Reviewing research outputs

Bérengère Digard @BerengereDigard

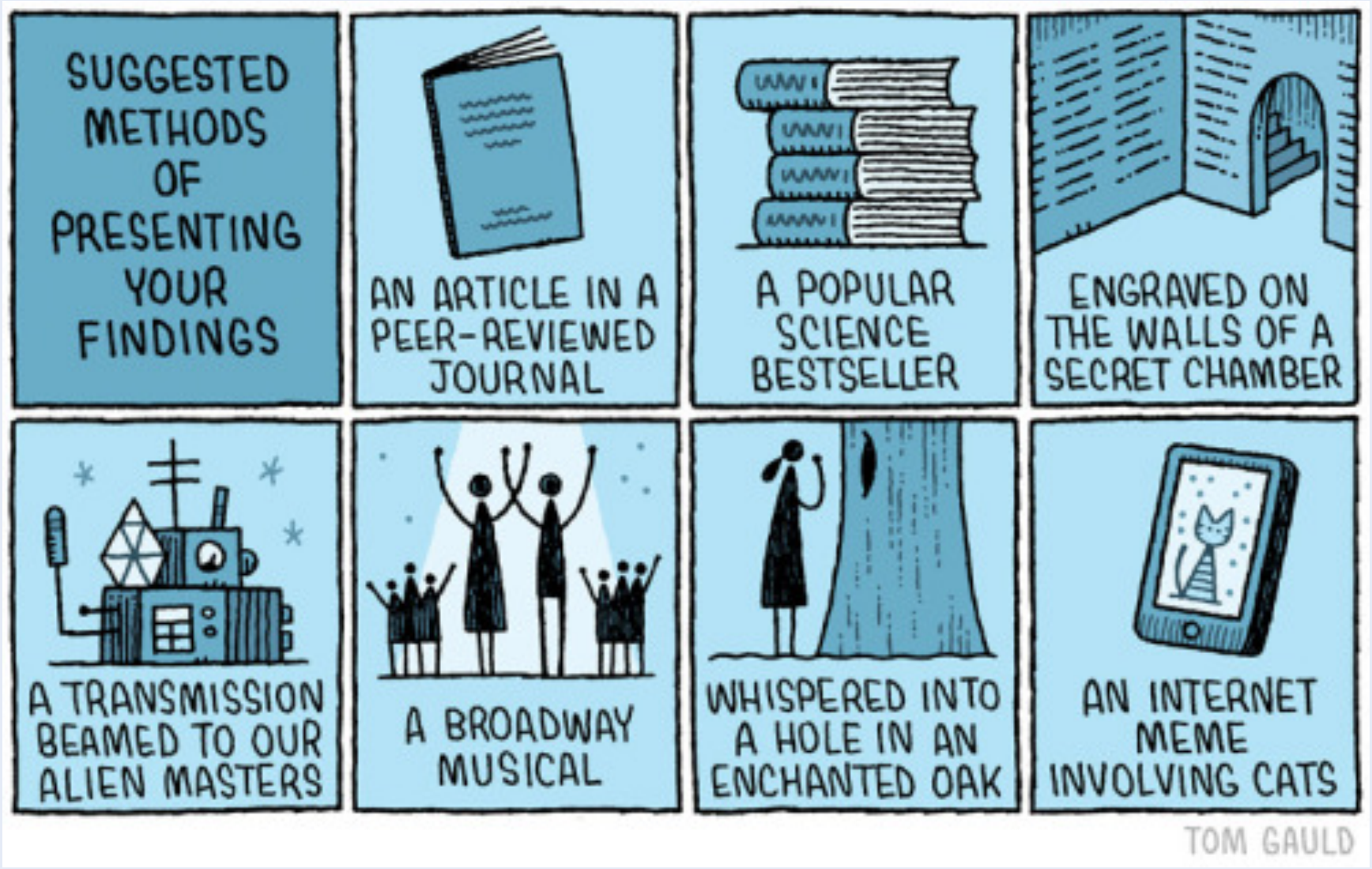
Research outputs – A world of possibilities

I – Research outputs review	II – Fun time: Tweet a study	III - Discussion
1. Different types of outputs 2. Media coverage 3. Scientific journal articles	1. Read a study 2. Write a tweet 3. Vote for the best tweet	You are in charge of this part, I didn't prepare anything.

Research outputs – A world of possibilities

I – Research outputs review		
1. Different types of outputs		

Research outputs – A world of possibilities



Different types of outputs

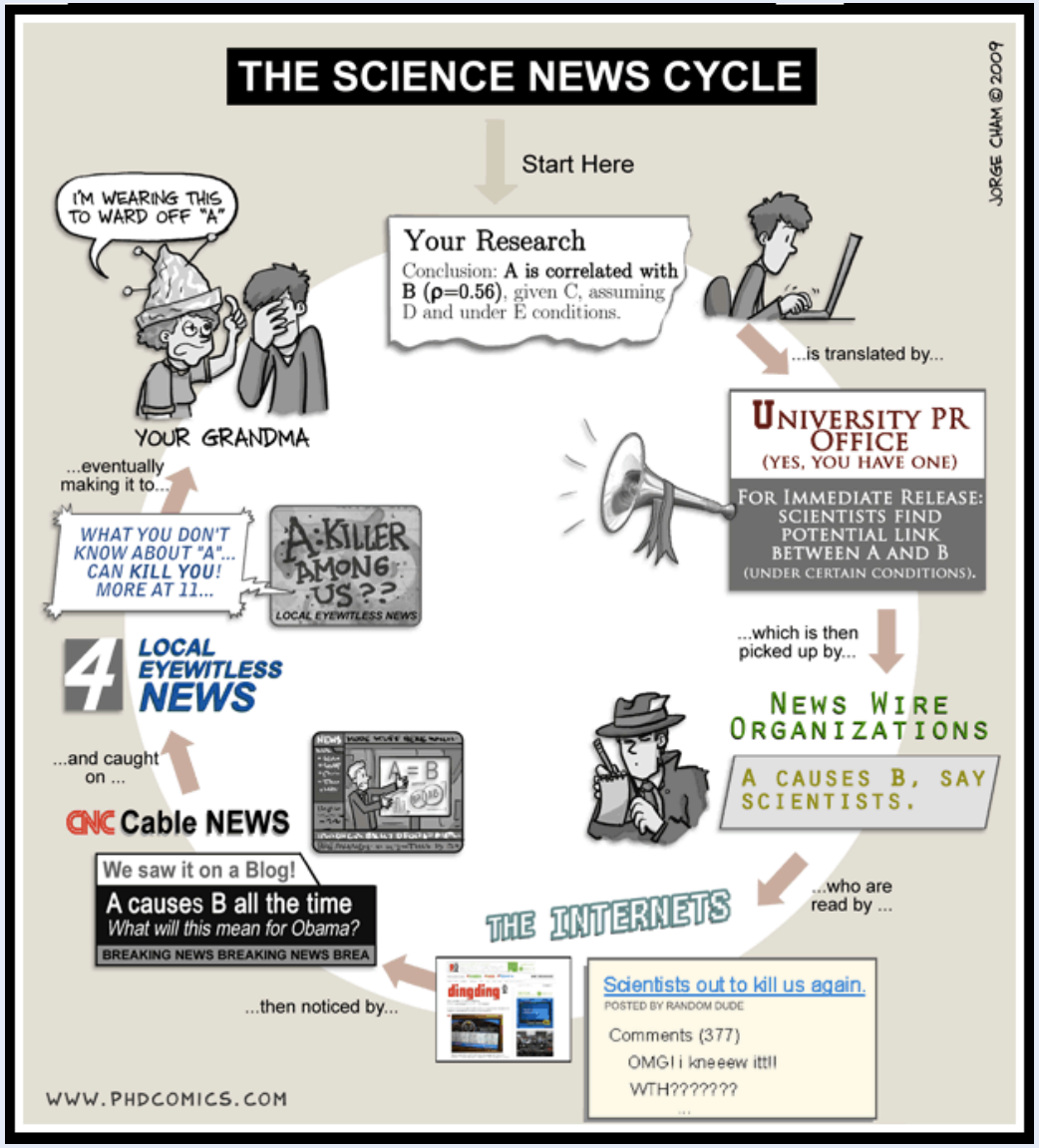
For fellow academics	For stakeholders	For the real world
- **Journal articles** - Posters - Talks	- Posters - Talks - Reports / Policy briefs / Guidelines - Website - Product / patent	- Talks - Books - Website - Creative works - **Media coverage**

For nobody
- PhD thesis

Research outputs – A world of possibilities

I – Research outputs review		
1. Different types of outputs 2. Media coverage		

Click-bait & sensational science – Media coverage



Click-bait & sensational science – Media coverage

Full text: https://www.ajog.org/article/S0002-9378(15)01352-6/fulltext Pdf: https://www.ajog.org/article/S0002-9378(15)01352-6/pdf

Click-bait & sensational science – Media coverage

- Objective

Previous studies showed conflicting results regarding the role of chocolate consumption during pregnancy and the risk of preeclampsia. We aimed to evaluate the impact of high-flavanol chocolate in a randomized clinical trial.

- Study Design

We conducted a single-center randomized controlled trial including women with singleton pregnancy between 11 and 14 weeks gestation who had double-notching on uterine artery Doppler. The pregnant women selected were randomized to either high-flavanol (HFC) or low-flavanol chocolate (LFC). A total of 30 g of chocolate was consumed daily for 12 weeks and women were followed until delivery. Uterine artery Doppler pulsatility index (UtA PI), reported as multiple of medians (MoM) adjusted for gestational age, was assessed at baseline and 12 weeks after randomization. Preeclampsia, gestational hypertension, placenta weight, and birthweight were also evaluated.

- Results

One hundred twenty nine women were randomized at a mean gestational age of 12.4 ± 0.6 weeks with a mean UtA PI of 1.4 ± 0.4 MoM. Although adjusted UtA PI significantly decreased from baseline to 12 weeks in the 2 groups (<0.0001), the difference between the 2 groups was not significant (p=0.16). At 12 weeks, we observed no significant difference between HFC and LFC groups in the rate of preeclampsia (4.7% vs 3.1%, p=0.49) and gestational hypertension (6.2% vs 12.5%, p=0.56). Placental weight (466 vs 464 grams, p=0.93) and birthweight (3348 vs 3215 grams, p=0.07) were comparable between the two groups.

- Conclusion

Compared with low-flavanol chocolate, daily intake of 30g of high-flavanol chocolate did not improve placental function, placental weight and the risk of preeclampsia. Nevertheless, the marked improvement of the pulsatility index observed in the 2 chocolate groups might suggest that chocolate effects are not solely and directly due to flavanol content.

Full text: https://www.ajog.org/article/S0002-9378(15)01352-6/fulltext Pdf: https://www.ajog.org/article/S0002-9378(15)01352-6/pdf

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Click cience – Media coverage

ScienceDaily®

Your source for the latest research news

Science News *from research organizations*

The benefits of chocolate during pregnancy

Date: February 1, 2016

Source: Society for Maternal-Fetal Medicine

Summary: Researchers will present findings from a study titled, 'High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial.'

Share:

FULL STORY

In a study to be presented on Feb. 4 at the Society for Maternal-Fetal Medicine's annual meeting, The Pregnancy Meeting™, in Atlanta, researchers will present findings from a study titled, High-flavanol chocolate to improve placental function and to decrease the risk of preeclampsia: a double blind randomized clinical trial.

In light of previous studies showing conflicting results regarding the role of chocolate consumption during pregnancy and the risk of preeclampsia, this study set out to evaluate the impact of high-flavanol chocolate. Researchers conducted a single-center randomized controlled trial of 129 women with singleton pregnancy between 11 and 14 weeks gestation who had double-notching on uterine artery Doppler. The pregnant women selected were randomized to either high-flavanol or low-flavanol chocolate. A total of 30 grams of chocolate was consumed daily for 12 weeks and women were followed until delivery. Uterine artery Doppler pulsatility index was at baseline and 12 weeks after randomization. Preeclampsia, gestational hypertension, placenta weight, and birthweight were also evaluated.

The result was that there was no difference in preeclampsia, gestational hypertension, placental weight or birthweight in the two groups; however, the uterine artery Doppler pulsatility index (a surrogate marker of blood velocity in the uterine, placental and fetal circulations) in both groups showed marked improvement that was much greater than expected in general population.

"This study indicates that chocolate could have a positive impact on placenta and fetal growth and development and that chocolate's effects are not solely and directly due to flavanol content," explained Emmanuel Bujold, M.D., one of the researchers on the study who will present the findings. Dr. Bujold and Dr. Sylvie Dodin, principal investigator of the trial, are with the Université Laval Québec City, Canada.

Story Source:

Materials provided by **Society for Maternal-Fetal Medicine**. *Note: Content may be edited for style and length.*

Press release: https://www.sciencedaily.com/releases/2016/02/160201214629.htm

Click-bait & sensational science – Media coverage

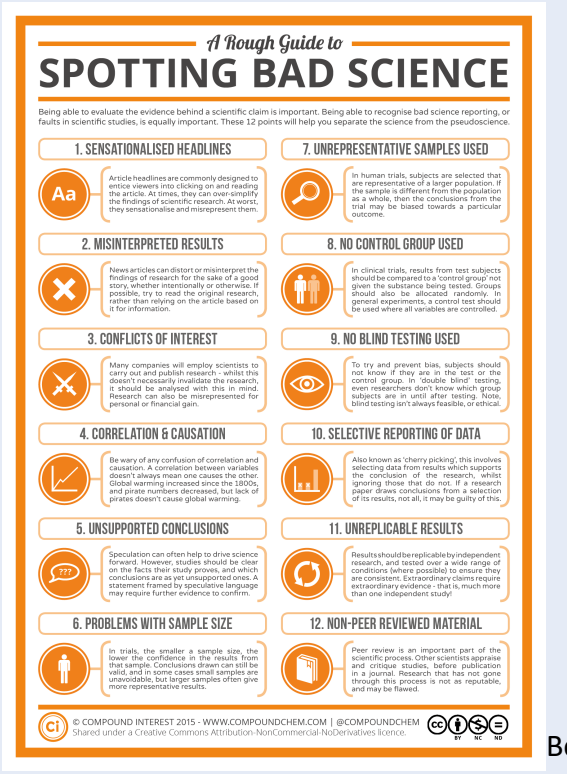
Video: https://www.youtube.com/watch?v=0Rnq1NpHdmw&has_verified=1 (5:37 - 6:37)

Click-bait & sensational science – Media coverage

- Judging the quality of a media report

-> Clear account ……-> Informative ……..-> Increased general understanding of the world

-> Poor account ……-> Climate change deniers, Anti-vaxxers …….-> Disaster



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Click-bait & sensational science – Media coverage

- Is there a link to the actual study?
- Do we know what species the study used?
- Was the sample representative?
- Do we know the exact manipulation?
- Do we know what are the remaining steps to cover before being sure this can be generalized?
- Were there some conflict of interest?

Click-bait & sensational science – Media coverage

Unsupported conclusions	Bad Science Bingo		Non-peer reviewed material
Sensationalised headlines	Correlation & Causation	Unrepresentative samples	Cherry-picked results
Misinterpreted results	Speculative language	No control group used	Unreplicable results
Conflicts of interests	Sample size too small	No blind testing used	Journals & Citations

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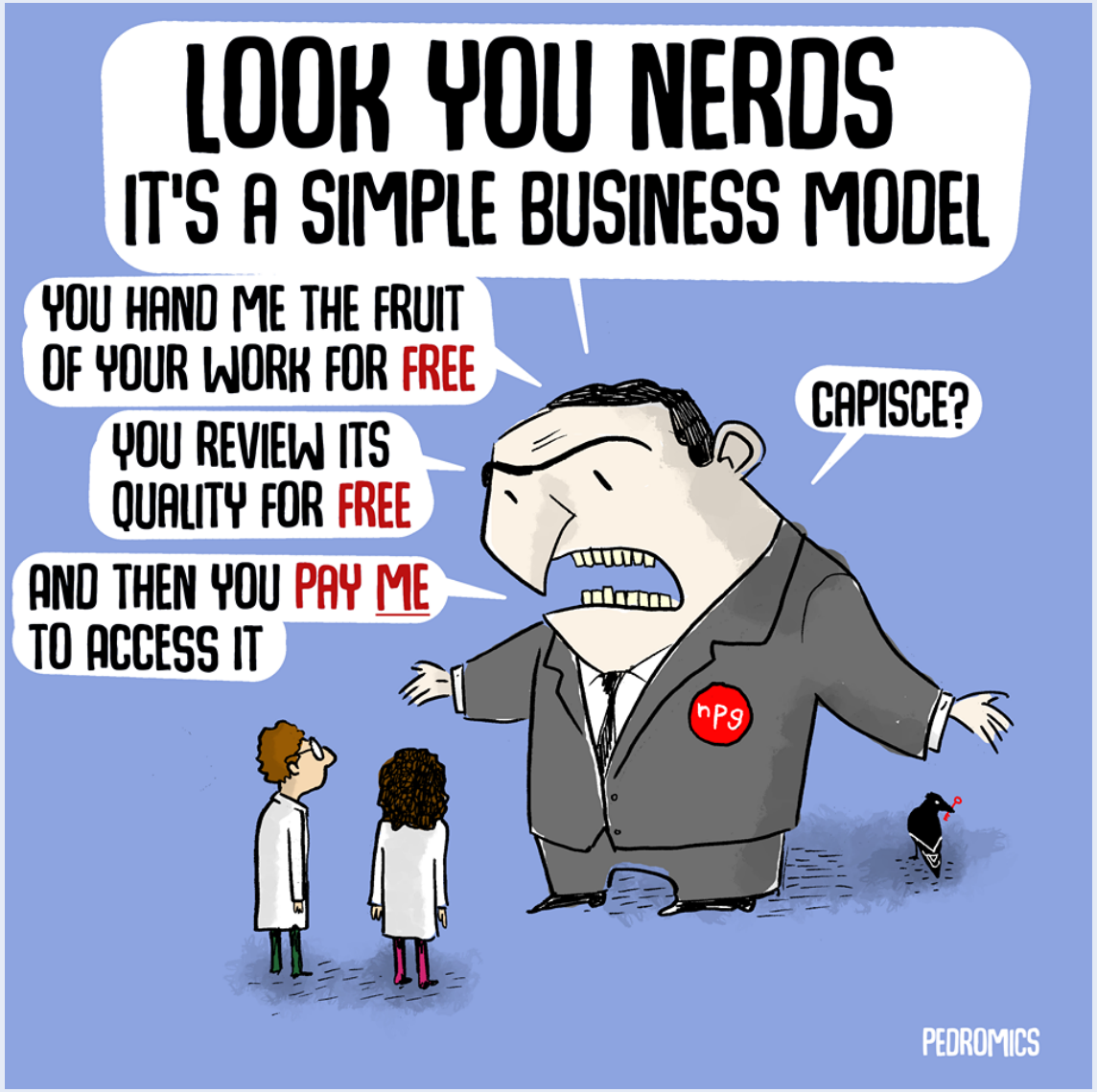
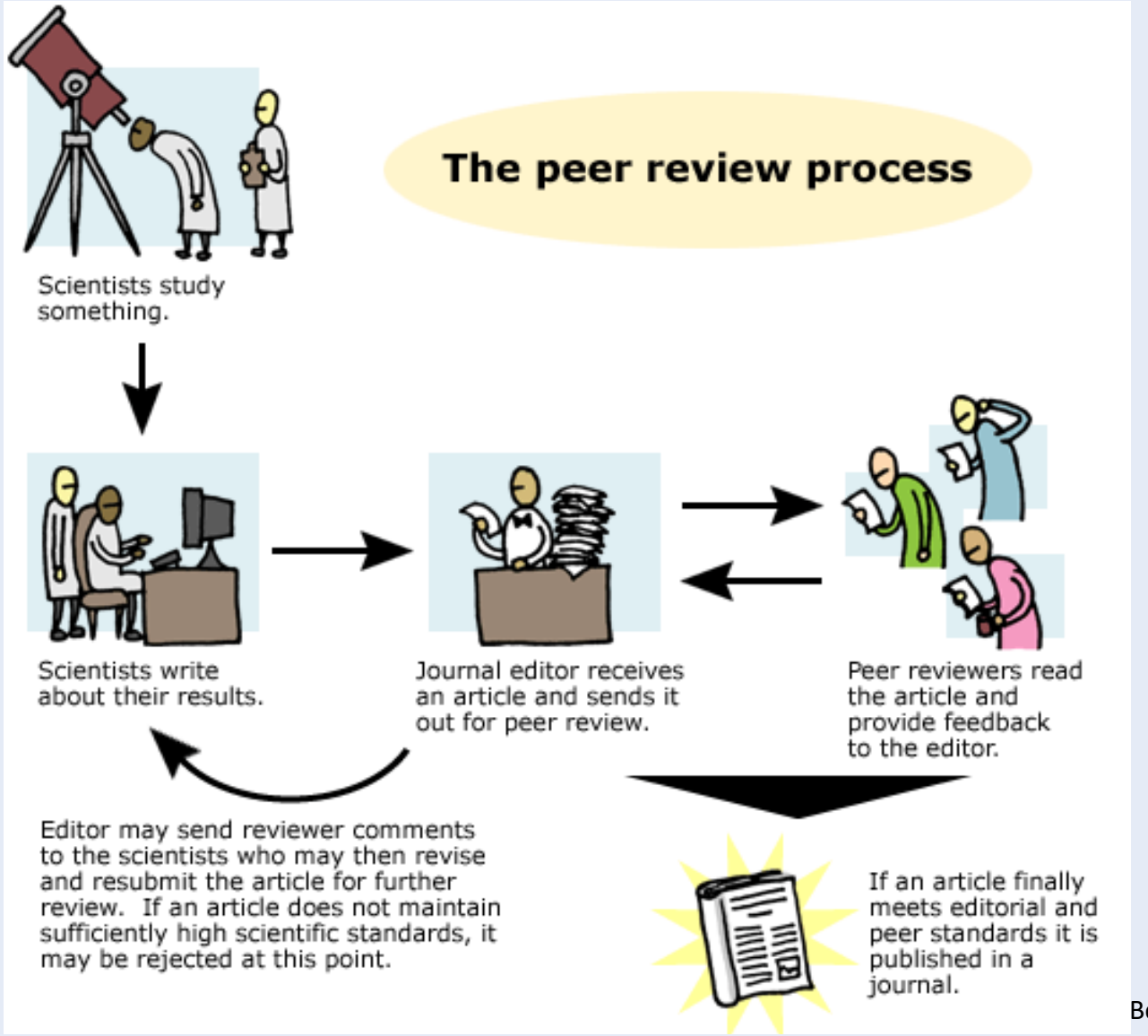
The one that rule them all – Journal article



The one that rule them all – Journal article



The one that rule them all – Journal article

- Structure

Abstract	Introduction	Material & Methods	Results	Discussion	References
Summary	- Set the scene - Justify the research question (RQ) - Give RQ + hypothesis	- What was done to answer the RQ	- What was found, objectively reported	- What the results mean - How they answer the RQ - How this fits into what we knew at the beginning - What went well, what went less well (and could mean the whole thing is pointless) - Implication + what should be done next	- All the other journal articles cited

The one that rule them all – Journal article

- Checklist
  - ❑ What was the research question? -> Introduction
  - ❑ Why does it matter? -> Introduction
  - ❑ What was done to answer the question? -> Methods
  - ❑ What was found? -> Results
  - ❑ What does it mean
    - ❑ For the research question? -> Discussion
    - ❑ For the field? -> Discussion
  - ❑ What was done well? -> Methods, Results, Discussion
  - ❑ What was not done well / could be improved ? -> Methods, Results, Discussion

The one that rule them all – Journal article

- Structure

Abstract	What you should do
- The teaser	Don’t read only the abstract

The one that rule them all – Journal article

- Structure

Introduction	What you should do
- Set the scene - Justify the research question (RQ) - Give RQ + hypothesis	- Identify the RQ - Check that the RQ makes sense based on what we know

The one that rule them all – Journal article

- Structure

Material & Methods	What you should do
- What was done to answer the RQ	- Was the method appropriate to answer the question? - Is this method clear enough to be repeated and reproduced? - Did they make sure they had all the necessary controls in place? - What are the factors that could affect the results?

The one that rule them all – Journal article

- Structure

Results	What you should do
- What was found, objectively reported	This is the real deal. The real untouched results. - As much as possible try and understand how they answer the question without the opinion of the researcher

The one that rule them all – Journal article

- Structure

Discussion	What you should do
- What the results mean - How they answer the RQ - How this fits into what we knew at the beginning - What went well, what went less well (and could mean the whole thing is pointless) - Implication + what should be done next	- Do they reach the same conclusion as you with the results? - Do they acknowledge all the mistakes they've made? - Identify the next step.

The one that rule them all – Journal article

- Structure

References	What you should do
- All the other journal articles cited	If Paper A cites a Paper B that seems intriguing, don't just trust what Paper A says Paper B found, go and look at Paper B yourself.

The one that rule them all – Journal article

- Checklist
  - ❑ What was the research question? -> Introduction
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The one that rule them all – Journal article

- Judging the quality of a study

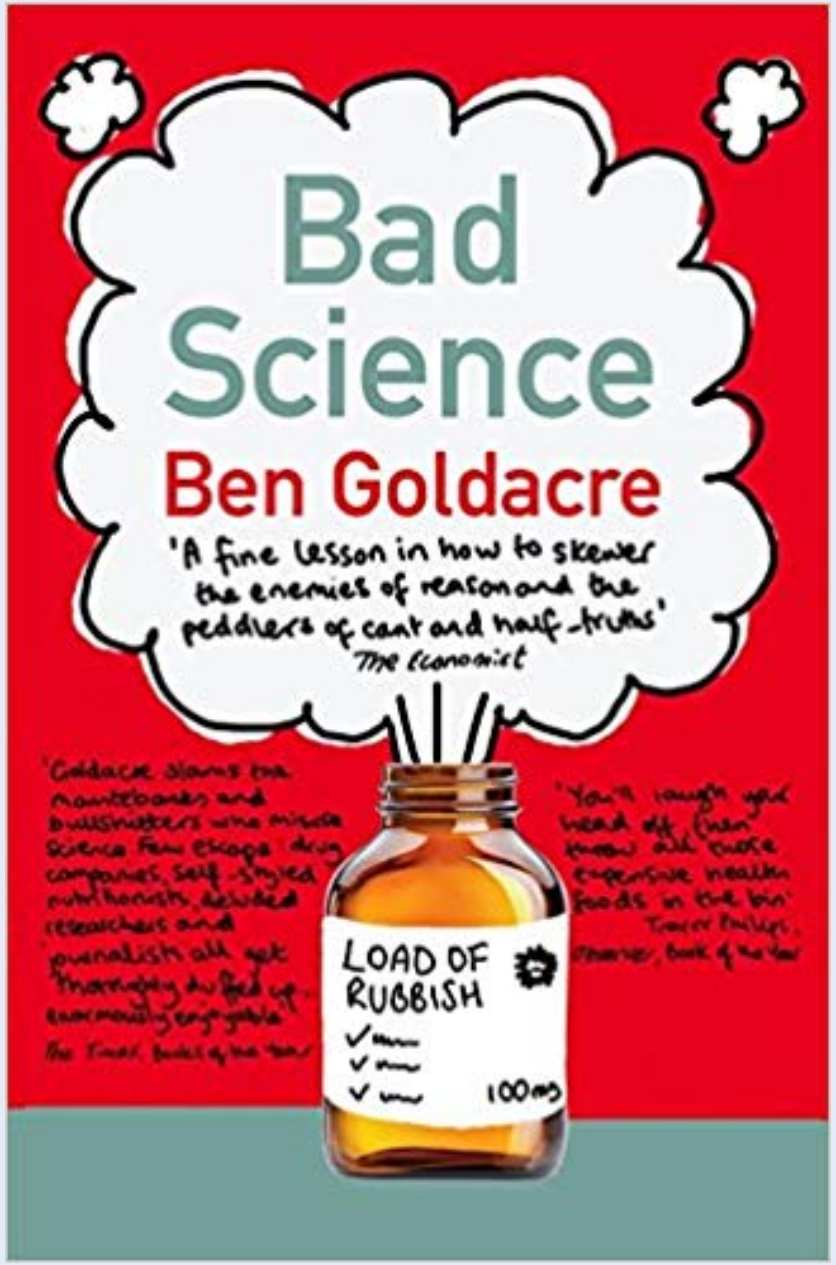
-> Good method -> reliable findings -> strong foundation for future research / policies / practices

-> Poor method -> weak findings -> … -> disaster (Wakefield)

What was not done well / could be improved ?		
Methods	Results	Discussion
- Task does not fit the question - No controls	- Statistics does not fit the task / question - P-hacking	- Results over-interpreted - Hides own limitations - Hides conflict of interest - Oddly validating results

Want more?

- Bad Science – Ben Goldacre
- John Oliver's Scientific Studies



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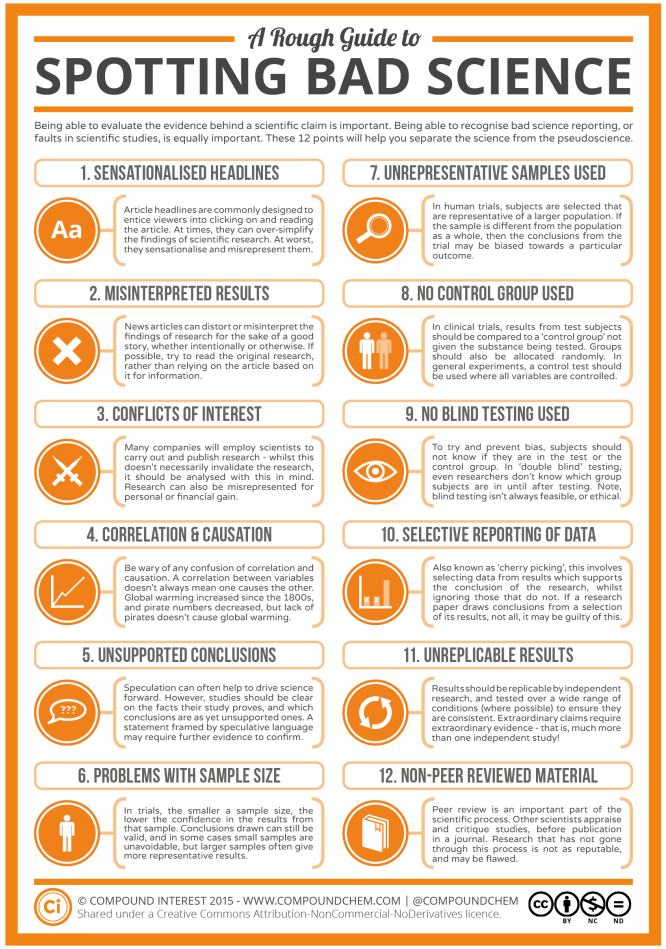
Hands on!

- Activity time

1. Read the paper (focus on Study 1)
2. Create a tweet
3. Vote for the best tweet
4. Discuss the tweets



Paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2778755/?version=meter+at+null&module=meter-Links&pgtype=Blogs&contentId=&mediaId=&referrer=&priority=true&action=click&contentCollection=meter-links-click

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Hands on!

- Discussion

Thoughts?
Questions?

Extra resources

- https://www.elsevier.com/connect/infographic-how-to-read-a-scientific-paper
- https://www.youtube.com/watch?v=AsD9Lp-q45Y
- https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0085355

The end

Thank you!

I hope you had a nice time!