

## **A conversation with David Jay on 03/14/13**

### **Participants**

- David Jay — Chief Executive Officer, Journal Lab
- Alexander Berger — Senior Research Analyst, GiveWell

**Note:** This set of notes was compiled by GiveWell and gives an overview of the major points made by David Jay.

### **Summary**

David Jay is the CEO of Journal Lab, a startup that aims to improve online discussion of scientific outputs. GiveWell spoke with him as a part of our investigation of opportunities to improve scientific research. The main topics of discussion were Journal Lab and ways to make scientific communications more efficient, including interfaces for post-publication peer review.

### **About Journal Lab**

David Jay and Robert Judson co-founded Journal Lab in 2011. Journal Lab works to improve communications about published science. It currently offers two services:

- A customizable content aggregation system that researchers can use to keep informed about the most recent items in their areas of interest that have appeared on PubMed.
- A figure-based commenting system that allows users to make comments on figures from scientific articles, and allows other researchers to read and respond to these comments.

Journal Lab is currently primarily serving researchers in stem cell biology, cancer biology and immunology, but hopes to expand to serve researchers in biomedical research more broadly, and perhaps expand to fields beyond biomedical research.

### **Journal Lab's user base and activity**

Journal Lab has currently has 300 users. About 30% of users use it on a monthly basis, and 17% participate by commenting on a monthly basis. There is an average of 17 comments per featured scientific article, and an average of 5 comments per article discussed. The Journal Lab user participation level is significantly higher than the user participation levels for most similar products. One point of comparison is that the number of papers shared on the much larger service Academia.edu is similar to the number of papers discussed on Journal Lab. Another point of comparison is that ResearchGate appears to have fewer than 100 comments per week in the life sciences despite having 400,000 total users.

## **Journal Lab's funding**

Journal Lab is mission-based for-profit company, which aspires to provide open access to the information on its website, and to accrue revenue through sources other than paid subscriptions. It was initially funded by grants and is currently seeking venture capital funding to scale up.

Investors in the tech start-up world have shown some interest in funding Journal Lab. There are investors who fund biotechnology companies who are interested in the possibility of funding Journal Lab, because they would like higher quality information on biomedical research to inform their funding decisions, and believe that Journal Lab may facilitate this.

## **Journal Lab's commenting system**

Journal Lab's interface allows users to make comments on figures in scientific papers, and for other users to read and respond to these comments. This enables a public discussion about scientific research that everybody in the relevant fields can benefit from.

### **Figure level commenting**

Online interfaces designed for scientists to comment on papers have followed one of three models:

1. Commenting on entire papers
2. Commenting on figures within papers
3. Commenting on individual sentences within papers

There are a number of reasons to think that the second approach (figure-level commenting) is more promising than the other two:

- When biomedical researchers discuss papers among themselves, the discussion is centered on the figures.
- Historically, biomedical researchers have used comment systems more when they're based around commenting on figures than when they're based around commenting on entire papers or on individual sentences.
- Commenting on an entire paper requires that the commenters read the entire paper, and this takes substantially more time than examining a figure in the paper and so imposes a high barrier to entry.
- Interfaces that facilitate leaving comments on individual sentences are cluttered, and it's difficult for readers to read the comments.

Journal Lab enables figure level commenting, and is working to promote this as the standard for online commenting on scientific papers.

Graduate students often take notes on each figure of a paper while reading it, so it's relatively low cost for them to post comments on the figures in the papers that they read.

### **Comment buttons**

Journal Lab's commenting system allows commenters to convey their thoughts by clicking on predefined buttons, for example, buttons indicating that the figure is missing controls, that the figure is solid science, or that the method used is poor. This reduces the time that it takes for commenters to comment on a figure.

Journal Lab generated the default buttons that commenters can use by observing discussions of figures in labs and extracting commonly voiced sentiments from them. Users can also customize their own buttons.

### **Linking to other references**

When a user notices that there's a reference or a discussion that's relevant to a figure, he or she can link to it in a comment on the figure.

### **Commenting as a source of altmetrics**

The phrase *alternative metrics* (altmetrics) refers to measures of the quality of scientific output other than journal publication.

Right now, the main alternative metric that is available is the number of page views associated with a particular scientific output. While number of page views may have some correlation with the merit of a scientific output, it seems unlikely that the correlation is very strong.

Commenting systems could potentially be used to create much more useful altmetrics. Such altmetrics could be generated for a scientific output by examining the nature of the comments that scientists make about it, weighting the comments using factors such as the number of upvotes that a comment receives and how distinguished the commenter is.

The metrics generated would be more informative than a journal publication record, because commenters give more specific feedback than the acceptance/rejection of a paper submitted to a given journal does.

### **Career incentives and commenting systems**

If scientists were to routinely use online commenting systems to discuss scientific outputs, it seems likely that altmetrics generated from them would be strong enough for them to be used for hiring, promotion and grant-making decisions (in conjunction with, or in place of, the traditional metric of journal publication record).

However, unless scientists use such systems routinely, it probably won't be possible to

get good enough data from them for them to play a major role in hiring, promotion and grant-making decisions.

Thus, the problem of shifting toward scientific communication based on online commenting systems is a “chicken-and-egg problem.”

### **The benefits to scientific practice of scientists sharing more information**

If scientists shared more information about their research online, it would greatly speed scientific progress:

- Lab workers often attempt to carry out experiments that are described in papers that don't provide implementation details, and so struggle to carry out the experiments as intended. If the implementation details were publically available, it would save these workers a lot of time.
- It's often the case that many different groups of researchers have attempted to replicate an experiment that doesn't replicate. If one such group were to publish the data from their attempted replication, this would save other groups time.
- Researchers often collect interesting data that is not immediately relevant to their project in the course of doing something else, and discard this data. If they made the data public, other researchers who are working on problems for which the data is more relevant could use it in their own research.

### **The future of scientific communication on the web**

David Jay envisages a future in which there are websites for scientific communication that serve the following functions:

- A venue for researchers to announce having published new scientific outputs
- Data repositories (similar to FigShare).
- A customizable “newsfeed” which aggregates scientific content for researchers to view.
- A mechanism facilitating and reporting on peer review.
- A website which collects analytics from other websites so as to aggregate the impact of individual researchers, both for their own information and for use by hiring/promotion/grant committees.

## **Supporters of the use of technology to make scientific communication more efficient**

### **Organizations**

Some organizations that do work on improving scientific communication electronically are: PLoS, Mendeley, Faculty 1000 (F1000), ResearchGate and Academia.edu.

### **Distribution of incentives to make scientific communication more efficient**

Some populations who are interested in the use of technology to make scientific communication more efficient are:

- Graduate students who are struggling to gain familiarity with the research literature and understand how to use it, and who see how online access to information about scientific research could help them with these things.
- The National Institutes of Health, which has moved toward looking at grant applicants' outputs aside from journal publications when making grant decisions.

### **Funders**

Some foundations that fund projects to make scientific communication more efficient are the Sloan Foundation, Moore Foundation and the Mozilla Foundation.

### **People and organizations for GiveWell to talk to**

- The Future of Research Communications and e-Scholarship (Force11). Force11 is a community working toward improved scholarly knowledge sharing. It has organized "Beyond the PDF" conferences, which bring together people who work in the academic infrastructure to discuss how to use technology to improve modern scholarly communication. Aaron Clelich is one person to speak to there.
- Richard Price is the founder of Academia.edu, which is an online platform for academics to share their research papers.
- William Gunn is Head of Academic Outreach for Mendeley, which produces reference management software.
- Joseph Jackson is the organizer of the Open Science Summit.
- India Hook-Barnard, a Senior Program Officer at the National Academies of Science. Hook-Barnard has done research for the federal government on problems with the academic communication system and how it might be improved, and is on the Journal Lab board

*All GiveWell conversations are available at <http://www.givewell.org/conversations>*