Beyond OpenURL: making the most of Crossref metadata

Patricia Feeney
Product Support
@CrossrefSupport

About Crossref

- 8,000+ publisher members
- almost 90 million scholarly content items (now including preprints)
- Persistent citation linking (through DOIs)
- Funder identifiers
- Report and display corrections & retractions
- Open REST API & Search
- Data about content activity e.g. social, dataset links

Who uses Crossref metadata?

- Funders
- Institutions
- Archives & repositories
- Research councils
- Data centres
- Professional networks
- Patent offices
- Indexing services

- Publishing vendors
- Peer review systems
- Reference manager systems
- Lab & diagnostics suppliers
- Info management systems
- Educational tools
- Data analytics systems
- Literature discovery services
- Registration Agencies

OpenURL

- Match metadata to DOIs

- Match DOIs to metadata

- Free library account

https://doi.crossref.org/openurl?issn=03770273&aulast=Walker&volume=54&spage=117&date=1983&redirect=false&pid=username:password

Citation metadata

including…

author names, ORCIDs, affiliations, article titles, ISSN, ISBN, pages, issue #, volume #s, dates, identifiers

more metadata

reference lists, funding data, ORCIDs, license data, clinical trial numbers, errata, retractions, updates and more through our Crossmark service, JATS-formatted abstracts, relationships between items…

Building new connections

- Identifiers
- Crossmark
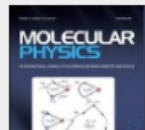- Funding data
- Relationships

Crossmark

Crossmark allows members to record publication status (updates, retractions, errata) funding information, TDM licenses, author ORCIDs. peer review status, link to clinical trials, and more

CrossMark

⚠️

Updates are available

Correction dated 2017-01-06

Click to view Correction:
https://doi.org/10.1080/00268976.2016.1265310

Simultaneous description of bulk and interfacial properties of fluids by the Mie potential
Crossref DOI link: https://doi.org/10.1080/00268976.2016.1206218
Published: 2017-06-18
Update policy: https://doi.org/10.1080/tandf_crossmark_01

> Authors

> Funding

> More Information

- maintain a registry of clinical trials (and assign DOIs to them

- Publishers include the clinical trials in their metadata (via Crossmark)

- We link the trials to related articles

http://api.crossref.org/works?filter=has-clinical-trial-number:true

How do I find DOIs for my citations?

Metadata Search (http://search.crossref.org)

- Search by title fragment, author name

- Find works related to an ORCID

- Search by ISSN

- Search by grant / award number

- Include / exclude terms (using + and !)

Crossref

Search the metadata
of 88,009,139 journal articles, books,
standards, datasets & more

🔍 10.1002/jobm.3630180605

Search help

TYPE

☐ Journal Article (6,809,206)

☐ Chapter (710,331)

☐ Conference Paper (306,914)

☐ Dataset (84,305)

☐ Entry (58,530)

☐ Journal Issue (29,212)

☐ Book (24,347)

☐ Component (17,836)

☐ Report (16,226)

☐ Monograph (14,697)

YEAR

☐ 2004 (1,852,550)

☐ 2016 (319,534)

☐ 2015 (304,691)

☐ 2014 (282,116)

☐ 2013 (270,639)

☐ 2010 (257,840)

☐ 2012 (257,049)

New concepts of the pathogenesis of cystic fibrosis lung disease

Journal Article published **1 Jan 2004** in **European Respiratory Journal** volume **23** issue **1** on pages **146** to **158**

Authors: R.C. **Boucher**

↗ 1 citations from patents   ☐ https://doi.org/10.1183/09031936.03.00057003   ⌄ Actions

Pathophysiology of cystic fibrosis lung disease

Chapter published **Jun 2014** in **Cystic Fibrosis** on pages **1** to **13**

Authors: Marcus A. Mall, Richard C. **Boucher**

☐ https://doi.org/10.1183/1025448x.10008513   ⌄ Actions

An overview of the pathogenesis of cystic fibrosis lung disease

Journal Article published **Dec 2002** in **Advanced Drug Delivery Reviews** volume **54** issue **11** on pages **1359** to **1371**

Authors: R.C **Boucher**

↗ 7 citations from patents   ☐ https://doi.org/10.1016/s0169-409x(02)00144-8   ⌄ Actions

Pathogenesis of Pulmonary Disease in Cystic Fibrosis

Crossref

10.1002/jobm.3630180605

TYPE
☐ Journal Article (1)

YEAR
☐ 1978 (1)

PUBLICATION
☐ Zeitschrift für allgemeine Mikrobiologie (1)

CATEGORY
☐ Applied Microbiology and Biotechnology (1)
☐ Genetics (1)

PUBLISHER
☐ blackwell (1)
☐ wiley (1)

FUNDER NAME

SOURCE
☐ Crossref (1)

SORT BY: **RELEVANCE   PUBLICATION YEAR**

PAGE 1 OF 1 RESULTS

Showing DOI matching **10.1002/jobm.3630180605**

Kinetics of growth and substrate consumption ofEscherichia coli ML 30 on two carbon sources

Journal Article published **1978** in **Zeitschrift für allgemeine Mikrobiologie** volume **18** issue **6** on pages **415** to **426**

Authors: E. Hegewald, W. A. Knorre

🔗 https://doi.org/10.1002/jobm.3630180605   ⏬ Actions

    ❝ Cite
    ▼ Filter on this publication
    ▯ Metadata as JSON

Feedback: support@crossref.org

Kinetics of growth and substrate consumption ofEscherichia coli ML 30 on two carbon sources

Citing 'Kinetics of growth and substrate consumption ofEscherichia coli ML 30 on two carbon sources' ✕

BibTeX   RIS   APA   Harvard   IEEE   MLA   Vancouver   Chicago

Hegewald, E., & Knorre, W. A. (1978). Kinetics of growth and substrate consumption ofEscherichia coli ML 30 on two carbon sources. Zeitschrift Für Allgemeine Mikrobiologie, 18(6), 415–426. doi:10.1002/jobm.3630180605

TYPE

☐ Journal Article (1)

YEAR

☐ 1978 (1)

PUBLICATION

☐ Zeitschrift für allgemeine Mikrobiologie (1)

CATEGORY

☐ Applied Microbiology and Biotechnology (1)

☐ Genetics (1)

PUBLISHER

☐ blackwell (1)

☐ wiley (1)

FUNDER NAME

SOURCE

☐ Crossref (1)

SORT BY: **RELEVANCE PUBLICATION YEAR**

PAGE 1 OF 1 RESULTS

Showing DOI matching **10.1002/jobm.3630180605**

Kinetics of growth and substrate consumption ofEscherichia coli ML 30 on two carbon sources

Journal Article published **1978** in **Zeitschrift für allgemeine Mikrobiologie** volume **18** issue **6** on pages **415** to **426**

Authors: E. Hegewald, W. A. Knorre

🔗 https://doi.org/10.1002/jobm.3630180605   ⌄ Actions

- 66 Cite
- ▼ Filter on this publication
- 🗋 Metadata as JSON

                },
            date-time: "2017-04-02T02:14:45Z",
            timestamp: 1491099285257
        },
    reference-count: 8,
    publisher: "Wiley-Blackwell",
    issue: "6",
  - license: [
      - {
            URL: "http://doi.wiley.com/10.1002/tdm_license_1",
          - start: {
              - date-parts: [
                  - [
                        2015,
                        9,
                        1
                    ]
                ],
                date-time: "2015-09-01T00:00:00Z",
                timestamp: 1441065600000
            },
            delay-in-days: 13757,
            content-version: "tdm"
        }
    ],
  - content-domain: {
        domain: [ ],
        crossmark-restriction: false
    },
  - short-container-title: [
        "Z Allg Mikrobiol"
    ],
  - published-print: {
      - date-parts: [
          - [
                1978
            ]
        ]
    },
    DOI: "10.1002/jobm.3630180605",
    type: "journal-article",
  - created: {
      - date-parts: [
          - [
                2007,
                2,
                4
            ]
        ],
        date-time: "2007-02-04T22:46:40Z",
        timestamp: 1170629200000
    },
    page: "415-426",
    source: "Crossref",
    is-referenced-by-count: 5,

Simple Text Query (https://doi.crossref.org/simpleTextQuery)

Cut-and-paste formatted references, will return DOI matches (when available)

Free but requires registration

Simple Text Query form

Citation matching (formerly simple text query)

Get persistent links for your reference list or bibliography. Copy and paste the list, we'll match with our metadata and return the links.

Please register for citation matching, verify an email address, and agree to the terms.

Members may also deposit reference lists here too.

Enter the email address you registered for use of Crossref services. If you have not registered your email address, click here.

Registered email: `pfeeney@crossref.org`

Enter text in the box below:

1. Boucher RC (2004) New concepts of the pathogenesis of cystic fibrosis lung disease. Eur Resp J 23: 146–158.
2. Knowles MR, Boucher RC (2002) Mucus clearance as a primary innate defense mechanism for mammalian airways. J Clin Investig 109: 571–577.
3. Antunes MB, Cohen NA (2007) Mucociliary clearance - a critical upper airway host defense mechanism and methods of assessment. Curr Opin Allergy Clin Immunol 7: 5–10.
4. Riordan JR, Rommens JM, Kerem BS, Alon N, Rozmahel R, et al. (1989) Identification of the Cystic-Fibrosis Gene - Cloning and Characterization of Complementary-Dna. Science 245: 1066–1(
5. Rommens JM, Iannuzzi MC, Kerem BS, Drumm ML, Melmer G, et al. (1989) Identification of the Cystic-Fibrosis Gene - Chromosome Walking and Jumping. Science 245: 1059–1065.
6. Bobadilla JL, Macek M, Fine JP, Farrell PM (2002) Cystic fibrosis: A worldwide analysis of CFTR mutations - Correlation with incidence data and application to screening. Human Mutation 19: 5
7. Qu BH, Thomas PJ (1996) Alteration of the cystic fibrosis transmembrane conductance regulator folding pathway - Effects of the Delta F508 mutation on the thermodynamic stability and folding

☐ Include PubMed IDs in results.   ☐ List all possible DOIs per reference.

Submit

1. Boucher RC (2004) New concepts of the pathogenesis of cystic fibrosis lung disease. Eur Resp J 23: 146–158.
https://doi.org/10.1183/09031936.03.00057003

2. Knowles MR, Boucher RC (2002) Mucus clearance as a primary innate defense mechanism for mammalian airways. J Clin Investig 109: 571–577.
https://doi.org/10.1172/JCI0215217

3. Antunes MB, Cohen NA (2007) Mucociliary clearance - a critical upper airway host defense mechanism and methods of assessment. Curr Opin Allergy Clin Immunol 7: 5–10.
https://doi.org/10.1097/ACI.0b013e3280114eef

4. Riordan JR, Rommens JM, Kerem BS, Alon N, Rozmahel R, et al. (1989) Identification of the Cystic-Fibrosis Gene - Cloning and Characterization of Complementary-Dna. Science 245: 1066–1072.
https://doi.org/10.1126/science.2475911

5. Rommens JM, Iannuzzi MC, Kerem BS, Drumm ML, Melmer G, et al. (1989) Identification of the Cystic-Fibrosis Gene - Chromosome Walking and Jumping. Science 245: 1059–1065.
https://doi.org/10.1126/science.2772657

6. Bobadilla JL, Macek M, Fine JP, Farrell PM (2002) Cystic fibrosis: A worldwide analysis of CFTR mutations - Correlation with incidence data and application to screening. Human Mutation 19: 575–606.
https://doi.org/10.1002/humu.10041

7. Qu BH, Thomas PJ (1996) Alteration of the cystic fibrosis transmembrane conductance regulator folding pathway - Effects of the Delta F508 mutation on the thermodynamic stability and folding yield of NBD1. J Biol Chem 271: 7261–7264.
https://doi.org/10.1074/jbc.271.13.7261

Reset   Deposit

REST API

- Search, filter, facet, and sample Crossref metadata
- No login, no fee
- Do whatever you want with the metadata:
  - Search
  - Report on funding, publishing, author activities
  - Ingest scholarly metadata
  - Locate full text for content mining

How researchers use the REST API

Use metadata to:

- Connect research output to funding
- Connect research output to Clinical trials
- Import records into ORCID
- Identify text and data mining license info and full text URLs

REST API

How many members? 8,415

http://api.crossref.org/members?rows=0

How many records does Crossref have? 89,377,410

http://api.crossref.org/works?rows=0

How many journal article records? 66,739,806

http://api.crossref.org/types/journal-article/works?rows=0

Book chapters? 10,425,160

http://api.crossref.org/types/book-chapter/works?rows=0

How many works have license information? 25,799,562

http://api.crossref.org/works?filter=has-license:true&rows=0

How many license types are there? 352

http://api.crossref.org/licenses?rows=0

How many works have a CC-BY license? 254,986

http://api.crossref.org/works?rows=0&filter=license.url:http://creativecommons.org/licenses/by/3.0/

How many works have full text links? 25,527,916

http://api.crossref.org/works?filter=has-full-text:true&rows=0

Get license info for a single journal

http://api.crossref.org/works?facet=license:*&filter=issn:2090-8091

Records containing the term "blood"   480,587

http://api.crossref.org/works?query=%22blood%22&rows=0

How many records with the word "blood" in the metadata have license information and full text links?   170,388

http://api.crossref.org/works?filter=has-license:true,has-full-text:true&query=blood&rows=0

Get all of those records

http://api.crossref.org/works?filter=has-license:true,has-full-text:true&query=blood

Get matching records for a given publisher

look up member ID: http://api.crossref.org/members?query=hindawi

look up using ID: http://api.crossref.org/members/98/works?filter=has-license:true,has-full-text:true&query=blood&rows=50

Content negotiation (http://citation.crosscite.org/cn)

Retrieve metadata records from Crossref, DataCite, and mEDRA

Format	Content Type	CrossRef	DataCite	mEDRA
RDF XML	application/rdf+xml	Yes	Yes	Yes
RDF Turtle	text/turtle	Yes	Yes	Yes
Citeproc JSON	application/vnd.citationstyles.csl+json	Yes	Yes	Yes
Schema.org in JSON-LD	application/vnd.schemaorg.ld+json	No	Yes	No
Formatted text citation	text/x-bibliography	Yes	Yes	Yes
RIS	application/x-research-info-systems	Yes	Yes	No
BibTeX	application/x-bibtex	Yes	Yes	Yes
CrossRef Unixref XML	application/vnd.crossref.unixref+xml	Yes	No	No
DataCite XML	application/vnd.datacite.datacite+xml	No	Yes	No
ONIX for DOI	application/vnd.medra.onixdoi+xml	No	No	Yes

Resources

- Full REST API tour: https://github.com/CrossRef/rest-api-doc/blob/master/rest_api_tour.md

- REST API docs: http://api.crossref.org

- TDM docs: https://support.crossref.org/hc/en-us/sections/203047543

- Crossref Support: http://support.crossref.org , @CrossrefSupport

Thank you!

Questions?
support@crossref.org