How to communicate a preprint

Scientific articles can take different forms, some of the most common are:

Journal article

> Original, new research findings

> Can be closed or open access (may require payment of an APC)

> Often 6-12 months behind current work

> Peer-reviewed by experts in the field

> The majority of the scientific literature

Review paper

> Provide an overview of a field

> Can be closed or open access (may require payment of an APC)

> Often 6-12 months behind current work

> Often peer-reviewed by experts in the field

> Good for an introduction to a new topic

Preprint

> Most commonly original research findings, may also report other outputs

> At the forefront of new knowledge

> Free-to-access

> Not peer-reviewed

> Most often in the form of research papers but can sometimes be review papers

Reading a preprint

Introduction
Gives background to the problem and the question addressed

Methods
How the work was done
An especially important section
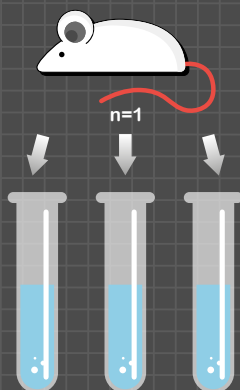
Results
What was found

Discussion
Places the findings into context and highlights why the work is important

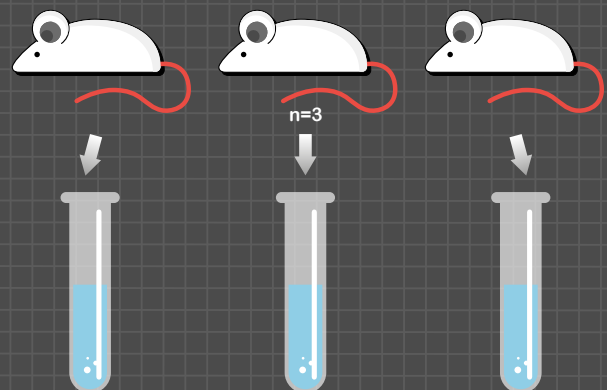Remember, when reading a preprint **YOU** are performing peer-review. Focus on the methods and results

Technical replicates
The same test on the same sample but done at different times

n=1

Biological replicates
The same test on biologically distinct samples

n=3

Power
The likelihood that what you are seeing is real

What kind of replicate was used?

Have the authors taken appropriate averages

Statistical tests
Some estimations suggest that a majority of the biological literature contains inappropriate statistical tests[1]

Is the test appropriately powered?

Are the authors comparing to an appropriate control?

Methods
Are the chosen methods and techniques the most appropriate to answer the question being addressed?

Source:
1. Ioannidis JPA (2005) Why Most Published Research Findings Are False. PLoS Med 2(8): e124. https://doi.org/10.1371/journal.pmed.0020124

When caution is needed

P-Hacking

> Using too many replicates, or incorrect replicates to achieve statistical significance

Hyperbole

> Authors or media exaggerate the findings

Poor study design

> Wrong techniques used

> Under-powered

> Only technical replicates

Use this checklist to determine if the preprint is appropriate to share

✓ Appropriate statistics

✓ Sufficient replicates

✓ Appropriate controls used

✓ You have sufficient expertise to assess the quality

✓ Methods are appropriate for the questions

✓ Appropriate power (no P-hacking)

✓ The data supports the conclusions

✓ Independently verified

✓ Positively reviewed by others

✓ Share preprints along with your opinion and assessment of them

Where to share?

Twitter

> Preprints are widely shared on Twitter by authors, bots and preprint servers

> Can be difficult to convey complex science in 280 characters. This can be overcome by using a thread

> You can direct questions to the authors

> Quick method of sharing

> Can interact with others

Skype and Zoom

> Scientists do talks often so should be well practiced

> Can explain difficult concepts relatively easily

> Allows for as much interaction as required

> Not as public as other methods

> Likely attended by people already interested

Facebook

> More restricted audience

> Audience may involve non-scientists. So take extra care when explaining concepts or sharing preprints

> Can convey more complex information

YouTube

> Easiest method for communicating complex concepts

> Limited interaction with others (only via comments)

> Audience may involve non-scientists. So take extra care when explaining concepts or sharing preprints

ASAPbio

Responsible sharing

✔ Add caveats such as any limitations or concerns with the methods or conclusions

✔ Share what others have said. Are they reliable sources?

✔ Defer to the expertise of others if the preprint is outside your field

✔ Share the full preprint link

✔ Link to peer-reviews if available

✔ Debunk any irresponsible sharing

✔ Give credit to others

✖ Propagate conspiracy theories

✖ Share information from untrustworthy sources

✖ Assume you're an expert in everything

✖ Share the headlines only

✖ Sensationalise

✖ Be rude or offensive

✖ Share copyrighted material

Who's responsibility is sci-comm?

The Scientist

> Experts in their field

> Can be difficult to step back and communicate with a broader audience

> May have bias against "competitors"

> Already very busy running a lab, training and writing papers

> Responsibility as part of public funding

The University

> Open-days and outreach events run 1-2x a year

> Specialised events and experts from a wide range of fields

> Community responsibility

The Politician

> May have a political agenda

> Not experts but surrounded by advisors

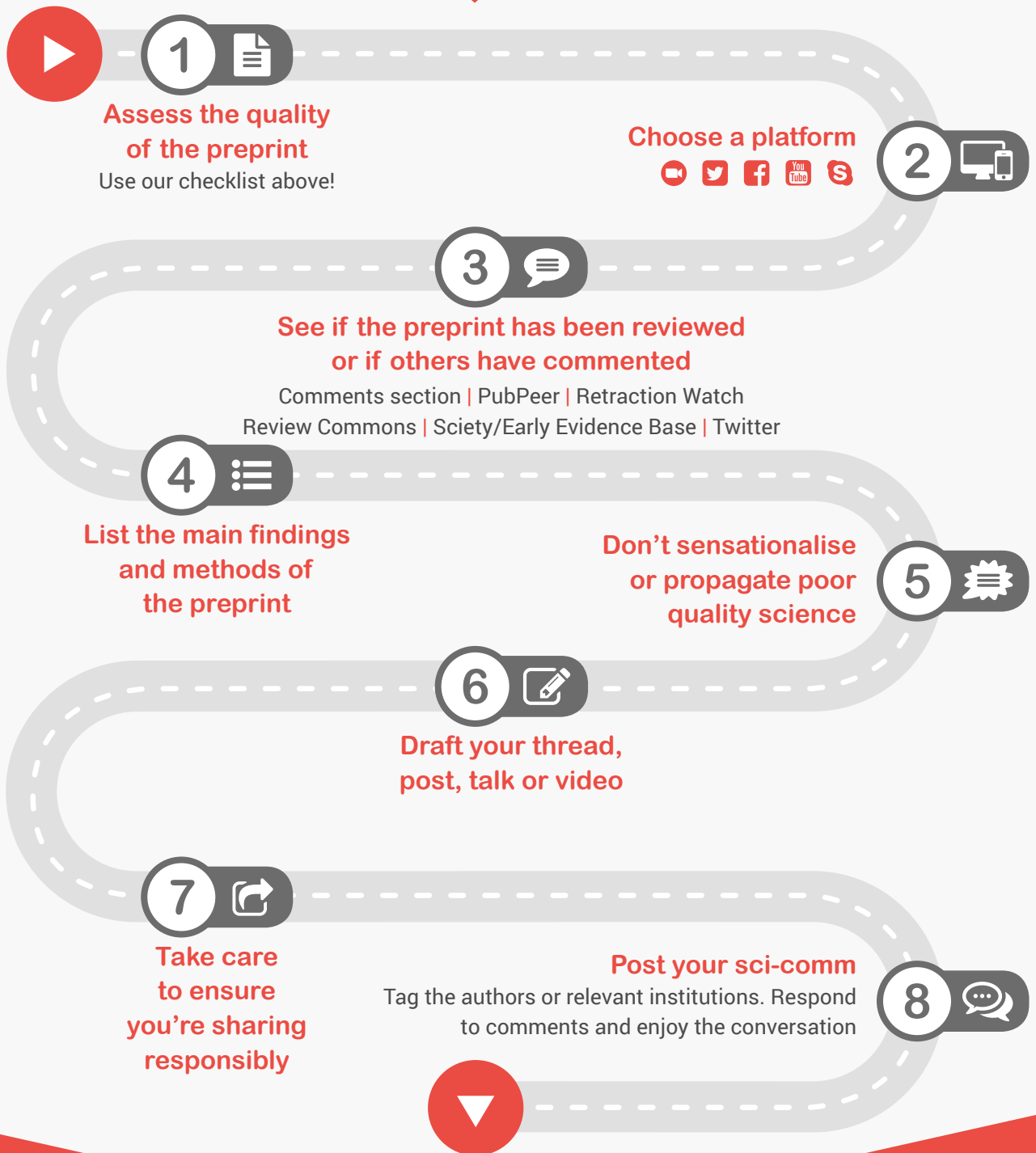> Often balance science with many other aspects

The Journalist

> May not be experts

> Trained to communicate with the general public

> May have editorial competing interests

Everyone

> Obligation to advance our understanding of the world

> Anybody can tackle misuse of science

> Not experts but adept at communicating with family and friends

How to share a preprint?

1 Assess the quality of the preprint
Use our checklist above!

2 Choose a platform

3 See if the preprint has been reviewed or if others have commented
Comments section | PubPeer | Retraction Watch
Review Commons | Sciety/Early Evidence Base | Twitter

4 List the main findings and methods of the preprint

5 Don't sensationalise or propagate poor quality science

6 Draft your thread, post, talk or video

7 Take care to ensure you're sharing responsibly

8 Post your sci-comm
Tag the authors or relevant institutions. Respond to comments and enjoy the conversation

Find more information at: tinyurl.com/preprintscourse