The background of the slide features a blurred image of a document. A silver pen is positioned horizontally across the middle. Below the pen, there is a checklist with several square boxes, some of which contain checkmarks. Faint dotted lines and the word 'CHECK' are visible in the background.

Writing a Better Manuscript: Tips for Publication Success

Peter Marbais, PhD, ELS
Quality Control Editor III, AJE

About American Journal Experts (AJE)

- Founded in 2004



About American Journal Experts (AJE)

- AJE has supported **over 500,000 manuscripts** across almost **450 research fields**

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The goal: publish quickly

- Publication – still the primary goal of researchers in an academic setting



Outline

- Tips for Publication Success
- Creating figures for scientific publications
- Conventions of scholarly publishing
- Five common errors



Tips for Publication Success: The Sections of a Manuscript

Manuscript sections

1. Introduction
2. Materials and methods
3. Results
4. Discussion and conclusions
5. Title and abstract
6. References

Introduction

- **Assume no one has read your abstract**
- Provide a background of the topic and current understanding
- Define acronyms (PCR, DNA)
- Include references
 - Most relevant (< 5 years old)
 - Primary literature
 - Balanced

General



Specific

Introduction

- Explain the **problems** your research addresses in the context of **recent advances** in the area.
- Define the **study objective** and briefly describe the **experimental design**.



Materials and methods

- **Common cause of rejection - lack of detail***
- Important questions
 - Have I explained my methods sufficiently so they can be reproduced?
 - Do I cite all previously described methods?
 - Do I have too much text?
 - Do I have the appropriate controls?
 - Did my choice of methods introduce any bias into the results?
 - Have I chosen the correct techniques to address my research question and used the correct statistical analyses?

*See Provenzale, 2007

Materials and methods

- Watch for journal requirements
 - Animal studies (ARRIVE guidelines, IACUC approval)
 - Human subjects (CONSORT guidelines, IRB approval)
 - Source of reagents
- **Do the results of the methods I chose answer my hypothesis?**

Results (may be combined with the discussion)

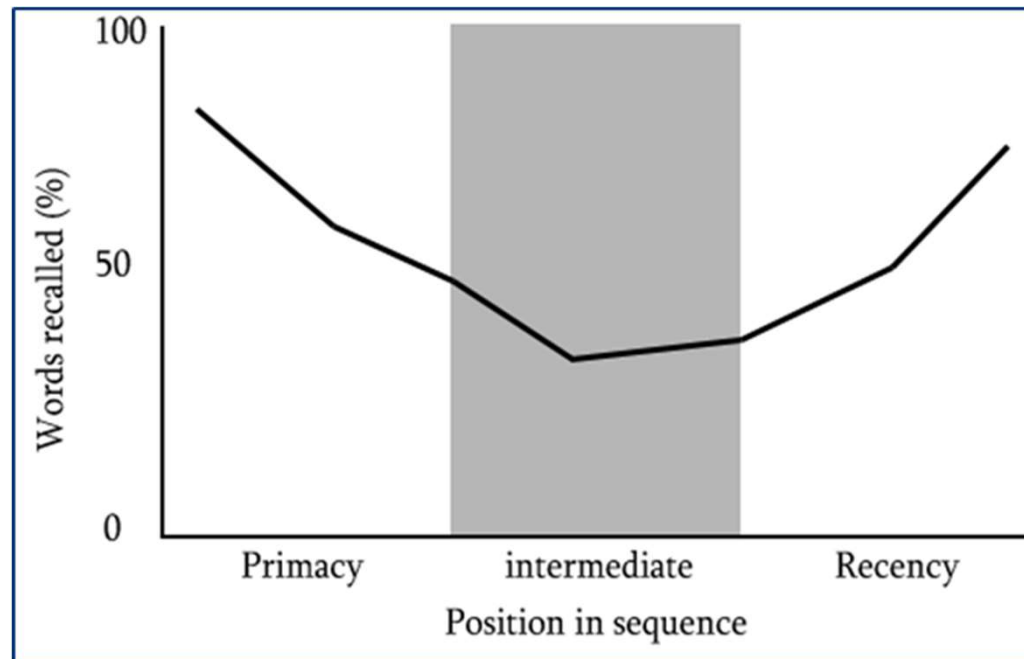
- The results should relate to the study objective
- Tie experiments together
 - “Having shown that salamanders prefer cool water over warm water, we next determined whether water was preferred to other liquids.”
- Highlight important data, especially novel findings, but include anything relevant
 - Present p-values
 - Trim data that do not fit your objectives
- Follow the most logical order (*not necessarily chronological*)

Discussion and conclusions

- Often the most challenging section to write
 - Connects your research to the field
 - Explains reasons behind the results
 - Includes any limitations
 - Offers insight into future research avenues
-
- Summarizes your take-away points

Discussion and conclusions

Readers remember what comes first and what comes last.



Serial position effect
(www.wikipedia.org)

www.aje.com

Discussion and conclusions

- Base your conclusions **only** on the data.
 - What do the results allow you to conclude?
 - **Assumptions** about what might be happening should be clearly presented as **speculation**.
- Remember that
 - If your experimental design does not answer your objective
 - If you generalize your results too far
 - If your conclusions are not supported by your data

...the journal editor will not consider the work publishable

Discussion and conclusions

- Address limitations
 - Balance with strengths
 - Do not dwell on limitations that are outside of your control
- Label the final paragraph “**Conclusions**”
 - Highlight major findings
 - Restate the study’s importance
 - Clarify the “takeaway message”

Title

- Capture reviewers' and readers' attention.
- Be concise.
- Answer the question, “What does this research contribute to the field?”
 - Reviewers will expect the paper's content to match the title.
- Be easy to search
 - how will readers search for your paper?
 - If no one can find it, no one will cite it.

Paiva, et al., 2012

www.aje.com

Title

- For many journals, the manuscript title does not need to be a complete sentence, and no verb is necessary:
 - Complications in warfarin use
- In cases where a complete sentence is appropriate, use the simple present tense to describe a conclusion that the manuscript supports:
 - Gene X is required for intestinal cell differentiation
 - Frameshift mutations in gene X cause abnormal notochord development in zebrafish

Title

- Include:
 - Key terms: Species names, geographical regions, method used
 - The most common name used for genes, methods, etc.
 - A descriptive answer
- Avoid:
 - Abbreviations
 - Filler terms: “Effect of,” “Comparison of,” “A Study of,” or “Observations on”
 - “Novel” / “First time”
 - A question

Abstract

- Your abstract may be all that some people read
 - Convince readers to read the entire paper
 - Make it easy to understand
- Determine what the journal requires
 - Unstructured abstract
 - Structured abstract (headings)
 - Plain-language summary

Abstract

- Watch the word count
 - Use strong verbs (**analyze** vs. *perform an analysis*).
 - Avoid filler phrases (“It is currently known that...” “We found that...”).
- Make sure that each piece of information is critical to the reader and relates to your main conclusions.

Abstract

- Include:
 - Importance of the research
 - Critical background
 - Clear hypothesis
 - Methods summary
 - Key results
 - Succinct conclusion
- Avoid:
 - Excessive abbreviation use
 - Citations
 - References to the text/figures
 - Statistics
 - Topics that your research does not address

References

- Important questions:
 - Do I cite all the studies that I need to?
 - Are all citations relevant to my study?
 - Are all citations as recent as possible?
- Reference formats change according to journal
 - Always keep the complete citation; you may need to reformat the references; e.g., “et al.” is not always acceptable.



Creating Figures for Scientific Publications

Outline

- Primary data figures
- Graphs
- Illustrative diagrams

Figure quality is a paper's suit and tie

- Before a journal reviewer or colleague even begins reading your paper, that person has formed an opinion about the quality of your work.
- Your figures reflect your overall effort in experimental design, technical execution, and attention to detail.
- “A picture is worth a thousand words.”

Figures

- Each figure should make a statement
 - Do not add too many (3 - 5 is often enough)
 - Do not reuse data or images
 - Reduce clutter or distractions
 - Make labels consistent and easy to read
 - Color is increasingly common, especially with online copies

Color is key

[Toxins \(Basel\)](#), 2010 Jun;2(6):1445-70. Epub 2010 Jun 14.

Heat-labile enterotoxin: beyond g(m1) binding.

[Mudrak B, Kuehn MJ.](#)

Department of Molecular Genetics and Microbiology, Duke University Medical Center, Durham, NC 27710, USA; Email: bm36@duke.edu.

Abstract

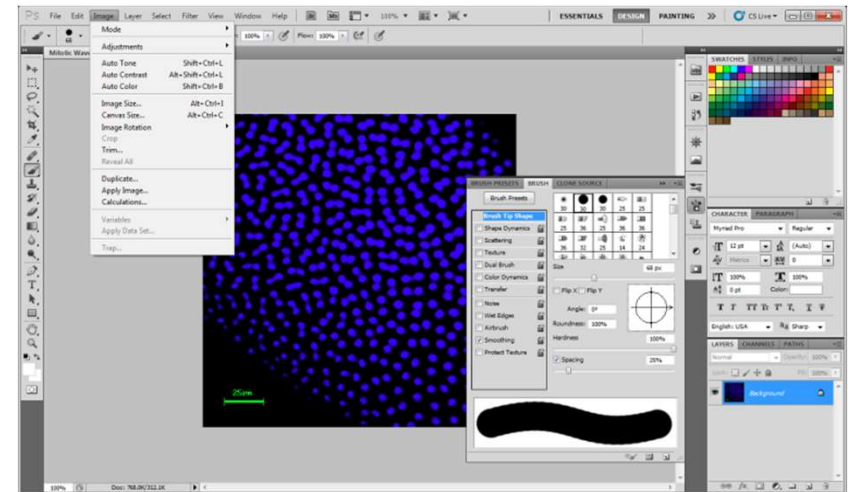
Enterotoxigenic *Escherichia coli* (ETEC) is a significant source of morbidity and mortality worldwide. One major virulence factor released by ETEC is the heat-labile enterotoxin LT, which is structurally and functionally similar to cholera toxin. LT consists of five B subunits carrying a single catalytically active A subunit. LTB binds the monosialoganglioside G(M1), the toxin's host receptor, but interactions with A-type blood sugars and *E. coli* lipopolysaccharide have also been identified within the past decade. Here, we review the regulation, assembly, and binding properties of the LT B-subunit pentamer and discuss the possible roles of its numerous molecular interactions.

PMID: 22069646 [PubMed] PMID: PMC3153253 [Free PMC Article](#)



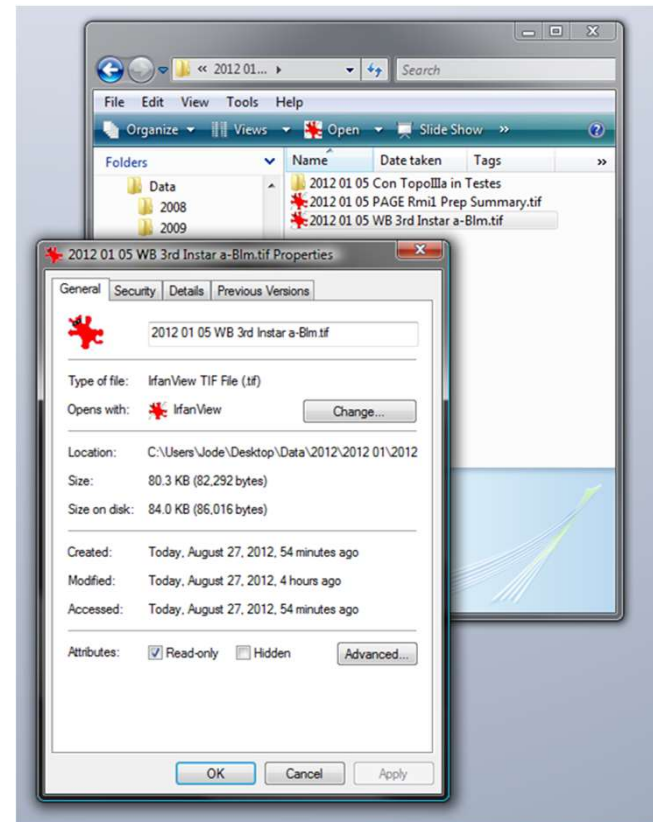
Primary data figures: Where to start

- High-quality figures start in the lab
- What story will your figures tell?
 - Plan the order of your experiments
 - Record data every day, every experiment
- Master your technique
 - Practice with the equipment
 - Get help from experienced colleagues
 - Learn which settings are best



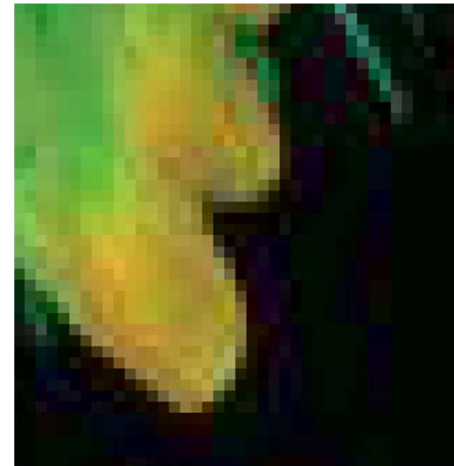
Primary data figures: Save your work

- Protect the original files
- Toggle the “Read-only” option on the data files



Pixel-based files

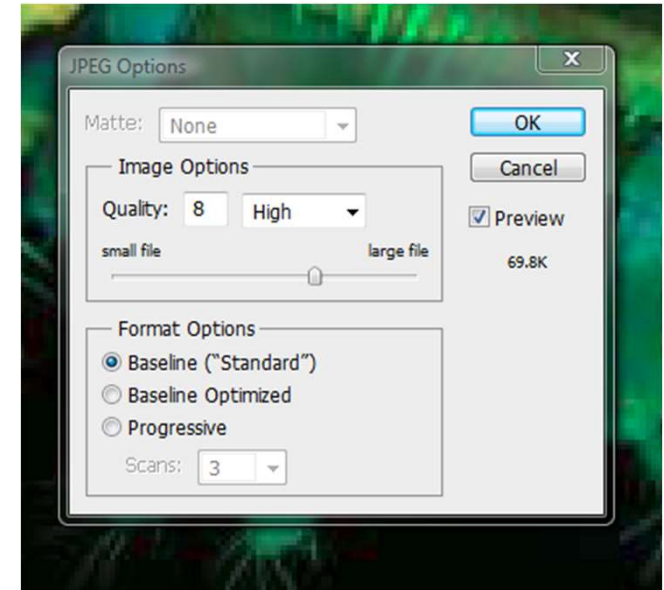
- Two sub-types of pixel-based files
 - Lossy (e.g., JPEG)
 - Lossless (TIFF images, preserve pixel number and color)



Dr. Jan Michels, Nikon Small World Competition

Lossy file formats

- JPG
 - The image is divided into tiles.
 - The number of colors in each tile is simplified.
 - How simplified depends on the “quality” setting chosen.
 - These protocols are re-applied every time the file is saved.
 - The image degrades with each save.



Compression in lossy file formats

- Compression
 - Leads to a greatly reduced file size
 - Even worse for drawings and graphs
 - Once applied, it cannot be reversed
 - Fine for everyday use, not for primary data

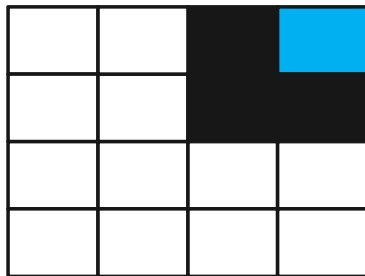
Lossless files

- Industry standard: TIFF
 - Color of each pixel is recorded
 - The color of each pixel will not change simply by saving
 - The price of fidelity: file size

LZW lossless file compression

- Efficient storage and no information loss
 - Replaces a pixel color with a short code throughout the whole image file

Image



Without LZW Compression

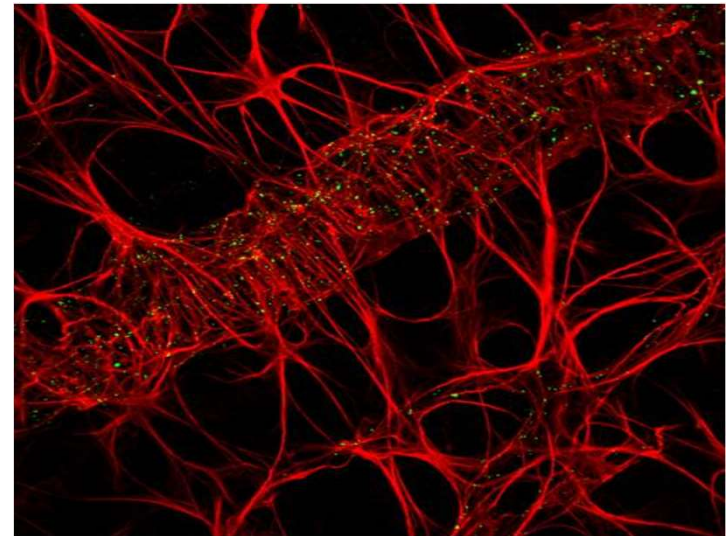
Pure White, Pure White, Pure Black, Medium Blue
Pure White, Pure White, Pure Black, Pure Black
Pure White, Pure White, Pure White, Pure White
Pure White, Pure White, Pure White, Pure White

**With LZW
Compression**

1, 1, 2, 3
1, 1, 2, 2
1, 1, 1, 1
1, 1, 1, 1

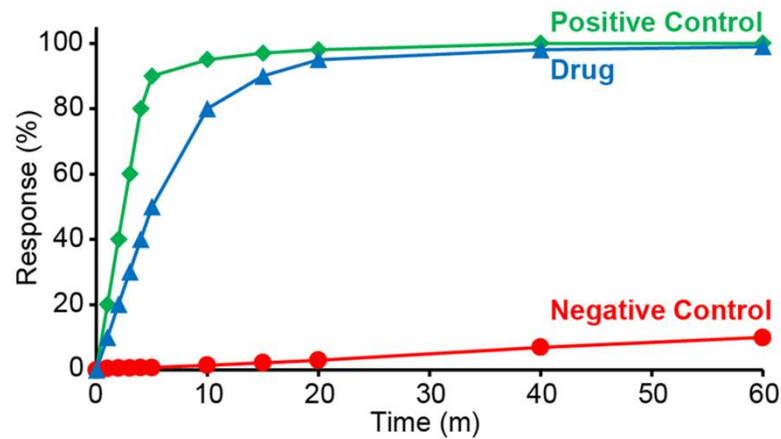
LZW lossless file compression

- Effective on images with a large number of colors
 - 82 mm wide, 300 dpi (typical journal requirements)
 - Uncompressed TIFF: 2,710 KB
 - LZW-compressed TIFF: 1,550 KB



Cameron Johnson, Nikon Small World Competition

LZW lossless file compression



- Very powerful on images with a limited number of colors
 - 82 mm wide, 1200 dpi (typical journal requirements)
 - Uncompressed TIFF: 25,200 KB (25.2 MB)
 - LZW-compressed TIFF: 256 KB
 - Jpeg (with a high quality setting): 586 KB

Figure size and scale

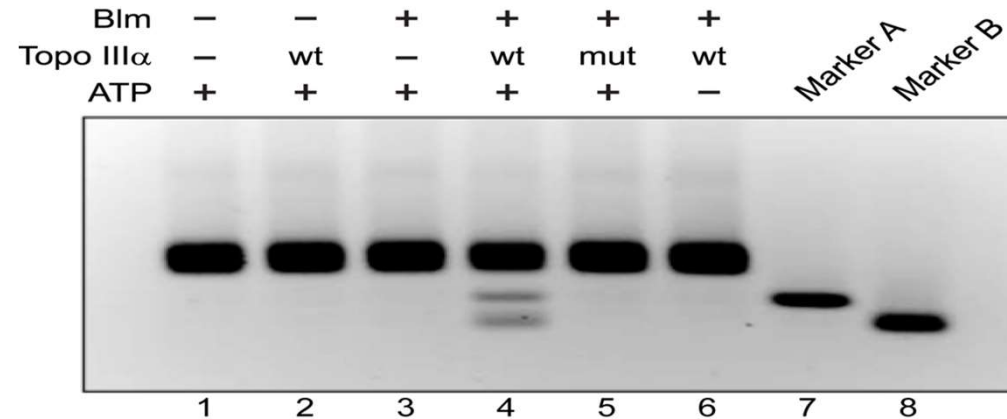
- Work at actual publication size
 - Journal guidelines
 - Print and measure your figures
- Keep a sense of scale
 - Figure panels should have the same dimensions
 - Figures on the same page should have the same dimensions

Figure text

- Use the correct size and type of font
 - Journal guidelines
 - General guidelines
 - 8 point Arial (with symbols)
 - Avoid bolding and italics
- The length of characters vary with Arial, Calibri, Helvetica, Myriad Pro, and Times New Roman

Labeling your primary data

- Be concise.
- Include enough detail to prevent the reader from having to continually reference the figure legend.



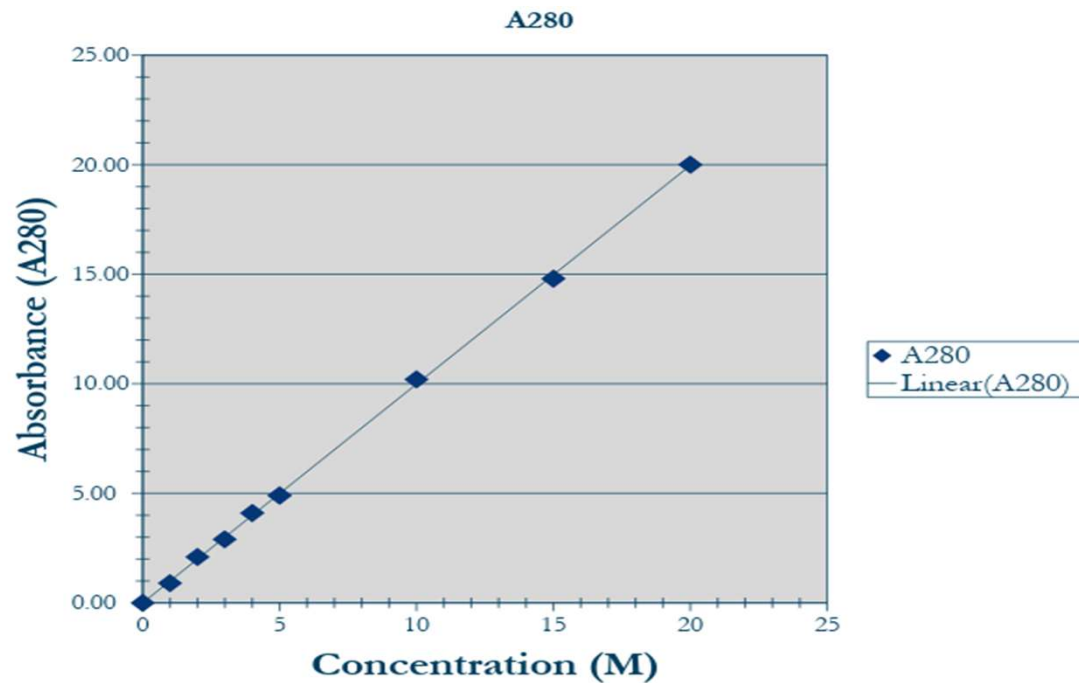
(Plank et al., 2006)

Crafting effective graphs

- Software programs such as Excel are excellent options for creating graphs.
- However, the default output of graphs from such programs often will not meet the guidelines of your target journal.
- These default graphs usually contain text that is too small and an unnecessary title and legend.
- They will likely have superfluous gridlines, tick marks, and labels.

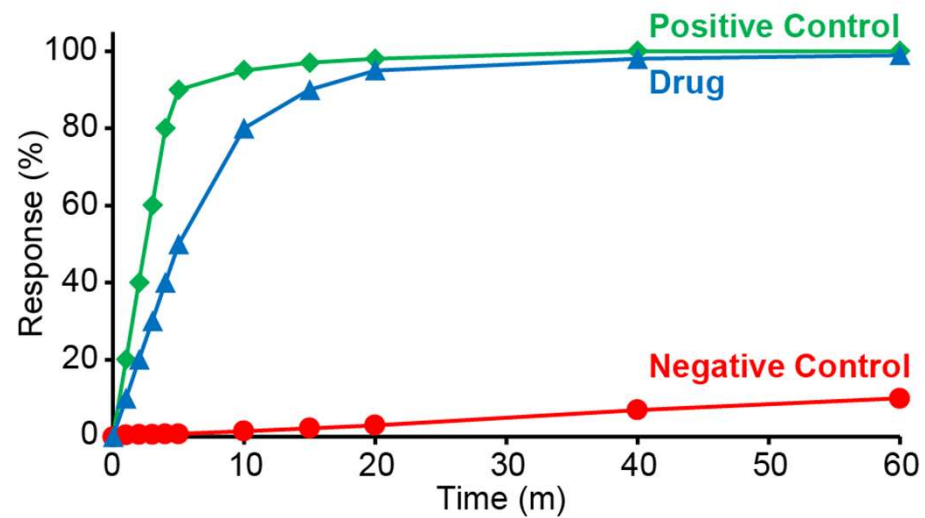
Crafting effective graphs

- Keep it uncluttered



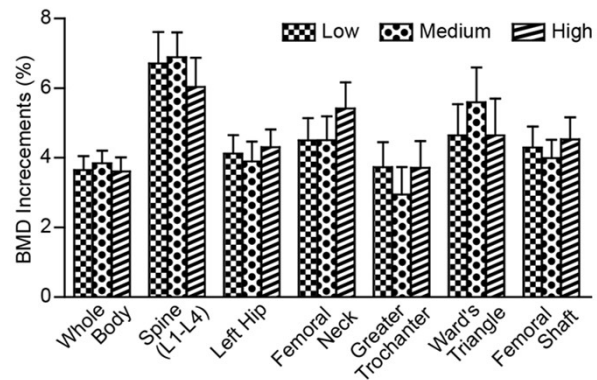
Crafting effective graphs

- Simplify captions and legends



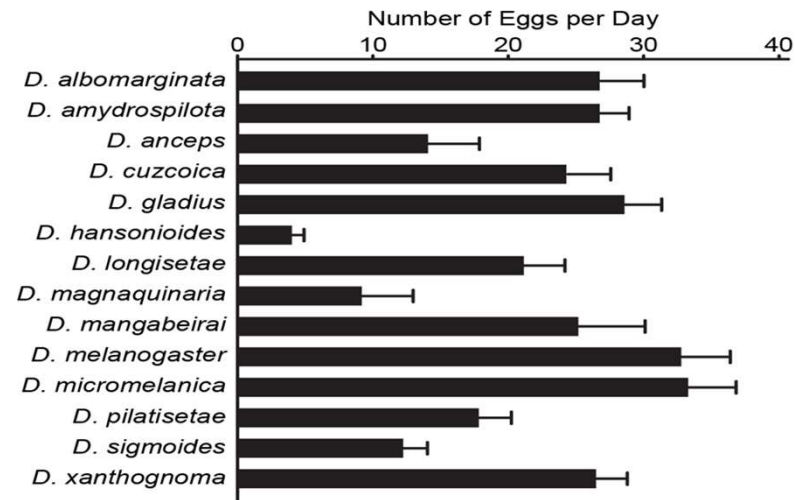
Crafting effective graphs

- Be careful with patterns



Crafting effective graphs

- Do not hesitate to try something new.
- Manipulate the axes to aid the viewer.

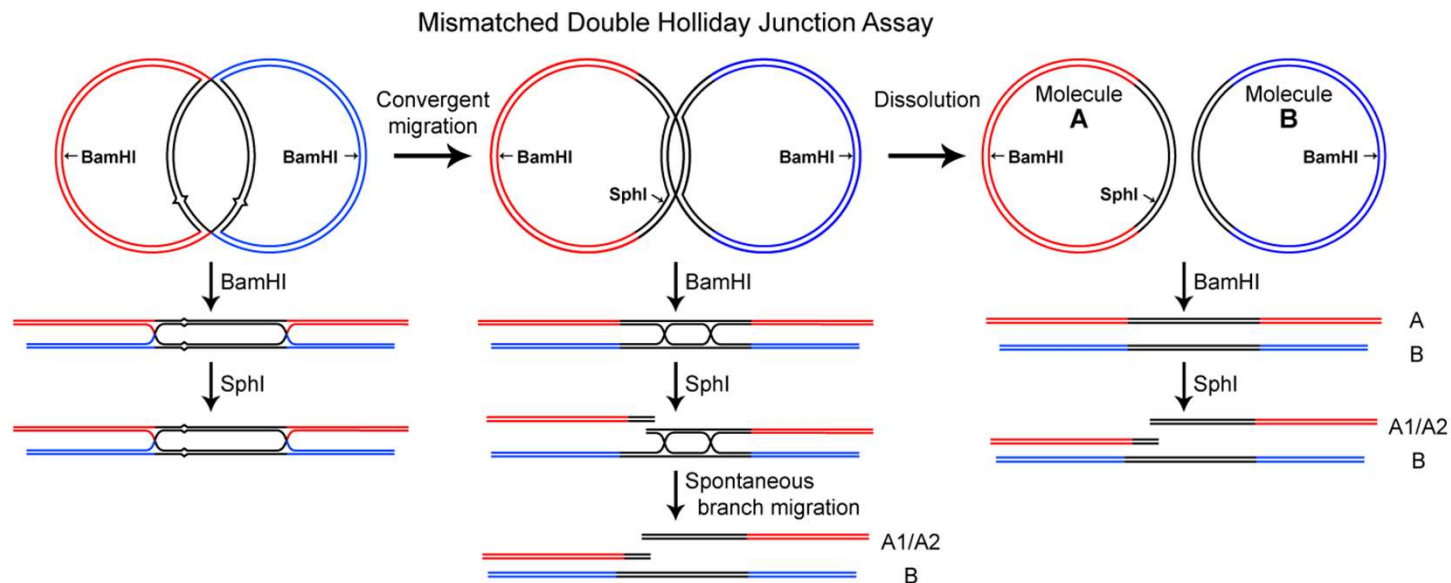


Moving graphs between programs

- Graphs are vector objects
- Copy and Paste often works
- Save (or Export) as a vector file
 - Postscript file (Eps)
 - Pdf file
- Pixel-based file = a picture of a graph

Illustrative diagrams

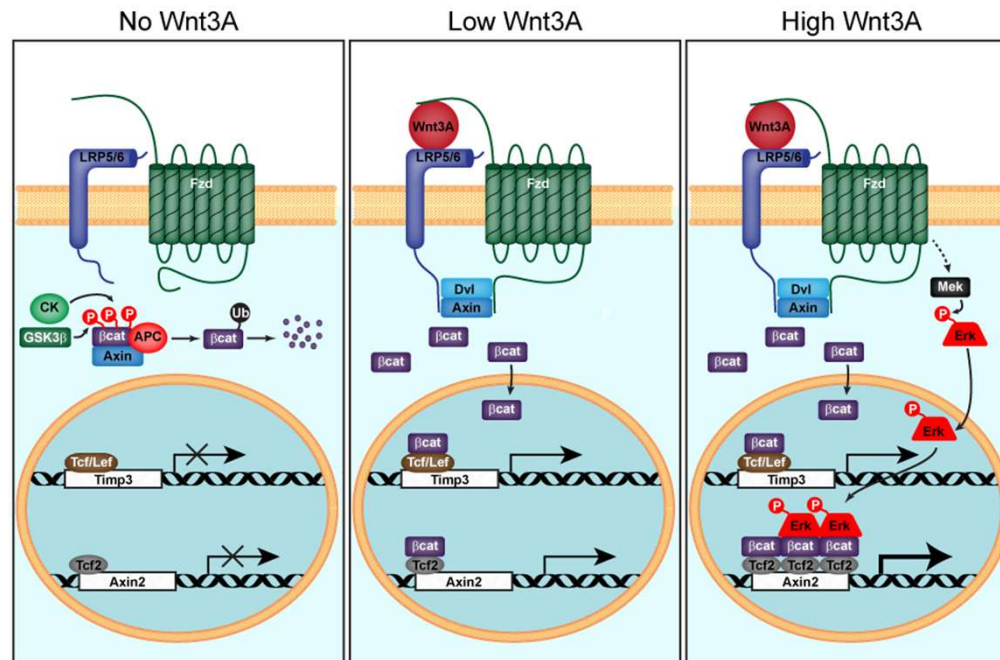
- Use diagrams to reduce reviewer (and general reader) confusion



(Cejka & Plank et al., 2004)

Illustrative diagrams

- Marketing for scientists



(Could be You et al., 2014)



Saving figures - types of formats

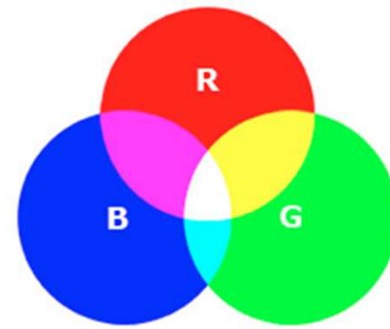
- Pixel-based
 - Industry standard: TIFF
 - Uneditable with a set resolution
 - General guidelines:
 - Photos: 300 dpi
 - Photos with lettering or line-art: 600 dpi
 - Line-art (graphs or diagrams): 1200 dpi
- Vector-based
 - Industry standard: Eps and pdf
 - Editable with “infinite resolution”

Saving figures from programs

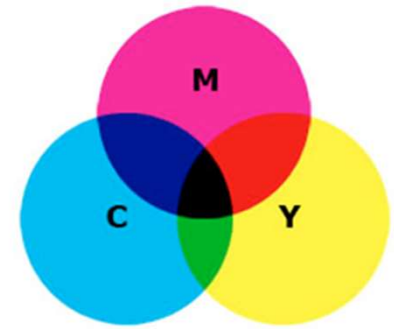
- Microsoft Office (PowerPoint)
 - Download extra add-ins from Microsoft
 - Common method:
 - Save as pdf
 - Convert pdf to proper file in Adobe Acrobat or Photoshop
- Adobe Illustrator (AI)
 - Save As (vector) or Export (pixel)
 - Open the AI file in Photoshop

CMYK vs. RGB color modes

- CMYK and RGB do not always display the same
- RGB is associated with electronic displays (CRT, LCD monitors, digital cameras)
 - Additive: Red, Green and Blue are used to create colors
- CMYK is used by printers
 - Combined: cyan, magenta, yellow and black are combined to create all colors when printing

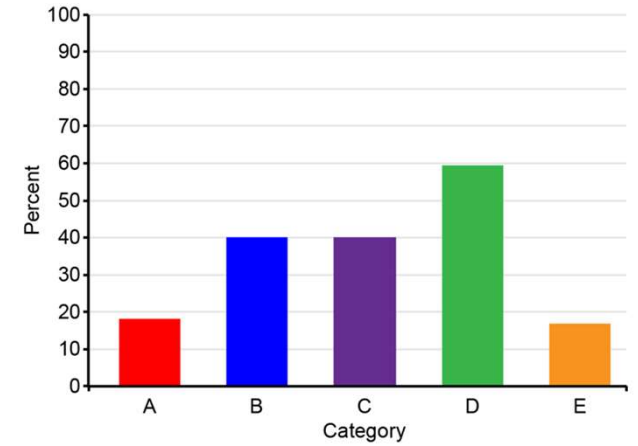
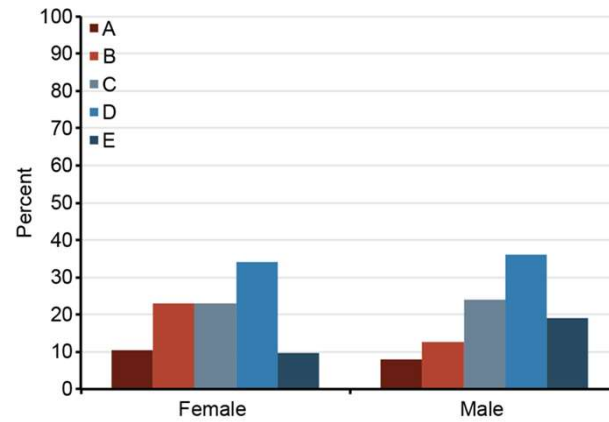
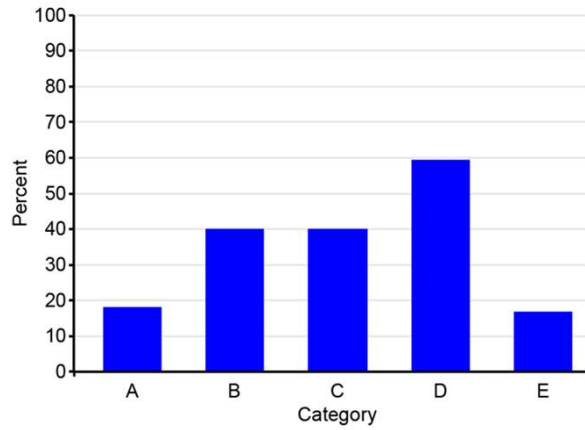


RGB - Additive Colors

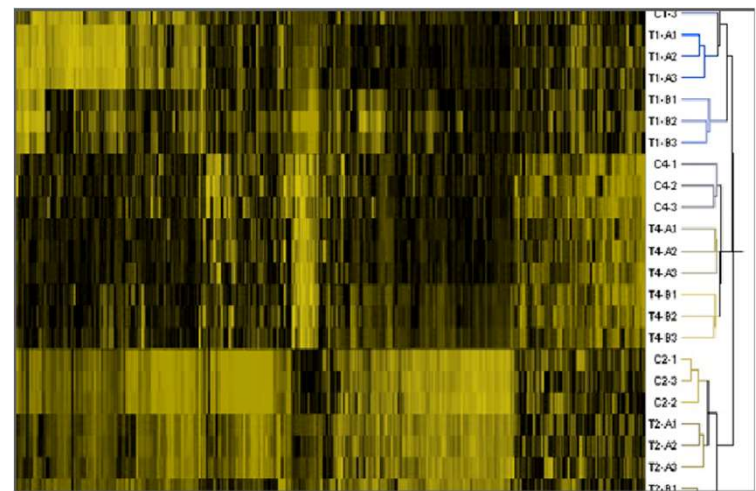
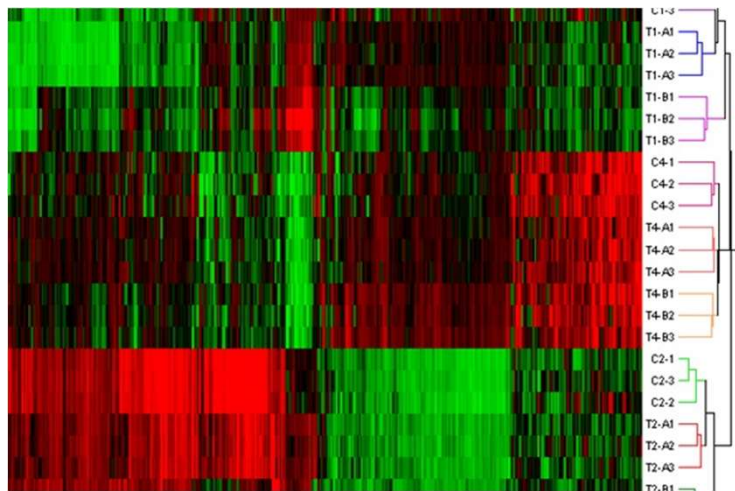


CMYK - Subtractive Colors

How to use color effectively



Colorblindness



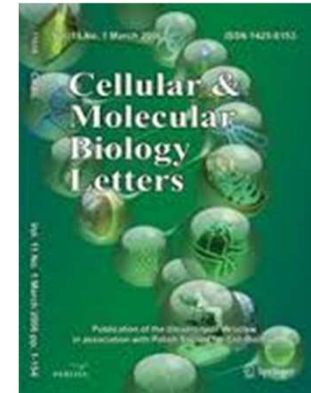
Academic Writing in English: Conventions of Scholarly Writing

Outline

- Verb tenses
- Formal tone
- Other journal-specific language conventions

“Attention to detail of the language will avoid severe misunderstandings which might lead to rejection of the paper.”

-- Cell & Molecular Biology Letters instructions for authors



Verb tense in scientific manuscripts

- Choosing the correct verb tense for each section of a scientific manuscript can be challenging.
- Editorials in several journals have noted that proper verb tense is an important aspect of a well-written manuscript.
- Some journals and publishers specifically mention verb tense in their style guides.

Verb tenses

- Present
 - Action is occurring now
- Past
 - Action already occurred
- Future
 - Action will occur later

Please see (<https://www.aje.com/dist/docs/AJE-Choosing-the-Right-Verb-Tense-for-Your-Scientific-Manuscript-2015.pdf>).

Perfect tenses

- The **present perfect tense** (a form of the verb ‘have’ plus a past participle, such as “have shown” or “has been shown”) is ideal for showing something that occurred but is still relevant. It is often used for past research that continues to have importance
 - Silva et al. have shown that gene X is part of an operon.

Perfect tenses

- The **past perfect** tense is used to indicate an earlier action when one action occurred before another, with the subsequent action in the simple past tense. The past perfect tense is formed by combining the word 'had' with the past participle of a verb.
 - The cells that **had been irradiated** [past perfect] **were assayed** [past] for DNA damage.
 - Patients who **had elected** [past perfect] to undergo surgery **completed** [past] questionnaires.

Progressive tenses

- In rare cases in which one action occurred while another was ongoing, the **past progressive** is used. The past progressive is a combination of the verb ‘was’ or ‘were’ and the present participle (‘-ing’ form) of the verb.
 - While the cells **were incubating** [past progressive], the temperature **was raised** [past] 1° per hour.
 - While patients **were preparing** [past progressive] for surgery, nurses **collected** [past] baseline samples”.

Progressive tenses

- The **present progressive** is even less frequently used. It shows something that is currently ongoing. The present progressive is a combination of the verb 'is' or 'are' and the present participle ('-ing' form) of the verb.
 - Efforts to monitor rainfall levels **are continuing** despite major technical difficulties.

Verbs in the title

- For many journals, the manuscript title does not need to be a complete sentence, and no verb is necessary:
 - Complications in warfarin use
- In cases where a complete sentence is appropriate, use the simple present tense to describe a conclusion that the manuscript supports:
 - Gene X **is** required for intestinal cell differentiation
 - Frameshift mutations in gene X **cause** abnormal notochord development in zebrafish

Verbs in the abstract

- Follow the publisher's style conventions.
- Follow the conventions for the other sections of the paper.

Verbs in the introduction

The introduction often includes several verb tenses, each providing a different context for the statements that they accompany.

- When stating a fact that is widely accepted, the present tense is appropriate. Use of the present tense signifies that the statement reflects the current understanding of the matter at hand.
 - DNA **is** composed of four nucleotides.
 - Trypanosomes **exhibit** global trans-splicing of RNA transcripts.

Verbs in the introduction

- When referring to a previous study with results that are still relevant, use the present perfect tense.
 - Peach production **has expanded** in the tropics.
 - Multivariate analyses **have been used** extensively to assess the effects of environmental exposure.

Verbs in the introduction

- The present tense is used when a specific result, figure, or paper is the subject of a sentence. Like a movie or book, published research is still available for readers to examine, and a paper therefore continues to express its conclusions.
 - The results of their study **indicate** that this fungicide is highly effective.
 - A landmark paper from Lima's lab **describes** the discovery of this new species of moth.

Verbs in the introduction

- When referring specifically to the methods used in a previous paper, the past tense is best.
 - Santos and Oliveira **sampled** 96 swamps and **found** 156 distinct dragonfly species.
 - Gene X **was** first cloned into a shuttle vector in 2003.

Verbs in the introduction

- Likewise, statements that are no longer considered true should remain in the past tense.
 - Bacteria **were believed** to lack introns.
 - Early physicists **thought** that electrons traveled in defined orbits.

Verbs in the introduction

- At times, a combination of tenses is necessary:
 - “Robert Corey **suggested** [past] that DNA contained three helices, but subsequent work **has proven** [present perfect] the existence of a double-helix structure.”
 - The grapes **were harvested** [past] while green because the immature stage **is** [present] the ideal ripeness for harvesting.

Verbs in the methods

- In general, most methods are reported using the past tense.
 - We **tested** independently derived cultures for resistance to trimethoprim.
 - Cells **were transfected, irradiated, and assayed** for DNA damage.
 - The dehydration process **comprised** five steps with three solvents.

Verbs in the methods

- Some exceptions include descriptions of something permanent, such as a study site or specific machine.
 - The Amazon River basin **occupies** approximately 7,000,000 km².
 - The Spectro3000 **measures** absorbance across a large spectrum of wavelengths.

Verbs in the results

- The results section of a manuscript is also largely written using the past tense.
 - We **detected** no fluorescence in the control sample.
 - All sites **indicated** a significant reduction in rainfall.

Verbs in the results

- In certain cases, however, the present tense is needed. The present tense is appropriate when referring to the entire paper or to individual elements of the manuscript (e.g., figures, tables, sections, results, or data).
 - Our results **demonstrate** that magnesium is essential for enzymatic function.
 - Figure 1 **shows** the results of this procedure.
 - In this study, we **report** the discovery of a new species of frog.

Verbs in the results

- Note that sometimes two tenses can be found within the same sentence.
 - Because no enzymatic activity **was detected** [past tense] in the absence of magnesium, our results **indicate** [present tense] that magnesium **is** [present tense] required.

Verbs in the discussion

- The discussion section follows the same rules as the previous sections of the manuscript.
- When referring to specific results or methods, use the past tense, but use the present when presenting conclusions.
 - X mRNA expression **was upregulated** by both viruses. (past tense)
 - We conclude that gene X **is** necessary for ornithine synthesis. (present tense)

Verbs in the discussion

- The discussion may include the future tense when describing directions for additional research.
 - The methods reported here **will allow** for rapid screening in the field.
 - We **will publish** the full results of our screen as part of another study.

- **Formal tone**

- Word choice
- Pronoun usage
- Parallel structure

Formal tone - word choice

- Possessive forms
 - The **material's melting point** was...
 - The **melting point of the material** was...
- Contractions
 - Can't, Isn't, It's, Haven't
- “Scare quotes”
 - Nicknames (e.g., calling oncogenes “time bombs”)
 - Quotation marks are appropriate for direct quotations or novel terms.

Formal tone - word choice

Formal synonym

- Approximately
- Large
- Currently
- Performed/conducted
- Such as
- Observed

Informal term

- About/around
- Big
- Nowadays
- Done
- Like
- Seen/saw

Formal tone - word choice

Phrasal verbs

- “addresses” vs. “deals with”
- “conduct” or “perform” vs. “carry out”
- “note” vs. “point out”
- “determine” or “understand” vs. “figure out”
- “occur” vs. “take place”

Formal tone - word choice

- “administrated” is often misused for “administered”
- “affect” means “to influence,” but it has a specific meaning in psychology
- “effect” is most commonly used as a noun, meaning “result” (as a verb, “effect” means “to bring about” or “to cause”)

Formal tone - word choice

- “comprise” means “to contain” or “include”; the whole comprises its parts. The whole can also be composed of its parts, but the parts do not comprise the whole.
- “evidence” cannot be pluralized (there cannot be multiple “evidences”)
- “less” is used with uncountable quantities (“less rain”, “less power”)
- “fewer” is used with countable numbers (“fewer mice”, “fewer pages”)

Formal tone - word choice

- “Research” as a noun cannot be pluralized (you cannot write “several researches show”).
- “Respectively” can only be used when two parallel lists are present in one sentence (e.g., “the cat and dog were 7 and 14 years old, respectively”); it does not mean “individually” or “separately.”

Formal tone - word choice

- Has/is
 - Cd nephrotoxicity is tubular dysfunction.
 - Cd nephrotoxicity **manifests as** tubular dysfunction.
 - The species has three toxins.
 - The species **secretes** three toxins.
- Interesting
 - One of its interesting functions is...
 - One of its **relevant** functions is... or
 - One **unique** function of this protein is...

Formal tone - word choice

- Important
 - Rice is one of the most important crops.
 - Rice is one of the most **commonly consumed** crops. or
 - Rice is a **critical food source for billions.**
- Superior
 - This method is superior to previous protocols.
 - This method is **faster than** previous protocols. or
 - This method **requires less starting material** than previous protocols.

Formal tone - word choice

- Human emotions or behaviors projected onto other animals or inanimate objects
 - It is unclear why cows in the US eat only when facing north.
 - **incorrect:** It is unclear why cows in the US choose to face north when they eat.
 - Bacteria in rich soil frequently secrete compounds that kill neighboring bacteria.
 - **incorrect:** Bacteria in rich soil regularly attack each other.

Formal tone - pronouns

- Avoid ambiguity with **demonstrative pronouns**
 - *This, that, these, those*
 - **incorrect:** This analyzes the effects...
 - **correct:** This **research** analyzes the effects...
 - **incorrect:** These correspond to...
 - **correct:** These **features** of the cells correspond to...
- And with **other pronouns**
 - **incorrect:** It was not active in the absence of Mg.
 - **correct:** **The enzyme** was not active in the absence of Mg.

Formal tone - pronouns

- **Who vs. that**

- Use **'who'** to introduce information about human beings
 - Patients **who** presented with three of the following symptoms were included.
 - The final two subjects, **who** were recruited from the same site, both tested negative.
- Use **'that'** or **'which'** to introduce information about inanimate objects or other nouns
 - This species of beetle, **which** is found in the Marañón basin, is now endangered.

Formal tone - pronouns

- **That vs. which**
 - Use '**that**' to introduce critical information that narrows the scope of the sentence (restrictive elements).
 - The cells **that** were transfected glowed green.
 - Use '**which**' to introduce non-essential information (non-restrictive elements).
 - Place a comma before “which.”
 - *Vibrio cholerae*, **which** causes the deadly diarrheal disease cholera, is endemic to tropical regions.

Formal tone - parallel structure

- Match elements in a series so that they serve the same grammatical purpose
 - Words
 - Phrases
 - Clauses
 - Sentences
 - **correct:** Possible therapeutic approaches include surgery, radiation therapy, and chemotherapy.
 - **incorrect:** Possible therapeutic approaches include surgery, undergoing radiation therapy, and to give chemotherapy.

Formal tone - parallel structure

- Avoid excessive coordination
 - **correct:** After drying, the samples were placed in paper bags, covered with plastic, labelled with tags and stored in separate containers at room temperature.
 - **incorrect:** The samples were dried and then placed in paper bags and then covered with plastic, and they were labelled with tags and stored in separate containers at room temperature.
- Using 'that'
 - The results show **that** changes could be made without affecting the error rate and **that** latencies continued to decrease over time.

Formal tone - parallel structure

- Using correlative conjunctions
 - **correct:** The participants were assigned to **either the** experimental group **or the** control group.
 - **incorrect:** The participants were assigned **either to the** experimental group **or the** control group.

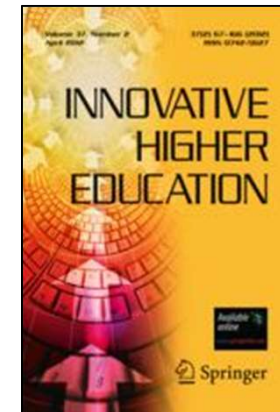
 - **correct:** *Polybia paulista* is aggressive toward **not only** humans but also cancer.
 - **incorrect:** *Polybia paulista* is **not only aggressive toward** humans but also cancer.

Formal tone - parallel structure

- Comparative adjectives (especially **higher/greater** or **lower/fewer**) must be paired with a point of reference
 - **correct:** The dosage given to the treated rats was significantly higher than the dosage given to control rats.
 - **incorrect:** The dosage given to the treated rats was significantly higher.

“Please be attentive to the requirements of APA style, as indicated on submission guidelines. Failure to do so can erode the impression your manuscript makes on reviewers.”

-- Innovative Higher Education instructions for authors



Journal-specific conventions - voice

- Active = subject is performing action
- Passive = subject is being acted on
 - **We inspected** the burners regularly. (*active*)
 - **The burners were inspected** regularly. (*passive*)
 - **Others have explained** these differences... (*active*)
 - These **differences have been explained**... (*passive*)
 - **I removed** the coating with alcohol. (*active*)
 - The **coating was removed** with alcohol. (*passive*)

Journal-specific conventions - voice

- Active voice
 - Shorter
 - Identifies agent
- Passive voice
 - Once considered more objective
 - Useful if the agent is unknown

Journal-specific conventions - voice

- Subjects are always first.
 - The tablet was administered orally.
 - **incorrect:** It was administered orally the tablet.
 - An increase in reaction rate was observed.
 - **incorrect:** It was observed an increase in reaction rate.
- The passive voice can be wordy but does not need to be.
 - The seeds were collected from different locations.
 - **incorrect:** Collection of the seeds was performed at different locations.

Journal-specific conventions - person

- First person = subject/object is speaking
 - **I confirmed** the results by direct sequencing.
 - **We found** that the animal studies were poorly designed.
- Second person = subject/object is being spoken to
 - **You determine** the results by direct sequencing.
 - **Wash** the samples with PBS before freezing them.

Journal-specific conventions - person

- Third person = subject/object is being spoken about
 - **She determined** the results by direct sequencing.
 - **Doctors renew** their licenses periodically.
 - **They found** that the animal studies were poorly designed.
- Which is best?
 - The first person is increasingly common and helps keep writing more concise.
 - Always defer to journal guidelines.

Journal-specific conventions: formatting

- Serial comma
 - Cells were transfected, irradiated, and assayed
 - Cells were transfected, irradiated and assayed
- Spacing
 - Between sentences
 - “p = 0.05” vs. “*p*=0.05”
- Abbreviations
 - (**sec** vs. **s**; **m/s** vs. **m·s⁻¹**)
 - Use abbreviations consistently

Journal-specific conventions: formatting

- Words vs. numerals
 - “A total of **ten** species” vs. “A total of **10** species”
- Number style
 - **1,000** vs. **1000** vs. **1 000**
 - **0.05** vs. **.05**
 - **17.3** vs. **17,3** (rare in English-language publications)

Journal-specific conventions: formatting

- Manuscript elements
 - **Figure 1** vs. **Fig. 1**
 - **Figure 1** vs. **figure 1**
- Capitalization/parallelism in section headings
 - **Sentence case:** Deforestation and habitat loss in the Amazon basin
 - **Headline case:** Deforestation and Habitat Loss in the Amazon Basin

Formatting tip!

We want authors spending their time **doing science**, not formatting.

We include reference formatting as a guide to make it easier for editors, reviewers, and PrePrint readers, but will not strictly enforce the specific formatting rules as long as the full citation is *clear*.

Styles will be normalized by us if your manuscript is accepted.

[A]uthors can submit manuscripts formatted in a variety of reference styles, including Harvard, Vancouver, and Chicago.

PeerJ



www.aje.com

Journal-specific conventions - other tips

While vs. **whereas/although** (*while* = at the same time)

- **While** the cells incubated, DNA samples were prepared.
- **Although** most of the patients were included in the study, three were excluded because of a preexisting condition.

Since vs. **because** (*because* = causal; *since* = temporal)

- **Since** 2010, there have been ten additional outbreaks.
- **Because** their findings were invalidated, the study has been retracted.

Journal-specific conventions - other tips

- Ban against splitting infinitives
 - **correct:** *To confirm empirically these data...*
 - **incorrect:** *To empirically confirm these data...*

Five Common Errors in English-language Papers

Five common errors

1. Lengthy sentences
2. Article use
3. Subject-verb agreement
4. Adjective placement and pluralization
5. Misplaced modifiers

Lengthy sentences

- One common error is writing sentences that are far too long. Consider the following example from Carpenter (2001):
 - “On the tops of crinoids is a circle of plates called radials, which in some primitive crinoids is further divided into a lower inferradial and an upper superradial, and below the radials is a circlet of plates called basals.”
 - “On the tops of crinoids is a circle of plates called radials. In some primitive crinoids, these radials are divided into lower inferradials and upper superradials. Below the radials is a circlet of plates called basals.”

Article Use

- Indefinite articles (a, an) refer to one of two or more general things that can be counted, and the definite article (the) refers to one specific thing.
- When the noun that an article precedes is a count noun (it can be counted as one or more of something), use an indefinite article.
 - **A** new species of *Escherichia* was identified.
 - **A** group of patients with dementia were examined.

Article Use

- When no more than one instance exists or is likely to exist in the future, use a definite article.
 - **The** organism identified as responsible for this outbreak was *Escherichia coli*.
- When a count noun is first mentioned, the indefinite article is necessary, but when it is mentioned later in the document, the definite article is needed.
 - **A** chi-square test was employed.
 - **The** chi-square test revealed.

Article Use

- With indefinite articles, the appropriateness of using *a* or *an* depends on the sound of the word it precedes. “A” comes before words with a consonant sound, including “y,” “h,” and “w,” no matter how the word is spelled. “An” comes before words with a vowel sound.
 - a study
 - an organism
 - a historic occasion
 - an hour-long treatment

Article Use

- When an abbreviation follows an indefinite article, the choice of “a” or “an” is determined by the way the abbreviation is read aloud.
 - a UN resolution
 - an HMO plan

Article Use

- Please note that pronunciation differs in American vs. British English, so there are some exceptions:
 - an historic occasion
- Oxford English Dictionary: (<https://en.oxforddictionaries.com/usage/a-historic-event-or-an-historic-event>)

Subject-verb agreement

- In simple sentences, it is easy to match the number of the subject and the verb:
 - **singular:** Then, **magnetic resonance spectroscopy was performed** to examine the consistency of the spectral patterns and to observe the changes in metabolites with treatment.
 - **plural:** Three **methods were used** to compare the samples.

Subject-verb agreement

- Compound subjects may complicate agreement:
- When a compound subject is joined by “and”, a plural verb is correct.
 - The color and weight of each sample **were recorded**.
- When a compound subject is joined by the correlative conjunction “both...and,” a plural verb is correct.
 - Both the taxonomic composition and abundance are influenced by these contaminants.

Subject-verb agreement

- When a compound subject is joined by other correlative conjunctions, the verb must agree with the closest noun of the correlative pair.
 - Not only raw sequence data but also a detailed **procedure** for implementing a well-tested PCR assay **is** included in the STS database.
 - Not only raw sequence data but also detailed **instructions** for implementing a well-tested PCR assay **are** included in the STS database.

Subject-verb agreement

- When a compound subject is joined by other correlative conjunctions, the verb must agree with the closest noun of the correlative pair.
 - Neither the response to the auditory stimuli nor the **response** to the tactile stimuli **was** repeated.
 - Neither the responses to the auditory stimuli nor the **responses** to the tactile stimuli **were** repeated.

Subject-verb agreement

- The same rule holds true for “either...or” and “whether...or” constructions.
 - Whether the temperature or the **amount** of precipitation **was** the cause has yet to be determined.
 - Either the introduced *Apis mellifera* or the indigenous ***Centris tarsata*** **is** necessary to pollinate this crop.

Subject-verb agreement

- The grammatical number of a compound subject joined by *and/or* is the subject of some debate. Some style manuals suggest that the construction be avoided for that reason. At AJE, we apply the proximity rule for correlative conjunctions described above.
 - Activation of BMAL1 transcriptional activity and/or **regulation** of clock genes **initiates** clock synchronization.
 - for comparison: **Activation** of BMAL1 transcriptional activity **and regulation** of clock genes **initiate** clock synchronization.
 - for comparison: Activation of BMAL1 transcriptional activity or **regulation** of clock genes **initiates** clock synchronization.

Subject-verb agreement

- If any words separate the subject and verb, number agreement may be more difficult to maintain.
 - **incorrect:** The analysis of the **results reveal** a significant difference between the groups.
 - **correct:** The **analysis** of the results **reveals** a significant difference between the groups.

Subject-verb agreement

- Agreement errors often occur when using “each” before a prepositional phrase.
 - **incorrect:** “**Each** of the samples **were** treated with the same dose of antibiotics.
 - **correct:** “**Each** of the samples **was** treated with the same dose of antibiotics.
 - **correct:** **All** of the samples **were** treated with the same dose of antibiotics.

Subject-verb agreement

- Agreement errors with Latin plurals (“data” and “media” are plural).
 - **correct:** **Data** from the growth inhibition activity assay **were** submitted.
 - **incorrect:** **Data** from the growth inhibition activity assay **was** submitted.
 - **correct:** **These** bacterial growth **media were** used in this experiment.
 - **incorrect:** **This** bacterial growth **media was** used in this experiment.
 - **incorrect:** **These** bacterial growth **mediums were** used in this experiment.

Adjective Placement

- Adjective placement in English differs from that in other languages. Many languages place adjectives after the nouns they modify, but in English, the adjective comes first:
 - **incorrect:** the group anesthetized
 - **correct:** the anesthetized group

Adjective Pluralization

- Adjectives are often pluralized in other languages when they modify plural nouns. In English, they are singular regardless of the number of the noun:
 - **incorrect:** different studies areas
 - **correct:** different study areas

 - **incorrect:** others effects
 - **correct:** other effects

 - **incorrect:** peaches cultivars
 - **correct:** peach cultivars

Misplaced modifiers

- When sentences include explanatory phrases or words, sometimes their placement alters the meaning of the sentence.
- Always place the modifier in a location where it logically modifies the correct subject.
 - “The patient experienced severe pain in his right arm when lifting objects for three months.”
- This sentence reads as though the patient lifted objects continuously for three months. It can be rearranged to read as follows:
 - “For three months, the patient experienced severe pain in his right arm upon lifting an object.”

Misplaced modifiers

- Multiple modifiers can make placement difficult.
 - **incorrect:** Resistant populations of this rust fungus to this treatment also appeared under field conditions.
 - **correct:** Populations of this rust that are resistant to this treatment also appeared under field conditions.

Misplaced modifiers

- Please see <https://www.aje.com/en/arc/editing-tip-misplaced-modifiers/>
- Please see the Author Resource Center regarding these issues and other common English language concerns:
<https://www.aje.com/en/arc/typical-english-language-errors-academic-writing/>



Choosing a Journal and the Scholarly Publishing Landscape

Peter Marbais, PhD, ELS
Quality Control Editor III, AJE

Outline

- 1. Ethics in Research Publication**
- 2. The Past, Present, and Future of Scholarly Publishing**
- 3. Choosing the Right Journal for Your Research**



Ethics in Research Publication

Peter Marbais, PhD, ELS
Quality Control Editor III, AJE

Outline

1. Plagiarism and self-plagiarism
2. Authorship and ghost authorship
3. Ethics in author services

What is plagiarism?

- The misrepresentation of someone else's original thought as your own
- The [U.S. Office of Research Integrity](#) defines plagiarism as “the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.”

Types of plagiarism

- Verbatim plagiarism
- Plagiarism of ideas
- Loose paraphrasing
- Plagiarizing alternative sources
- Self-plagiarism

Verbatim plagiarism

- Copying text word-for-word from someone else's work
 - **Original text:** *Salmonella typhimurium* and *Clostridium perfringens* bacteria were present in over 75% of the chickens processed.
 - **Verbatim plagiarism:** *Salmonella typhimurium* and *Clostridium perfringens* bacteria were present in over 75% of the chickens processed.
 - **Proper citation of a direct quotation:** Other researchers found that “*Salmonella typhimurium* and *Clostridium perfringens* bacteria were present in over 75% of the chickens processed” (Wu et al. 2015).
- If content from several sources is duplicated, this form of plagiarism is known as *mosaic* or *patchwork*.

Plagiarism of ideas

- Mentioning someone else's unique idea, whether in the form of a theory, an interpretation, data, a method, an opinion, or new terminology, without citing your source, even if explained in your own words
 - **Original text:** *Salmonella typhimurium* and *Clostridium perfringens* bacteria were present in over 75% of the chickens processed.
 - **Plagiarized idea:** Other researchers found that *Salmonella typhimurium* and *Clostridium perfringens* bacteria occurred in the majority of the processed chickens.
 - **Proper citation of a paraphrase:** Other researchers found that *Salmonella typhimurium* and *Clostridium perfringens* bacteria occurred in the majority of the processed chickens (Wu et al. 2015).

Loose paraphrasing

- Paraphrasing someone else's work with only slight changes, effectively maintaining the other author's logic while mentioning most or all of the same ideas. Please note that the flow of an argument is indeed an original idea.
 - **Original text:** Cross-contamination experiments showed that *Clostridium perfringens* and *Salmonella* spp. were easily transferred from raw chicken products to consumers.
 - **Loose paraphrase:** *Clostridium perfringens* and *Salmonella* spp. transferred easily from raw chicken products to consumers because of handling practices. Cross-contamination experiments demonstrated that these practices were the cause of the contamination (Wu et al. 2015).

Plagiarizing alternative sources

- As with journal articles, sources such as books, webpages, blogs, lectures, and personal communication (including descriptions of unpublished ideas, with permission) should be referenced if they contributed unique information to your manuscript.
 - For example, if you include an idea shared by a colleague who has commented on your findings or has suggested including a specific method or technique to your study, citing the personal communication from your colleague ensures that your colleague gets the credit that he or she deserves.

Self-plagiarism

- Any attempt to take any of your own previously published text, papers, or research results and make it appear brand new.
- When your manuscript contains uncited recycled information, you are countering the unspoken assumption that you are presenting entirely new discoveries.
- It is a best practice to cite your previous work thoroughly, even if you are simply revisiting an old idea or a previously published observation.

Self-plagiarism and publishing

- Although self-plagiarism does not cross the line of true theft of others' ideas, it nonetheless can create issues in the scholarly publishing world.
 - The standard publication process of many journals includes ceding copyright of the finished paper to the publisher.
 - While you are still the intellectual owner of the ideas and results, the publication is property of the journal. As such, reuse of that material without citation or permission is not acceptable.
- In addition to repeating sections of text verbatim, self-plagiarism can also refer to the publication of identical papers in two places (duplicate plagiarism).

Authorship

- “Clearly conveying who is responsible for published work is integral to scientific integrity” (Panter).
- The top four International Committee of Medical Journal Editors (ICMJE) guidelines state that an author is a person who has:
 1. Significant involvement in study conception/design, data collection, or data analysis/interpretation
 2. Involvement in drafting or revising a manuscript
 3. Approval of the final version of a manuscript for publication
 4. Responsibility for the accuracy and integrity of all aspects of research

Authorship responsibility, order, and guidelines

- Some journals require a public guarantor for each article, an author who takes responsibility for the entire research project, including conception, data acquisition and analysis, and publication.
- Author names may be listed:
 - Alphabetically
 - By magnitude of contribution
- Professional guidelines
 - Coalition for Responsible Publication Resources ([CRPR](#))
 - World Association of Medical Editors ([WAME](#))

Honorary authorship

- Gift
 - The study is gifted to someone who did not contribute.
 - It is better to reference the person in the acknowledgment section if you want to honor him or her but he or she did not contribute to the research.
- Guest
 - A person added to the author list to use the credibility of that researcher's name, even though that person did not contribute to the study
- Coercive
 - Someone in authority over the author requests that another person be added as an author, even though he or she did not contribute to the study.

Problems with honorary authorship

- Elevating the study beyond its potential impact
 - Using someone else's good name to elevate the work
- Attributing without permission

Ghost authorship

- The opposite of honorary authorship, ghost authorship is when a substantial contribution is made to a manuscript without acknowledgment of that contribution.
- It includes any content contributed to the study that is not acknowledged (drafting, data collection and analysis, etc.).
- It is not having somebody edit your language or formatting.
- “Such ghost authorship was present in approximately one-tenth of papers published in six medical journals in 2008” (Wislar et al. 2011).

Problems with ghost authorship

- Masks industry ties to a paper
- Hides the identify of the ghost author, who has done the work but receives no credit

Avoiding ghost authorship

- Authors should disclose all contributors and their specific individual contributions and affiliations.
- Authors should sign a formal declaration about their contributions.
- Authors should publish a comprehensive list of contributions and a detailed acknowledgments section.

Ethics in author services

- Author services companies are increasing.
 - What help is appropriate?
 - How can unethical behavior be identified?
- Language editing should entail clarifying language without adding or subtracting information.
- Formatting a manuscript should consist of changing layout elements and references to conform to a journal's specifications but not adding content.
- Review services should assess a manuscript's content, statistics, and novelty without directly rewriting the manuscript.

Ethics in author services

- Appropriate author services:
 - Will have clear ethical limits on what they will and will not provide
 - Will deny a client's request that crosses an ethical boundary
 - Will not help a client plagiarize or commit other ethical violations
 - Will not help fabricate or manipulate results or figures
 - Will not sell a client ghost authorship
 - Will improve a manuscript's form without changing the manuscript's content
 - May be accredited by an outside agency or be a member of a society such as the Committee on Publication Ethics ([COPE](#))

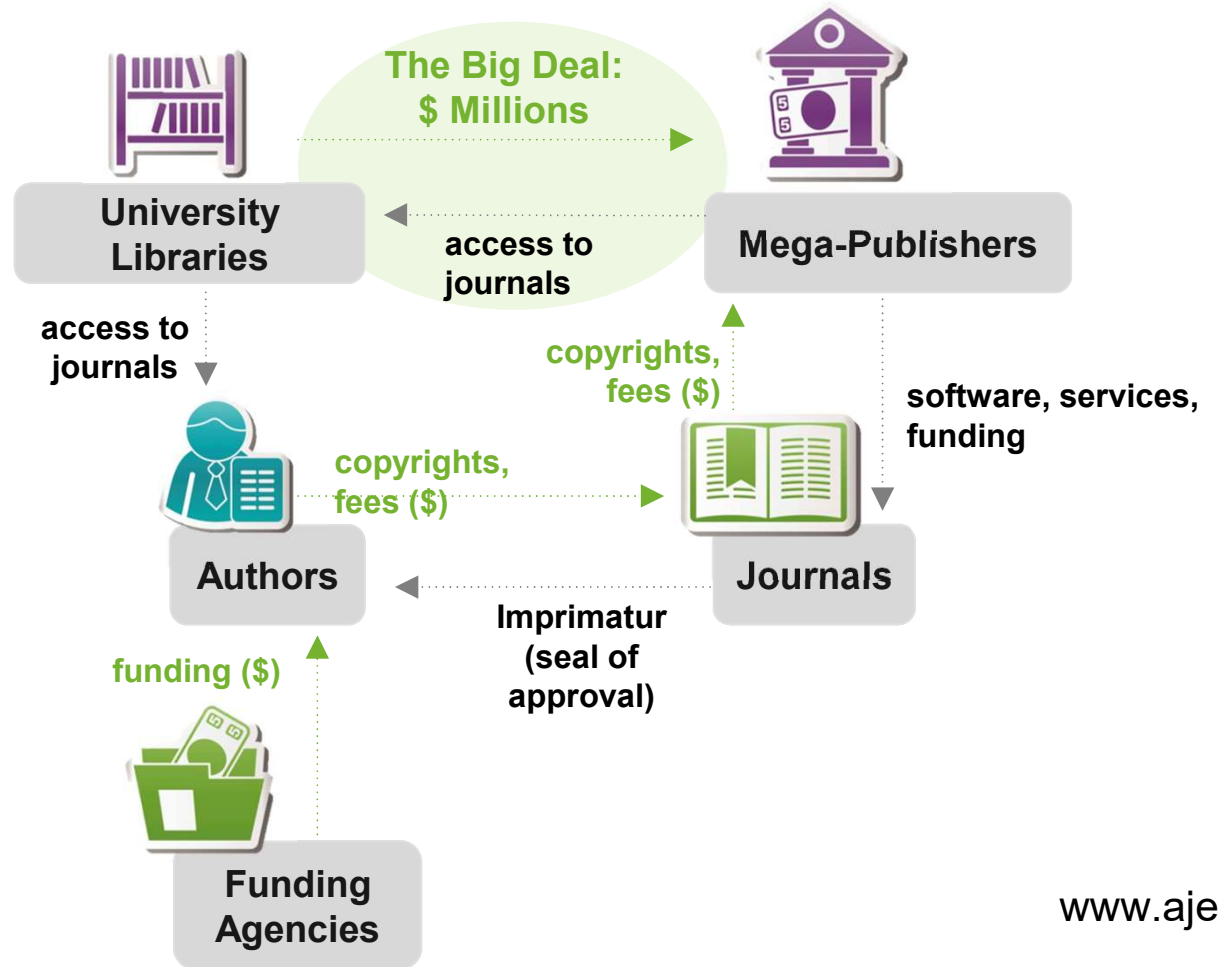
What to evaluate

- Quality
- Reputation
- Service level agreement
- Ethics
 - Does the service operate within academic and publishing ethics?

The Past, Present, and Future of Scholarly Publishing

State of the industry

- Academic publishing is a **\$12 billion industry...in flux**



THE PAST

The beginning and evolution of scholarly publishing

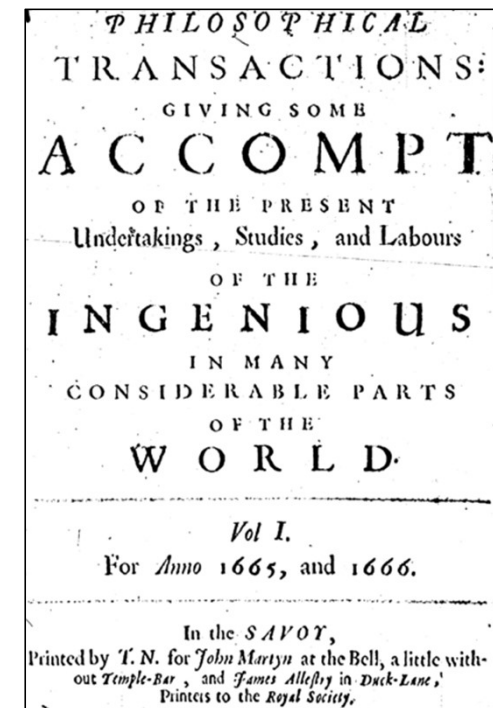
Early discoveries

- 1610 - Galileo's discovery of the rings of Saturn
 - Smaismrmilmepoetaleumibunenugttauiras.
 - *Altissimum planetam tergeminum observavi.*
 - “I have observed the most distant planet to have a triple form.”



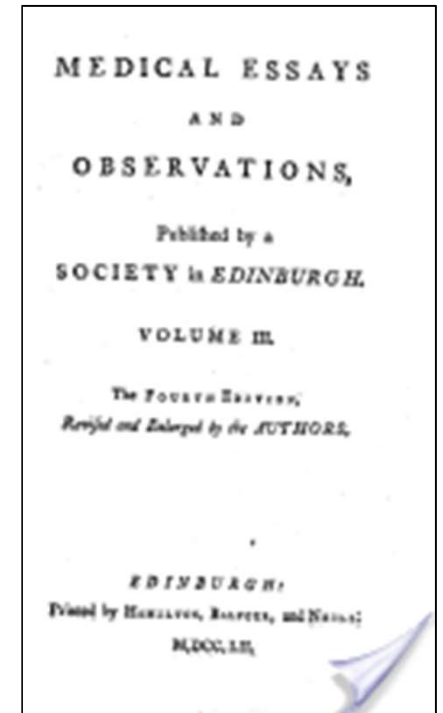
The history of academic publishing

- 1665 - The first journals
 - *Journal des Sçavans* (France)
 - *Philosophical Transactions of the Royal Society* (England)
- Mostly in Latin, although some in their native language
- Editorial review only (no peers)
- Even then, journals provided
 - Dissemination by sharing discoveries more widely
 - Registration through establishing priority (one author)



The history of academic publishing

- 1731- Peer review
 - *Medical Essays and Observations* (Scotland)
 - *Philosophical Transactions of the Royal Society* (UK)
- Even as late as the early 1900s, peer review as we know it was rare.



The history of academic publishing

- 1800s
 - German
 - English
 - French
 - Some Latin

Academic publishing goes international

- 1930s - English moves to the front
 - After WWII, scientific publishing as we know it began to flourish
 - In 1951, 50,675 chemistry papers; In 2001, 606,680 papers
- 1947 - One of the first international journals was launched
 - *Biochimica et Biophysica Acta*
 - Fear of “compartmentalizing knowledge”
 - In 2014, 57 out of 6,166 journals in the JCR are “Multidisciplinary” (<1%)

Academic publishing goes online

- 1990 - *Postmodern Culture*
 - Online only, no print version
- 2006 - PLOS ONE
 - No weight to “novelty” of results
 - Multidisciplinary
 - High volume



THE PRESENT

A snapshot of scholarly publishing today

Scholarly publishing by the numbers

- The total number of researchers grew by 120% from 2007 - 2013

STM journals

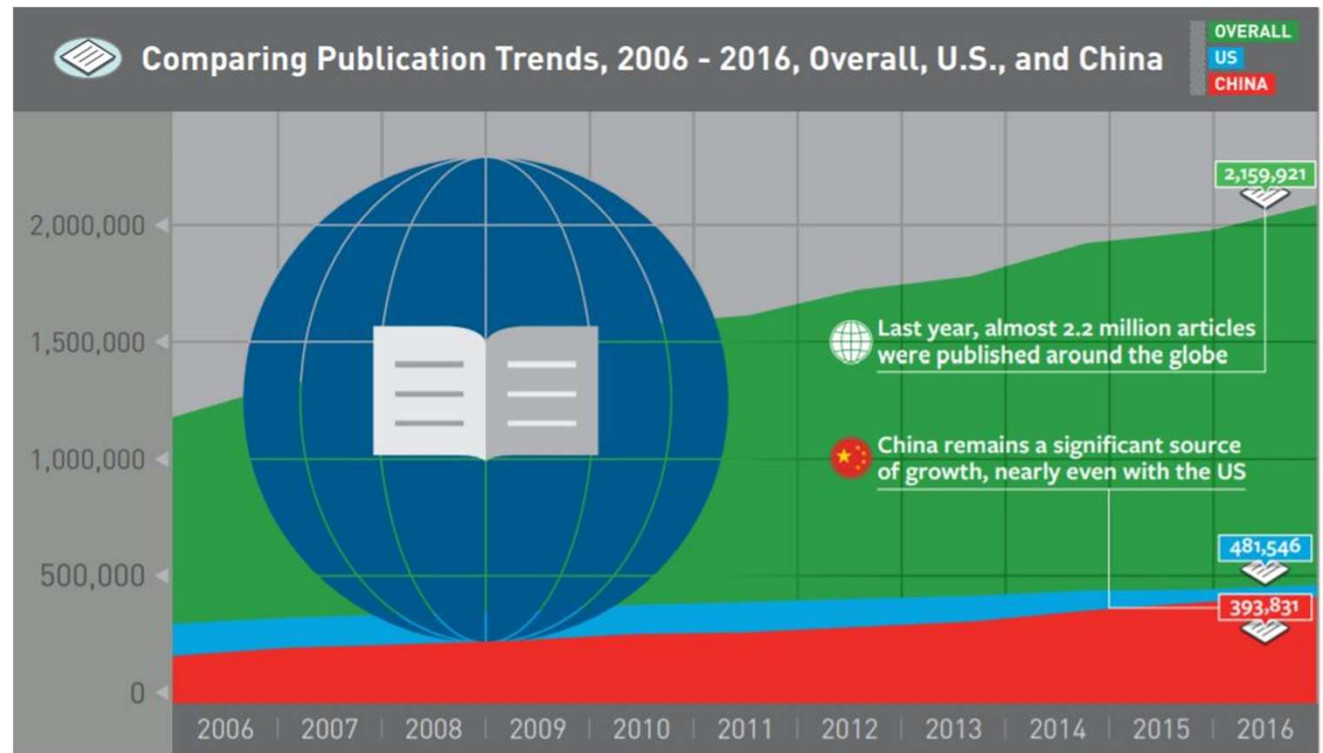
- Global market
 - Nearly 2,000 journal publishers
 - Up to 30,000 active peer-reviewed scholarly journals
 - Nearly 10,000 open access journals
- English-language journals
 - Nearly 680 publishers
 - Nearly 11,550 journals
 - Annual revenues of \$9 - \$10 billion
 - Growing 7-8% per year

Thomson Reuters; Directory of Open
Access Journals (www.doaj.org), 2013

www.aje.com

Publication trends

- In 2016, the number of articles published was more than 2 million.
- In 2017, China published the most number of scientific articles of any country (over 426,000).



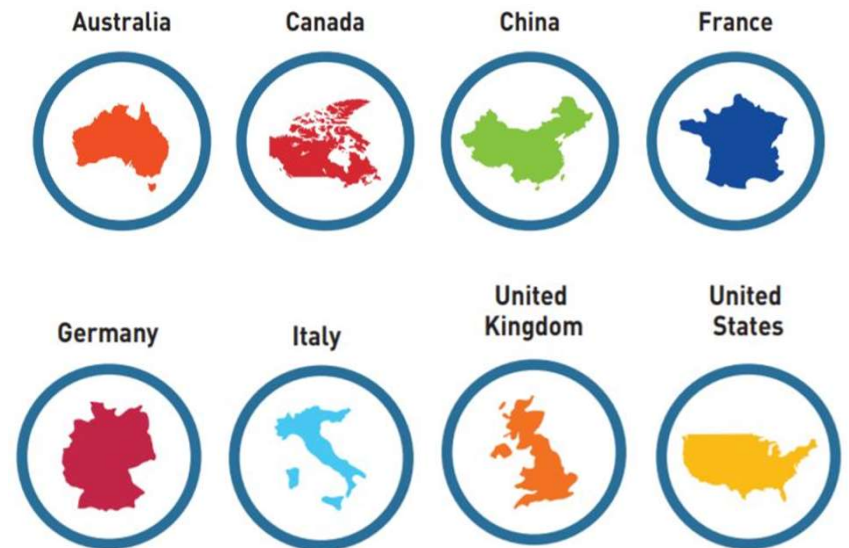
AJE, *AJE Scholarly Publishing Report: 2016, 2018*
Scientific American, *China Declared World's Largest
Producer of Scientific Articles, 2018*

www.aje.com

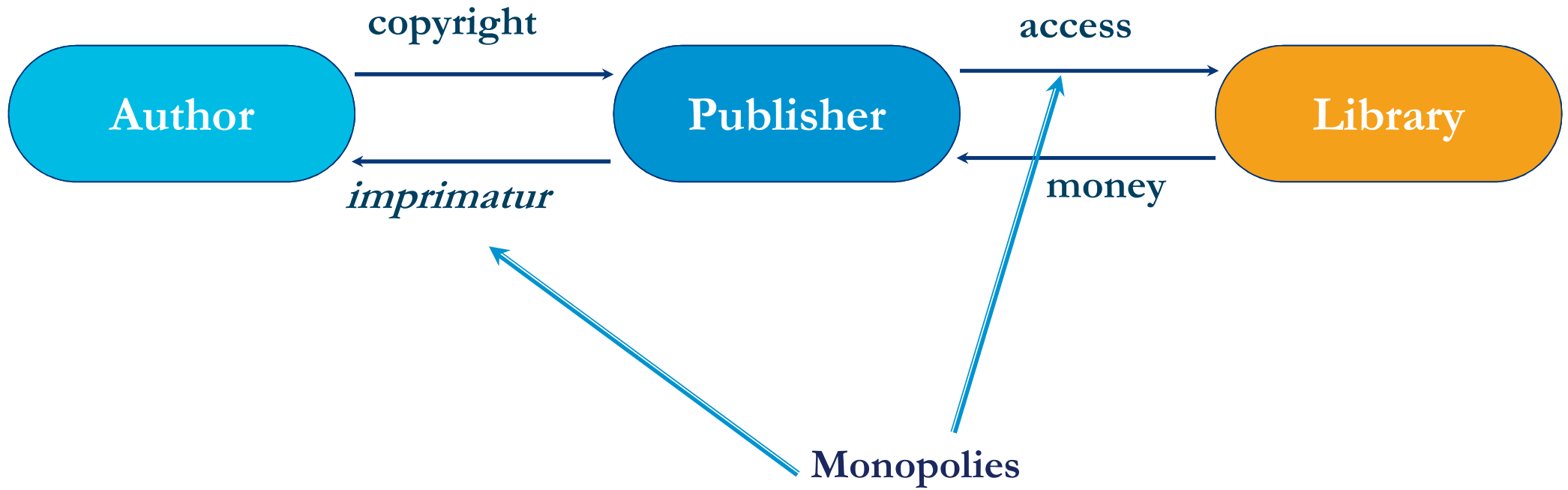
Research is international

- Research is collaborative.
- In 2016, the top two collaborating countries in biomedical research were China and the US, working together on 19,162 published papers.

Top 10 countries for biomedical research collaboration in 2016



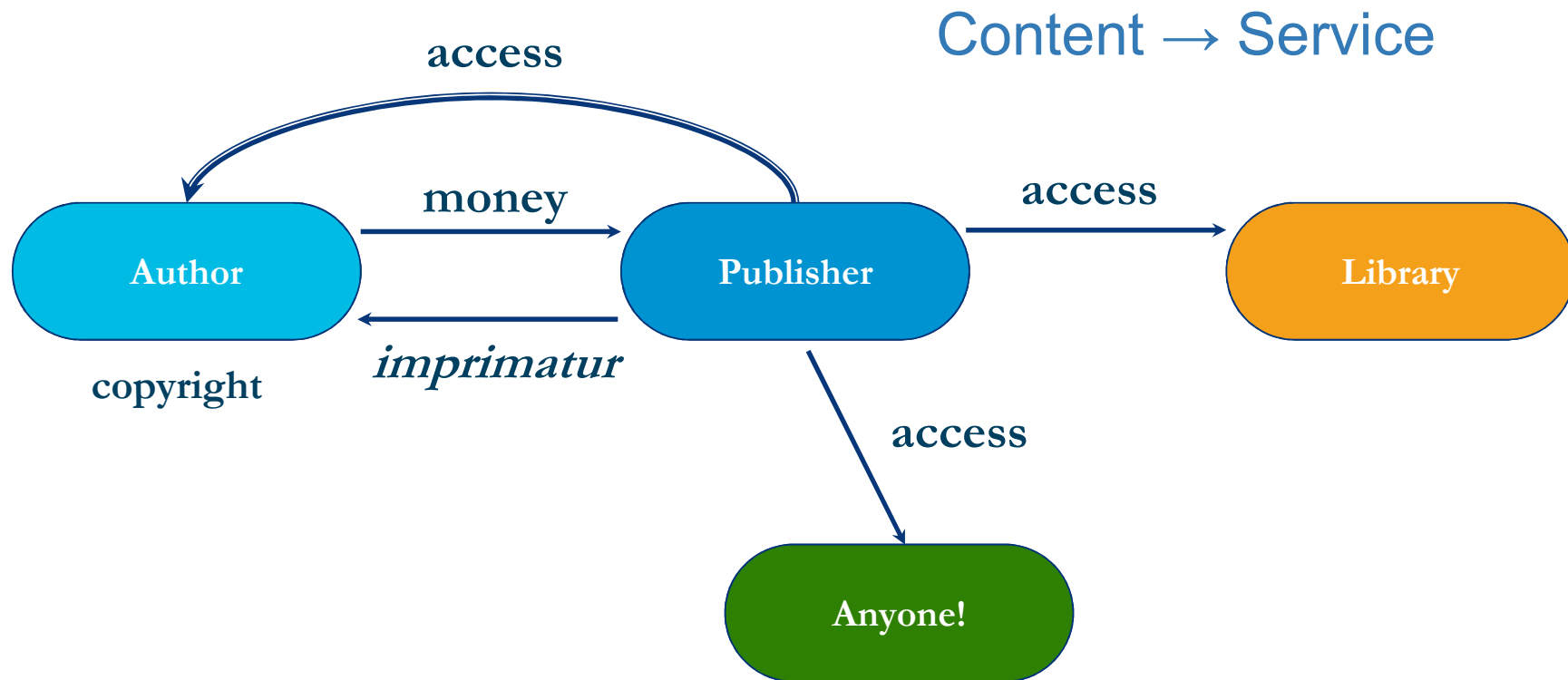
Subscription model



Open access - another big shift

OPEN  **ACCESS**

Open access model



Open access is here to stay

- Costs shift to the author, but they drive competition among journals.
- Mandates by governments and funding agencies are incentivizing open access.
 - Horizon 2020 by the EU
 - 2007: House Bill 1120, Brazil: requires an open access repository of all research published by higher education institutions
- Increasingly more researchers are realizing the potential for letting *anyone* read their results and build off of them.

AJE, Open Access Mandates: The Changing Landscape of Scholarly Publishing, 2018

Plan S

- Plan launched by a group of EU funders (e.g., Science Europe, Wellcome, UK Research and Innovation) on September 4, 2018
- Researchers receiving funding from any participating funders (Coalition S) must publish their research in open access journals.
- *“After 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access Journals or on compliant Open Access Platforms.”*

Plan S

- The funders have [10 Principles](#) for journal compliance with Plan S.
- The funders have run out of patience with waiting for the world to move to open access.
- They feel that publishers have not made enough effort to transition and have even blocked the progression to this open access future.

Plan S: consequences

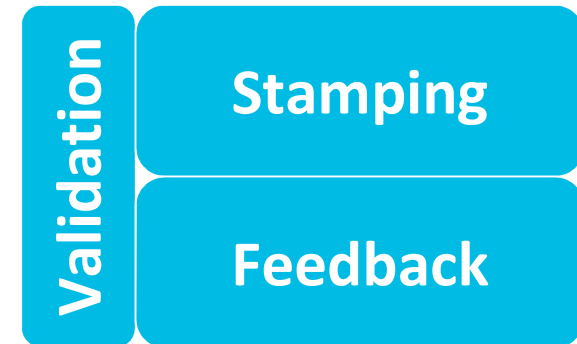
- Ultimately, to free research by breaking the pay wall for readers.
- The vast majority of journals are now off-limits to anyone funded by the Coalition funders, e.g., *Nature*, *Science*, *Cell*, *The Lancet*). Other top journals, e.g., *eLife* and *PLOS Biology*, are compliant.
- This limitation threatens the academic freedom of Coalition-funded researchers.
- Publishers may need to find new revenue streams (not library subscriptions).

Plan S: solutions

- Preprint servers such as [ours](#) allow researchers to post their paper online under a CC-BY licence as soon as it has been written (i.e., before it has been peer reviewed and formally published by a journal).
- Our partnership with the BMC journals (called [In Review](#)) takes this a step further since all peer reviewed versions of the manuscript are also uploaded, meaning that the final published version is fully open access.
- If more journals were to adopt this publishing model, they would automatically meet the requirements set out by Plan S.

Current journal functions

- Journals provide authors:
 - Validation
 - Dissemination
 - Registration
 - Preservation



- All functions are performed individually by each and every journal

Priem J and Hemminger BM (2012) *Decoupling the scholarly journal*.
Front. Comput. Neurosci. 6:19. doi: 10.3389/fncom.2012.00019

Peer review in the past 50 years



- Most common model:
 - External reviewers
 - Freeform responses
 - Quality of results
 - Fit for journal
 - Final decision by journal editor
 - Reviews returned anonymously
 - Authors do not know reviewers
 - Double-blind peer review
- New experiments are iterating on these principles

Spectrum of peer review - peer review criteria

- Impact and novelty?
- Good science?
- Appropriate for this journal?

Reviewers' comments are included in the final published article to provide a level of transparency to the validation process.

Peer review statistics

- Kravitz and Baker (2011):
 - Average # of reviews before publication: 6.3
 - Average # journals submitted to: 2.1
 - 1.5 million articles x 80% receiving reviews x 2.3 reviewers per paper = 2.76 million reviews per year

Time Spent on Rejected Reviews Annually:
15.6 Million Hours = 1779 Years

Problems with peer review

- Inefficiency and reviewer fatigue
- Inconsistency (Smith, 2006):
 - Reviewer A: *I found this paper an extremely muddled paper with a large number of deficits.*
 - Reviewer B: *It is written in a clear style and would be understood by any reader.*
- Personal and manuscript-related bias

THE FUTURE

What is to come

A shifting industry

More research, more publications = new challenges

- Reviewer fatigue
- Discovery of new content
- Unsustainable subscription prices
 - See Gonzalez's [**"The wealthiest university on Earth can't afford its academic journal subscriptions"**](#)

Preprints

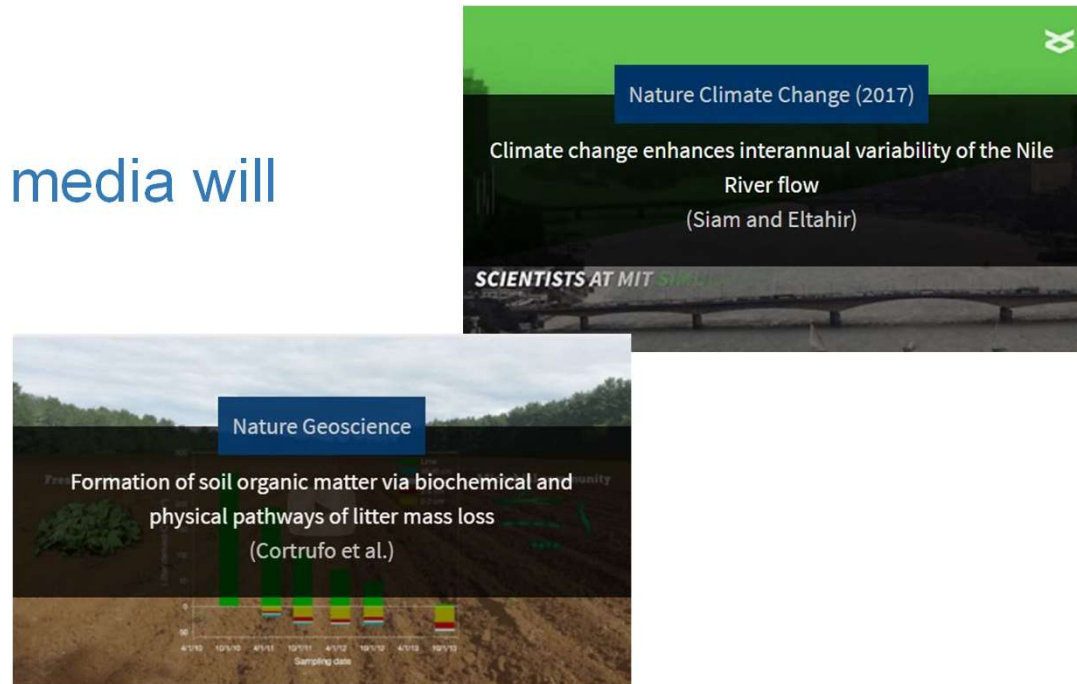
- Preprints on the rise
 - arXiv, bioRxiv, ChemRxiv, PeerJ
- Researchers using preprints to share their work early
 - Benefits include exposure for one's work, collaboration opportunities, and possibly career advancement
- Preprints are new and still have unknowns
 - Concern for getting scooped
 - Many authors have not heard of preprints

Science, *Are Preprints the Future of Biology?*
A Survival Guide for Scientists, 2018

www.aje.com

New media and channels

- Videos to share research
- Sharing research on social media will continue to grow
 - ResearchGate
 - Twitter



Research Square, Research Square Videos, 2018

www.aje.com

Sharing and storing data



PLOS' New Data Policy: Public Access to Data

By Liz Silva

Posted: February 24, 2014

The future

- Endless amounts of new knowledge
 - Tools for discovery
 - Tools for sharing (social media)
 - Tools for archiving data
- Changes to the publishing process
 - Preprint sharing
 - Iterations on peer review
- Collaborations among researchers
 - More opportunities to collaborate
 - Collaborations may offer more funding opportunities

Choosing the Right Journal for Your Research

Outline

1. Search tips
2. Journal information/metrics
3. Final decisions



The goal: publish quickly

- Every time you get rejected, it can cost you months of time or more
 - Average time from submission to acceptance: 188 days
 - Average time from acceptance to publication: 175 days
- Find a journal that fits your work closely. Take your best shot first



AJE, State of Authorship Report: Time and Costs Involved in Publishing Research, 2018.

SEARCH TIPS

Create and curate your own list of target journals

Search tips and basic strategy

- Find articles similar to the one you want to publish
- Collect a list of journals that publish those articles
- Research those journals
- Make a prioritized list of targets

Search

- Use your draft title and abstract (find specific journals and articles)
- Use keywords (more general searches)

The screenshot shows a PubMed search results page for the query "vibrio cholerae biofilms". The search bar at the top contains the query and options for RSS, Save search, and Advanced. The results are displayed in a list format, with the first two results visible. The first result is "Post-transcriptional activation of a diguanylate cyclase by quorum sensing small RNAs promotes biofilm formation in *Vibrio cholerae*." by Zhao X, Koestler BJ, Waters CM, Hammer BK, published in Mol Microbiol. The second result is "Development of quinoline-based disruptors of biofilm formation against *Vibrio*." by León B, Fong JC, Peach KC, Wong WR, Yildiz FH, Linington RG, published in Org Lett. To the right of the search results is a Google Scholar search bar with the same query and a search button. Below the search bar, the Google Scholar results are shown, including the same two articles as in the PubMed results, with their HTML abstracts visible. The PubMed results also include a left sidebar with filters for Article types, Text availability, Publication dates, and Species.

Options



www.ncbi.nlm.nih.gov/pubmed



jane.biosemantics.org



scholar.google.com

JournalGuide

journalguide.com

Pros and cons

- **PubMed**

- ✓ All peer-reviewed
- ✓ Advanced search capabilities
- ✗ Restricted to certain biomedical journals

- **Google Scholar**

- ✓ Good at finding free versions
- ✓ Expansive
- ✗ Includes gray literature and junk

- **JANE**

- ✓ Easy interfaces
- ✗ Layered over PubMed, so no extra coverage

- **JournalGuide**

- ✓ Compares data across all fields
- ✓ Indicates presence of journal in major international index
- ✗ Relies on third parties, so some information unavailable

www.aje.com

Collect “hits” into journal list

Report ranking	IF	J. title	Website	Print ISSN	E-ISSN	issues/year	acceptance rate	JCR category/rank	Keywords used	Title of published articles
1	7.14	Diabetes Care	http://care.diabetesjournals.org/	0149-599	1935-5548	12	20	Endocrinology & Metabolism (9/116= 7.8%)	title:glucose AND preterm AND mortality (or issn:XXXX-XXXX AND "gestational outcome")	The impact of glycemic control on neonatal outcome in singleton pregnancies complicated by gestational diabetes. (2007)) Ethnic differences in perinatal outcome of gestational diabetes mellitus. (2006 Maternal metabolic control and perinatal outcome in women with gestational diabetes mellitus treated with lispro or aspart insulin: comparison with regular insulin. (2007)

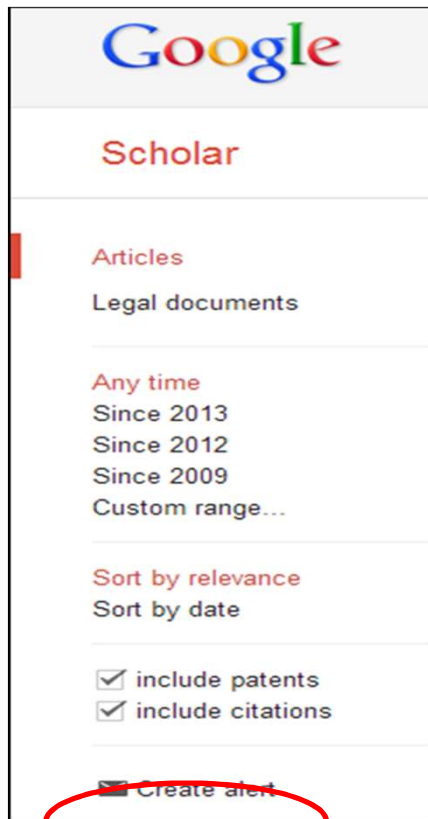
Confidence	Journal	Influence	Articles
	Journal of bacteriology PubMed Central: immediately	1.47414	Show articles
	FEMS microbiology letters PubMed Central: immediately	0.78904	Show articles
	Proceedings of the National Academy of Sciences of the United States of America PubMed Central: immediately	4.85992	Show articles
	Applied and environmental microbiology PubMed Central: immediately	1.34708	Show articles
	Infection and immunity PubMed Central: immediately	1.31496	Show articles
	Molecular microbiology	2.42712	Show articles
	Science (New York, N.Y.)	16.5797	Show articles
	PloS one Open access PubMed Central: after 0 months	1.92142	Show articles
	Environmental microbiology reports		Show articles
	Trends in microbiology	3.04537	Show articles
	Microbiology and immunology	0.51451	Show articles
	Archives of microbiology	0.71651	Show articles
	Organic letters		Show articles



Advanced search strategies

- Use “advanced search” options if available
- Limit your search to the years 2014-2019
 - (expand to earlier articles only if needed)
- Include recent articles or articles in press
- Note the name of the publisher to investigate later
 - Introduce you to new options
 - Avoid questionable publishers

Save your searches to run later



Google

Scholar

Articles

Legal documents

Any time

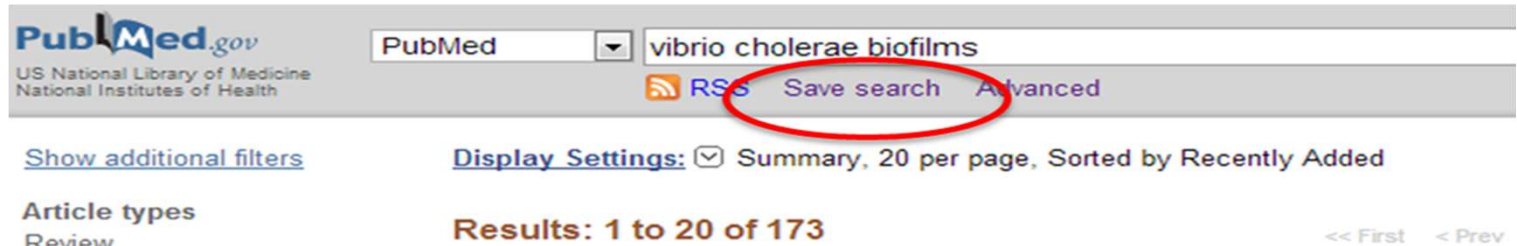
- Since 2013
- Since 2012
- Since 2009
- Custom range...

Sort by relevance

Sort by date

- include patents
- include citations

Create alert



PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed

[RSS](#) [Save search](#) [Advanced](#)

[Show additional filters](#) [Display Settings:](#) Summary, 20 per page, Sorted by Recently Added

Article types
Review

Results: 1 to 20 of 173

<< First < Prev

Dealing with the results

- A good number of results is 100 – 300.
- If you recover < 30 or > 300 results, expand or restrict your search, respectively.
- Make a list of your top journal choices.
- Find out more about them.

JOURNAL INFORMATION / METRICS

What can you find out about the journals that might be a good fit?

Information to gather

- Find the journal's website, and grab key information:
 - ISSN (unique identifier for every journal)
 - Publisher/affiliated societies
 - Contact information (in case of questions)
 - Aims and scope
 - Publication frequency

Information to gather

- Look for additional information that can help you make a more informed decision:
 - Acceptance rate
 - Speed
 - Time to first decision, time to publication (online and/or print)
 - Costs
 - Page fees, publication fees, color image fees
 - Open access policies
 - Is self-archiving allowed?
 - Is full open access available?

Colleagues' experience

- One of the most valuable pieces of data about a journal is the experience of real researchers. Ask around!
 - Advisor/committee
 - Labmates (past and present)
 - Collaborators



Researchers' experience in general

- Online resources:
 - University/program listservs
 - Other academic websites
 - Google search



www.reddit.com/r/academia



academia.stackexchange.com



Identifying “predatory” journals

- Take care to avoid journals that are only out to turn a profit
- Questionable publishers are springing up frequently, and they can be hard to distinguish from legitimate new journals.



Identifying “predatory” journals

- Look for some warning signs:
 - A single publisher has launched a huge number of journals at one time, with little content.
 - Issues are late or skipped.
 - The journal claims affiliation with a country or region that is different from the actual location of the publisher or editor.
 - There are fundamental errors in the titles or abstracts.
 - Editorial board is “coming soon.”

Journal metrics and types

- Some established metrics can help you discern the strength of a specific journal – but take each one with a grain of salt
 - **Journal Impact Factor** (Clarivate Analytics): average measure of citations/published article
 - **SNIP** (Scopus/Elsevier): citation metric normalized for citation habits in the journal's field
 - **Eigenfactor**: measures total impact of articles in a journal (estimating how frequently the journal is accessed)
 - **h-index**: assesses overall productivity combined with impact

Journal metrics and types

Issue: All citations are NOT the same! No metrics currently evaluate whether a citation was positive and essential, just filler, or negative (to refute prior errors)

Beware of “predatory” metrics

- Some questionable journals invent new metrics to make the journal appear more credible
- Watch for metrics that
 - Are not transparent
 - Are not used outside of one publisher
 - Intentionally build on established metrics (e.g., “Global Impact Factor”)

Verify journal indexing

- Do not take a journal's word for it. Visit the index website:
 - Clarivate Analytics Journal Master List (<http://ip-science.thomsonreuters.com/mjl/>)
 - SCOPUS journal title list (download at <http://www.elsevier.com/online-tools/scopus/content-overview>)
 - PubMed/MEDLINE (search at <http://www.ncbi.nlm.nih.gov/nlmcatalog> with filter 'Currently indexed in MEDLINE')

FINAL DECISIONS

The last steps

Benefits and risks - high impact factor journal

- High impact factor = stronger “stamp of approval”
- High risk of rejection and lost time



Questions to consider - high impact factor journal

- Is it more important to get this research out quickly or to maximize the prestige of the journal?
- Is this paper from a project that is a primary focus of your lab's efforts, or is it a side project that might be nice to wrap up?

Benefits and risks - multidisciplinary journal

- Multidisciplinary journal = more readers, broader impact
- Need to rewrite paper to appeal to a larger audience



Questions to consider - multidisciplinary journal

- Is your work relevant to a broad audience, or will the most interested readers of your work be within your field?
- Can you easily frame your research to a multidisciplinary audience?

Benefits and risks - specialized journal

- Specialized journal with fewer submissions = higher chance of acceptance
- Risk of “walling off” your research within your field



Questions to consider - specialized journal

- Is getting the research accepted quickly an important consideration?
- Will a specialized journal be visible enough to researchers in other fields? (Most researchers search at the article level now anyway.)

Benefits and risks - open access journal

- Open access journal = greater exposure and (perhaps) more citations
- May not be the most prestigious journal in your field
- Chance of running into questionable publishers



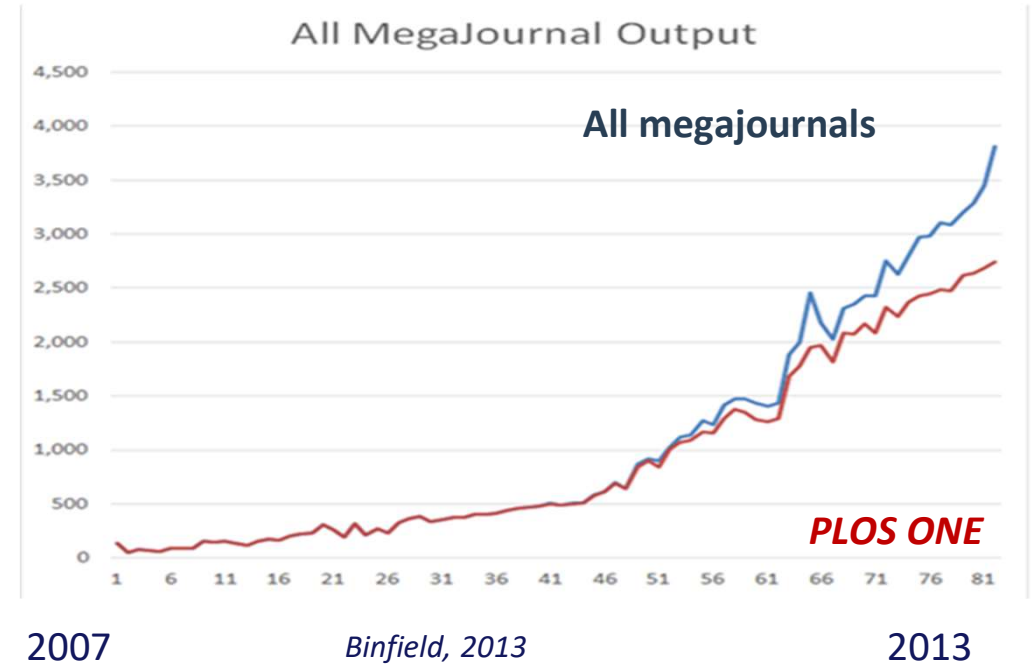
Questions to consider - open access journal

- Is open access an important motivation for you?
- Will you be concerned if only researchers with subscriptions can see your work?

Sound research “megajournals”

What is a megajournal?

- Review for soundness of research results and interpretation, not perceived importance/impact
- Broad subject scope
- Publishes any and all articles that meet criteria



Benefits and risks - megajournal

- Increasing number of journals focusing on rigor of research, not perceived interested/novelty
- Fast and easy route to publication
- More effort on your part in other areas:
 - Polishing the language
 - Sharing the paper post-publication
 - Demonstrating the value of the paper without relying on the journal “brand”



The final decision

- Weigh the pros and cons for each journal, then make an ordered list
- Start with journal #1, and move down the list only if needed
- Remember that the best fit is not the only thing that affects your paper's chances
 - Edit your paper carefully
 - Spend time creating strong figures
 - Write an effective cover letter

For more resources on choosing the
right journal, visit the
AJE Author Resource Center
arc.aje.com

ARC HOME | CHOOSING A JOURNAL

Why Choosing a Journal Early in the Research Process is Important

SUMMARY

Choose a journal for your research early with these tips, and keep track of your options with our free downloadable template.

ARC HOME | CHOOSING A JOURNAL

8 Ways to Identify a Questionable Open Access Journal

SUMMARY

How to watch out for predatory journals in the Open Access world

ARC HOME | CHOOSING A JOURNAL

Understanding Submission and Publication Fees

Also available in: [中文](#).

SUMMARY

- A number of journals charge fees to authors of one kind or another.

References - sources from AJE

- [Agreement across prepositional phrases](#)
- [Authorship](#)
- [Ethics](#)
- [Ghost authorship](#)
- [Open access mandates](#)
- [Plagiarism](#)
- [Self plagiarism](#)

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