ELSEVIER

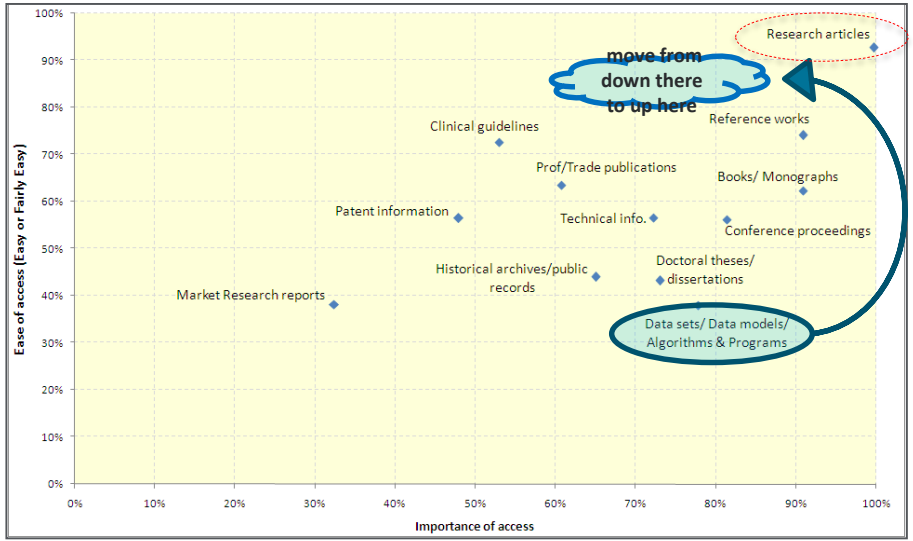
Publishing software and data

Dr. Chiara Farinelli – Publisher

CERN Workshop, 31 October 2017

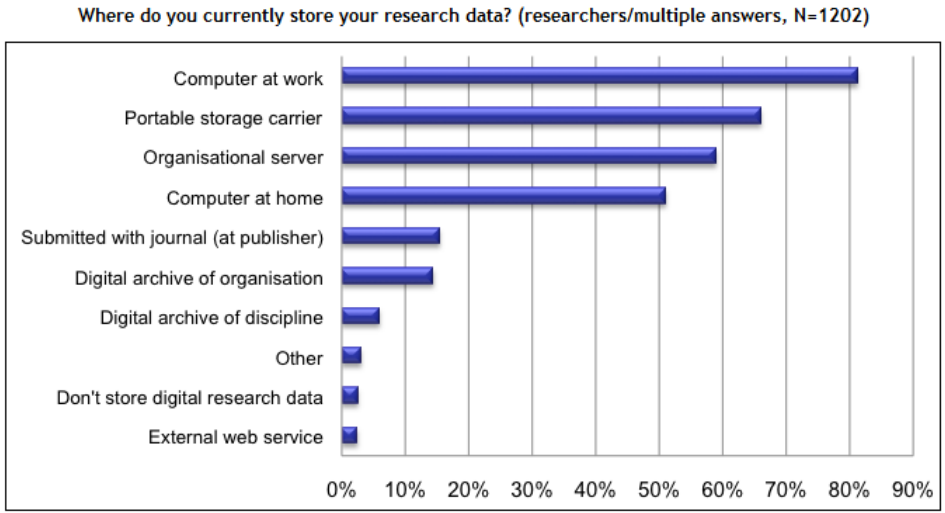
Empowering Knowledge

Why publish data and software?



1. **Data and software are important, but hard to access**

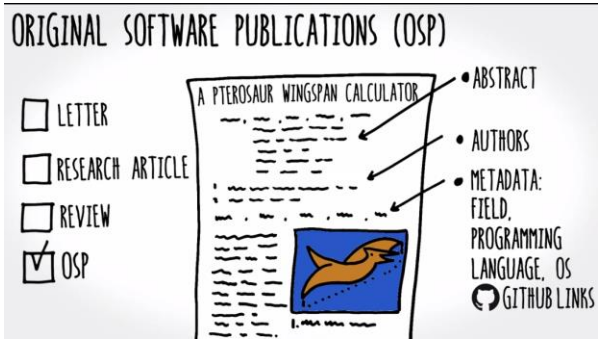
2. **Storage of data and software is very fragmented**

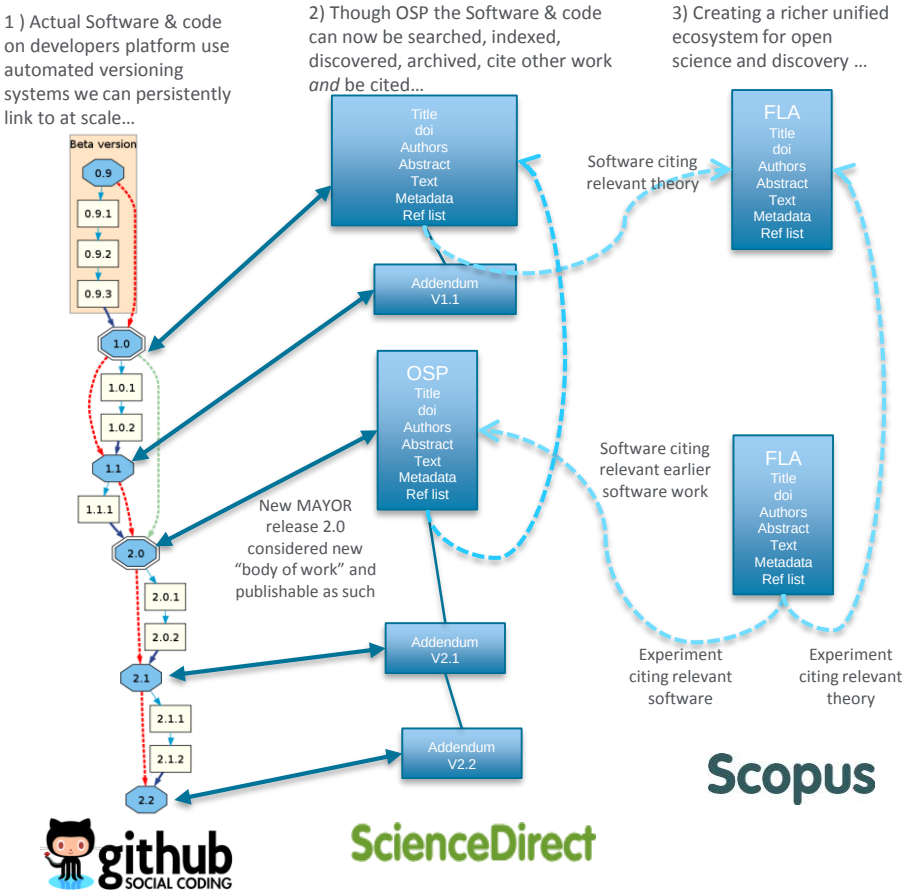


Original Software Publications

- Every researcher uses software, a big fraction writes software
- Distribution is not organized and authors don't get credit for their work
- It is often considered only a "support" and not part of publishable research.

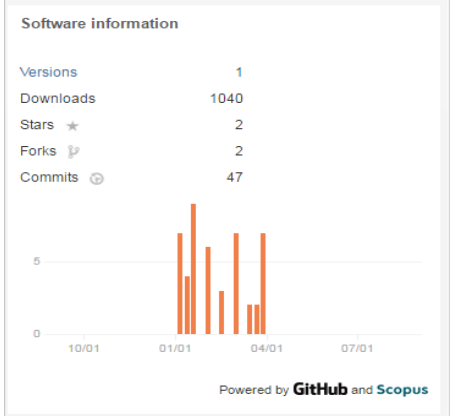
- software makes software indexed, peer reviewed and discoverable. Developers have the same credits of any other author and their work can be found and re-used by others





• What is a software article?

- Submissions to SoftwareX are composed of:
  - A **short article** describing the software, with particular focus on the impact of the software in the research community and its re-usability across disciplines
  - A "**metadata table**" containing information about the software and software metrics



  - A **permanent link** to a software repository (GitHub) where the software and code is stored and maintained by Elsevier and made freely available

Code metadata

Current code version	2016.04.01.0
Permanent link to code/repository used of this code version	https://github.com/ElsevierSoftwareX/SOFTX-D-16-00022
Legal Code License	LGPLv3.0
Code versioning system used	git
Software code languages, tools, and services used	VB.NET, C#
Compilation requirements, operating environments & dependencies	.NET Framework 4.5
If available Link to developer documentation/manual	http://wiki.spectrafox.com
Support email for questions	contact@spectrafox.com

Table options

Software metadata

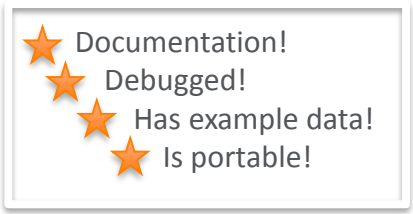
Current software version	2016.04.01.0
Permanent link to executables of this version	https://github.com/ElsevierSoftwareX/SOFTX-D-16-00022
Legal Software License	LGPLv3.0
Computing platform/Operating System	Microsoft Windows Vista or higher (32- or 64-bit)
Installation requirements & dependencies	.NET Framework 4.5, data acquisition tools: SPECS/Nanonis, Omicron/Matrix, Createc, Nanotec/WSxM
If available, link to user manual—if formally published include a reference to the publication in the reference list	http://wiki.spectrafox.com
Support email for questions	contact@spectrafox.com

Table options

How to review a Software Article?

- Software articles are judged based mainly on their IMPACT on science and research
- Reviewers are asked to answer a set of questions to simplify their job and assess the value of the submitted software
- Reviewing criteria are public and authors are encouraged to keep them in mind when submitting their work. They can be found at: http://www.elsevier.com/data/assets/pdf_file/0010/97066/ReviewerForm.pdf (or via the Guide for Authors)
- Reviewers are not expected to compile, run or debug the code, but they need to be convinced by the author that the software runs correctly. This can be done via videos, screencasts, examples or anything else the author can provide

- Test the submitted software (current pilot with CODE OCEAN BETA)
- Accompany software with example data (on Mendeley Data) – because software and data must go together!
- Introduce a star system to acknowledge the extra step from authors besides peer review, eg.



Elsevier & research data

To help researchers store, share, discover and use data

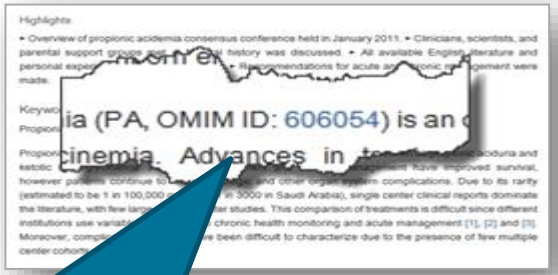
*"**Raw** research data should be made freely available to all researchers wherever possible"* – STM Brussels Declaration 2007

Elsevier Research Data Policy

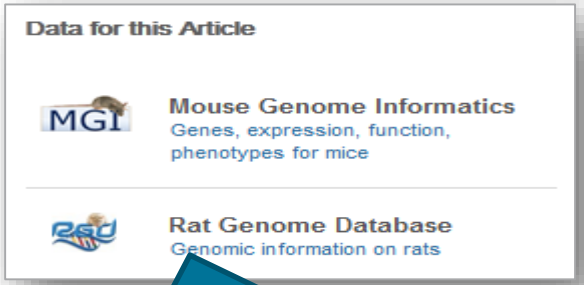
- Data-linking program (MGI, CCDC)
- Data Repository (MENDELEY)
- Open Data (Open Data)
- Data articles (Data in Brief)
- Standards bodies & working (RDA RESEARCH DATA ALLIANCE)

Data-linking

- Elsevier has an extensive program with 90+ leading domain-specific data repositories to interlink articles and data
- Makes it easier to find relevant data and place data into the right context
- Linking through in-article accession numbers, data DOI's, or data banners



Linking through **in-article data accession numbers**

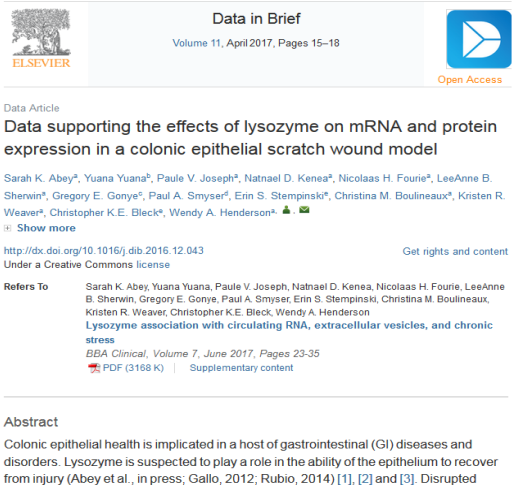


Database banners shown next to the article on ScienceDirect

See http://www.elsevier.com/databaselinking

Data in Brief

- Place to describe datasets in any scientific discipline.
- Data articles are purely descriptive and do not provide functional data nor interpretation.
- Data articles are intended to facilitate data reuse and reproducibility
- All data described must be made publicly available, either with the article or in a public repository
- All authors fill in a standard data article template available at: https://www.elsevier.com/dib-template
- Specifications table with direct link to data
  - Value of the Data
  - Materials and Methods
- All *Data in Brief* articles have CC-BY license



Data in Brief

Volume 11, April 2017, Pages 15–18

Open Access

Data Article

Data supporting the effects of lysozyme on mRNA and protein expression in a colonic epithelial scratch wound model

Sarah K. Abey[a], Yuana Yuana[a], Paule V. Joseph[a], Natnael D. Kenea[a], Nicolaas H. Fourie[a], LeeAnne B. Sherwin[a], Gregory E. Gonye[c], Paul A. Smyser[d], Erin S. Stempinski[a], Christina M. Boulineaux[a], Kristen R. Weaver[a], Christopher K.E. Bleck[a], Wendy A. Henderson[a]

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Refers To Sarah K. Abey, Yuana Yuana, Paule V. Joseph, Natnael D. Kenea, Nicolaas H. Fourie, LeeAnne B. Sherwin, Gregory E. Gonye, Paul A. Smyser, Erin S. Stempinski, Christina M. Boulineaux, Kristen R. Weaver, Christopher K.E. Bleck, Wendy A. Henderson

Lysozyme association with circulating RNA, extracellular vesicles, and chronic stress

BBA Clinical, Volume 7, June 2017, Pages 23-35

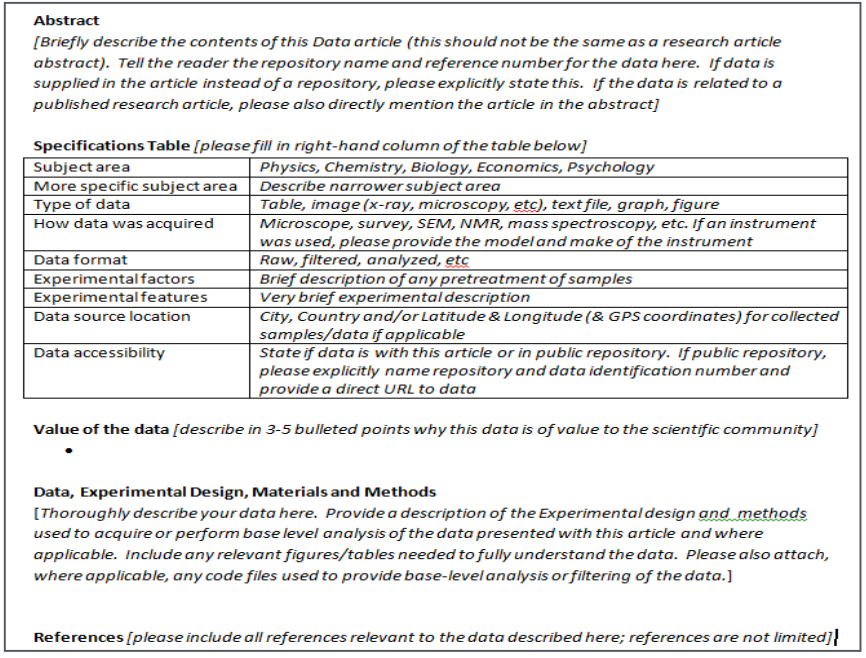
PDF (3168 K) | Supplementary content

Abstract

Colonic epithelial health is implicated in a host of gastrointestinal (GI) diseases and disorders. Lysozyme is suspected to play a role in the ability of the epithelium to recover from injury (Abey et al., in press; Gallo, 2012; Rubio, 2014) [1], [2] and [3]. Disrupted

links back to related research article

Both articles cite each other in the reference list.



Abstract

[Briefly describe the contents of this Data article (this should not be the same as a research article abstract). Tell the reader the repository name and reference number for the data here. If data is supplied in the article instead of a repository, please explicitly state this. If the data is related to a published research article, please also directly mention the article in the abstract]

Specifications Table *[please fill in right-hand column of the table below]*

Subject area	*Physics, Chemistry, Biology, Economics, Psychology*
More specific subject area	*Describe narrower subject area*
Type of data	*Table, image (x-ray, microscopy, etc), text file, graph, figure*
How data was acquired	*Microscope, survey, SEM, NMR, mass spectroscopy, etc. If an instrument was used, please provide the model and make of the instrument*
Data format	*Raw, filtered, analyzed, etc*
Experimental factors	*Brief description of any pretreatment of samples*
Experimental features	*Very brief experimental description*
Data source location	*City, Country and/or Latitude & Longitude (& GPS coordinates) for collected samples/data if applicable*
Data accessibility	*State if data is with this article or in public repository. If public repository, please explicitly name repository and data identification number and provide a direct URL to data*

Value of the data *[describe in 3-5 bulleted points why this data is of value to the scientific community]*

-

Data, Experimental Design, Materials and Methods

[Thoroughly describe your data here. Provide a description of the Experimental design and methods used to acquire or perform base level analysis of the data presented with this article and where applicable. Include any relevant figures/tables needed to fully understand the data. Please also attach, where applicable, any code files used to provide base-level analysis or filtering of the data.]

References *[please include all references relevant to the data described here; references are not limited]*

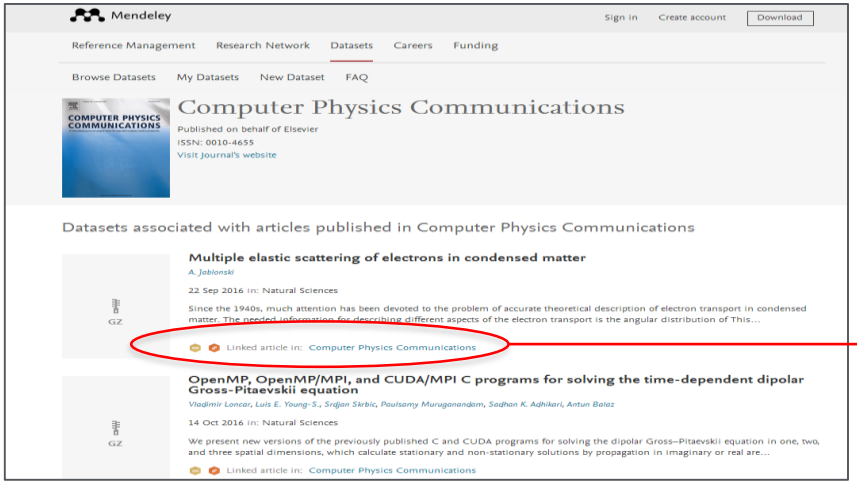
Mendeley Data: Elsevier's data repository

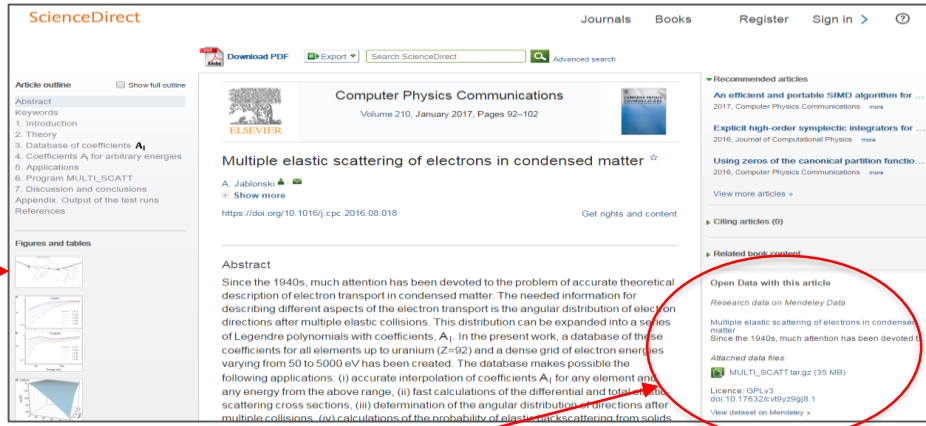
- Active 'data share' section at submission to directly upload datasets to Mendeley
- Research data can be deposited, shared and cited

MENDELEY

Link between dataset/program on Mendeley and journal article:

- CPC programs on Mendeley are linked to the original research article on the CPC journal





a link to the program also appears next to the article on SD

Elsevier Research Intelligence

Back-up slides

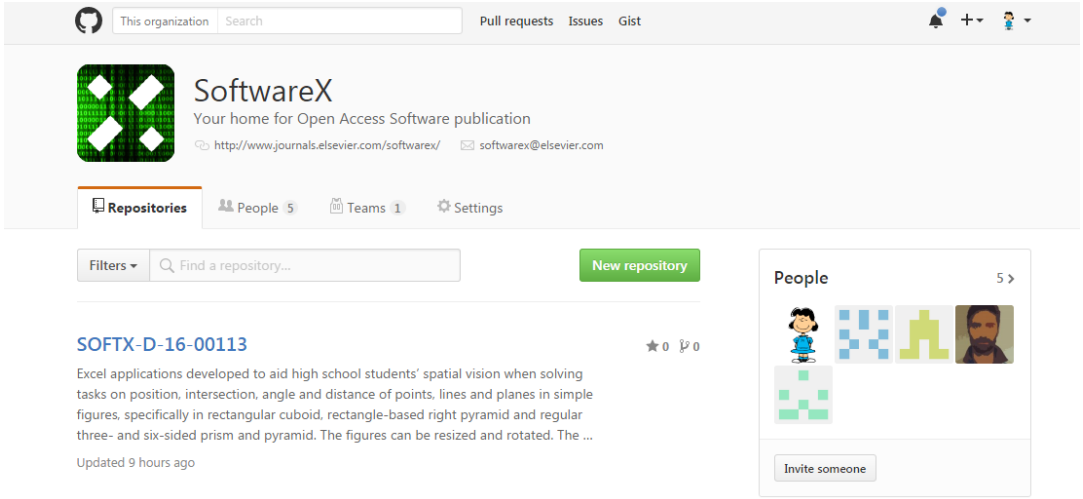
How to submit

{share code} = create impact

- Submissions to *SoftwareX* consist of two major parts:
  - a short descriptive paper of max. 3000 words, max. 6 figures
  - an open source software distribution with support material.
- All articles are published Open Access with OA fee of 500$
- Authors should include in their article:
  1. **Motivation and Significance** – scientific background and motivation for developing software
  2. **Software Description** – architecture and functionalities
  3. **Illustrative Examples** – at least one example to demonstrate major functions
  4. **Impact** - key factor; should include how widespread software is and citations of results obtained using this software
  5. **Conclusions**

https://www.journals.elsevier.com/softwarex/submit-your-software/you-can-now-submit-your-software-to-softwarex

SoftwareX GitHub repository



- **SoftwareX** is maintaining a curated GitHub repository

- A dedicated person is in charge of branching or copying submitted software in the SoftwareX repository
- Elsevier takes responsibility to maintain availability of the submitted software, even if the authors retract/delete their own repository
- Versioning is done following GitHub method
- Each deposited software is peer reviewed (for relevance, re-usability and research value) by independent reviewers
- Whenever possible, documentation is included in the repository