# How to make an EBI Search API call in python

EBI Search’s Restful Web Services API has documentation [here](https://www.ebi.ac.uk/ebisearch/documentation/rest-api). This page is useful for testing queries, but has limited information on how to construct a query. The ebisearch python library is somewhat helpful if you want to get possible fields. The available fields and filters differ for each domain, which is why it’s important to check before you construct the API request.

Step 1: Get the Domain

Check EBI Advanced Search for possible domains [here](https://www.ebi.ac.uk/ebisearch/search/advanced). Click on the domain name, and then check the URL. The domain’s identifier may not match up with its name. For example, Differential Expression Atlas is identified with atlas-genes-differential. Copy the domain from the URL exactly.

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Step 2: Build a query

Check if you want to limit fields to search in. By default, it will search for the term in all entry fields. If you only want to check a certain fields for a term, use Advanced search to build the query, and then click search. Then copy part of the url between query= and &requestfrom. For example if I want to search for ids with the hugo reference brca1 and disease=breast cancer, then disease:breast%20cancer%20AND%20hgnc\_symbol:brc

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Step 3: Decide which fields to return

By default, EBI search will return some form of entry id. Selecting Idlist as the return format will retrieve up to 10,000 entry ids. But depending on the field you will need to select another return format type, and other types will return only 100 entries. Some of the queries that are searchable are also retrievable (but may return empty). [This](https://www.ebi.ac.uk/ebisearch/metadata.ebi?db=atlas-genes) is a page listing the fields for Baseline Expression Atlas genes. In the link, replace atlas-genes with your domain identifier. Then sort fields by retrievable. If Retrievable = true, then the API request can pull them.

In addition you can run the function get\_retrievable\_fields() from the ebisearch python library. If you want to retrieve multiple fields, separate fields by commas but no spaces. Ex: fields=description,tissue,TAXONOMY,disease,organism\_part.

Step 4: Build the API call

EBI’s [documentation page](https://www.ebi.ac.uk/ebisearch/documentation/rest-api) is helpful for creating the API URL needed. Take the domain identifier and the query terms from the previous steps. Scroll down and click to show the search options, and then click domain search.

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Once you’ve selected domain search, pick a response format type. Then copy the domain identifier, query string, and fields into the parameters. Then click send.Graphical user interface

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If successful, it should not only construct an API request URL, but also return a response. You can adjust the parameters as needed, for instance changing the response type. When you’re satisfied, copy the link address into your program.

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In a python program, you can replace parts of the query string with {variable\_name}. For example given two variables:

Hugo\_ref = str

diseaseInput = str

And the test link: <https://www.ebi.ac.uk/ebisearch/ws/rest/atlas-genes-differential?query=disease:breast%20cancer%20AND%20hgnc_symbol:brca1&fields=description,tissue,TAXONOMY&format=csv>

In this url, I could replace brca1 and breast%20cancer with two variables. Just not that inputted spaces need to be replaced with %20 .