

DH01

ClinicalTrials.gov REST API

tapping into the
clinical studies registry database
the smart way

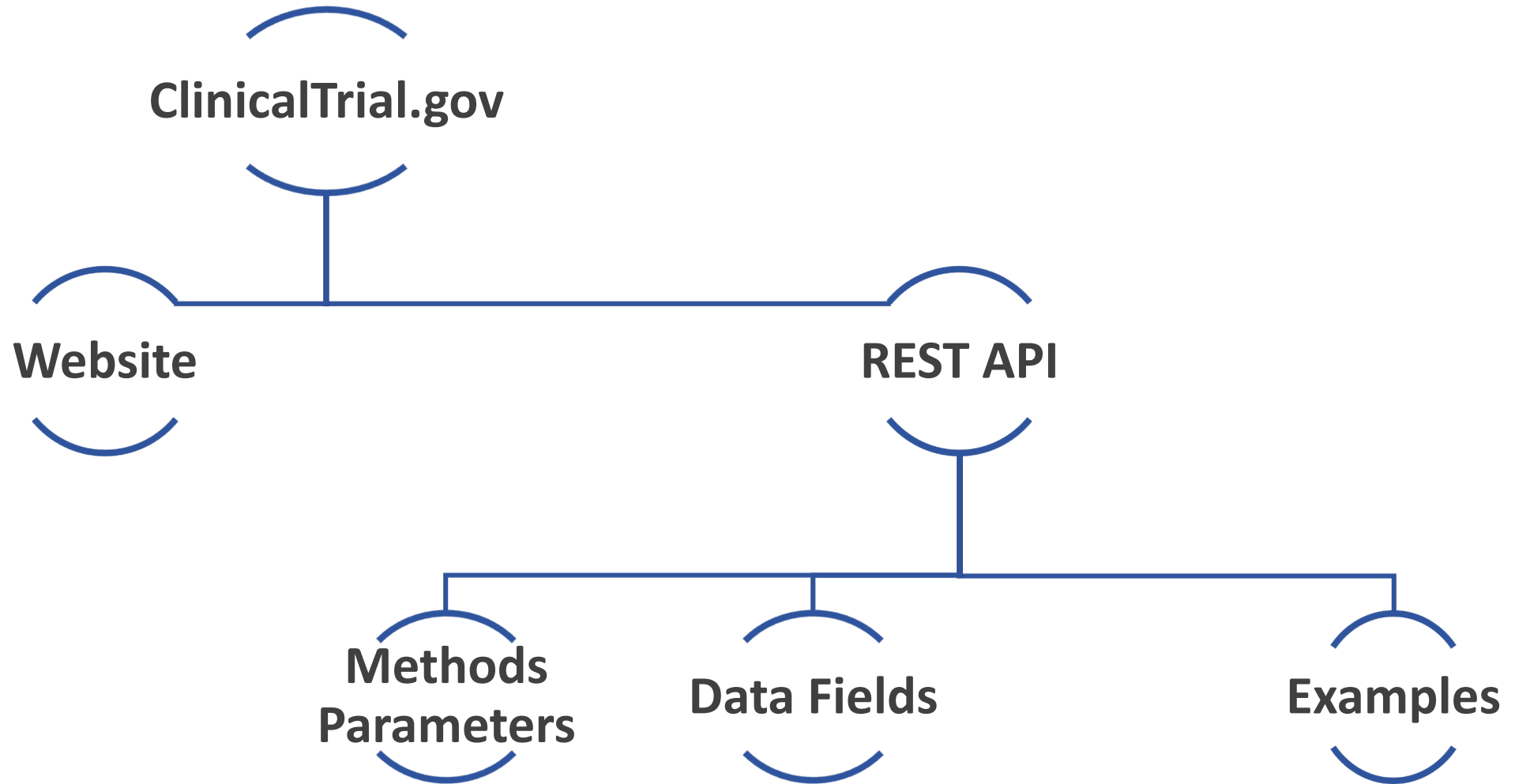
PHUSE EU Connect 2021

Lukasz Kniola, Biogen, Maidenhead, UK

Disclaimer

Any views, thoughts, and opinions stated within this paper are those of the author alone, and they **do not represent** the positions of their employer or any other organization or group they may be affiliated with.

In the next 20 minutes...



ClinicalTrials.gov website

CT Home - ClinicalTrials.gov

clinicaltrials.gov/ct2/home

NIH U.S. National Library of Medicine

ClinicalTrials.gov

Find Studies ▾ About Studies ▾ Submit Studies ▾ Resources ▾ About Site ▾ PRS Login

ClinicalTrials.gov is a database of privately and publicly funded clinical studies conducted around the world.

Explore 391,946 research studies in all 50 states and in 219 countries.

See [listed clinical studies related to the coronavirus disease \(COVID-19\)](#)

ClinicalTrials.gov is a resource provided by the U.S. National Library of Medicine.

IMPORTANT: Listing a study does not mean it has been evaluated by the U.S. Federal Government. Read our [disclaimer](#) for details.

Before participating in a study, talk to your health care provider and learn about the [risks](#) and [potential benefits](#).

Find a study (all fields optional)

Status ⓘ

☐ Recruiting and not yet recruiting studies

☐ All studies

Condition or disease ⓘ (For example: breast cancer)

Multiple Sclerosis X

Other terms ⓘ (For example: NCT number, drug name, investigator name)

X

Country ⓘ

X

Search Advanced Search

Help | Studies by Topic | Studies on Map | Glossary

CT Search of: Multiple Sclerosis - List

clinicaltrials.gov/ct2/results?cond=Multiple...

NIH U.S. National Library of Medicine

ClinicalTrials.gov

Find Studies ▾ About Studies ▾ Submit Studies ▾ Resources ▾ About Site ▾ PRS Login

Home > Search Results

Modify Search Start Over

2467 Studies found for: **Multiple Sclerosis**

List By Topic On Map Search Details

Hide Filters

Download Subscribe to RSS

Showing: 1-10 of 2,467 studies 10 studies per page Show/Hide Columns

Row	Saved	Status	Study Title	Conditions	Interventions	Locations
1	☐	Active, not recruiting	Nutritional Approaches in Multiple Sclerosis	• Multiple Sclerosis	• Behavioral: ketogenic diet • Behavioral: Intermittent therapeutic fasting • Behavioral: Active comparator	• Charité - Universitätsmedizin Berlin, Germany
2	☐	Not yet recruiting	Emotions in Multiple Sclerosis	• Multiple Sclerosis	• Diagnostic Test: Carrying out a tests and questionnaires battery	
3	☐	Recruiting	Correlation of Serum Lactate and Activity of Multiple Sclerosis	• Multiple Sclerosis	• Radiation: Magnetic resonance imaging • Radiation: Magnetic resonance spectroscopy	• Mansoura University Hospital Mansoura, Dakahlia, Egypt
4	☐	Recruiting NEW	Study to Evaluate Efficacy, Safety, and Tolerability of IMU-838 in Patients With	• Multiple Sclerosis	• Drug: IMU-838 • Drug: Placebo matching IMU-838	• University Ukraine Kryvyi Rih, Ukraine

Status

Recruitment ⓘ:

☐ Not yet recruiting

☐ Recruiting

☐ Enrolling by invitation

☐ Active, not recruiting

☐ Suspended

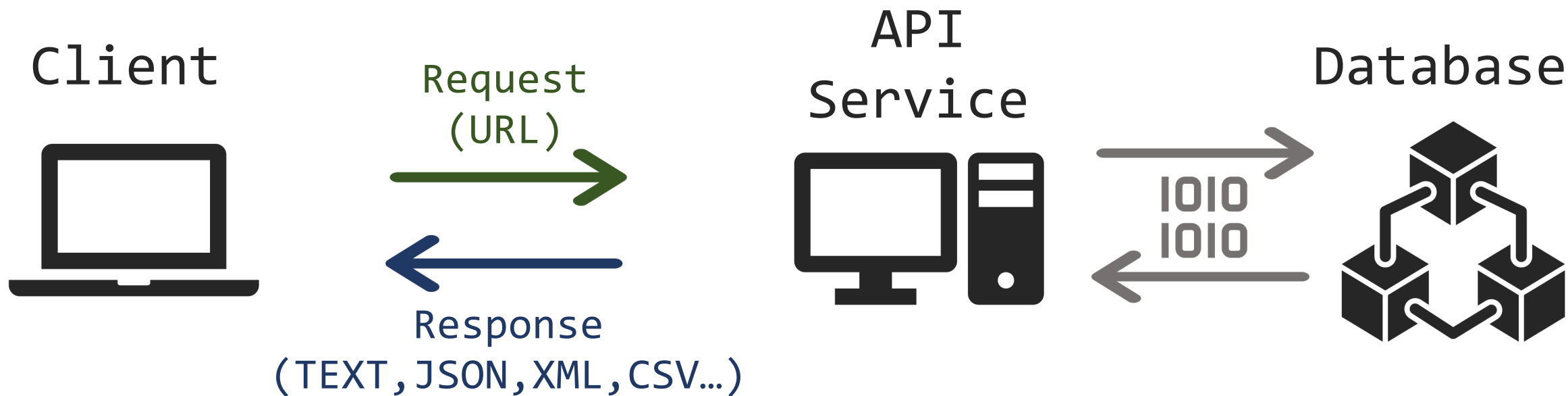
☐ Terminated

☐ Completed

☐ Withdrawn

☐ Unknown status†

REST API



ClinicalTrials API

<https://ClinicalTrials.gov/api/query/TypeOfRequest?param1=value1¶m2=value2>

study_fields
full_studies
field_values

expr=
min_rnk= / max_rnk=
fmt= (XML, JSON, CSV or TREE)

[https://clinicaltrials.gov/api/query/study_fields?expr=covid
&fields=NCTId,LeadSponsorName,BriefTitle,Condition
&min_rnk=1&max_rnk=5
&fmt=csv](https://clinicaltrials.gov/api/query/study_fields?expr=covid&fields=NCTId,LeadSponsorName,BriefTitle,Condition&min_rnk=1&max_rnk=5&fmt=csv)

"APIVrs: 1.01.03"

"DataVrs: 2021:09:27 22:32:33.007"

"Expression: covid"

"NStudiesAvail: 390761"

"NStudiesFound: 7272"

"MinRank: 1"

"MaxRank: 5"

"NStudiesReturned: 5"

"Field Names: NCTId,LeadSponsorName,BriefTitle,Condition"

"Rank","NCTId","LeadSponsorName","BriefTitle","Condition"

1,"NCT04609969","Centre Hospitalier Régional d'Orléans","Diagnostic Performance
Evaluation of a Novel SARS-CoV-2 (COVID-19) Antigen Detection Test","Covid19|SARS-CoV-2
Infection"

2,"NCT04785898","Groupe Hospitalier Paris Saint Joseph","Diagnostic Performance of the ID
Now™ COVID-19 Screening Test Versus Simplexa™ COVID-19 Direct Assay", "Covid19"

[https://clinicaltrials.gov/api/query/study_fields?expr=covid
&fields=NCTId,LeadSponsorName,BriefTitle,Condition
&min_rnk=1&max_rnk=5
&fmt=csv](https://clinicaltrials.gov/api/query/study_fields?expr=covid&fields=NCTId,LeadSponsorName,BriefTitle,Condition&min_rnk=1&max_rnk=5&fmt=csv)

"APIVrs: 1.01.03"

"DataVrs: 2021:09:27 22:32:33.007"

"**Expression: covid**"

"NStudiesAvail: 390761"

"NStudiesFound: **7272**"

"**MinRank: 1**"

"**MaxRank: 5**"

"NStudiesReturned: 5"

"Field Names: NCTId,LeadSponsorName,BriefTitle,Condition"

"Rank","NCTId","LeadSponsorName","BriefTitle","Condition"

1,"NCT04609969","Centre Hospitalier Régional d'Orléans","Diagnostic Performance Evaluation of a Novel SARS-CoV-2 (COVID-19) Antigen Detection Test","Covid19|SARS-CoV-2 Infection"

2,"NCT04785898","Groupe Hospitalier Paris Saint Joseph","Diagnostic Performance of the ID Now™ COVID-19 Screening Test Versus Simplexa™ COVID-19 Direct Assay", "Covid19"

[https://clinicaltrials.gov/api/query/study_fields?expr=covid
&fields=NCTId,LeadSponsorName,BriefTitle,Condition
&min_rnk=1&max_rnk=5
&fmt=csv](https://clinicaltrials.gov/api/query/study_fields?expr=covid&fields=NCTId,LeadSponsorName,BriefTitle,Condition&min_rnk=1&max_rnk=5&fmt=csv)

"APIVrs: 1.01.03"

"DataVrs: 2021:09:27 22:32:33.007"

"Expression: covid"

"NStudiesAvail: 390761"

"NStudiesFound: 7272"

"MinRank: 1"

"MaxRank: 5"

"NStudiesReturned: 5"

"Field Names: NCTId,LeadSponsorName,BriefTitle,Condition"

"Rank", "NCTId", "LeadSponsorName", "BriefTitle", "Condition"

1, "NCT04609969", "Centre Hospitalier Régional d'Orléans", "Diagnostic Performance Evaluation of a Novel SARS-CoV-2 (COVID-19) Antigen Detection Test", "Covid19|SARS-CoV-2 Infection"

2, "NCT04785898", "Groupe Hospitalier Paris Saint Joseph", "Diagnostic Performance of the ID Now™ COVID-19 Screening Test Versus Simplexa™ COVID-19 Direct Assay", "Covid19"

[https://clinicaltrials.gov/api/query/study_fields?expr=covid
&fields=NCTId,LeadSponsorName,BriefTitle,Condition
&min_rnk=1&max_rnk=5
&fmt=csv](https://clinicaltrials.gov/api/query/study_fields?expr=covid&fields=NCTId,LeadSponsorName,BriefTitle,Condition&min_rnk=1&max_rnk=5&fmt=csv)

"APIVrs: 1.01.03"

"DataVrs: 2021:09:27 22:32:33.007"

...

"Field Names: NCTId,LeadSponsorName,BriefTitle,Condition"

R	"NCTId"	"LeadSponsorName"	"BriefTitle"	"Condition"
1	"NCT04609969"	Centre Hospita...	"Diagnostic Per..."	"Covid19 SARS-CoV-2 Infection"
2	"NCT04785898"	"Groupe Hospita..."	"Diagnostic Per..."	"Covid19"
3	"NCT04412265"	"University of ..."	"Frailty in Eld..."	"Covid19"
4	"NCT04476940"	"Meharry Medica..."	"COVID-19 Breas..."	"Covid19 Exclusive Breastfeeding"
5	"NCT04427345"	"University of ..."	"Predictive Fac..."	"covid19"

Data elements and fields

Registration Elements

Results Elements

Key Record Dates

Data elements and fields

Registration Elements

- study identification
- study status
- sponsors
- FDA oversight info,
- study description and keywords,
- study design arms, groups, and interventions
- outcome measures eligibility
- IPD sharing statement,
- and others

Results Elements

- participant flow
- baseline characteristics
- outcome measures
- statistical analyses
- AE information

Key Record Dates

- record posted
- record submitted
- record updated
- etc.

<https://clinicaltrials.gov/api/gui/ref/crosswalks>

Search expression

expr=Covid AND (USA OR France) AND (AstraZeneca AND NOT (Pfizer OR Moderna))

Search expression

expr=Covid AND (USA OR France) AND (AstraZeneca AND NOT (Pfizer OR Moderna))

expr=AREA [*LeadSponsorName*] Biogen

Search expression

expr=Covid AND (USA OR France) AND (AstraZeneca AND NOT (Pfizer OR Moderna))

expr=AREA [*LeadSponsorName*] Biogen

expr=NCT00390221 vs expr=AREA [*NCTId*] NCT00390221

Search expression

expr=Covid AND (USA OR France) AND (AstraZeneca AND NOT (Pfizer OR Moderna))

expr=AREA [*LeadSponsorName*] Biogen

expr=NCT00390221 vs expr=AREA [*NCTId*] NCT00390221

expr=AREA [*LeadSponsorName*] Moderna AND AREA [*Condition*] Covid-19

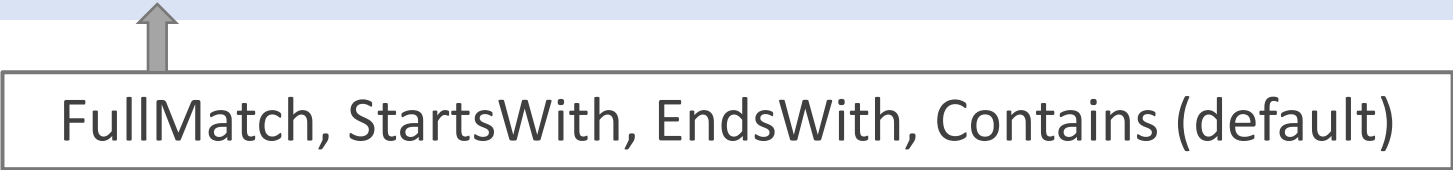
Other useful operators

```
expr=AREA [ResultsFirstPostDate] RANGE [01/01/2015, MAX]
```

Other useful operators

expr=AREA [*ResultsFirstPostDate*] RANGE [*01/01/2015, MAX*]

expr=AREA [*Condition*] COVERAGE [*FullMatch*] (pain OR asthma)



FullMatch, StartsWith, EndsWith, Contains (default)

Other useful operators

expr=AREA [*ResultsFirstPostDate*] RANGE [01/01/2015, MAX]

expr=AREA [*Condition*] COVERAGE [*FullMatch*] (pain OR asthma)

↑
FullMatch, StartsWith, EndsWith, Contains (default)

expr=AREA [*Condition*] EXPANSION [*Concept*] cough

↑
None, Term, Concept, Relaxation (default), Lossy

Other useful operators

expr=AREA [*ResultsFirstPostDate*] RANGE [*01/01/2015, MAX*]

expr=AREA [*Condition*] COVERAGE [*FullMatch*] (pain OR asthma)

↑
FullMatch, StartsWith, EndsWith, Contains (default)

expr=AREA [*Condition*] EXPANSION [*Concept*] cough

↑
None, Term, Concept, Relaxation (default), Lossy

expr=AREA [*ResultsFirstPostDate*] MISSING

example1.R

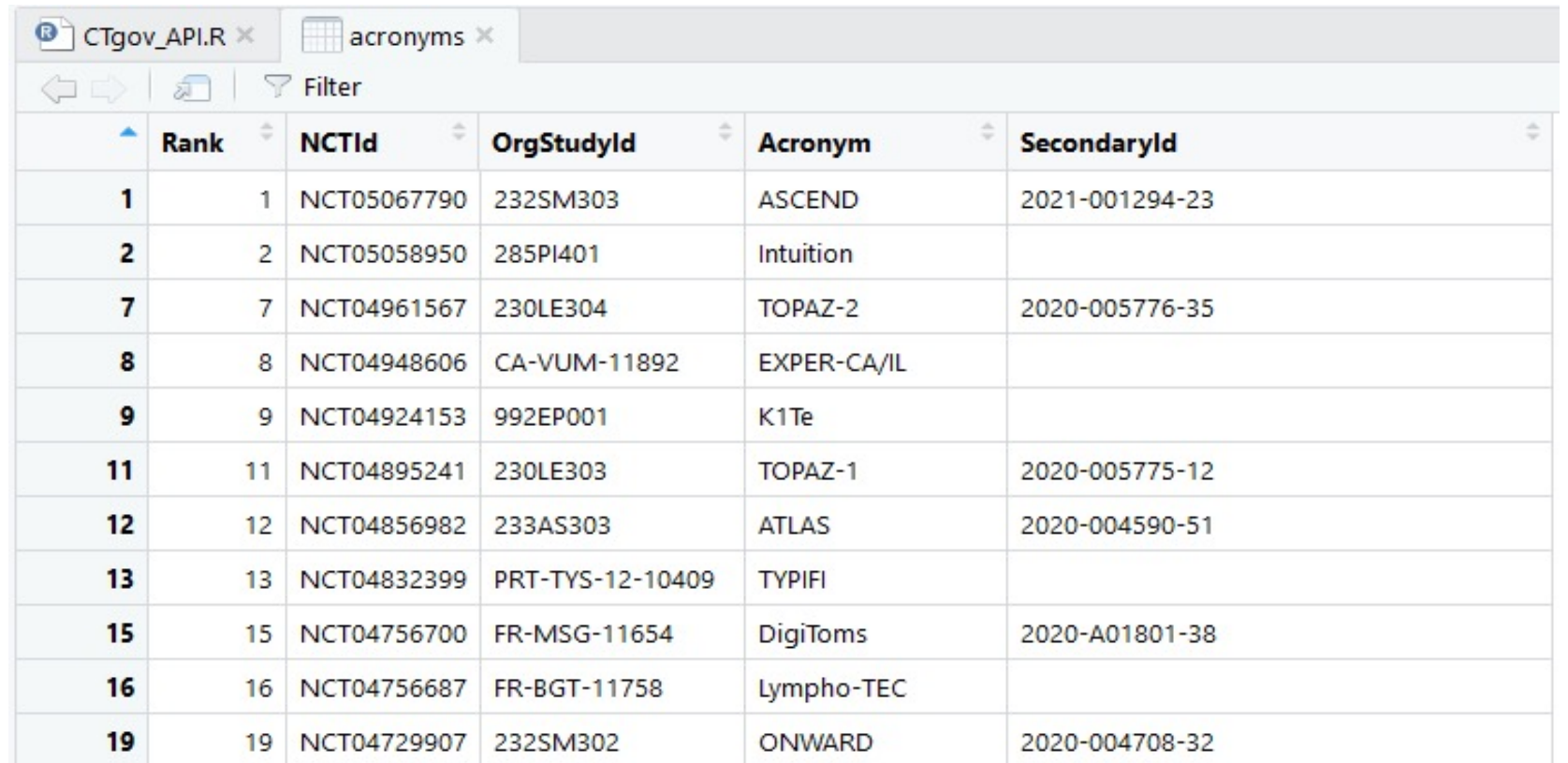
```
library(httr)
library(jsonlite)

res <- GET("request_url")
data <- fromJSON(rawToChar(res$content))
studyFields <- as.data.frame(data$StudyFieldsResponse$StudyFields)
```

example1.R

request_url:

```
https://clinicaltrials.gov/api/query/study_fields  
?expr=AREA[LeadSponsorName]Biogen  
&fields=NCTId,OrgStudyId,Acronym,SecondaryId  
&min_rnk=1&max_rnk=1000  
&fmt=json
```



The screenshot shows an RStudio window with two tabs: 'CTgov_API.R' and 'acronyms'. The 'acronyms' tab is active, displaying a data table with 6 columns: Rank, NCTId, OrgStudyId, Acronym, and SecondaryId. The table contains 10 rows of clinical trial data.

	Rank	NCTId	OrgStudyId	Acronym	SecondaryId
1	1	NCT05067790	232SM303	ASCEND	2021-001294-23
2	2	NCT05058950	285PI401	Intuition	
7	7	NCT04961567	230LE304	TOPAZ-2	2020-005776-35
8	8	NCT04948606	CA-VUM-11892	EXPER-CA/IL	
9	9	NCT04924153	992EP001	K1Te	
11	11	NCT04895241	230LE303	TOPAZ-1	2020-005775-12
12	12	NCT04856982	233AS303	ATLAS	2020-004590-51
13	13	NCT04832399	PRT-TYS-12-10409	TYPIFI	
15	15	NCT04756700	FR-MSG-11654	DigiToms	2020-A01801-38
16	16	NCT04756687	FR-BGT-11758	Lympho-TEC	
19	19	NCT04729907	232SM302	ONWARD	2020-004708-32

example2.sas

```
filename request HTTP 'request_url' debug;

proc import datafile=request
            out=ct(rename=(VAR3=StudiesFound VAR4=Sponsor))
            dbms=csv replace;
    getnames=no;
    datarow=14;
run;
```

example2.sas

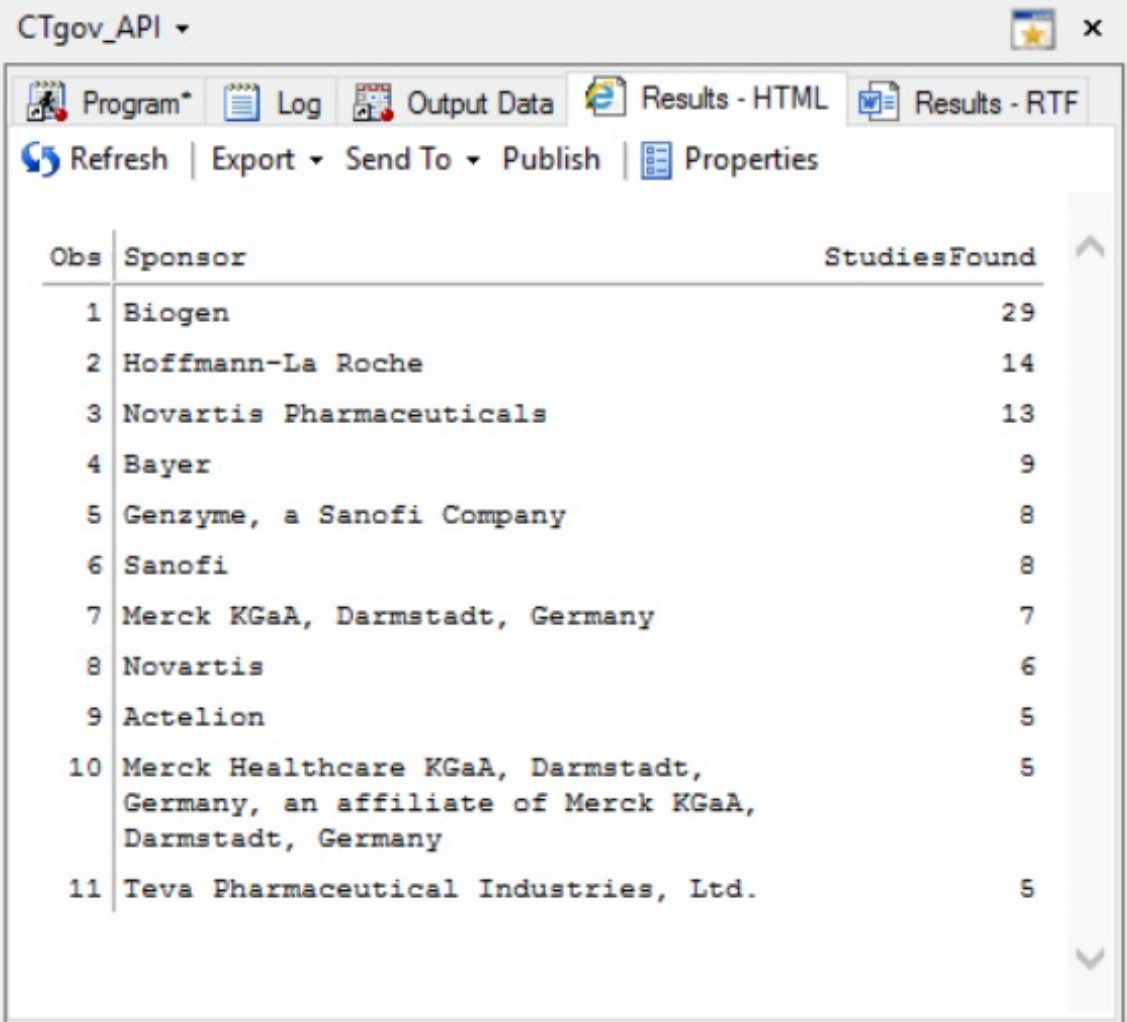
request_url:

https://clinicaltrials.gov/api/query/field_values

?expr=**AREA**[LocationCountry]Poland AND **AREA**[Condition]Multiple+Sclerosis

&field=*LeadSponsorName*

&fmt=**CSV**



The screenshot shows a web application window titled "CTgov_API". It has a toolbar with buttons for "Program*", "Log", "Output Data", "Results - HTML", and "Results - RTF". Below the toolbar is a navigation bar with "Refresh", "Export", "Send To", "Publish", and "Properties". The main content area displays a table with three columns: "Obs", "Sponsor", and "StudiesFound". The table lists 11 sponsors and the number of studies found for each.

Obs	Sponsor	StudiesFound
1	Biogen	29
2	Hoffmann-La Roche	14
3	Novartis Pharmaceuticals	13
4	Bayer	9
5	Genzyme, a Sanofi Company	8
6	Sanofi	8
7	Merck KGaA, Darmstadt, Germany	7
8	Novartis	6
9	Actelion	5
10	Merck Healthcare KGaA, Darmstadt, Germany, an affiliate of Merck KGaA, Darmstadt, Germany	5
11	Teva Pharmaceutical Industries, Ltd.	5

example2.sas

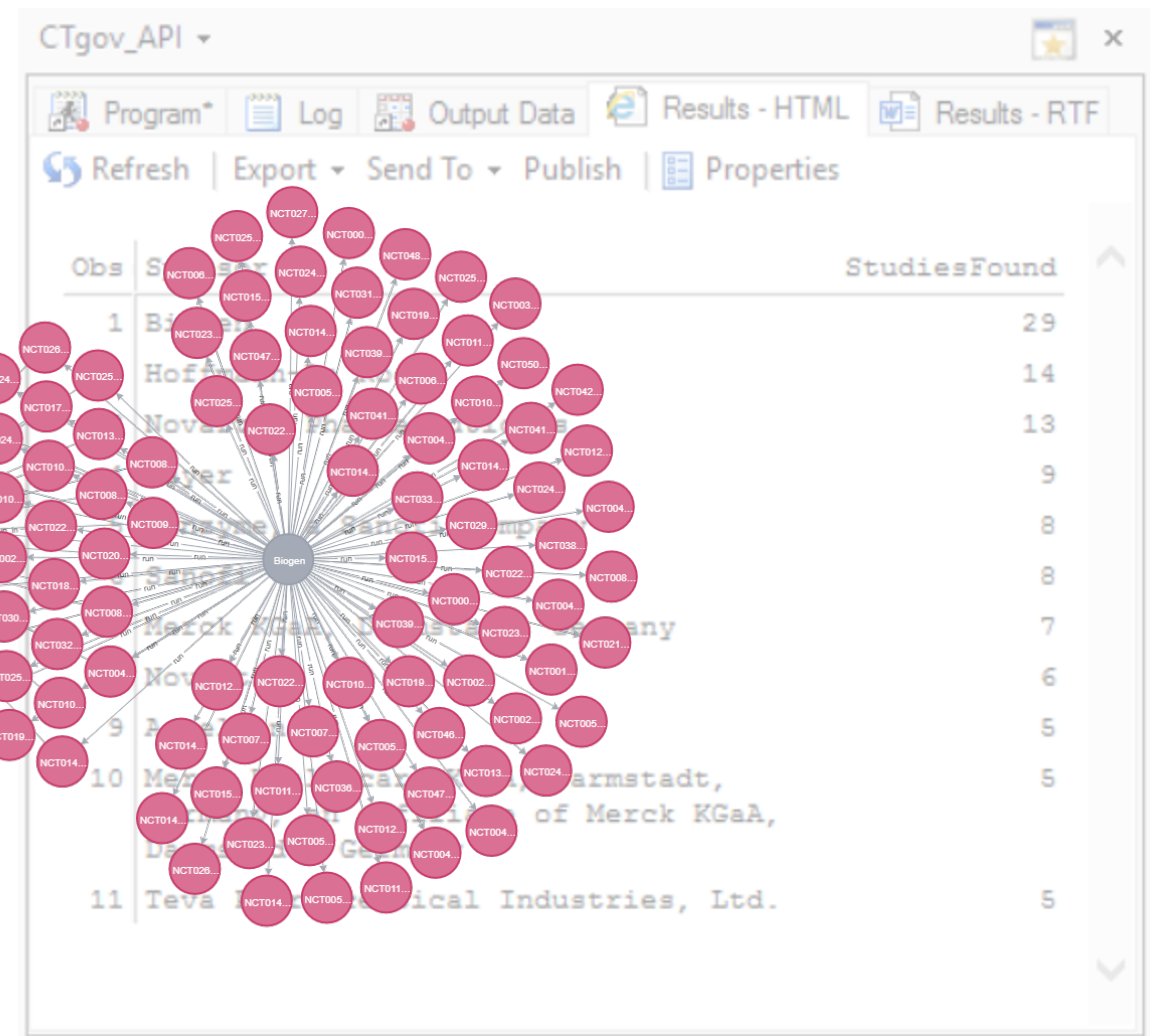
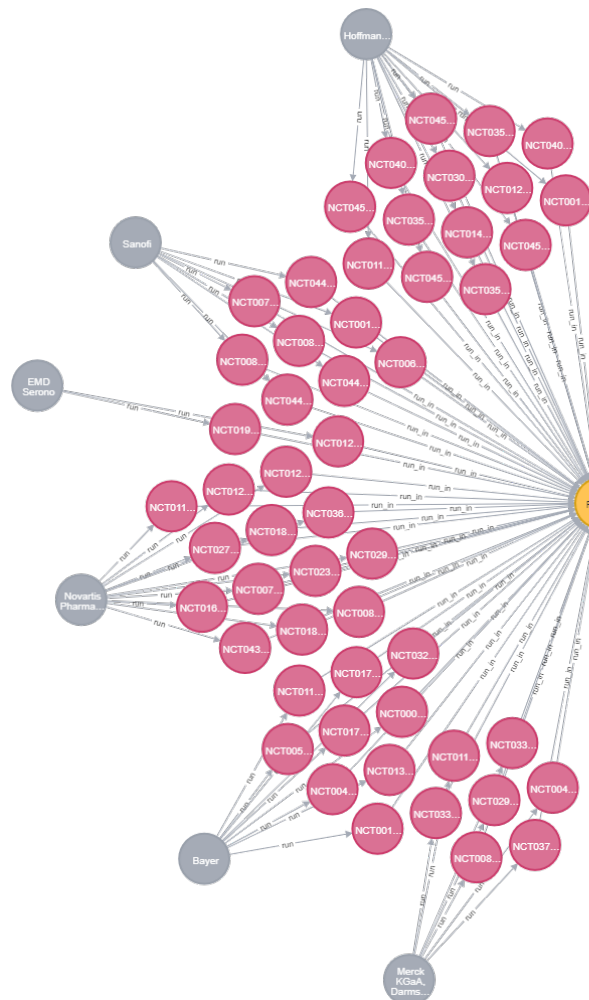
request url:

https://clinicaltrials.gov/api/query/field_values

```
?expr=AREA[LocationCountry]Poland AND AREA[Condition]Multiple+Sclerosis
```

&field=*LeadSponsorName*

`&fmt=csv`



example3.py

```
import requests, io
import pandas as pd

# Send and retrieve HTTP (REST) request
url = 'request_url'
res = requests.get(url).content

# Extract contents, skip CSV header (first 10 lines), to dataframe
data = pd.read_csv(io.StringIO(res.decode("utf-8")), skiprows=10).fillna(0)

...

import streamlit as st
import altair as alt
```

example3.py

request_url:

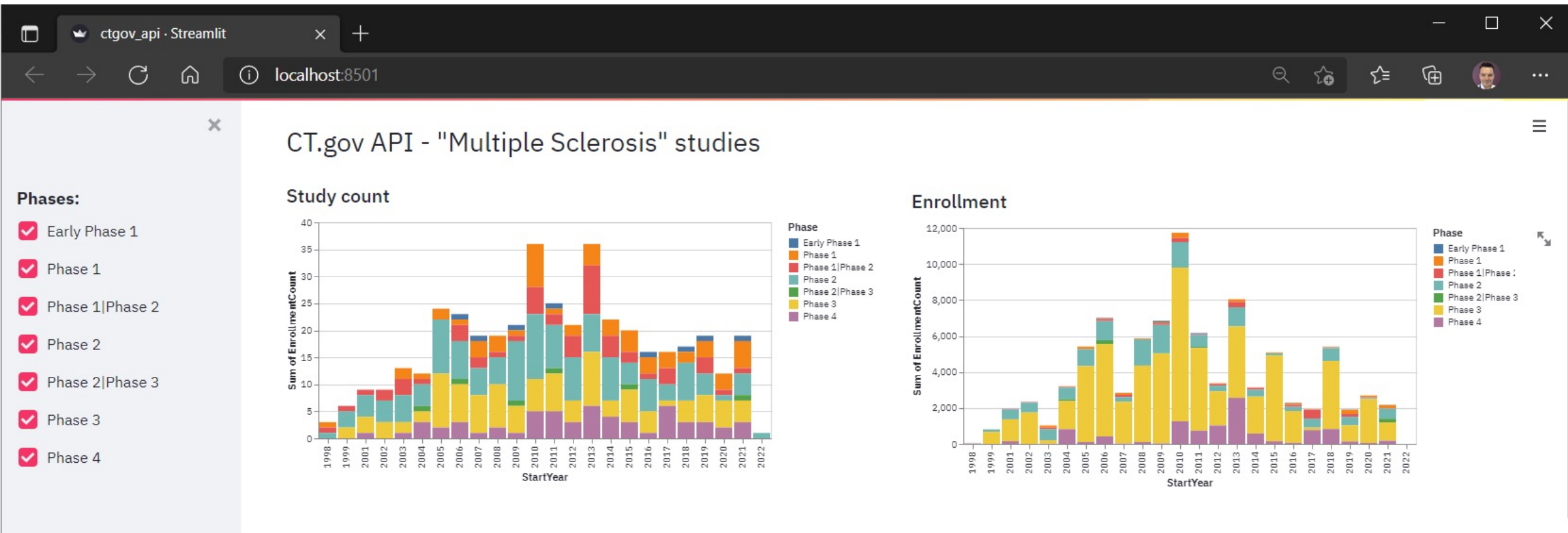
https://clinicaltrials.gov/api/query/study_fields

?expr=multiple+sclerosis

&fields=NCTId,Condition,Phase,StartDate,EnrollmentCount

&min_rnk=1&max_rnk=1000

&fmt=csv



Conclusions

CT Home - ClinicalTrials.gov

clinicaltrials.gov/ct2/home

U.S. National Library of Medicine

ClinicalTrials.gov

Find Studies About Studies Submit Studies Resources About Site

ClinicalTrials.gov is a database of privately and publicly funded clinical studies conducted around the world.

Explore 391,946 research studies in all 50 states and in 219 countries.

See [listed clinical studies related to the coronavirus disease \(COVID-19\)](#)

ClinicalTrials.gov is a resource provided by the U.S. National Library of Medicine.

IMPORTANT: Listing a study does not mean it has been evaluated by the U.S. Federal Government. Read our [disclaimer](#) for details.

Before participating in a study, talk to your health care provider and learn about the [risks](#) and [potential benefits](#).

Find a study (all fields optional)

Status

☐ Recruiting and not yet recruiting studies

☐ All studies

Condition or disease (For example: breast cancer)

Multiple Sclerosis

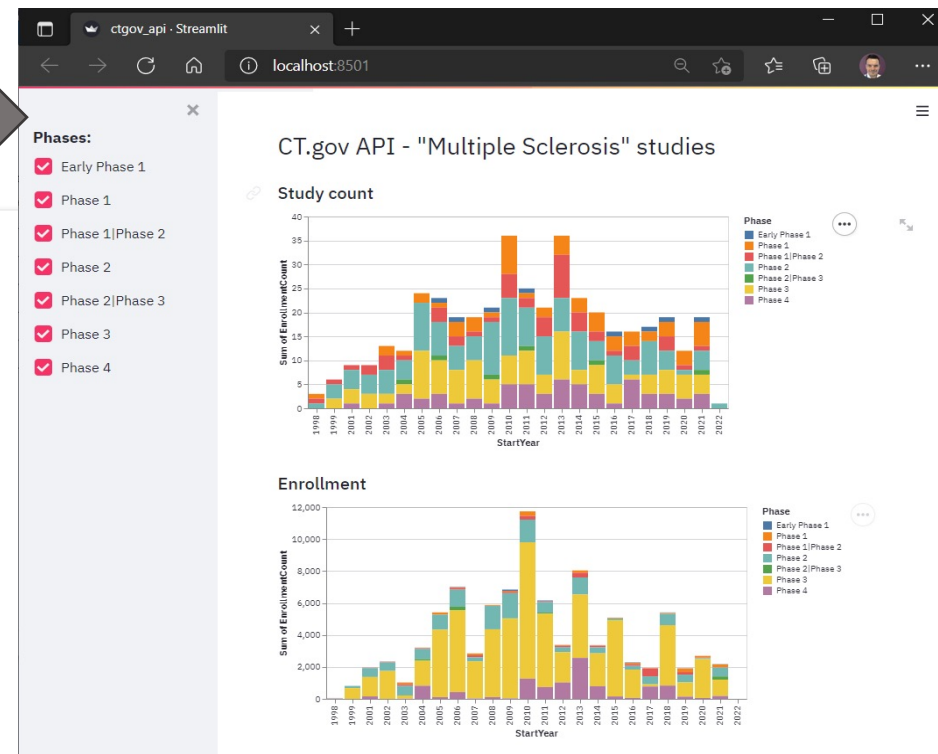
Other terms (For example: NCT number, drug name, investigator name)

Country

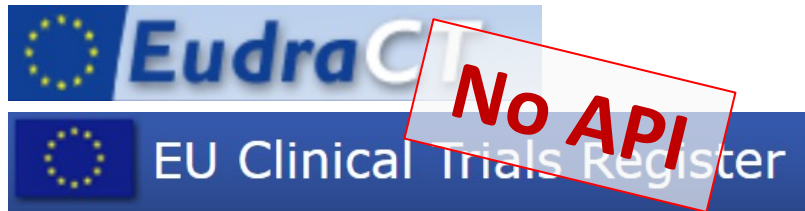
Search Advanced Search

Help Studies by Topic Studies on Map Glossary

```
{
  "StudyFieldsResponse": {
    "APIVrs": "1.01.03",
    "DataVrs": "202110:12 22:57:39.169",
    "Expression": "multiple sclerosis",
    "NStudiesAvail": 392063,
    "NStudiesFound": 2823,
    "MinRank": 1,
    "MaxRank": 20,
    "NStudiesReturned": 20,
    "FieldList": [
      "NCTId",
      "BriefTitle",
      "Condition"
    ],
    "StudyFields": [
      {
        "Rank": 1,
        "NCTId": [
          "NCT02845635"
        ],
        "BriefTitle": [
          "MS Mosaic: A Longitudinal Research Study on Multiple Sclerosis"
        ],
        "Condition": [
          "Multiple Sclerosis"
        ]
      },
      {
        "Rank": 2,
        "NCTId": [
          "NCT04667130"
        ],
        "BriefTitle": [
          "Preventive Program in Multiple Sclerosis"
        ],
        "Condition": [
          "Multiple Sclerosis"
        ]
      },
      {
        "Rank": 3,
        "NCTId": [
          "NCT04988880"
        ],
        "BriefTitle": [
          "Territorial Implementation and Evaluation of a Multiple Sclerosis Expert Patient Program"
        ],
        "Condition": [
          "Multiple Sclerosis",
          "Quality of Life",
          "Patient Empowerment",
          "Patient Activation",
          "Fatigue",
          "Peer Group"
        ]
      }
    ]
  }
}
```



Other resources



<https://www.cdisc.org/cdisc-library>

DH01

Questions?

Full API documentation: <https://clinicaltrials.gov/api/gui>

Lukasz Kniola :: lukasz.kniola@biogen.com