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June 2022

# Fact-Checking in Science & Medical Journalism

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# Fact-checking is essential for trustworthiness



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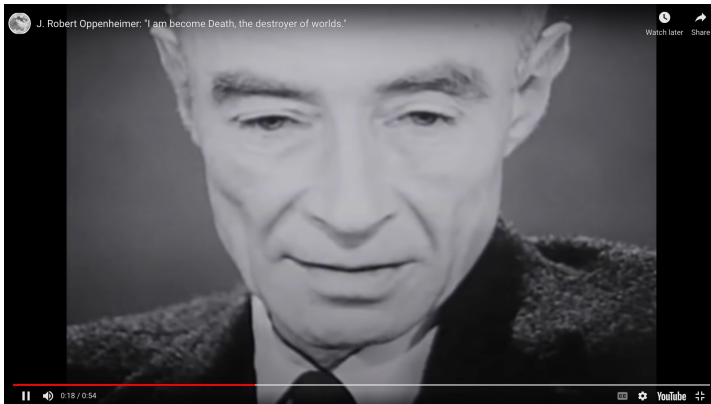
- History
- Fact-checking 101
- Fact-checking process in science journalism
- Fact-checking checklist
- Expert tips from science journalists and writers
- Fact-checking in medical journalism
- Group exercise

# The curious case of Robert Oppenheimer's quote



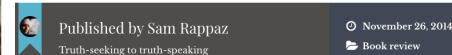
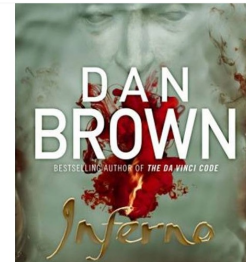
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” “Okay... I guess that beats ‘I am Vishnu, destroyer of worlds.’”  
The young woman had just quoted Robert Oppenheimer at the moment he tested the first atomic bomb.  
– Inferno by Dan Brown<sup>1</sup>



” And now I am become Death,  
the destroyer of worlds<sup>2</sup>

Dan Brown's Inferno must burn



1. Brown D. Chapter 10. In: Inferno. 2013.

2. Video available from: <https://youtu.be/lb13ynu3lac>. Accessed June 2022

3. Rappaz S. Dan Brown's Inferno must burn. Available from: <https://tokillamimingbird.wordpress.com/2014/11/26/dan-browns-inferno-must-burn/>. Accessed June 2022



# Fact-checking is a 20<sup>th</sup> century invention



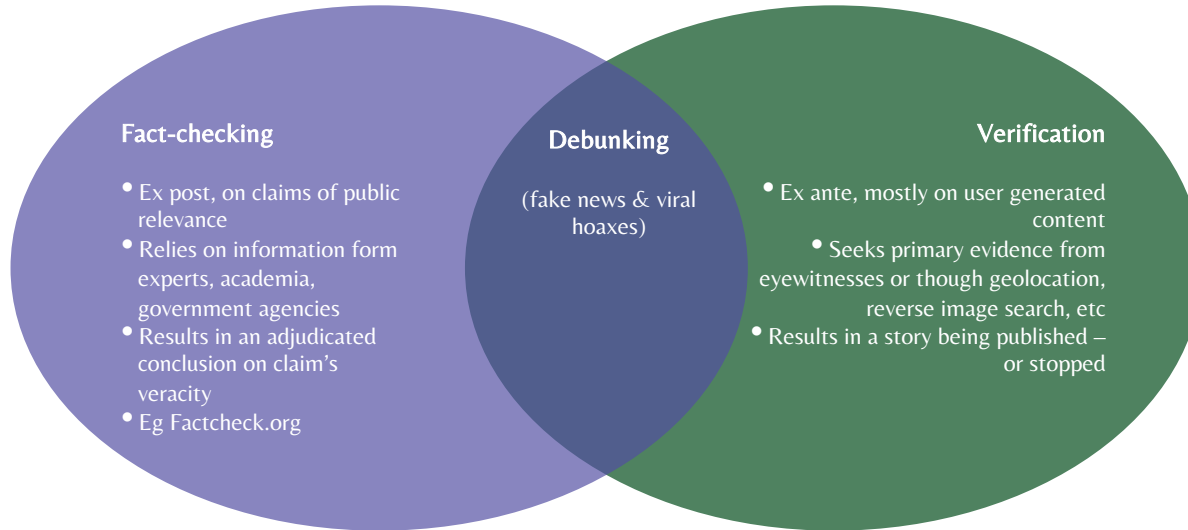
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- Early newspaper printers were more interested in opinions
- Advent of wire services changed how stories were reported
- Retroactive efforts to catch fakery and printing mistakes came into effect
- 1923 – Briton Hadden and Henry Luce, at **Time**, set up the first “fact-checking department”
- Fact-checking was initially considered a woman’s job
- Fact-checkers were pitted against writers
- Fact-checking has its critics but we love facts
- Fact-checking gives a sense of legitimacy and seriousness

# Fact-checking in the 21<sup>st</sup> century: Political fact-checking



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- Fact-checking after a claim/content is in the public domain
- PolitiFact: 2009 Pulitzer Prize for national reporting



# KSJ Fact-Checking Project



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- Knight Science Journalism @ MIT
- The KSJ Fact-Checking Project launched in 2019



Our mission: To provide free fact-checking resources for journalists around the world. We've designed our materials especially for fact-checkers, journalists, newsrooms, and journalism professors.



# Editorial fact-checking: An invisible task with important implications



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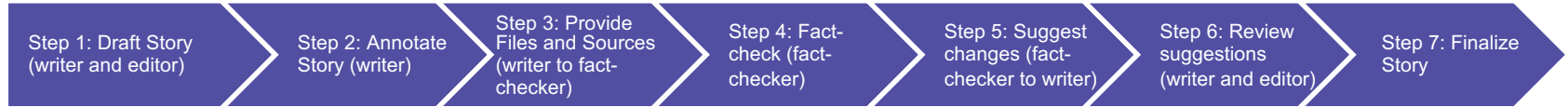
- Definition: “Editorial fact-checking is a process that takes place at a media outlet before a story publishes”
- Who?  
Ideally, a person employed by a media outlet who is **not part of the initial reporting and writing process**
  - Journalist and assigning editor should NOT be the fact-checkers
  - Copyeditors (checking details) and line editors (checking sense) may have some fact-checking roles
- Where?
  - Magazines (longer deadlines), long-form podcasts, documentaries
  - Newspapers and online publications: Editors expect reporters to fact-check
  - Rarely in books



# Fact-checking process in a magazine model



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- Process is familiar to med comms professionals
- Newspaper and hybrid models: Writers, editors, and copyeditors share responsibility
- Advice to all writers: Have a rigorous reporting and writing process

Speaker's writing and fact-checking experience

The fact-checking process. Fact-checking science journalism: How to make sure your stories are true. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/the-fact-checking-process/>. Accessed June 2022





# Consistent and clear processes for efficient fact-checking



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- Create a workflow and SOP for annotation/referencing – include clear stages and responsibilities for editing, fact-checking, and copy editing
- Strictly enforce the processes
- Make sure there is **strong evidence** for big claims:
  - “Scientists say...” (Generalization)
  - “X is linked to Y”, although majority of relevant studies state X is linked to Z (Breakthrough and contrary outcome)
  - “CRO prematurely broke the blinding” (Litigation)
  - “Fix-it-all diet leads to massive weight loss and is safe” (Harm)
- Checklist for writers



# Checking for accuracy and precision



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- What?  
Everything

” Good fact-checkers never assume they know a fact [...] If you rely on memory, rather than actual sources, you can easily overlook errors.<sup>1</sup>

- Ages (has the person had a recent birthday?).
- Titles, job descriptions, affiliations.
- Quotes.

- Even the thing you just checked last week.
- Even things you think you know are true.
- *Especially* things you think you know are true.
- Even if it isn't on this list.

- Quotes from movies, history, etc.
- World record claims: First, biggest, etc.
- Anecdotes and famous quotes widely assumed to be true.

” ...suggest accurate edits that are true to the writer's voice.

– Brad Scriber

Deputy research director

National Geographic<sup>2</sup>

- Even if it isn't on this list.

1. Fact-Checking 101. What to fact-check. Available from: <https://ksjfactcheck.org/fact-checking-101-module/what-to-fact-check/>.

2. The fact-checking process. Fact-checking science journalism: How to make sure your stories are true. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/the-fact-checking-process/>. Both accessed June 2022.



# Checking for impressions



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- What?

## Gray areas:<sup>1,2</sup>

- Author's conclusions or extrapolations
- Opinions
- Conflicting versions as told by eyewitnesses
- Quotes
- Images
- Lede
- Headlines and coverlines



Fact-checking is more than checking facts: It's also about checking assumptions. [...] the hardest part is identifying and interrogating the implicit ideas that tie a story together.

– Katie Palmer

Science and health editor

Quartz<sup>3</sup>

1. Fact-Checking 101. What to fact-check. Available from: <https://ksfactcheck.org/fact-checking-101-module/what-to-fact-check/>.
















2. Fact-Checking 101. When and how to fact-check. Available from: <https://ksfactcheck.org/fact-checking-101-module/when-and-how-to-fact-check/>.

3. Introduction. Fact-checking science journalism: How to make sure your stories are true. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/>. All accessed June 2022

# Ten criteria for trustworthy health article<sup>1</sup>



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-  Phase of research  
Availability of treatment/test/product/procedure 
-  Cost: Estimate, comparison, insurance coverage
-  Disease mongering: Overselling a condition, creating fear, presenting only "worst-case" scenarios
-  Quality of the evidence: Strength, limitations, generalizability, causation, clinical significance, peer review 
-  Adverse effects: Communicating safety accurately
-  True novelty: Be careful about off-label use
-  Framing of benefits: Quantify, absolute risk, Number-Needed-to Treat 
-  Relying solely on news release 
-  Conflict of interest and independent source 
-  Alternative treatment/test/product/procedure

1. Schwitzer G. Criteria for judging your story. In: Covering Medical Research: A Guide for Reporting on Studies. 2010. p.51-55.

2. Mantzarlis A. 5 tips for fact-checking claims about health. 2016. Available from: <https://www.poynter.org/fact-checking/2016/5-tips-for-fact-checking-claims-about-health/>. Accessed June 2022



# Checklist for the details



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- Spellings of names and places
- Titles and affiliations
- Ages (be sure to check if a source will have a birthday before publication)
- Gender and preferred pronouns
- Dates
- Basic numbers and statistics
- Geographical locations
- Common typos (using spellcheck is not enough)
- Any other quick fact

Speaker's fact-checking experience

The fact-checking process. Fact-checking science journalism: How to make sure your stories are true. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/the-fact-checking-process/>. Accessed June 2022



# Checklist for impressions<sup>1,2</sup>



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- Make sure the facts are used fairly
- Do the details add up to a story that is true?
- Are there errors of omission?
- Does the narrative obscure or confuse the facts?
- Are the word choices accurate and apt, or do they smear or misrepresent the source or subject?

## For science reporting:<sup>2</sup>

- Is there false equivalence?
- Are there any big claims?
- Are claims based only on a single source?

1. Fact-Checking 101. What to fact-check. Available from: <https://ksjfactcheck.org/fact-checking-101-module/what-to-fact-check/>.

2. Borel B. Setting up a fact-checking system. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/setting-up-a-fact-checking-system/>. Both accessed June 2022



# Fact-checking on a budget



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- Employ a hybrid model
- Prioritize potential liabilities
- Create a reporting checklist
- Factor in “cooling off period”
- Ensure multiple people read story
- Track errors and corrections



# Expert tips to speed up fact-checking - part 1



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- **Save webpages as PDFs**; use these PDFs as source and annotate these PDFs  
– Roxanne Khamsi, freelance science journalist<sup>1</sup>
- **Use colour coding to mark up text** as writing to differentiate confirmed and unconfirmed information  
– George Johnson, science journalist and author<sup>2</sup>
- **When it comes to quotes, do not share drafts with sources**, as they may alter them for tone and emphasis  
– Yudhijit Bhattacharjee, staff writer, Science<sup>2</sup>
- **Don't use Wikipedia** when reporting a scientific discovery  
– Zach Zorich, freelance science journalist, former fact-checker for Discover Magazine<sup>3</sup>
- **Send everything to the fact-checker**  
– David Lande, senior researcher and fact-checker, National Geographic<sup>3</sup>

1. The fact-checking process. Fact-checking science journalism: How to make sure your stories are true. In: KSJ Science Editing Handbook. Available from: <https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/the-fact-checking-process/>.

2. TON Editors. Ask TON: How to fact-check. Available from: <https://www.theopennotebook.com/2012/10/09/ask-ton-how-to-fact-check/>.

3. Pringle H. Surviving the grind of fact-checking. Available from <https://www.theopennotebook.com/2014/11/25/surviving-fact-checking/>. All accessed June 2022

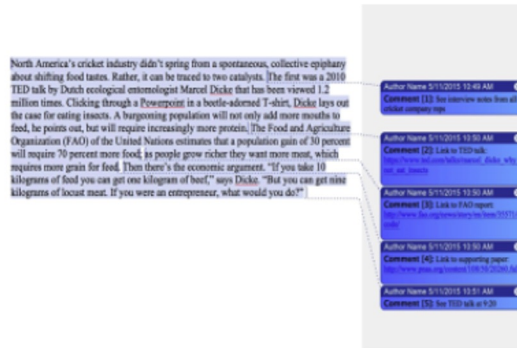


# Expert tips to speed up fact-checking - part 2



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- Mark up documents with source comments or footnotes
  - Brooke BorelArticles editor at Undark and author of “The Chicago Guide to Fact-Checking”  
Project lead, KSJ Fact-Checking Project



North America's cricket industry didn't spring from a spontaneous, collective epiphany about shifting food tastes. Rather, it can be traced to two catalysts.<sup>1</sup> The first was a 2010 TED talk by Dutch ecological entomologist Marcel Dicke that has been viewed 1.2 million times. Clicking through a Powerpoint in a beetle-adorned T-shirt, Dicke lays out the case for eating insects. A burgeoning population will not only add more mouths to feed, he points out, but will require increasingly more protein.<sup>2</sup> The Food and Agriculture Organization (FAO) of the United Nations estimates that a population gain of 30 percent will require 70 percent more food;<sup>3</sup> as people grow richer they want more meat, which requires more grain for feed.<sup>4</sup> Then there's the economic argument. "If you take 10 kilograms of feed you can get one kilogram of beef," says Dicke. "But you can get nine kilograms of locust meat. If you were an entrepreneur, what would you do?"<sup>5</sup>

<sup>1</sup> See interview notes from all cricket company reps

<sup>2</sup> Link to TED talk:  
[https://www.ted.com/talks/marcel\\_dicke\\_why\\_not\\_eat\\_insects](https://www.ted.com/talks/marcel_dicke_why_not_eat_insects)

<sup>3</sup> Link to FAO report:  
<http://www.fao.org/news/story/en/item/35571/icode/>

<sup>4</sup> Link to supporting paper:  
<http://www.pnas.org/content/108/50/20260.full>

<sup>5</sup> See TED talk at 9:20

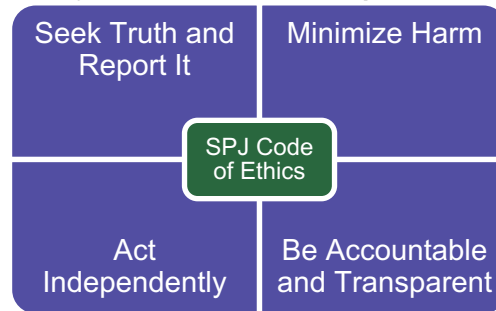


# Medical journalism is a part of medical writing



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- Medical journalists communicate research, medical news, and scientific breakthroughs to the public<sup>1</sup>
- Medical journalists write for newspapers, consumer publications (eg Modern Healthcare, Psychology Today), radio and television, websites<sup>1</sup>
- Medical journalism deliverables: Press releases, blogs, congress reports, social media posts (eg tweetorials)
- Can medical writers be called journalists if they write for a non-specialist audience?
- Society of Professional Journalists' (SPJ) Code of Ethics<sup>2</sup>



1. American Medical Writers Association. 3 tips for success in medical journalism. Available from: [https://blog.amwa.org/3-tips-for-success-in-medical-journalism?utm\\_campaign=Inbound%20Marketing&utm\\_content=201630996&utm\\_medium=social&utm\\_source=linkedin&hss\\_channel=lcp-659269](https://blog.amwa.org/3-tips-for-success-in-medical-journalism?utm_campaign=Inbound%20Marketing&utm_content=201630996&utm_medium=social&utm_source=linkedin&hss_channel=lcp-659269)

2. Society of Professional Journalists. SPJ Code of Ethics. Revised 2014. Available from: <https://www.spj.org/ethicscode.asp>. Both accessed June 2022



# Fact-checking in medical writing



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- Ensure each claim is properly referenced
  - What is a claim?<sup>1</sup>
    - Is the statement rooted in a fact that is verifiable?
    - Is the statement leaving a particular impression that may be misleading?
    - Is the statement likely to be passed on and repeated by others?
    - Would a person hear or read the statement and wonder: Is that true?
- Types of references: Peer-reviewed journal article, a professional medical textbook, information from a reputable website, article from a government agency<sup>2</sup>
- Claims that **cannot** be supported: “Drug X is the best in the market”<sup>2</sup>
- Advice to writers: **Always** use annotated citations

1. Adair B. Principles of PolitiFact and the Truth-O-Meter. Available from: <https://www.politifact.com/article/2011/feb/21/principles-truth-o-meter/>.

2. Pierre-Jean K. Fact-checking medical texts. Available from: <https://aceseditors.org/news/2021/fact-checking-medical-texts>. Both accessed June 2022



# Annotated citations - part 1



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- Include the following:<sup>1</sup>
  - Author name(s)
  - Title name
  - Journal or book with year
  - Site name and URL if needed
  - Page number(s) (use page numbers as noted in the PDF)
  - Section number(s)
  - Paragraph number(s)
  - Line number(s) or sentence number(s)
  - Table or Figure number(s)

Example: [Krammer\_Nature\_2020/p6/col1/para2/sent1]



# Annotated citations - part 2



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- Text document: MS Word Comments or as endnotes (while drafting outlines)
- Slide deck:  
Include the full reference + annotated citation in the slide notes or PPT comments
  1. [Krammer F. SARS-CoV-2 vaccines in development. Nature. 2020;586\(7830\):516-527. p6/col1/para2/sent1](#)
- File organization: Include keywords in the PDF name



# Aligning press releases with the evidence



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- Press releases of novel findings are a really important stage for ensuring accurate fact-checking, as these usually go on to inform science and health news content
- In one study, journalistic ‘spin’ was identified in nearly 50% of press releases<sup>1</sup>, meaning the subsequent misrepresentation in the news started with the press releases!
- Fact-checking press releases and aligning them with the evidence results in improved quality and better aligned news claims and headlines<sup>2</sup>

1. Yavchitz A et al. PLoS Med. 2012;9:e1001308.

2. Adams RC et al. BMC Med. 2019;17:91.



# Fact-checking a press release

(Group exercise)



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We should be able to verify the following:

- Basic numbers and statistics
- ?



# Fact-checking a press release

(Group exercise)



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- Basic numbers and statistics
- Study identifiers
- Spelling
- Quotes
- Impression
- Omissions
- Strength of evidence and limitations
- Peer review
- References