

University of San Diego

Digital USD

Digital Initiatives Symposium

Apr 30th, 2:10 PM - 2:55 PM

What If We Get Open Access?: A New Case for Undergraduate Scientific Literacy

AJ Boston

Murray State University, aboston@murraystate.edu

Follow this and additional works at: <https://digital.sandiego.edu/symposium>



Part of the [Scholarly Communication Commons](#)

Boston, AJ, "What If We Get Open Access?: A New Case for Undergraduate Scientific Literacy" (2019).
Digital Initiatives Symposium. 23.

<https://digital.sandiego.edu/symposium/2019/2019/23>

This 45-minute concurrent session is brought to you for free and open access by Digital USD. It has been accepted for inclusion in Digital Initiatives Symposium by an authorized administrator of Digital USD. For more information, please contact digital@sandiego.edu.

What If We Get Open Access?: A New Case for Undergraduate Scientific Literacy

Presenter 1 Title

Scholarly Communication Librarian, Assistant Professor. Head, Office of Research and Creative Activity.

Session Type

45-minute concurrent session

Abstract

For the educators among us who care about the Open Access Movement, are we prepared for what comes in a post-OA world? Suppose that Plan-S (or another initiative with similar objectives) succeeds in making vast quantities of previously paywalled scientific literature openly available to anyone with an Internet connection.

On one hand, it's the utopia we've fought for: our best ideas, set free to circulate among the minds who will incorporate them toward solving the big issues humanity faces. On the other hand, what if scientific literature becomes weaponized in the same way that journalism has in recent years, where legitimate work gets sewn with seeds of doubt, and bad-faith efforts gain more traction than they deserve. When our research institutions continue to have trouble assessing science literature, to what measure should laypersons hold themselves?

In this cheery presentation, we will imagine a possible dystopia of our own creation, followed by a discussion of tools, tech, and approaches that could be used in an undergraduate education setting to make our future scientists better research communicators and our future citizens better research consumers.

Location

KIPJ Room D

Keywords

open access; open science; undergraduate instruction; assessment metrics; altmetrics; open review; science literacy

Creative Commons License



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

What If We Get Open Access?

A New Case for Undergraduate (Meta) Scientific Literacy

@AJ_Boston

Assistant Professor, Scholarly Communication Librarian
Murray State University

2019 Digital Initiatives Symposium
Copley Library, University of San Diego
Monday, April 30, 2019



What If We Get Open Access?

A New Case for Undergraduate Meta-Scientific Literacy

Agenda:

- **Case for a Conceptual Framework**
 - Post-OA world
 - Distrust & #FakeScience
 - Open Science: Public School of Thought
- **Practical Examples**
 - Researcher Roles
 - Tools & Technology
 - Student Activities





Use of the Journal Impact Factor in academic review, promotion, and tenure evaluations

Preprint

View 468
tweets 

Research article

Science Policy

Erin C. McKiernan ¹, Lesley A. Schimanski², Carol Muñoz Nieves²,
Lisa Matthias³, Meredith T. Niles⁴, Juan Pablo Alperin ^{2,5}

April 9, 2019

I lied! I'm not a scientist.

AMC

Science Literature Corpus

- **Who is reading research?**
 - **Researchers**
 - **Students**
 - **Citizens**
- **How is research judged?**
 - **Journal or Author Reputation?**
 - **Citations?**
 - **Close-reading?**

The image shows the main portion of a Plan S banner. On the right side, there is a large, stylized orange 'S' logo with a white dot in the center. The text 'Plan S' is written in white, with a horizontal line underneath. Below this, the tagline 'Making full and immediate Open Access a reality' is written in a smaller white font. The background is a solid orange color.

Plan S
Making full and
immediate Open
Access a reality



Kelsey D. Atherton

@AthertonKD

Follow



Oh, you're experiencing a structural problem?
Have you ever considered trying different
personal choices instead?

12:20 PM - 22 Apr 2019



Plan S

Making full and immediate Open Access a reality

Plan S

**Making full and
immediate Open
Access a reality**



Peter Suber

@petersuber

Following



Good data from [@lariviev](#) and [@csugimoto](#) show that "the funding agency is a stronger driver of [#openaccess](#) than is the culture of any particular discipline."



Do authors comply when funders enforce open access to research?

The first large-scale analysis of compliance with open-access rules reveals that up to one-third of articles are not free to read.

[nature.com](#)

12:03 PM - 18 Apr 2019



Plan S

Making full and immediate Open Access a reality

Plan S

Making full and
immediate Open
Access a reality



Thomas Padilla

@thomasgpadilla

Follow

If you could start over, would you call "scholarly communication" something else?

If yes, what would you call it and why?

If no, why?

1:03 PM - 18 Apr 2019



Plan S

Making full and immediate Open Access a reality

Plan S

**Making full and
immediate Open
Access a reality**

Opening Science

openingscience.org/get-the-book

Benedikt Fecher & Sascha Friesike, eds.

- *Open Science: One Term, Five Schools of Thought*
 - **Democratic**
 - **Pragmatic**
 - **Infrastructure**
 - **Public**
 - **Measurement**



School of thought	Central assumption	Involved groups	Central Aim	Tools & Methods
Democratic	The access to knowledge is unequally distributed.	Scientists, politicians, citizens	Making knowledge freely available for everyone.	Open access, intellectual property rights, Open data, Open code
Pragmatic	Knowledge-creation could be more efficient if scientists worked together.	Scientists	Opening up the process of knowledge creation.	Wisdom of the crowds, network effects, Open Data, Open Code
Infrastructure	Efficient research depends on the available tools and applications.	Scientists & platform providers	Creating openly available platforms, tools and services for scientists.	Collaboration platforms and tools
Public	Science needs to be made accessible to the public.	Scientists & citizens	Making science accessible for citizens.	Citizen Science, Science PR, Science Blogging
Measurement	Scientific contributions today need alternative impact measurements.	Scientists & politicians	Developing an alternative metric system for scientific impact.	Altmetrics, peer review, citation, impact factors



Public

Science needs to be made accessible to the public.

Scientists & citizens

Making science accessible for citizens.

Citizen Science, Science PR, Science Blogging



Public School of Open Science

- **Accessibility**
 - Can it be widely accessed?
- **Comprehensibility**
 - Can it be widely comprehended?





MINERS FOR TRUMP



Stephen Wood

@stevewoodYYC

Follow



One very bad thing about scientific papers being behind paywalls is that (competing) pseudoscience isn't behind paywalls, so it's easier to find misinformation online than to find facts.

1:37 PM - 22 Apr 2019



New York Times Opinion

@nytopinion

Following

The World Health Organization has ranked the anti-vaccination movement as one of the top biggest health threats facing the world in

It's no mystery how we got here. **On the internet, anti-vaccine propaganda has outpaced pro-vaccine public health information.** The anti-vaxxers, as they are colloquially known, have hundreds of websites promoting their message, a roster of tech- and media-savvy influencers and an aggressive political arm that includes at least a dozen political action committees. Defense against this onslaught has

Opinion | How to Inoculate Against Anti-Vaxxers

The no-vaccine crowd has persuaded a lot of people. But public health can prevail.

nytimes.com

9:05 PM - 19 Jan 2019

<https://www.nytimes.com/2019/01/19/opinion/vaccines-public-health.html?>



Stephen Wood

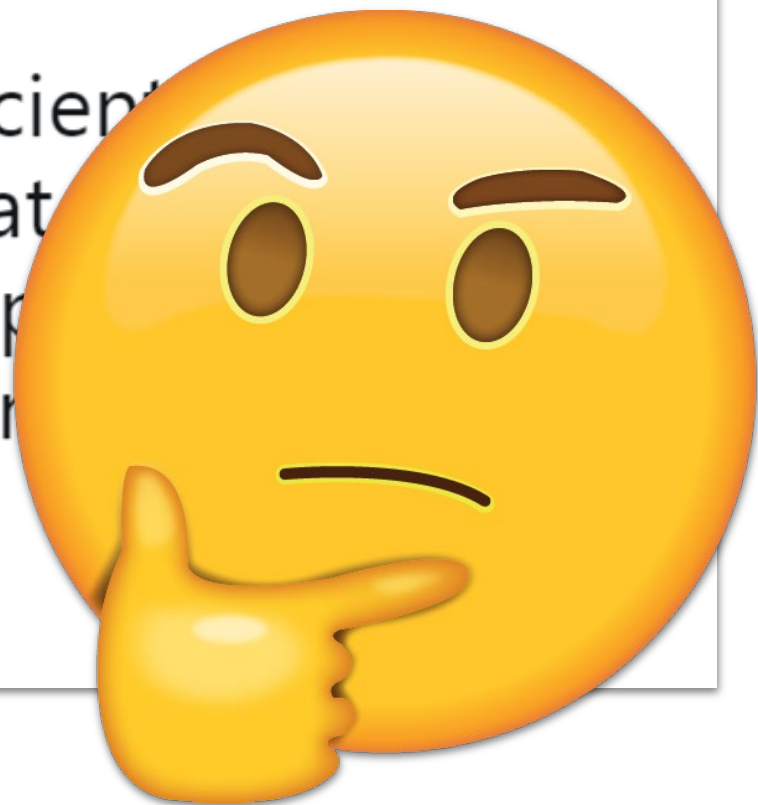
@stevewoodYYC

Follow



One very bad thing about science
being behind paywalls is that
pseudoscience isn't behind paywalls
easier to find misinformation
find facts.

1:37 PM - 22 Apr 2019



Format-as-proxy

for trustworthiness or fact.

RESEARCH & IDEAS

FRIDAY, DECEMBER 5, 2014

Citations for sale

Saudi university boosts rankings by aggressively recruiting world's top researchers

Researchers with secondary affiliations to King Abdulaziz University



<http://www.dailycal.org/2014/12/05/citations-sale/>



NEWS · 28 FEBRUARY 2019

Big pharma is embracing open-access publishing like never before

Proportion of open-access publications with authors from the pharmaceutical industry doubled between 2009 and 2016.

Matthew Warren

<https://www.nature.com/articles/d41586-019-00610-2>

The New York Times

What These Medical Journals Don't Reveal: Top Doctors' Ties to Industry



The Sarah Cannon Research Institute, based in Nashville, received nearly \$8 million in payments from drug companies on behalf of its president for clinical operations, Dr.

<https://www.nytimes.com/2018/12/08/health/medical-journals-conflicts-of-interest.html>

SCIENCE

Psychology's Replication Crisis Is Running Out of Excuses

Another big project has found that only half of studies can be repeated. And this time, the usual explanations fall flat.

ED YONG NOV 19, 2018





'Sokal Squared': Is Huge Publishing Hoax 'Hilarious and Delightful' or an Ugly Example of Dishonesty and Bad Faith?

By *Alexander C. Kafka* | OCTOBER 03, 2018

Reactions to an elaborate academic-journal hoax, dubbed "Sokal Squared" by one observer, came fast and furious on Wednesday. Some scholars applauded the hoax for unmasking what they called academe's leftist, victim-obsessed ideological slant and low publishing standards. Others said it had proved nothing beyond the bad faith and



Mike Nayna

James A. Lindsay, Helen Pluckrose, and Peter Boghossian, the

UNDARK Truth, Beauty, Science.



VARIABLES | *Essays & Opinion*

Junk Science or the Real Thing? 'Inference' Publishes Both.

The newish 'quarterly review of science' sometimes muddies the waters between science and political ideology. It is funded by Peter Thiel.

01.28.2019 / BY **Adam Becker**

<https://undark.org/article/junk-science-or-real-thing-inference/>



Public School of Open Science

- **Accessibility**
 - Can it be widely accessed?
- **Comprehensibility**
 - Can it be widely comprehended?



In short, the reality of human-caused climate change cannot be denied.

And yet, it is denied: regularly, loudly, vociferously, and persistently by small but well-funded and politically connected groups.

It is important to make a clear distinction between these deniers and the far, far larger body of people who don't understand climate science, are legitimately skeptical and questioning about the issue, or who are simply uninterested or uninformed about it. The latter group must continue to be the focus of science communicators, educators, media.

Peter Gleick, January 15, 2019

Climate Debates: On Data and Denial

<http://blog.lareviewofbooks.org/provocations/climate-debates-data-denial/>

Agenda:


- **Case for a Conceptual Framework** ✓
 - Post-OA world
 - Distrust & #FakeScience
 - Open Science: Public School of Thought
- **Practical Examples**
 - Researcher Roles
 - Tools & Technology
 - Student Activities

Researcher Roles

(1/3)

Researcher Roles

Meta-Research: How significant are the public dimensions of faculty work in review, promotion and tenure documents?

Juan P Alperin  et al.

FEATURE ARTICLE Feb 12, 2019

DOI: 10.7554/eLife.42254

<https://elifesciences.org/articles/42254>

Researcher Roles

New (ahem) researcher mandates for publications?

- Layperson/simplified abstracts
- Publishing with open peer-reviews
- Publishing with open citations
- Posting data sets, protocols, lab notebooks, etc.

Researcher Roles

Other ideas for researchers:

- Host podcasts or guest on them
 - Everything Hertz; Ipse Dixit; The Weeds
- Design grants with citizen scientists in mind
 - Geocaching; birdwatching; water sampling; coding

Tools & Technology

(2/3)

Tools & Technology

- CrossMark
- Scholarcy & Get the Research
- Scite
- MetaFact
- Publons

Tools & Technology: CrossMark

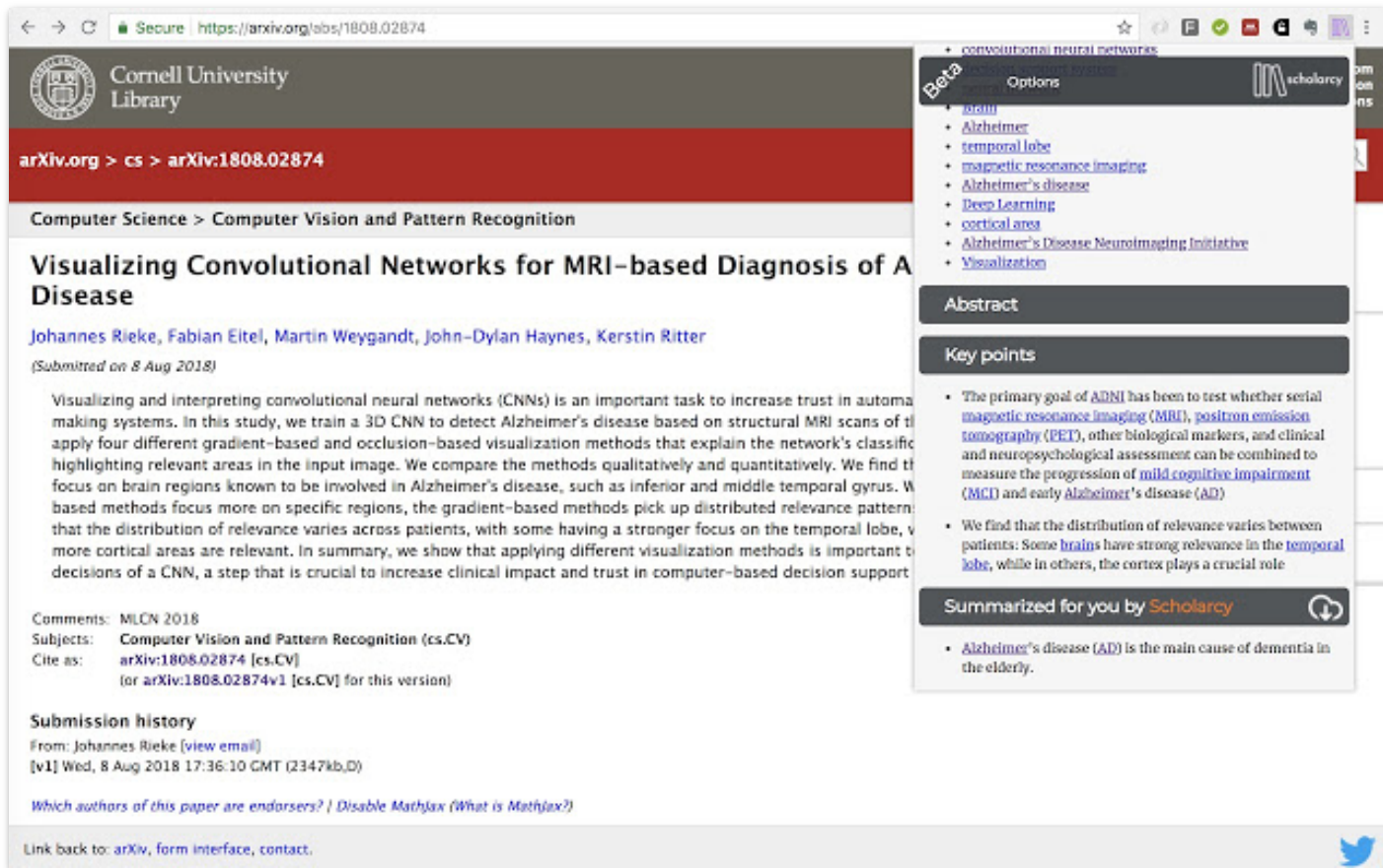


Document is current

Any future updates will be listed below

<https://www.crossref.org/services/crossmark/>

Tools & Technology: Scholarcy & Get the Research



The screenshot shows a web browser displaying an arXiv paper page. The browser's address bar shows the URL <https://arxiv.org/abs/1808.02874>. The page header includes the Cornell University Library logo and the text "Cornell University Library". Below this, a red banner displays "arXiv.org > cs > arXiv:1808.02874". The main content area shows the paper title "Visualizing Convolutional Networks for MRI-based Diagnosis of Alzheimer's Disease" by Johannes Rieke, Fabian Eitel, Martin Weygandt, John-Dylan Haynes, and Kerstin Ritter. The abstract text is partially visible, discussing the use of 3D CNNs for Alzheimer's diagnosis. A sidebar on the right, labeled "Beta", contains a "Options" menu with a list of related terms: "convolutional neural networks", "brain", "Alzheimer", "temporal lobe", "magnetic resonance imaging", "Alzheimer's disease", "Deep Learning", "cortical areas", "Alzheimer's Disease Neuroimaging Initiative", and "Visualization". Below the menu are sections for "Abstract", "Key points", and "Summarized for you by Scholarcy". The "Key points" section contains two bullet points: "The primary goal of ADNI has been to test whether serial magnetic resonance imaging (MRI), positron emission tomography (PET), other biological markers, and clinical and neuropsychological assessment can be combined to measure the progression of mild cognitive impairment (MCI) and early Alzheimer's disease (AD)" and "We find that the distribution of relevance varies between patients: Some brains have strong relevance in the temporal lobe, while in others, the cortex plays a crucial role". The "Summarized for you by Scholarcy" section contains one bullet point: "Alzheimer's disease (AD) is the main cause of dementia in the elderly." The footer of the page includes a "Link back to: arXiv, form interface, contact." and a Twitter icon.

Secure <https://arxiv.org/abs/1808.02874>

Cornell University Library

arXiv.org > cs > arXiv:1808.02874

Computer Science > Computer Vision and Pattern Recognition

Visualizing Convolutional Networks for MRI-based Diagnosis of Alzheimer's Disease

Johannes Rieke, Fabian Eitel, Martin Weygandt, John-Dylan Haynes, Kerstin Ritter
(Submitted on 8 Aug 2018)

Visualizing and interpreting convolutional neural networks (CNNs) is an important task to increase trust in automata making systems. In this study, we train a 3D CNN to detect Alzheimer's disease based on structural MRI scans of the brain. We apply four different gradient-based and occlusion-based visualization methods that explain the network's classification by highlighting relevant areas in the input image. We compare the methods qualitatively and quantitatively. We find that the focus on brain regions known to be involved in Alzheimer's disease, such as inferior and middle temporal gyrus. We find that gradient-based methods focus more on specific regions, the gradient-based methods pick up distributed relevance patterns that the distribution of relevance varies across patients, with some having a stronger focus on the temporal lobe, while more cortical areas are relevant. In summary, we show that applying different visualization methods is important to support the decisions of a CNN, a step that is crucial to increase clinical impact and trust in computer-based decision support systems.

Comments: MLCN 2018
Subjects: Computer Vision and Pattern Recognition (cs.CV)
Cite as: arXiv:1808.02874 [cs.CV]
(or arXiv:1808.02874v1 [cs.CV] for this version)

Submission history

From: Johannes Rieke [view email]
[v1] Wed, 8 Aug 2018 17:36:10 GMT (2347kb,D)

Which authors of this paper are endorsers? | Disable MathJax (What is MathJax?)

Link back to: arXiv, form interface, contact.

Beta Options

- convolutional neural networks
- brain
- Alzheimer
- temporal lobe
- magnetic resonance imaging
- Alzheimer's disease
- Deep Learning
- cortical areas
- Alzheimer's Disease Neuroimaging Initiative
- Visualization

Abstract

Key points

- The primary goal of ADNI has been to test whether serial magnetic resonance imaging (MRI), positron emission tomography (PET), other biological markers, and clinical and neuropsychological assessment can be combined to measure the progression of mild cognitive impairment (MCI) and early Alzheimer's disease (AD)
- We find that the distribution of relevance varies between patients: Some brains have strong relevance in the temporal lobe, while in others, the cortex plays a crucial role

Summarized for you by Scholarcy

- Alzheimer's disease (AD) is the main cause of dementia in the elderly.

<https://www.scholarcy.com/> & <http://gettheresearch.org/>

Tools & Technology: Scite

beta
scite_

DOI, Title, Author etc.



Nature volume 435, issue 7042, P673-676 2005 DOI: [10.1038/nature03701](https://doi.org/10.1038/nature03701)

Oxytocin increases trust in humans

Michael Kosfeld, Markus Heinrichs, Paul J. Zak, Urs Fischbacher, Ernst Fehr

Classification

- supporting ✔ 29
- mentioning ⊖ 635
- contradicting ✘ 4

Year Published



668 Citations

- 1 ⊖ MENTIONING ☰
 - Supporting 0.03
 - Contradicting 0.01
 - Mentioning 0.96

[Oxytocin and social pretreatment have similar effects on processing of negative emotional faces in healthy adult males](#)

Kis et al.

Front. Psychol. Section: Introduction

[Full Text](#)

More importantly, increasing body of evidence supports the notion that oxytocin is specifically involved in the regulation of human social cognition (Lee et al, [2009](#)). It has been shown to reduce fear responses to social stimuli (Kirsch et al, [2005](#)) through the attenuation of amygdala activation (Domes et al, [2007a](#)), that encourages social approach, affiliation and complex social phenomena, such as trust (Kosfeld et al, [2005](#); Baumgartner et al, [2008](#)) or generosity (Zak et al, [2007](#); Barraza et al, [2011](#)).

<https://www.scite.ai/>

Tools & Technology: Metafact

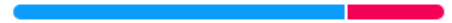
Do routine mammograms save lives?

I read an article [suggesting routine mammograms don't save lives](#) and then another [suggesting they do](#). Can experts please share us their perspective and answer on this important question. Many thanks.

 78%

Affirmative

From 40 verified experts:



31 answered Likely or higher

Views: 5208 Interested: 10

ANSWER

WANT TO KNOW

SHARE

Top

Yes (31)

Neutral (0)

No (9)



Archie Bleyer has answered **Unlikely**

An expert from Oregon Health & Science University in [Oncology](#) [Paediatrics](#) [Radiology](#)

As exemplified by the replies on this Metafact page, the answer remains contentious. Of the 37 responses to date (August 1), 30 contend that saving lives is likely or almost certain and 7 opine unlikely or extremely unlikely. Virtually all of the 30 affirmative responses are limited to breast cancer mortality and do not consider overall mortality (death due any cause, *all-cause-related mortality*). All-cause mortality is mentioned in only two replies.

Recently Answered



Ian M Goodyer from University of Cambridge answered [Do SSRIs \(antidepressants\) work in teenagers?](#)

about 9 hours ago



Walter Hsu from Iowa State University answered [Is vitamin C useful for type-2 diabetes?](#)

about 9 hours ago



Peter Millett MD from The Steadman Clinic answered [Is osteoarthritis reversible?](#)

<https://www.metafact.io/>

Tools & Technology: Publons

PRE-PUBLICATION REVIEW

APR 2017

In this manuscript (IJMS-189565), the authors summarize recent developments in HEV molecular taxonomy, epidemiology and evolution and describe the discovery of novel camel HEV genotypes as an illustrative example of the changes in this field.

Merit: 3

DETAILS

Comments:

- Page 1, line 42: "consuming meat" should be replaced by "consuming meat or milk"
- Figure 1: authors should indicate what is the difference between the two first strains
- Page 4, line 94: "of the Caliciviridae" should be replaced by "of the family Caliciviridae"
- Page 4, lines 126-128: these studies are not recent (2009 and 2012), please, change this paragraph: "The recent identification of inter-genotypic HEV recombinants infecting swine [31,34] further complicates precise genotype allocations of all strains"

Discussion

<https://publons.com/publon/840565/>

Student Activities

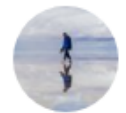
(3/3)

Student Activities

- Wikipedia edit-a-thons
- Science meets art
- Assign podcasts in place of readings on occasion
- Campus Scholars Week / Posters at the Capitol
- Teach research using the public library

Student Activities: Wikipedia edit-a-thons

- (change visibility) 11:00, 22 April 2019 (diff | hist) .. (+43) .. Acinonyx (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 11:00, 22 April 2019 (diff | hist) .. (+39) .. Scientific misconduct (Flagging a cited source as retracted) (current)
- (change visibility) 11:00, 22 April 2019 (diff | hist) .. (+37) .. Josiah S. Carberry (Flagging a cited source as retracted) (current)
- (change visibility) 11:00, 22 April 2019 (diff | hist) .. (+43) .. Anil Potti (Flagging a cited source as retracted) (current) [rollback]



Sam Walton
@samwalton9

Follow

First RetractionBot trial complete - 25 citations flagged as citing a retracted source on @Wikipedia! @Wikicite

- (change visibility) 10:57, 22 April 2019 (diff | hist) .. (+43) .. Surfactant protein A2 (Flagging a cited source as retracted) (current)
- (change visibility) 10:57, 22 April 2019 (diff | hist) .. (+48) .. E-box (Flagging a cited source as retracted) (current) [rollback: 1]
- (change visibility) 10:57, 22 April 2019 (diff | hist) .. (+45) .. Isomaltulose (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:56, 22 April 2019 (diff | hist) .. (+44) .. Mir-542 microRNA precursor family (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:53, 22 April 2019 (diff | hist) .. (+75) .. Pamela Ronald (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:43, 22 April 2019 (diff | hist) .. (+43) .. Prostate cancer (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:41, 22 April 2019 (diff | hist) .. (+39) .. Mir-23 microRNA precursor family (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:39, 22 April 2019 (diff | hist) .. (+70) .. Pamela Ronald (Flagging a cited source as retracted)
- (change visibility) 10:38, 22 April 2019 (diff | hist) .. (+51) .. Low sodium diet (Flagging a cited source as retracted) (current) [rollback]
- (change visibility) 10:36, 22 April 2019 (diff | hist) .. (+43) .. TeraView (Flagging a cited source as retracted) (current) [rollback]

5:07 AM - 22 Apr 2019

Student Activities: Science meets art



SciArt Magazine & Center

@SciArtMagCenter

Following

How can art influence science?

Read the stories of 17 scientists who experienced the direct impact of the arts on their research practice:

sciartmagazine.com/october2018con...



11:30 AM - 19 Apr 2019

Student Activities: Assign podcasts

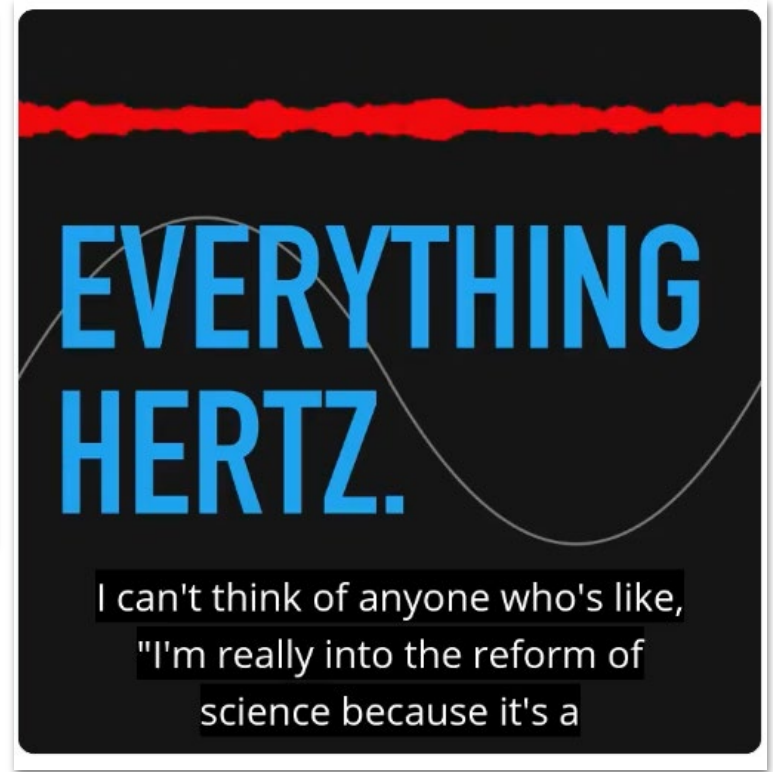


 **Everything Hertz**
@hertzpodcast Following

New episode coming tomorrow, where we chat about the pros and cons of scientific reform. Here's a sneak preview...

If you haven't already, subscribe to Everything Hertz in your podcast app to get this episode delivered straight to your device

2:26 AM - 14 Apr 2019



**EVERYTHING
HERTZ.**

I can't think of anyone who's like,
"I'm really into the reform of
science because it's a

Student Activities: Campus Scholars Week / Posters at the Capitol



Student Activities: Teach research using the public library



Matthew Murray 🦇

@MidniteLibrary

Follow

A few weeks ago myself and @ryregier gave a workshop on accessing scholarly material after you graduate. I have never had so many people contact me and ask for slides before...

8:54 AM - 17 Apr 2019



erin glass

@erinroseglass

Following

the role of the public library today is obviously a complicated question that intersects with a broad range of social issues & requires *above all* input from the amazing librarians/staff that work in them, but also the renewed interest from citizens who might help support them

9:39 PM - 26 Feb 2019

<https://scholarlykitchen.sspnet.org/2018/05/22/are-library-subscriptions-overutilized/>

THE SCHOLARLY
kitchen

ABOUT

ARCHIVES

COLLECTIONS ▾

Are Library Subscriptions Over-Utilized?

By **LISA JANICKE HINCHLIFFE** | MAY 22, 2018 | 57 COMMENTS

Agenda:

- **Case for a Conceptual Framework** ✓
 - Post-OA world
 - Distrust & #FakeScience
 - Open Science: Public School of Thought
- **Practical Examples** ✓
 - Researcher Roles
 - Tools & Technology
 - Student Activities

What If We Get Open Access?

A New Case for Undergraduate Scientific Literacy

@AJ_Boston

Assistant Professor, Scholarly Communication Librarian
Murray State University

2019 Digital Initiatives Symposium
Copley Library, University of San Diego
Monday, April 30, 2019

