

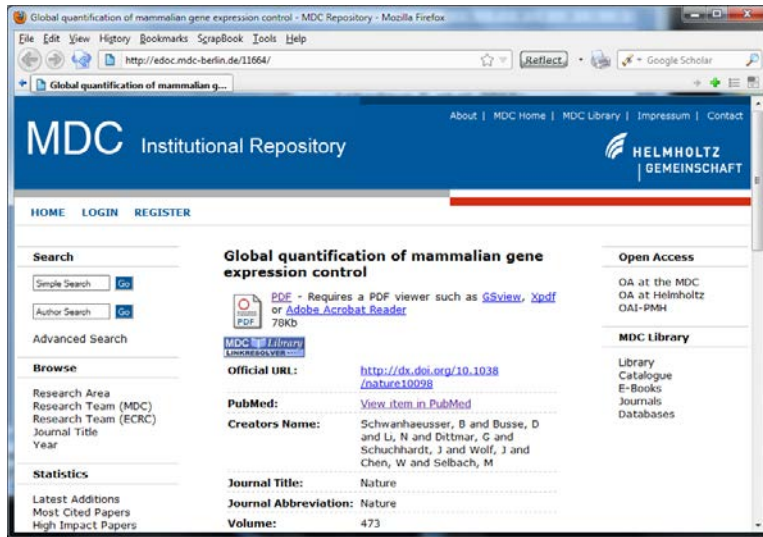
# Science is Open: An Introduction to Open Access



Paul Schultze-Motel

Helmholtz Open Science

# OPEN ACCESS PAPER: EXAMPLE



Schwanhäusser, B. *et al.* 2011:  
Global quantification of  
mammalian gene expression  
control. *Nature* **473**: 337–342.  
doi:[10.1038/nature10098](https://doi.org/10.1038/nature10098)



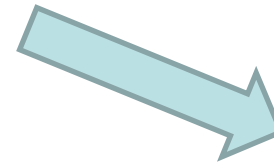
Final draft



Genome-wide parallel quantification of mRNA and protein levels  
and turnover in mammalian cells

Björn Schwanhäusser<sup>1</sup>, Dorothea Busse<sup>1</sup>, Na Li<sup>1</sup>, Gunnar Dittmar<sup>1</sup>, Johannes  
Schuchhardt<sup>2</sup>, Jana Wolf<sup>1</sup>, Wei Chen<sup>1</sup>, Matthias Selbach<sup>1</sup>

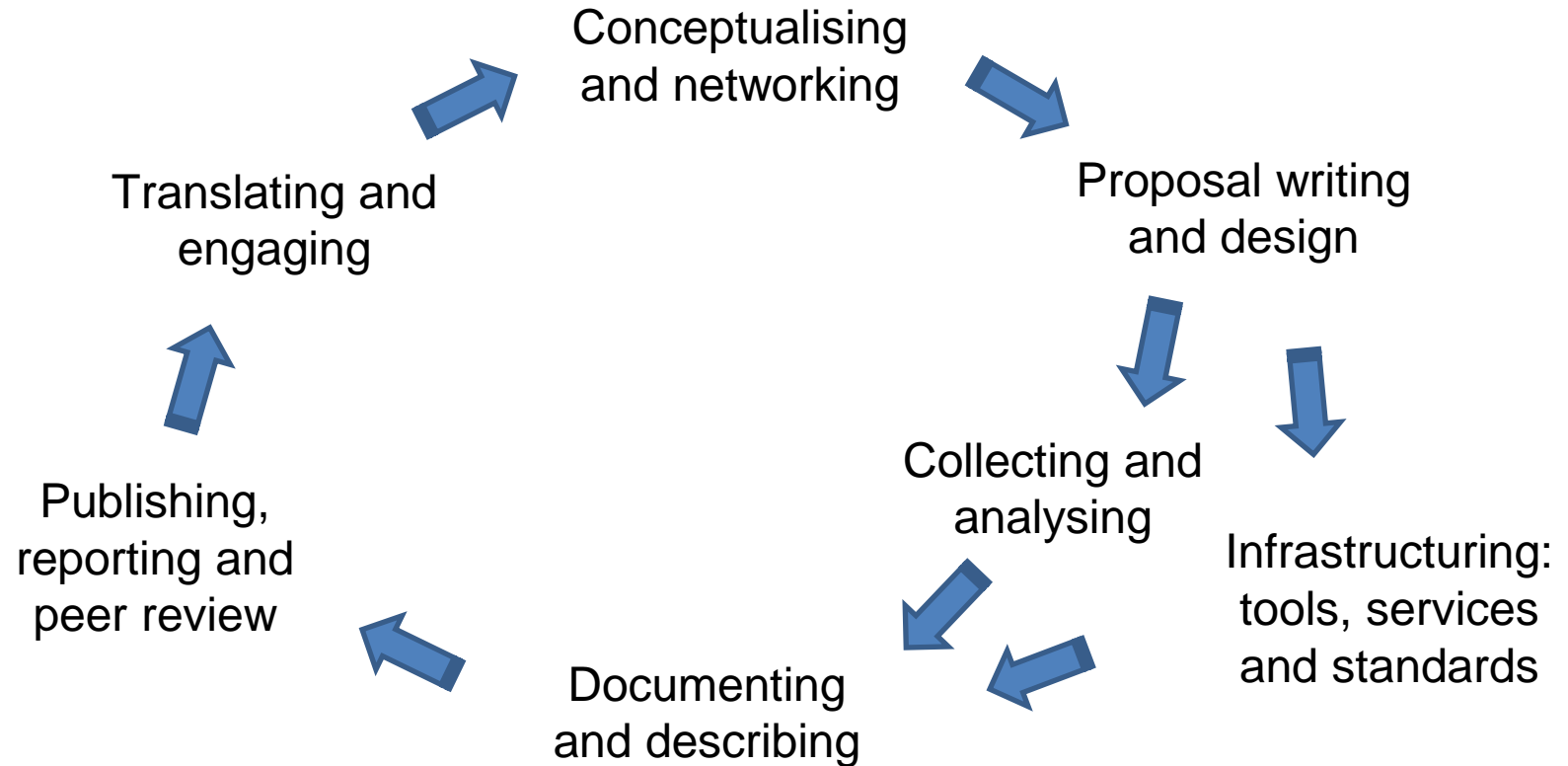
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Publisher's  
version



# SCIENTIFIC PROCESS: RESEARCH CYCLE



Source: *Open to All? Case studies of openness in research.* RIN / NESTA, September 2010



# OPEN ACCESS: DEFINITIONS

- Open access publications
  - scientific information is made freely available from web repositories (internet servers for digital archiving)
  - it can be read, downloaded, copied, printed, searched, text mined...
  - without financial, legal or technical barriers
- Types of open access information
  - peer-reviewed scholarly publications
  - other publications (Ph.D. theses, reports, conference papers, posters...)
  - research data



# OPEN ACCESS: ORIGINS

- Rise of the internet
  - unprecedented possibilities for dissemination of information
  - potential for easier and cheaper access
- Traditional subscription-based scientific journals
  - publishing has a cost
  - **but:** considerable price increase („journal crisis“) is ongoing
  - e. g. annual subscription rate for „Biochimica et biophysica acta“: 20.526 €\*

\*KIT Library 2014/15



# OPEN ACCESS: BERLIN DECLARATION

- Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities
  - milestone of the open access movement
  - signed on 22 October 2003 by the Helmholtz Association and other research organisations

„(...) Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society. New possibilities of knowledge dissemination not only through the classical form but also and increasingly through the open access paradigm via the Internet have to be supported. We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community. (...)”



# JOURNAL CRISIS: THE COST OF KNOWLEDGE

- in 2012, the British mathematician Timothy Gowers initiated a boycott movement against the publisher Elsevier
- Elsevier is criticised for profits exceeding 35 % as one of the causes for the journal crisis
- boycotters have announced not to publish or review papers in Elsevier journals any more
- to date more than 15,000 scientists have signed the declaration „The cost of knowledge“



# OPEN ACCESS: „GREEN“ ROAD

- „secondary“ open access to publications in closed-access, subscription-based journals
- scientists (or their libraries) deposit copies of their peer-reviewed published articles in a document server („repository“)
- See listing of publishers' copyright policies: SHERPA/RoMEO  
<http://www.sherpa.ac.uk/romeo/>
- 80 % of journals allow „self-archiving“





# OPEN ACCESS: „GREEN“ ROAD

- final manuscripts, more rarely layouted versions
- institutional or subject-based repositories
- open access immediately or after a grace period (for publishers being able to recoup their investments)
- many Helmholtz Centres run their own repositories, usually as an add-on to the publication data base:

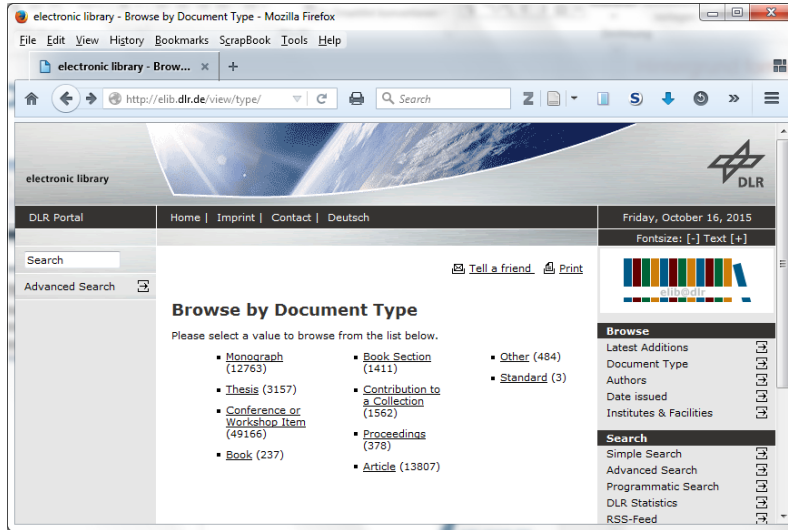
<http://os.helmholtz.de/open-science-in-der-helmholtz-gemeinschaft/open-access-der-gruene-weg/>



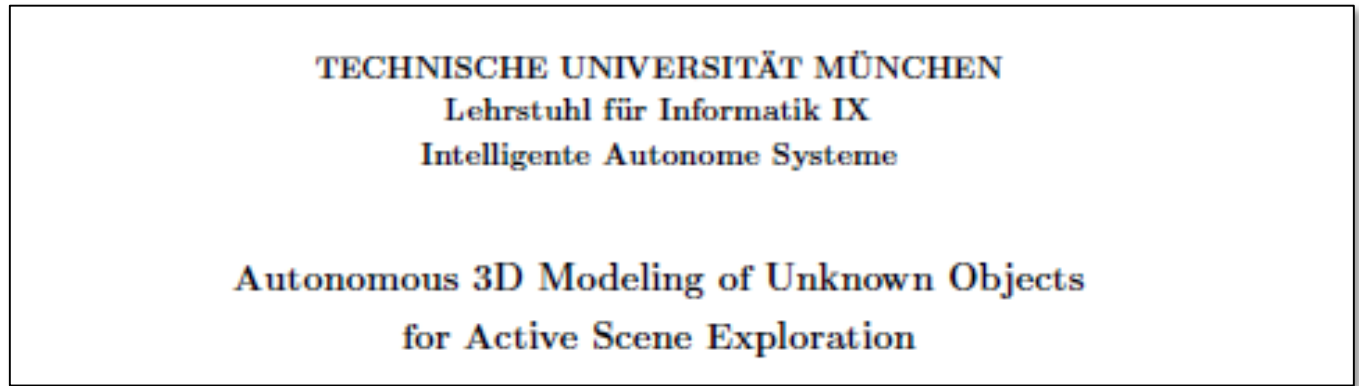
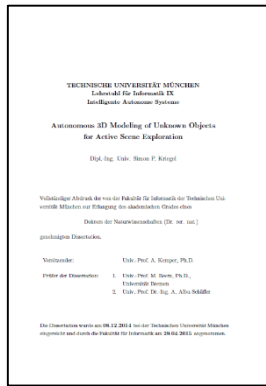
Bild: Nicolas Pioch / Ibiblio / CC BY-SA



# REPOSITORY CONTENTS: EXAMPLE



Kriegel, S. 2015: Autonomous 3D modeling of unknown objects for active scene exploration. Ph.D. Thesis, TU München.



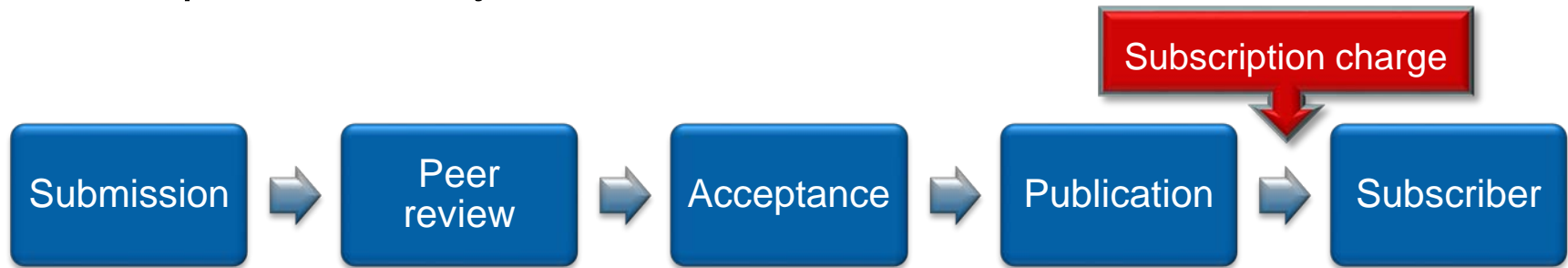
# OPEN ACCESS: „GOLD“ ROAD

- „born“ open access: publications in dedicated open access journals
- peer-reviewed articles are made available free of charge immediately on publication
- articles published under a Creative Commons licence
- the journal usually charges a publication fee
- subscription-based journals may have „hybrid“ models (authors have an option to pay for immediate open access of their published article, **but**: double payment by library subscription?)

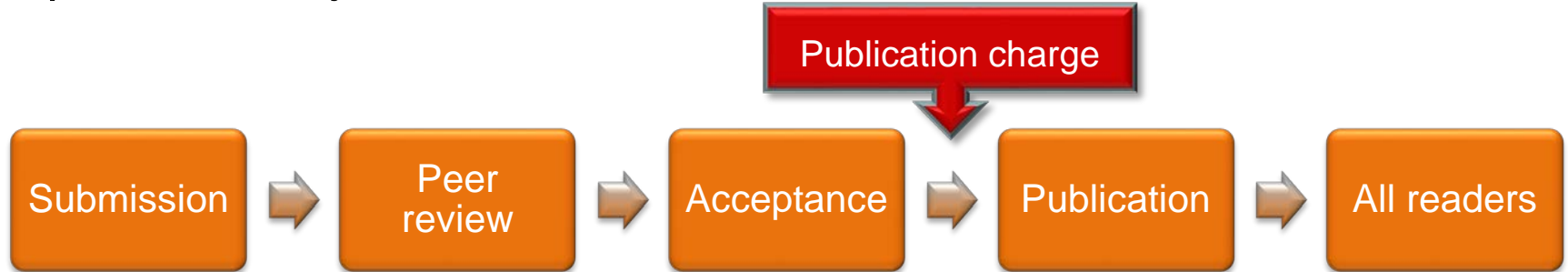


# SCIENTIFIC JOURNALS: COST MODELS

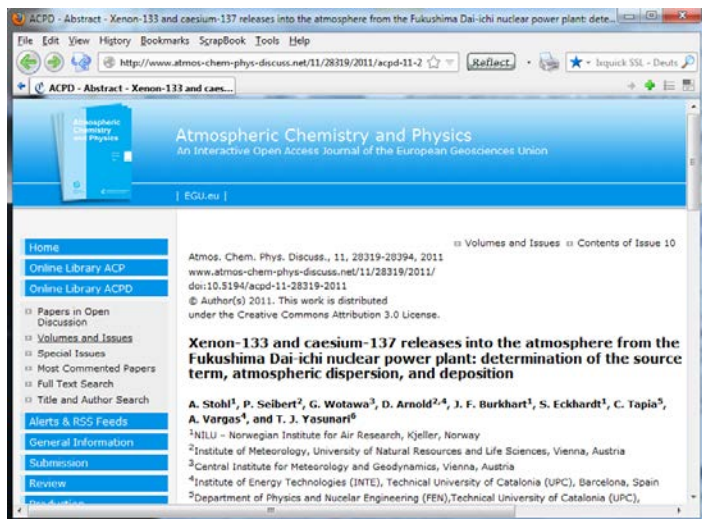
## Subscription-based journal



## Open access journal



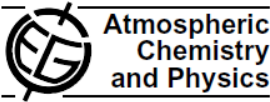

# PUBLICATION IN AN OPEN ACCESS JOURNAL



Stohl, A. *et al.* 2012: Xenon-133 and caesium-137 releases into the atmosphere from the Fukushima Dai-ichi nuclear power plant: determination of the source term, atmospheric dispersion, and deposition. *Atmospheric Chemistry and Physics* **12**: 2313–2343. doi:[10.5194/acp-12-2313-2012](https://doi.org/10.5194/acp-12-2313-2012).



Atmos. Chem. Phys., 12, 2313–2343, 2012  
www.atmos-chem-phys.net/12/2313/2012/  
doi:10.5194/acp-12-2313-2012  
© Author(s) 2012. CC Attribution 3.0 License.



**Xenon-133 and caesium-137 releases into the atmosphere from the Fukushima Dai-ichi nuclear power plant: determination of the source term, atmospheric dispersion, and deposition**



# OPEN ACCESS: SEARCH ENGINES & TOOLS

- BASE

- <http://www.base-search.net/>



- Google Scholar

- <http://scholar.google.com/>



- oaDOI: alternative DOI resolver

- <http://oadoi.org/>



# OPEN ACCESS: BENEFITS

- wide dissemination of research results
- increased scientific discussion
- raised public perception of science
- better return on investment by public research funding



# OPEN ACCESS POLICY OF THE HELMHOLTZ ASSOCIATION, 2016

- publications must be deposited in repositories
- deposited publication must be made openly accessible within 6 months (12 months in the humanities and social sciences; books: 12 or 24 months, respectively)
- bibliographic metadata must be available
- research data underlying the publication should be made accessible
- <http://oa.helmholtz.de/open-science-in-der-helmholtz-gemeinschaft/open-access-richtlinien/open-access-policies.html>





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all	<a href="http://os.helmholtz.de/open-science-in-der-helmholtz-gemeinschaft/akteure-und-ihre-rollen/">http://os.helmholtz.de/open-science-in-der-helmholtz-gemeinschaft/akteure-und-ihre-rollen/</a>



# RESEARCH DATA: „INTELLIGENT OPENNESS“

„Realising the benefits of open data requires effective communication through a more intelligent openness: data must be accessible and readily located; they must be intelligible to those who wish to scrutinise them; data must be assessable so that judgments can be made about their reliability and the competence of those who created them; and they must be usable by others.“



Boulton, G. et al. 2012:  
Science as an open enterprise.  
London: Royal Society.  
[https://royalsociety.org/topics-policy/  
projects/science-public-enterprise/  
report/](https://royalsociety.org/topics-policy/projects/science-public-enterprise/report/)



# OPEN ACCESS: FURTHER READING

- Berlin Declaration on Open Access  
<https://openaccess.mpg.de/Berlin-Declaration>
- Getting your feet wet: an introduction to open access  
[http://www.rin.ac.uk/system/files/attachments/open\\_access\\_booklet\\_screen\\_0.pdf](http://www.rin.ac.uk/system/files/attachments/open_access_booklet_screen_0.pdf)
- Suber, P. 2016: How to make your own work open access  
<http://bit.ly/how-oa>
- Listing of publishers' copyright policies  
<http://www.sherpa.ac.uk/romeo/>
- Scientist meets publisher  
[http://www.youtube.com/watch?v=GMIY\\_4t-DR0](http://www.youtube.com/watch?v=GMIY_4t-DR0)
- Information platform open-access.net  
<http://open-access.net/DE-EN/>
- Helmholtz Open Science Newsletter (in German)  
<http://os.helmholtz.de/bewusstsein-schaerfen/newsletter/>



# HELMHOLTZ OPEN SCIENCE COORDINATION OFFICE

Thank you for listening!

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