GenSmart[™] Design Tool



GenSmart[™] Design is a free online DNA construct design tool developed by GenScript. It integrates a variety of utilities for vector design, providing researchers with a comprehensive one-stop solution for all their design needs.



Extensive Vectors Choice: • Vector Library: 170+ Ready-to-go Vectors

Vector Design: GenScript's Vectors for Customized Design



Comprehensive Design Tools:Codon Optimization

Reverse Complement Sequence Conversion

GC Content Calculator



Customer-friendly Service Experience:

- Free Online Design & Map Download
- Seamlessly Designs to Orders Conversion

Workflow Overview: Design in 3 steps, order in 5!



Design completed in 3 steps



Step 1: Choose Your Vector to Start Design

- Select and click on "Vector Library" or "Vector Design" tab to browse the vectors we offer.
- Vector Library Tab offers **170+ Ready-to-go Vectors** for your choice (see **Figure 1**). Click on the specific card to check the vector introduction (see **Figure 2**). After selecting a vector, click "Start Design" to the design page.
- Vector Design Tab provides customized vector design options for various applications (see **Figure 3**). Click the

⑦ icon to view vector details. After selecting a vector, click on the vector card to start design.



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60126234	Vector Design	Vector Library	My Design			
	AAV					
	Gene expression plasmid	s				
	Gene expression					
	Tetracycline regulatory g	ene expression plasmids				
	tet-on/Tet-off	Tet responsive transcription factor				
	Cre-loxP regulatory gene	expression plasmids				
	Cre-on	Cre-off	Cre recombinase			
	shRNA plasmids					
	shRNA					
	CRISPR gene editing plas	mids				
	SaCas9 and gRNA co- expression	gRNA (Sa) expression	gRNA (Sp) expression Si	aCas9 expression SpCas9 expression		•

Figure 3: Vector design tab.

For more intricate vector design projects, switch to our Vector Design platform. Here, you'll find GenScript's proprietary vectors and specialized vectors for different applications. Simply click the vector card that aligns with your specific application and begin designing.

Step 2: Start your vector design!

- On this page (see Figure 4), the left part displays the map of the selected vector, while the right part shows the relevant sequence. Click on the https://www.input.org buttons in the map to insert your desired components. Buttons marked with an asterisk * indicate that these components are required.
- You can select components from our database or input a customized sequence as needed. When inputting a customized sequence, you can use all the design tools integrated on this page once you sign in (see **Figure 5**).
- > Codon Optimization: Convert your protein sequence into nucleotides.

- Check Sequence: Detect the synthesis difficulty of the input gene, which will serve as the basis for the gene synthesis quotation.
- View the reverse complementary sequence: Allow you to view the reverse complementary sequence of your input gene for your needs.
- After finishing your design, you can click on the "View ORF" button to view the ORF region in your insert to check if everything is right (see **Figure 6**).
- In the end, click on the "Design Completed" button to move to the next page.



Figure 4: Vector design page.

The left part displays the map of the selected vector, while the right part shows the relevant sequence. You can see the role of each component on the vector by hovering the mouse over the component name.

Click on the buttons in the map to insert your desired components. Buttons marked with an **asterisk** * indicate that these components **are required**.

* OBE Name				×
MY ORF				6/25
* Sequence				
Full length: 606 Position: 606			Status: 🔽	mplex 🌗
1 ATGCGATGCG GGCGACGATG CGGGCGACGA 101 GATGCGGGCG ACGATGCGGG CGACGATGCC 201 CGGGCGACGA TGCGGGCGACGA 301 CGACGATGCG GCCAACGATG CGGGCGACGA 401 GATGCGGGCG ACGATGCGG CGACGATGCC 501 CGGGCGACGA TGCGGGCGAC GATGCGGGCG 601 CGATAA	TGCGGGCGAC GATGCGGGCG A GGCGACGATG CGGGCGACGA T ACGATGCGGG CGACGATGCG G TGCGGCGACGAC GATGCGGGCA GGCGACGATG CGGGCGACGA T ACGATGCGGG CGACGATGCG G	CGATGCGGG CGACGATGCG GGCGACC GCGGGCGAC GATGCGGGGCG ACGATG GCGACGATG CGGGCGACGA TGCGGG CGATGCGGG CGACGATGG GGCGACG GCGGGCGAC GATGCGGGCG ACGATG GCGACGATG CGGGCGACGA TGCGGGG	SATG CGGGCGACGA TGCGGG GGGC GAACGATGCG GGCGAC CCGAC GATGCGGGCG ACGATG GGGC GACGATGCGGCG ACGATG CGGGC GACGATGCG GGCGAC CGGC GATGCGGGCG ACGATG	CGAC GATG CGGG GGAC GATG CGGG
Type: Nucleotide ~				Clear
View the reverse complementary sequence	~	Check Sequence	Codon Op	timization
282			Add	to Vector
GenScript Recombinant A	ntibody in CHO Expression	۹.	🐣 Genscript - 🌐	EN & CONT.
.VV_Gene expression plasmids_Gene exp	pression 🖋	Ba	ck Hide ORF D	Design complet
		Length: 705 Locatio	on: 3952 4656 CC	3 content: 62.70%
		TCAGGTGTCGTGATCTTCTGGTCCCC AGTCCACAGCACTAGAAGACCAGGGG	CACAGACTCAGAGAGAACCCGC STGTCTGAGTCTCTTGGGCG	Ncol Btgi CACCATGGTGAGC GIGGTACCACTCG
CMV enhanc	er		Fspl	Met Val Ser
AmpR	/ promoter 5' LTR (truncated)	AAGGGCGAGGAGGTCATCAAAGAGTT TTCCCGCTCCTCCAGTAGTTTCTCAA	CATGCGCTTCAAGGTGCGCAT AGTACGCGAAGTTCCACGCGTA	GGAGGGCTCCATG CCTCCCGAGGTAC
	HIV-1 Psi	Lys Gly Glu Glu Val Ile Lys Glu Ph	Met Arg Phe Lys Val Arg Me Met Arg Phe Lys Val Arg Me	t Glu Gly Ser Met t Glu Gly Ser Met
pUC ori		Enel AACGGCCACGAGTTCGAGATCGAGGG	SCGAGGGCGAGGGCCGCCCTA	BseSI CGAGGGCACCCAG
	RRE	Ash Gly His Clu Phe Clu IIe Clu Clu	IN GIU GIV GIU GIV Arg Pro Ty	CTCCCGTGGGTC
SV40 poly(Al signal		ASSIGN HIS GIU PREGIU HE GIU G	CGGCCCCCTGCCCTTCGCCTG	GGACATCCIGICC
3 LTR (Delta-U3)	<pre>coppt/cts</pre>	Thr Ala Lys Leu Lys Val Thr Lys G Thr Ala Lys Leu Lys Val Thr Lys G	ly Gly Pro Leu Pro Phe Ala Trp ly Gly Pro Leu Pro Phe Ala Trp	o Asp Ile Leu Ser p Asp Ile Leu Ser
	sEFlα× ✓	CCCCAGTCATGTACGGCTCCAAGG	BaiWI	CATCOCCEPTTAC
		GGGGTCAAGTACATGCCGAGGTTCCC Pro Gin Phe Met Tyr Gly Ser Lys Al	CATGCACTTCGTGGGGGGGGGCT	GTAGGGGGCTAATG
		Pro Gln Phe Met Tyr Gly Ser Lys Al	la Tyr Val Lys His Pro Ala As CAAGTGGGAGCGCGTGATGAA	D IIe Pro Asp Tyr
		TTCTTCGACAGGAAGGGGCTCCCGAA	NGTTCACCCTCGCGCACTACTT	BAAGCTCCTGCCG
		Lys Lys Leo ser Phe Pro Old Oly Ph	Pstl	in the one wash only

Figure 5: Input Sequence Popup.

It has many built-in design tools for your convenience. After modifying your gene name and inserting the sequence, click the **"Add to Vector"** button to insert the sequence into the vector.

Figure 6: After finishing design.

You can click on the **"View ORF"** button to view the ORF region in your insert to check if everything is correct. Additionally, clicking the "Hide ORF" button will hide all translations of the vector. Once you have completed your design, click on the **"Design Completed"** button to proceed to the next page.

Step 3: Vector construction completed

- On this page (see **Figure 7**), you can download your design for free or save it to your account. The production price and lead time of your design's vector will be displayed on the right side. By scrolling down the page, you can view all the detailed information of the vector.
- If you want to convert your design into an order, click on the "Order" button to the next step.



Figure 7: Design completed page.

This page is the end of your design journey. You can download your design for free or save it to your account for review next time.

The price and production time of the product will be shown on the right side. If you want to receive a physical copy of your design, please click the **"Order"** button to seamlessly enter our ordering page.

Step 4: Plasmid Setup and Add-ons

- If you need customized plasmid configurations, please modify the plasmid settings or add add-on services on this page (see **Figure 8**).
- It's worth mentioning that for AAV vectors, we recommend you select the ITR Guarantee service to ensure the integrity of your ITR sequence on the vectors.

GenScript Mode Research Easy	5 Business Days from Gene to Antibody	Q	Genscript → @ EN	& CONTACT US	Figure 9: Discript cotting page
	2 ²⁵	-6 ^{2%}			Figure 6: Plasmid setting page.
Quantity	Supercoil Percentage	Endotoxin Level		Back Order	The default plasmid DNA quantity is 4 µg for high-copy plasmids,
4 µg	V Not Guarantee V	Not Guarantee	~	Gene_20250423Lk4 Summary	but you can add buddled plasmid DNA preparation services to
Cuarantee Services				Service Qty Cost(USD) Basic Cene Synthesis 1 \$79.00	acquire high-quality gram-level plasmid DNA. Select the quantity ,
ITR Guarantee ()	AAV_Gene expression plasmids_Gene expression		Ŷ	Cloning 1 \$248.00 Subtotal \$327.00	supercoil percentage and endotoxin level for your clonal genes
+ Additional Fee			ß	Est. Total (USD) \$327.00 Production Time 10 BD	based on your downstream application requirements.
Delivery Format				1000	Choose the delivery format and form for your plasmid DNA, and you
Tube	96-well Plate	Box		info This price is calculated based on the listing price and does not include any negotiated or discounted rates.	can also customize the buffer and concentration.
Delivery Form				For reference only.	It's worth mentioning that for AAV vectors , we recommend you
Freeze dried	Liquid				select the ITR Guarantee service to ensure the integrity of your ITR
Delivery Buffer	Concentration	Aliquot		S	sequence on the vectors. Good ITR integrity is essential for efficient
					rAAV packaging.

Step 5: Seamlessly place an order or request a quote

- Check the order summary, available coupons and pricing agreement contracts, turnaround time, and estimated cost that showing on the right side of the page (see Figure 9).
- Add new addresses or edit existing ones, by clicking "Management" next to the shipping address and billing address. For the shipping option, click "Edit" to select your preferred choice.
- Once you have everything set up, click "Order Now" to place your order, or if you prefer to receive a detailed quote first, click "Get Quote" to request a quote for your order.

Gene Sy Gene Sy Gene Sy	nthesis	Q	🐣 Genscript 🌐 EN	€ CONTACT US	
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© 0123456789 Ext: ⊖ 1611360529@fakemail.local Shipping Options	Edit	ailJocal	Edit	Coupons Promotion Code Total Discount	> Apply -\$0.00
Ship Via:CenScript's Default Shipping Account No.:	Delivery Preference:Ship o	rder when complete (single shipment)		Shipping Fee TAX Fee Turnaround Time () Est. Total (USD)	\$0.00 \$35.56 8-13 BD \$391.11
TAX/VAT VAT NO 123 gene preview contactProcurement	Comments gene preview.Please leave cor	nment when you have extra requirement	ts.	17125 ²³⁴	0
Back			Get Quote	Order Now	

Figure 9: Available pricing agreement contracts and coupons, shipping address, billing address and shipping options. Select one available contract or coupon. Fill the shipping address and billing address, as well as select the shipping options for your order. You can use the existing payment method, or add new a new payment method on the payment page (see Figure 10). Then, click "Checkout" to place an order. Your order number will be shown on the new page (see Figure 11). You can click "View My Order" to keep track of your ongoing and past orders, or click "Design A New Vector" to get back to the vector-list page.

GenScri	pt FLASH Gene: 4 d	iays delivery	٥	L & Genscript 🔮 EN	& CONTACT US	
Payment						
Credit Card				~	Gene_20250424JdV St	ummary
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Visa Visa		asd test	01/2019 01/2020		Subtotal	\$327.0
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Visa	********6548	duanjunwei	12/2019	*	Contract	>
PO				^	Coupons	5
Add New PO Blanket PO				i	Total Discount	-\$0.0
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Figure 10: Payment. Use existing payment method, or add new a new payment method.

Figure 11: Order and Quotation summary page. Click "View My Order" to keep track of your ongoing and past orders, or click "Design A New Vector" to get back to the vector-list page.