

DOE OSTI – Connecting Research Components Using PIDs

Carly Robinson

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CHORUS Forum

Mapping the Research Lifecycle - Connecting the Pieces



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Office of Scientific and
Technical Information

US DOE OSTI Mission and Services

Mission: The US Department of Energy's Office of Scientific and Technical Information (OSTI) collects, preserves, and disseminates DOE-funded research and development results.



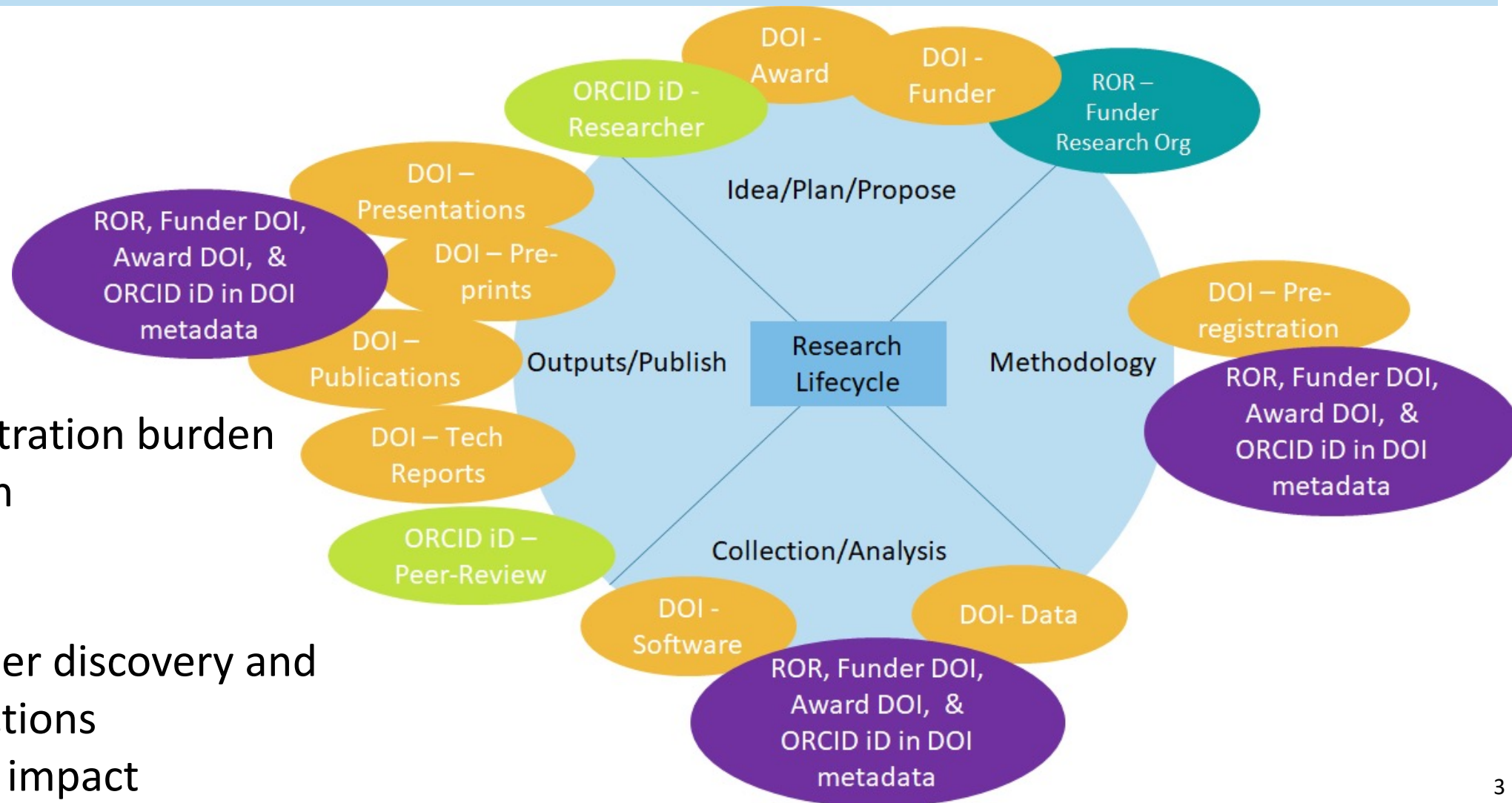
Required by law: Energy Policy Act of 2005, P.L. 109-58, Section 982: “The Secretary, through the Office of Scientific and Technical Information, shall maintain within the Department publicly available collections of scientific and technical information resulting from research, development, demonstration, and commercial applications activities supported by the Department.”



Core Function: Provide and use persistent identifier services

PIDs at DOE and throughout the Research Lifecycle

PID Definition (OSTP) – A digital identifier that is globally unique, persistent, machine resolvable and processable, and has an associated metadata schema.



PIDs support:

- Easing administration burden
- Disambiguation
- Proper credit
- Reporting
- Enabling broader discovery and making connections
- Understanding impact

OSTI PID Services

PIDs for Research Outputs



Reports, Posters,
Presentations



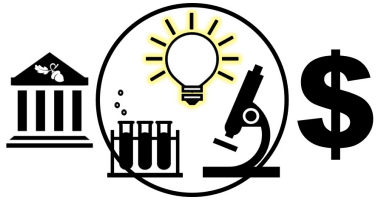
Data



Software



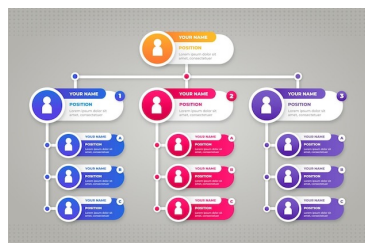
PIDs for Awards



PIDs for People



PIDs for Organizations



Persistent Identifiers (PIDs)

The Department of Energy's Office of Scientific and Technical Information (DOE OSTI) offers persistent identifier (PID) services to the DOE community and the US Government. A PID is a digital identifier that is globally unique, persistent, machine resolvable, has an associated metadata schema, identifies an entity, and is frequently used to disambiguate between entities.

PIDs for Data

OSTI provides DOIs for DOE-funded research data through the free DOE Data ID Service and to partnering US government agencies through the Interagency DOI Service.

PIDs for Software

OSTI provides DOIs for DOE-funded software through the DOE software services platform and search tool DOE CODE. DOIs are optionally assigned when submitting software to OSTI and automatically assigned through the formal software announcement process.

PIDs for Text Documents

OSTI automatically assigns DOIs to DOE-funded technical reports, workshop reports, conference posters, and presentations submitted to OSTI through the E-Link submission system.

PIDs for Awards

OSTI provides the Award DOI Service for DOE organizations to assign DOIs to awards, grants, and contracts.

PIDs for People

OSTI leads the US Government ORCID Consortium for US government organizations who would like to use, collect, and integrate ORCID iDs into their research workflows.

PIDs for Organizations

OSTI maintains an internal organization authority that maps organization names to organization PIDs such as ROR, DOI, Wikidata, and Ringgold identifiers.

Using PIDs for Reporting and Easing Burden

United States Department of Energy Energy Link System (E-Link) DOE STI Management System

1. Product Description

Submission of USDOE Scientific and Technical Information (Step-by-step version of Announcement Notice 241.3)
(For use by Financial Assistance Recipients and Non-Major Site/Facility Management Contractors to submit Final Technical Reports, Accepted Manuscripts of Journal Articles, Conference Papers, and other STI products under an award; reference other Submission Options for Software and Datasets)

*** DOE Award/Contract Number ?**
DE-ostitest

Other Identifying Numbers ?
Enter other numbers that may aid in online retrieval

Award DOIs ?
(Click on a row below to Edit or Delete Award DOIs)

DOI	Funder
No data available in table	

Showing 0 to 0 of 0 entries
[Add Award DOI](#) [Clear](#)

*** Recipient/Contractor (Organization) ?**
University of

*** STI Product Type ?**
Accepted Manuscript of Journal Article

*** Is there a DOI assigned to this Manuscript ?**
 Yes No
This accepted manuscript will be made publicly available and disc OSTI products after an administrative interval of 12 months from t A digital object identifier (DOI) is a unique persistent identifier that object and provides long-term access; DOIs remain stable even if address or URL for the content changes.

What is an accepted manuscript?
An accepted manuscript is the version of the article that has been publication by a publisher and includes changes made during the also known as the final peer-reviewed accepted manuscript. It incl content as the published article in the journal and may or may not include all of the publisher's form or format. [Find more info](#)

*** Digital Object Identifier (DOI) ?**
10.1088/1742-6596/713/1/012008
Your DOI may auto-populate some of the title, author, and publication date.

*** Required**

*** Is there a DOI assigned to this Manuscript?**
 Yes No

This accepted manuscript will be made publicly available and disc OSTI products after an administrative interval of 12 months from t A digital object identifier (DOI) is a unique persistent identifier that object and provides long-term access; DOIs remain stable even if address or URL for the content changes.

What is an accepted manuscript?
An accepted manuscript is the version of the article that has been publication by a publisher and includes changes made during the also known as the final peer-reviewed accepted manuscript. It incl content as the published article in the journal and may or may not include all of the publisher's form or format. [Find more information and accepted manuscript examples.](#)

*** Digital Object Identifier (DOI) ?**
10.1088/1742-6596/713/1/012008
Your DOI may auto-populate some of the required metadata, including title, author, and publication date.

1. Product Description

2. Product Type Info

3. Authors

4. Content

5. Related Documents

6. Contact Info

7. Upload/Link

8. Certifications

9. Summary

Product Type Info

*** STI Product Title ?**
Novel Target Fabrication Using 3D Printing Developed at University of Michigan

Conference Information
(title, location, dates)

*** Journal Name**
Journal of Physics: Conference Series

Volume 713 **Issue**

Serial Identifier ISSN 1742-6588 **Page Range** Article No. 012008

Publication/Issue Date ?
 Date MM/DD/YYYY
 Publication/Issue
Year YYYY Journal Issue [Select One] v
05/24/2016 [Clear Date](#)

*** Required** [Start Over](#) [Previous](#) [Next](#)

Using PIDs to Broaden Discovery and Make Connections

Data Record

Omics-Lethal Human Virus, Influenza A Experiment ICL102

Full Record | References (1) | Cited by (1) | Other Related Research

DATASET:

[View Dataset](#)

<https://doi.org/10.25584/LHVICL102/1661912>

Data DOI

Abstract

The purpose of this experiment was to evaluate the human host cellular response to wild-type Influenza A/Anhui/1/2013 (H7N9; "AH1-WT") virus and NS1-L103F/1103F partially ferret-adapted ("AH1-691") mutant virus infection. Sample data was obtained from carcinoma cells (Calu-3) and processed for mRNA, miRNA, proteomic, and metabolomic analysis. Secondary host-associated viral dataset download and analysis. Quantitative statistically processed (normalization data transfer) resulting from primary viral experimental study design data, leveraging unique capabilities. Proteomic, metabolomic, lipidomic, and/or transcriptomics dataset download a direct relationship to a primary sample data submission corresponding to a specific Influenza A host infection.

**Researchers/Authors
ORCID iDs**

Authors: [Anderson, Lindsey](#) [1]; [Eisfeld, Amie J](#) [2]; [Waters, Katrina M](#)

+ Show Author Affiliations

Publication Date: 2021-01-18

Research Org.: Pacific Northwest National Lab. (PNNL), Richland, WA (United States); Environmental Molecular Sciences Lab. (EMSL)

Sponsoring Org.: National Institute of Allergy and Infectious Diseases (NIAD), 619 [U19A]106

Contributing Org.: Environmental Molecular Sciences Laboratory [ROR:04...

OSTI Identifier: 1661912

Report Number(s): ICL102
PRJNA284341 (NCBI BioProject), GSE151111 (GEO Series, miRNA transcriptome); MSV00007916 (Metabolite LC-MS proteomics); MSV00007915 (Metabolite LC-MS lipidome); MSV000079156 (MassIVE, Global MS metabolite)

DOE Contract Number: AC05-76RL01830

**Research
Organization
ROR IDs**

**Sponsoring/Funding
Organization ROR ID**

Contract/Award/Grant DOI

Full Record | **References (1)** | Cited by (1) | Other Related Research

All References > Works referenced in this record:

Journal (1)

Hypergraph analysis of biological networks to identify genes critical to pathogenic viral response

JOURNAL, MAY 2021

Feng, Song; Heath, Emily; Jefferson, Brett

BMC Bioinformatics, Vol. 22, Issue 1

<https://doi.org/10.1186/s12859-021-04197-2>

Reference Publication DOI

Full Record | References (1) | **Cited by (1)** | Other Related Research

All Cited By > Works referencing / citing this record:

Dataset (1)

PNNL DataHub Project Omics-LHV Profiling of Host Response to Influenza Infection Post-Processed Data Package DOIs

DATASET, JANUARY 2021

Anderson, Lindsey; McDermott, Jason; Waters, Katrina

Pacific Northwest National Laboratory 2; PNNL

<https://doi.org/10.25584/LHVFLU/1773428>

Cited By Data DOI

SOFTWARE - [Statistical Analysis](#)

pmartR: Quality Control and Statistics for Mass Spectrometry-Based Biological Data

SCIENTIFIC DISCOVERY

BIOLOGY

COMPUTATIONAL RESEARCH

SOFTWARE DATA ANALYSIS

STATISTICS

MASS SPECTROMETRY

OMICS

Reference Software DOI

pmartR Software Overview

<https://data.pnnl.gov/group/nodes/software/33341>

Using PIDs to Broaden Discovery and Make Connections



<https://doi.org/10.46936/10.25585/60008401>

Award Record

Award DOI Service OSTI.GOV
U.S. Department of Energy
Office of Scientific and Technical Information

Submit/Edit Dev Tools & Resources About FAQs Contact Sign In
Create an Account

SIP-Omics: Development of a semi-automated stable isotope probing pipeline for targeted metagenomics & metatranscriptomics

AWARD	Lead Investigator:	Pett-Ridge, Jennifer 
Site Award URL: https://genome.jgi.doe.gov/portal/SIPOmicriptomics/SIPOmicriptomics.info.html	Awarding Organization:	1. DOE OBER, NSF Joint Genome Institute (JGI) 
Award DOI: https://doi.org/10.46936/10.25585/60008401	Award Type:	Award
	Site Award Number:	2749
	Award Start Date:	2016-01-06

Award DOI **Investigator ORCID ID** **Awarding Organization ROR ID** **Publication DOI**

Research | [Open Access](#) | [Published: 25 November 2022](#)

HT-SIP: a semi-automated stable isotope probing pipeline identifies cross-kingdom interactions in the hyphosphere of arbuscular mycorrhizal fungi

[Erin E. Nuccio](#) , [Steven J. Blazewicz](#), [Marissa Lafler](#), [Ashley N. Campbell](#), [Anne Kakouridis](#), [Jeffrey A. Kimbrel](#), [Jessica Wollard](#), [Dariia Vyshenska](#), [Robert Riley](#), [Andy Tomatsu](#), [Rachel Hestrin](#), [Rex R. Malmstrom](#), [Mary Firestone](#) & [Jennifer Pett-Ridge](#) 

Microbiome **10**, Article number: 199 (2022) | [Cite this article](#)

3152 Accesses | 1 Citations | 105 Altmetric | [Metrics](#)

Acknowledgements

We thank Steve Kubala for assistance programming the robotic methods, Craig See for assistance with manual refractometry, G. Mike Allen for SIP technical assistance, Edith Lai for laboratory assistance, and the JGI IMG and metagenomics teams for assistance with data processing (Neha Varghese, Alicia Clum, Marcel Huntemann, Tatiparthi Reddy, Supratim Mukherjee). Work at Lawrence Livermore National Laboratory was conducted under the auspices of the U.S. DOE under Contract DE-AC52-07NA27344. The work conducted by the U.S. Department of Energy Joint Genome Institute (<https://ror.org/04xm1d337>), a DOE Office of Science User Facility, is supported by the Office of Science of the U.S. Department of Energy operated under Contract No. DE-AC02-05CH11231.

Funding

Development of the HT-SIP pipeline was sponsored by the Joint Genome Institute through an Emerging Technologies Opportunities Program award (DOI: 10.46936/10.25585/60008401) to JP, SB, EN, and AC. Experimental validation of the LLNL HT-SIP pipeline was supported by the U.S. Department of Energy Office of Science, Office of Biological and Environmental Research (BER) Genomic Science Program (GSP) "Microbes Persist" Scientific Focus Area award SWC1632 to JP. Metagenomics sequencing and hyphosphere-SIP analysis was supported by DOE BER Early Career award SCW1711 to EN. The ¹³C₂ plant-AMF experiment was supported by DOE BER GSP awards DE-SC0016247 and DE-SC0020163.

<https://doi.org/10.1186/s40168-022-01391-z>

Using PIDs to Understand Impact

Impact of Persistent Identifiers

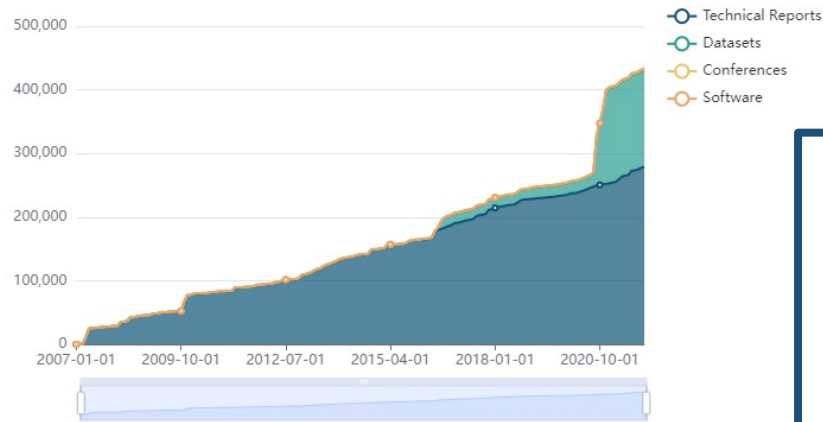
The persistent identification of digital entities (e.g., research outputs, people, funders, awards, etc.) can increase discoverability of research, alleviating data validation issues, and reducing researcher burden.

By increasing discoverability of research-related objects, user communities can track their research over time and develop programmatic methods for finding, reproducing, and reusing research. PIDs are an essential component to developing mechanisms for human-machine interoperability, which helps promote improved citation and reference tracking.

PIDs are not just for journal articles and datasets. DOE OSTI collects DOIs for many different research product types (e.g. conference papers, conference proceedings, journal articles, etc.). And OSTI's [DOI Services](#) provide DOI assignment and registration for technical reports, conference posters and presentations, data, and software.

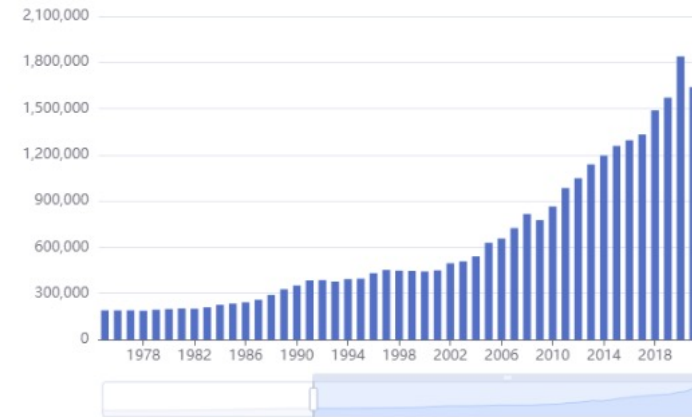
Since 2007, more than 400k DOIs have been registered by OSTI on behalf of the DOE community for texts, data, and software. More than 1.6M of the records in OSTI.GOV can be referenced with a DOI.

Total DOI Registration by Type



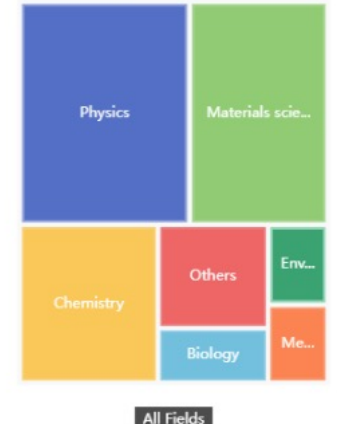
To date, more than 260k records in OSTI.GOV have been submitted or curated with related identifiers that identify specific types of relationships with other research products.

Citations of OSTI Records in Scientific / Scholarly Publications

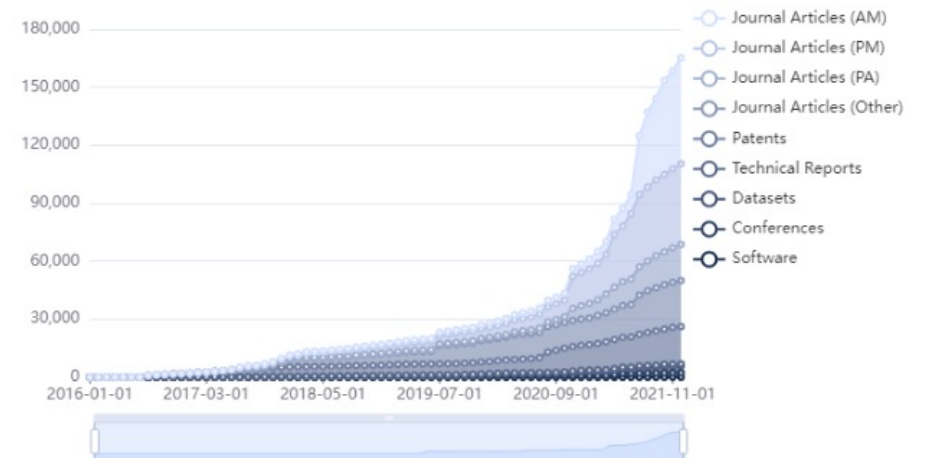


Citations by Field (All Years)

30,805,905 citations



R&D Results with Related Identifiers by Type



Thank you!

carly.robinson@science.doe.gov

Please reach out to pids@osti.gov with any questions.