Spotlight on R^3 Resources

Bringing RIGOR & REPRODUCIBILITY to RESEARCH

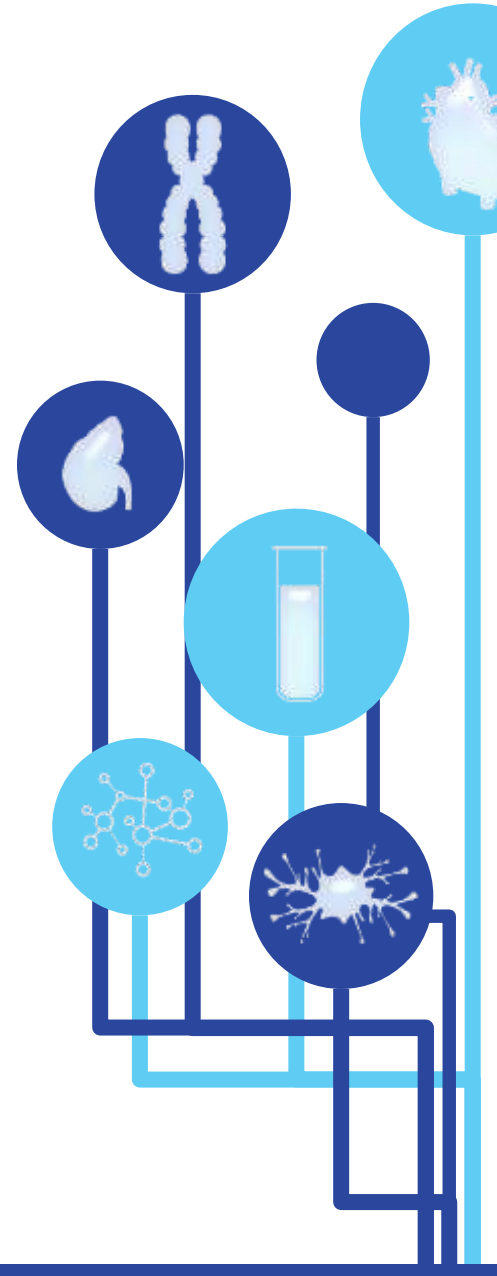
www.hsls.pitt.edu/bringing-rigor-and-reproducibility-research

Protocol Search

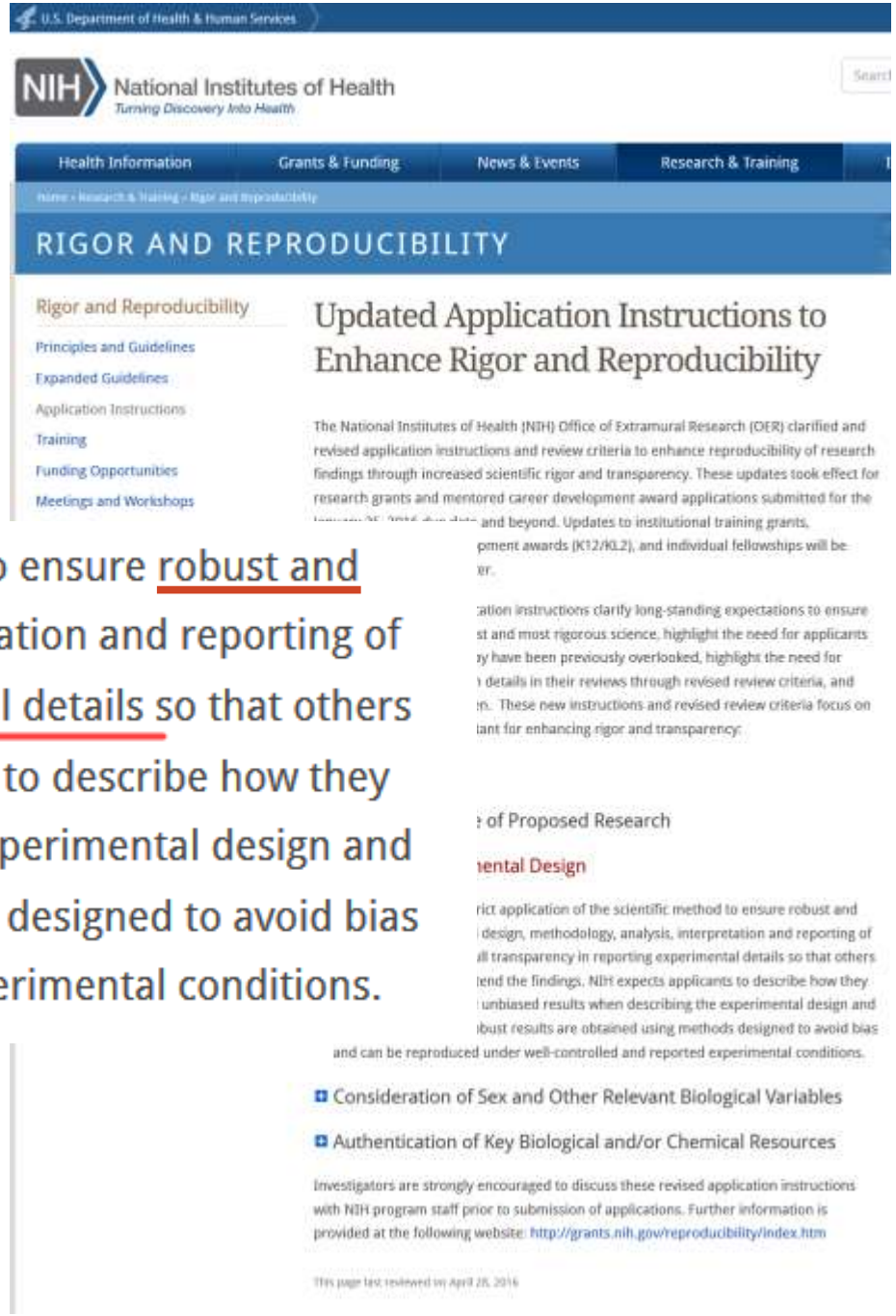
MELISSA RATAJESKI, MLIS, RLAT, AHIP

COORDINATOR OF DATA MANAGEMENT SERVICES

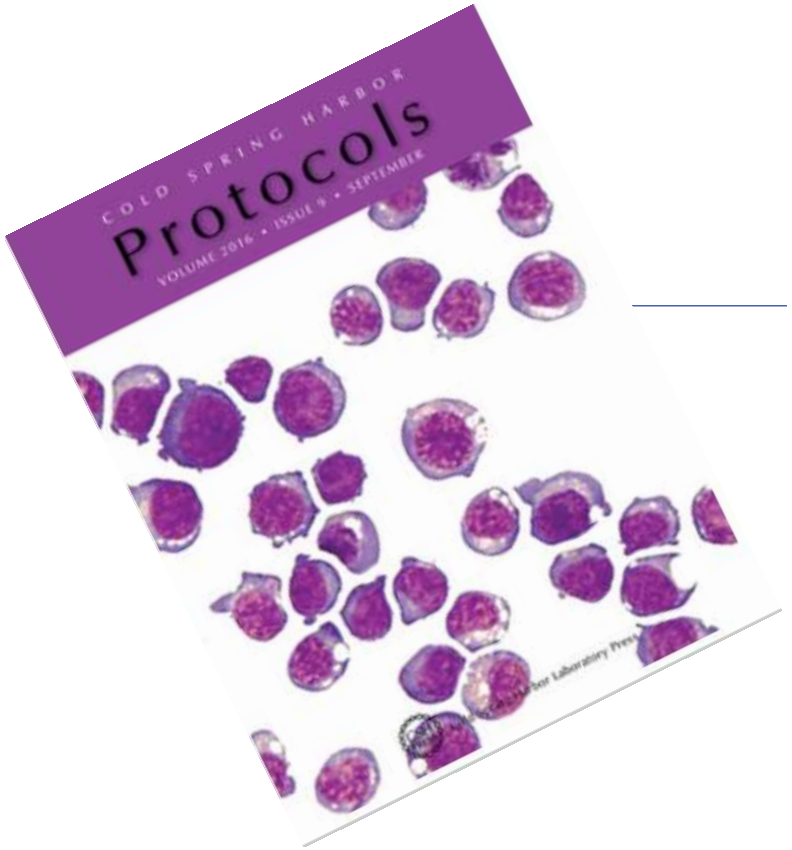
IACUC LIAISON



Methodology = Robust & Transparent



Scientific rigor is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results. This includes full transparency in reporting experimental details so that others may reproduce and extend the findings. NIH expects applicants to describe how they will achieve robust and unbiased results when describing the experimental design and proposed methods. Robust results are obtained using methods designed to avoid bias and can be reproduced under well-controlled and reported experimental conditions.



- Current Protocols in Bioinformatics
- Current Protocols in Cell Biology
- Current Protocols in Neuroscience
- Current Protocols in Nucleic Acid Chemistry

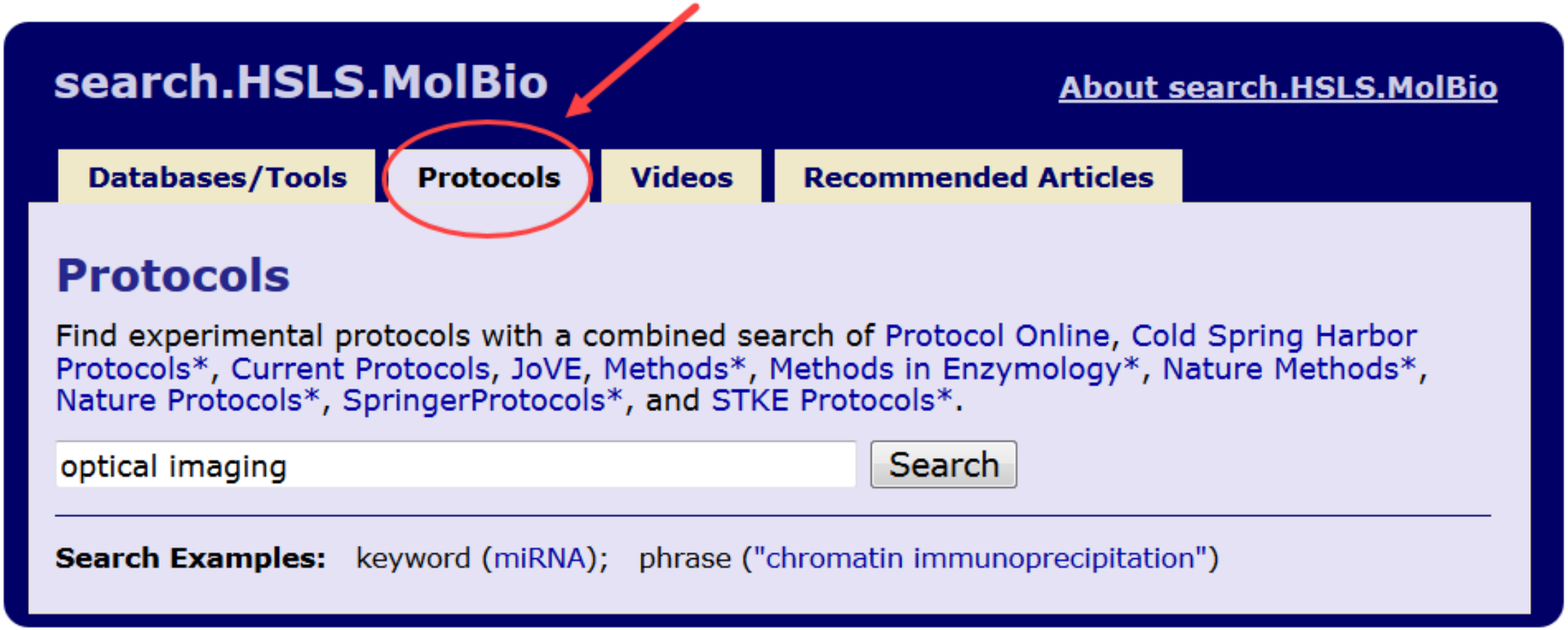
jove
JOURNAL OF VISUALIZED EXPERIMENTS

nature methods
Techniques for life scientists and chemists

Springer Protocols

nature protocols

www.hsls.pitt.edu/molbio



Narrow your search:

Topic **Source**

Top **77** Results remix

- **In Vivo Optical Imaging** (6)
  - Near-Infrared (2)
  - Methods (2)
  - Other Topics (2)
- \+ Tomography (6)
- \+ Bioluminescence Imaging (5)
- Cellular Imaging (5)
- Optical imaging methods (4)
- Brain (4)
- Approaches (3)
- Photoactivation, Localization Microscopy (3)
- Non-invasive (3)
- Live Imaging (3)

more | all

Search within clusters

Find

1. Fluorescence-quenching of a Liposomal-encapsulated Near-infrared Fluorophore as a Tool for **In Vivo Optical Imagin**
   Authors: Felista L. Tansi*1, Ronny Rüger*2, Markus Rabenhold2, Frank Steiniger3, Alfred Fahr2, Ingrid Hilger1
   JoVE

2. Development and Application of a Dual-Purpose Nanoparticle Platform for Delivery and **Imaging** of siRNA in Tumors
   Summary:) for magnetic resonance imaging (MRI), labeled with Cy5.5 dye for near-infrared **in vivo optical imaging** (NIRF), conjugated to m complex...
   Published: Jan-01-2009
   Test: 2000
   Springer Protocols

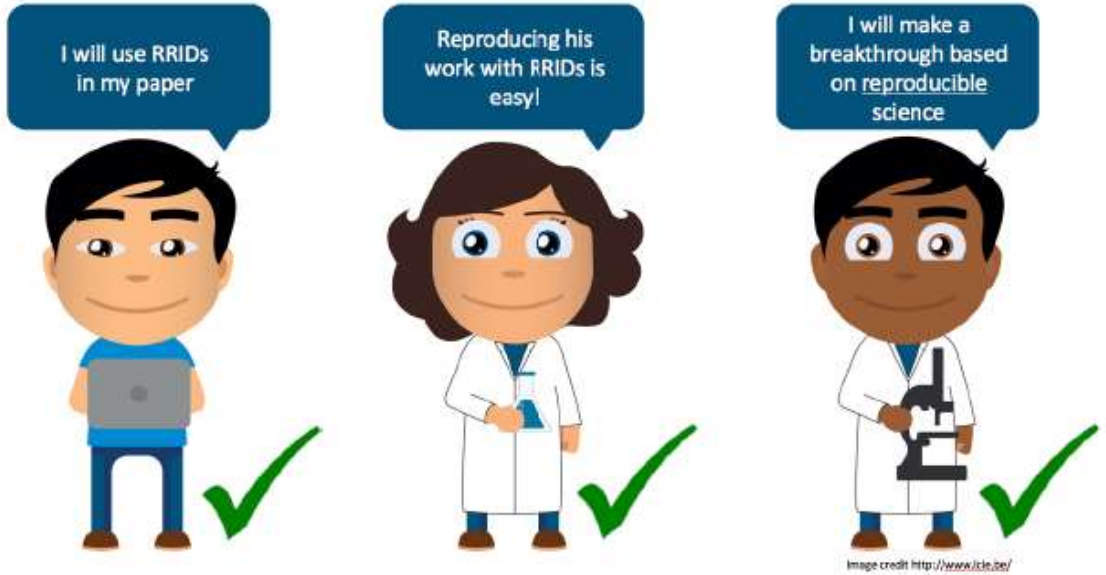
3. Practical Methods for Molecular **In Vivo Optical Imaging** new window
   Source: Current Protocols in Cytometry
   Date: January 01, 2012
   Authors: Hannah Chen, Stephen H. Thorne
   Wiley Current Protocols

4. **In Vivo Optical Imaging** of Brain Tumors and Arthritis Using Fluorescent SapC-DOPS Nanovesicles new window
   Authors: Zhengtao Chu1,2, Kathleen LaSance3, Victor Blanco1, Chang-Hyuk Kwon5,6, Balveen Kaur5,6, Malinda Frederick4, Sherry Thornton4, Lisa Lem
   JoVE

Resource Identification Initiative

It is now possible to improve your next paper to make it more reproducible, findable and more widely read by including RRIDs.

RRIDs are authentication tags for key biological resources such as antibodies, transgenic organisms, cell lines and software tools.



RRIDs are easy to find on scicrunch.org/resources a website for researchers to quickly identify the tools they use. RRIDs are required in journals published by Cell Press, BMC, Wiley, Elsevier and others.

****Contact info@scicrunch.org****

*Authentication is a new requirement for NIH grants starting in May 2016 (NOT-OD-16-011)
*NIDA points to scicrunch.org/resources as a method for meeting this new requirement for Rigor and Transparency (-NIDA Neuroscience Update, March 4, 2016).

R3 Bringing RIGOR & REPRODUCIBILITY to RESEARCH

J Comp Neurol. 2014 Dec 15;522(18):4023-42. doi: 10.1002/cne.23654. Epub 2014 Jul 29.

Target- and input-dependent organization of AMPA and NMDA receptors in synaptic connections of the cochlear nucleus.

Rubio ME[1], Fukazawa Y, Kamasawa N, Clarkson C, Molnár E, Shigemoto R.

Author information

[1]Department of Otolaryngology, University of Pittsburgh, Pittsburgh, PA, USA; Department of Neurobiology, University of Pittsburgh, PA, USA.

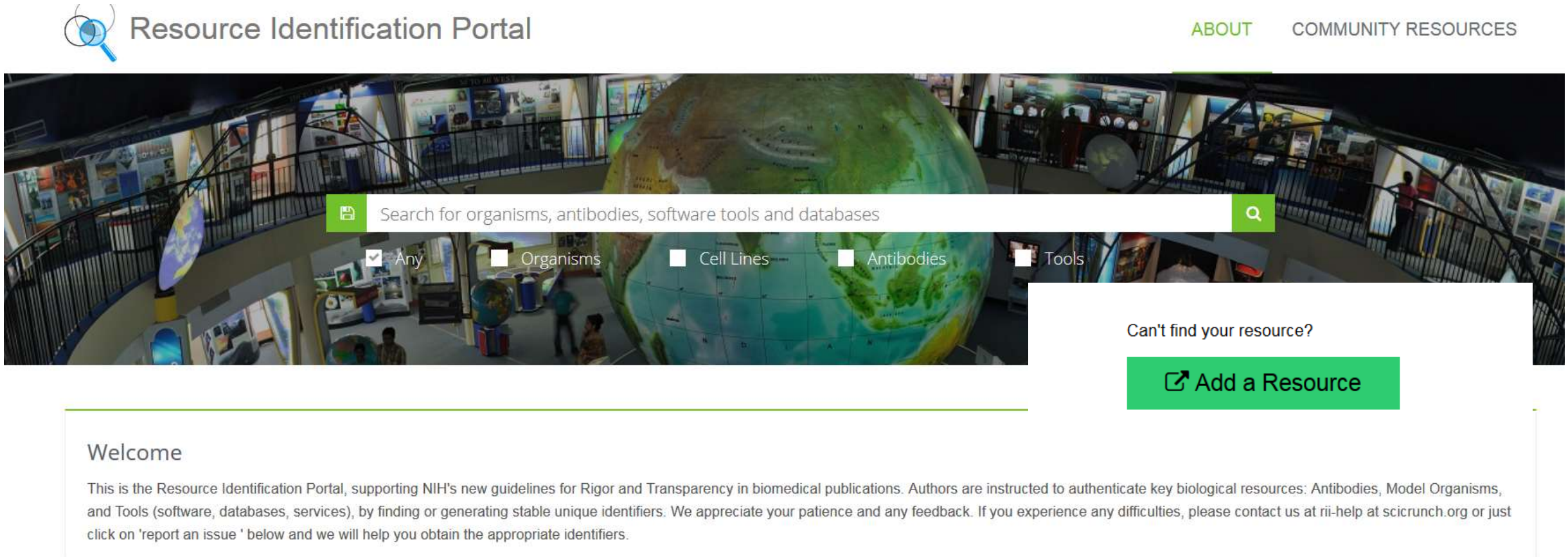
Abstract

We examined the synaptic structure, quantity, and distribution of α-amino-3-hydroxy-5-methylisoxazole-4-propionic acid (AMPA)- and N-methyl-D-aspartate (NMDA)-type glutamate receptors (AMPARs and NMDARs, respectively) in rat cochlear nuclei by a highly sensitive freeze-fracture replica labeling technique. Four excitatory synapses formed by two distinct inputs, auditory nerve (AN) and parallel fibers (PF), on different cell types were analyzed. These excitatory synapse types included AN synapses on bushy cells (AN-BC synapses) and fusiform cells (AN-FC synapses) and PF synapses on FC (PF-FC synapses) and cartwheel cell spines (PF-CwC synapses). Immunogold labeling revealed differences in synaptic structure as well as AMPAR and NMDAR number and/or density in both AN and PF synapses, indicating a target-dependent organization. The immunogold receptor labeling also identified differences in the synaptic organization of FCs based on AN or PF connections, indicating an input-dependent organization in FCs. Among the four excitatory synapse types, the AN-BC synapses were the smallest and had the most densely packed intramembrane particles (IMPs), whereas the PF-CwC synapses were the largest and had sparsely packed IMPs. All four synapse types showed positive correlations between the IMP-cluster area and the AMPAR number, indicating a common intrasynapse-type relationship for glutamatergic synapses. Immunogold particles for AMPARs were distributed over the entire area of individual AN synapses; PF synapses often showed synaptic areas devoid of labeling. The gold-labeling for NMDARs occurred in a mosaic fashion, with less positive correlations between the IMP-cluster area and the NMDAR number. Our observations reveal target- and input-dependent features in the structure, number, and organization of AMPARs and NMDARs in AN and PF synapses.

KEYWORDS: GluN1; RRID: AB_94946; RRID: nif-0000-30467; SDS-freeze fracture immunolabeling; dorsal cochlear nucleus; electron microscopy; synapses; ventral cochlear nucleus

PMID: 25041792 PMCID: PMC4198489 DOI: 10.1002/cne.23654

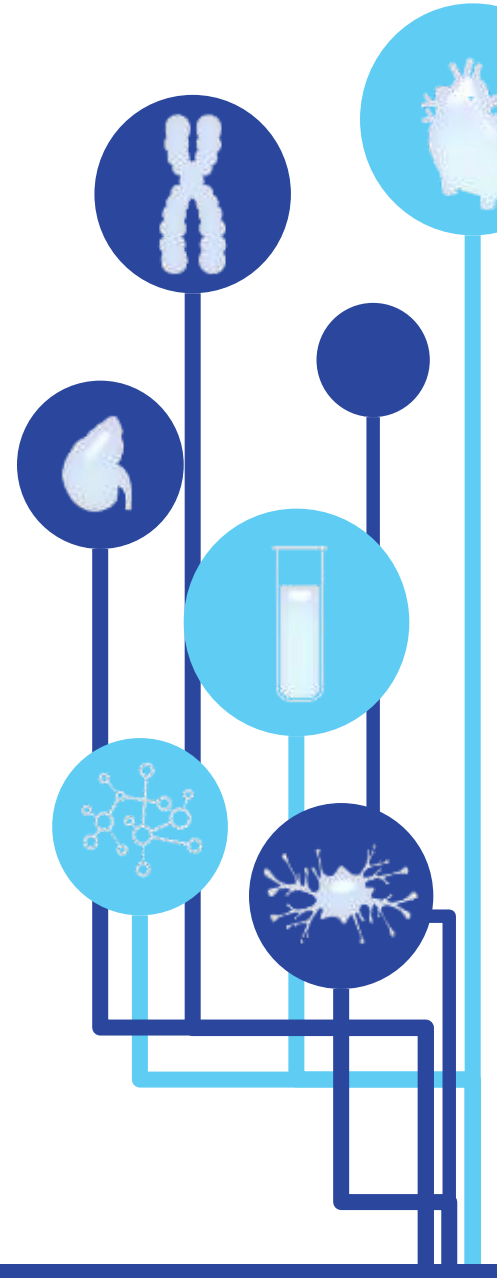
https://scicrunch.org/resources



InfoBoosters

CONNECTING TEXTS WITH THE DATABASES

ANSUMAN CHATTOPADHYAY, PHD
HEAD, MOLECULAR BIOLOGY INFORMATION SERVICE



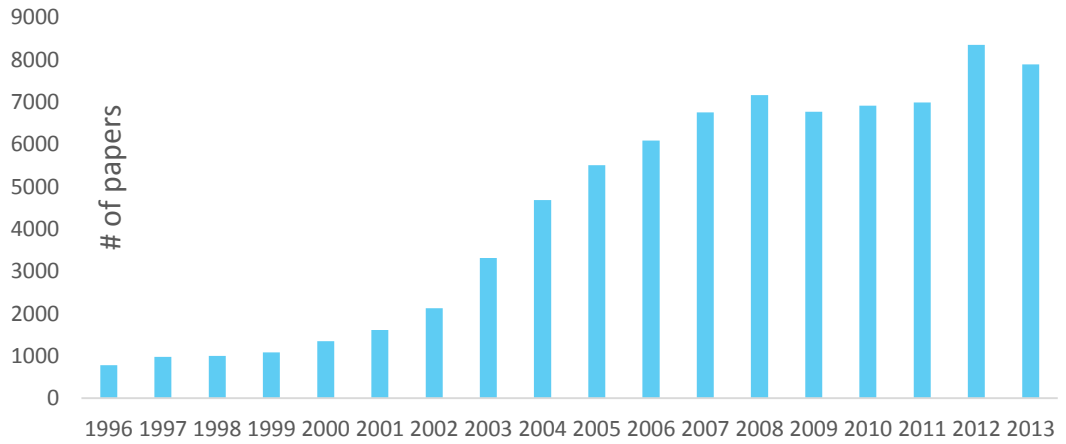
UniProt

Protein Data Bank

RNAcentral

DrugBank
Open Data Drug & Drug Target Database

Growth of Molecular Databases and Tools



GeneCards®
The Human Gene Compendium

PharmGKB
The Pharmacogenomics Knowledgebase

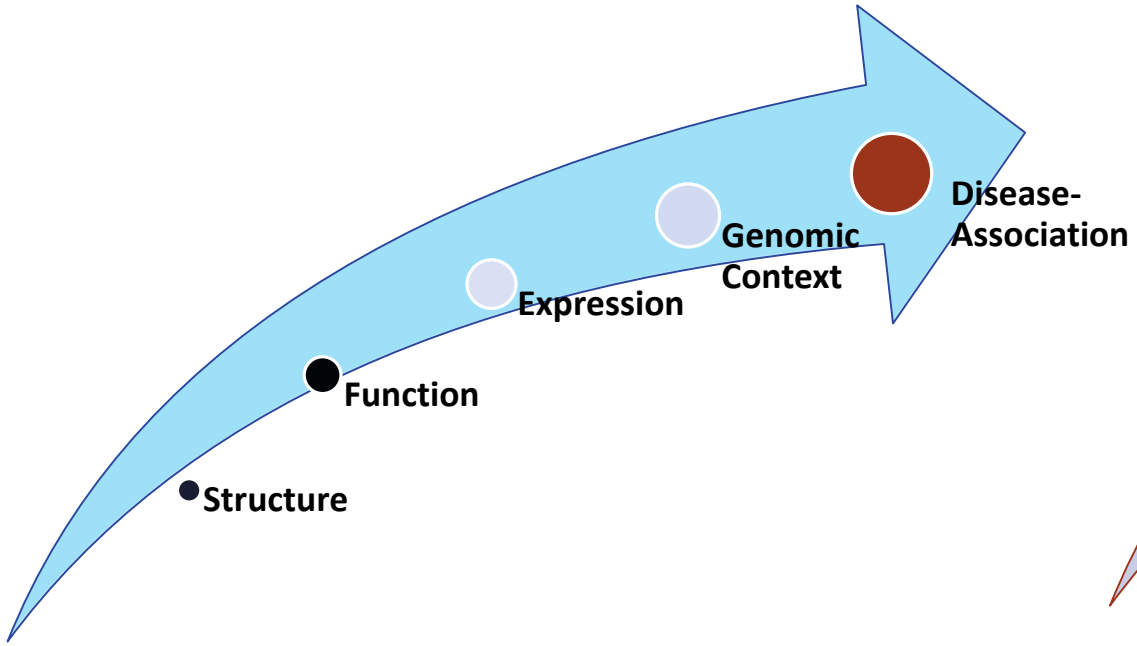
COSMIC
Catalogue of somatic mutations in cancer

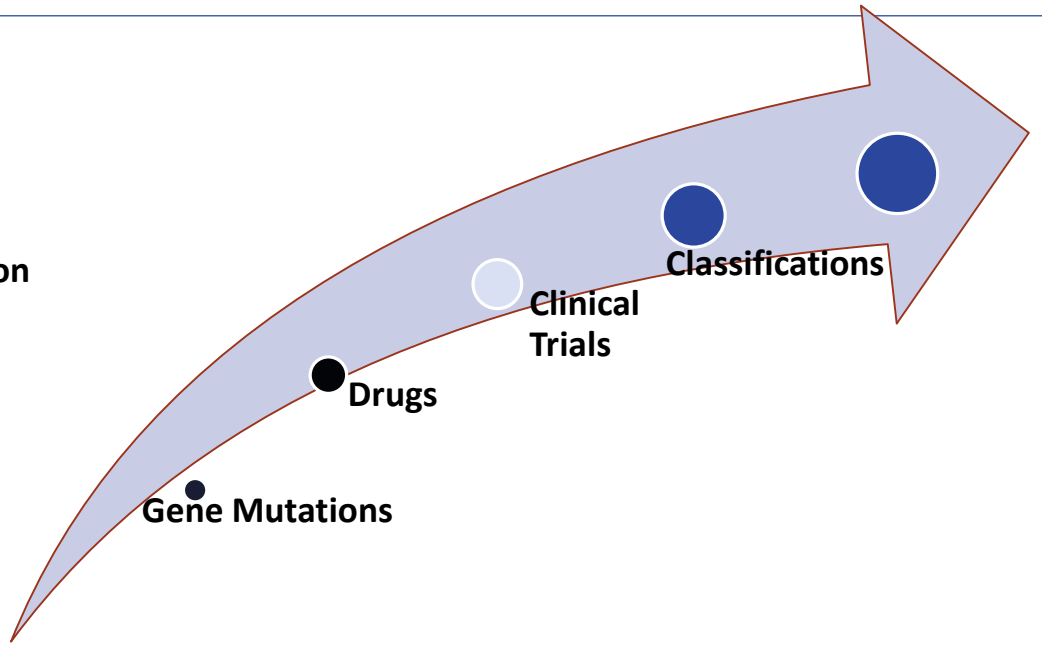
NCBI

BL

BROAD INSTITUTE

Multidimensional Data





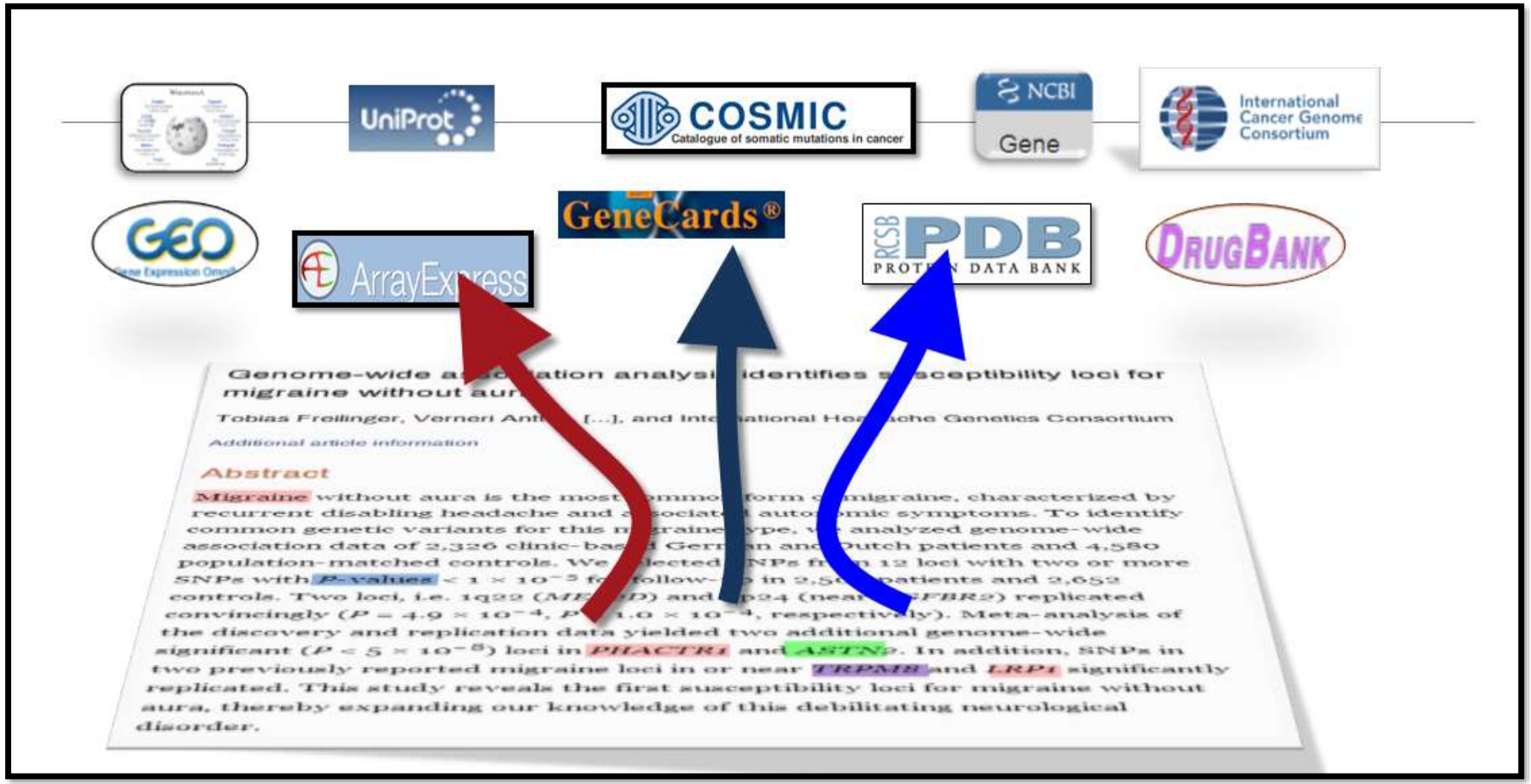
Gene: *BRCA1 / BRAF/EGFR*

Disease: *Asthma /cancer/schizophrenia*

One-Dimensional Reading Format

InfoBoosters

www.hsls.pitt.edu/molbio/infobooster


UniProt
COSMIC
Catalogue of somatic mutations in cancer
NCBI
Gene
International Cancer Genome Consortium
GEO
ArrayExpress
GeneCards®
RCSB PDB
DRUGBANK
Genome-wide
migraine without
Tobias Freilinger, Verneri
Additional article information
Abstract
Migraine without aura is the most
recurrent disabling headache and
common genetic variants for this
association data of 2,326 clinic-
population-matched controls.
SNPs with
controls.
convincingly
the discovery and replication data yielded two additional genome-wide
significant
two previously reported migraine loci in or near
replicated.
aura, thereby expanding our knowledge of this debilitating neurological
disorder.

Genome-wide association analysis identifies susceptibility loci for migraine without aura

Tobias Freilinger, Verneri Anttila, [...], and International Headache Genetics Consortium

Addi

How is it calculated ?

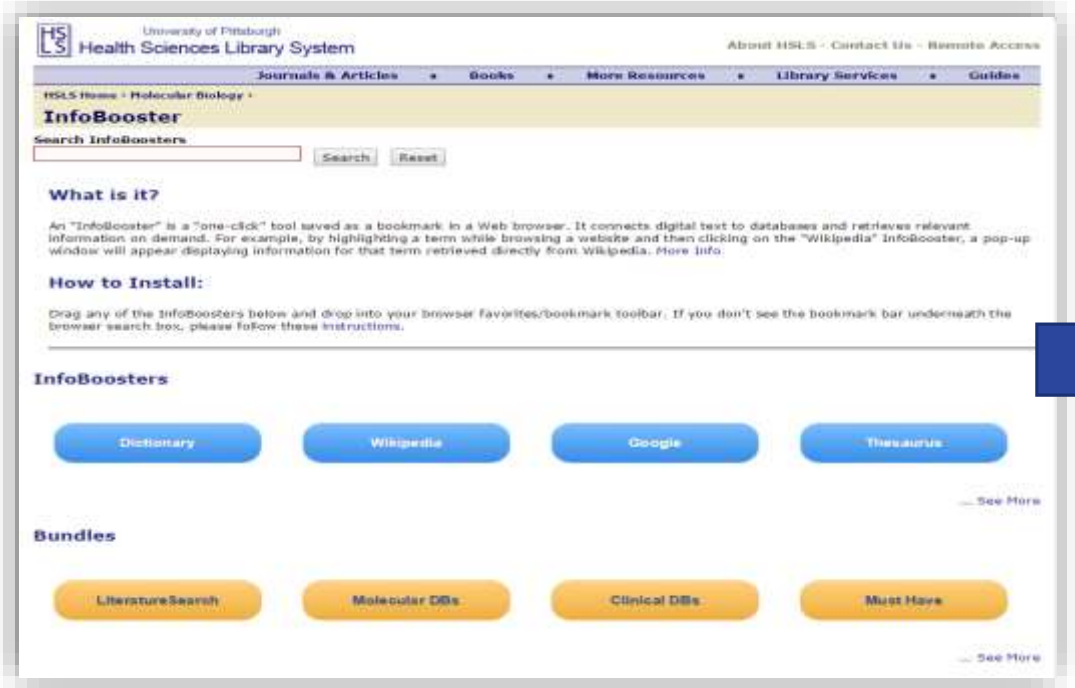
aine, characterized by recurrent disabi ache ar symptoms. To identify common genetic riants for thi yzed genome-wide association data o 2,326 clinic-b patients and 4,580 population-matched controls. W loci with two or more SNPs with *P*-values < 1×10^{-5} tients and 2,652 controls. Two loci, i.e. 1q22 (*MEF2D*) and 3p24 (near *TGFBR2*) replicated convincingly ($P = 4.9 \times 10^{-4}$, $P = 1.0 \times 10^{-4}$, respectively). Meta-analysis of the discovery and replication data yielded two additional genome-wide significant ($P < 5 \times 10^{-8}$) loci in *PHACTR1* and *ASTN2*. In addition, SNPs in two previously reported migraine loci in or near *TRPM8* and *LRP1* significantly replicated. This study reveals the first susceptibility loci for migraine without aura, thereby expanding our knowledge of this debilitating neurological disorder.

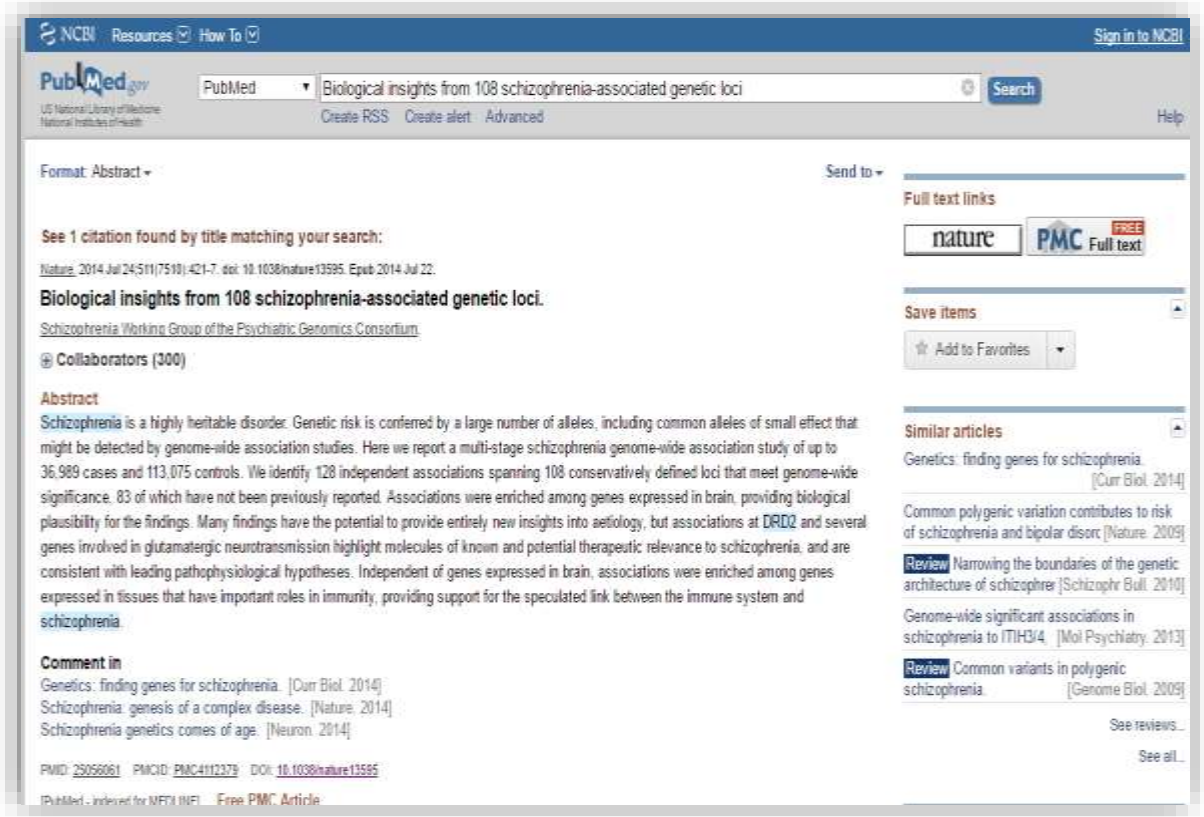
Main text

Migraine is a disabling episodic neurovascula 12% of the general populatio by severe throbbing and phonophobia (mig ts attacks may be as al with aura; MA). Previous genome- association ed a migraine susceptibility locus on chromosome 8q22, close to *MTDH*, in the clinic-based International Headache Genetics Consortium (IHGC) MA study[5] and three other loci in or near *PRDM16*, *LRP1*, and *TRPM8* in the population-based migraine Women's Genome Health Study (WGHS)[6]. For *TRPM8* there was suggestive association ($P < 1 \times 10^{-5}$) also in the clinic-based IHGC MA GWAS[5]. Here we report the first GWAS in MO, the most co mon form Ne analyzed two large samples from headache centres in Ge Netherlands including 2,326 MO patients and 4,580 po controls (Supplen plot of the joint a (λ_{1000}) of 1.03 w dataset identified 10 chromosome 1q2 ining multiple SNPs with suggestive a ary Table 1). Eighteen SNPs from these 12 loci were taken forward to the replication stage in four independent clinic-based European MO samples (2,508 cases and 2,652 controls) (Supplementary Fig. 1 and Supplementary Table 1). Eight SNPs in six loci showed *P*-values < 0.05 in the replication study, and five of these SNPs also showed *P*-values < 5×10^{-8} in the meta-analysis combining the discovery and replication cohorts (Table 1, Fig. 1 and Supplementary Fig. 3). Four loci (1q22, 3p24, 6p24, 9q33) replicated, although replication was less convincing for loci on

What is its function ?

What is its structure?





www.hsls.pitt.edu/molbio/infobooster

https://goo.gl/99Fz2U

Create Your Own InfoBooster

www.hsls.pitt.edu/infoboosters

Peter Coles
http://mrcoles.com/

Chris Zarata
http://chris.zarate.org/

Janis Elsts
W-shadow.com

Angie Zack
Web & Application
Programmer
University of Pittsburgh

John Ladue
Head Knowledge
Integration
University of Pittsburgh

Julia Dahm
Technology Service
University of Pittsburgh

Carrie Iwema
Information Specialist in Mol Bio
University of Pittsburgh

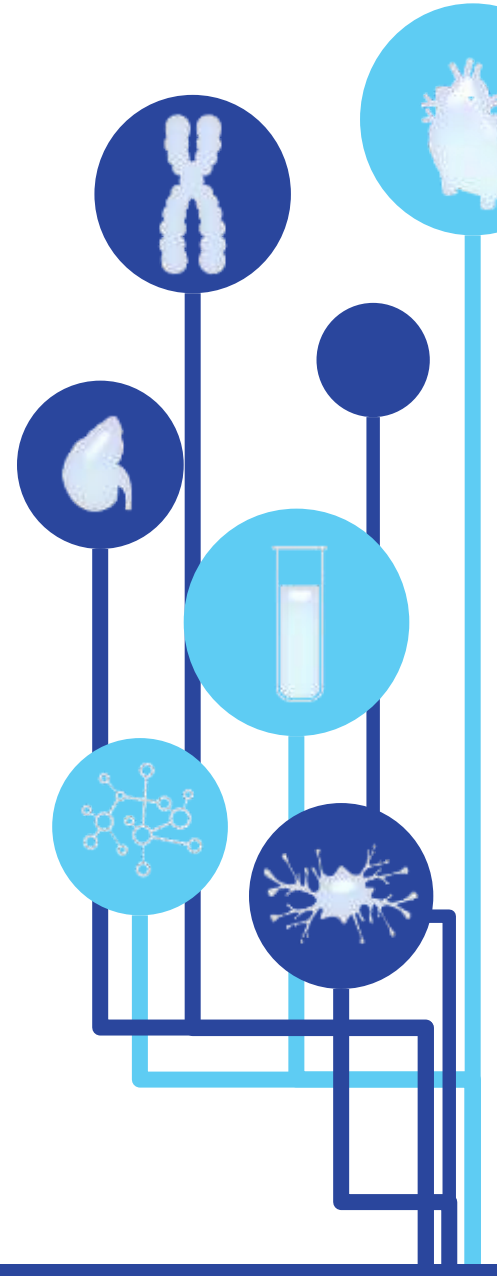
InfoBoosters

www.hsls.pitt.edu/molbio/infobooster

Search.bioPreprint

DISCOVER CUTTING EDGE, YET-TO-BE PUBLISHED RESEARCH ARTICLES

ANSUMAN CHATTOPADHYAY, PHD
HEAD, MOLECULAR BIOLOGY INFORMATION SERVICE



Preprint Servers

www.hsls.pitt.edu/resources/preprint

University of Pittsburgh
Health Sciences Library System

About HSLS - Contact Us - Remote Access

Journals & Articles ▪ Books ▪ More Resources ▪ Library Services ▪ Guides

HSLS Home ›

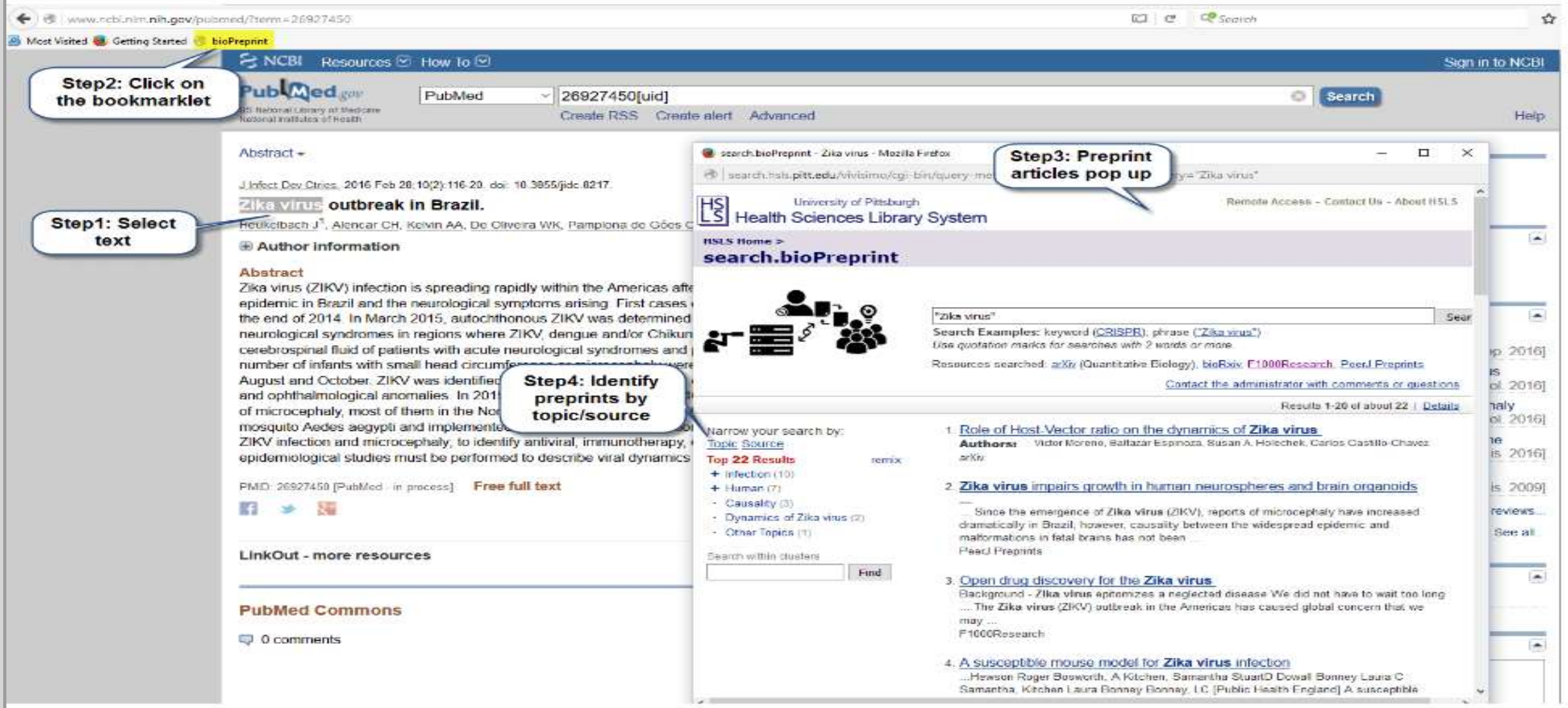
bioPreprint Bookmarklet

Seamlessly integrate any text from any web page with the bioPreprint search engine!

bioPreprint

Drag and drop it into the browser favorites/bookmark toolbar.

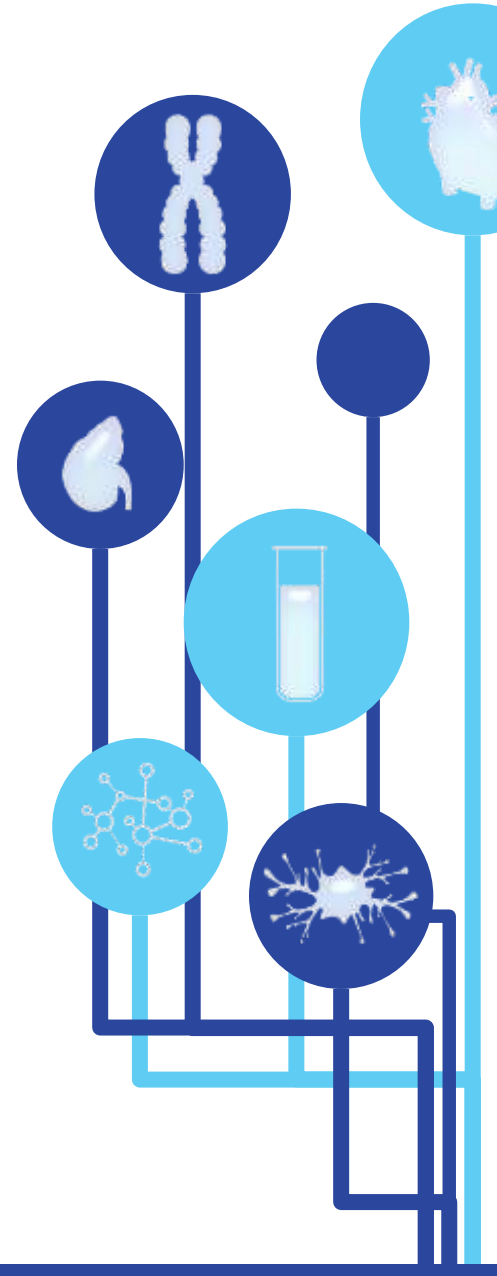
Steps to link highlighted text from an abstract in PubMed to preprint articles on the same subject using bioPreprint bookmarklet.



PubMed Commons

ELAINA VITALE, MLIS

NATIONAL NETWORK OF LIBRARIES OF MEDICINE (NN/LM)
MIDDLE ATLANTIC REGION (MAR)



(But first: PubMed)

- > 26 million citations for biomedical literature (and growing daily)
- ~7 million searches a day
- Citations come from MEDLINE, life science journals and online books
- Content spans life sciences, behavioral sciences, chemical sciences, and bioengineering
- Free resource maintained by the National Library of Medicine (NLM)

Getting started: what is PubMed Commons?

Using PubMed Commons

Access:

- via PubMed Commons homepage or top right of PubMed
- “has user comments” [filter]
- Journal title [journal] AND “has user comments”

Use of PubMed Commons

- Update and expand the public record, for instance by pointing to new data, relevant publications, or alternative interpretations
- Note corrections and retractions to publications
- Post discussion and critique, either directly or via links to blog posts and other platforms
- Provide links to datasets, code, or publicly accessible versions of publications
- Call attention to issues affecting reproducibility, such as cell line misidentification

(from "Commenting on PubMed: a successful pilot," 17 December 2015)

A few things to consider about PubMed Commons:

Bringing RIGOR & REPRODUCIBILITY to RESEARCH

PubMed Commons is REALLY NEW!

- PubMed has > 26 million citations (14 September 2016) vs. PubMed Commons has 4442 comments (14 September 2016)
- Fewer than 1% of PubMed articles have comments

Commenting is restricted to users who:

- Have My NCBI accounts
- And are authors of publications in PubMed
- Journal clubs allowed, too

PubMed Commons: Rigor & Responsibility

J Clin Virol. 2016 Aug 30;83:63-65. doi: 10.1016/j.jcv.2016.08.297. [Epub ahead of print]

Fatal encephalitis associated with Zika virus infection in an adult.

Soares CN[1], Brasil P[2], Carrera RM[3], Sequeira P[4], de Filippis AB[4], Borges VA[5], Theophilo F[5], Ellul MA[6], Solomon T[6].

PubMed Commons PubMed Commons home

2 comments

How to join PubMed Commons

Cristiane N Soares 2016 Sep 09 5:48 p.m. (6 days ago) 2 of 2 people found this helpful

The question regarding CHIK tests mentioned by Thomas Jeanne is really relevant in this case. In fact, we were concerned about co-infections, and after the paper acceptance we performed IgM and IgG CHIK tests in serum and CSF. All samples were negatives for CHIKV.

Permalink Share

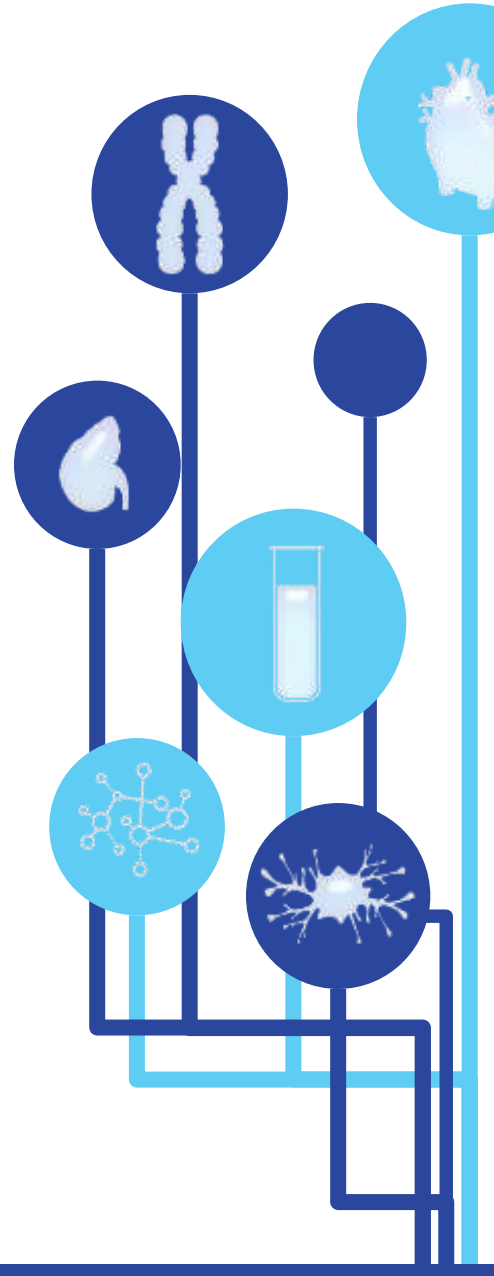
Thomas Jeanne 2016 Sep 07 8:33 p.m. 1 of 1 people found this helpful

In their case report, Soares et al. do not mention testing for chikungunya virus (CHIKV), which has considerable overlap with Zika virus (ZIKV) in both epidemiologic characteristics and clinical presentation. Brazil experienced a large increase in chikungunya cases in early 2016 (Collucci C, 2016), around the time of this patient's illness, and recent case series in Ecuador (Zambrano H, 2016) and Brazil (Sardi SI, 2016) have demonstrated coinfection with ZIKV and CHIKV. Moreover, a recently published study of Nicaraguan patients found that 27% of those who tested positive for any of ZIKV, CHIKV, or DENV (dengue virus) with multplex RT-PCR also tested positive for one or both of the other viruses (Waggoner JJ, 2016). CHIKV itself has previously been linked to encephalitis including fatal encephalitis (Gérardin P, 2016), and some have speculated that adverse interactions could result from coinfection with two or more arboviruses (Singer M, 2016). Coinfection with chikungunya as a contributing factor in this case cannot be ruled out without appropriate testing.

Permalink Share

Retrieved 16 September 16

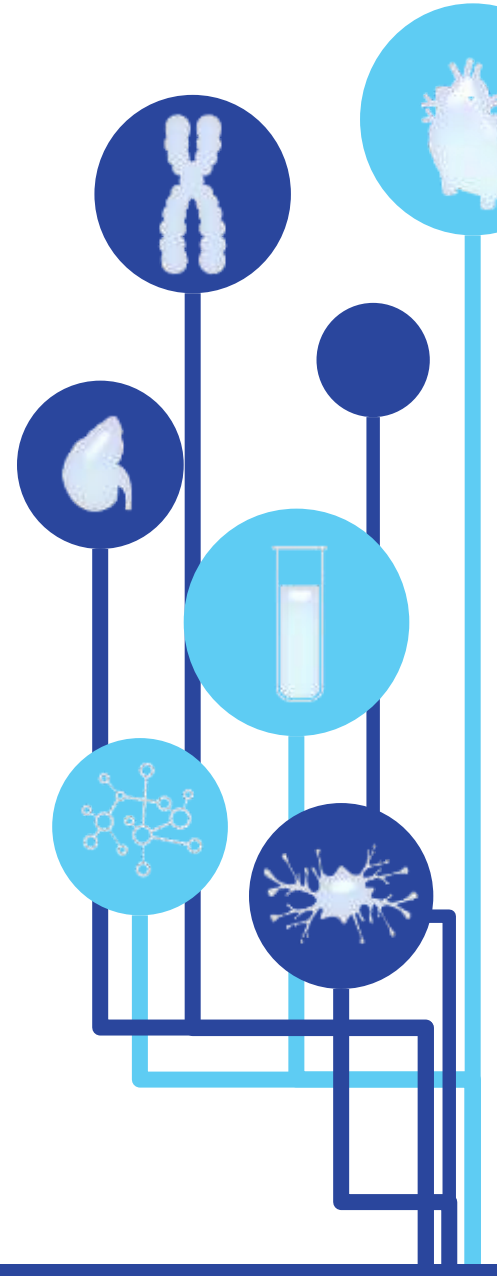
Questions?



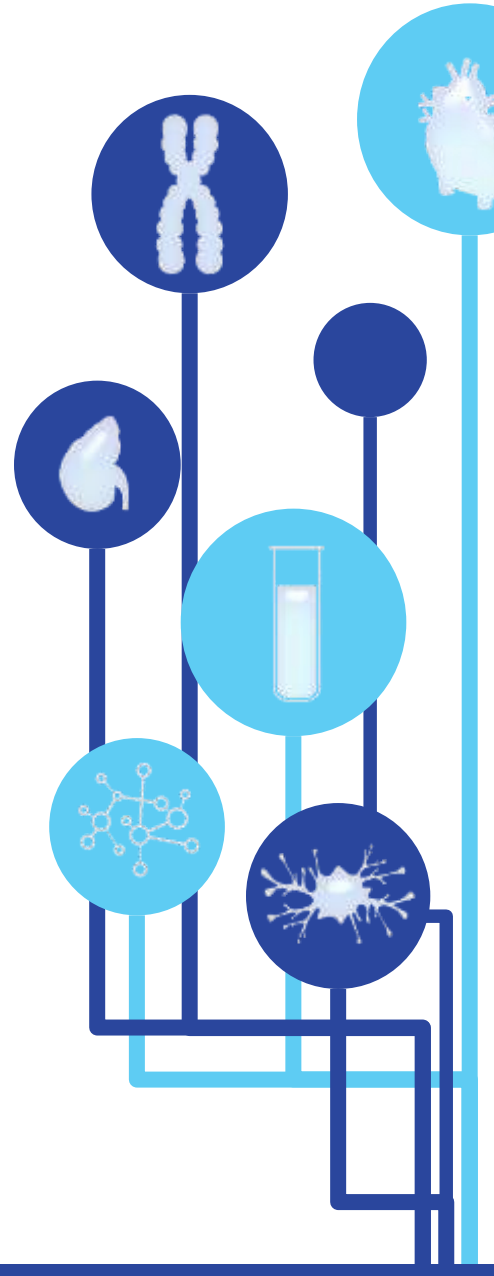
DMPTool

CARRIE L IWEMA, PHD, MLS, AHIP

INFORMATION SPECIALIST IN MOLECULAR BIOLOGY



A **Data Management Plan** is a formal document that outlines how you will handle your data both **during** your research and **after** the project is completed.



Why create a DMP?

- Grant requirement
- Saves time
- Simplifies research
- Facilitates sharing/preserving
- Decreases chances of data loss
- Extends life of research

Bringing RIGOR & REPRODUCIBILITY to RESEARCH

What should be included?

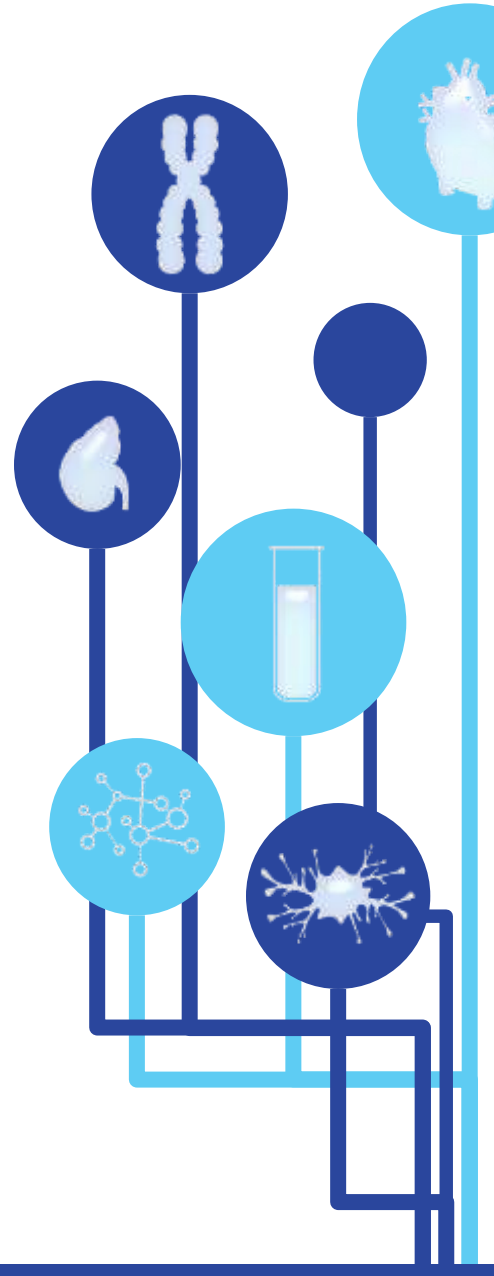
- Types of data
- Data formats & standards
- Data access policies
- Data use & distribution
- Data preservation & archiving

Bringing RIGOR & REPRODUCIBILITY to RESEARCH

DMP Development Tool

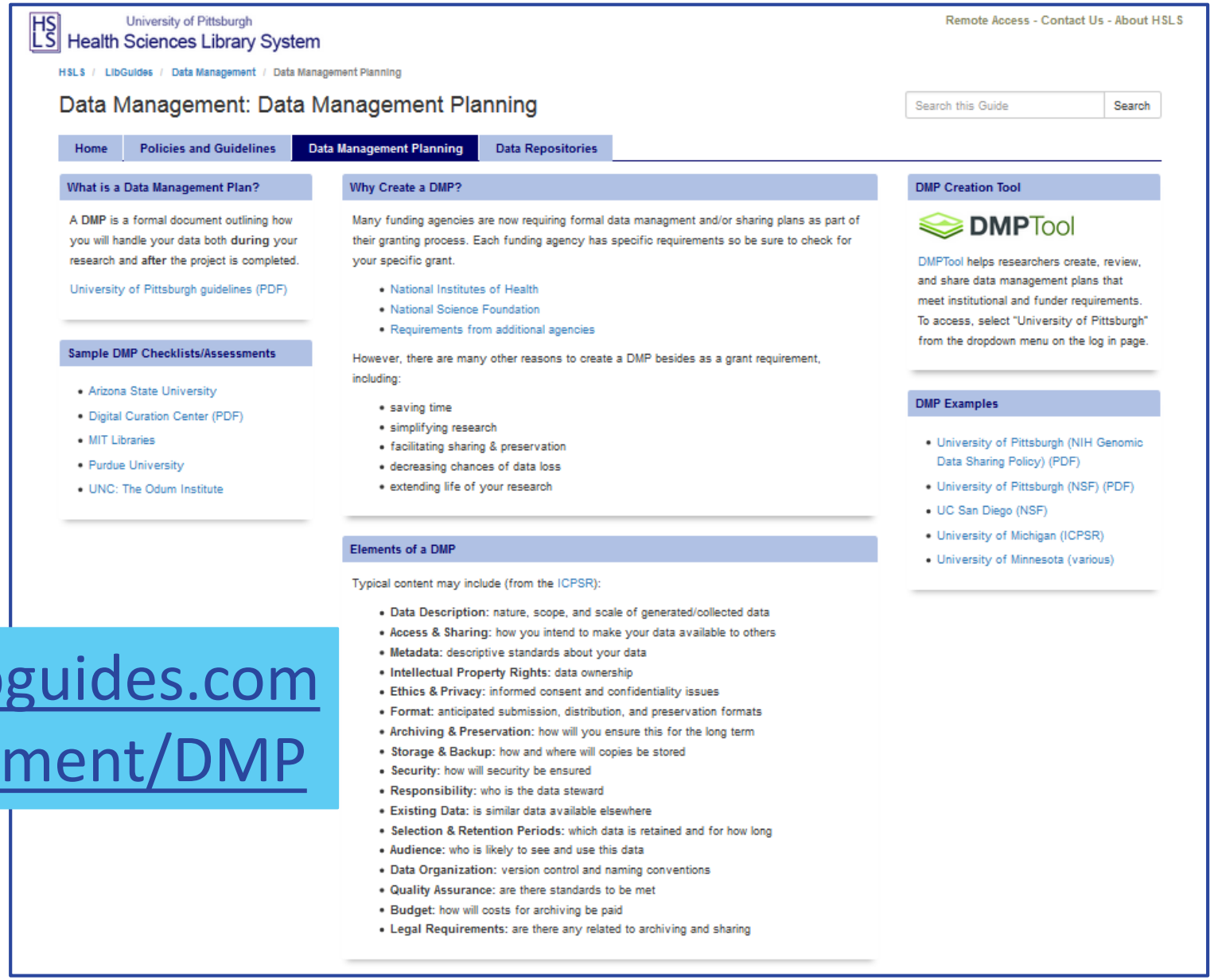
DMPTool
Guidance and Resources for your Data Management Plan

https://dmp.cdlib.org/



DMPTool Highlights

- Step by step instructions
- Resource links
- Easy to edit & export
- Share via web link
  - PDF version
  - Only viewable to those w/URL (no edits)
- Institutional customization
  - Sample text
  - Policies
  - Contacts

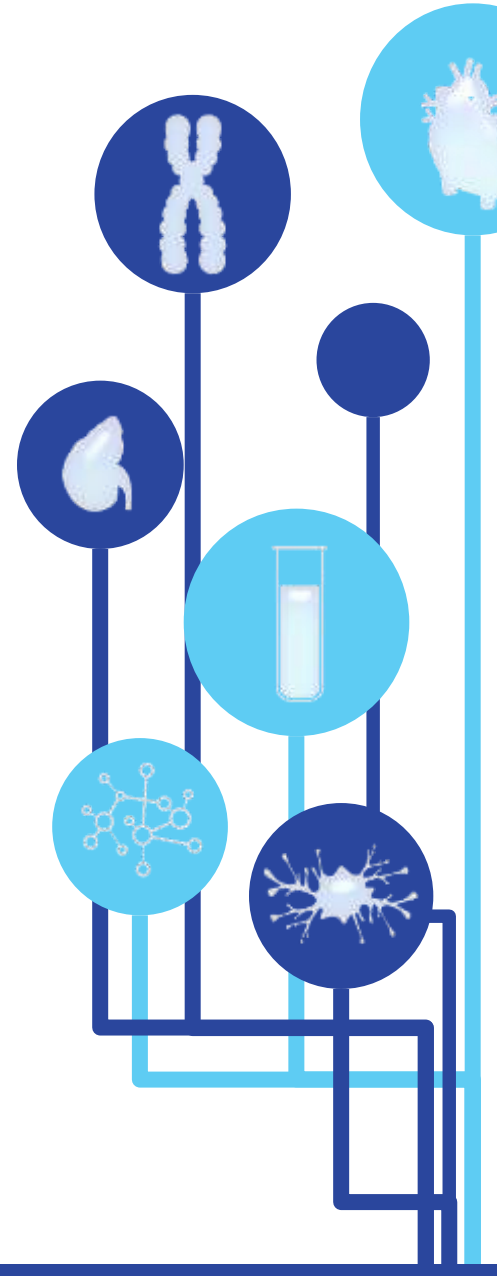


http://hsls.libguides.com/datamanagement/DMP

Electronic Lab Notebooks

CARRIE L IWEMA, PHD, MLS, AHIP

INFORMATION SPECIALIST IN MOLECULAR BIOLOGY



WHAT is an electronic lab notebook (ELN)?

A computer program designed to replace a paper lab notebook.

Bringing RIGOR & REPRODUCIBILITY to RESEARCH

WHY use an ELN?

- **DOCUMENTATION** of experiments (as with paper versions)

AND

- **SEARCHABLE** notes
- **SHARE** notebooks
- **SAVE** more than numbers, protocols, taped-in read-outs
- **SECURE** backup
- **TRACEABLE** versions
- **LOCATION** independent (cloud-based, need Internet)

Pitt & ELN decision

Ditching paper for digital → 18 February 2016

- Enterprise ELN (i.e., free for Pitt researchers)
- Valuable for research data management
- Surveyed faculty / research administrators / technology staff
  - easy to use, flexible, accessible
  - automate common tasks
  - fix processing trouble spots
  - enhance not change existing workflow
- Addresses Pitt's legal, regulatory, QA, records management, collaboration, & centralized reporting needs

So what ELN was chosen???

labarchives
Chance Favors the Organized Lab

- Proof-of-concept trial period
- Flexible integration
  - Microsoft Office Windows
  - Google Docs
  - ChemDoodle
  - PubMed
  - GraphPad Prism
- Customizable widgets
- Unlimited storage
- Mobile versions for Android & iOS
- Professional & Classroom editions

R3 Bringing RIGOR & REPRODUCIBILITY to RESEARCH

labarchives
Chance Favors the Organized Lab

The classroom edition is for instructors, TA's, lab coordinators, and students. This edition is focused on increasing student completion rate for lab courses.

The professional edition is for principal investigators, lab managers, post doctoral fellows and grad students. Store, organize, share laboratory research data.

The enterprise license provides the University with unlimited users, unlimited storage, customer support, and most favored pricing.

Access to LabArchives — www.labarchives.com

LabArchives Features

Replace the Paper Notebook to better monitor, engage and evaluate your teams' lab work

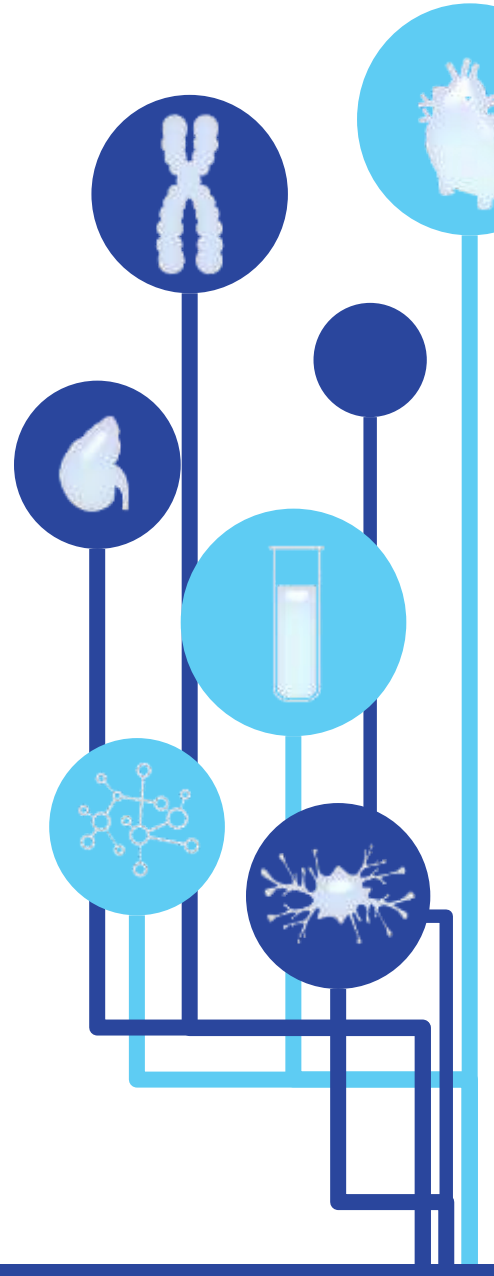
Interconnect all your lab data and image files to your observations and notes

Notebook user access can be managed to allow access rights to certain notebooks, pages and/or entries

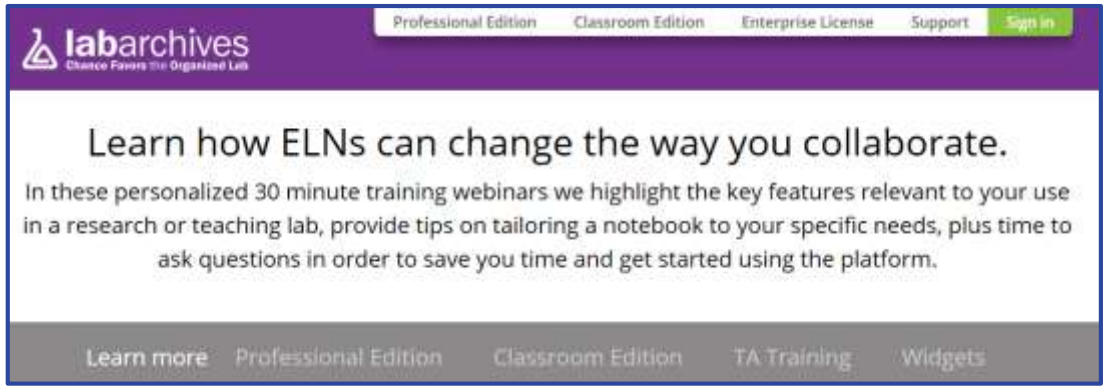
Easily import and access digital experimental data captured from original lab machines produced by hardware/software

Lab team can easily upload images and videos directly to their notebook while conducting lab experiments

Complete audit control - tracks and stores ALL revisions, by users, for every entry - NO entry can deleted - Protect IP

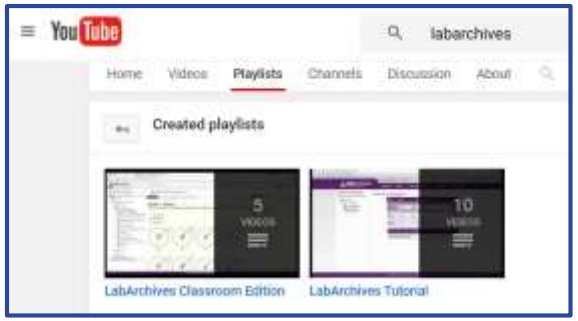


LabArchives — Resources

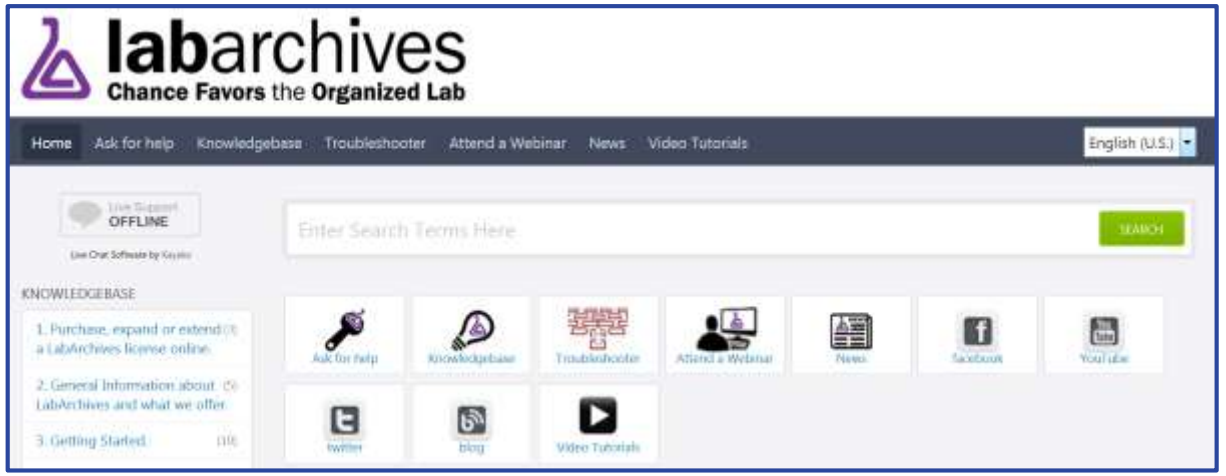


www.labarchives.com/training-webinars/

www.labarchives.com/newsletter/images/LA_Quick_Start_Guide_NewUser.pdf



www.youtube.com/user/LabArchives



http://labarchives.kayako.com/

http://technology.pitt.edu/service/electronic-lab-notebooks

CSSD: Brian Stengel & Jay Graham

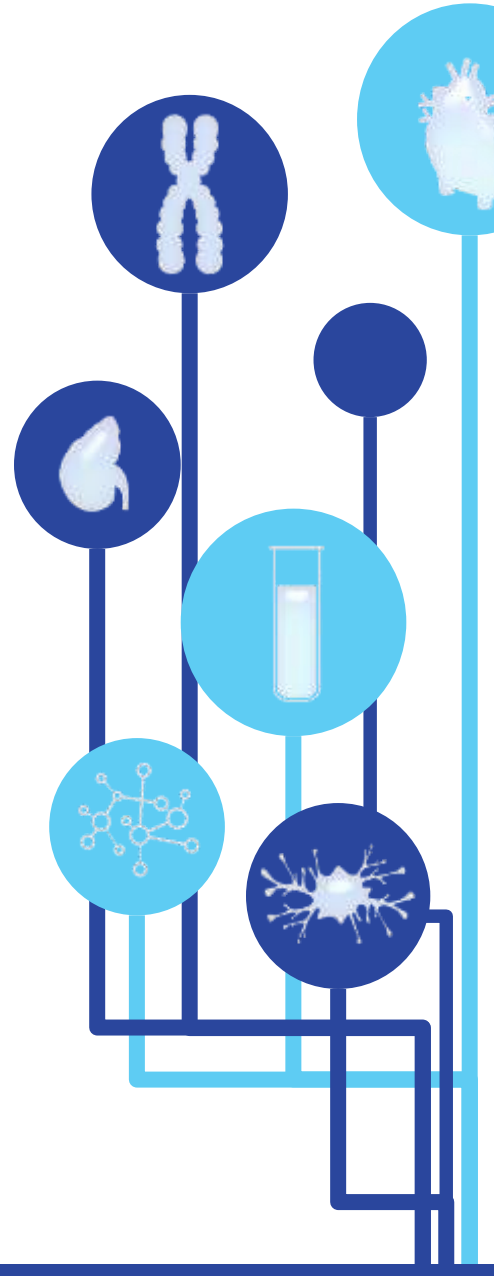
- Overview
- Benefits
- Access Info
- FAQ
- Restrictions
- Getting Started & Help

HSLS Systematic Review Program

MARY LOU KLEM, PHD, MLIS

HEALTH SCIENCES LIBRARY SYSTEM

KLEM@PITT.EDU



Systematic review

"A scientific investigation that focuses on a specific question and that uses explicit, planned scientific methods to identify, select, assess, and summarize the findings of similar but separate studies. “

Finding What Works in Health Care: Standards for Systematic Reviews, 2011; pg 21

Systematic review

"An SR must minimize bias in identifying, selecting, and interpreting evidence to be credible. “

Finding What Works in Health Care: Standards for Systematic Reviews, 2011; pg 28

Steps to a well-designed SR

1. **Organize the review team and formulate a research question**
   - *Librarian as co-investigator*
   - *Assist in question development and refinement*
   - *Search for existing SRs on your topic*

Steps to a well-designed SR

1. Organize the review team and formulate a research question
2. **Develop the review protocol**
   - *Provide you with guidelines on protocol development*
   - *Develop a proposed search strategy*
     - *Choose appropriate bibliographic databases*
     - *Identify grey literature resources*

Steps to a well-designed SR

1. Organize the review team and formulate a research question
2. Develop the review protocol
3. **Systematically locate, screen, and select studies for review**
   - *Design and test comprehensive searches for each bibliographic database*
   - *Provide detailed documentation of all searches*
   - *Access to DistillerSR for Pitt faculty and students collaborating with a librarian*

Steps to a well-designed SR

1. Organize the review team and formulate a research question
2. Develop the review protocol
3. Systematically locate, screen, and select studies for review
4. **Appraise the risk of bias in individual studies and extract data**
5. **Synthesize findings and assess overall quality of body of evidence**
   - *Point you to resources on data extraction, data synthesis and quality appraisal*

Steps to a well-designed SR

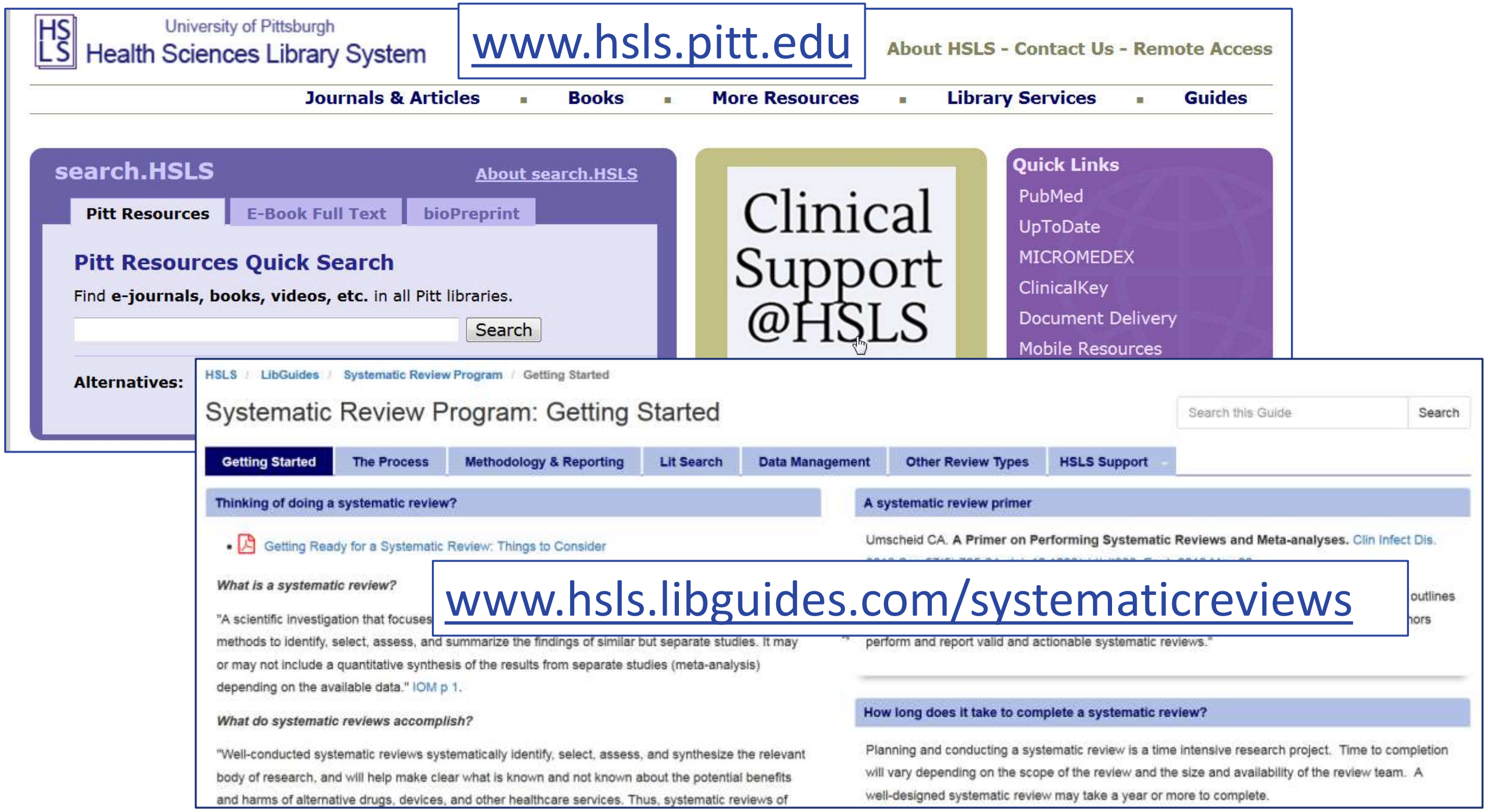
1. Organize the review team and formulate a research question
2. Develop the review protocol
3. Systematically locate, screen, and select studies for review
4. Appraise the risk of bias in individual studies and extract data
5. Synthesize findings and assess overall quality of body of evidence
6. **Prepare a final report and undergo peer review**
   - *As a co-author:*
     - *Provide standards for reporting the completed systematic review (PRISMA)*
     - *Draft the literature search portion of the Methods section*
     - *Review the entire final manuscript*

Steps to a well-designed SR*

1. Organize the review team and formulate a research question
2. Develop the review protocol
3. Systematically locate, screen, and select studies for review
4. Appraise the risk of bias in individual studies and extract data
5. Synthesize findings and assess overall quality of body of evidence
6. Prepare a final report and undergo peer review

*Adapted from: Institute of Medicine (2011). *Finding What Works in Health Care: Standard for Systematic Reviews*. Washington DC: The National Academies Press.


University of Pittsburgh
Health Sciences Library System
www.hsls.pitt.edu
About HSLS - Contact Us - Remote Access
Journals & Articl
Library Services
Guides
search.HSLS
About search.HSLS
Pitt Resources
E-Book Full Text
bioPreprint
Pitt Resources Quick Search
Find e-journals, books, videos, etc. in all Pitt libraries.
Search
Alternatives: Search PITTCat directly
Clinical Support @HSLS
Quick Links
PubMed
UpToDate
MICROMEDEX
ClinicalKey
Document Delivery
Mobile Resources
Molecular Biology
Ask A Librarian

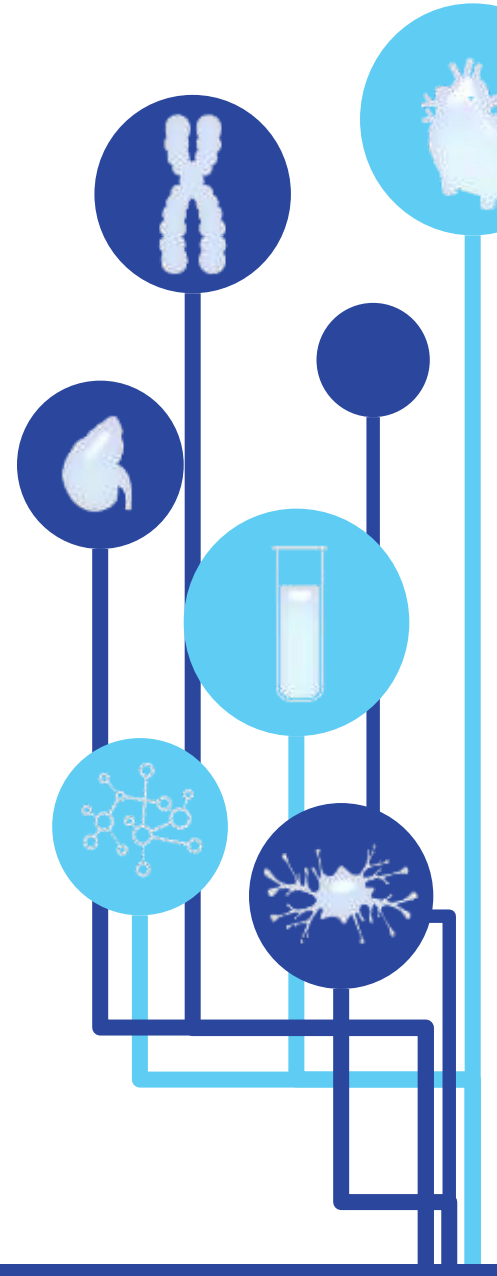

University of Pittsburgh
Health Sciences Library System
www.hsls.pitt.edu
About HSLS - Contact Us - Remote Access
Journals & Articles
Books
More Resources
Library Services
Guides
search.HSLS
About search.HSLS
Pitt Resources
E-Book Full Text
bioPreprint
Pitt Resources Quick Search
Find e-journals, books, videos, etc. in all Pitt libraries.
Search
Alternatives:
Clinical Support @HSLS
Quick Links
PubMed
UpToDate
MICROMEDEX
ClinicalKey
Document Delivery
Mobile Resources
HSLS / LibGuides / Systematic Review Program / Getting Started
Systematic Review Program: Getting Started
Search this Guide
Search
Getting Started
The Process
Methodology & Reporting
Lit Search
Data Management
Other Review Types
HSLS Support
Thinking of doing a systematic review?
Getting Ready for a Systematic Review: Things to Consider
What is a systematic review?
"A scientific investigation that focuses
methods to identify, select, assess, and summarize the findings of similar but separate studies. It may or may not include a quantitative synthesis of the results from separate studies (meta-analysis) depending on the available data." IOM p 1.
What do systematic reviews accomplish?
"Well-conducted systematic reviews systematically identify, select, assess, and synthesize the relevant body of research, and will help make clear what is known and not known about the potential benefits and harms of alternative drugs, devices, and other healthcare services. Thus, systematic reviews of
A systematic review primer
Umscheid CA. A Primer on Performing Systematic Reviews and Meta-analyses. Clin Infect Dis.
outlines
hors
perform and report valid and actionable systematic reviews."
How long does it take to complete a systematic review?
Planning and conducting a systematic review is a time intensive research project. Time to completion will vary depending on the scope of the review and the size and availability of the review team. A well-designed systematic review may take a year or more to complete.
www.hsls.libguides.com/systematicreviews

HSLS IACUC Service

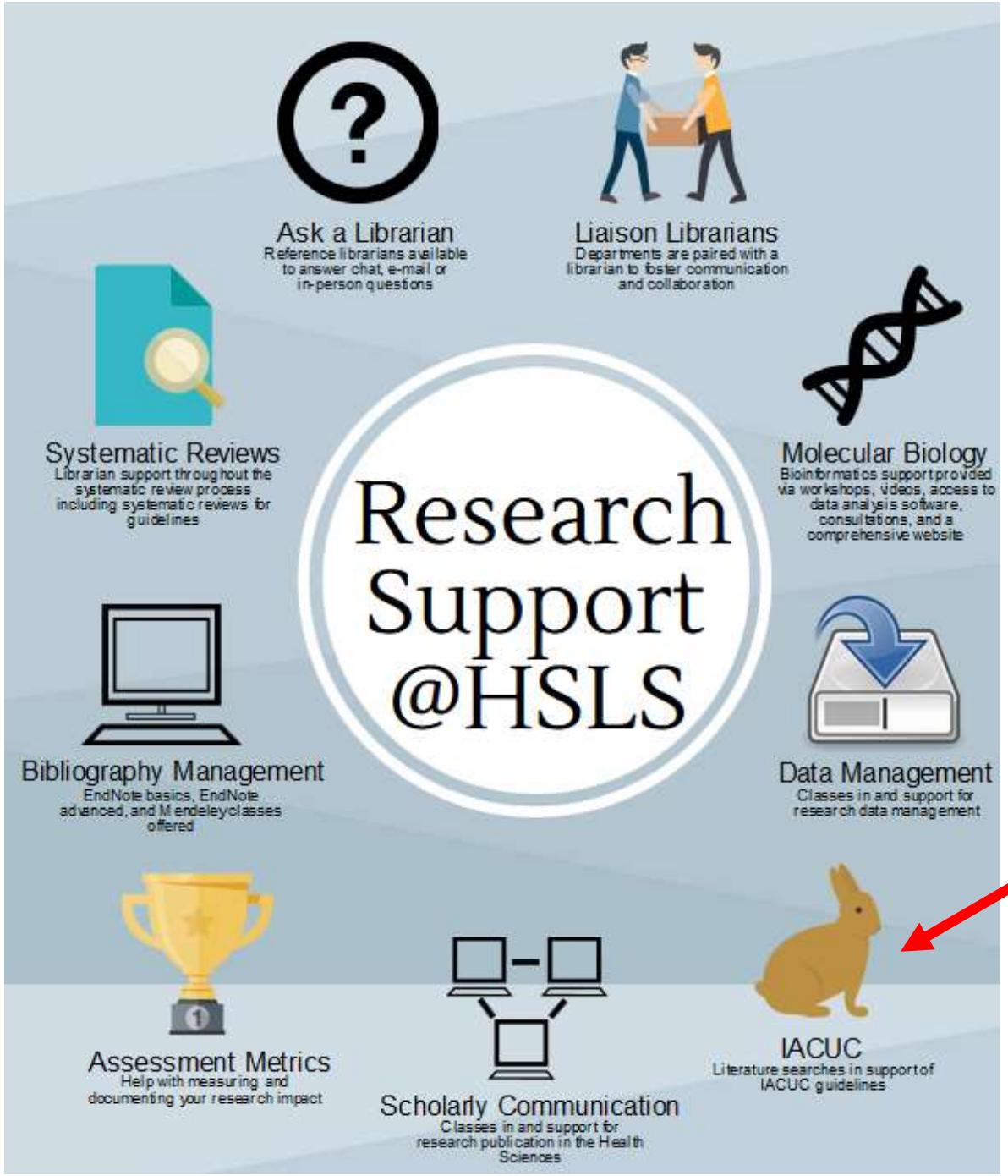
MELISSA RATAJESKI, MLIS, RLAT, AHIP

COORDINATOR OF DATA MANAGEMENT SERVICES

IACUC LIAISON



Research Support @ HSLS



Bringing RIGOR & REPRODUCIBILITY to RESEARCH

Subject: **Consideration of Alternatives to Painful/Distressful Procedures** **Policy #12**

References:
AWA Section 2143(a)(3)(B)
9 CFR, Part 2, Section 2.31 (d)(1)(ii)and (e); Section 2.32 (c)(2) and (5)(ii)
Principles of Humane Experimental Techniques, William Russell and Rex Burch, 1959
Public Health Service Policy on Humane Care and Use of Laboratory Animals (IV,C,5)
Animal Welfare Information Center

History: Replaces policies dated April 14, 1997, and June 21, 2000.

Justification: The Animal Welfare Act (AWA) regulations require principal investigators to consider alternatives to procedures that may cause more than momentary or slight pain or distress to the animals and provide a written narrative of the methods used and sources consulted to determine the availability of alternatives, including refinements, reductions, and replacements.

What Animal Models?

Required for research using warm-blooded species other than birds, mice of the genus *Mus*, and rats of the genus *Rattus*

What Pain Class?

Classification B: Animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery, but not yet used for such purposes.

Classification C: Animals upon which teaching, research, experiments, or tests will be conducted involving no pain, no distress, or no use of pain-relieving drugs. Euthanasia must precede any invasive procedure (i.e. tissue harvesting) to be in Classification C.

Classification D: Animals upon which experiments, teaching, research, surgery, or tests will be conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs will be used. Acute or terminal surgery is considered a painful procedure, which is alleviated by anesthesia.

Classification E: Animals upon which teaching, experiments, research, surgery (survival or non-survival), or tests will be conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs will adversely affect the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests and/or animals upon which teaching, experiments, research, surgery (survival or non-survival), or tests will be conducted resulting in either death as an endpoint or permanent physiological impairment that may lead to chronic pain or distress.

How?

The USDA considers the performance of database searches and analysis of articles as an effective method for demonstrating compliance with this requirement

“You must provide written narratives that will convince the IACUC reviewers you have made a good faith effort to substantively address each of these three issues”

1. You have **refined** potential pain/distress producing methods as much as possible
2. You have considered **replacing** with other techniques (e.g. in vitro techniques, computer simulations, lower animal species, etc.)
3. You have **reduced** animal numbers as much as possible without jeopardizing statistical validity

Documentation Required

- Name of database/s searched
- Date of the search
- Time period covered
- Search strategy used

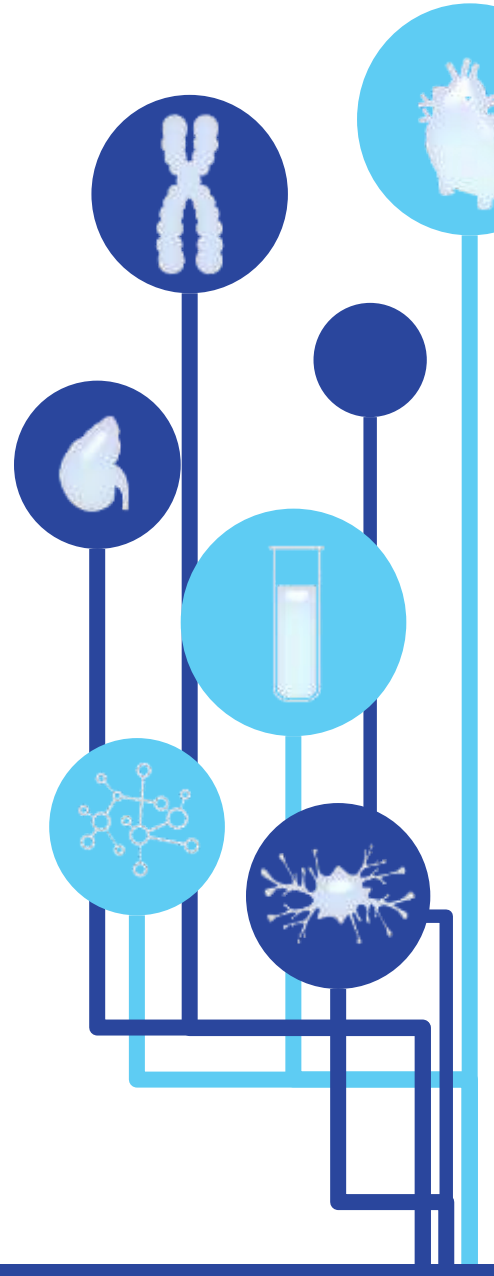
#	Searches	Results
1	macaca/ or macaca mulatta/	51856
2	(monkey$ or non-human primate$ or nonhuman primate$).mp.	95337
3	1 or 2	111179
4	((induc$ or experimental$) adj3 tuberculosis).mp.	3929
5	Blood Specimen Collection/mt [Methods]	4369
6	Bronchoalveolar Lavage/	2987
7	4 or 5 or 6	11283
8	3 and 7	77
9	limit 8 to (english language and yr="2006 -Current")	34
10	*Analgesia/ or Pain/pc [Prevention & Control]	23232
11	(Zolazepam/ and Tiletamine/) or telazol.mp.	281
12	10 or 11	23508
13	3 and 12	71
14	limit 13 to (english language and yr="2006 -Current")	13

Consult a Librarian

- Suggest terminology
- Provide database instruction
- Complete searches with your input

Melissa Ratajeski
mar@pitt.edu
412-648-1971

Questions?



www.hsls.pitt.edu/bringing-rigor-and-reproducibility-research