Science will be closed to the public Monday through Sunday… tickets $1million

Twitter: Scientific publishing is changing and its story is not as simple as you think! https://docs.google.com/document/d/1tCfcLQbO9JguasYiLR991Bm8tushXrlcj__aCWPrq7c/edit

Access to contemporary information is a vital part of any scientist or medical professionals career. To come up with new ideas, to provide successful and up to date treatment to patients, one needs to read about what others in their field are doing. Publishing companies take advantage of researcher's work, profiting from the publishing of their discoveries and leaving the articles hidden from the public behind a paywall. With the rise of the Internet, access to knowledge in many fields is just an extension of our limbs. But why does such an obsolete, inaccessible system persist in science? And what is the alternative?

Open access (OA) : making research articles online freely available to the public

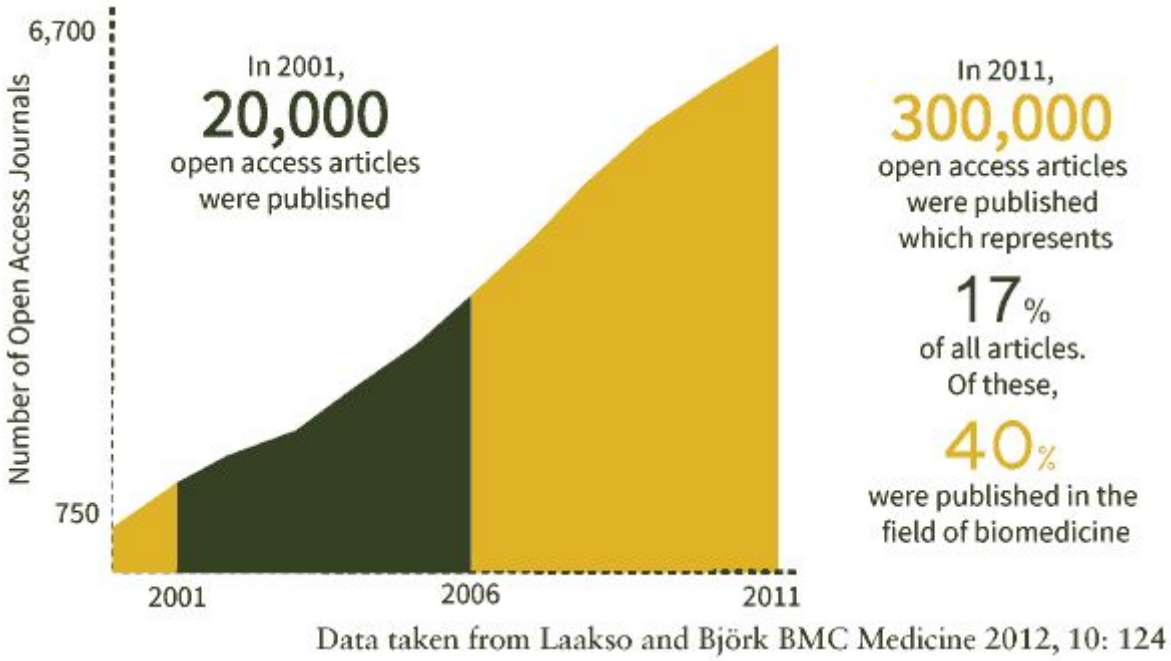
Journals requiring an access fee are often called paywalled journals, these include the likes of Nature or Science and have been the norm in the scientific community for many years. The process of publishing in paywalled journals is such that, the authors must surrender the copyrights of their article to the journal. Then the process of peer review, guaranteeing the quality of the paper, is performed by scientists in the field on a voluntary basis, thus costing the journal no money. Despite this process being free the author and all of us then have to pay to access the article!

"Piled Higher and Deeper" by Jorge Cham www.phdcomics.com

To give an idea of these costs, a single article costs around US$30 and research institutions opting for bundle subscriptions can expect to pay in the millions, the “freedom collection” of 2,200 journals from Elsevier costs around US$1.2 million a year. However, the price of these is confidentially negotiated and varies markedly between institutions with no clear pattern.

So how are professionals such as doctors who aren't affiliated with large institutions supposed to stay up to date on the latest therapeutic and procedural advances and provide cutting edge care? They turn to the biased and deceptive information fed to them by drug reps for free and often with the bonus of an expensive dinner! Yet publishers continue to justify these fees, arguing that print and online maintenance are costly. Of course there is still the prestige and career boost that comes with publishing in the paywalled, high impact journals, but with scientific quality-control being provided to the journal for free is a profit margin of 20-40% in a $7 billion industry reasonable?

Funding for research comes from outside of the publishing companies, largely from the tax paying public, and so it seems irrational that researches' key benefactors are unable to access the discoveries they facilitated. In response to the frustration that the public, researchers and medical professionals were cut off, open access journals, publishing free articles, started emerging in the 90s. In 2001 PLoS, the Public Library of Science, a now well established OA journal, was founded by a number of elite scientists. Many more exist now and downloads of OA articles have overtaken subscription articles. However, though online OA journals have lower maintenance costs, they financially depend on grants, and with this being a fragile source of funding at best It is still unsure if the model can survive. One concern some have with OA publishing is that the journals favour publishing quantity over quality for financial reasons, letting "Bad Science" slip through the net. However it isn't uncommon for this to happen in even the most prestigious of journals, peer review is not a fool proof filtering system, it is still susceptible to human error.



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With technology at our fingertips paper publishing is becoming obsolete across all forms of literature, the online offering is plentiful and often with reduced costs. With print soon to be outdated, paywalled journals need to find new ways of maintaining their self-declared high

quality service. The current costs for many papers leaves scientists worldwide on the back foot unable to afford to keep up with their field, leading for example to slower development of therapeutic procedure in medicine. Scientists are putting pressure on publishers to change their ways; In 2017 a boycott of Elsevier saw a number of institutions worldwide refusing to renew their subscriptions until offered a fairer price. As open access increases in popularity and viability, it is only a matter of time before the norm switches from paywalled to open access and science becomes a far more accessible field.

For extra information on the topics we've discussed take a look at these:

Journal subscription bundles:
http://www.pnas.org/content/111/26/9425.full

Open access: implications for scholarly publishing and medical libraries
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1525322/

Major German Universities Cancel Elsevier Subscriptions:
https://www.the-scientist.com/?articles.view/articleNo/49906/title/Major-German-Universities-Cancel-Elsevier-Contracts/ (Elsevier)

Open Access: The true cost of science publishing
https://www.nature.com/news/open-access-the-true-cost-of-science-publishing-1.12676

Ben Goldacre, Bad Pharma:
https://www.amazon.de/Bad-Pharma-Ben-Goldacre/dp/0007350740

Comic on Nature publishing:
https://classnotes--org-and-gov-2013.wmwikis.net/Class+Session+7

Graph of open access journals:
http://www.immpressmagazine.com/open-access-improving-the-availability-of-scientific-literature-for-all/