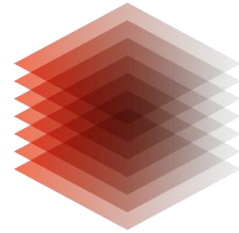

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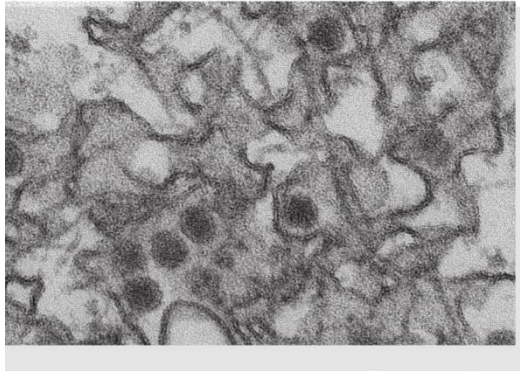
Why Open Science matters (not only) in times of a pandemic

Stefan Schmeja

19 October 2020

Open Access Week, TU Chemnitz

Open Access Week 2016 ...



SARS-CoV-2 WAS HILFT BEI DER BEKÄMPFUNG DES ~~ZIKA~~-VIRUS?

Gefährliche Krankheiten breiten sich oft schneller aus, als die Forschung reagieren kann. Dazu kommt, dass **FORSCHUNGSERGEBNISSE OFT NUR IN TEUREN FACHZEITSCHRIFTEN** erscheinen, die für viele Menschen, etwa Forschende in Entwicklungsländern oder niedergelassene Ärztinnen und Ärzte, nicht zugänglich sind. Um die Erforschung und damit die Bekämpfung des Zika-Virus zu beschleunigen, haben – wie schon bei der SARS-Pandemie 2002/2003 und der Ebola-Epidemie 2014 – verschiedene Organisationen, darunter die Weltgesundheitsorganisation (WHO), dazu aufgerufen, Forschungsergebnisse im Zusammenhang mit dem Zika-Virus **FREI ZUGÄNGLICH ZU VERÖFFENTLICHEN**. Die WHO hat dafür eine eigene Plattform „Zika Open“ zur Verfügung gestellt.

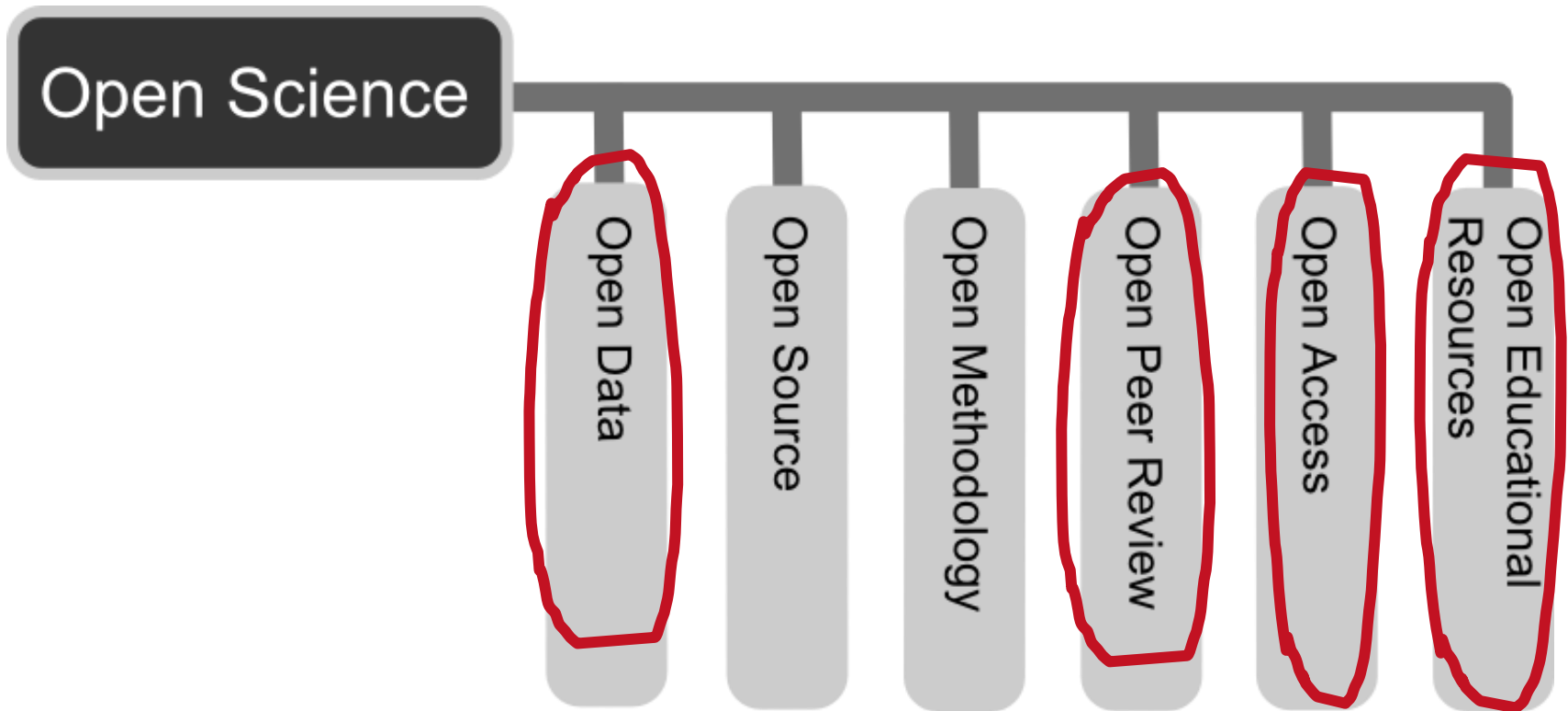
TIB.EU/OAW2016



KONTAKT: WWW.TIB.EU/PUBLIZIEREN



Open Science



Andreas E. Neuhold, CC BY 3.0, via Wikimedia Commons

Agenda

- **Research on Covid-19:**
 - Open Access (for research on SARS-CoV-2)
 - Preprints
 - Open Peer Review
 - Open Data
- **Studying and working during a pandemic**
 - Open Access to scholarly literature
 - Open Educational Resources

Scientific communication

Traditional process:

- Research results often behind paywalls
 - Not accessible for many researchers and practitioners
- Research, manuscript preparation, peer review take time

Needed for fighting a global pandemic:

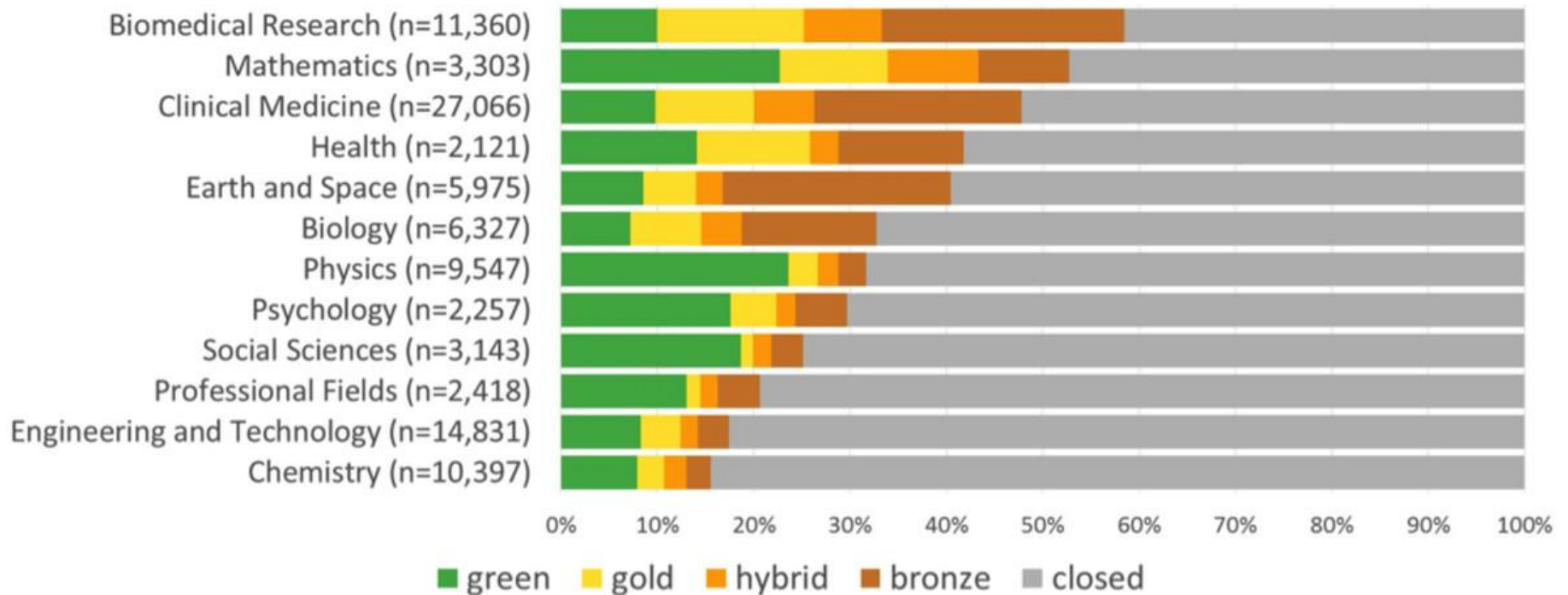
- easily accessible information
 - **Open Access**
- quick dissemination of new insights
 - **sharing preprints**
 - **open peer review**
 - **sharing data**

Open Access

- Free access to scholarly information without financial, legal, or technical barriers
- Free to use and reuse
- Budapest Open Access Initiative (2002), Berlin Declaration (2003)
- Supported by politics, research institutions, and funders
- EU: 100% Open Access to publicly funded research by 2020



Open Access: Status quo



H. Piwowar et al. 2018, PeerJ 6:e4375
<https://doi.org/10.7717/peerj.4375>
 CC BY 4.0

Open Access for Covid-19 related research



The NEW ENGLAND
JOURNAL of MEDICINE



SPECIALTIES TOPICS MULTIMEDIA CURRENT ISSUE LEARNING/CME AUTHOR CENTER COVID-19

SEARCH 

A collection of articles and other resources on the Coronavirus (Covid-19) outbreak, including clinical reports, management guidelines, and commentary.



Coronavirus (Covid-19)

All Journal content related to the Covid-19 pandemic is freely available.

NEJM Covid-19 Update

Listen to conversations with editors Eric Rubin and Lindsey Baden on the current coronavirus outbreak.



Covid-19 Rx — Treatment Simulations

The spectrum of Covid-19



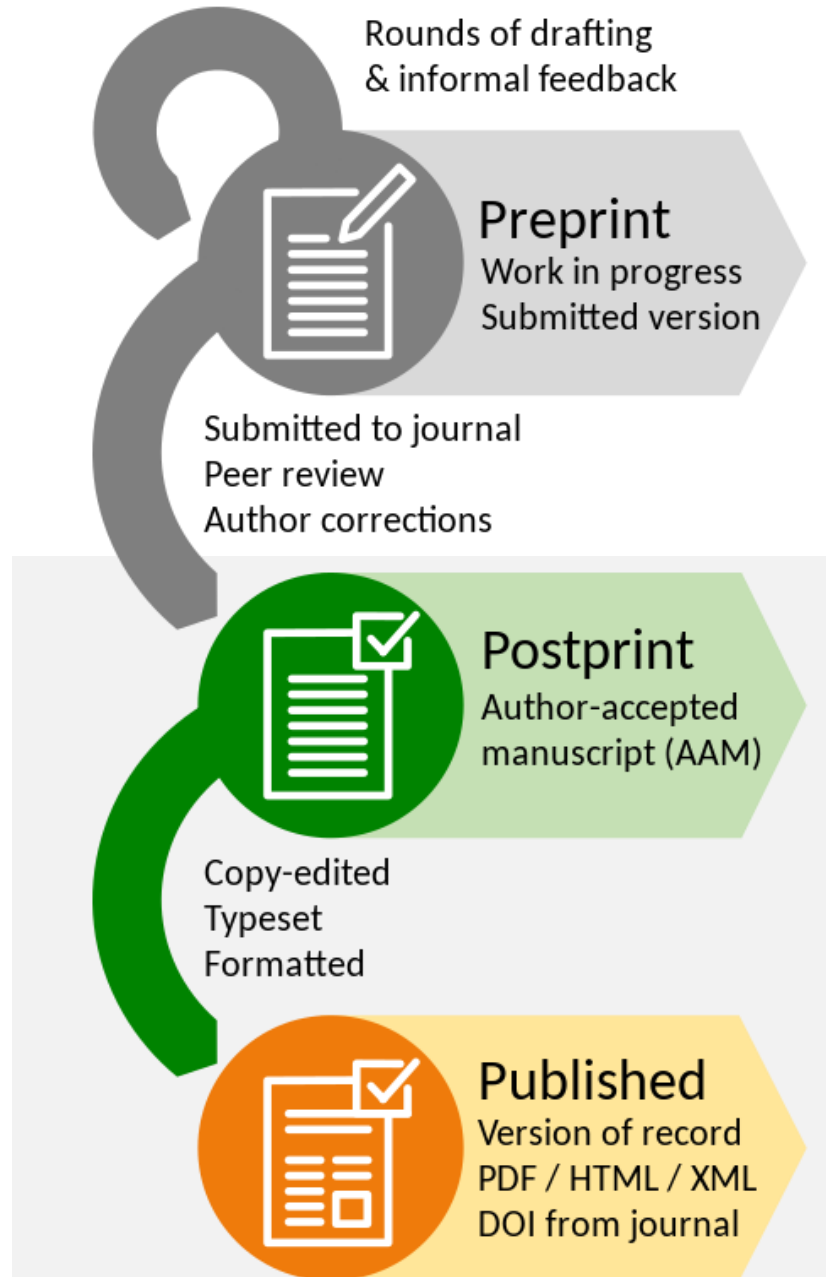
Open Access for Covid-19 related research

- More than 50 % of research articles behind paywalls
- Publishers make articles on Covid-19 related research freely available
- happened before during SARS, Ebola or Zika virus outbreaks
- only temporarily, articles will probably be behind paywalls when the pandemic is over

Preprints

- Peer review in medicine takes on average 12 weeks
- 93 % of the relevant papers on SARS were published in journals after the 2003 epidemic had ended
- To accelerate scientific exchange, preprints are shared in the community
- Preprints: manuscripts that are to be submitted to a journal, but have not been peer-reviewed
- Dedicated preprint servers like bioRxiv or medRxiv (forerunner: arXiv)
- Allow discussion in the community, informal peer review, open access, even when published paper behind a paywall
- Almost 7000 Covid-19 related preprints on bioRxiv and medRxiv within 4 months after first confirmed case

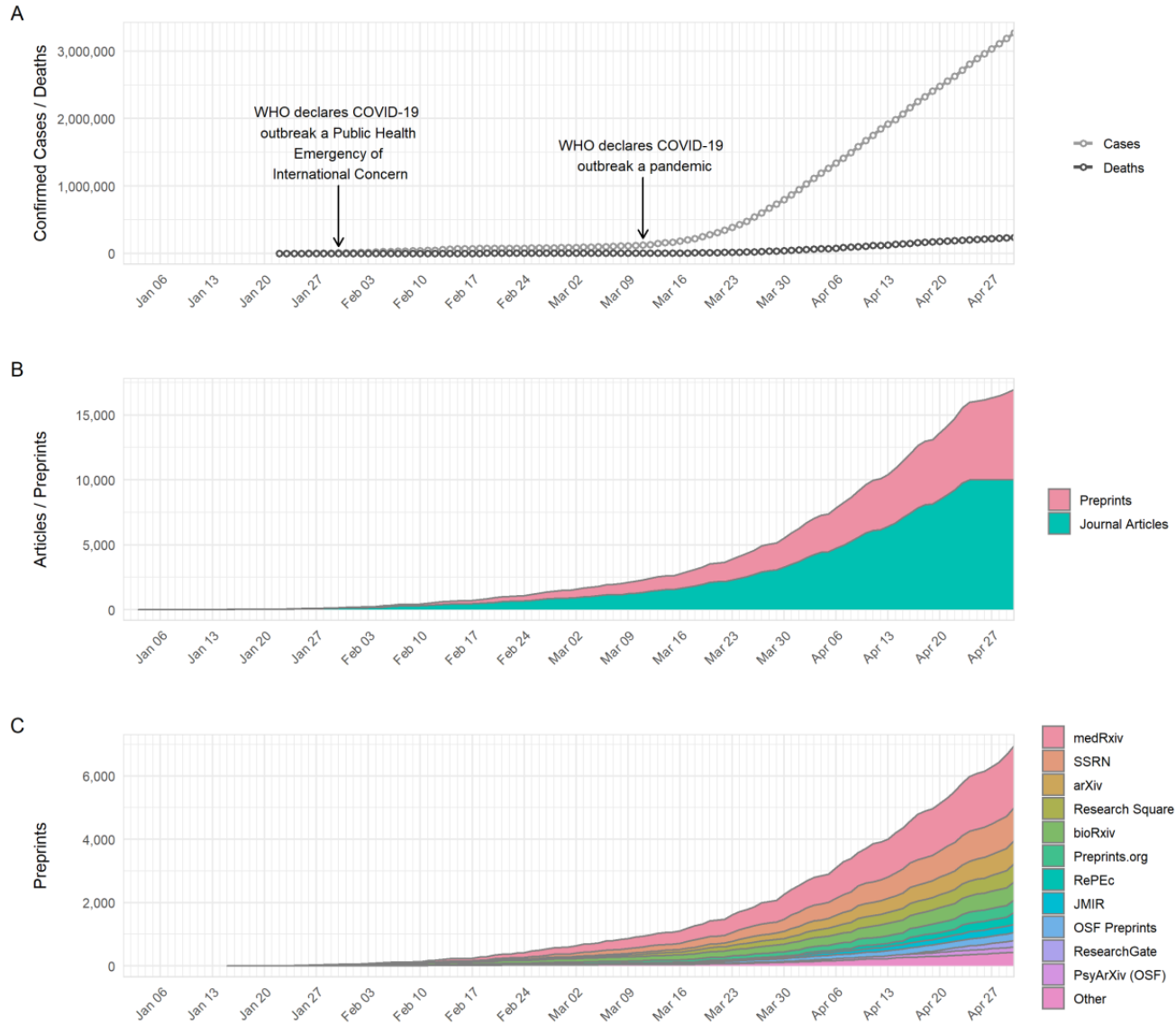
Preprints



Thomas Shafee / CC BY 4.0
via Wikimedia Commons,
adapted

Publications and preprints during Covid-19

N. Fraser et al. 2020,
<https://doi.org/10.1101/2020.05.22.111294>



Objections to Preprints

- No peer review, results could be seriously flawed
- Media and the public spread these results uncritically
- Warning notices on preprint servers
- Critical debate in the community
 - Example: preprint claiming questionable connections between SARS-CoV-2 and HIV was retracted from bioRxiv after it had received many critical comments

Caution: Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information.

Warning notice on medRxiv

Open Peer Review

- Peer review process takes a long time
- Anonymous, intransparent
- Usually only two reviewers

⇒ Open Peer Review

- Several meanings:
 - review reports (including authors' replies) published together with the article
 - everyone can comment on the submitted manuscript in an open forum

Open Peer Review: Example



The screenshot shows a news article on the 'ONLINE FOCUS' website. The page has a red header with the logo and social media icons. A navigation bar below the header lists various categories, with 'Gesundheit' (Health) underlined. The article's breadcrumb trail is 'Nachrichten > Gesundheit > News > Christian Drosten: Wirbel um Kinder-Studie - Virologe kontert schwere Vorwürfe'. The main headline is '„Habe Besseres zu tun“ Wirbel um „Bild“-Bericht zu Kinder-Studie: Schwere Vorwürfe gegen Drosten - der kontert'. Below the headline are buttons for 'Teilen' (Share) and 'Pocket'. At the bottom of the visible section is a photograph of Christian Drosten, a man with dark, wavy hair, wearing a dark suit jacket over a light-colored shirt, standing in a modern, brightly lit indoor space with large windows and glass railings.

ONLINE FOCUS

Politik Finanzen Regional Perspektiven Wissen Gesundheit Kultur Panorama Sport Digital R

Nachrichten > Gesundheit > News > Christian Drosten: Wirbel um Kinder-Studie - Virologe kontert schwere Vorwürfe

„Habe Besseres zu tun“

Wirbel um „Bild“-Bericht zu Kinder-Studie: Schwere Vorwürfe gegen Drosten - der kontert

Teilen Pocket



Open Peer Review: Example

- Study by Jones et al. on the SARS-CoV-2 viral load by patient age
- Published as preprint on institutional website in April 2020, shared on (social) media
- Not submitted to a journal
- Six detailed reviews, one from outside the field (economics)
- arguments of the reviewers considered in subsequent versions
- “It turns out that such a process can be successful and enriching even without a collecting or coordinating authority.” (Claudia Frick, <https://doi.org/10.11588/ip.2020.2.74406>)

Open Data

- Sharing data crucial for fighting a pandemic:
 - new insights
 - combining different data
 - replicating results
- WHO and many other institutions call for all research data gathered during the Covid-19 outbreak, and future public health emergencies, to be made available as rapidly and openly as possible

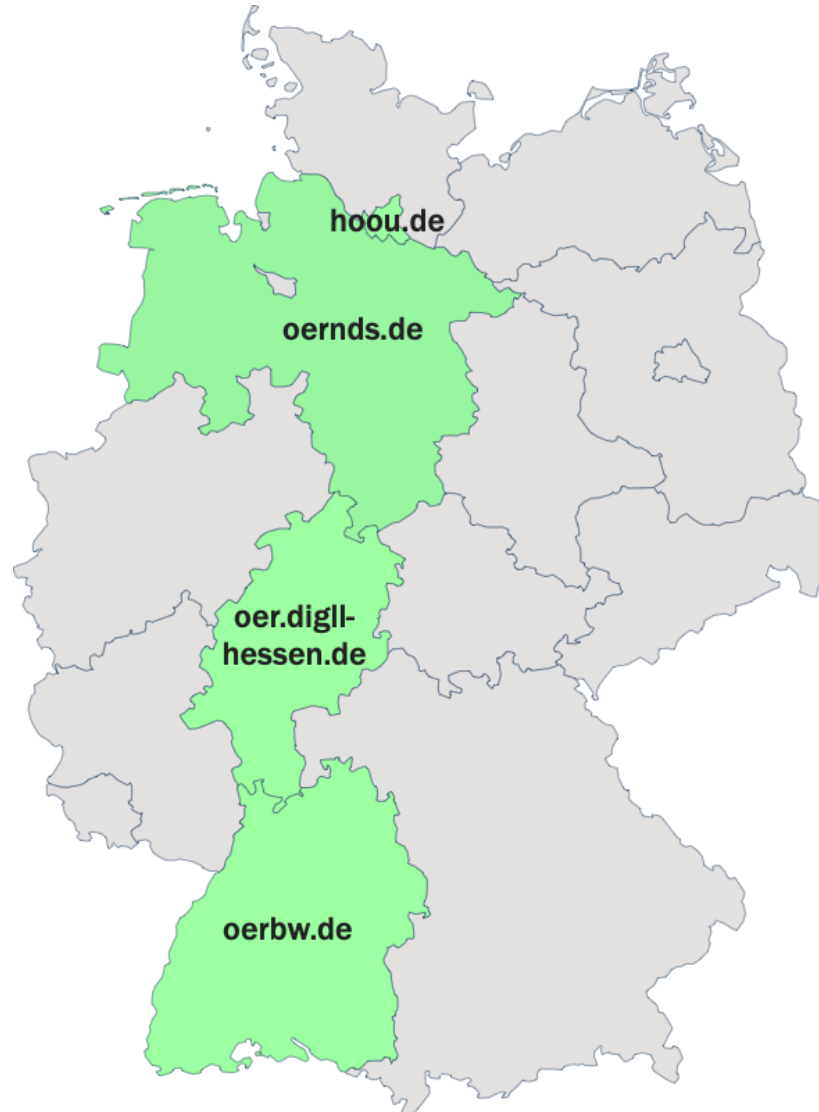
Free Access (≠ Open Access)

- After closure of universities and libraries due to the Covid-19 pandemic, many publishers made their publications freely available
- Free access does not mean Open Access:
 - Access often **restricted** to a specific groups, e.g. researchers on campus or via VPN.
 - Paywalls only **temporarily** removed.
 - Documents are **not reusable** (e.g. for teaching), as they do not have an open license. Copyright restrictions remain.

Open Educational Resources

- Summer term 2020: Online teaching at schools and universities → need for educational material
- “Open Educational Resources (OER) are teaching, learning or research materials that are in the public domain or released with intellectual property licenses that facilitate the **free use, adaptation and distribution.**” (UNESCO definition)
- Published under an open license (CC BY or CC BY-SA)
- any kind of material (textbooks, presentations, videos, podcasts...)
- Complete courses or individual resources

Open Educational Resources



Infografik: Frei zugängliche Bundeslandportale mit OER, die in den Hochschulen des jeweiligen Bundeslands erstellt wurden. Kartengrafik: Portal der statistischen Ämter des Bundes und der Länder (DeStatis); David Liuzzo. (https://commons.wikimedia.org/wiki/File:Karte_Bundesrepublik_Deutschland.svg), „Karte Bundesrepublik Deutschland“, Einfärbungen und Text ergänzt von OERhörchen, <https://creativecommons.org/licenses/by-sa/2.0/de/legalcode> | Stand: 12.05.2020

Open Science

- ...makes research results accessible for everyone
- ...speeds up scientific exchange
- ...leads to more reliable results
- ...supports distant learning and teaching
- ...is crucial to address current and future problems



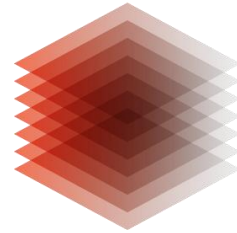
OPEN SOURCE MALARIA
Looking for New Medicines



**open
climate
knowledge**



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Thank you!

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