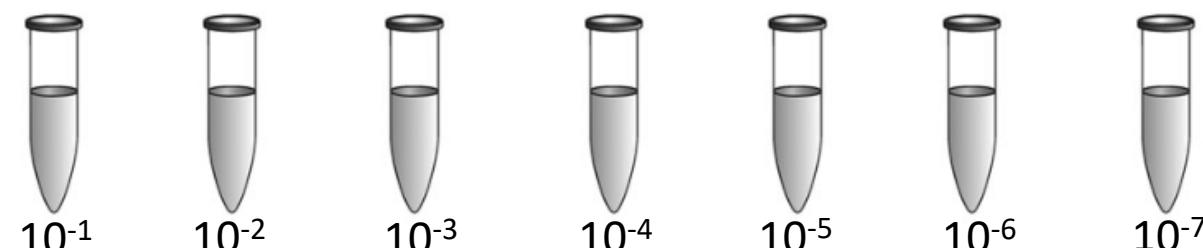
$$\times (\text{volume of template [\mu l]})$$

(Ritalahti et al., 2006, AEM)

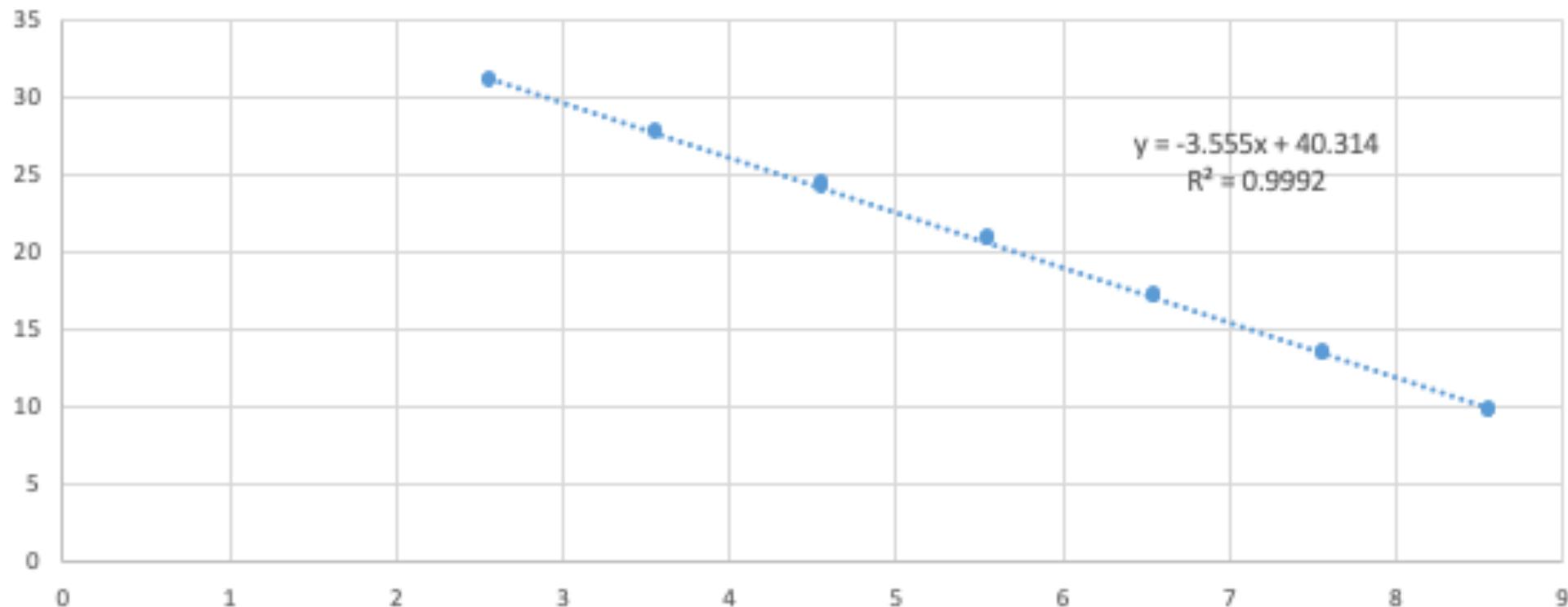
$$10^0 \quad \cancel{1 \text{ ng}/\mu\text{L}} \quad \times \quad \cancel{\frac{1 \text{ g}}{10^9 \text{ ng}}} \quad \times \quad \cancel{\frac{1 \text{ mol bp DNA}}{660 \text{ g DNA}}} \quad \times \quad \cancel{\frac{6.023 \times 10^{23} \text{ bp}}{\text{mol bp}}} \quad \times \quad \cancel{\frac{1 \text{ copy}}{500 \text{ bp}}} \quad \times \quad \cancel{2 \mu\text{L}}$$

$$= 3650303030.30303 = 3.65 \times 10^9 \text{ copies}$$

3.65E+09 3.65E+08 3.65E+07 3.65E+06 3.65E+05 3.65E+04 3.65E+03



Standard Curve: Example



Ordering primers and standard DNA

Menu

Search

IOWA STATE UNIVERSITY

← cyBUY

Welcome to cyBUY!

cyBUY Marketplace

cyBUY Marketplace

Connect to cyBUY

My inbox (list view)

Connect to my inbox

Open my cart

View Cart

OK

Cancel

Connect to Supplier Website

Requester	*	<input type="text"/>	⋮	?
Company	*	<input type="text"/> Iowa State University	⋮	?
Currency	*	<input type="text"/> USD	⋮	?
Requisition Type	<input type="text"/>			
Deliver-To	<input type="text"/> ELINGS - Virgil B Elings Hall			
Ship-To	*	<input type="text"/> Elings 605 Bissell Rd Ames, IA 50011-1098 United States of America		
Grant	<input type="text"/>			
Project	<input type="text"/>			
Program	<input type="text"/>			
Gift	<input type="text"/>			
Department Detail	<input type="text"/>			
Assignee	<input type="text"/>			

OK

Cancel

Ordering primers and standard DNA

Connect to Supplier Website ...

Company Iowa State University Requester Jaejin Lee Currency USD

Supplier Websites 1 item

	Logo	Supplier Link Name	Multi-Supplier	Supplier	Description	
		cyBUY	<input checked="" type="checkbox"/>			Connect

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Ordering primers (1)

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- Luminex assay
- NGS solutions
- Cas13 guide RNAs
- Affinity Plus ASOs
- Genes & gene fragments
- Media information

DNA & RNA

- Custom DNA oligos
- Custom RNA oligos
- Affinity Plus DNA & RNA oligos
- DNA oligo pools
- Large-scale synthesis
- SameDay oligos
- Inventoried oligos
- Oligo modifications

qPCR & PCR

- Gene expression
- Genotyping
- Custom qPCR probes
- Custom primers
- Master mixes & reagents
- SARS-CoV-2 reagents

CRISPR GENOME EDITING

- CRISPR-Cas9
- CRISPR-Cas12a (Cpf1)
- Custom guide RNAs
- Alt-R CRISPR gRNA Libraries
- CRISPR enzymes
- HDR donor oligos
- HDR donor blocks
- rhAmpSeq CRISPR Analysis System
- Genome editing detection

GENES & GENE FRAGMENTS

- eBlocks Gene Fragments
- gBlocks & gBlocks HiFi Gene Fragments
- Gene Synthesis
- Megamer ssDNA DNA Fragments

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- Library preparation & adapters
- Hybridization capture
- Amplicon sequencing
- Library normalization
- IDT Align Program
- NGS Solutions Builder Tool
- NGS solutions by method

FUNCTIONAL GENOMICS

- RNA interference
- Antisense oligonucleotides
- miRNA inhibitors

REAGENTS & KITS

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- Oligo length standards
- Nuclease detection and control
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Ordering primers (2)



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Experience greater sensitivity and better confidence in your data with PrimeTime and rhAmp™ products.

Gene expression • Genotyping
Custom probes • Master mixes & reagents
GMP & OEM services

Ordering primers (3)



ORDERING

- Complete confidence in oligos that are checked by electrospray ionization mass spectrometry (ESI-MS)*
- Begin your project sooner with >90% of orders shipped within 24 hours†
- Extensive control of oligo specifications with custom formulation and mixing options

*With the exception of mixed base oligos, which could potentially represent multiple sequences and therefore cannot be evaluated by ESI-MS.

†Small scale, standard, desalted oligos

Tubes Plates Expedited

Single-stranded DNA

Shipped dry, or resuspended to your specifications.

ORDER NOW

Product	Length	DNA bases
25 nmole DNA Oligo	15–60 bases	\$0.42 USD/base
100 nmole DNA Oligo	10–90 bases	\$0.80 USD/base
250 nmole DNA Oligo	5–100 bases	\$1.40 USD/base
1 umole DNA Oligo	5–100 bases	\$2.97 USD/base
2 umole DNA Oligo	5–100 bases	\$4.65 USD/base
5 umole DNA Oligo	5–100 bases	\$11.00 USD/base
10 umole DNA Oligo	5–100 bases	\$19.33 USD/base

For larger quantities, [click here](#).

Ordering primers (4)

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0 ITEMS \$0.00 USD

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Oligo Entry

Aliquots orderable through custom formulation

Duplex | RxnReady | Plates

Select All ACTIONS: # of Items: 1 GO BULK INPUT

1 Items

1 Item Name

Scale
25 n mole DNA oligo

Sequence * (5' → 3')
5' MOD INTERNAL 3' MOD BASES

Bases: 0 (Min:15 Max:60) Min Yield: 0 nmoles
GC: % Tm: °C DeltaG: kcal/mol

Formulation None

Purification Standard Desalting

Services No services are available

ADD TO ORDER

Table 1
List of primer sets for quantification of *mcyA* genes.

Primer	Sequence (5'-3')	Length of product (bp)	Target	Note
mcyA_MF	TCTATTCTCA GT ATT CAG GTTGTCGC	225	<i>Microcystis</i> <i>mcyA</i> genes	This study
mcyA_MR	CTGATTAAGTGGTGCATTTCAGCG			
mcyA_AF	TCCATCCTCA GT ATT CAAGTACTCG	225	<i>Anabaena</i> <i>mcyA</i> genes	This study
mcyA_AR	TTGATTGAAATGGTGC GGTTCAG			
mcyA_PF	TCGATTCTCA GT CTGCAAGTCG	249	<i>Planktothrix</i> <i>mcyA</i> genes	This study
mcyA_PR	TTGATTAAAAGTGGTGAGAACATCAGATCG			
mcyA-Cd 1F	AAAATTAAGGCGTATCAA	297	<i>Microcystis</i> , <i>Planktothrix</i> , <i>Anabaena</i> <i>mcyA</i> genes	Hisbergues et al. (2003)
mcyA-Cd 1R	AAAAGTGT TTTATTAGCGGCTCAT			
MSF	ATCCAGCAGTTGAGCAAGC	190	<i>Microcystis</i> <i>mcyA</i> genes	Tillett et al. (2001); Furukawa et al. (2006)
MSR-2R	GCCGATGTTGGCTGTAAAT			
M1r-F	AGCGGTAGTCATTCGATCGG	107	<i>Microcystis</i> <i>mcyA</i> genes	Yoshida et al. (2007)
M1r-R	GCCCTTTCTGAAGTCGCC			
mcyA-f1	AACCTATCCGGTTGCTCA GATG	395	<i>Microcystis</i> <i>mcyA</i> genes	Gagaia et al. (2014)
mcyA-r1	CACATCTCCAAGGAAAATACACCCC			
peamso+	ATCAAACAGATGTACTGACAGGT	174	<i>Planktothrix</i> <i>mcyA</i> genes	Kurmayer et al. (2004)
peamso-	AGGCCAGACTATCCCGTT			

Example

Ordering primers (5)

Oligo Entry

Aliquots orderable through custom formulation

Select All ACTIONS: # of Items: 4 GO BULK INPUT

1 mcyA_MF * ⓘ

Scale: 25 nmole DNA oligo

Sequence (5' → 3')
5' MOD INTERNAL 3' MOD BASES
TCTATTCTCACTATTCAAGGTTGTCGC
G

Bases: 26 (Min:15 Max:60) Min Yield: 10 nmoles
GC: 42.3% Tm: 56.3°C DeltaG:-44.68 kcal/mol

2 mcyA_MR * ⓘ

Scale: 25 nmole DNA oligo

Sequence (5' → 3')
5' MOD INTERNAL 3' MOD BASES
CTGATTAAGTGGTGCATTCAGCG
G

Bases: 25 (Min:15 Max:60) Min Yield: 12 nmoles
GC: 44% Tm: 56.9°C DeltaG:-46.99 kcal/mol

3 mcyA_AF * ⓘ

Formulation

- 25 nmole DNA oligo
- 100 nmole DNA oligo
- 250 nmole DNA oligo
- 1 μmole DNA oligo
- 2 umole DNA oligo
- 5 umole DNA oligo
- 10 umole DNA oligo
- 4 nmole Ultramer™ DNA Oligo
- 20 nmole Ultramer™ DNA Oligo
- PAGE Ultramer™ DNA Oligo
- 25 nmole Sameday

Formulation

- None
- LabReady (100 μM in IDTE, pH 8.0)
- Create a custom formulation

Purification

- Standard Desalting
- PAGE \$62.17
- HPLC \$43.35
- IE HPLC \$46.85
- RNase Free HPLC \$78.39
- Dual HPLC \$83.30

Services

- Analytical RP-HPLC \$57.80
- Analytical IE-HPLC pH 12.0 \$57.80
- Na+ Salt Exchange \$78.39

Ordering primers (6)

Shopping Cart Web Order #25104133

Current Order as of 2023/04/25 12:06:34 PM (CDT)

Please click here to give us your feedback on your ordering experience.

Select All				DELETE SELECTED
<input type="checkbox"/> # 1 mcyA_MF	ACTIONS		qty 1	GO
Product	100 nmole DNA Oligo	Expected Ship Date	4/26/2023	
Purification	Standard Desalting	Guaranteed Yield	8.4 ODs = 35 nmol = 277.1 µgrams	
Length	26			
Sequence	TCT ATT CTC AGT ATT CAG GTT GTC GC			
<input type="checkbox"/> # 2 mcyA_MR	ACTIONS		qty 1	GO
Product	100 nmole DNA Oligo	Expected Ship Date	4/26/2023	
Purification	Standard Desalting	Guaranteed Yield	8.5 ODs = 35 nmol = 269.9 µgrams	
Length	25			
Sequence	CTG ATT AAA GTG GTG CAT TTC AGC G			

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Promo Code

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Order Summary

Subtotal	\$27.45 USD
S&H	TBD
Tax	TBD
Total	TBD

Options and Confirm Order

Documentation

Electronic Spec Sheet
Certificate of Analysis and all QC Data will be available online in Order History for two years.

Paper Spec Sheet
Printed on paper, packaged with other materials, and shipped with the order

Delivery Preference

Ship order when complete (single shipment)
 Ship items as available (\$11.00 USD charge, multiple shipments)

Enter PI Information

First Name: Adina

Last Name: Howe

Order Summary

Subtotal	\$27.45 USD
S&H	\$12.00 USD
Tax	\$0.00 USD
Total	\$39.45 USD

* Tax shown here is an estimate. Taxes for your order will be calculated at the time of invoicing when applicable.

Item Summary (4 Items)

Item Details	Quantity	Price (USD)	Subtotal (USD)	
Name:mcyA_MF Sequence:TCT ATT CTC AGT ATT CAG GTT GTC GC Product:100 nmole DNA Oligo Purification:Standard Desalting Bases:26 Notes: By: Integrated DNA Technologies Catalog Item #: 287934774 Mfg/Provider: Integrated DNA Technologies, Inc.	1	9.10 / EA	9.10	X
Name:mcyA_MR Sequence:CTG ATT AAA GTG GTG CAT TTC AGC G Product:100 nmole DNA Oligo Purification:Standard Desalting Bases:25 Notes: By: Integrated DNA Technologies	1	8.75 / EA	8.75	X

Cart Summary

Total Items in Cart:	4
Number of Suppliers:	1
Cart Total (USD):	27.45

[Checkout](#)

Ordering primers (7)

Company
Iowa State University

Requester
Jaejin Lee

Total Amount
\$27.45

Currency
USD

4 items		Sort By: ▾
Name:mcyA_MF Sequence:TCT AT...	1	
\$9.10		
Name:mcyA_MR Sequence:CTG AT...	1	
\$8.75		
Name:mcyA_AF Sequence:TCC ATC...	1	
\$5.00		
Name:mcyA_AR Sequence:TTG ATT...	1	
\$4.60		

Edit

Description Name:mcyA_MF Sequence:TCT ATT CTC AGT ATT CAG GTT GTC GC Product:100 nmole
atation:Standard Desalting Bases:26 Notes:

Supplier Item Identifier 287934774

Spend Category SC10207 Biochemicals/Oligos/DNA

Supplier INTEGRATED DNA TECHNOLOGIES (CYBUY)

Supplier Contract (empty)

Quantity 1

Unit of Measure Each

Unit Cost 9.10

Extended Amount 9.10

Item Identifiers Manufacturer Item Name : Integrated DNA Technologies, Inc.
Manufacturer Part ID : 287934774

UNSPSC : 41105600

Checkout

Continue Shopping ▾

Cart Details

GLSupplierID : 178461687

Ordering primers (8)

Shipping Address

Deliver-To	ELINGS - Virgil B Elings Hall
Ship-To Address	Elings 605 Bissell Rd Ames, IA 50011-1098 United States of America

Requisition Information

Request Date	* 04/25/2023
Currency	* USD
Submitted by	Jaejin Lee
Memo to Suppliers	
Internal Memo	

Goods

4 items

	Order	Item	Item Description	
-	-	-	-	
-	-	-	-	
-	-	-	-	

Actions: Submit, Save for Later, Continue Shopping, ...

Click Apply to use the deliver-to and ship-to address on the requisition header and all lines.

Deliver-To 1201 SUKUP

Ship-To Address

Use Alternate Address

Search Results (2)

- SUKUP - Sukup Hall and Atrium > 1201 SUKUP - Sukup Hall and Atrium
- SUKUP - Sukup Hall and Atrium > 1201A SUKUP - Sukup Hall and Atrium

Click Apply to use the deliver-to and ship-to address on the requisition header and all lines.

Deliver-To SUKUP - Sukup Hall and Atrium > 1201 SUKUP - Sukup Hall and Atrium

Ship-To Address 1201 Sukup 609 Bissell Rd Ames, IA 50011-1098 United States of America

Use Alternate Address

Apply

Ordering primers (9)

Deliver-To SUKUP - Sukup Hall and Atrium > 1201 SUKUP - Sukup Hall and Atrium

Ship-To Address 1201 Sukup
609 Bissell Rd
Ames, IA 50011-1098
United States of America

Requisition Information

Request Date * 04/25/2023  

Currency * X USD  

Submitted by Jaejin Lee

Memo to Suppliers

Internal Memo

Goods

4 items

	Memo	Grant	Project	Program	Gift	Department Detail	As:
61687	<input type="text"/>						
086							
0106806							
61687	<input type="text"/>						
086							
0106807							

Ordering standard DNA (1)

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COVID-19 SOLUTIONS

- SARS-CoV-2 kits and controls
- Luminex assay
- NGS solutions
- Cas13 guide RNAs
- Affinity Plus ASOs
- Genes & gene fragments
- Media information

qPCR & PCR

- Gene expression
- Genotyping
- Custom qPCR probes
- Custom primers
- Master mixes & reagents
- SARS-CoV-2 reagents

DNA & RNA

- Custom DNA oligos
- Custom RNA oligos
- Affinity Plus DNA & RNA oligos
- DNA oligo pools
- Large-scale synthesis
- SameDay oligos
- Inventoried oligos
- Oligo modifications

CRISPR GENOME EDITING

- CRISPR-Cas9
- CRISPR-Cas12a (Cpf1)
- Custom guide RNAs
- Alt-R CRISPR gRNA Libraries
- CRISPR enzymes
- HDR donor oligos
- HDR donor blocks
- rhAmpSeq CRISPR Analysis System
- Genome editing detection

GENES & GENE FRAGMENTS

- eBlocks Gene Fragments
- gBlocks & gBlocks HiFi Gene Fragments
- Gene Synthesis
- Megamer ssDNA DNA Fragments

NEXT GENERATION SEQUENCING

- Library preparation & adapters
- Hybridization capture
- Amplicon sequencing
- Library normalization
- IDT Align Program
- NGS Solutions Builder Tool
- NGS solutions by method

REAGENTS & KITS

- Microbial detection
- Oligo length standards
- Nuclease detection and control
- Buffers and solutions

Ordering standard DNA (1)

ORDERING

gBlocks Gene Fragments in tubes

- *A, T, C, and G residues only.*
- *Delivered dry and normalized to 250, 500, or 1000 ng, depending on length.*

[ORDER TUBES](#)

gBlocks Gene Fragments in plates

- *Orders require a minimum of 24 fragments per plate.*
- *Resuspended in 25 µL of nuclease-free water (concentration: 10 ng/µL).*
- *Shipped on dry ice within 10 business days of order confirmation (excluding Fridays).*

[ORDER PLATES](#)

Tubes				Plates		
gBlocks™ Gene Fragments	Shipped (BD) ¹	Amount (ng)	Price per fragment	Shipped (BD) ¹	Amount (ng)	Price per fragment
125-250 bp	2-4	250	\$100.00 USD	10-15	250	\$90.00 USD
251-500 bp	2-4	500	\$100.00 USD	10-15	250	\$90.00 USD
501-750 bp	2-4	500	\$144.00 USD	10-15	250	\$100.00 USD
751-1000 bp	3-5	1000	\$170.00 USD	10-15	250	\$112.00 USD
1001-1250 bp	5-8	1000	\$237.00 USD	10-15	250	\$180.00 USD
1251-1500 bp	5-8	1000	\$283.00 USD	10-15	250	\$226.00 USD
1501-1750 bp	5-8	1000	\$330.00 USD	10-15	250	\$258.00 USD
1751-2000 bp	5-8	1000	\$397.00 USD	10-15	250	\$314.00 USD
2001-2250 bp	5-8	1000	\$474.00 USD	10-15	250	\$386.00 USD

Ordering standard DNA (2)

PRODUCTS & SERVICES ▾ APPLICATIONS & SOLUTIONS ▾ SUPPORT & EDUCATION ▾ TOOLS ▾ COMPANY ▾

gBlocks™ Gene Fragments Entry

Watch a video demo of new features »
Wondering when your order will ship? Check the real time Order Status page! »

BULK INPUT COLLAPSE ALL EXPAND ALL Number of Entries: 1 GO

# 1 16S_967_STD	
Sequence ⓘ	Modifications ⓘ
TGCGAAAGCGTGGGAGCAAACAGGATTAGATAACCTGGTAGTCCACGCCGTAAACGATGTCGACTTGGAGGGTTGCCCTTGA GGCGTGGCTTCCGGAGCTAACCGCTTAAGTCGACCGCCTGGGGAGTACGGCCGCAAGGTTAAAACCTCAAATGAATTGACGGGG GCCCGACAAGCGGTGGAGCATGTGGTTAACATGCAACCGCGAAGAACCTTACCTGGTCTTGACATCCACCGGAAGTTTCAG AGATGAGAATGTGCCTCGGGAACCGTGAGACAGGTGCTGCATGGCTGTCGTCACTCGTGTGAAATGTTGGTTAACGTCCC GCAACGAGCGAACCCCTATCCTTGTGCCCCGGAACTCAAAGGAGACTGCCAGTGATAAAACTGGAGGAAG GTGGGGATGACGTCAAGTCATCATGGCCCTACGACCAGGGCTACACACGTGCTACAATGGCGCATACAAAGAGAAGCGA	<input type="checkbox"/> 5' Phosphorylation (for blunt cloning only)
TEST COMPLEXITY	Length: 500 Current base: 501

Sequence passes initial screening.

Ordering standard DNA (3)

Biohazard Disclosure

In accordance with the Harmonized Screening Protocol created by the International Gene Synthesis Consortium, and in order to protect the safety of IDT personnel, IDT requires that the following disclosure be completed by the ordering researcher, or by an authorized representative of the ordering institution prior to the acceptance of any Synthetic Biology order.

Biohazard screening guidelines allow us to accept the electronic signature included during the Web ordering process as long as the form is filled out correctly. The form includes a question asking whether the gBlock sequence originates from a plant or animal pathogen. If you order sequences from any pathogen please click the 'Yes' radio button and enter a brief description of the sequence. This will avoid the need for a written form and the delays associated with the process.

1. Does the requested cloned DNA sequence encode (either fully or partially) a toxin? Yes No
2. Does the requested DNA sequence originate in a plant or animal pathogen? Yes No
3. Does the requested DNA sequence encode a replication competent and/or infectious form of a virus, or a form of DNA which, by itself, could replicate within its host? Yes No
4. Does the requested cloned DNA sequence encode for an etiologic agent (something which causes or may cause human disease)? Yes No
5. Does the gene element encode a product that can interfere with cloning or propagation in bacterial hosts? Yes No

Typing your name in the box below will serve as your digital signature. By providing your digital signature you agree to the following:

1. You are the person named below.
2. You are the person who will be directly working with the requested material or will be responsible for the individuals working with the material.
3. The purchase, shipment to, and acceptance of the genetic material in this order is legal in the country in which this order will be received, and you are in compliance with all regulations regarding the possession and use of said materials. For US customers this includes but is not limited to those described in the current HHS and USDA Select Agents and Toxins 7CFR Part 331, 9 CFR Part 121, and 42 CFR Part 73.
4. You agree to prevent the distribution of this material to any individual, group, or entity that is not lawfully permitted to possess said material, or whose possession or use may endanger the safety of themselves or others.

Signature:

I have read and accept IDT's terms and conditions

BACK

ADD TO CART