

Take a REST from manual searching

Programmatic access to Europe PMC



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Francesco Talo



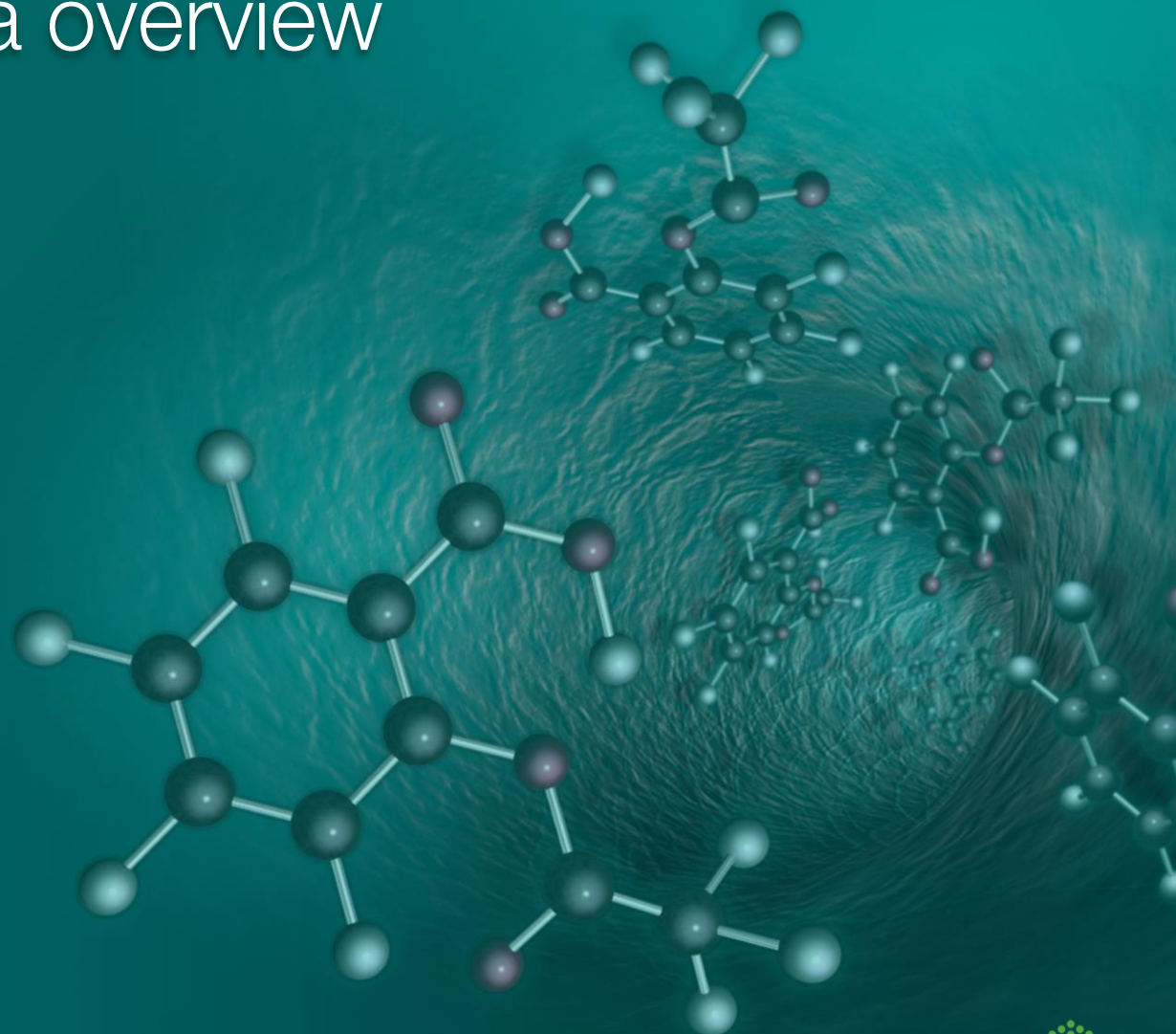
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Contents

- Tools and data overview
- RESTful Web Service
- Using RESTful Web Service: examples
- RESTful Web Service Output
- Literature search: tips and suggestions
- Related resources
- Where to get help
- Q&A

Tools and data overview



Which data is available?

- Over 37 million publications including PubMed records, Agricola records, preprints from various servers, micropublications, clinical guidelines and patents.
- Free full text for more than 6 million publications (3.2 million open access).
- Reference lists for more than 15 million publications.
- Citation counts and a citation network.
- Database cross-references (UniProt, ENA, PDBe, and more).
- Text-mined terms (accession numbers, chemicals, diseases, genes and proteins, GO terms, and organisms).
- Author IDs from the [ORCID organization](https://orcid.org/).

<https://europepmc.org/RestfulWebService#ovie>

Which programmatic tools are available?



Articles RESTful API

Access publications and related information.



Grants RESTful API

Access grant information from Europe PMC funders using the GRIST database.



SOAP web service

Retrieve publication data using this Simple Object Access Protocol (SOAP)-based service.



OAI service

Get access to the metadata of all items in the Europe PMC archive, and full text of a subset of these items.



Annotations API

Access annotations contained in abstracts and open access articles



Bulk downloads

Download all the articles in the Open Access set, plus the metadata of all full-text articles in Europe PMC.

<https://europepmc.org/developers>

Which programmatic tools are available?

Type of Data	Protocol	Grant Award Details	All OA articles (1.1M)	Metadata for all full text articles (3.5M)	All full text articles (3.5M)	Abstracts (PubMed and others, 30.6M)
Article	FTP	✓ ¹	✓	✓	✗	✗
Article	OAI-PMH	✓ ¹	✓	✓	✗	✗
Article	SOAP API	✓ ¹	✓	✓	✗	✓
Article	RESTful API	✓ ¹	✓	✓	✗	✓
Grants	RESTful API	✓ ²	✗	✗	✗	Abstract of grants
Annotations	Annotations API	✓	✗ ³	✗	✗	Annotations inside Abstracts

¹ Some grant details are available in bibliographic record, for example grant ID and agency (where provided).

² The GRant Information SysTem ([GRIST](#)) holds award data as supplied by Europe PMC Funders. This does not include NIHMS grants.

³ The Annotations API will provide annotations on full text articles with a [CC-BY, CC-BY-NC or CC0 license or open access](#)

<https://europepmc.org/developers>

Which programmatic tools are available?

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Article	FTP	✓ ¹	✓	✓	✗	✗
Article	OAI-PMH	✓ ¹	✓	✓	✗	✗
Article	SOAP API	✓ ¹	✓	✓	✗	✓
Article	RESTful API	✓ ¹	✓	✓	✗	✓
Grants	RESTful API	✓ ²	✗	✗	✗	Abstract of grants
Annotations	Annotations API	✓	✗ ³	✗	✗	Annotations inside Abstracts

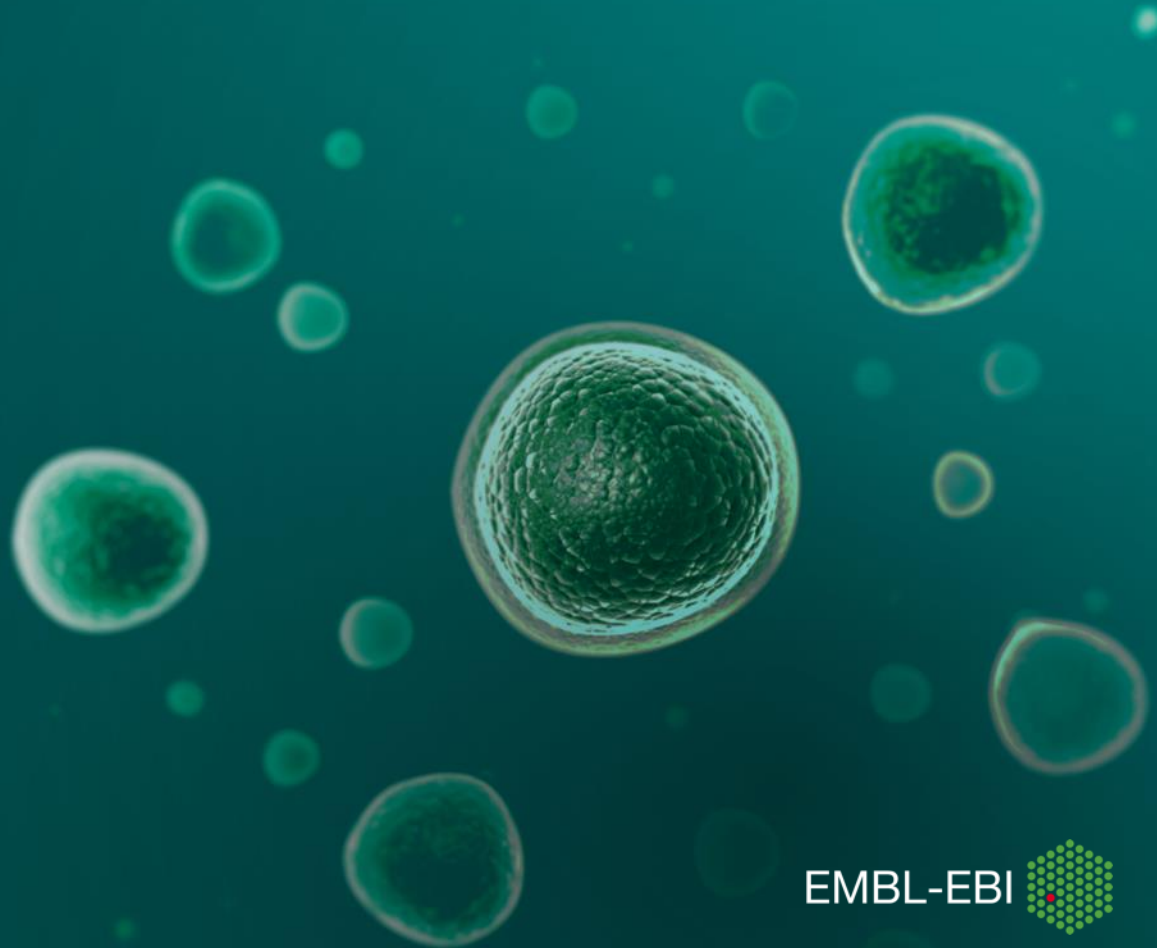
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<https://europepmc.org/developers>

RESTful Web Service



RESTful Web Service

- Europe PMC RESTful Web Service gives you access to all the publications and related information available in the Europe PMC database
- It is organized in search modules (request methods)
- Each module has specific URL syntax and can be combined with additional request parameters

<https://europepmc.org/RestfulWebService>

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<http://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&sort=CITED desc>

<https://europepmc.org/RestfulWebService>



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data provider resource API module parameter 1 parameter 2

<https://europepmc.org/RestfulWebService>

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<http://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&sort=CITED desc>

‘Search for papers on malaria and sort results list by times cited in descending order’

<https://europepmc.org/RestfulWebService>



RESTful Web Service Search Modules

- **search** - search publication database
- **citations** - publications which cite a given publication
- **references** - publications referenced in a given publication
- **databaseLinks** - biological database records that have cited a given publication
- **datalinks** – data-literature links
- **fullTextXML** - the full text in XML format for the **Open Access** publications subset
- **supplementaryFiles** - supplementary files where available for the full text

And more...

<https://europepmc.org/RestfulWebService#meth>

S

RESTful Web Service Search Modules

- Gives access to information in all publications in Europe PMC
- Divided up into many 'modules' → retrieve different information

POST /search**POST**

Use this module to search our publication database. For more information on query syntax, search field combination and other curiosities, see the [Europe PMC help page](#)

GET /{{source}}/{{id}}/citations

Use this module to retrieve a count and list of publications which cite a given publication.

GET /{{source}}/{{id}}/datalinks

Use this module to retrieve data-literature links of the API modules databaseLinks, labsLinks and textMinedTerms consolidated in one web service module and returns them in Scholix format.

GET /{{source}}/{{id}}/references

Use this module to retrieve a count and list of publications referenced in a given publication.

GET /profile

Use this module to obtain a 'profile' of hit counts from our database for various publication types, data sources, and subsets.

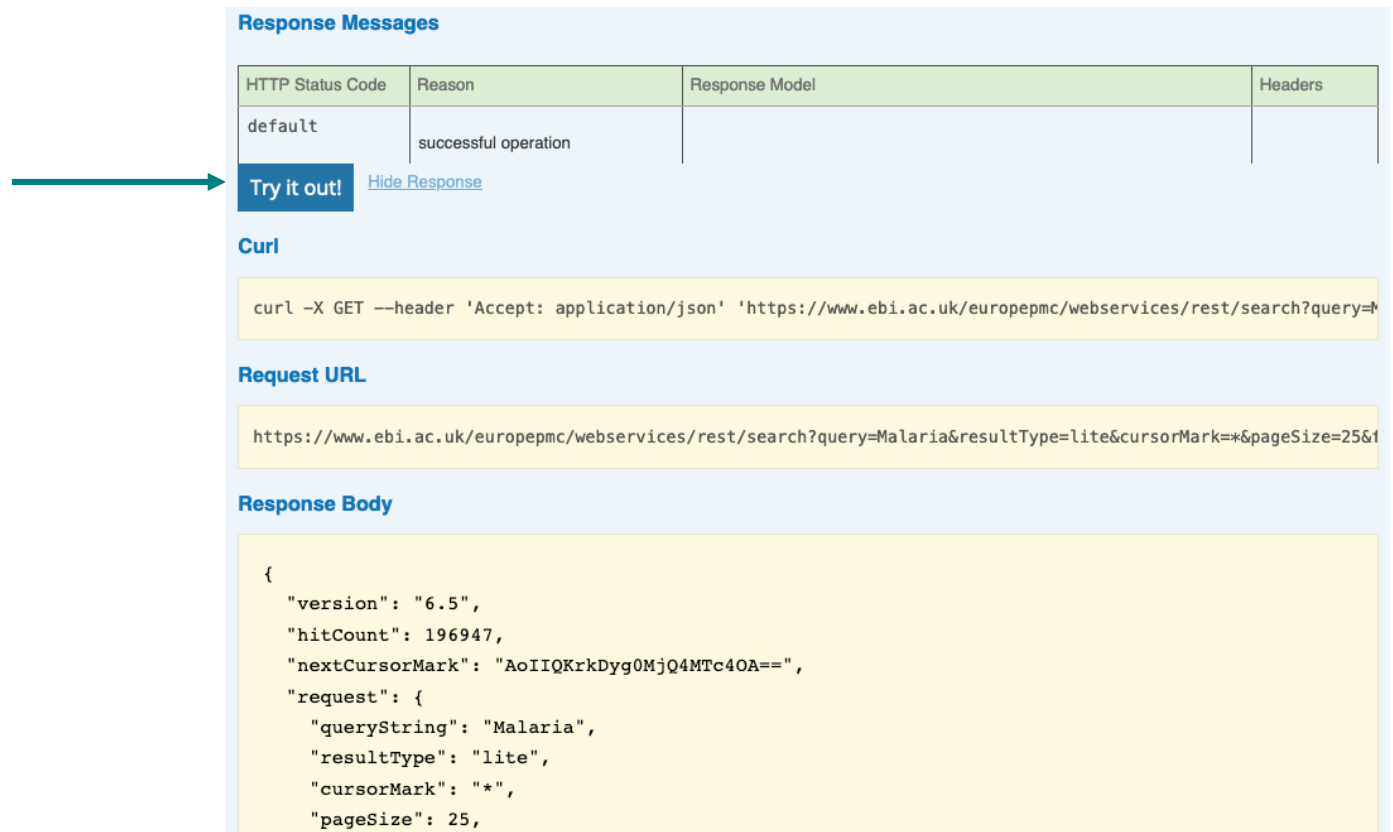
GET /fields

Use this module to see a full list of our indexed search fields, along with the datasets they can be used for.

GET /search

RESTful Web Service Search Modules

- Swagger allows writing documentation on how to use each API module
- You can use the Swagger interface to interactively try to run your queries in a more visual.



The screenshot displays the Swagger interface for a RESTful web service search module. A green arrow points to the 'Try it out!' button. The interface includes a table for response messages, a section for the curl command, a section for the request URL, and a section for the response body.

Response Messages

HTTP Status Code	Reason	Response Model	Headers
default	successful operation		

[Try it out!](#) [Hide Response](#)

Curl

```
curl -X GET --header 'Accept: application/json' 'https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=M'
```

Request URL

```
https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=Malaria&resultType=lite&cursorMark=*&pageSize=25&f
```

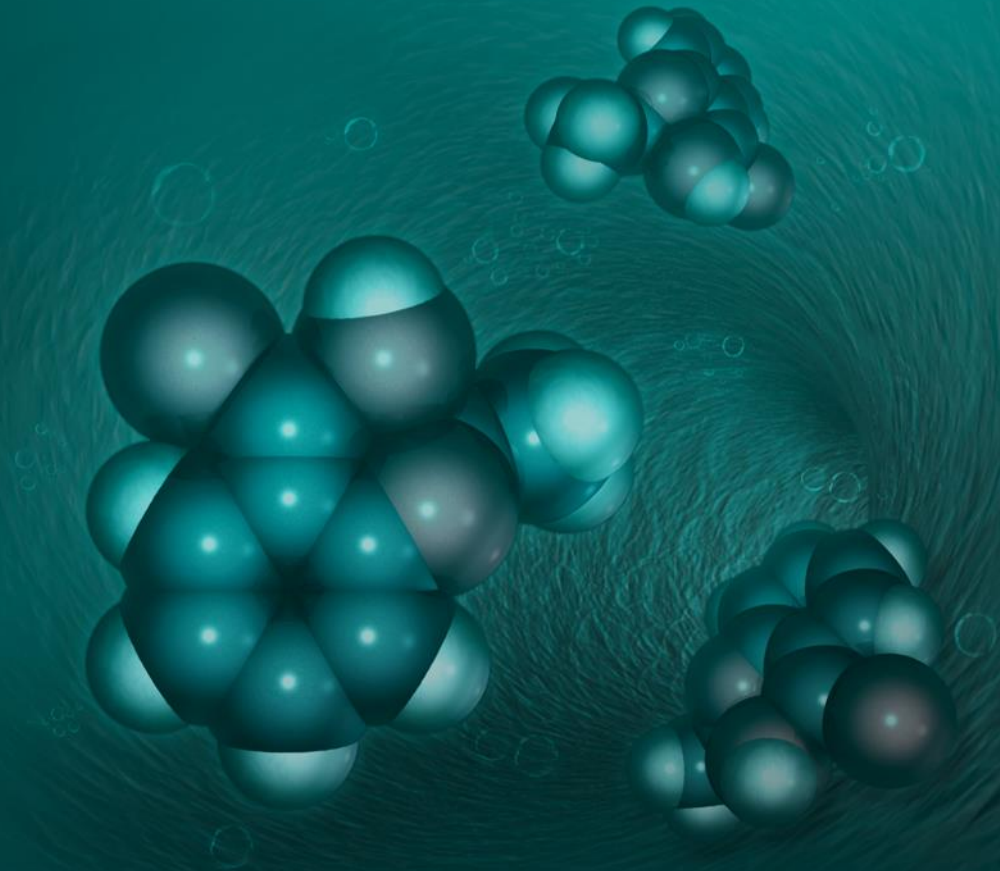
Response Body

```
{
  "version": "6.5",
  "hitCount": 196947,
  "nextCursorMark": "AoIIQKrKdyg0MjQ4MTc4OA==",
  "request": {
    "queryString": "Malaria",
    "resultType": "lite",
    "cursorMark": "*",
    "pageSize": 25,

```

Using RESTful Web Service: example

Topic search



Find publications for a given search term

“I want to find all publications on covid-19”

Find publications for a given search term

GET **/search**

Use this module to search our publication database. For more information on query syntax, search field combination and other curiosities, see the Europe PMC help page

“I want to find all publications on diabetes treatment”

- Use **search** module for your query.
- Construct your URL:

[http://www.ebi.ac.uk/europepmc/webservices/rest/search?query={} \[¶meters\]](http://www.ebi.ac.uk/europepmc/webservices/rest/search?query={} [¶meters])

<http://www.ebi.ac.uk/europepmc/webservices/rest/search?query=covid19>

- Specify parameters
- Construct your URL:

<https://europepmc.org/RestfulWebService#search>

[h](#)

Parameters

Parameter
<code>query</code>
<code>resultType</code>
<code>synonym</code>
<code>cursorMark</code>

Results list

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=covid-19>

```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>111923</hitCount>
  <nextCursorMark>AoIIQkMWyyg0MjUyODgxMQ==</nextCursorMark>
  ▼<request>
    <queryString>covid-19</queryString>
    <resultType>lite</resultType>
    <cursorMark>*</cursorMark>
    <pageSize>25</pageSize>
    <sort/>
    <synonym>>false</synonym>
  </request>
  ▼<resultList>
    ▼<result>
      <id>PMC7561308</id>
      <source>PMC</source>
      <pmcid>PMC7561308</pmcid>
      ▼<fullTextIdList>
        <fullTextId>PMC7561308</fullTextId>
      </fullTextIdList>
      <title>COVID 19</title>
      <authorString>Devers G.</authorString>
      <journalTitle>Droit, Déontologie & Soin</journalTitle>
      <pubYear>2020</pubYear>
      <journalIssn>1629-6583</journalIssn>
      <pubType>book-review; book review</pubType>
      <isOpenAccess>Y</isOpenAccess>
      <inEPMC>Y</inEPMC>
      <inPMC>Y</inPMC>
      <hasPDF>Y</hasPDF>
      <hasBook>N</hasBook>
      <hasSuppl>N</hasSuppl>
      <citedByCount>0</citedByCount>
      <hasReferences>N</hasReferences>
      <hasTextMinedTerms>Y</hasTextMinedTerms>
      <hasDbCrossReferences>N</hasDbCrossReferences>
      <hasLabsLinks>N</hasLabsLinks>
      <hasTMAccessionNumbers>N</hasTMAccessionNumbers>
      <firstIndexDate>2020-10-18</firstIndexDate>
      <firstPublicationDate>2020-10-15</firstPublicationDate>
    </result>
  </resultList>
</responseWrapper>
```

Results list

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=covid-19>

```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>111923</hitCount>
  <nextCursorMark>A011QXmwygMjUyODgxMQ==</nextCursorMark>
▼<request>
  <queryString>covid-19</queryString>
  <resultType>lite</resultType>
  <cursorMark>*</cursorMark>
  <pageSize>25</pageSize>
  <sort/>
  <synonym>false</synonym>
</request>
▼<resultList>
  ▼<result>
    <id>PMC7561308</id>
    <source>PMC</source>
    <pmcid>PMC7561308</pmcid>
    ▼<fullTextIdList>
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    </fullTextIdList>
    <title>COVID 19</title>
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```

Total number of publications found

Results list

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▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
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    </result>
  </resultList>
</responseWrapper>
```

Total number of publications found

Our query

Results list

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=covid-19>

```
<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>111923</hitCount>
  <nextCursorMark>A011QXmwyg0MjUyODgxMQ==</nextCursorMark>
  <request>
    <queryString>covid-19</queryString>
    <resultType>lite</resultType>
    <cursorMark>*</cursorMark>
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```

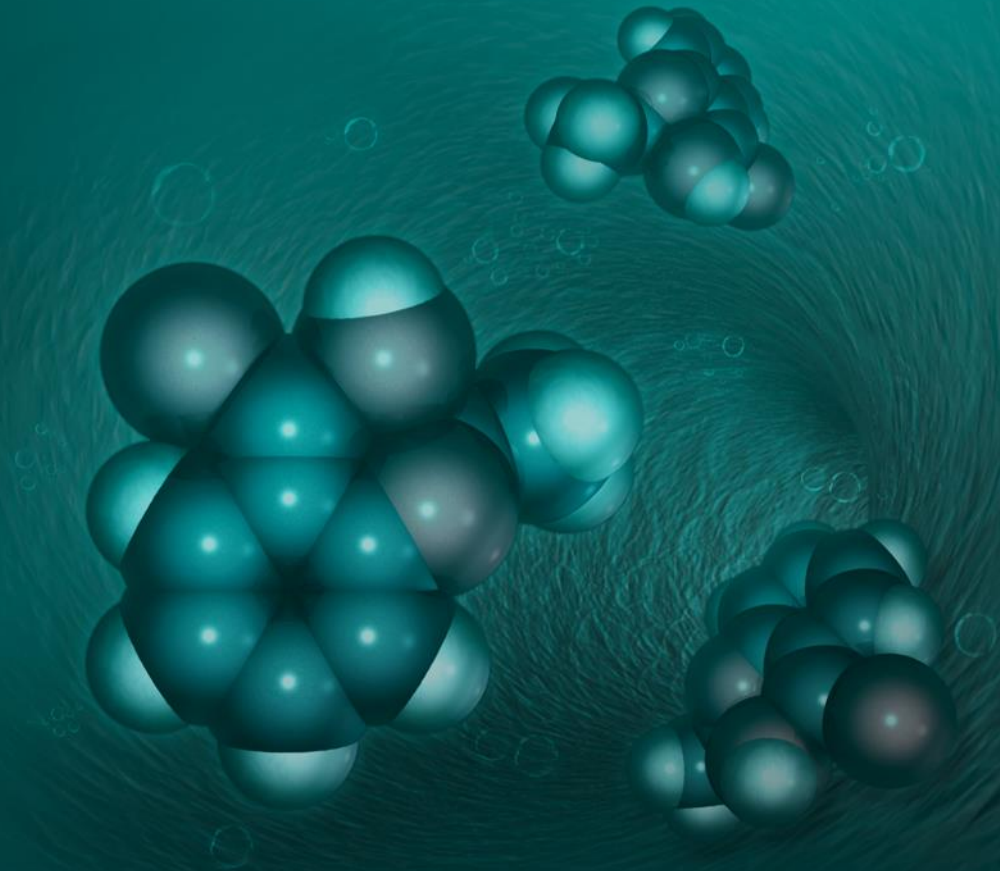
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    <id>PMC7561308</id>
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    <pmcid>PMC7561308</pmcid>
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```

List of results

Using RESTful API with a client



Using RESTful web service with a Python client

```
In [15]: '''For XML processing'''
from lxml import etree
'''For REST requests'''
import requests

def searchEuropePMCclient(query, format='XML'):
    '''Search Europe PMC using the REST service'''
    base_url = 'https://www.ebi.ac.uk/europepmc/webservices/rest/search?'
    payload = {'query': query, 'format': format}
    '''REST request'''
    result = requests.get(base_url, params=payload)
    if result.ok:
        return result.content
    else:
        print('something went wrong, please, check the code!')
```

```
In [16]: searchEuropePMCclient('covid-19')
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```

```
In [16]: searchEuropePMCclient('covid-19')
```

```
Out[16]: b'<?xml version="1.0" encoding="UTF-8" standalone="yes"?><responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="
https://www.europepmc.org/docs" version="6.5"><version>6.5</version><hitCount>111923</hitCount><nextCursorMark>AoIIQkMSUig0MjUyODgxMQ==
</nextCursorMark><request><queryString>covid-19</queryString><resultType>lite</resultType><cursorMark>*</cursorMark><page
Size>25</pageSize><sort></sort><synonym>false</synonym></request><resultList><result><id>PMC7561308</id><source>PMC</sour
ce><pmcid>PMC7561308</pmcid><fullTextIdList><fullTextId>PMC7561308</fullTextId></fullTextIdList><title>COVID 19</title><a
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</inEPMC><inPMC>Y</inPMC><hasPDF>Y</hasPDF><hasBook>N</hasBook><hasSuppl>N</hasSuppl><citedByCount>0</citedByCount><hasRe
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Phenomenon</title><authorString>Akgul A.</authorString><journalTitle>Ann Thorac Surg</journalTitle><pubYear>2020</pubYear
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C><inPMC>Y</inPMC><hasPDF>Y</hasPDF><hasBook>N</hasBook><hasSuppl>N</hasSuppl><citedByCount>0</citedByCount><hasReference
s>N</hasReferences><hasTextMinedTerms>N</hasTextMinedTerms><hasDbCrossReferences>N</hasDbCrossReferences><hasLabsLinks>N
</hasLabsLinks><hasTMAccessionNumbers>N</hasTMAccessionNumbers><firstIndexDate>2020-10-17</firstIndexDate><firstPublicati
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```

Using RESTful Web Service: example

Retrieving citations

Retrieve publications citing a particular paper

[Abstract](#)[Figures \(4\)](#)[Free full text ▶](#)[Citations & impact](#)[Data](#)[Reviews](#)[Similar Articles](#)[Funding](#)

Chemical genetics of *Plasmodium falciparum*.

Guiguemde WA¹, Shelat AA , Bouck D , Duffy S , Crowther GJ , Davis PH, Smithson DC, Connelly M, Clark J, Zhu F, Jiménez-Díaz MB, Martínez MS, Wilson EB, Tripathi AK, Gut J, Sharlow ER, Bathurst I, El Mazouni F, Fowble JW, Forquer I ... [Show all 35] ... Guy RK 

Author information ▶

Nature, 01 May 2010, 465(7296):311-315

DOI: [10.1038/nature09099](https://doi.org/10.1038/nature09099) PMID: 20485428 PMCID: PMC2874979

Free to read & use 

 A comment on this article appears in "Antimalarial drugs: A treasure trove of potential antimalarials." *Nat Rev Drug Discov*. 2010 Jul;9(7):516-7.

 A comment on this article appears in "Drug discovery: Priming the antimalarial pipeline." *Nature*. 2010 May 20;465(7296):297-8.

Share this article    

Abstract

Malaria caused by *Plasmodium falciparum* is a disease that is responsible for 880,000 deaths per year worldwide. Vaccine development has proved difficult and resistance has emerged for most antimalarial drugs. To discover new antimalarial chemotypes, we have used a phenotypic forward chemical genetic approach to assay 309,474 chemicals. Here we disclose structures and biological activity of the entire library-many of which showed potent in vitro activity against drug-resistant *P. falciparum* strains-and detailed profiling of 172 representative candidates. A reverse chemical genetic study identified 19 new inhibitors of 4 validated drug targets and 15 novel binders among 61 malarial proteins. Phylochemogenetic profiling in several organisms revealed similarities between *Toxoplasma gondii* and mammalian cell lines and dissimilarities between *P. falciparum* and related protozoans. One exemplar compound displayed efficacy in a murine model. Our findings provide the scientific community with new starting

[Annotations \(155\)](#)[Get citation](#)[Open PDF](#)[Claim to ORCID](#)

Retrieve publications citing a particular paper

Citations & impact

Impact metrics

288

Article citations
[Jump to Citations](#)

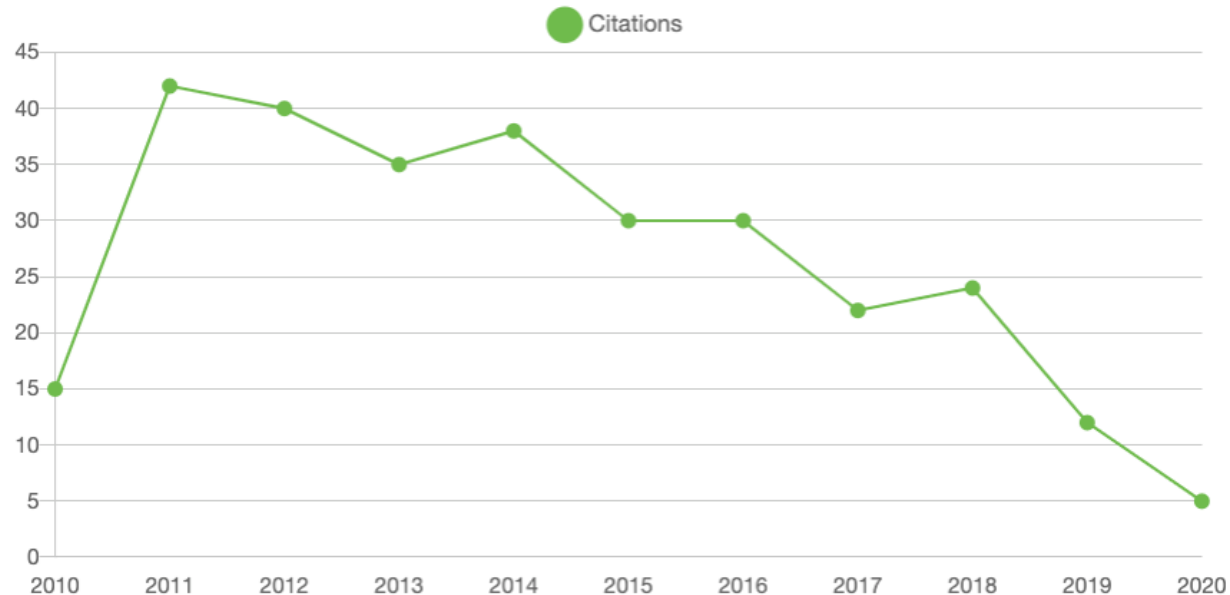
10

Data citations
[Jump to Data](#)

2

Recommendations
[Jump to Reviews](#)

Citations of article over time



Retrieve publications citing a particular paper

GET

/ {source} / {id} / citations

“I want to find all publications, which have cited this work”

- Use **citations** module for your query.
- Construct your URL:
[http://www.ebi.ac.uk/europepmc/webservices/rest/src/ext_id/citations/\[parameters\]](http://www.ebi.ac.uk/europepmc/webservices/rest/src/ext_id/citations/[parameters])
- You need to specify the source (src) and the publication's external ID (ext_id) for your query. Those parameters are obligatory.

<https://europepmc.org/RestfulWebService#cites>

Parameters

Parameter

id

source

page

pageSize

Retrieve publications citing a particular paper

- The **src** is a three letter code for the data source. Those include:
 - MED = biomedical citations from [PubMed](#) and [MEDLINE](#)
 - PMC = full-text biomedical publications from [PubMed Central](#)
 - PPR = Preprints from various preprints servers and open research platforms
 - PAT = biomedical patents from the [European Patent Office](#)
 - AGR = agricultural citations from the [AGRICOLA database](#)
 - CBA = citations from the [Chinese Biological Abstract journal](#)
 - ETH = EthOs PhD theses from the [British Library](#)
- Full list of data sources is available in the Europe PMC RESTful web service description (see link below) or in the [Reference Guide](#).

<https://europepmc.org/RestfulWebService#cites>

Retrieve publications citing a particular paper

- For the publication of interest you can find the **src** and the **ext_id** in the results returned by the web service search module:

```
▼<result>  
  <id>20485428</id>  
  <source>MED</source>  
  <pmid>20485428</pmid>  
  <pmcid>PMC2874979</pmcid>  
  ▼<fullTextIdList>  
    <fullTextId>PMC2874979</fullTextId>  
  </fullTextIdList>  
  <doi>10.1038/nature09099</doi>  
  <title>Chemical genetics of Plasmodium falciparum.</title>
```

- The **src** and the **ext_id** can also be found using the Europe PMC web search interface:

Nature, 465(7296):311-315, 01 May 2010

Cited by: [293 articles](#) | [PMID: 20485428](#) | [PMCID: PMC2874979](#)

[+ Add to export list](#)

Free to read & use

<https://europepmc.org/RestfulWebService#cites>

Retrieve publications citing a particular paper

“I want to find all publications, which have cited this work”

- Construct your URL:

<https://www.ebi.ac.uk/europepmc/webservices/rest/MED/20485428/citations>

GET	/{source}/{id}/citations
Parameters	
Parameter	Value
id	20485428
source	MED ▾

<https://europepmc.org/RestfulWebService#cites>

Results list

```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>288</hitCount>
  ▼<request>
    <id>20485428</id>
    <source>MED</source>
    <offset>0</offset>
    <pageSize>25</pageSize>
  </request>
  ▼<citationList>
    ▼<citation>
      <id>32403408</id>
      <source>MED</source>
      <citationType>research-article; journal article</citationType>
      <title>Predicting Drug Resistance Using Deep Mutational Scanning.</title>
      <authorString>Pines G, Fankhauser RG, Eckert CA.</authorString>
      <journalAbbreviation>Molecules</journalAbbreviation>
      <pubYear>2020</pubYear>
      <volume>25</volume>
      <issue>9</issue>
      <citedByCount>0</citedByCount>
    </citation>
  </citationList>
</responseWrapper>
```

Results list

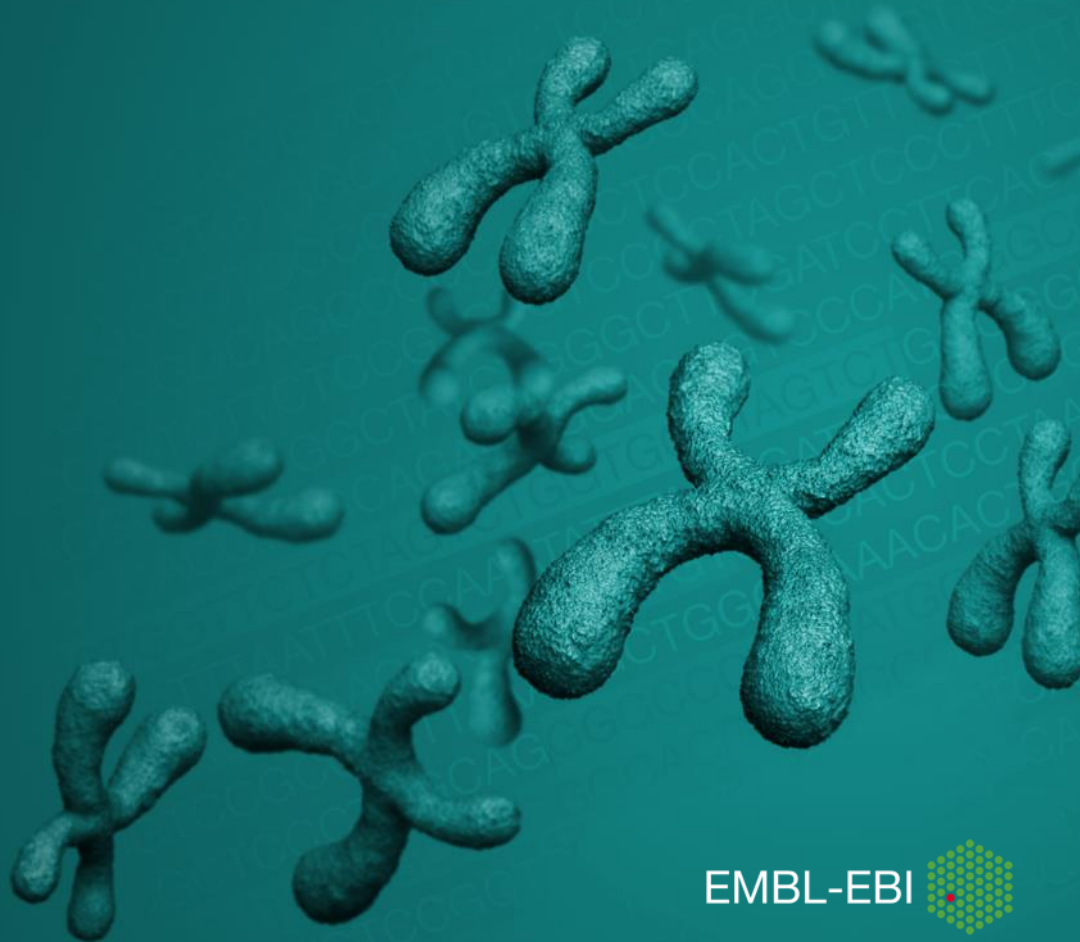
```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>288</hitCount>
  ▼<request>
    <id>20485428</id>
    <source>MED</source>
    <offset>0</offset>
    <pageSize>25</pageSize>
  </request>
  ▼<citationList>
    ▼<citation>
      <id>32403408</id>
      <source>MED</source>
      <citationType>research-article; journal article</citationType>
      <title>Predicting Drug Resistance Using Deep Mutational Scanning.</title>
      <authorString>Pines G, Fankhauser RG, Eckert CA.</authorString>
      <journalAbbreviation>Molecules</journalAbbreviation>
      <pubYear>2020</pubYear>
      <volume>25</volume>
      <issue>9</issue>
      <citedByCount>0</citedByCount>
    </citation>
  </citationList>
</responseWrapper>
```

Total number of citations found

The publication of interest

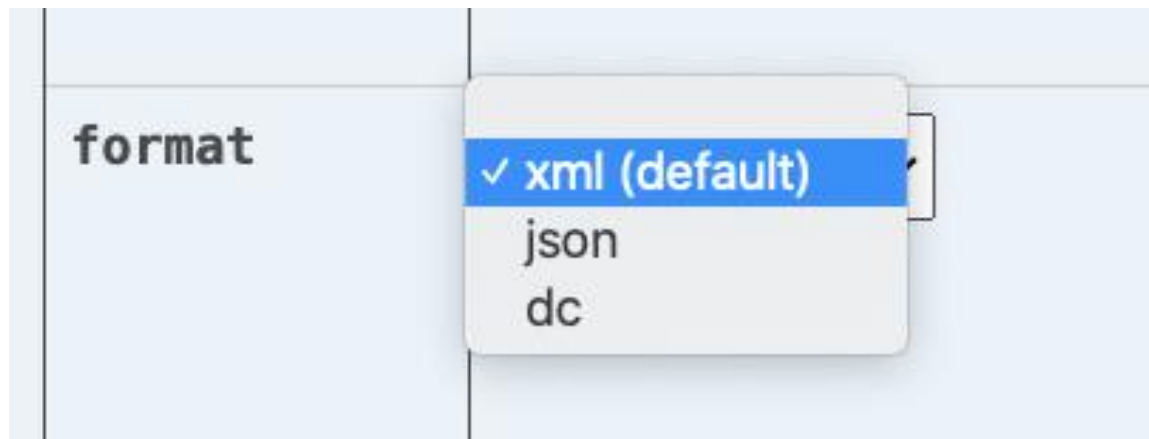
List of resulting citations

RESTful Web Service Output



RESTful Web Service Output

- The output response formats can be **XML** (default) or **JSON**.
- In the case of the 'search' module a **Dublin Core** format is also available.



RESTful Web Service Output

- The result type can either be **lite** (default), **idlist**, or **core**:
 - **lite** returns key metadata for the given search terms;
 - **core** returns full metadata for a given publication ID, including abstract, full text links, and MeSH terms;
 - **idlist** returns a list of IDs and sources for the given search terms.
- The result type parameter determines the fields returned by XML and JSON formats, but it has no effect on the DC format.



RESTful Web Service Output

- For pagination of the result list use the **cursorMark** parameter. For the first request you can omit the parameter, and use it for every following page.

cursorMark	*
-------------------	--------------------------------

- Find the next cursor mark on the current results page:
<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria>

```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>197037</hitCount>
  <nextCursorMark>AoIIQKsQtyg0MjQ5NDc4NA==</nextCursorMark>
▼<request>
  <queryString>malaria</queryString>
```

- Use this parameter value to construct the URL for the next results page:

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&cursorMark=AoIIQKsQtyg0MjQ5NDc4NA==>

RESTful Web Service Output

- **PageSize** parameter allows you to specify the number of articles you wish to retrieve in each page. The default value is 25, the maximum number of results per page is 1000:

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&pageSize=200>

pageSize	200

RESTful Web Service Output

- The RESTful search results are sorted by relevance (default), with the most relevant result being presented first in the list.
- For the search module you can specify the **sort field** (publication date **P_PDATE_D**, citation count **CITED**, first author **AUTH_FIRST**, etc.) and **sort order** (ascending **asc** or descending **desc**):

https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&sort=P_PDATE_D asc

*display oldest publications first

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&sort=CITED asc>

https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=malaria&sort=AUTH_FIRST desc

*sort publications by the last name of the first author from Z to A

sort	CITED asc
-------------	--

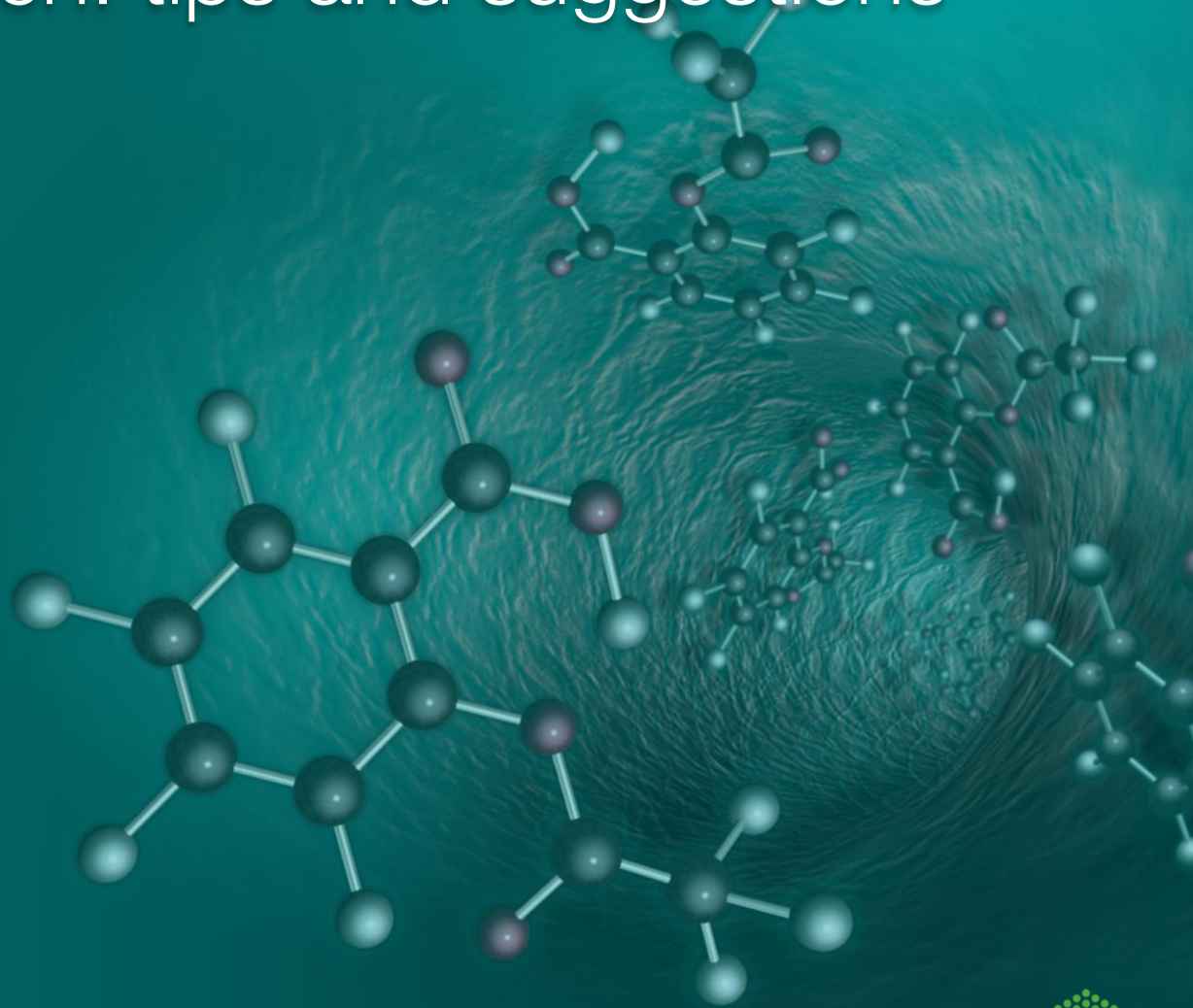
<https://europepmc.org/RestfulWebService#sort>

RESTful Web Service Output

```
▼<responseWrapper xmlns:slx="http://www.scholix.org" xmlns:epmc="https://www.europepmc.org/data">
  <script/>
  <version>6.5</version>
  <hitCount>111908</hitCount>
  <nextCursorMark>AoIIQkLddCg0MjQ3NzYwOA==</nextCursorMark>
▼<request>
  <queryString>covid-19</queryString>
  <resultType>lite</resultType>
  <cursorMark>*</cursorMark>
  <pageSize>25</pageSize>
  <sort/>
  <synonym>>false</synonym>
</request>
▼<resultList>
  ▼<result>
    <id>PMC7561308</id>
    <source>PMC</source>
    <pmcid>PMC7561308</pmcid>
    ▼<fullTextIdList>
      <fullTextId>PMC7561308</fullTextId>
    </fullTextIdList>
    <title>COVID 19</title>
```

Output parameters

Literature search: tips and suggestions



Tip: using exact matches and synonyms

- To get an exact match use enclosing speech marks:
[https://www.ebi.ac.uk/europepmc/webservices/rest/search?query="antimalarial compound"](https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=)
- You can expand your query using MeSH terminology and the UniProt synonyms list. For synonym search the default parameter is off ('false'). To include synonyms in the search set the parameter value to 'true', 'Y' or 'YES':
<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=aspirin&synonym=YES>
* you will get results mentioning 'aspirin' as well as 'salicylic acid'



A screenshot of a web form with a light blue background. On the left, there is a label 'synonym' in bold black text. To its right is a dropdown menu. The menu is open, showing a list of options: 'TRUE', 'Y', '✓ YES' (which is highlighted with a blue background), 'FALSE', 'N', and 'NO'. The '✓ YES' option has a small checkmark to its left.

<https://europepmc.org/RestfulWebService#search>

[h](#)

Tip: searching in specific fields

- Use fielded search to specify fields like abstract:
<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=abstract:malaria>

query	abstract:malaria
--------------	-------------------------

- For a list of available search fields see our reference guide:
https://europepmc.org/docs/EBI_Europe_PMC_Web_Service_Reference.pdf

or use the fields module:

<http://www.ebi.ac.uk/europepmc/webservices/rest/fields>

<https://europepmc.org/RestfulWebService#search>

[h](#)

Example using R europepmc package

Set COVID-19 query

```
q_epmc <- '((TITLE:"COVID 19" OR TITLE:"SARS CoV 2")  
OR (ABSTRACT:"COVID 19" OR ABSTRACT:"SARS CoV 2")) AND (SRC:PPR)'
```

Search preprints: SRC:PPR

Search fields:

TITLE:"COVID 19" OR TITLE:"SARS CoV 2" OR
ABSTRACT:"COVID 19" OR ABSTRACT:"SARS CoV 2"

Use R europepmc package to query the Europe PMC API

```
data <- epmc_search(query = q_epmc,  
  limit = 99999999,  
  output = "raw")
```

Tidy results, add first publication week and count

Extract firstPublicationDate

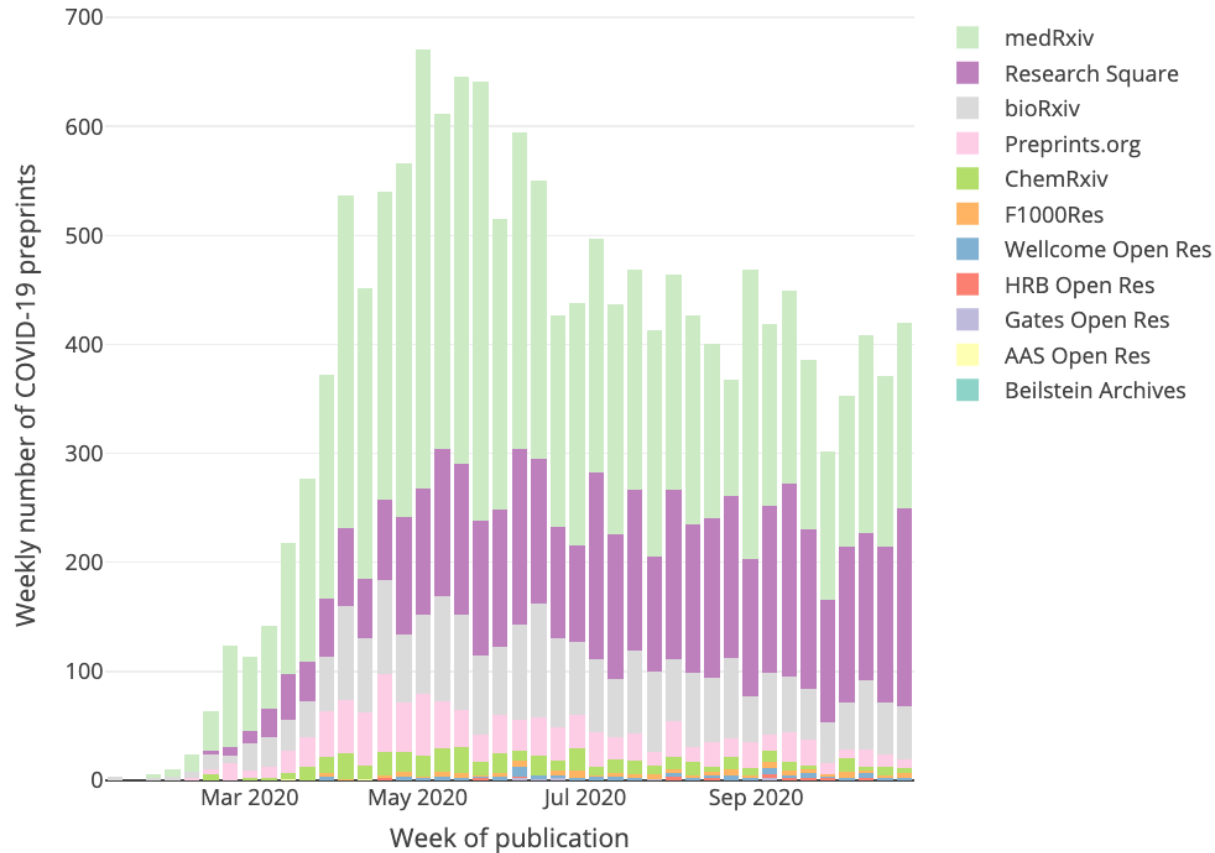
Extract preprint repository

```
tidy <- data %>% {  
  tibble(  
    id = map_chr(., "id"),  
    resultPublicationDate = as_date(map_chr(., "firstPublicationDate")),  
    details = map(., "bookOrReportDetails"),  
    repository = map_chr(details, "publisher")  
  )  
} %>% mutate(firstPublicationWeek = floor_date(resultPublicationDate, "week")) %>%  
filter(firstPublicationWeek >= "2020-01-01",  
  firstPublicationWeek < floor_date(Sys.Date(), "week")) %>%  
count(firstPublicationWeek, repository) %>%  
ungroup()
```

<https://bit.ly/3oPSKaM>

Example using R europepmc package

- List of results used to get distribution graph of COVID-19 preprints over time



<https://bit.ly/3oPSKaM>

Tip: author search

“I want to find all publications from Ewan Birney”

- Use AUTH field for your search query to search for a surname and (optionally) initial(s) in publication author lists:
[https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:"Birney"](https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:)
- Find most cited papers with the sort function:
[https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:"Birney"&sort=CITED_desc](https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:)
- Find most recent publications with the sort function:
[https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:"Birney"&sort=P_PDATE_D_desc](https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTH:)

Tip: exact author search using ORCID



“I want to find all publications from Ewan Birney”

- For authors with an ORCID record you can use their ORCID instead of the name to search for publications.
- How to find the author's ORCID ID?

Suggested authors matching "AUTH:Birney E" with an ORCID 

 **Ewan Birney**
EMBL-EBI

278
Publications

78,464
Citations

[View profile](#)

Results for Ewan Birney

 [View profile](#)

 0000-0001-8314-8497
EMBL-EBI

278
Publications

78,464
Citations

<https://europepmc.org/search?query=AUTH%3A%22Birney%20E%22>

Tip: exact author search using ORCID



“I want to find all publications from Ewan Birney”

- Construct the URL:

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=“AUTHORID:0000-0001-8314-8497”>

- Tip: find papers with an associated ORCID by specifying AUTHORID_TYPE as ORCID:

https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=AUTHORID_TYPE:ORCID

Tip: exact author search using ORCID



“I want to find all publications from Ewan Birney”

- ORCIDs associated with a paper are listed at the bottom of Author information field on the article page on Europe PMC.

[Abstract](#)

[Figures \(24\)](#)

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[Citations & impact](#)

[Data](#)

[Reviews](#)

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[Funding](#)

The human leukemia virus HTLV-1 alters the structure and transcription of host chromatin in cis.

Melamed A¹ , Yaguchi H¹ , Miura M¹ , Witkover A¹, Fitzgerald TW² , Birney E² , Bangham CR¹ 

Author information ▼

Affiliations

1. Division of Infectious Diseases, Imperial College London, London, United Kingdom.
2. The European Bioinformatics Institute (EMBL-EBI), Cambridge, United Kingdom.

ORCIDs linked to this article

- Melamed A,  0000-0002-7312-3138
- Yaguchi H,  0000-0002-6184-0033
- Miura M,  0000-0002-6943-3782, Kyoto University
- Fitzgerald TW,  0000-0002-2370-8496, European Bioinformatics Institute
- Birney E,  0000-0001-8314-8497, EMBL-EBI
- Bangham CR,  0000-0003-2624-3599, Imperial College London

Elife, 26 Jun 2018, 7

DOI: 10.7554/elifesciences.36245 PMID: 29941091 PMCID: PMC6019074

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 [Annotations \(662\)](#)

 [Get citation](#)

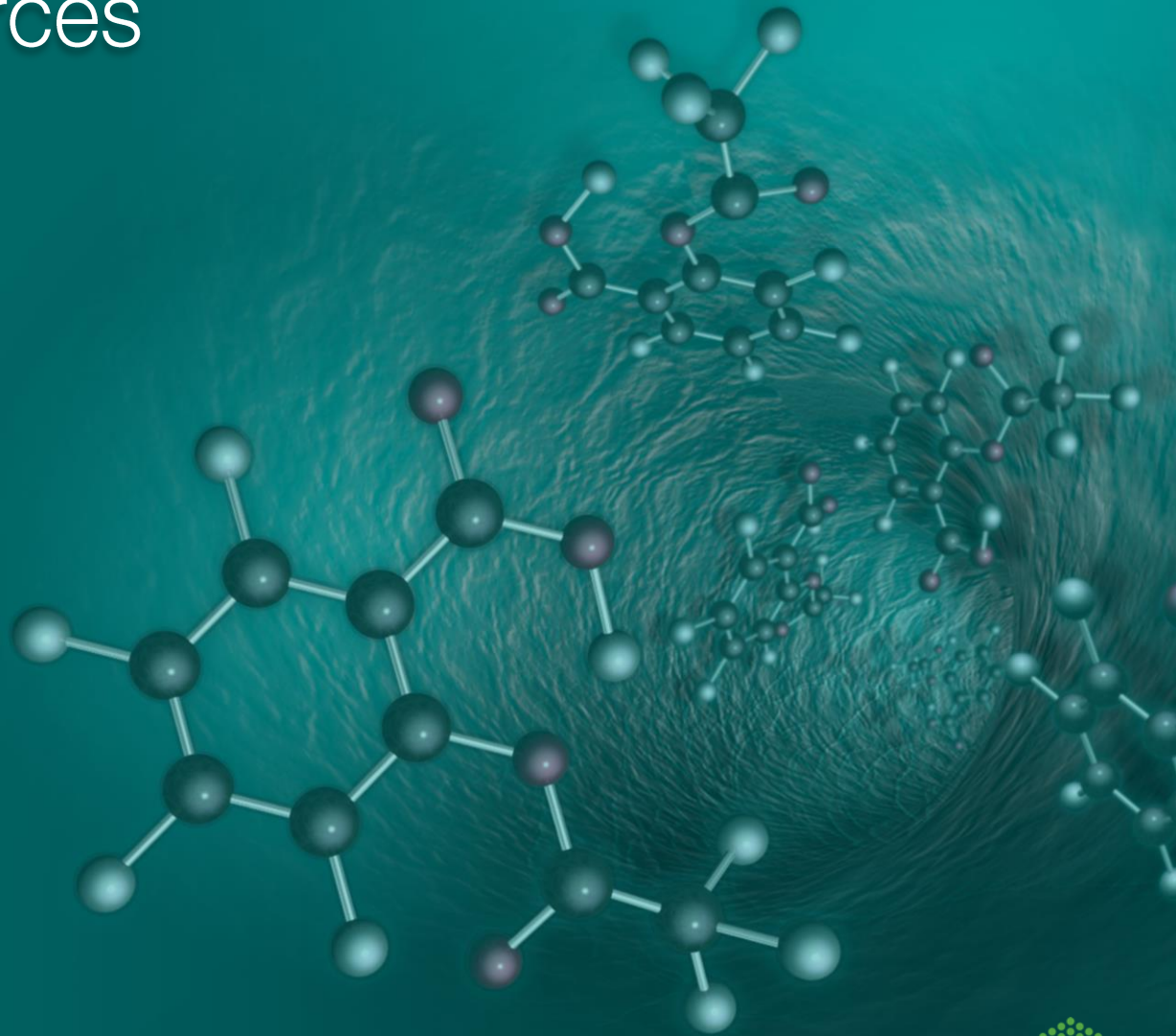
 [Open PDF](#)

 [Claim to ORCID](#)

5 authors

2 authors

Related resources



Documentation

- Detailed information about the Europe PMC RESTful web service:
<https://europepmc.org/RestfulWebService>
- The detailed developer-friendly web service guide:
https://europepmc.org/docs/EBI_Europe_PMC_Web_Service_Reference.pdf

Releases

- To be contacted about Web Service related news and releases sign up to a Google group: <https://groups.google.com/a/ebi.ac.uk/forum,webervices>



nc-

...or supply your email address in the 'Email' parameters of the RESTful modules:

<https://www.ebi.ac.uk/europepmc/webservices/rest/search?query=p53&email=dayane@ebi.com>

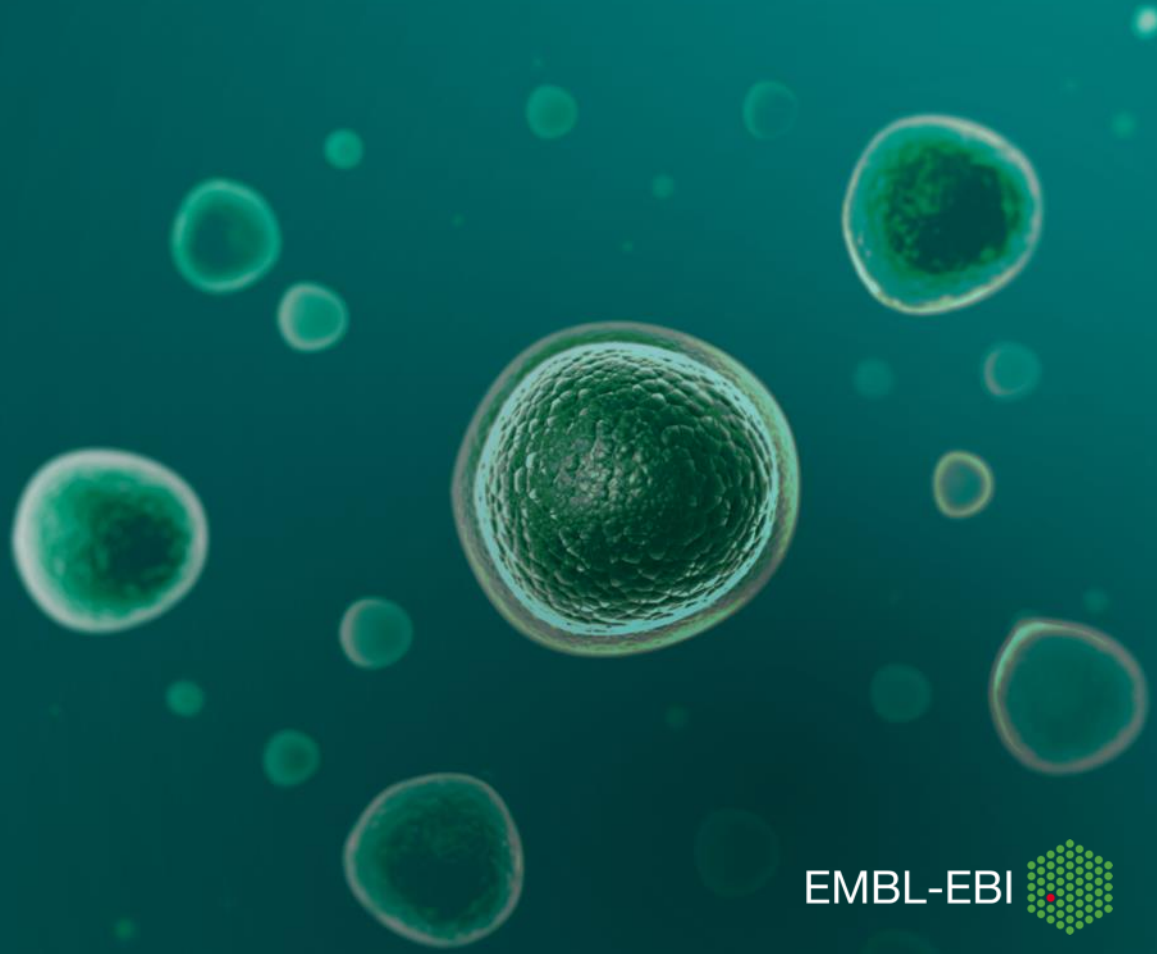
- Check Europe PMC Tech blog to get to know news on programmatic search

<https://europepmc.github.io/techblog/>

- Learn more about how Europe PMC APIS can be used on Europe PMC use case page

<https://europepmc.org/use-cases>

Where to get help



Contact Europe PMC

- Contact us about Web Service-related issues via the Google group:
<https://groups.google.com/a/ebi.ac.uk/forum/#!forum/epmc-webservices>
- For help using Europe PMC contact the Europe PMC helpdesk at:
helpdesk@europemc.org

Check other webinars in the series

See the full list of webinars at

<https://www.ebi.ac.uk/training/online/>



Feedback

Tell us what you think