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Invitrogen GeneArt Gene Synthesis API

Contents

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What is an API?

Three ways to design/order genes

Offline
- Call or email our customer care team

Online
- Use our online design and ordering portals

Online with API
- Set up GeneArt API for programmatic level design and ordering.

- *An API (Application Programming Interface) is a set of rules that let programs talk to each other, exposing data and functionality across the internet in a consistent format.*
- *With GeneArt APIs we enable programs on the customer's side to allow access to services and algorithms through thermofisher.com to automate design and ordering for clones and fragments.*

Who can benefit from GeneArt APIs?

GeneArt APIs

Will Bring Benefit To:

- Customers ordering large amounts of sequences frequently.
- Customers having an automated pipeline to design genes before ordering.
- Third-party developers offering commercial platforms for gene design or open source libraries for bioinformaticians.

What we offer

Design & Diagnostics APIs

- Check sequences against production acceptance criteria and get a detailed description of the found problems
- Optimize sequences for expression in a selected host organism and/or producibility

Upload & Ordering APIs

- Validate a project.
  Get a brief problem summary for the rejected constructs and prices for the accepted ones
- Upload a project.
  Validation is done in the background, only fully accepted projects can be uploaded
- Submit an uploaded project to the cart.
  Checkout is to be done manually on the thermofisher.com website
- Review the status of the uploaded project

Supported products: Strings, High-Q Strings, Gene Syntheses into pMX vectors and direct Gene Synthesis into one of the 9 standard expression vectors.

How to get started

- Each user need be enabled manually. Send a request to geneartapi@thermofisher.com to get instructions.

- To try the API in action use the provided Postman collection with examples for requests.
  - ✓ Install Postman tool (postman.com)
  - ✓ Import “GeneArtApis April2020.postman_collection.json” as a collection.
  - ✓ Select individual requests from the tree on the left.

- To see detailed specifications and to start implementation
  - ✓ Go to Swagger editor (editor.swagger.io)
  - ✓ Upload one of the documentation files: UploadAndOrdering.yaml or DesignAndDiagnosticsBulk.yaml
  - ✓ Automatically generate client code in the language of your choice

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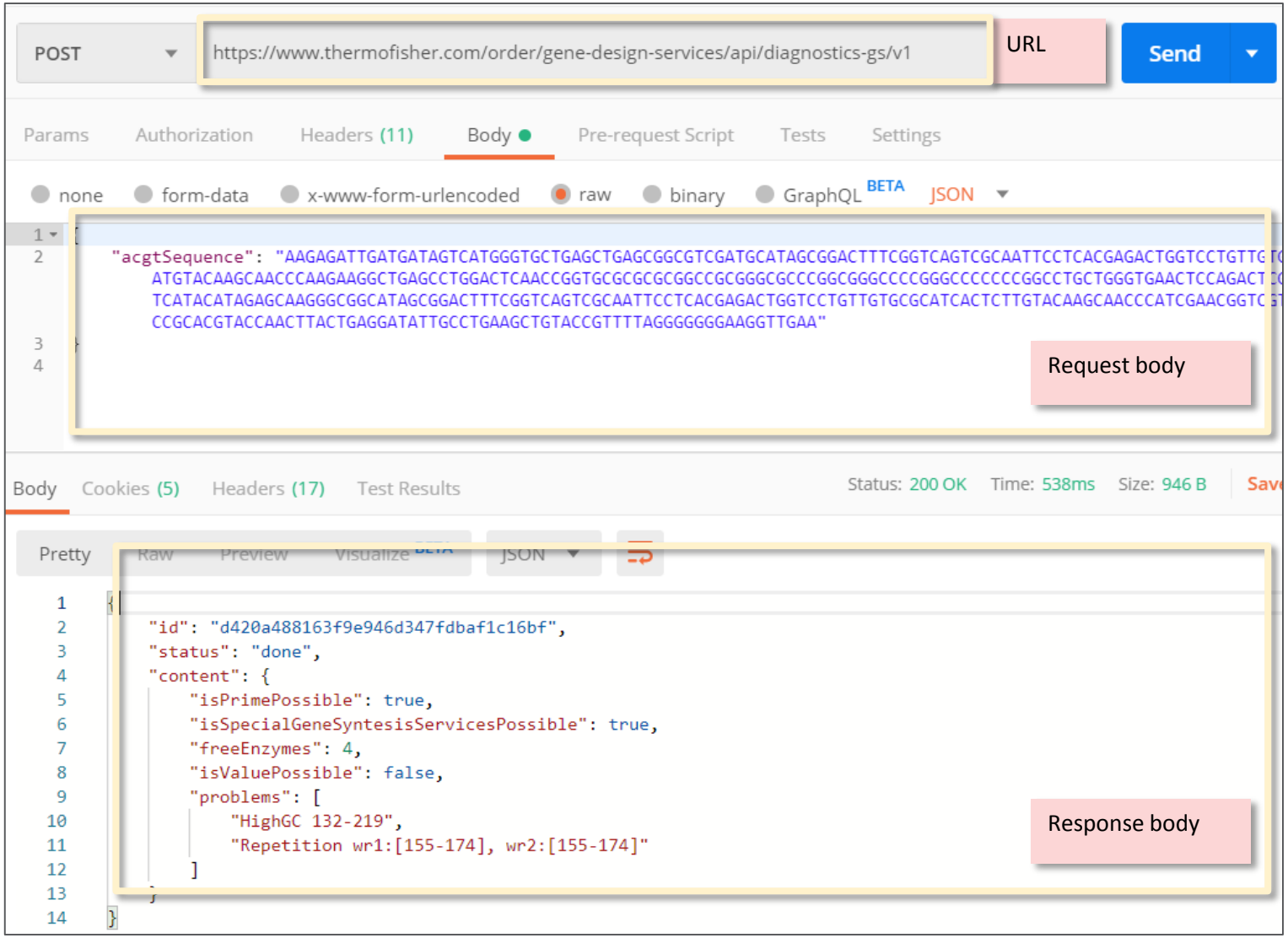
Appendix

Design & Diagnostics API example: diagnostics-gs webservice

- Webservice name is part of the URL
- Data is exchanged in the JSON format, that is a set of key-value pairs.
- In the request body, “acgtSequence” is a key, while “AAGAGATTGA…” is a value, representing a sequence that needs to be checked.
- In the response, is the list of key-value pairs, with “isPrimePossible”: true and “isValuePossible”: false, indicating that this sequence can be ordered as a Prime product, but not as a Value product.
- In addition, is a list of problems, preventing a sequence from being ordered as Value.

More information can be found in *DesignAndDiagnosticsBulk.yaml* file



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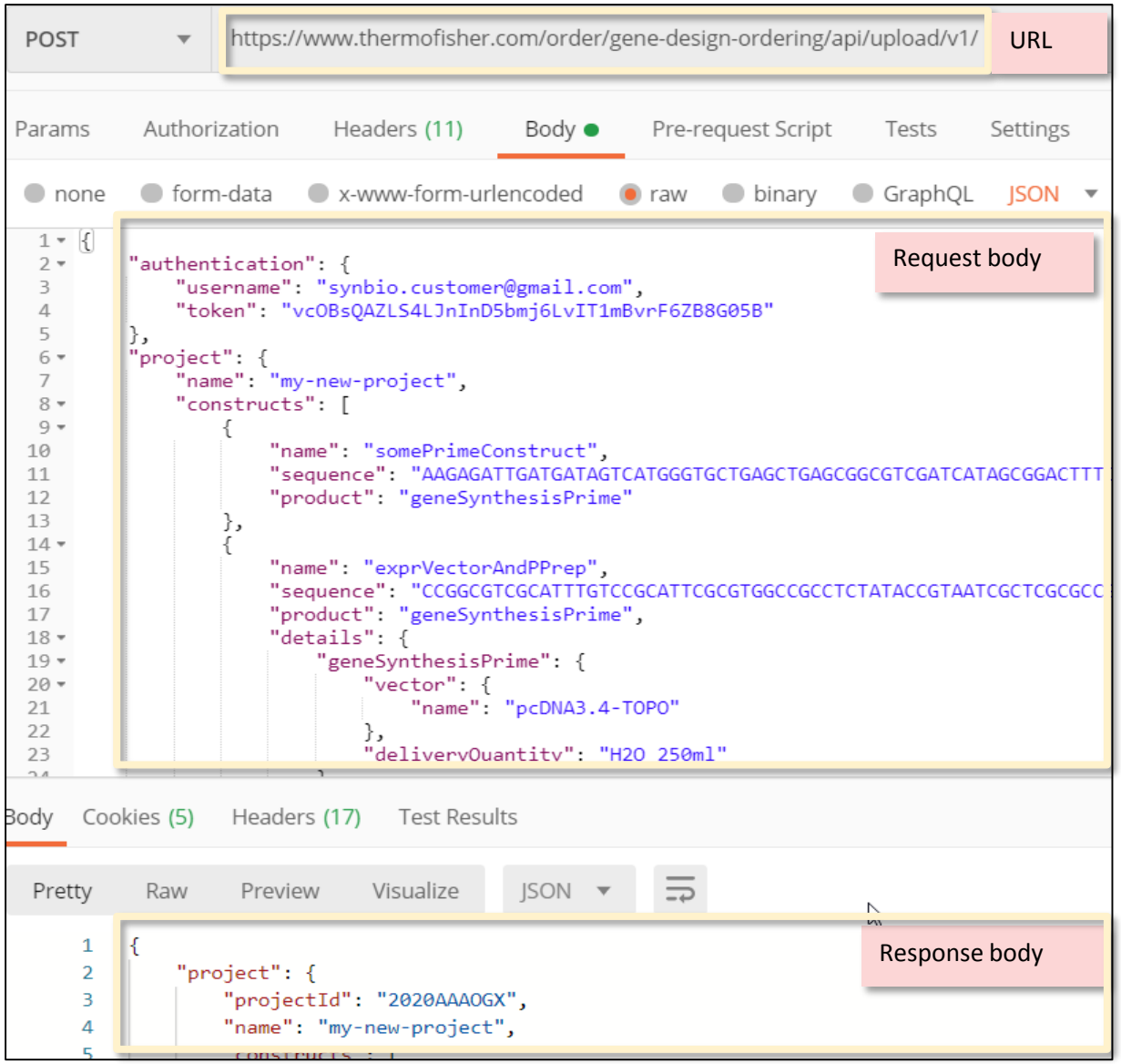
Upload & Ordering API example: construct upload

- Request body consists of the two main parts: Authentication and Project.
- Authentication information consists of the thermofisher.com username and access token provided when access is requested.
  - For the purpose of testing one can use example access data, but no confidential sequences should be uploaded with it.
- Project contains list of constructs, each with name, sequence, product type and (optionally) details.
- I.e. for “geneSynthesisPrime” product details can include vector name, delivery quantity and some other options.
- Most important value in Response is project id, which can be later used to add project to cart or review status.

More information can be found in *UploadAndOrdering.yaml* file.



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