SUMMARY
TRANSPARENCY, RECOGNITION AND INNOVATION IN PEER REVIEW IN THE LIFE SCIENCES
Wednesday, February 7, 2018   HHMI Headquarters
Live collaborative notes (Google Doc)

Archives of all open sessions are available on the asapbio.org website.
Agenda and links to slides are at the ASAPBio site, and at the end of the document.
Highlights for HRA Members in RED.

SESSION 1: OPENING REMARKS

ERIN O'SHEA (PRESIDENT, HHMI)
SCIENTIFIC PUBLISHING IN THE DIGITAL AGE: CHALLENGES WITH CURRENT SYSTEM OF SCIENTIFIC PUBLISHING

Purpose of scientific publishing:
1. Create a public record of original scientific contributions
2. Gives authors intellectual credit for their claims
3. Enables others to re-use and build upon the finding in future research

We (especially those who invest in research) need to have the last step in the research workflow (the sharing of research output) happen in the way that best serves the needs of science and scientists.

Challenges of scientific publishing today:
1. **Corrupt inventive system** – evaluation based on WHERE not WHAT is published.
    Journal-based metrics determine value not article-based metrics
2. **Lack of transparency and accountability** – critiques are not made public
    Editors as gatekeepers determining fate of an article - serves the journal over serving science
3. **Waste of time and resources** – too much time spent on revisions and resubmissions
4. **Access is limited** – often research outputs are only available by paying fees

Characteristics of proposed process:
1. Open peer review
2. Author as publisher - shifts the decision to publish to the author. Serves science and scientists. Not journals.
3. Article specific tags – (post-publication) indicators that reflect the quality of the article can capture long term impact and can be updated overtime (shorthand measures of quality features of research articles (reproducibility, technical quality, # of citations)
4. Open Access – freely available at the time of publication.

Evolving scientific publishing to address challenges
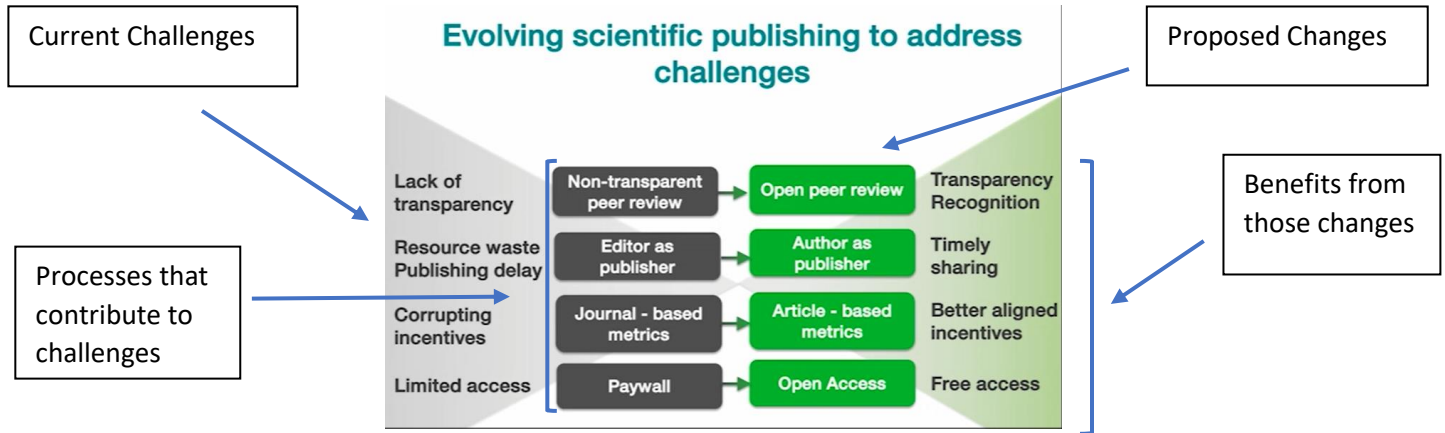
The 4 changes are synergistic, and can be implemented separately:
Open peer review:
- evaluations accessible, more constructive
- ***ability to treat peer review as the scholarly activity that it is***
  recognize scientists for good peer review (if scientists sign open peer review)
  cite peer reviews and add peer review to their cv

Author Driven:
- Leads to faster sharing by eliminating waste of revise and resubmitting
- Peer reviewers will have no longer have a conflicting role of advising editor (journal suitability) and the more important scientific role of advising the author ***(how to improve the work)***

Article based Metrics – lower the value of JIF which drives too many decisions
Open Access – free and timely sharing

Her hope for the future:
- Editors and journals will be less relevant in the publishing of primary research. # of journals will probably shrink. That's not a bad thing.
- Publishing platforms will more relevant. Collect primary literature, peer reviews, comments, and tags.
- Journals shift from being publishers to the critical role of curators. Even more important at the amount of literature keeps growing.
- Develop post-publication evaluation – currently underserved area. Subscription model is not OK – but charging fees for curation services is fine.

Major challenges: Financial, technological. Biggest is **cultural**. Need to reward/incentivize new models.
Funders should look at peer review as scholarly contribution to science as a way to reward/incentivize.

JEREMY BERG (EDITOR-IN-CHIEF, SCIENCE)
AUDIENCES FOR PEER REVIEW

- Journal Editors: Importance of finding, technical analysis, other (ethical issues, reproducibility, etc)
- Authors: Want feedback on conceptual and technical aspects of the manuscript and associated projects
- Others (1) other reviewers, shared comments between reviews and other interactions between reviewers, and (2) open peer review (people write differently if reviews are open especially if non-anonymous.)

Challenges when considering improvements to peer review:
- What are benchmarks and what areas of improvements are sought?
- How can participation of appropriate reviewers be encouraged and achieved?
- Can academic recognition process be modified to incentive desired behavior?

o   Improve assessment of scientific contributions without flawed surrogates (NOT value JIF)
o   Meaningful incorporation of community service such as peer review in academic assessment

MIKE LAUER (DEPUTY DIRECTOR FOR EXTRAMURAL RESEARCH, NIH)
PERSPECTIVES ON PEER REVIEW AND ENHANCING RIGOR AND TRANSPARENCY OF SCIENTIFIC RESEARCH

Major issue in scientific research: Scientific studies are grossly under-powered.
Small sample size is too often low. Causes huge variability. Shows extreme results. This causes excitement and leads to publishing studies with invalid conclusions. Inefficient and wasteful.

Suggested as *required reading*: Power failure: why small sample size undermines the reliability of neuroscience
Katherine S. Button, John P. A. Ioannidis, Claire Mokrysz, Brian A. Nosek, Jonathan Flint, Emma S. J. Robinson & Marcus R. Munafò, Nature Reviews Neuroscience.

NIH Perspective: Story Landis and Shai Silverberg
"A call for transparent reporting to optimize the predictive value of preclinical research" (see Box 1 for details)
At a minimum what should appear in the published paper:

- *Sample size estimation* (assumes this was done at all, let alone BEFORE the experiments were undertaken)
- Whether and how animals were randomized
- Whether investigators were blind to the treatment
- Data handling

Peer review will not help with underpowered experiments and the lack of sample size estimation.
If appropriate, funders could look for these points in experimental design (preregistration).

Journals are stepping up – Nature Neuroscience is an example.
http://www.nature.com/articles/nn.3391?WT.ec_id=NEURO-201305
Funders can and should use these guidelines and the checklist. Nature journals' developed a set of guidelines for the reporting of basic methods information, along with a checklist (sample available) for papers, to prompt authors to disclose technical and statistical information in their submissions and to encourage referees to consider these issues in their reviews.

DISCUSSION:

- 2 ways to implement change
  Design experiments changing various aspects of the 4 elements proposed by Erin.
  Entice a journal to convert to the new model she described
- Is there a difference between journal review and *Grant Review?* Yes. Grant Review asks reviewers to predict *potential.* Journal peer review doesn't. Early Career Scientists should start by reviewing articles not grants.
- How can we increase the use of post-publication peer review? Incentivize. Now only risks and no reward for open post-publication commenting.
- Very strong need for professional statisticians as part of peer review.
- Using journal metrics to convey the value of the work is deeply flawed. But beware of flaws of transferring the value to the investigator – bias will be a factor (institution, pedigree, etc.). Conveying value to the article is the most unbiased. Especially if tags and post publication metrics (ideally non-anonymous and open) are used and updated.

SESSION 2: TRANSPARENCY AND RECOGNITION OF PEER REVIEW

- Should peer review reports (with or without reviewer identities) become part of the public scholarly record that is linked to a scientific work?

- Is transparency of peer review reports (with or without reviewer identities) desirable from the viewpoint of scientists (both as authors and reviewers), funding agencies, or journals?
- If transparent peer review is desirable, how can it be implemented and what might be barriers to adoption?

TONY ROSS-HELLAUER (KNOWCENTER)
OPEN PEER REVIEW – RESEARCHER ATTITUDES AND NEXT STEPS

What is meant by "Open Peer Review"? See article *for a systematic review.*
Tony described his schema of seven "traits" of open peer review, but discussion focused on the 1st 3.

1. **Open identities:**   Authors and reviewers are aware of each other's identity
2. **Open reports:**   Review reports are published alongside the relevant article.
3. **Open interaction:** Direct reciprocal discussion between author(s) and reviewers, and/or between reviewers, is allowed and encouraged.
4. *Open participation:* The wider community are able to contribute to the review process.
5. *Open pre-review manuscripts:*   Manuscripts are made immediately available (e.g., via pre-print servers like arXiv) in advance of any formal peer review procedures.
6. *Open final-version commenting:*   Review or commenting on final "version of record" publications.
7. *Open platforms ("decoupled review"):* Review is facilitated by a different entity than the venue of publication.

View of having peer review be be part of scholarly body of work:
- Peer review should be common scholarly practice
- Open interaction would make peer review much better – make it collaborative vs adversarial
- Open participation and open commenting could be valuable (but no one uses that)
- Review alongside the article would add value
- Strong pushback on identities (75% think reviewers should have choice to have their identities known, and that it would make it harder to find reviewers)
- Criticism would be tempered (but is that good or bad?)
- Attitudes vary by age group. Younger are more enthusiastic.
- Attitudes also vary by discipline – but it's complicated. Health science YES – life science NO.
- Needs are different – so we need more evidence about what works best for what circumstances.

Thus, we need to design experiments, collect data, make the data open for analysis by many stakeholders. It needs a multi-stakeholder (including cross publisher) agreement on definitions and priorities for research.

REBECCA LAWRENCE (F1000)
F1000: OUR EXPERIENCES WITH PREPRINTS FOLLOWED BY FORMAL POST-PUBLICATION PEER REVIEW

After 5 years trying to solve the problems Erin stated, they are now less a publisher and now a service company. They partner with Gates and Wellcome and others.
Wellcome's Open Research is a central service: *Wellcome Open Research provides all Wellcome researchers with a place to rapidly publish results they think are worth sharing. Articles benefit from immediate publication, transparent refereeing and the inclusion of all source data.*

The process - **Authors are in charge making the key decisions.**
- Authors submit (like a preprint) manuscript plus data.
- Prepublication checks (more than for a preprint - plagiarism, ethical. FAIR, meets community standards, etc)
- Authors select referees from list
- Referees **invited** AFTER publication.
- Reports publish and signed
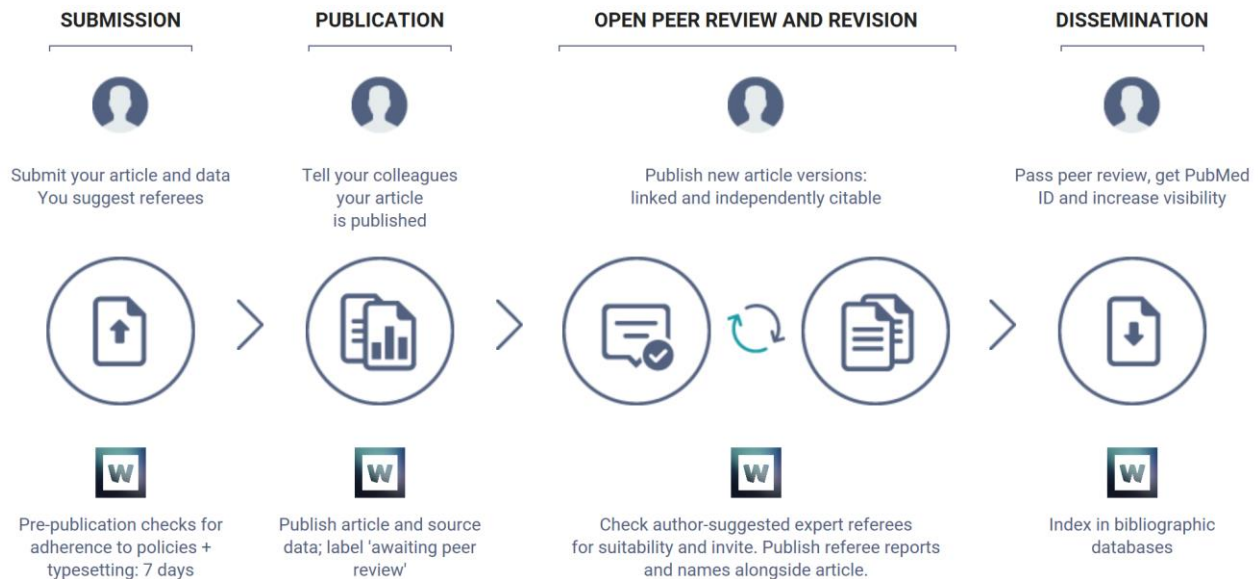- Authors in charge – they can respond or not.

- The post publication review is FULLY OPEN= names and reviews shown alongside the manuscript in the published version. Referees get credit, reports get DOI's. Included in ORCID profiles etc. When a referee asks their postdoc – that shows as well.
- Publication is made NLM compliant, XML, and PDF. Yes, versioning does make it more complicated.

Key take homes:
- With the authors in charge – science and the scientists are served, not the journals.
- They have not found it harder to get reviewers.
- Review is faster and more constructive for the author and the science
- Transparency is crucial to the process
- The open and active participation of referees acknowledges peer review for the scholarly work that is really is.

The Welcome Open Research Publishing Process:

SUBMISSION	PUBLICATION	OPEN PEER REVIEW AND REVISION	DISSEMINATION
Submit your article and data. You suggest referees	Tell your colleagues your article is published	Publish new article versions: linked and independently citable	Pass peer review, get PubMed ID and increase visibility
Pre-publication checks for adherence to policies + typesetting: 7 days	Publish article and source data; label 'awaiting peer review'	Check author-suggested expert referees for suitability and invite. Publish referee reports and names alongside article.	Index in bibliographic databases

Theo Bloom ([British Medical Journal](#) - BMJ)
Open peer review at BMJ: What we know and what we don't

BMJ has [Open Peer Review](#) (Open identities, Open report, Open final version commenting)
Very active community of post publication commenting – follows the article.

BMJ uses the Review Quality Instrument (RQI) for Assessing Peer Review of Manuscripts which was tested, and results were [published](#).

The [RQI](#) assesses the extent to which a reviewer has commented on:
- five aspects of a manuscript:
  - importance of the research question
  - originality of the paper
  - strengths and weaknesses of the method
  - presentation
  - interpretation of results
- two aspects of the review

- o constructiveness
- o substantiation of comments

Some disturbing findings of their own were
- Peer review doesn't find most errors and even with training still doesn't help
- Studies showed that time spent past 3 hours per review doesn't improve the review
- Even if the author declared a conflict of interest the reviewers' confidence in the validity didn't decrease

Joyce Backus (NIH NLM)
MEDLINE and PMC – Role of journal peer review in journal evaluation.

NLM has many resources that enables the NIH to connect the literature to these resources.
Will focus on MEDLINE and PMC.

National Library of Medicine at NIH

- MEDLINE – 26 million records, 5,400 journals
- PMC (PubMed Central) – 4.7 M articles
- JATS – Journal Article Tag Suite
- ClinicalTrials.gov – 265,000 studies
- GenBank - 196 M sequences, > 370,000 species
- dbGaP - 700 Clinical studies involving over 1.2 M people
- PubChem – 90 M unique chemical structures

For a journal to be included in PMC or Medline – journals need to pass the basic selection policy. Peer review is one of the criteria to qualify for the collection.
- Experts review is what the journal has done in the past looking at the editorial process and a publicly stated process of peer review and evidence it's followed

Open peer reviews area already in PMC
- F1000 and Wellcome Open Research already send open peer review reports to NLM which are identified and included and identified in the XML. Links to the versioning of the article after each peer review. Readers can see versioning.
- eLife send the editorial decision letter and the author response all displayed in the XML

Jennifer Lin (Crossref)
Peer Review Metadata: Provisioning it to systems across the research enterprise
Nonprofit, Scholarly infrastructure provider – ~10,000 members are all publishers. 91 Million works.
Makes research outputs easy to find, cite, link, and assess. We're a not-for-profit membership organization that exists to make scholarly communications better. Metadata is useful etc.
Bring identities and identifiers – link together and bring to the whole research ecosystem.

Crossref collects and links meta data:
- Associated research entities (literature discovery, papers, preprints)
- Associated outputs (data and software, protocols, videos)
- Events surrounding it (Published peer reports – a lot of revision number, contributor, blogs, commentary, etc)
- Research integrity tracking
- Reproducibility
- Reporting to funders and institutions
- Funder policy compliance

Now have a new content type that encompasses many types of content:
Referee reports, editorial decision letters, author responses, etc.
Already has publishers registering peer reviews (PeerJ, SciPost, and ScienceOPEN)

Also captures reviews on non-publisher platforms (blogs, F1000 recommendations).
You can add reviews to your record by sending the letter yourself or directly from the published if they are integrated.

Andrew Preston (Publons)
Publons: Recognizing review and the challenges we've faced along the way.
Publons is a website and free service for academics to track, verify and showcase their peer review and editorial contributions across the world's academic journals.
- Peer review takes a huge chunk of time - If we can speed up review process can speed up science
- Get cross publisher recognition for peer reviews
- Captures all peer reviews for a scientist, plus track citations, altmetrics published papers.

Public research profiles:
Allows the public to see the journals you review for and the reviews you have done – but not linked to the article. That is important – many authors, publisher, and reviewers don't want it open. But they DO verify with journals.

Enhance a cv - Verified contributions from (2,000 publishers) Reports can also show how you compare with peers.
Key learnings:
- Editors (Post-publication peer review curators) are key – that's why Post-publication commenting doesn't work.
- It's more effective it you tap into what people are already doing
- Scale really matters (250K researchers on the platform)
- Incentives really matter

Integrating peer review into the research lifecycle
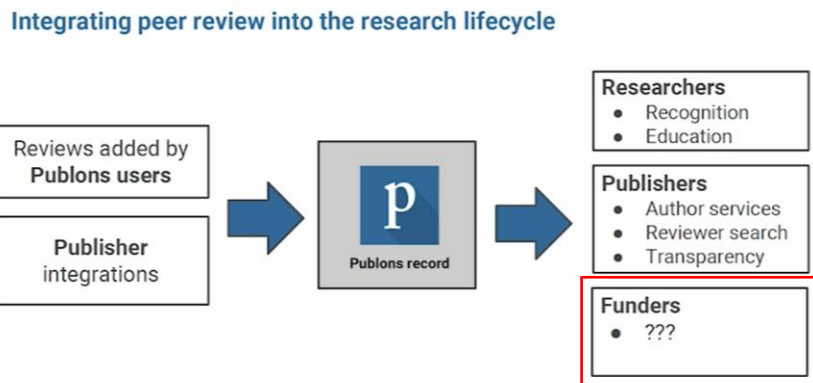
Sage's is a good example.
Really want as open as possible. However, default is closed. But give reviewers option to open various aspects. Publons can be used in the peer review research lifecycle.
Funders should consider adding Publons profile (review activity) in their evaluation of grant applications. That will change behavior and incentivize review activity.

Kaf Dzirasa (Duke) Researcher perspective
- We need to consider positive roles open peer review could play in the development of early career scientists.
- We also need to worry about the potential it can have to harm vulnerable people (including Early Career Researchers and minority populations.
- There is the potential for a minority negative review in an open system override the validity of the majority view – as it already has in global warming.
- It can be dangerous to make reviews open since there is the possibility for the minority to change the conversation and change the "truth."

Natalie Ahn (University of Colorado, Boulder) Researcher perspective
- Who reviews the reviewers? Open reviews can make accusations that lead to serious consequences including destroying a career, even unintentionally and even if no misconduct actually happened.
- In open commentaries people can make extreme statements and authors have little defense against this.
- A very big concern is the potential to negatively impact the public perception of science.

SESSION 3: REPORT BACK ON BREAKOUT SESSIONS

What are the *benefits* of making peer review REPORTS open?
- More thorough reviews (if reports and eventually identities are public)
- Improved review accuracy (if there is interaction between author and reviewer)
- Increased number and diversity (demographics and disciplines) of reviewers if open participation
- Reduced time before research is public
- Reduce waste of multiple review cycles
- Conflicts are transparent
- Editorial bias can be decreased
- Increased quality Assurance – community scrutinizes the reviews, makes more information from review available to the scientific community
- Reviewers get credit and recognition for reviews – can be cited and used in applications, promotion and tenure
- Incentives to review – if reviewers get to choose the papers they review (but if they aren't asked they don't participate)
- Professional development – get training for how good review is done

What are the *risks* of making peer review REPORTS open?
- Harder to find reviewers (potentially) – could increase the delay
- Reviewers won't participate if not specifically asked
- Conflicts could be more likely – especially if open participation but not open identity
- Might discourage strong criticism – especially in reviewing higher status colleagues
- Retribution for a negative review
- Doesn't do anything to eliminate social bias since identity of author is known

Other benefits and risks to other aspects of Open Peer Review:
- Open Participation and Open Final Version Commenting (Post-publication peer review)- could increase the number of reviewers from different disciplines (but might not if reviewers are not actually invited)
- Open Interaction - could increase accuracy of reviews and make public information of value to the author and community, but the interaction could also increase the delay in making research public
- Open Platforms – reduce multiple cycles of review (make reviews portable – other journals could take use technical reviews from open platforms but add their own review for suitability only)
- Open Participation – decreases reviewer bias (but could add to conflicts, esp if anonymous)

Addition points:
- Scientists should receive credit or recognition for peer review activities. Either generically (like Publons which verifies activity with publishers) or even citing specific reviews like CrossRef or ORCID. Recognition and credit for specific reviews would incentivize signing reviews.

- Strong consensus that the names of all scientists (including students and postdocs) who contribute to peer review should be disclosed to the journal as standard practice. This is already happening in some journals (like F1000 and BMJ).

SESSION 4: INNOVATION IN PEER REVIEW

What are new ideas for peer review models and how can they be piloted and evaluated? What other evaluation metrics might be considered?

PRACHEE AVASTHI (KANSAS UNIVERSITY MEDICAL CENTER)
PROVIDING PEER REVIEW TRAINING AND PREPRINT FEEDBACK THROUGH PREPRINT JOURNAL CLUBS.
IDEA THAT MOST RESONATED WITH MEETING PARTICIPANTS:
Preprint journal club: critical analysis of a preprint with feedback sent to authors directly and authors responding to journal club participant's comments.
- Training for critical evaluation using peer review.
- Increase trainees' interactions with larger community
- Preprint authors get much needed feedback
- Increased participation (diversity) in peer review
Process: Individual trainees choose preprint to review and presents review to the class. Class discusses the review and gives feedback. Trainees sends reviews to preprint author, authors engaged with students.
Results: Authors were thrilled that someone read their preprints and thought the feedback was valuable. They often gave feedback back to students and incorporated the feedback in the next version.
Next Steps: The ability for preprint authors to flag their submissions (want to be included in preprint journal clubs) would be helpful. Virtual preprint journal clubs are already out there. Can expand on that model.

ANDREW McCALLUM (U MASS AMHERST)
OPENREVIEW.NET: FIVE YEARS OF OPEN PEER REVIEW EXPERIENCE IN COMPUTER SCIENCE

Early system is Rexa.info – knows about topical trends, people, conference and all interconnected
Current project: Building a knowledge of all scientists and all scientific entities in the world and their relationships
To accelerate science – need better technology and "open peer review meaning submission, review, and public comments
OpenReview.net - aims to promote openness in scientific communication, particularly the peer review process, by providing a flexible cloud-based web interface and underlying database API enabling all aspects of open peer review. Publish preprints on arXiv, invite reviewers (anony or not) and open to public – public comments are all non anonymous. Gives an API.
Results:
- More vigorous reviewing when review process open during review period.
- Stogy communities are willing to try small steps of change.
- Open review period is valuable – with double-blind review
- Don't allow anonymous reviews to be anonymous – can lead to trolling.

MIKE EISEN (UC BERKELEY/HHMI)
APPRAISE (A POST-PUBLICATION REVIEW AND ASSESSMENT IN SCIENCE EXPERIMENT)
ACCELERATE RESEARCH AND PROMOTE ITS EFFECTIVE BY USING BUILD A ROBUST READER

Post-publication review (PPR): Currently the focus of PPR is on technical characteristics of article: F1000 does this well.
But reviews have many other uses and audiences who want more than just technical merits.

APPRAISE: Focused reviews on papers in biorxiv, reader-driven process. Review and give feedback on papers you want to read.

The different audiences and uses of peer review

Potential readers (people who are looking for papers to read)
want to find articles that are interesting, useful and important to them and know how to prioritize them

Readers (people who have chosen to read the article)
want to know what parts of the work are valid/flawed, and they want context to help them interpret and use the data, methods and ideas

Never readers (people evaluating the scientists, public)
want to know if the work is innovative, well executed and impactful

Authors
care about all of these things <u>and</u> want constructive feedback that makes the paper being reviewed <u>and</u> their future research better

- Develop software for appraising bioRxiv papers in collaboration with openreview.net
- Work with bioRxiv, PLOS and others to develop standards for production and display of badges/tags (aka Polka Dots)

Characteristics: Full text and partially quantitative, for use in multiple ways
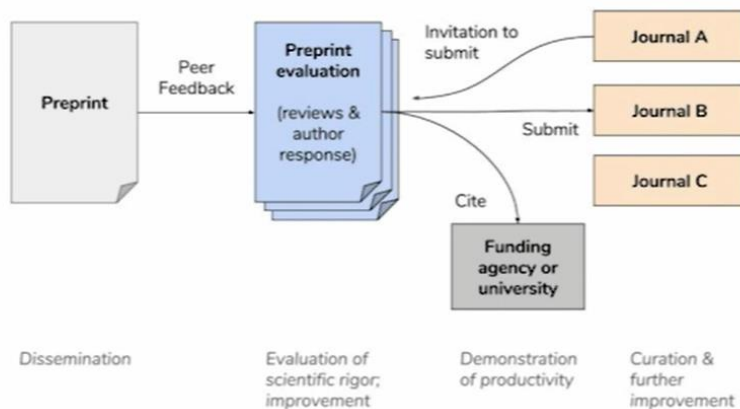Default to open identity but option to remain anonymous.
Piloting soon in many areas – focusing on recruiting early career scientists.

RON VALE (UCSF/HHMI/ASAPBIO)
PEER FEEDBACK

Peer Feedback

Journal Agnostic, Assigned Peer Review

Peer Feedback is ASAPbio's proposal for changing peer review using preprints.
It's not the technology that is the problem – it's often understanding the culture and behavior of the scientific community.

- Journal articles: bundle multiple goals (disclosure of work, dissemination to the community, and evaluation of the technical quality of the work) and takes time.
- Preprints: unbundle these goals (scientists driven disclosure in a timely fashion but little focus on evaluation).
- Journal Peer Review: currently bundles evaluation of technical merit (which functions to improve the science) with check for journal suitability, ethical, data and other checks.

But - can unbundling these goals and processes better serve science and the scientific process?
This proposed Peer Feedback model is a bit like the way we used to work –giving our drafts to colleagues asking for feedback with the goal of improving the scientific work.

Roles:
- Scientist and scientific societies: Important role in peer feedback is to provide high quality technical merit evaluation which also functions to improve the science.
- Journals: Are still important for curation, ethical, and data checks, and added features. Peer feedback will help take some of the technical review burden from journals and allow for portability of reviews.

Goals:
- Review before journal submission focuses on technical quality and can add valuable info to body of work.
- Authors choice of which journal creates a flexible pipeline and leaves the gatekeeping role up to the publisher and not in the hands of reviewers.
- Removing the gatekeeping role of the reviewer makes them an ally and serves to improve the science.
- Better matchmaking with journals - preprints are more acceptable; fewer reviewers needed for journal acceptance.

Process:
- Author deposits preprint – results in early dissemination of the research
- Preprint undergoes preprint evaluation by designated reviewers (including reviewer and author interaction)
    - Evaluation of scientific rigor will improve the body of work for the author
    - Technical evaluation will also be helpful for the journals.
- Author can then submit to journals when he/she thinks it's ready (recognizing the need to demonstrate productivity but helping to alleviate authors sending papers before they are ready.)
- Author can also send to funding agency at any point – when the author thinks it's ready.

Potential Problems:
- This model will only work if excellent scientists and scientific societies are willing to participate.
- Peer review as a service means delivering excellence. Since this is a non-traditional option for authors it must add value. Reviews must but of extremely high quality and relatively timely.
- It would be used if this process was integrated with journals' own processes.

BODO STERN (HHMI)
ARTICLE-SPECIFIC TAGS
Post-publication evaluation through article level tags – this is just at the concept stage.
We agree that:
(1) Journal based indicators not good and
(2) We need article specific indicators of quality and impact reflect the individual contributions of scientist
Can post-publication tags or badges provide much needed indicators of article-level scientific quality and impact?

Critiques via expert peer reviews are the gold standards. Experts will not need these to evaluate scientists in their own field but for those who rely on journal-level metrics currently these could be very useful.
Also useful for:
- In selecting scholarly papers outside of our own expertise
- Evaluate scientists and scholarly applications – in the early stages, especially at the triage stage

Features of proposes Post-publication tags:
- Proxies for quality features of published articles.
- Evaluate critical features (technical quality score, rigor, reproducibility, statistical power)
- Attached to article or easily discoverable

- Easily generated and easily consumed (need to be easy to replace JIF)
- Metric that can change over time (like relative citation scores or even technical quality score initially by peer reviewer but track over time)

Questions for the Community:
- Are tags a good and feasible alternate to journal-based indicators?
- Are there better approaches to allow scientists to identify value of articles?
- How can tags be created?
- How can tags be attached to papers or be discoverable?
- How can they change over time?
- What are the cultural hurdles? Will scientists use these?   Will journals be afraid of this? (This would highlight that journals publish less than very high impact papers sometimes).

SESSION 5: TAKE HOMES FROM BREAKOUT SESSIONS

OPEN PARTICIPATION (PUBLIC COMMENTING) MODELS:

Benefits:
Articles living breathing documents, inclusiveness, engages more than just scientists, catches things not in peer review – 1 stop shopping, improves the science and reinvents scholarly discussion, includes the vulnerable and those with only remote access. Opens up the old boys club. Commenters could be future reviewers; critical comments can be made by vulnerable. Could be an incentive if open commenting participation was taken into account in hire, promotion, tenue. Can use "hypothes.is" to comment on all publications.

[hypothes-is](#)   h. hypothes.is

Hypothes.is uses annotation to enable sentence-level note taking or critique on top of news, blogs, scientific articles, books, terms of service, ballot initiatives, legislation and more.

Weaknesses:
Comments across many decentralized platforms. Scientists and public aren't all aware of these platforms so bias the consensus. Adoption is low. Purpose is not clear. Anonymity lead to trolling. Comments are almost always negative. Volume, clumsiness. Fear of reprisals. No incentives. Need to define goals and objectives.

How to moderate these public commenting platforms:
Anonymous reviewer could build a reputation.
Platforms start the process but later that community takes over and self-moderates.
Directly address the author.
See Biorxiv's example – allows communities to participate as the commenters. Invite societies (SFN or ASCB) to comment.
The journal club peer review could be integrated.
PubPeer is another post-publication commenting tool. https://pubpeer.com/ seems great for science but harsh for authors.

IMPROVING TRADITIONAL PEER REVIEW AND REDUCING REVIEWER BURDEN:

- Currently - burden falls on too few journal reviewers to check too many things for too many papers.
- Reviewers need to review paper quality including statistics (which should be added to all publication reviews). Funders could play a bigger role in checking stats before publication so that doesn't all fall on journals.

- *Important role for top tier journals to issue clear guidance on best stats treatment that should be required by more journals.*
- Specialist data reviewers are valuable – but that's not really scalable.
- Sharing reviews between journals is a good idea: But technical difficulties. How to share reviews between journals? Need to know the reviewers' identities as well as get the review text. Need to create a system to transfer reviews and reviewers – maybe a more journal agnostic review system will work better.
- Collaborative peer review seems to be extremely valuable – but not scalable. How to make that technologically feasible?
- Good editors serve to facilitate dialogue between author and reviewer to enhance the rigor and impact of the science.
- Postdocs should be included more as reviewers

We shouldn't expect a solution that solves all of these programs – but many solutions to address a variety of problems.

NEW WAYS OF EVALUATING PAPERS:

- Scale up *Journal club for preprints.* Working on a "not final work" enable better review training.
- *Leverage expertise*: But break up the task: Include domain experts responsible for rigorously reviewing certain parts of the paper that fall into their area of expertise. Read the whole paper but tasked with reviewing only certain parts.
  Review should mirror the way scientists work: Collaboration among domain experts coming together to write a story. That's what we should expect of reviews and reviewers.
- Split gatekeeping vs technical into different layers: Technical side at the preprint level, suitability for the journal and ethical standards at the journal level.
- Crowd source the image analysis etc. Get the preprint stage to look at certain aspects of the manuscript.
- Create article level tags by asking reviewers to score: Long term value, Wow factor, Originality, Rigor, Many other scholarly outputs.

This creates a huge data problem since each field has its own list of important scholarly metrics. It will be possible to calculate these over time after publication, but need something is needed that can be measured at the beginning.

Can the NIH biosketch or a concise one- or two-page '[bio-sketches](#)', be models? These let researchers summarize their most important research contributions, plus mentoring, societal engagement and other valuable activities. This approach could have flaws. Perhaps it gives too much leeway for 'spin' and for university affiliation and pedigree to have too much weight.

DORA Announcement: Declaration on Research Assessment
How to make research assessment better!

The [Declaration on Research Assessment (DORA)](#) recognizes the need to improve the ways in which the outputs of scholarly research are evaluated. Just announced in [Nature.](#)

Example: [The Good Practices for Funders Page](#) has these examples for improved assessment:
- In the 'achievements of PhD' section please provide your own summary of what you consider the most important outcome(s) of your PhD work and the impact of your work on and beyond the respective scientific field.
- In your publication list, you should indicate your three most important publications, i.e. the three primary research papers that in your view provided the most important and original contributions to scientific

knowledge irrespective of journal name and impact factor. Do NOT add the journal impact factor. Citations to the article or other article level metrics with source may be listed, but are not essential.

- Research Excellence Framework (REF), is a UK exercise to assess the quality of research being done in UK universities. The resulting report, The Metric Tide, which was published in July 2015, provides an extensive review of the literature on peer review, the use of metrics and altmetrics, and a statistical analysis of the predictive power of various numerical indicators (including the JIF). The expert group concluded that, while some metrics may sometimes be a useful adjunct to peer review, they should always be used carefully and with due consideration of context. The report recommends institutions of higher education consider signing DORA or applying DORA principles for the responsible use of metrics.

NEXT STEPS:

SUPPORT FOR EXPERIMENTS SUGGESTED BELOW:

HHMI and CZI will partner to support experiments in transforming peer review. Experimental details, data, and results must be shared openly. All are welcome to apply. Stay tuned for additional details.

1. Can we implement 3 changes to peer review now (and work to make them standard practice for how we do business) that would have a large impact. Have these risen to the point that there is return on investment for these actions? Can we encourage more journals to implement these or they feel left out? Can we aim to implement these in one year?
- Open report – publish review plus author response plus editorial letter. (Not necessarily identity soon, but ideally move in that direction.)
- DOI's for reviews – get credit for that report and it's findable
- Names of contributors to peer review to publishers
2. Another product from this meeting should be a recommendation to the community and have us all sign and buy in. Discuss benefits and risks to get out there with the community.
3. Survey funders: Do funders see value in these specific actions? **Grant application can't benefit unless the grant reviewers know that there is an accessible peer review. How do we find out? Eventually it will be the default that there are peer reviews available, but until then ask applicants can cite their own reviews in the application, and cite others' reviews of their work.** Eventually – identities must be known to get credit for scholarly contribution.
4. Can the publisher and reviewers change the structure of their review? Respond to specific questions. Create separate your questions into different boxes. This would be especially helpful to transfer reviews to different journals (and would help journal clubs with structure). This could be a role for ASAPBio can get together to get reviews to be interoperable. Help referees focus on just what you want them to focus on – reduce their burden. Need to build consensus around community norms. ASAPBio could come up with a standard for making reviews interoperable and an organization like COS could work with ASAPBio to provide the technology.
5. Can editors sign their names to the decision to publish or not? Often it's not just one person, it's a team decision. But there is on person who should sign it. One person signs the decision letter. That person should sign the paper.

***Most important conclusion for funders: Recognition** of contribution to reviews should be viewed as scholarship. But this needs transparency first, the community needs to move to more transparent peer review then move to recognition of scholarly contributions.*

Meeting Agenda with Links to Slides

- Tony Ross-Hellauer (KnowCenter) – slides

  Open Peer Review – Researcher Attitudes and Next Steps

- Rebecca Lawrence (F1000) – slides

  F1000: Our experiences with preprints followed by formal post-publication peer review

- Theo Bloom (BMJ) – slides

  Open peer review at BMJ: What we know and what we don't

- Joyce Backus (NIH NLM) – slides

  MEDLINE and PMC – Role of journal peer review in journal evaluation.

- Jennifer Lin (Crossref) – slides

  Peer Review Metadata: Provisioning it to systems across the research enterprise

- Andrew Preston (Publons) – slides

  Publons: Recognizing review and the challenges we've faced along the way.

- Kaf Dzirasa (Duke)

  Researcher perspective

- Natalie Ahn (University of Colorado, Boulder)

  Researcher perspective