RRIDS: A WAY TO TRACK RESOURCES THROUGH THE LITERATURE

...LIKE ORCID FOR CORE FACILITIES?

RRID
Research Resource ID's

Anita Bandrowski, PhD
UCSD Dept. Neurosci
RRIDs lead: https://scicrunch.org/resources
COI: Co-Founder and CEO of SciCrunch Inc

RRIDS: A WAY TO TRACK RESOURCES THROUGH THE RE ES?

Official 501(c)(3) non-profit as of February 2024!

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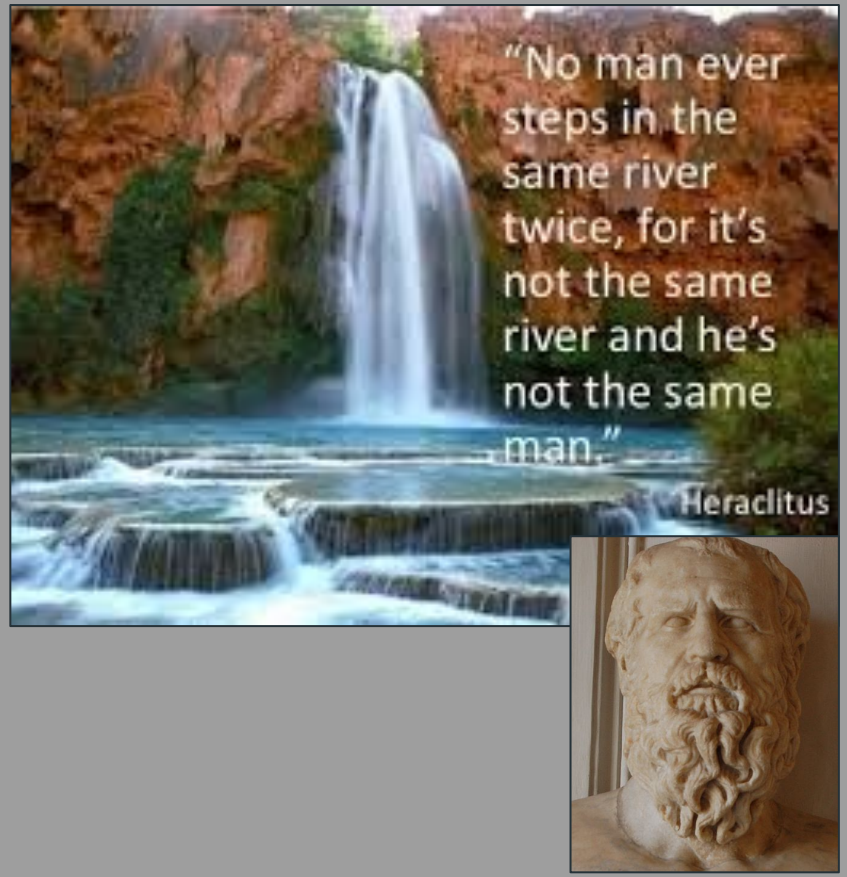
WHAT IS THE INTERNET, WHY RRIDS?



- Internet, like a river, is not persistent
- Scientific literature is persistent
- How can we bridge these worlds?
- RRIDs are persistent unique identifiers for things that can change such as key biological resources, cores and Instruments

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mBio. 2019 Jul-Aug; 10(4): e01942-19. PMCID: PMC67
Published online 2019 Aug 27. doi: 10.1128/mBio.01942-19 PMID: 314

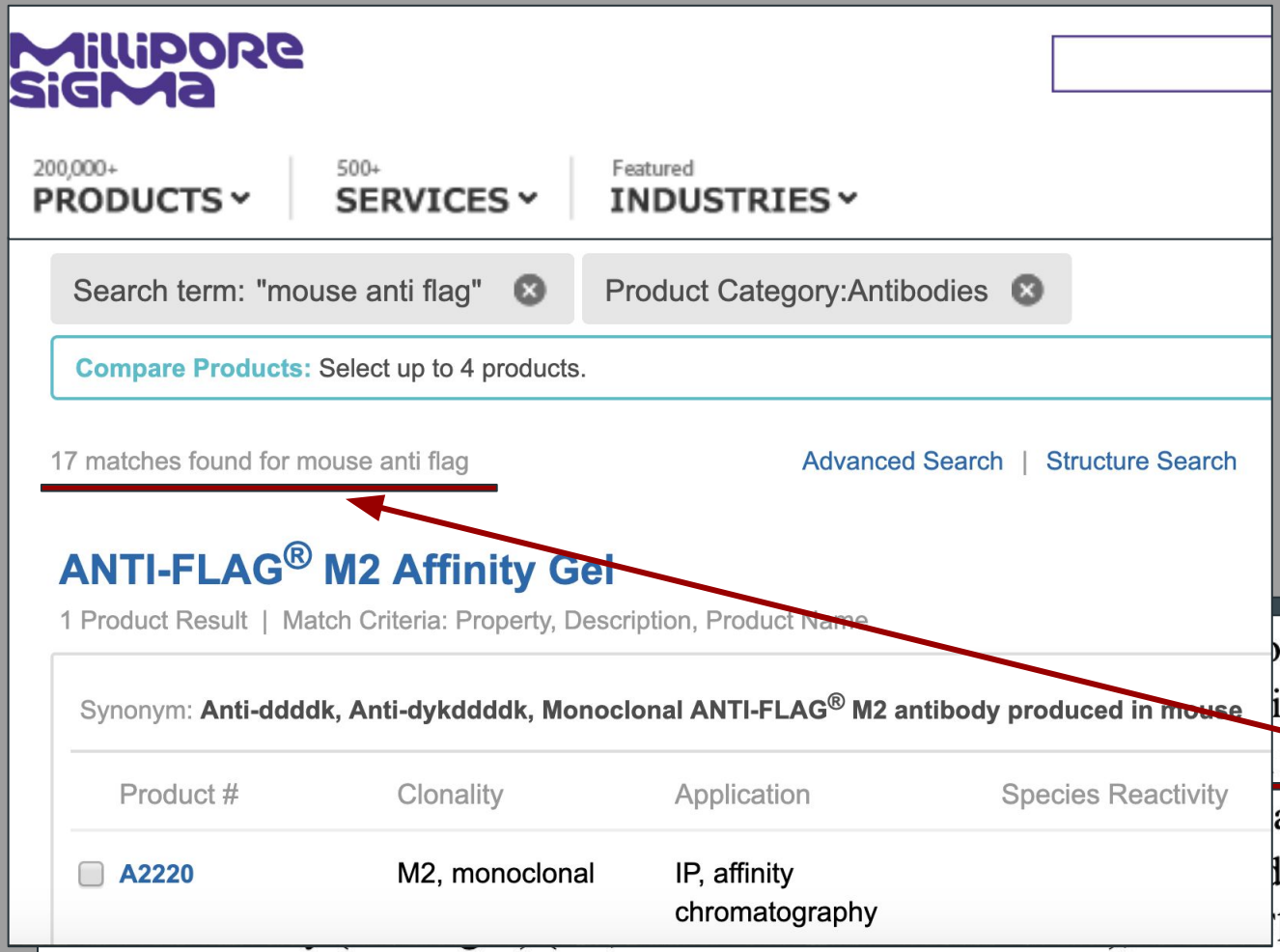
Interaction of the Ankyrin H Core Effector of *Legionella* with the Host LARP7 Component of the 7SK snRNP Complex

Juanita Von Dwingelo,[#a] Ivy Yeuk Wah Chung,[#b] Christopher T. Price,[a] Lei Li,[b] Snake Jones,[a] Miroslaw Cy
and Yousef Abu Kwaik[a,d]

Scot P. Ouellette, Editor
Scot P. Ouellette, University of Nebraska Medical Center;

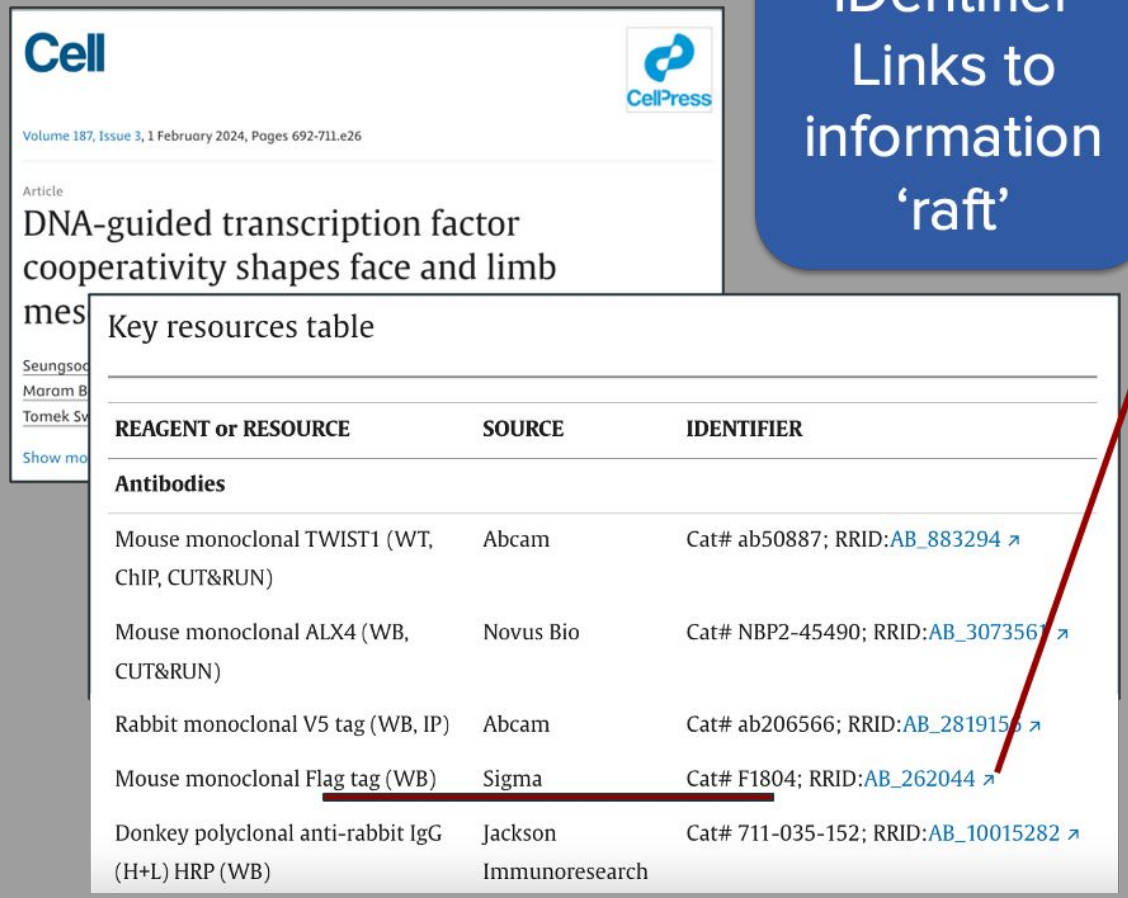
How are key resources described?

Confocal laser scanning microscopy. Processing of transfected cells for confocal microscopy was performed as we described previously. Briefly, monolayers were permeabilized and fixed using 100% methanol held at –20°C for 5 min and were then blocked and labeled with mouse-anti-FLAG (Sigma) (1/200 dilution in 3% bovine serum albumin [BSA]–phosphate-buffered saline [PBS]) and rabbit-anti-Myc (Proteintech) (1/200 dilution in 3% BSA–PBS). Cells were counterlabeled with Alexa Fluor 488 anti-mouse antibody (Invitrogen) (1/4,000 dilution in 3% BSA–PBS), Alexa-Fluor 555 anti-rabbit antibody

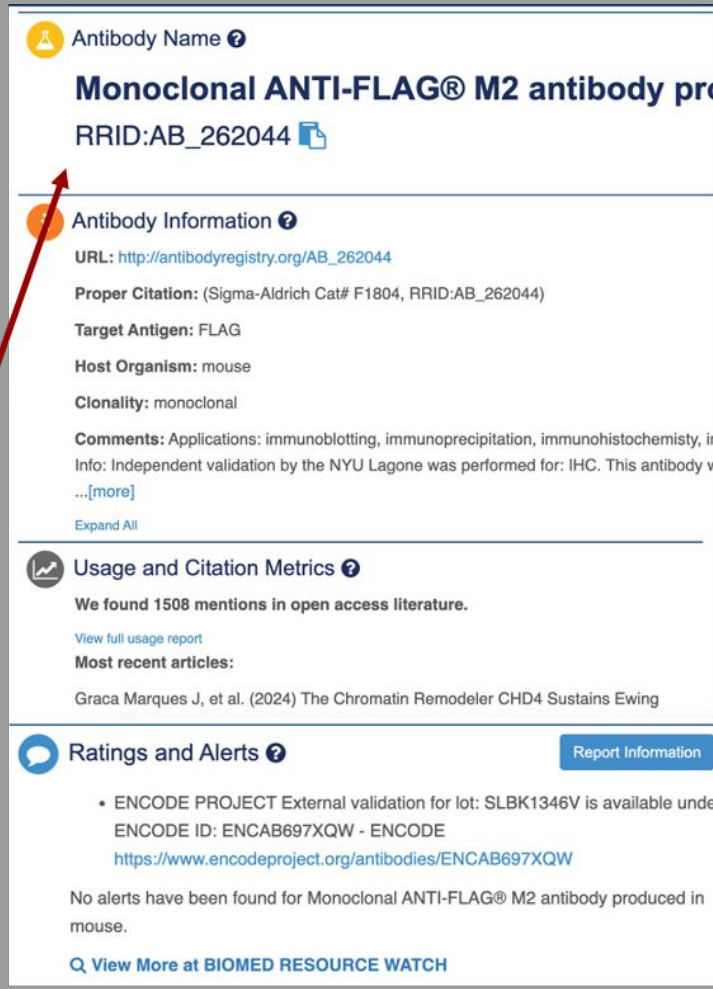


No IDentifier
=
Not Findable

...r confocal microscopy was
...ilized and fixed using 100%
mouse-anti-FLAG (Sigma)
...aline [PBS]) and rabbit-anti-Myc
...l with Alexa Fluor 488 anti-
...luor 555 anti-rabbit antibody

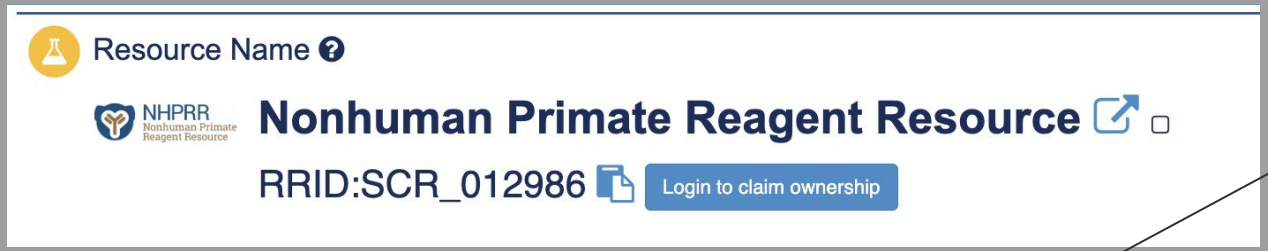


IDentifier Links to information ‘raft’



HOW ARE CORES AND INSTRUMENTS ACKNOWLEDGED?

HOW ARE CORES AND INSTRUMENTS ACKNOWLEDGED?



Materials and Methods

Go to:

Animal inoculation and cART treatment

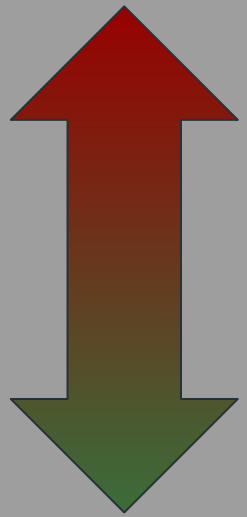
Eight Indian-origin adult rhesus macaques, housed according to the standards of the American Association for Accreditation of Laboratory Animal Care, were inoculated with SIVmac251 (20ng SIV *p27*, i.v. supplied by Ron Desrosiers, Harvard Medical School) and depleted of $CD8^+$ cells by treatment with the monoclonal anti-CD8 antibody cM-T807 (supplied by Keith Reimann, National Cell Culture Center) on 6, 8, and 12 days post-inoculation (dpi) as previously described to accelerate disease progression (Ratai *et al*, 2010; Schmitz *et al*, 1999; Williams *et al*, 2005). Four of the monkeys also received cART consisting of daily Racivir (RCV, 10mg/kg, supplied by Raymond Schinazi) and (R)-9-(2-phosphonylmethoxypropyl) adenine (PMPA, 20 mg/kg, Gilead Sciences, Foster City, CA), nucleoside and nucleotide analogs, respectively, neither of which penetrates the CNS (Haworth *et al*, 1998; Schinazi *et al*, 1992) (Table 1). The drugs were given orally for 4 weeks beginning on 28 dpi. Terminal CSF samples were analyzed for the presence of RCV metabolites to test for CNS penetration of this drug (Williams *et al*, 2005).

Reagent ID & former core director acknowledged;

Core name was never National Cell Culture Center, director changed 6 years ago; reagent in freezer for 20 year

HOW ARE CORES AND INSTRUMENTS ACKNOWLEDGED?

- Cores can be acknowledged by:
  - Name of staff member
  - Core PI name
  - Name of core
  - URL
  - Grant #
  - RRID

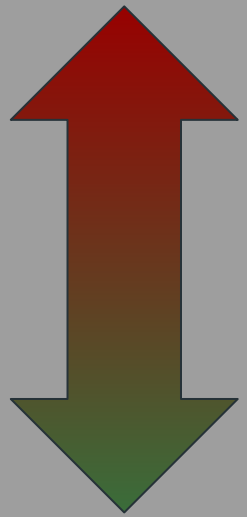


Less reliable

More reliable

HOW ARE CORES AND INSTRUMENTS ACKNOWLEDGED?

- Cores can be acknowledged by:
  - Name of staff member
  - Core PI name
  - Name of core
  - URL
  - Grant #
  - RRID



More time

Less time

ADVICE FROM YOUR FRIENDLY NEIGHBORHOOD LIBRARIANS: USE RRIDS!

COMMENTARY

DOI: dx.doi.org/10.5195/jmla.2024.1887

Research networking and the role of the medical librarian

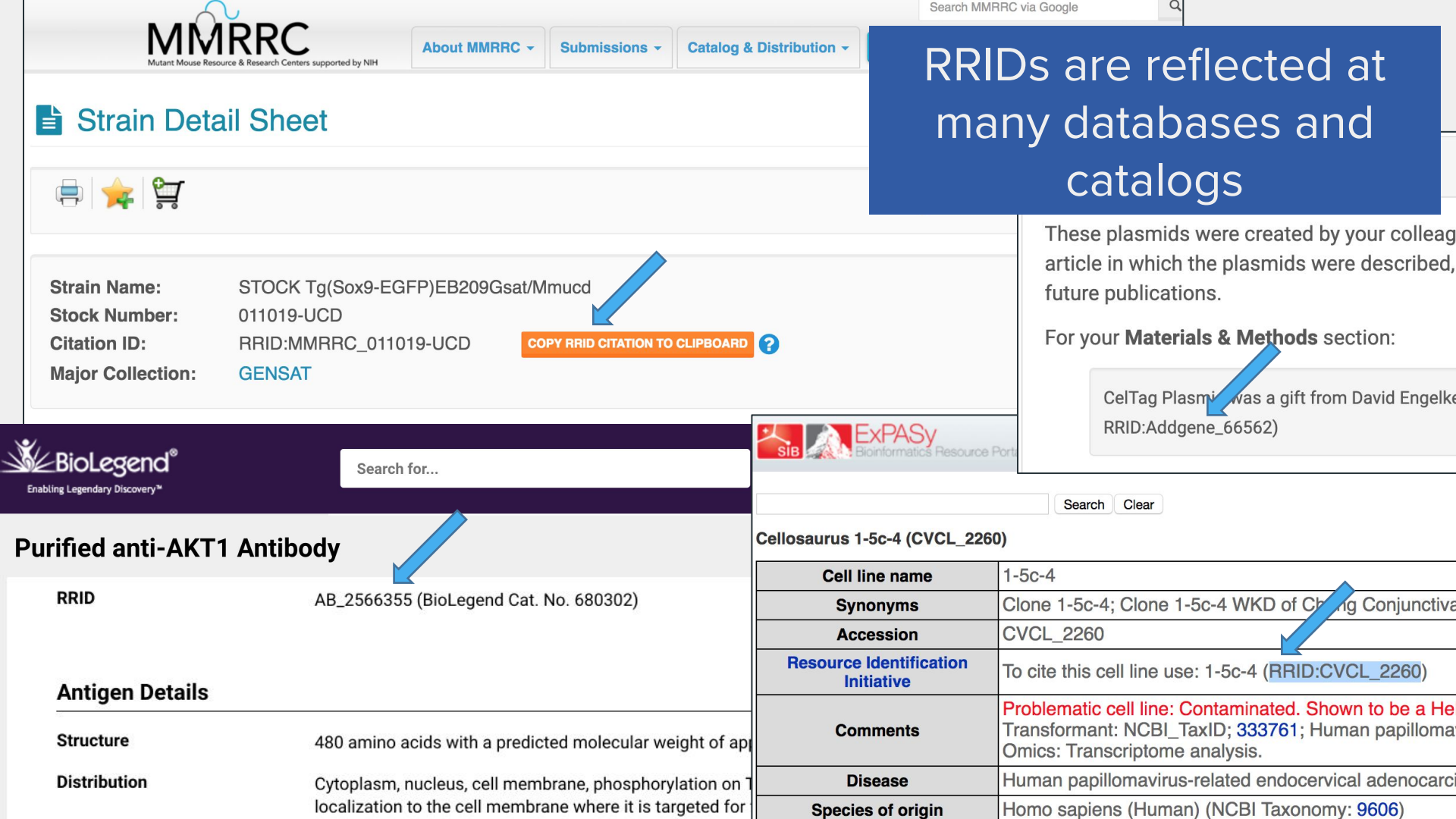
Robyn Reed, AHIP; Matthew J. Eyer; Megan M. Young; Sarah K. Bronson

See end of article for authors' affiliations.

Medical librarians work collaboratively across
librarians can provide key expertise is in the
(RIMS). At Penn State, the RIMS implementa
marketing staff from the College of Medicine
expanded their own RIMS systems, the CoM
State RIMS instance. The goal of this comme
Penn State to address questions related to r
from other institutions.

"…The efforts of the CoM RIMS team collaborating with the director of the biomedical core facilities have improved internal return-on-investment analyses while publicly demonstrating applications from research core usage on the RIMS. As uptake of RRID usage increases, reporting on the impact of individual core facilities may be simplified to searches employing only RRIDs."

Keywords: Research networking; collaboration; biomedical research


MMRRC
Mutant Mouse Resource & Research Centers supported by NIH
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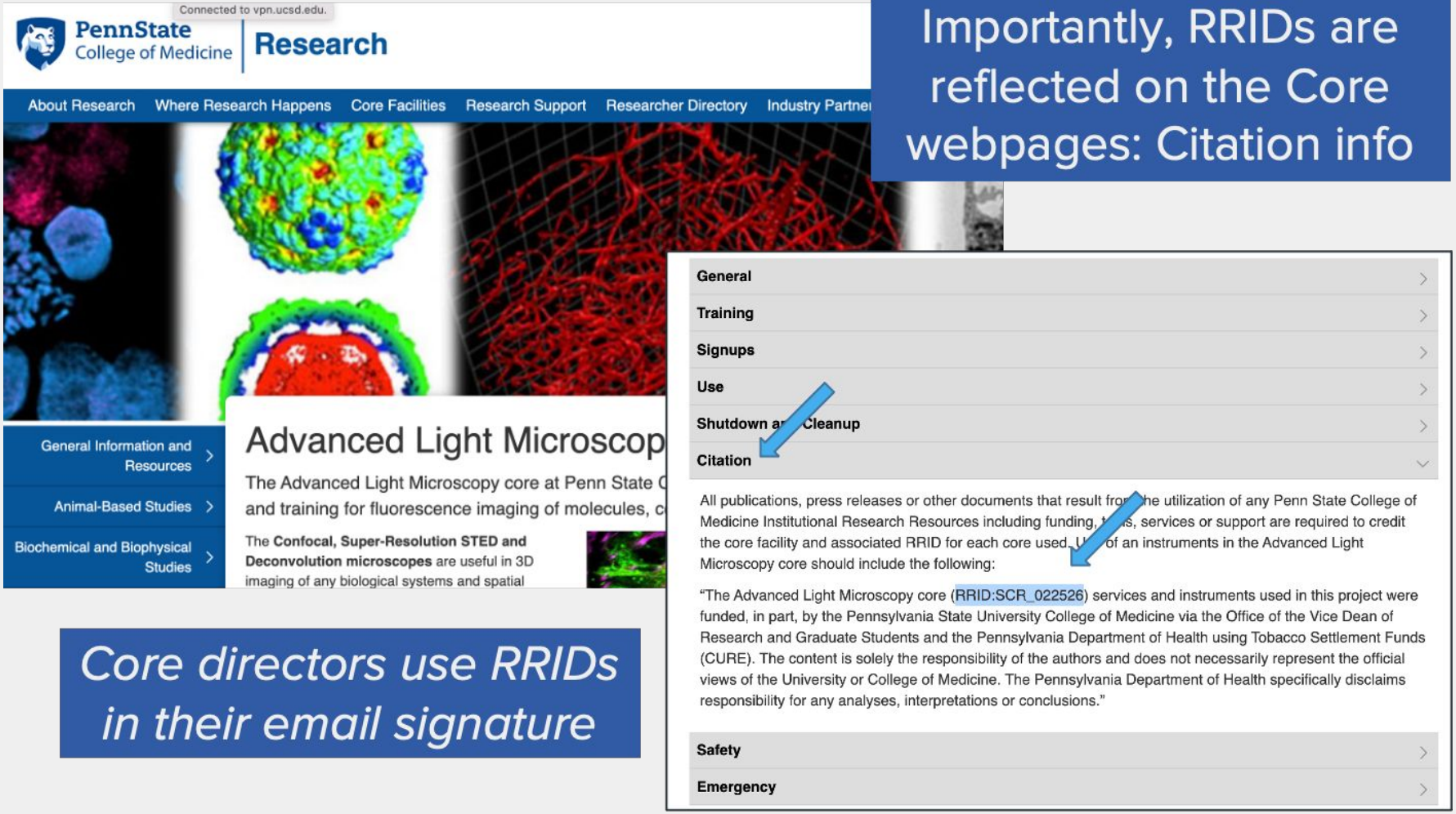
RRIDs are reflected at many databases and catalogs
Strain Detail Sheet
Strain Name: STOCK Tg(Sox9-EGFP)EB209Gsat/Mmucd
Stock Number: 011019-UCD
Citation ID: RRID:MMRRC_011019-UCD
COPY RRID CITATION TO CLIPBOARD
Major Collection: GENSAT
These plasmids were created by your colleag
article in which the plasmids were described,
future publications.
For your Materials & Methods section:
CelTag Plasmi was a gift from David Engelke
RRID:Addgene_66562)
BioLegend
Enabling Legendary Discovery™
Search for...
ExPASy
Bioinformatics Resource Port
Search
Clear
Purified anti-AKT1 Antibody
RRID
AB_2566355 (BioLegend Cat. No. 680302)
Antigen Details
Structure
480 amino acids with a predicted molecular weight of ap
Distribution
Cytoplasm, nucleus, cell membrane, phosphorylation on T
localization to the cell membrane where it is targeted for
Cellosaurus 1-5c-4 (CVCL_2260)
Cell line name
1-5c-4
Synonyms
Clone 1-5c-4; Clone 1-5c-4 WKD of Ch ng Conjunctiva
Accession
CVCL_2260
Resource Identification Initiative
To cite this cell line use: 1-5c-4 (RRID:CVCL_2260)
Comments
Problematic cell line: Contaminated. Shown to be a He
Transformant: NCBI_TaxID; 333761; Human papilloma
Omics: Transcriptome analysis.
Disease
Human papillomavirus-related endocervical adenocarci
Species of origin
Homo sapiens (Human) (NCBI Taxonomy: 9606)

Importantly, RRIDs are reflected on the Core webpages: Citation info



Core directors use RRIDs in their email signature

Who does this?

2000+ journals have RRID containing papers
>5000 journals indexed in Pubmed

eLIFE About Careers Labs

July 2016

eLife joins the Resource Identification Initiative

Thursday, July 7, 2016 - 09:05

To promote reproducibility in scientific researc
Research Resource Identifiers, encouraging a
description of the research resources within t

Resources used in experimental work are often ir
barrier to replicating the results. That is why we h
Initiative (#RII), a community-led project that origi
aims to improve reproducibility in biomedical and
and unique Research Resource Identifiers (RRIDs
resources.

RRIDs must be machine-readable, free to genera
publishers and journals.

ENDOCRINE SOCIETY

Aug 2016

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Home > Instructions to Authors > Endocrinology Instructions to Authors

Antibody Table

It is the policy of *Endocrinology* to require authors using antibodies for immunohistochemistry, immunocytochemistry, western blots, immunoblots, immunoneutralization, or related methodology, to submit an Antibody table. This table should be numbered to indicate its position in the sequence of tables in the article (e.g. Table 1). In the Methods section, ...riate positive or negative controls, antibody validation, lot number, and ...ces. Beginning in September 2016, authors should also ascertain whether the Research Resource Identifier (RRID) by consulting the Antibody Registry and ...rmation, if available, in the Methods section and/or the Antibody table of the

JNeurosci
THE JOURNAL OF NEUROSCIENCE
An Official Journal of SFN SOCIETY for NEUROSCIENCE

Feb 2014

RRIDS

JNeurosci encourages use of Rese...RIDs) through the Resource Identifica...
used in the course of scientific res...ss concerns of reproducibility by pro...
RRIDs can be used to link readers to external resources and enable search engines to return all pape...

To find an RRID: visit https://scicrunch.org/resources and enter your search term(s).

- Antibodies: searching for the catalog number usually narrows the search to only a few relevant res...
- Cell Lines: searching for the catalog number of an established cell line is usually best, searching fo...
of results.
- Organisms: you can include PubMed IDs (PMIDs) in your search or filter your search results by PM...
- Software tools: usually the name of the tool (MATLAB or ImageJ) or the institution where it is hous...

Search help is available at: rii-help@scicrunch.org.

Once you have located an RRID, insert "RRID:" plus the identifier in the appropriate location in the m...

- Antibodies: "Sections were stained with a rabbit polyclonal antibody against ERK1 (Abgent Cat# A...

eNeuro
an open-access journal of SFN SOCIETY for NEUROSCIENCE

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FOR AUTHORS

Jun 2016

PDF Information for Authors

eNeuro, an open-access journal from the Society for Neuroscience, publishes high-quality, b... peer-reviewed research focused solely on the field of neuroscience. *eNeuro* embodies a... scientific vision that offers a new experience for authors and readers, all in support of SfN's advance understanding of the brain and nervous system.

CellPress

Explore

Oct 2016

Cell Press STAR Methods

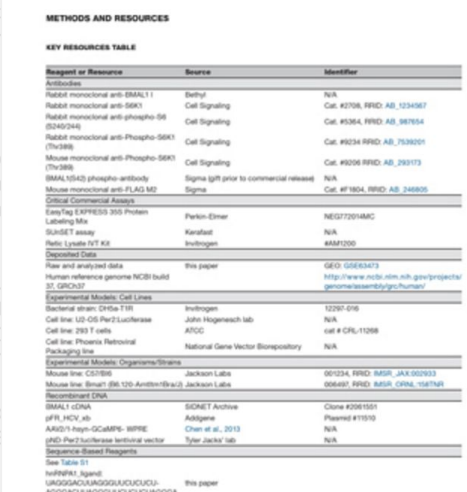
Cell Press is pleased to introduce a new format for reporting methods that replaces ... Methods format (Structured, Transparent, Accessible Reporting) will be introduced ... journals. The format ... improved rigor and r...

Text Format

The Methods and R... There is no length li... Methods and Resou...

- CONTACT FOR ...
- EXPERIMENTAL ...
- METHOD DETA...
- QUANTIFICATIO...
- DATA AND SOF...
  - Software
  - Data Resour...
- ADDITIONAL RE...

Table Format

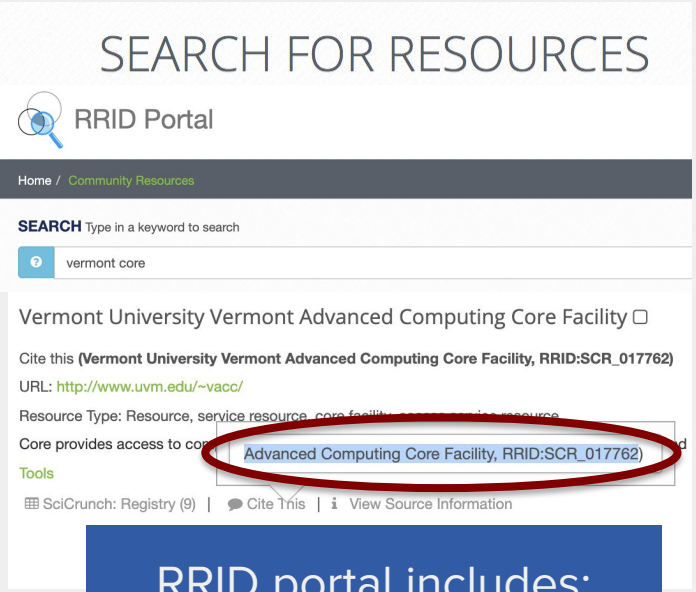

METHODS AND RESOURCES

KEY RESOURCES TABLE

Reagent or Resource	Source	Identifier
Antibodies		
Rabbit monoclonal anti-BMAL1 I	Bethyl	N/A
Rabbit monoclonal anti-S6K1	Cell Signaling	Cat. #2708, RRID: AB_1234567
Rabbit monoclonal anti-phospho-S6 (S240/244)	Cell Signaling	Cat. #5364, RRID: AB_987654
Rabbit monoclonal anti-Phospho-S6K1 (Thr389)	Cell Signaling	Cat. #9234 RRID: AB_7539201
Mouse monoclonal anti-Phospho-S6K1 (Thr389)	Cell Signaling	Cat. #9206 RRID: AB_293173
BMAL1(542) phospho-antibody	Sigma (gift prior to commercial release)	N/A
Mouse monoclonal anti-FLAG M2	Sigma	Cat. #F1804, RRID: AB_246805
Critical Commercial Assays		
EasyTag EXPRESS 35S Protein Labeling Mix	Perkin-Elmer	NEG772014MC
SUnSET assay	Kerafast	N/A
Retic Lysate IVT Kit	Invitrogen	#AM1200
Deposited Data		
Raw and analyzed data	this paper	GEO: GSE63473
Human reference genome NCBI build 37, GRCh37		http://www.ncbi.nlm.nih.gov/projects/genome/assembly/grc/human/
Experimental Models: Cell Lines		
Bacterial strain: DH5α-T1R	Invitrogen	12297-016
Cell line: U2-OS Per2:luciferase	John Hogenesch lab	N/A
Cell line: 293 T cells	ATCC	cat # CRL-11268
Cell line: Phoenix Retroviral Packaging line	National Gene Vector Biorepository	N/A
Experimental Models: Organisms/Strains		
Mouse line: C57/B6	Jackson Labs	001234, RRID: IMSR_JAX:002933
Mouse line: Bmal1 (B6.120-Arntltm1Bra/J)	Jackson Labs	006497, RRID: IMSR_CRNL:15878R
Recombinant DNA		
BMAL1 cDNA	SIDNET Archive	Clone #20661501
pFR_HCV-ab	Addgene	Plasmid #11510
AAV2/1-hsyn-GCaMP6- WPRE	Chen et al., 2013	N/A
pND-Per2:luciferase lentiviral vector	Tyler Jacks' lab	N/A
Sequence-Based Reagents		
See Table S1		
hnRNPA1 ligand: UAGGGAGUUAGGGUUCUCUCU-	this paper	

RRID AUTHOR'S WORKFLOW

https://scicrunch.org/resources
or rrid.site



RRID portal includes:
Antibodies >2.5M
Organisms >800K (~30 centers)
Cell lines >150K
Plasmids (Addgene) >100K
Stats tools,Core fac. etc 23K

Journal directs author to RRID portal

Author searches for a resource

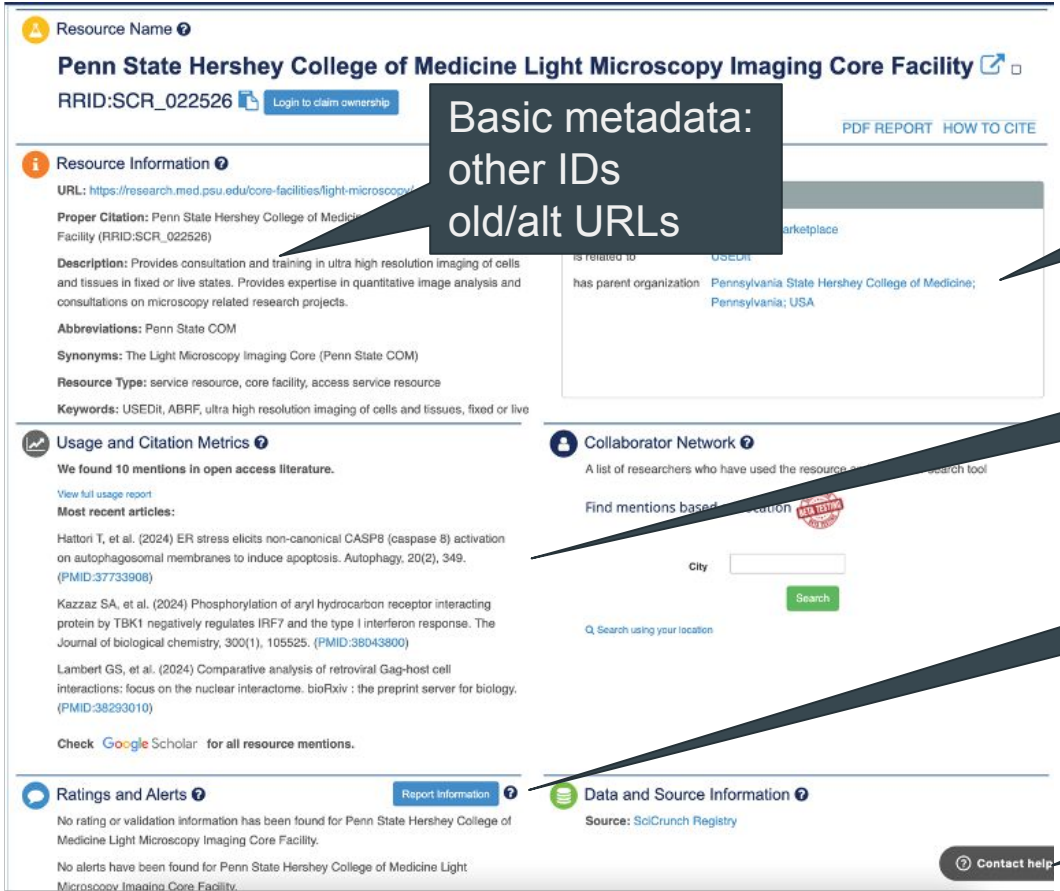
Author copies "Cite This" text into manuscript

Paper is published

Paper becomes data

EACH RRID HAS A DEDICATED WEBPAGE

N2T.NET/RRID:SCR_022526



Basic metadata: other IDs old/alt URLs

Relationships to other resources Institutions ROR!

Citations of resource

Ratings and alerts

Well used helpdesk

CORE MARKETPLACE

Total cores: 2,855
Last 4 years: 1,727
1.2 per day
Cited cores: 605

All Mentions (10 mentions) [Download Mentions]

First | Previous | 1 | Next | Last Page 1 of 1 (1 ~ 10 of 10)

Hattori T, et al. (2024) ER stress elicits non-canonical CASP8 (caspase 8) activation on autophagosomal membranes to ind
-- ; e (**RRID:SCR_022526**) and Genome Sciences Core (RRID [Verified RRID ✓]

Kazzaz SA, et al. (2024) Phosphorylation of aryl hydrocarbon receptor interacting protein by TBK1 negatively regulates IRF
chemistry , 300 (1) , 105525. (PMID:38043800)
-- ; Advanced Light Microscopy Core (**RRID:SCR_022526**), Flow Cytometry Core (RRID:SCR [Verified RRID ✓]

Lambert GS, et al. (2024) Comparative analysis of retroviral Gag-host cell interactions: focus on the nuclear interactome. bi
-- ; core (**RRID:SCR_022526**) services and instruments used [Verified RRID ✓]

Ye Y, et al. (2024) Identification of membrane curvature sensing motifs essential for VPS37A phagophore recruitment and a
(PMID:38491121)
-- image quantification. The NMR (**RRID:SCR_022526**) and Advanced Light Microscopy [Verified RRID ✓]

Saha K, et al. (2023) Alpha-tocopherylquinone-mediated activation of the Aryl Hydrocarbon Receptor regulates the producti
inflammation. Mucosal immunology , 16 (6) , 826. (PMID:37716509)
--

Kaddis Maldonado R, et al. (2023) The Rous sarcoma virus Gag Polyprotein Forms Biomolecular Condensates Driven by In
435 (16) , 168182. (PMID:37328094)
-- Advanced Light Microscopy Core (**RRID:SCR_022526**). The Advanced Light Microscopy [Verified RRID ✓]

Pandya Shesh B, et al. (2023) Uptake of H-ferritin by Glioblastoma stem cells and its impact on their invasion capacity. Jou
-- Advanced Light Microscopy core (**RRID:SCR_022526**) services and instruments used [Verified RRID ✓]

Chang J, et al. (2023) HIV-1 Gag co-localizes with euchromatin histone marks at the nuclear periphery. Journal of virology ,
-- Advanced Light Microscopy Core (**RRID:SCR_022526**), which is funded, in part, by [Verified RRID ✓]

RRID
Research Resource ID's

RRIDs are visible in papers, sometimes linked; Brings trust in citations

INSTRUMENTS HAVE MORE CONSISTENT TEXT MINING RESULTS

All Mentions (1085 mentions) [Download Mentions]

First Previous 1 2 3 4 5 6 Next Last Page 1 of 11 (1 ~ 100 of 1085)

Huang LC, et al. (2024) BRCA1 and ELK-1 regulate neural progenitor cell fate in the optic tectum in response to visual experience in
Academy of Sciences of the United States of America , 121 (3) , e2316542121. (PMID:38198524)
-- ; CSAria II, BD Biosciences, USA; **RRID:SCR_018934**). [Verified RRID]

Bennett NK, et al. (2024) Systems-level analyses dissociate genetic regulators of reactive oxygen species and energy production. Pro
United States of America , 121 (3) , e2307904121. (PMID:38207075)
-- ; ted on either a BD FACSAria II (**RRID:SCR_018934**) or a BD FACSAria Fusion (facil [Verified RRID]

Kinoshita S, e
(PMID:38380
-- as perfo

Adaku N, et a
-- (**RRID:S**

Sarrafha L, et
-- ; a II Cel

Sutton MS, et
-- sciences

Bennett NK, e
(PMID:37904
-- ; ted on

Tsukamoto S,
-- II cell so

Evans MK, et al. (2020) Ybx1 fine-tunes PRC2 activities to control embryonic brain development. Nature cor
-- After three washes in cold PBS, cells were resuspended in PBS and analyzed by BD FACSAria ™ Fusi

Zhang H, et al. (2020) An IL-27-Driven Transcriptional Network Identifies Regulators of IL-10 Expression acr
-- For RNA-seq and qPCR analysis of IL-10 producing and non-producing T helper cells, naive CD4+CD4
mice using BD FACSAria sorter and were activated with irradiated splenocytes depleted of CD4 T cells (a

Tanno H, et al. (2020) A facile technology for the high-throughput sequencing of the paired VH:VL and TCRβ
-- Cells were washed and analyzed with BD FACSAria and FlowJo v10 software.

Xie K, et al. (2020) Activation leads to a significant shift in the intracellular redox homeostasis of neutrophil-like cells. Redox biology , 28 , 101344. (PM
-- 2.4 Monoclonal cultures of roGFP2 expressing PLB-985 cells were generated using a fluorescence-activated cell sorter (FACS, BD FACSAria III,
respective software BD FACSDiva (version 8.0.1, BD, Franklin lakes, USA).

Cinque L, et al. (2020) MiT/TFE factors control ER-phagy via transcriptional regulation of FAM134B. The EMBO journal , 39 (17) , e105696. (PMID:32
-- Cells were collected in PBS, and the fluorescence was analyzed with BD FACSAria.

Of 2317 instruments 667 have citations;

Did authors use funded instrument? Core RRID + instrument citation

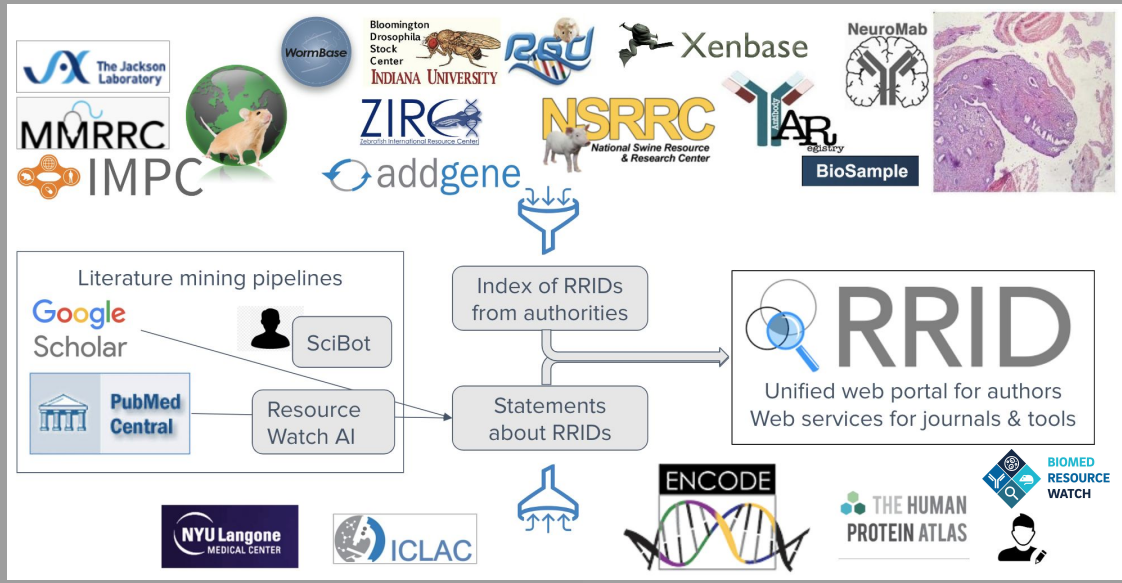
RRIDS: PIDS FOR KEY BIOLOGICAL RESOURCES

Millipore/Sigma Cat# MAB3026, RRID:AB_2178887 (lot#)
(Company Name) (Catalog number), (RRID Identifier from authority)

What does it do: The Resource Identification Initiative is designed to help researchers sufficiently cite the key resources used to produce the scientific findings reported in the biomedical literature.

What problem does it solve: Resources reported in the biomedical literature often lack sufficient detail to enable reproducibility or reuse. This has been called out as a serious enough problem by the NIH to introduce new guidelines for Rigor and Transparency for almost all awards in starting in May of 2016.

Who are the users: Publishers/journals, research resource companies (producing e.g. antibody, mouse and cell lines)



WHAT IF THERE IS NO RRID FOR YOUR RESOURCE?

https://scicrunch.org/resources

Getting Started

The Resource Identification Portal was created in support of the Resource Id
discovery, and reuse. The portal offers a central location for obtaining and ex
identifiers for referencing a research resource. This portal relies on the good
Cellosaurus. These community databases are the source for RRIDs of their ty
cite it using the RRID, if you created a new resource, we link you to the place
examples are shown below, which are linked to metadata about each resourc

Antibody: RRID:AB_90755

Plasmid: RRID:Addgene_44362

Organism: RRID:MMRRC_026409-UCD

Cell Line: RRID:CVCL_1074

Tool: RRID:SCR_003070

Biosamples: RRID:SAMN19842595

To ensure they are recognizable, unique, and traceable, identifiers are prefixe
that provided it (e.g. "*AB*" for the Antibody Registry, "*CVCL*" for the Cell
SciCrunch registry of tools).

Can't find your resource?

Add a Resource

Add a resource

New Search

Home / Tools / Add a resource

What is a Resource?

RRID contributes to the SciCrunch Registry, the antibodyregistry.org, Cellosaurus database and a large number of model organism databases.

To submit your information for a new research resource, you must first select the type of resource. You will most likely be taken to a site outside of the RRID portal because the RRID is based on identifiers that

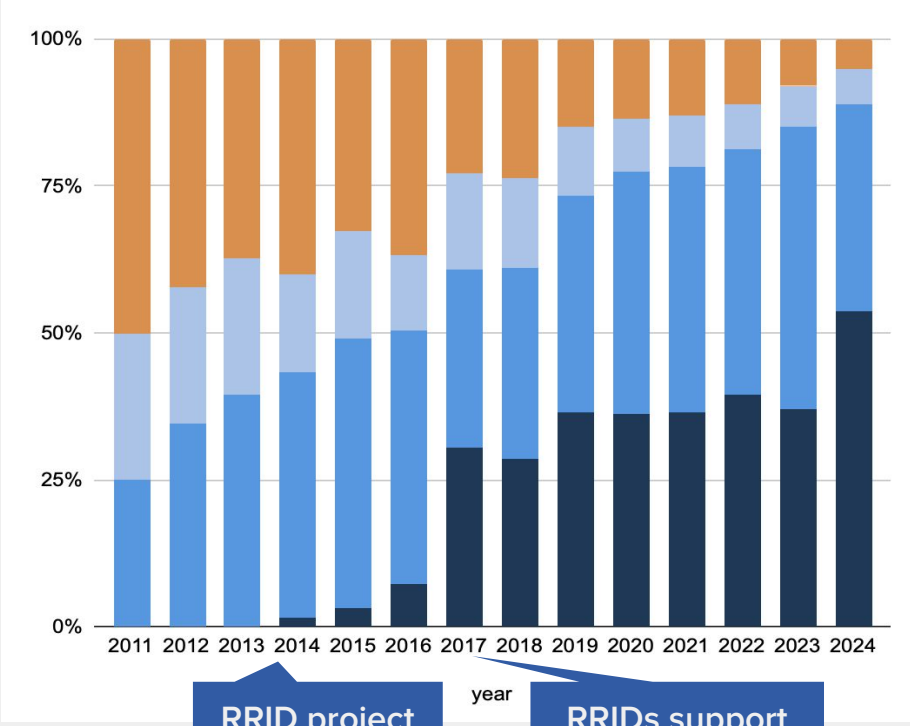
Choose a resource type

Resource Type	Select
Antibody	
Cell Lines	
Core Facility	
Organism	
Plasmid	
Resource	

CORE MARKETPLACE

No need to be logged in

Percentage of references per category when MMRRC mice were used



n > 24100 papers

Nickname provided, mouse could not be found

Sripada A, et al. (2021) Sprouty2 positively regulates T cell func
CSK and LCK kinases. PLoS biology , 19 (3) , e3001063. (PMI
-- m The Jackson's Laboratory) and **Spry2f/f** (MMRRC, muta

Name provided, RRID found

cells international , 2020 , 8878412. (PMID:32733573)
-- 5xFAD mice (**B6SJL-Tg(APPSwFILon,-PSEN1?M146L?L286V)67**
accordance with the laboratory guidelines.

Catalog number provided

Pan JX, et al. (2021) Osteoblastic Swedish mutant APP expedites brain de
(PMID:34824365)
-- ed from The Jackson Laboratory (**MMRRC stock #34 840-JAX**)25 wh

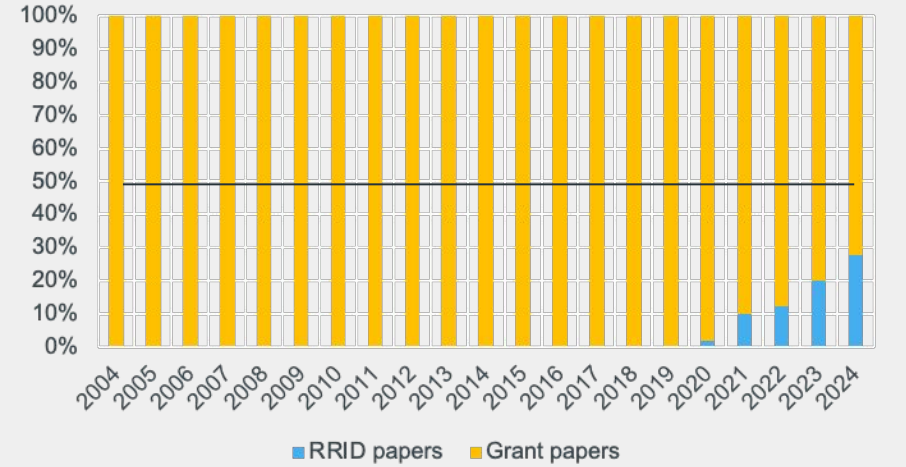
RRID provided

Liu L, et al. (2020) Preparing Viable Hippocampal Slices from Ad
-- xFAD mice (**RRID:MMRRC_034840-JAX**, Jackson Labs) (C

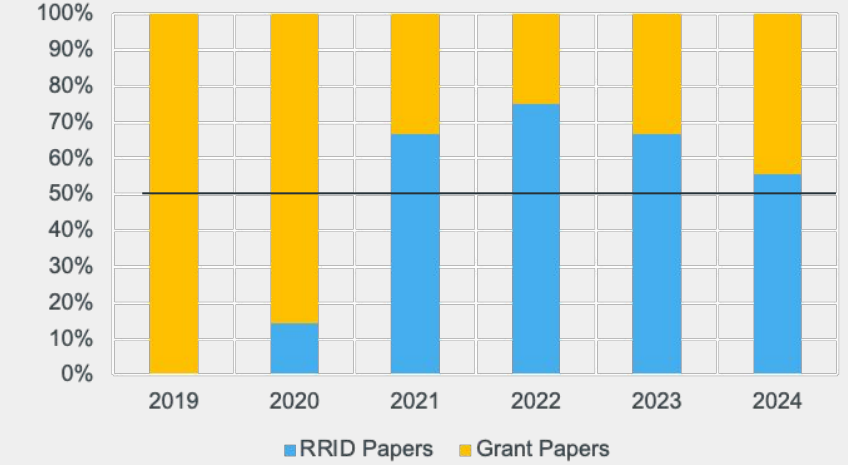
Piekniewska et al, BioRxiv. 2024

HOW MANY RRID CITATIONS DO WE GET FOR CORES?

UNC Microscopy Core Facility



UCSC Microscopy Core Facility



Ideal case for these graphs is 50%

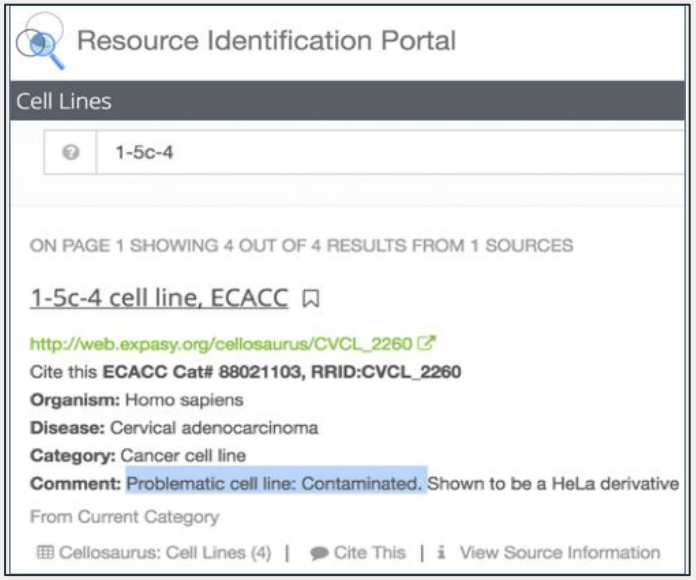
To put RRIDs into your next paper!

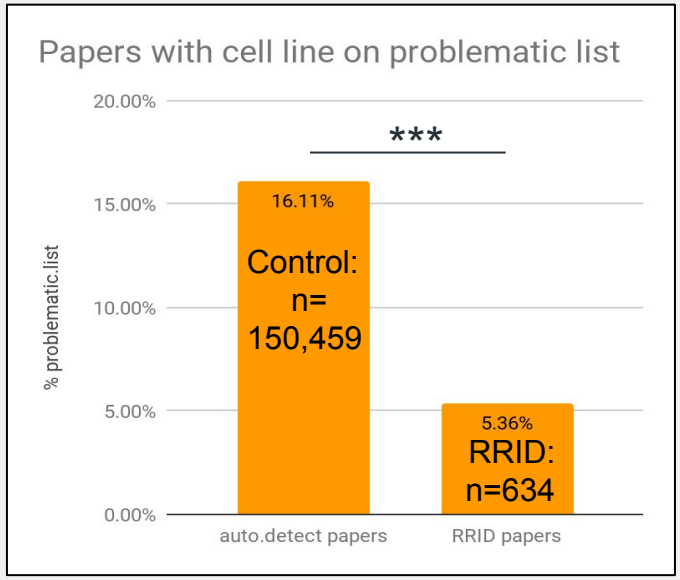
When reviewing ask for RRIDs
Review papers (*and grants*) for methods!
Cores: Register
...and tell us about your good or bad antibodies or other tools

Journal editors, RRIDs.org has drafts for your instructions to authors

Comments / Thoughts:
abandrowski@ucsd.edu

Using IDentifiers for resources makes better (reproducible) papers



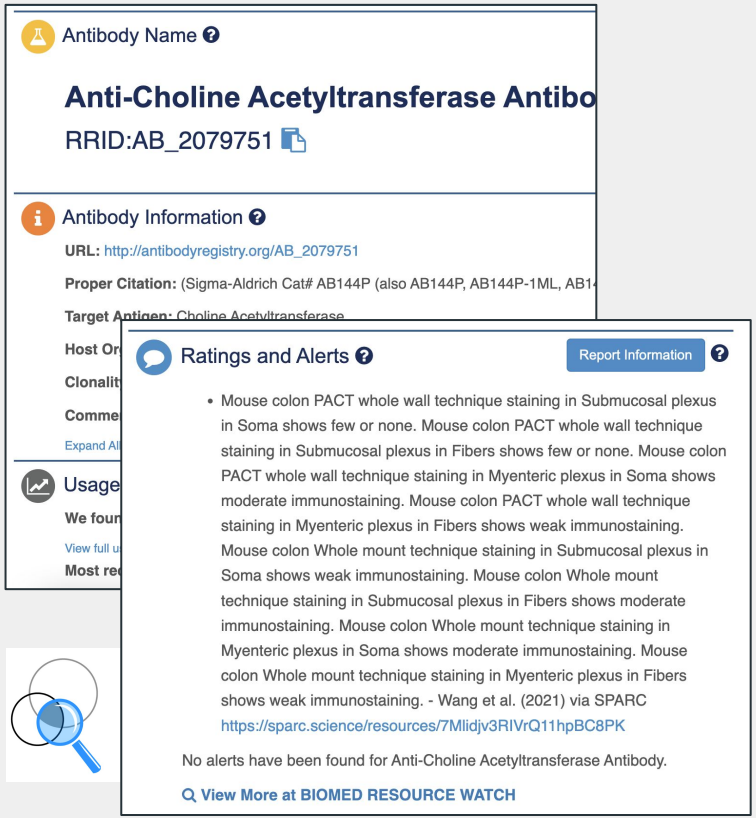


Authors see warning about cell lines
=
66% decrease in naughty cell lines

Babic et al, eLife, 2019

RRID

Using IDentifiers for resources makes better (reproducible) papers



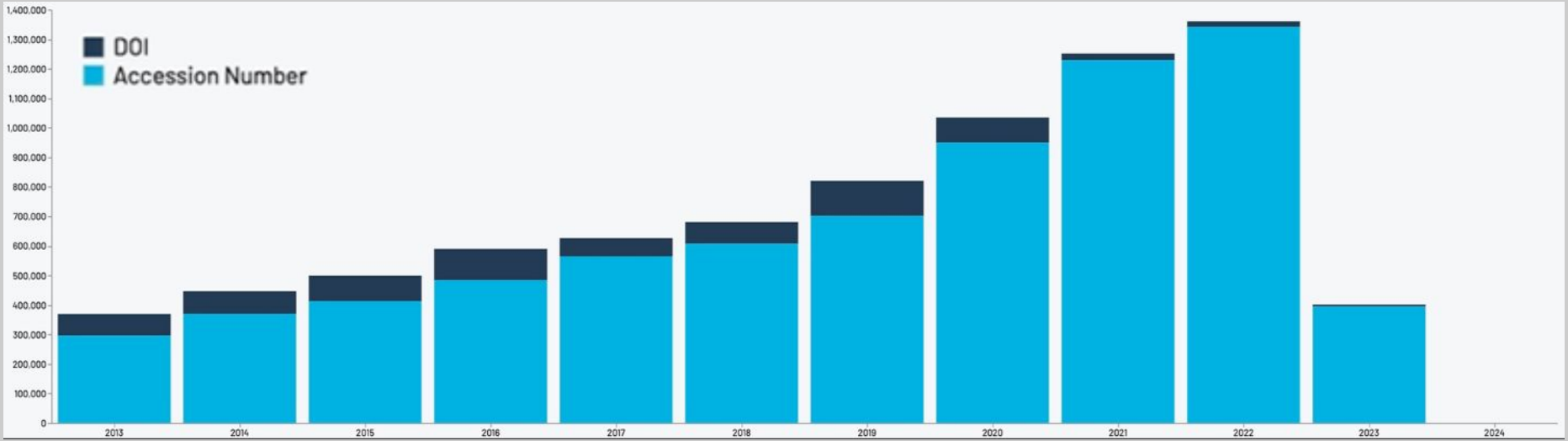
Antibody reports come from:
ENCODE
psyENCODE
YCharOS
Core facilities (10+ universities)

****Software tools** with reported problems

*****Animals** that don't recapitulate a disease

SciCrunch

Fig 1. The Data Citation Corpus dashboard.



Puebla I, Ascoli GA, Blume J, Chodacki J, Finnell J, et al. (2024) Ten simple rules for recognizing data and software contributions in hiring, promotion, and tenure. PLOS Computational Biology 20(8): e1012296. https://doi.org/10.1371/journal.pcbi.1012296
https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1012296

SciCrunch

PLOS COMPUTATIONAL BIOLOGY

So why is the reagent problem not solved?

Making papers better requires staff time

SciScore.com

What does it do: SciScore is an automated and multifaceted tool based on AI and deep learning technology, that evaluates manuscripts for adherence to several key reporting criteria for rigor and reproducibility introduced over the years by funding agencies and journals. Using criteria from various reporting standards (e.g. the NIH, MDAR, and ARRIVE), SciScore generates three reports and a score for every submission.

What problem does it solve: SciScore helps ensure key resources like antibodies, cell lines, and organisms, are described in enough detail (e.g. vendor names, catalogue numbers, RRIDs, etc.), so that other researchers can try to replicate a studies findings.

Who are the users: These materials assist researchers, peer reviewers and editors, in improving the quality and reliability of scientific research by automatically reporting detected criteria of interest for future review.

Funding: SBIR R44MH119094 & sustained by partners

	1	2	3	4	5
Ethics					
Institutional Review Board Statement	x				
Consent Statement	x				
Institutional Animal Care and Use Committee Statement	x	x			
Field Sample Permit	x				
General Euthanasia and Agent				x	
Study Participation					
Inclusion and Exclusion Criteria	x	x	x		x
Attrition	x	x			x
Sex as a biological variable	x	x	x	x	x
Subject Demographics					
Age		x	x		
Weight		x			

	1	2	3	4	5
Randomization	x	x	x		x
Blinding	x	x	x		x
Power Analysis	x	x	x		x
Replication Information					
Type of replication	x				x
Cell Line Confirmation					
Cell Line Authentication	x				x
Cell Line Contamination Check	x				x
Code Information & Availability	x				
Data Information & Availability	x	x			x
Protocol Identifiers					
Clinical Trials	x		x		
Lab Protocols	x				

1. MDAR / 2. ARRIVE / 3. CONSORT / 4. AVMA Guidelines / 5. Landis et al., 2013 (NIH)

Partners

American Association for Cancer Research

consensus

american physiological society

Microbiology Society

scienceOPEN.com research+publishing network

LCSB

uni.lu Université du Luxembourg

Chan Zuckerberg Initiative

American Heart Association

bioRxiv The preprint server for biology

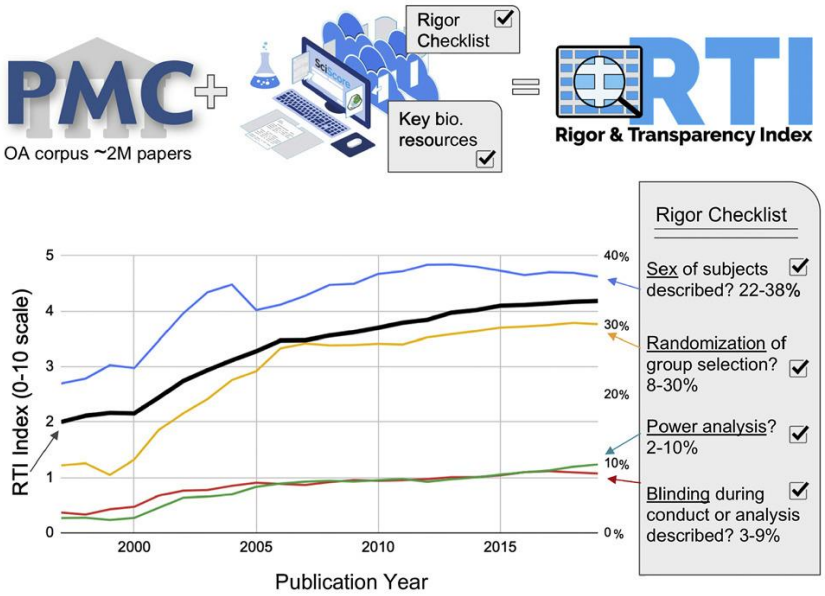
medRxiv The preprint server for health sciences

Rigor & Transparency Index - RTI

What does it do: The RTI is a new journal metric of quality for assessing biological and medical science methods, based on the degree to which journal articles were addressing reproducibility guidelines.

What problem does it solve: How can we score the science published in journals itself as opposed to counting tweets or citations?

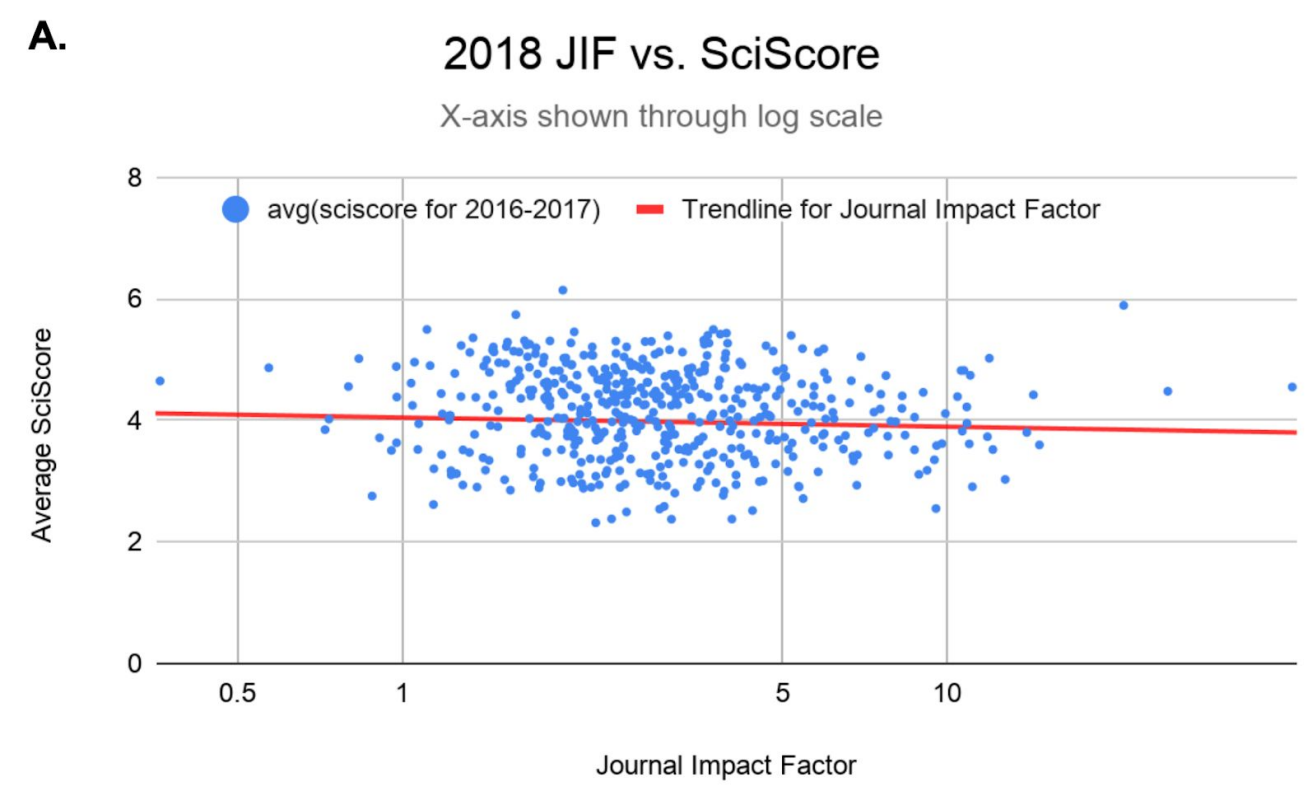
What are the users: It can be used as a selection criterion for authors who want to be associated with more reproducible journals, or by editors to assess the reproducibility of their journal, or by publishers as benchmarking for their their journal portfolio.



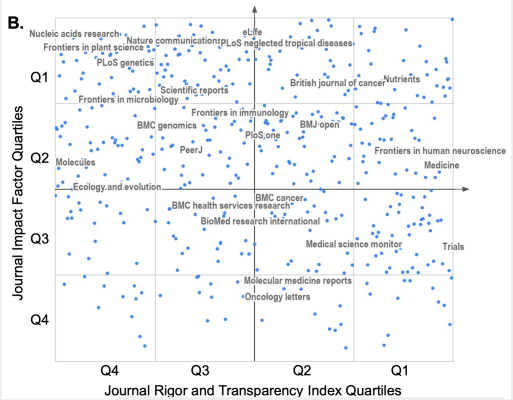
- We evaluated 1,578,964 open access articles for rigor criteria using SciScore.
- We developed a journal quality metric and studied rigor criteria reporting trends.
- There was no correlation between the Rigor & Transparency Index and the Impact Factor.
- The Rigor & Transparency Index may serve as a proxy for methodological quality.

Menke et al, iScience. 2020
http://dx.doi.org/10.1016/j.isci.2020.101698

What about the Journal Impact Factor?

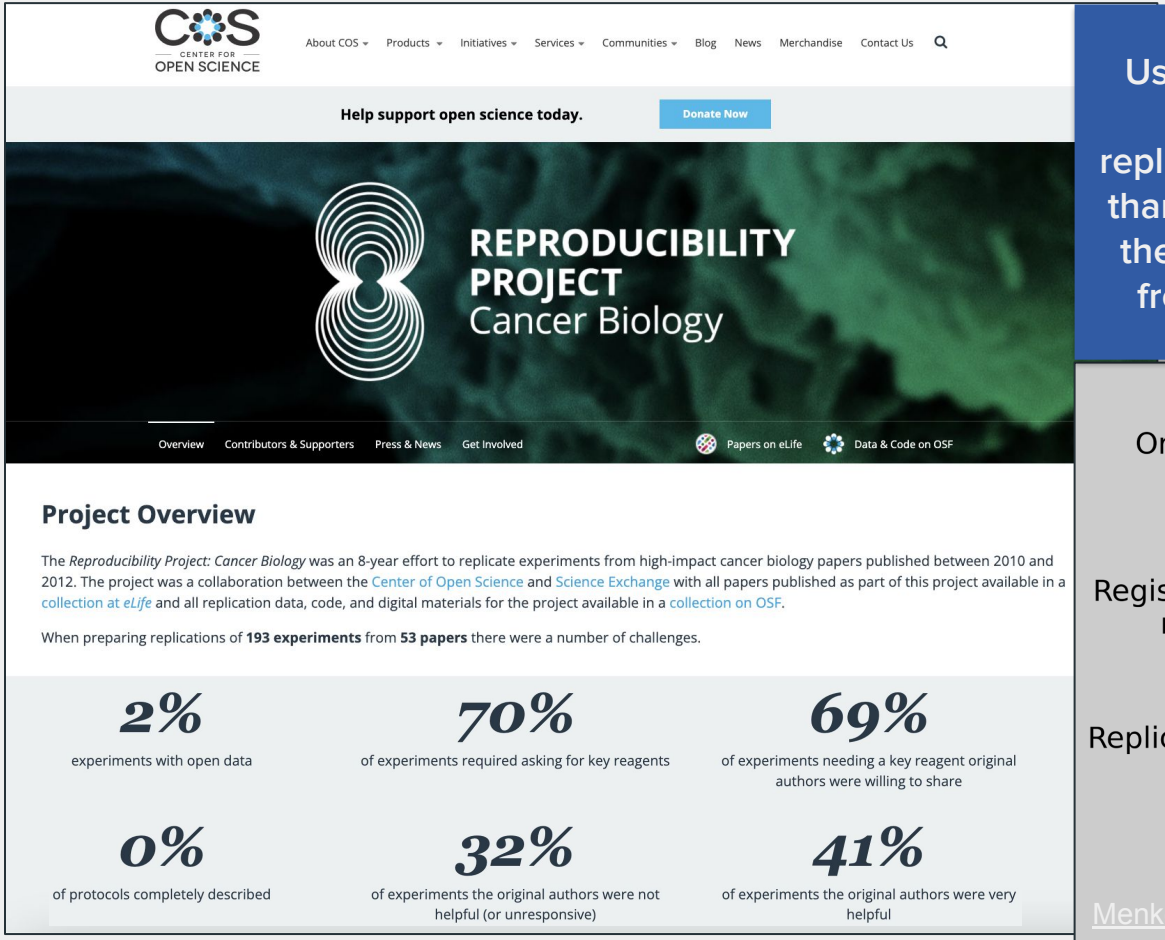


There is NO relationship

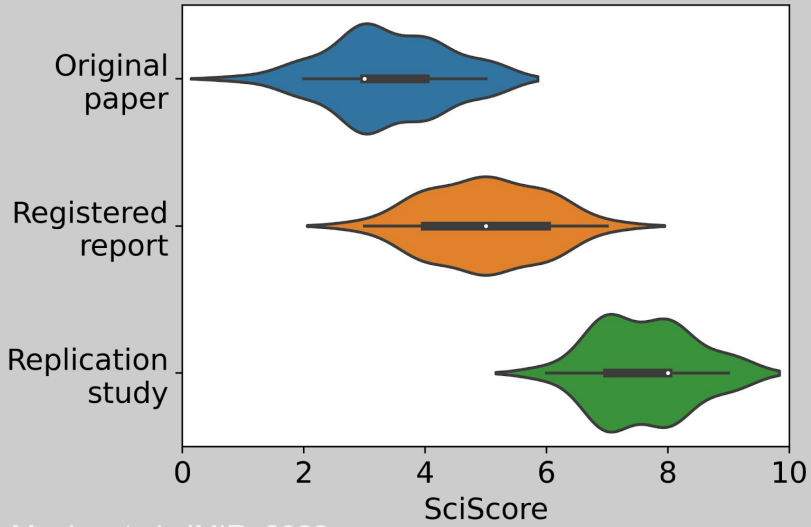


Average journal SciScore between 2016-2017 as a function of the journal impact factor for 2018 (data from published papers from 2016-2017).

Are these scores meaningful?



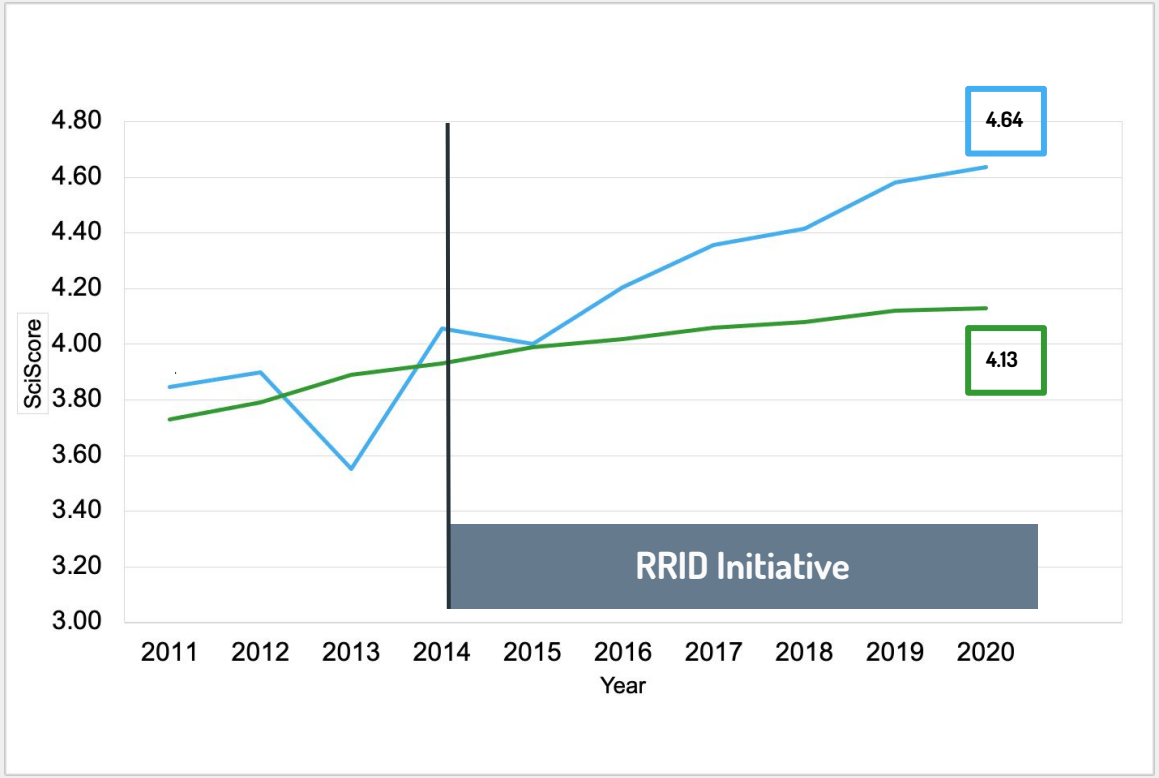
Using work by the Reproducibility Project: Cancer Biology, we determined that replication papers scored significantly higher than the original papers, which according to the project required additional information from authors to begin replication efforts.



Menke et al, JMIR, 2022

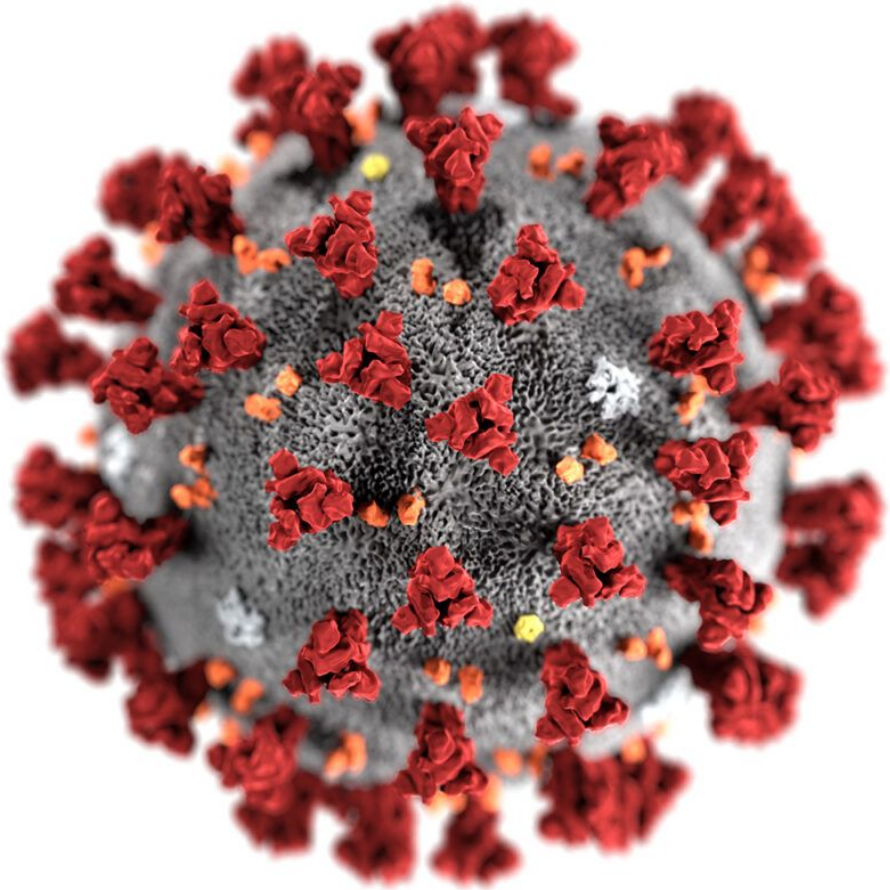
Use of MMRRC mice & with rigor?

Average Sciscore for MMRRC compared with average SciScore for all available publications

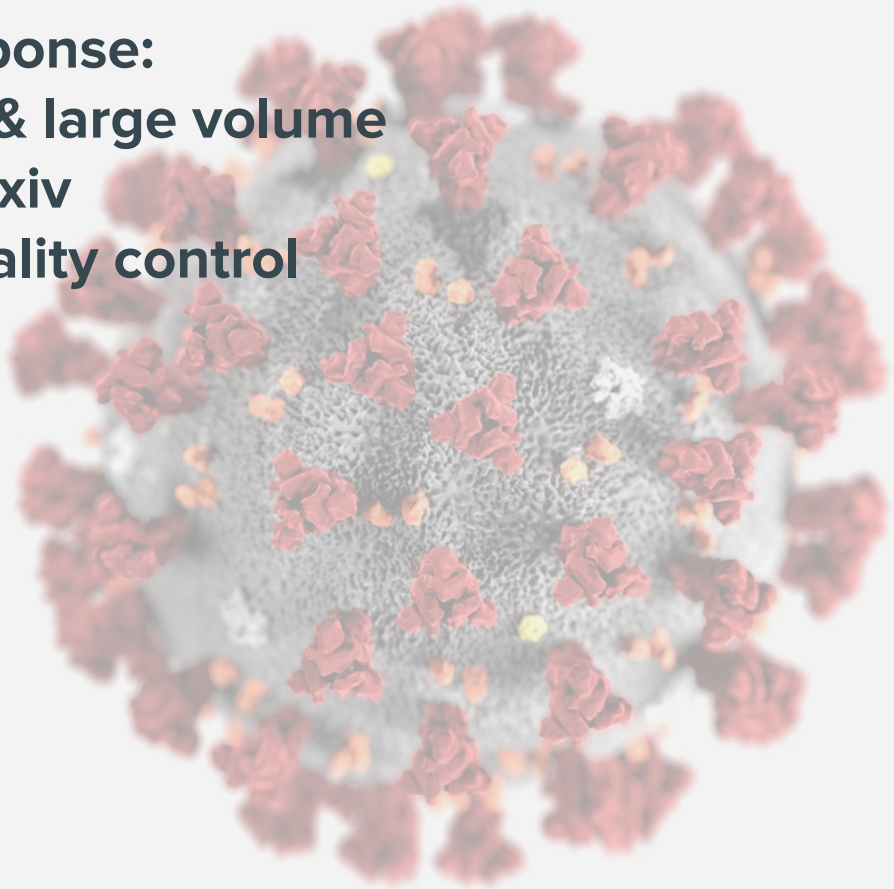


Scores are significantly different
(MMRRC papers 907;
All papers 2.1 mln)

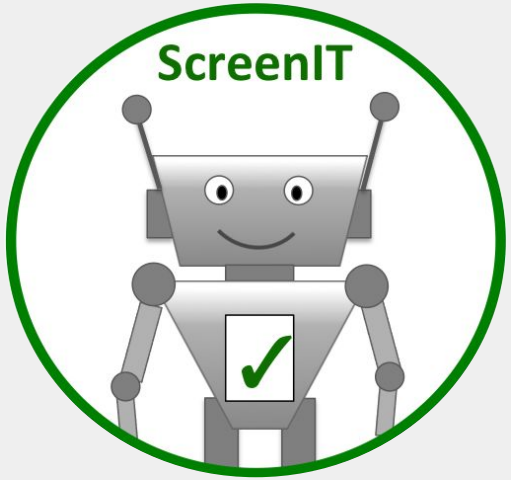
Is the difference meaningful?



Community response:
Publish quickly & large volume
BioRxiv & MedRxiv
Problem: No quality control



ScreenIT



Automated Screening Working Group:
AI-based screening of COVID-19 preprints
for rigor and reproducibility

Who are ScreenIT?

The people behind the tools:

Tracey Weissgerber, Ph.D.
Expertise: Visualization
Tools: Barzooka
QUEST – Quality I Ethics I Open Science I Translation
Charité - Universitätsmedizin Berlin
BIH Center for Transforming Biomedical Research
Germany

Anita Bandrowski, Ph.D.
Expertise: Publishing
Tools: SciScore
Department of Neuroscience
The University of California at San Diego
USA

Shyam Saladi
Expertise: Code
Tools: JetFighter
California Institute of Technology
USA

René Bernard, Ph.D.
Coordinator for Value and Open Science
Excellenzcluster NeuroCure
Charité – Universitätsmedizin Berlin
Germany

Michèle B. Nuijten, Ph.D.
Expertise: Statistics
Tools: Stat Check
Meta-Research Center
Department of Methodology and Statistics
Tilburg School of Social and Behavioral Sciences
Tilburg University
Netherlands

Martijn Roelandse, Ph.D.
Expertise: Publishing
Tools: SciScore
Netherlands

Nick Brown, Ph.D.
Expertise: Statistics
Tools: rSPRITE
Linnaeus University
Sweden

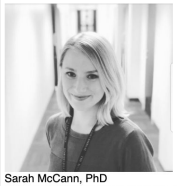
Halil Kilicoglu, Ph.D.
Expertise: Text mining, transparent reporting, stu
University of Illinois at Urbana-Champaign
School of Information Sciences
USA

AG Siegerink, Ph.D.
Expertise: Tool review
Dr. Bob Siegerink
Charité - Centrum für
Hemiolo

Jennifer Byrne, Ph.D.
Tools: Seek&Blastn
The University of Sydney,
Faculty of Medicine and Health,
NSW Health Statewide Biobank,
Camperdown, New South Wales,
Australia

Guillaume Cabanac, Ph.D.
Tools: Seek&Blastn
Computer Science Department
University of Toulouse
France

Sean C. Rife, PhD
Expertise: Chief Research Officer
Tools: scite.ai
Associate Professor of Psychology, Murray State University
Director of Research, scite, Inc.
USA



Sarah McCann, PhD
Expertise: Systematic review and meta-analysis
QUEST – Quality I Ethics I Open Science I Translation
Charité - Universitätsmedizin Berlin
BIH Center for Transforming Biomedical Research
Germany

Subhashini Sivagnanam
Tools: OSC
Expertise: big data provenance
San Diego Supercomputing Center
University of California at San Diego,
USA

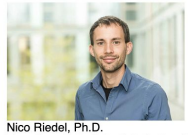
Amanda Capes-Davis, Ph.D.
Tools: Seek&Blastn
CellBank Australia, Children's Medical Research Institute
The University of Sydney
Australia

Dr. Alexandra Bannach-Brown
Institute for Evidence-Based Healthcare,
Bond University
Australia

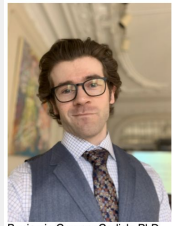
Bertrand Favier, Ph.D.
Tools: Seek&Blastn
Univ. Grenoble Alpes,
TIMC-IMAG, team GREPI,
France

Gerben ter Riet, Ph.D.
Expertise: transparent reporting, acknowledg
Amsterdam University of Applied Sciences:
rd-Holland

Peter Grabitz, M.D.
Expertise: Scripting
QUEST – Quality I Ethics I Open Science I Translation
Charité - Universitätsmedizin Berlin
Berlin Institute of Health (BIH)
Germany



Nico Riedel, Ph.D.
Expertise: Data Scientist, Text and Data Mining
Tools: Barzooka, ODDPub
QUEST – Quality I Ethics I Open Science I Translation
BIH Center for Transforming Biomedical Research
Germany



Benjamin Gregory Carlisle PhD
Expertise: Scripting
Tools: Trial registration number screener
Charité – Universitätsmedizin Berlin, Germany
Berliner Institut für Gesundheitsforschung (BIG) / Berlin Institute of Health (BIH)
QUEST
Germany

Peter Eckmann
Expertise: Scripting
Tools: SciScore
SciCrunch Inc
The University of California at San Diego
USA

https://scicrunch.org/ASWG

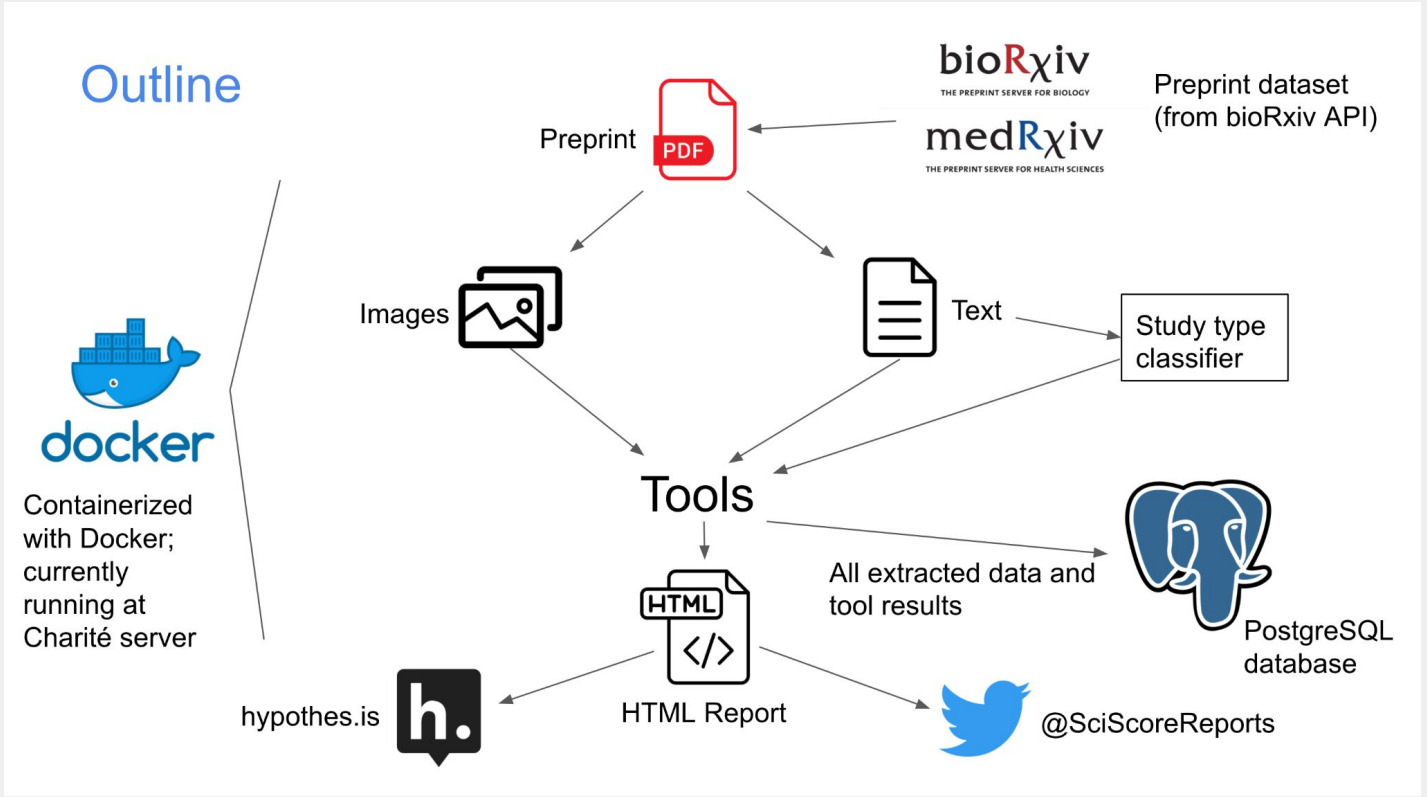
Who are ScreenIT?

Tool	Application
SciScore	Detects compliance with MDAR reproducibility checklist • 24 rigor criteria verified • 6 classes of reagents verified (is this a valid catalog number?) • Authentication/contamination of cell lines verified • Statistical tests outlined
Jetfighter	Makes authors aware of their use of non-colorblind safe pictures / graphs
Barzooka	Points to misleading graphs of data, e.g., bar graphs of continuous variables
Seek ‘n Blastn	Identifies common problems with nucleotide sequences
Trial Registration screener	Verified clinical trial identifiers
ODDpub	Screens for the presence of open data and open code
limitation-recognizer	Recognizes self acknowledged limitation sentences
Scite.ai	Smart citations; looks for unacknowledged use of retracted papers
rtransparent	Identifies and extracts indicators of transparency

Many other tools are strewn throughout the scientific literature; lots of AI experts are joining us

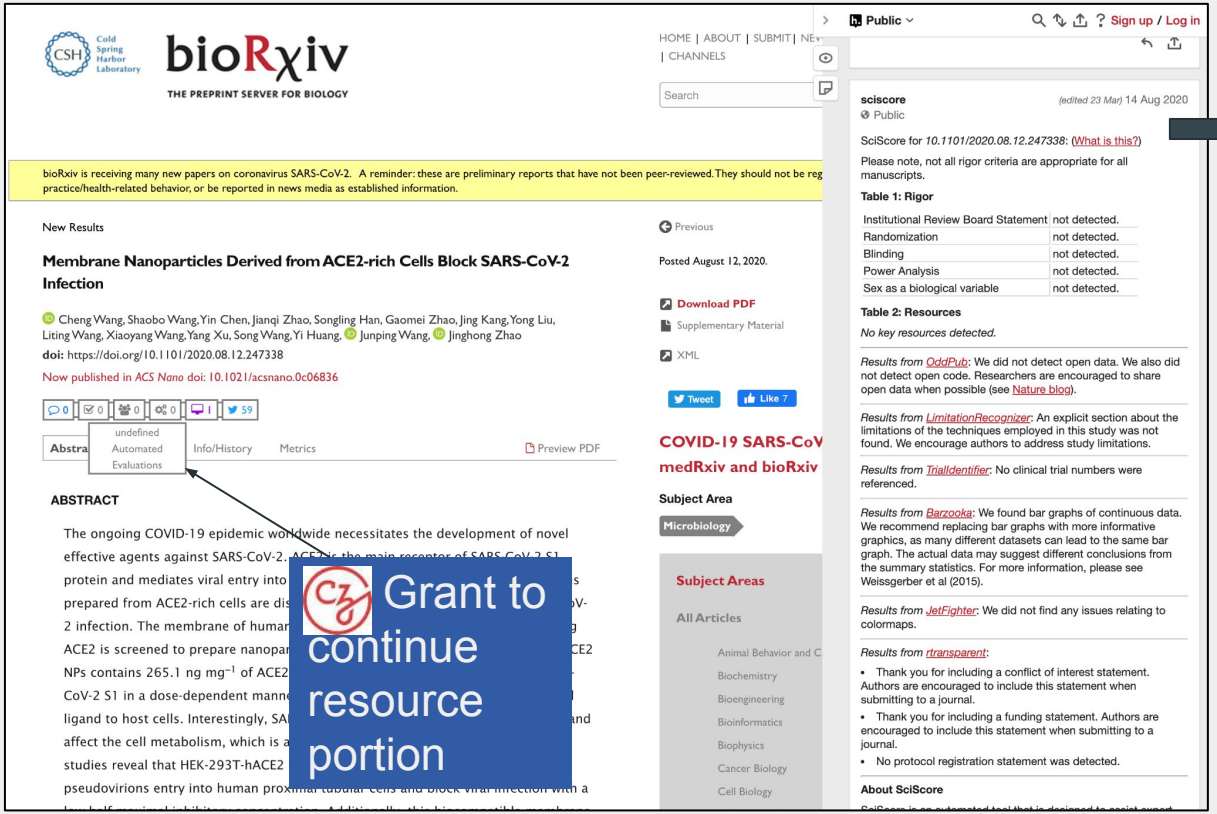
First achievement: Running various tools on covid-19 preprints

Peter Eckmann
ORCID:0000-0002-5388-9451
UC High School
Currently undergrad
At UCSD in
Computer Science



Output shared via social media / hypothesis

Preprints are not as good as papers when it comes to rigor & transparency



sciety

IRB	26.28%	
Randomization	11.39%	12.56%
Blinding	2.65%	5.35%
Power	1.36%	2.37%
Sex as biological variable	19.91%	38.25%

Weissgerber et al NatMed 2021

https://www.nature.com/articles/s41591-020-01203-7

Reproducibility Challenge

PERSPECTIVE

JBMR®

Reproducibility of Results in Preclinical Studies: A Perspective From the Bone Field

Stavros C Manolagas[1] and Henry M Kronenberg[2]

Vox SCIENCE & HEALTH

Too many mice are sacrificed for seriously flawed studies

Updated by Julia Belluz on July 28, 2016, 10:20 a.m. ET @juliaoftoronto julia.belluz@voxmedia.com

The Economist World politics Business & finance Economics Science & technology Culture

Unreliable research

Trouble at the lab

Scientists like to think of science as self-correcting. To an alarming degree, it is not

Oct 19th 2013 | From the print edition

RESEARCH ARTICLE

PSYCHOLOGY

Estimating the reproducibility of psychological science

Open Science Collaboration*†

Science

Evaluating replicability of laboratory experiments in economics

Colin F. Camerer,[1*†] Anna Dreber,[2†] Eskil Forsell,[2†] Teck-Hua Ho,[3,4*†] Jürgen Huber,[5†] Magnus Johannesson,[2†] Michael Kirchler,[5,6†] Johan Almenberg,[7] Adam Altmejd,[2] Taizan Chan,[8] Emma Heikensten,[2] Felix Holzmeister,[5] Taisuke Imai,[1] Siri Isaksson,[2] Gideon Nave,[1] Thomas Pfeiffer,[9,10] Michael Razen,[5] Hang Wu[4]

THE WALL STREET JOURNAL.

OPINION | COMMENTARY

Getting the Bogus Studies Out of Science

Government funding should provide more incentives for replicating research

By ADAM MARCUS And IVAN ORANSKY

Aug. 19, 2015 6:46 p.m. ET

Why animal research needs to improve

Many of the studies that use animals to model human diseases are too small and too prone to bias to be trusted, says Malcolm Macleod.

TECHNICAL COMMENT

PSYCHOLOGY

Comment on "Estimating the reproducibility of psychological science"

Daniel T. Gilbert,[1*†] Gary King,[1] Stephen Pettigrew,[1] Timothy D. Wilson[2]

False-Positive Psychology: Undisclosed Flexibility in Data Collection and Analysis Allows Presenting Anything as Significant

Believe it or not: how much can we rely on published data on potential drug targets?

Florian Prinz, Thomas Schlange and Khusru Asadullah

Reforming Science: Methodological and Cultural Reforms

Raise standards for preclinical cancer research

C. Glenn Begley and Lee M. Ellis propose how methods, publications and incentives must change if patients are to benefit.