

GeneArt Instant Designer

Quick reference guide

The Invitrogen™ GeneArt™ Services Dashboard provides a single location to engage with all aspects of synthetic biology custom services. It features an intuitive design with access to the Invitrogen™ GeneArt™ Instant Designer tool for creating synthesis projects that can then be used to generate a quote or place an order. The projects can also be saved as a draft for later. In addition, you can access the status of clones and DNA fragments in production, as well as documentation of completed projects. The dashboard also includes easy navigation to other services, such as custom DNA libraries and protein expression.

The GeneArt Instant Designer tool offers a refreshingly simple way to enter, edit, and optimize your gene synthesis projects, and order the gene synthesis products you need. The tool provides the best pricing available based on the complexity of your sequence.

To help you get started with your projects, this quick reference guide will provide you with important tips and highlights regarding some of its features.

1. Start a new project

- Select “Start New Project” for cloned genes or DNA fragments from the dashboard (Figure 1), then select whether you would like to upload a sequence file or enter the sequence manually via copy and paste (Figure 2). A Microsoft™ Excel™ upload template is also available on this screen.
- To copy and paste your sequence, double-click within the table.
- Once sequences are loaded into the pre-import table, select and edit any items with errors (Figure 3)
- Multiple sequences can also be assigned the same configuration settings on the pre-import screen (Figure 3) by selecting the sequences and clicking Configure Selected above the table (continue to step 2 below for this option). Otherwise, click Import and Save when the status of all constructs are green to access comprehensive configuration options for individual sequences (continue to step 3 below for this option).

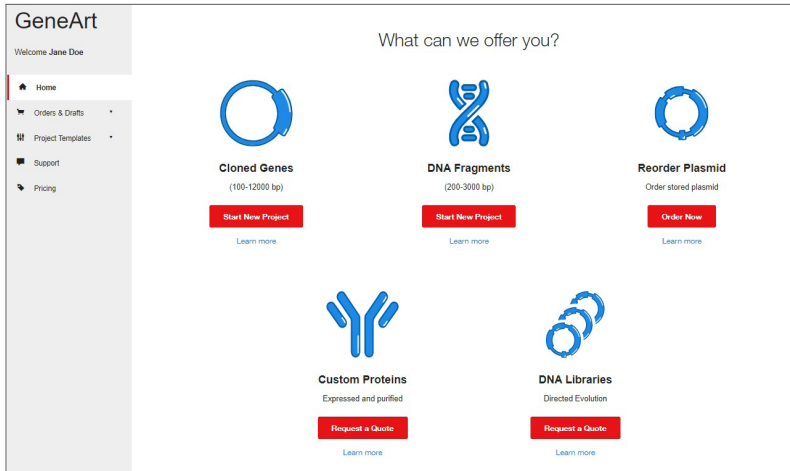


Figure 1. GeneArt Services Dashboard. Easily place orders, access drafts and personal templates, connect with support, and get pricing estimates.

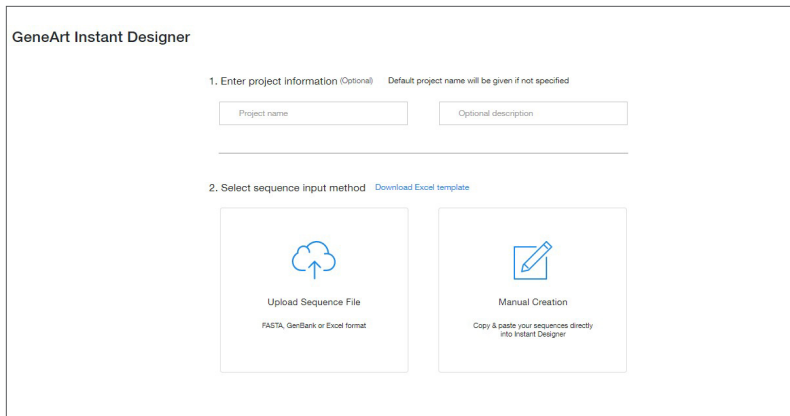


Figure 2. Sequence Input screen of the GeneArt Instant Designer tool. Select your method of input.

Cloned Genes - Instant Designer

Project: Test_Project

Upload Sequence(s) Verify & Configure

7 Sequences (0 Errors)

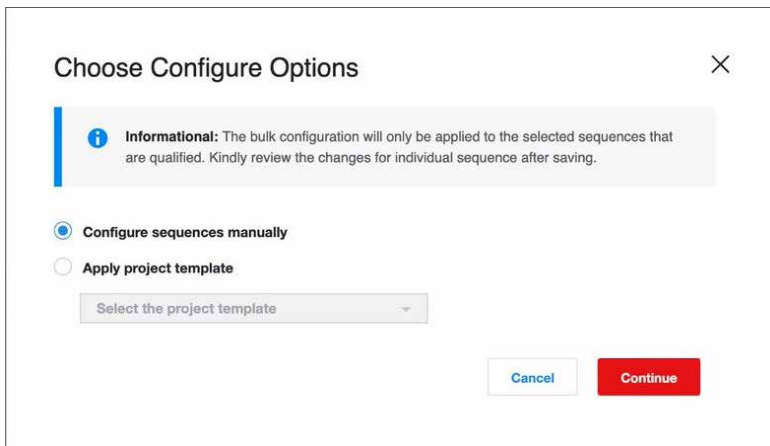
Configure Selected | Delete Selected | Protein sequences must have a host organism selected. You can do this for one or multiple sequences.

Actions	Status	Sequence Name	Vector	Delivery Quantity	Type	Host Organism	Length	DNA/Protein Sequence
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✓	Sequence1	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	1000	GTACTTAGAAATGAGG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✓	Sequence2	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	1009	GTACTTAGAAATGAGG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✓	Sequence3	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	1044	GTACTTAGAAATGAGG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✓	Sequence4	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	1048	GTACTTAGAAATGAGG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✓	Sequence5	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	3000	GGTGCCTGGAGAAATG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✗	1000plusrep...	Standard (pMX)	5µg dried plasmid DNA	DNA	No codon preferences	1048	GTACTTAGAAATGAGG...
<input type="checkbox"/> Delete <input type="checkbox"/> Configure	✗	Sequence7	Standard (pMX)	5µg dried plasmid DNA	PRO...	No codon preferences	181	GTAGCTAGCTAGGATC...

Figure 3. Pre-import screen. After uploading your sequences, the Status column alerts you of any issues with the input name or sequence. Click Configure to address any issues. Import when status of all constructs are green.

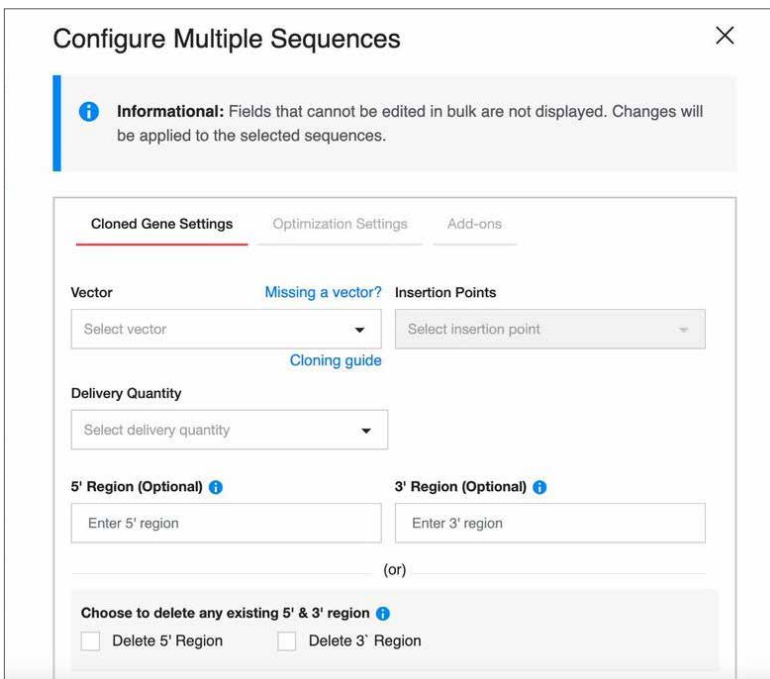
2. Configure multiple sequences at once (option 1)

- Choose to configure your sequences manually or apply an existing template (Figure 4).
- For manual configuration, choose desired insert sequence and vector settings on the first tab (Figure 5). Select the Optimization Settings tab to set the host organism and motifs to avoid. Production speed, additional quality control (QC), and delivery options can be selected on the Add-ons tab.
- The settings selected manually can be saved as a personal template that can be applied to future cloned-gene projects.
- Settings will be applied to all selected sequences that are qualified.



The dialog box is titled "Choose Configure Options" and has a close button (X) in the top right corner. It contains an informational message: "Informational: The bulk configuration will only be applied to the selected sequences that are qualified. Kindly review the changes for individual sequence after saving." Below the message are two radio button options: "Configure sequences manually" (which is selected) and "Apply project template". Under "Apply project template" is a dropdown menu labeled "Select the project template". At the bottom are "Cancel" and "Continue" buttons.

Figure 4. Modifying multiple sequences. Choose settings manually or select an existing personal template.



The dialog box is titled "Configure Multiple Sequences" and has a close button (X) in the top right corner. It contains an informational message: "Informational: Fields that cannot be edited in bulk are not displayed. Changes will be applied to the selected sequences." Below the message are three tabs: "Cloned Gene Settings" (selected), "Optimization Settings", and "Add-ons". Under "Cloned Gene Settings" are sections for "Vector" (with a "Missing a vector?" link), "Insertion Points", "Delivery Quantity", "5' Region (Optional)", and "3' Region (Optional)". There are also checkboxes for "Choose to delete any existing 5' & 3' region" with options for "Delete 5' Region" and "Delete 3' Region".

Figure 5. Manually select settings for multiple sequences. Vector and sequence settings, optimization settings, and add-on options can be applied to multiple sequences.

3. Configure sequences individually (option 2)

- The Review tab (Figure 6; clones only) gives you options to change your cloning vector and/or resistance marker and allows you to add or select cloning sites. These options can be applied to one sequence or to all sequences in the project using the “Apply changes to all sequences” checkbox.
- Added cloning sites are conveniently shown in color.

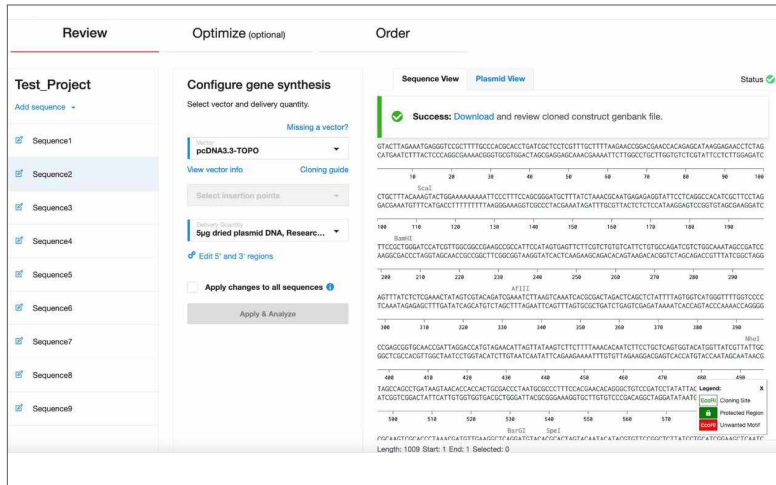


Figure 6. The GeneArt Instant Designer interface provides information in an easy-to-view presentation to review/configure constructs, optimize if desired, and place the order. The Review tab is where you can configure your individual construct to select your resistance marker, your vector, and insertion sites. You can also select delivery scale.

4. Optimize (optional)

- The Host Organism dropdown allows you to optimize a sequence for the species of your expression system (Figure 7). The sequence can be edited by clicking on the sequence and dragging the cursor or clicking on the amino acid symbol to invoke the edit option.
- The open reading frame (ORF) region may be entered manually or selected from a list of detected ranges.

- Cloning sites and other regions or motifs can be protected against DNA sequence changes during the optimization.
- For Invitrogen™ GeneArt™ Strings™ DNA Fragments, repetitive or otherwise complex sequences can be fixed using the minimum number of sequence changes to meet synthesis criteria, or you can use full sequence optimization to increase expression in the chosen host system.
- Optimizing your sequence will reduce the complexity and may improve price and turnaround time.

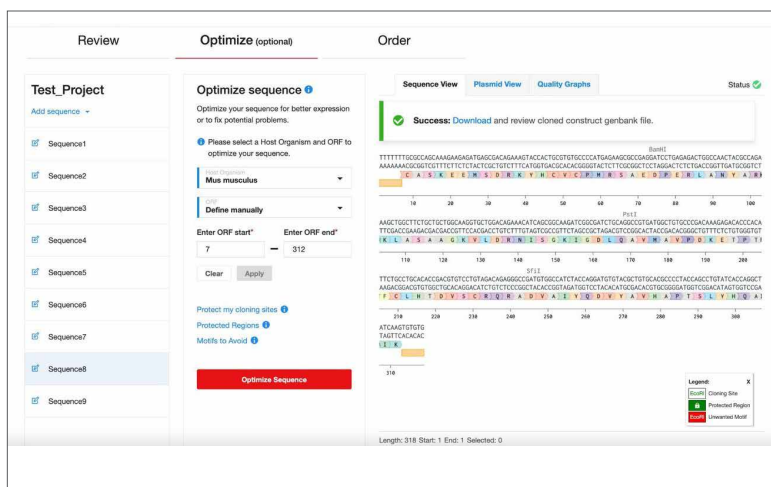


Figure 7. Optimization to the host organism (optional) can improve protein expression.

5. Order

- The Order tab allows you to review your choices before adding them to your cart (Figure 8). Select add-on or delivery services (e.g., express shipping) and review any suggestions.
- Before adding an order to your cart, you can download a summary of all configured items.
- If any sequences were loaded but were not selected for ordering, the GeneArt Instant Designer will alert you that these sequences will be moved to a separate draft project.
- Click “Add to Cart” to see your final price and begin the checkout process or generate a detailed quote.

The screenshot displays the 'Order' tab in the GeneArt Instant Designer. It features three main sections: 'Your Sequence Configuration', 'Your Products', and 'Suggestions'. The 'Your Sequence Configuration' section includes a dropdown for 'Add sequence' and a checkbox for 'Choose Add-on & Fast Delivery for Selected'. The 'Your Products' section lists three sequences with their respective prices and delivery options. The 'Suggestions' section provides links to optimize sequences. A summary table on the right shows the total price as GBP 1,943.10 and includes a 'Download Summary' button and a red 'Add to Cart (9)' button.

Sequence	Length	Price	Delivery	Suggestion
Sequence1 pcDNA3.3-TOPO 5µg dried plasmid DNA, Research Grade	1000 bp	GBP 232	8 business days Choose add-on and fast delivery	Optimize this sequence for better expression
Sequence2 pcDNA3.3-TOPO 5µg dried plasmid DNA, Research Grade	1009 bp	GBP 273.89	8 business days Choose add-on and fast delivery	Optimize this sequence for better expression and faster turnaround time
Sequence3 Standard (pMX) 5µg dried plasmid DNA, Research Grade	1044 bp	GBP 220.07	19 business days Choose add-on and fast delivery	Optimize this sequence for better expression and faster turnaround time

Figure 8. Review ordering options and finalize add-ons. Add to cart.

Note: All sequences and associated prices shown here are for demonstration purposes only. For accurate pricing and production times, please log in with your account.

Learn more at thermofisher.com/genesythesis

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