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Effectively Communicating Your Research – Day 1

UNAM

22 February 2016

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Science Director

About Daniel...



THE UNIVERSITY
OF AUCKLAND

NEW ZEALAND

Te Whare Wānanga o Tāmaki Makaurau



UNIVERSITY OF
CAMBRIDGE



nature publishing group



**Your goal is not only to be published,
but also to be widely read/cited**

Be an effective communicator

- ✓ **Write effectively**
- ✓ **Choose the most appropriate journal**
- ✓ **Logically organize your ideas in your manuscript**
- ✓ **Write impressive cover letters to the journal editor**
- ✓ **Successfully navigate peer review**
- ✓ **Promote your work after publication**

Workshop outline

Day 1	Day 2
Ethics	Writing skills
Writing skills	Titles & Abstracts
Effective writing	Cover letters
Journal selection	Peer review
Methods & Results	Promoting your work
Introductions & Discussions	

Workshop outline

Day 1	Day 2
Ethics	Writing skills
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Session 1

Publication ethics

Data manipulation

Fabricate data

**Move data on
a graph**

Never

**Manipulate
images**

**Hide bad
results**

Three criteria for authorship

- 1. Significantly involved in study design, data collection/analysis**
- 2. Writing and revising the manuscript**
- 3. Approval of final version (responsible for the content)**

<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>

Gift/ghost authorship

Gift authorship

Making someone an author when they do not deserve it (friends, colleagues, etc.)

- Try to make paper more prestigious by adding a “big name”
- Adding the department head to every paper from their department
- Thanking someone for a contributed material

Ghost authorship

Not making someone an author when they do deserve it

- Hide conflict of interest (e.g., company employee)
- If someone did not conduct the study, but wrote the paper (e.g., “ghost writer”)

Conflicts of interest

*Financial or personal relationships
that may bias your research*

You are doing research on a new drug and...

- Your brother works at the drug company
- The drug company funded the research
- You own stock in the drug company
- You own stock in a competing drug company



ICMJE Form for Disclosure of Potential Conflicts of Interest

Section 1. Identifying Information

1. Given Name (First Name) _____ 2. Surname (Last Name) _____ 3. Date _____

4. Are you the corresponding author? Yes No

5. Manuscript Title _____

6. Manuscript Identifying Number (if you know it) _____

Section 2. The Work Under Consideration for Publication

Did you or your institution **at any time** receive payment or services from a third party (government, commercial, private foundation, etc.) for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.)?

Are there any relevant conflicts of interest? Yes No

Section 3. Relevant financial activities outside the submitted work.

Place a check in the appropriate boxes in the table to indicate whether you have financial relationships (regardless of amount of compensation) with entities as described in the instructions. Use one line for each entity; add as many lines as you need by clicking the "Add +" box. You should report relationships that were **present during the 36 months prior to publication**.

Are there any relevant conflicts of interest? Yes No

Section 4. Intellectual Property – Patents & Copyrights

Do you have any patents, whether planned, pending or issued, broadly relevant to the work? Yes No



ICMJE Form for Disclosure of Potential Conflicts of Interest

Section 5. Relationships not covered above

Are there other relationships or activities that readers could perceive to have influenced, or that give the appearance of potentially influencing, what you wrote in the submitted work?

- Yes, the following relationships/conditions/circumstances are present (explain below):
- No other relationships/conditions/circumstances that present a potential conflict of interest

At the time of manuscript acceptance, journals will ask authors to confirm and, if necessary, update their disclosure statements. On occasion, journals may ask authors to disclose further information about reported relationships.

Section 6. Disclosure Statement

Based on the above disclosures, this form will automatically generate a disclosure statement, which will appear in the box below.

Evaluation and Feedback

Please visit <http://www.icmje.org/cgi-bin/feedback> to provide feedback on your experience with completing this form.

Multiple submissions

Submit to *one* journal at a time

Don't try to increase your chances of acceptance!

You can only submit to another journal if:

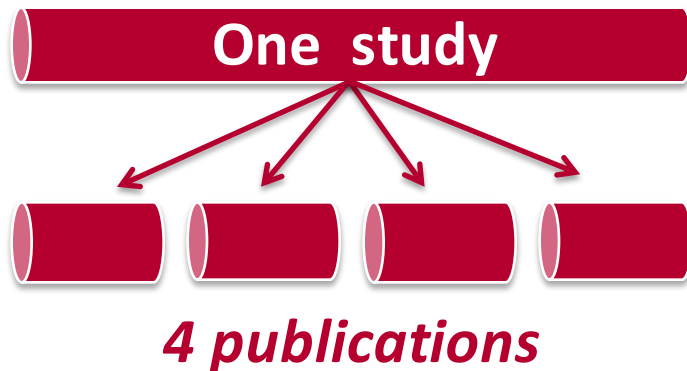
- ✓ You have been rejected by the first journal
- ✓ You have formally withdrawn the submission

Salami publishing



Don't slice your research to increase your publication output!

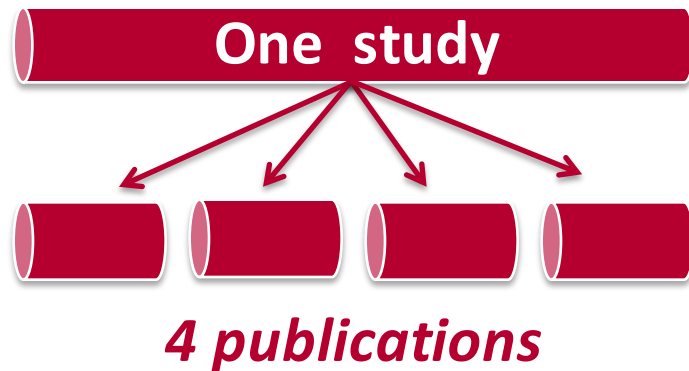
By André Karwath [CC BY-SA 2.5], via Wikimedia Commons



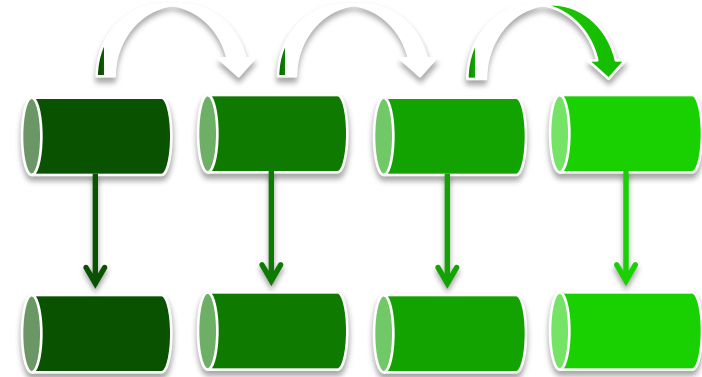
Why unethical?

Readers will not have access to all the relevant information to critically evaluate the study

Salami publishing



- ✗ Same sample population
- ✗ Same controls
- ✗ Experiments concurrent
- ✗ *Dependent* results



- ✓ Distinct populations
- ✓ Different controls
- ✓ Experiments sequential
- ✓ *Independent* results

*One larger paper will have more impact
in the field and more citations!*

Plagiarism

Makes readers think others' words or ideas are your own

Copying published text

Stating ideas of someone else without citing the source

Self-plagiarism

Copying text into your manuscript that you have written and published before

Violates copyright

Makes readers think you are presenting something *new*

Is plagiarism common?

***Nature* conducted a survey across 9 scientific publishers and found that 6–23% of submitted papers were rejected because of plagiarism!**

Butler D. *Nature*. 2010; 466: 167.

Paraphrasing

*Expressing published ideas
using different words*

Tips on paraphrasing:

- Write the text first in Spanish, and then later translate back into English
- Verbally explain ideas to a colleague
- Summarize in a flowchart (e.g., methods)
- Cite published methods

Good paraphrasing

“This trial shows that sorafenib improves overall survival by nearly 3 months in patients with advanced hepatocellular carcinoma.”



Sorafenib improves survival by almost 3 months in patients with advanced hepatocellular carcinoma.²⁴

Good paraphrasing

“This trial shows that **sorafenib improves** overall **survival by** nearly **3 months in patients with advanced hepatocellular carcinoma.**”



✘ Sorafenib improves **survival by** almost **3 months in patients** with **advanced hepatocellular carcinoma.**²⁴



Sorafenib has been shown to improve the survival of **hepatocellular carcinoma** patients.²⁴

Transparency: It needs to be very clear how your study was conducted

PERSPECTIVE

nature
doi:10.1038/nature11556

BMJ



A call for transparent reporting to optimize the predictive value of preclinical research

Story C. Landis¹, Susan G. Amara², Khusrul Asadullah³, Chris P. Austin⁴, Robi Blumenstein⁵, Eileen W. Bradley⁶, Ronald G. Crystal⁷, Robert B. Darnell⁸, Robert J. Ferrante⁹, Howard Fillit¹⁰, Robert Finkelstein¹, Marc Fisher¹¹, Howard E. Gendelman¹², Robert M. Golub¹³, John L. Goudreau¹⁴, Robert A. Gross¹⁵, Amelie K. Gubitz¹, Sharon E. Hesterlee¹⁶, David W. Howells¹⁷, John Huguenard¹⁸, Katrina Kelner¹⁹, Walter Komshetz¹, Dimitri Krainc²⁰, Stanley E. Lazic²¹, Michael S. Levine²², Malcolm R. Macleod²³, John M. McCall²⁴, Richard T. Moxley III²⁵, Kalyani Narasimhan²⁶, Linda J. Noble²⁷, Steve Perrin²⁸, John D. Porter¹, Oswald Steward²⁹, Ellis Unger³⁰, Ursula Utz¹ & Shai D. Silberberg¹

BMJ 2013;347:f4796 doi: 10.1136/bmj.f4796 (Published 7 August 2013)

Page 1 of 2

EDITORIALS

UK Parliamentary Office
of Science & Technology

POSTNOTE

Number 461 March 2014

Transparency of Clinical Trial Data

Declaration of transparency for each research article

OPEN ACCESS

An antidote to inadequate reporting of research

Douglas G Altman *director*¹, David Moher *senior scientist*²

It needs to be very clear how your study was conducted

Patients

- How patients were enrolled
- Inclusion and exclusion criteria
- How patients were randomized into treatment groups
- Used intention-to-treat (all enrolled patients analyzed) or per-protocol analysis (only patients that complete the study analyzed)

It needs to be very clear how your study was conducted

Data

- **Unclear data** (blue vs. blue-ish)
- **Uninterpretable data** (glucose levels in patients who did not fast overnight)
- **Missing data**
 - **Why missing?** E.g., outliers or lost to follow-up?
 - **Imputed methods** (e.g., last observation carried forward, multiple imputation methods, sensitivity analyses)

It needs to be very clear how your study was conducted

Data

- How you analyzed your data (levels of measurement)?
 - Continuous (e.g., systolic pressure in mmHg)
 - Nominal categories (unranked: e.g., normal vs. abnormal blood pressure)
 - Ordinal categories (ranked; e.g., hypotensive, normal, and hypertensive)

It needs to be very clear how your study was conducted

Data

- How you categorized continuous data
 - Continuous: height of your patients in cm
 - Subjective ranking: short <150 cm, normal 151–175 cm, tall >176 cm
 - Logical ranking: short <1 SD of the mean, normal ± 1 SD of the mean, tall >1 SD of the mean

Treatment of participants

Informed consent

Participants in a study need to be informed of the:

- Study objectives
- Potential benefits or risks involved
- Confidentiality

This is usually written informed consent

Templates: http://www.who.int/rpc/research_ethics/informed_consent/en/

Informed consent



Consent form

For a patient's consent to publication of information about them in BMJ Publishing Group Ltd ("BMJ Group") publications and products.

Name of person described in article or shown in photograph: _____

Subject matter of photograph or article: _____

Journal name: _____

Manuscript number _____

Title of article: _____

Corresponding author: _____

I _____ [insert full name] give my consent for this information about MYSELF/MY CHILD OR WARD/MY RELATIVE [circle correct description] relating to the subject matter above ("the Information") to appear in the journal and associated publications.*

Informed consent

I have seen and read the material to be submitted to the journal

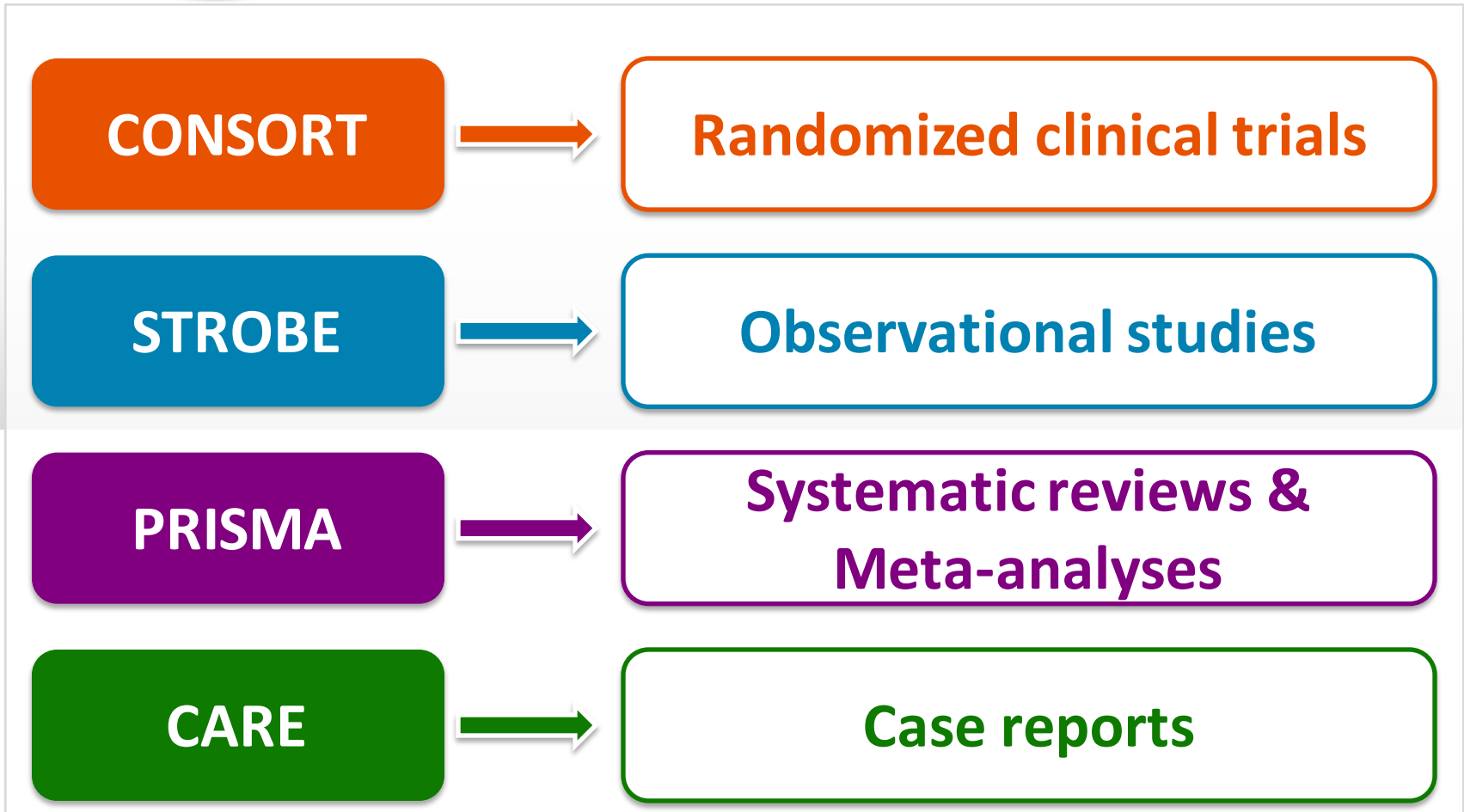
I understand the following:

- (1) The Information will be published without my name attached and BMJ Group will make every attempt to ensure my anonymity. I understand, however, that complete anonymity cannot be guaranteed. It is possible that somebody somewhere - perhaps, for example, somebody who looked after me if I was in hospital or a relative - may identify me.
- (2) The text of the article will be edited for style, grammar, consistency, and length
- (3) The Information may be published in the journal, which is distributed worldwide. The journal goes mainly to doctors but is seen by many non-doctors, including journalists.
- (4) The Information will also be placed on the journal website, <http://group.bmj.com/products>
- (5) *The Information may also be used in full or in part in other publications and products published by the BMJ Group or by other publishers to whom the BMJ Group licenses its content. This includes publication in English and in translation, in print, in electronic formats, and in any other formats that may be used by the BMJ Group or its licensees now and in the future. In particular the Information may appear in local editions of the journal or other journals and publications published overseas.
- (6) The BMJ Group will not allow the Information to be used for advertising or packaging or to be used out of context.
- (7) I can revoke my consent at any time before publication, but once the Information has been committed to publication ("gone to press") it will not be possible to revoke the consent.

Signed: _____

Date: _____

Reporting guidelines



Clinical trial registration

Where to

*Not required
observational*

Retrospective

Should

Primary Registries in the WHO Registry Network

Primary Registries in the WHO Registry Network meet **specific criteria** for content, quality and validity, accessibility, unique identification, technical capacity and administration. Primary Registries meet the requirements of the ICMJE.

The registries that currently meet these criteria are:

Australian New Zealand Clinical Trials Registry (ANZCTR)	Profile	Website
Brazilian Clinical Trials Registry (ReBec)	Profile	Website
Chinese Clinical Trial Registry (ChiCTR)	Profile	Website
Clinical Research Information Service (CRiS), Republic of Korea	Profile	Website
Clinical Trials Registry - India (CTRI)	Profile	Website
Cuban Public Registry of Clinical Trials (RPCEC)	Profile	Website
EU Clinical Trials Register (EU-CTR)	Profile	Website
German Clinical Trials Register (DRKS)	Profile	Website
Iranian Registry of Clinical Trials (IRCT)	Profile	Website
ISRCTN.org	Profile	Website
Japan Primary Registries Network (JPRN)	Profile	Website (in Japanese)
		Network members: UMIN CTR Website JapicCTI Website JMACCT CTR Website
Thai Clinical Trials Registry (TCTR)	Profile	Website
The Netherlands National Trial Register (NTR)	Profile	Website
Pan African Clinical Trial Registry (PACTR)	Profile	Website
Sri Lanka Clinical Trials Registry (SLCTR)	Profile	Website

gov

*tions are
investigator*

ossible

mission

Public registration not enough, need to publish!

RESEARCH ARTICLE

Extent of Non-Publication in Cohorts of Studies Approved by Research Ethics Committees or Included in Trial Registries

Only **54.2%** of
12,660 trials were
published

Mean publication times


- Positive: 62.4 months
- Inconclusive: 78.0 mo
- Negative: 82.2 mo


Publication ethics activity

Please see Activity 1 in your Workbook

Activity 1: Publication ethics


1. A graduate student had completed her research project and submitted the manuscript to her target journal before graduation. However, when the peer reviewer comments are returned, she had already left the university for a new post-doc. Therefore, the revisions, which included doing new experiments, were done by a new student in the lab. Can the new student now be a co-author on the paper?

 A. Yes. Although they were not involved in the first stage, they were involved in the research and writing during the second stage. That is sufficient.


 No! They had nothing to do with the original project—an acknowledgement is enough. **Fulfills authorship criteria**

Activity 1: Publication ethics


2. One of the authors on your manuscript owns stock in a company that competes with the one that makes the drug you are testing. What should you do?

 Nothing. He has no direct relationship with the company that makes the drug being tested, so it's not a conflict of interest.

Financial COI


 To avoid a potential conflict of interest, do not include them as an author on the manuscript. An acknowledgement for their work is sufficient.

Ghost authorship

 C. List them as an author, but declare a potential conflict of interest in your manuscript and cover letter

Activity 1: Publication ethics


3. You treat a patient with a unique clinical presentation. Later, a colleague suggested that you publish those findings as a case report. However, you cannot find the patient to ask for consent. What should you do?

 Explain to the journal editor that the patient cannot be found to ask for consent. However, because patient identity will remain anonymous in the paper, consent is not necessary.

Consent is *always* necessary!

 Decide not to publish the patient's case.

If important to public health, try to publish

 C. Contact your institute review board and request a consent waiver before preparing your manuscript for submission.

Criteria for waiver:

- Important for public health
- Patient will remain anonymous

Decision still up to the journal editor

Activity 1: Publication ethics

4. Please choose which sentence below is the best paraphrase for this sentence:


“After application of the oil-based cream, we observed a 78% reduction in rashes caused by plants, but no reduction in those caused by animals.”

A. Oil-based creams have been found to be more effective in reducing rashes caused by plants than those caused by animals (Robens et al., 2013).

Activity 1: Publication ethics

4. Please choose which sentence below is the best paraphrase for this sentence:

“After application of the oil-based cream, we observed a 78% reduction in rashes caused by plants, but no reduction in those caused by animals.”

 After application of oil-based creams, Robens et al. (2013) found a 78% decrease in rashes that were caused by plants. However, they did not see a decrease in rashes caused by animals.

Still too similar

Activity 1: Publication ethics

4. Please choose which sentence below is the best paraphrase for this sentence:

“After application of the oil-based cream, we observed a 78% reduction in rashes caused by plants, but no reduction in those caused by animals.”

 **Rashes caused by plants are easier to treat than rashes caused by animals (Robens et al., 2013).**

Not accurate

Activity 1: Publication ethics

5. You would like to use the following text in your manuscript. Properly paraphrase this sentence to avoid plagiarism.

“We found that students who preferred team sports, such as football and basketball, scored 6.9% higher on entrance exams than students who preferred video games.”

Students who preferred team sports rather than video games had higher entrance exam scores.

Professional writing skills

Use your figures to structure your manuscript

Where to start?

- ❖ Your *findings* are why you want to publish your work
- ❖ Form the basis of your manuscript
- ❖ First step, is to logically organize your findings

Figure 1

Table 1

Figure 2

?

Figure 3

Logical presentation

Is anything missing?

Additional analyses?

Use your figures to structure your manuscript

Where to start?

- ❖ Your *findings* are why you want to publish your work
- ❖ Form the basis of your manuscript
- ❖ First step, is to logically organize your findings

Figure 1

Table 1

Figure 2

Figure 3

Figure 4

Logical presentation

New data

Outlines

2 factors to consider when writing a manuscript

**Logically organizing
your ideas**

**Communicating
in English**



2 factors to consider when writing a manuscript

**Logically organizing
your ideas**



Write outline

**Communicating
in English**



Write manuscript



Focus your outline

Concisely describe your research question

- Why is it important
- Not only what is unknown, but could be a limitation or a controversy

State your aims to address question

How does it address the question

State your main conclusion

- How does it answer the question
- How does it advance the field

Prepare an outline

- I. **Introduction**
 - A. General background
 - B. Related studies
 - C. Problems in the field
 - D. Aims
- II. **Methods**
 - A. Subjects/Samples/Materials
 - B. General methods
 - C. Specific methods
 - D. Statistical analyses
- III. **Results**
 - A. Key points about Figure 1
 - B. Key points about Table 1
 - C. Key points about Figure 2
 - D. Key points about Figure 3
 - E. Key points about Figure 4
- IV. **Discussion**
 - A. Major conclusion
 - B. Key findings that support conclusion
 - C. Relevance to published studies
 - D. Unexpected/negative findings
 - E. Limitations
 - F. Implications
 - G. Future directions

Use a *reporting checklist* when preparing your outline

Prepare an outline

- I. **Introduction**
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 - C. Problems in the field
 - D. Aims
- II. **Methods**
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Introduction

**What background information
you will introduce**

Prepare an outline

- I. **Introduction**
 - A. General background
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 - G. Future directions

Introduction

**What background information
you will introduce**

Methods

What analyses you will describe

Prepare an outline

- I. **Introduction**
 - A. General background
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 - G. Future directions

Introduction

**What background information
you will introduce**

Methods

What analyses you will describe

Results

What findings you will present

Prepare an outline

- I. Introduction**
 - A. General background
 - B. Related studies
 - C. Problems in the field
 - D. Aims
- II. Methods**
 - A. Subjects/Samples/Materials
 - B. General methods
 - C. Specific methods
 - D. Statistical analyses
- III. Results**
 - A. Key points about Figure 1
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 - E. Key points about Figure 4
- IV. Discussion**
 - A. Major conclusion
 - B. Key findings that support conclusion
 - C. Relevance to published studies
 - D. Unexpected/negative findings
 - E. Limitations
 - F. Implications
 - G. Future directions

Introduction

What background information you will introduce

Methods

What analyses you will describe

Results

What findings you will present

Discussion

What interpretations, limitations, and implications you will discuss

Preparing an outline

- I. **Introduction**
 - A. General background
 - B. Related studies
 - C. Problems in the field
 - D. Aims
- II. **Methods**
 - A. Subjects/Samples/Materials
 - B. General methods
 - C. Specific methods
 - D. Statistical analyses
- III. **Results**
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 - A. Major conclusion
 - B. Key findings that support conclusion
 - C. Relevance to published studies
 - D. Limitations
 - E. Unexpected results
 - F. Implications
 - G. Future directions

- ❖ **Knowing what you need to discuss, write down the key ideas**
- ❖ **Use short bullet points to list ideas**
- ❖ **Don't let "writing correct English sentences" get in the way of outlining your ideas**

List important information from your reading in the appropriate section with citations

Getting feedback

- ❖ After completing outline, discuss with colleagues
- ❖ Make the necessary changes *before* you begin writing
- ❖ Write your manuscript *section-by-section*
 - Less stressful
 - Get feedback after each section
 - Easier for your colleagues to review
- ❖ Set *deadlines* for each section

The 'write' order

Manuscript sections

- Title
- Abstract
- Introduction
- Methods
- Results
- Discussion

Writing order

- Methods
- Results
- Discussion
- Introduction
- Abstract
- Title

The 'write' order

Methods

- Write as you are doing experiments
- Include any changes you've made

Results

- Based on prepared figures
- Subsections based on each figure

Discussion

- Conclusions based on presented data
- Discuss relevant studies

The 'write' order

Introduction

- Narrow/broad & international/regional
- Introduce ideas necessary for understanding the Results/Discussion

Abstract

- Concisely summarize manuscript
- According to author guidelines

Title

- Concisely summarize key finding
- Include keywords

After the first draft....

Update references

- 75% from the last 5 years
- Avoid too many self-citations
- Include international citations

Introduction

Methods

Discussion

Results

Conclusion

Abstract

Most references

Some references

No references

After the first draft....

Format manuscript

- Journal template
- Re-check word limits
- Reference formatting

Revise manuscript

- Proofread (read aloud)
- Input from colleagues
- Reduce by 15%
- Clear Figures/Tables
- Logical flow

Effective writing

Improving readability

Use short sentences

Limit your sentences to 15–20 words

One idea per sentence

Use active voice

More simple, direct, and easier to read

*“Nature journals prefer authors to write in the **active voice**”*

(http://www.nature.com/authors/author_resources/how_write.html)

Use strong verbs

**Avoid
nominalizations**

Converting a verb into a noun

Estimate → *Estimation*

Decide → *Decision*

Confirm → *Confirmation*

Assess → *Assessment*

Use strong verbs

We made a...

Subject

Verb

Still no idea what this sentence is about!

...decision

...confirmation

...estimation

...cake?

Use strong verbs

~~We made a...~~

Subject

Verb

Still no idea what this sentence is about!

We decided...

We confirmed...

We estimated...

Clear and direct

Use strong verbs

The phosphorylation of the receptor by Src results in the recruitment of Grb2 and the activation of Ras.

Use strong verbs

18 words

The **phosphorylation** of the receptor by Src results in the **recruitment** of Grb2 and the **activation** of Ras.



11 words

Src phosphorylates the receptor, which then recruits Grb2 and activates Ras.

Use strong verbs

Haywood R. Photochem Photobiol. 2006; 82: 1123–1131.

“These findings imply that the rates of ascorbate radical production and its recycling via dehydroascorbate reductase to replenish the ascorbate pool are equivalent at the lower irradiance, but not equivalent at higher irradiance with the rate of ascorbate radical production exceeding its recycling back to ascorbate.”

Use strong verbs

Haywood R. Photochem Photobiol. 2006; 82: 1123–1131.

“These findings imply that **the rates of** ascorbate radical **production** and its **recycling** via dehydroascorbate reductase ~~to replenish the ascorbate pool~~ are equivalent at the lower irradiance, but not equivalent at higher irradiance with **the rate of** ascorbate radical **production** exceeding its **recycling** back to ascorbate.”

46 words

These findings imply that at low irradiation, ascorbate radicals are **produced and recycled**—by dehydroascorbate reductase—at the same rate, but at higher irradiation, they are **produced** faster than they can be **recycled** back to ascorbate.

36 words

These findings imply that at low irradiation, ascorbate radicals are produced and recycled—by dehydroascorbate reductase—at the same rate. However, at higher irradiation, **these radicals** are produced faster than they can be recycled back to ascorbate.

20 & 17 words

Academic English writing style

Which sentence suggests that you
will get a raise?


1. Although you deserve a raise, the budget is tight.
2. Although the budget is tight, **Stress position** you deserve a raise.

Readers focus at the **end of the sentence** to determine what is important.

Academic English writing style

The **stress position** also introduces
the topic of the next sentence

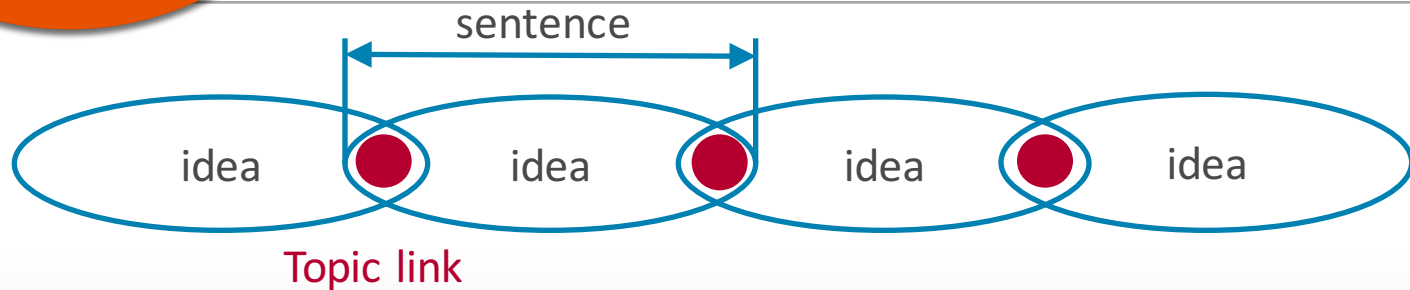
Although the budget is tight, you deserve a raise. Your salary
will increase at the beginning of next year.



Stress position **Topic position**

The topic position introduces the idea of the current sentence

Academic English writing style



The patient went to the hospital to see a *gastroenterologist*. *The doctor* then performed a series of *diagnostic tests*. *The results* showed the patient suffered from a *bacterial infection*. *Antibiotics* were prescribed to treat the infection before the patient developed an *ulcer*.

Academic English writing style

Topic sentence

Lung cancer is the leading cause of cancer mortality for men and women. **Despite** smoking prevention and cessation programs and advances in early detection, the 5-year survival rate for lung cancer is only 16% with current therapies. **Although** lung cancer incidence rates have recently declined in the United States, more lung cancer is now diagnosed when considered together in former- and never-smokers than in current smokers. **Thus**, even if all of the national anti-smoking campaign goals are met, lung cancer will remain a major public health problem for decades. New ways to treat or prevent lung cancer are therefore needed.

Support

Stress sentence

One potential therapeutic target for lung cancer is the Wnt signaling pathway.

Topic sentence The Wnt signaling pathway in mammals consists of a family of secreted lipid-modified Wnt protein ligands that bind to a family of 7-pass transmembrane Frizzled (Fzd) receptors, as reviewed...

Academic English writing style

Contrasting ideas

**Readers use sentence structure to
determine *emphasis***

- Stress position
- Main clause vs. subordinate clause
- Clause length

Useful in the Discussion
Vary emphasis of your interpretations

Contrasting ideas

Main vs. subordinate clause

Subordinate

Main

Although the budget is tight, you deserve a raise.

Linking word

- However
- Despite
- In spite of
- But
- Even though

Tells the reader 2 things:

- Idea may not be important
- There is another contrasting idea

Contrasting ideas

Examples

Main + stress

Although your study has an important application, the methodology is flawed.



Subordinate + stress

Your study has an important application, but the methodology is flawed.



Main + stress

Although the methodology is flawed, your study has an important application.



Subordinate + stress

The methodology is flawed, but your study has an important application.



Varying clause length

Subordinate + stress

Your study has an important application, **but the methodology is flawed.**

Your study will facilitate our understanding of stem cell differentiation and promote the development of new therapeutics, **but the methodology is flawed.**



<http://www.jenningswire.com/wp-content/uploads/2013/08/bigstock-Successful-business-people-wit-42882634.jpg>

Contrasting ideas

Varying clause length

Subordinate + stress

Your study has an important application, **but the methodology is flawed.**

Your study has an important application, **but it has a poor study design, improper controls, and inappropriate techniques that are out-of-date.**



<http://epilepsy.com/wp-content/uploads/2014/11/Stress-7508650.jpg>

Discussing limitations



Short subordinate clause not in the stress position

Although our results demonstrate that this may be a useful therapy, it was limited by its small sample size.



Long main clause in the stress position

Although this study was limited by its small sample size, our results demonstrate that this novel therapy will likely be useful in treating patients with persistent MRSA infections.

Common mistakes

Data is plural

Data is the plural form of ***datum***

The data was analyzed...
This data suggests...



The data were analyzed...
These data suggest...

Comparisons

- ❖ ***Compared with*** is for comparing similar things
- ❖ ***Compared to*** is for comparing different things

The toxicity of the new scaffold was reduced compared to the previous scaffold.



The toxicity of the new scaffold was reduced compared with the previous scaffold.

Comparisons

The toxicity of the new scaffold was reduced compared with the previous scaffold.

Comparing toxicity with the scaffold?

Parallel structure:

A of B compared with A' of B'.

The toxicity of the new scaffold was reduced compared with the toxicity of the previous scaffold.

The toxicity of the new scaffold was reduced compared with that of the previous scaffold.

Comparisons

Parallel structure



“The tumor growth was faster in untreated patients **as compared to** patients that were treated.”

“The tumor growth was faster in untreated patients **when compared with** the tumor growth in treated patients.”

“The tumor growth was faster in untreated patients when compared with **that** in treated patients.”

Unnecessary words

~~“It is well known that~~ most of the intense diffraction peaks...”

~~“As a matter of fact, such a~~ **This** low-temperature reaction...”

~~“A number of studies have shown that~~ the charged group...”

~~“That is another reason why~~ **Therefore**, we believe...”

...as described **previously** ~~in our previous study.”~~

~~“The study of~~ **Studying** multilayer graphene is also important...”

~~“...at a flow rate of~~ 1.0 mL/min.”

Unnecessary words

Avoid

At a concentration of 2 g/L

At a temperature of 37°C

At a wavelength of 340 nm

In order to

In the first place

Four in number

Green color

Subsequent to

Prior to

Preferred

At 2 g/L

At 37°C

At 340 nm

To

First

Four

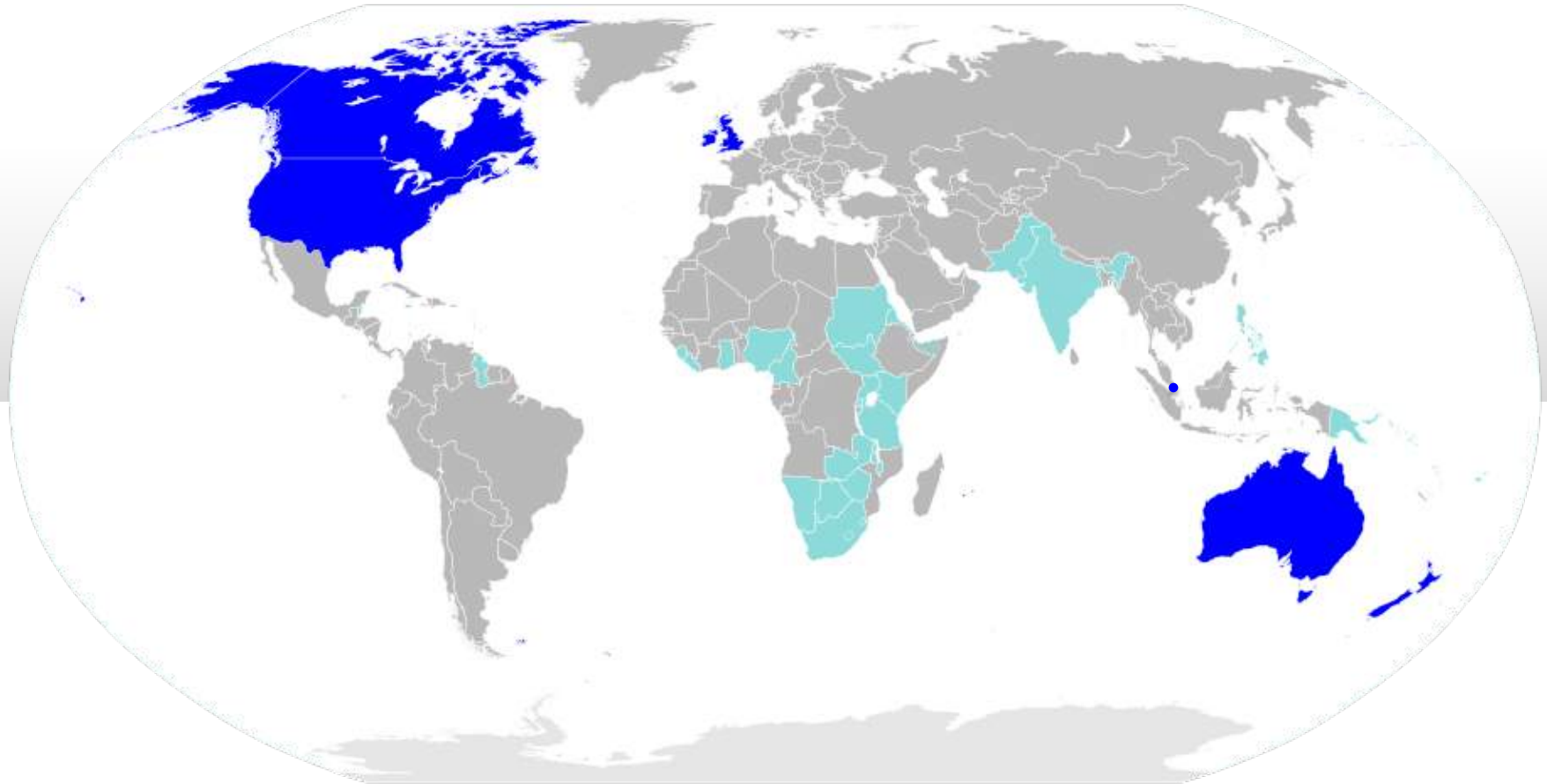
Green

After

Before



What does this map represent?



 English is official language

 English is commonly used



“I should use complex words to make my writing more impressive.”

Nature's guide to authors:

Nature is an international journal covering all the sciences. Contributions should therefore be written ***clearly and simply*** so that they are accessible to readers in other disciplines and to readers for whom English is not their first language.

Complex words

To ascertain the efficaciousness of the program, we interrogated the participants upon completion.

Complex words

To **ascertain** the **efficaciousness** of the program, we **interrogated** the participants upon completion.

To **determine** the **success** of the program, we **questioned** the participants upon completion.

Simple words

Avoid

Adequate
Apparent
Ascertain
Endeavor
Magnitude
Retain
Sufficient
Terminate
Utilization



Preferred

Enough
Clear
Determine
Try
Size
Keep
Enough
End
Use

Effective writing activity

Please see Activity 2 in your Workbook

Activity 2: Effective writing

1. What is wrong with the following sentences? How would you rewrite them to be clearer?

A. The patient who was admitted to the clinic after running a marathon held in honor of those who died from prostate cancer was diagnosed as having pancreatic cancer.

Activity 2: Effective writing

1. What is wrong with the following sentences? How would you rewrite them to be clearer?

A. The **patient** who was admitted to the clinic after running a marathon held in honor of those who died from prostate cancer **was diagnosed** as having pancreatic cancer. **28 words**

We diagnosed a patient as having pancreatic cancer after **he ran** a marathon held in honor of those who died from prostate cancer. **23 words**

Subject-verb placement

Active voice

Activity 2: Effective writing

1. What is wrong with the following sentences? How would you rewrite them to be clearer?

37 words!

B. Randomized groups of mice were subjected to different treatments based on age and sex to evaluate the effects of specific drugs on their nervous systems and freely fed organic food and water until the next regimen commenced.

Activity 2: Effective writing

1. What is wrong with the following sentences? How would you rewrite them to be clearer?

37 words!

B. Randomized groups of mice were subjected to different treatments based on age and sex to evaluate the effects of specific drugs on their nervous systems and freely fed organic food and water until the next regimen commenced.

We evaluated the effects of specific drugs on the nervous systems of randomized groups of mice. Different treatments were given to the animals based on age and sex. The mice were then freely fed organic food and water until the next regimen began.

16, 12, & 15 words

Too long

Active voice

Simpler words

Activity 2: Effective writing

- 2. Based on the stress and topic positions, how would you logically organize these four sentences ?**
- A. Centrally located cells likely received lower drug concentrations due to decreased drug bioavailability.
 - B. Application of the drug decreased cell movement but increased cell survival.
 - C. Increasing the bioavailability of the drug is an important area of future research.
 - D. Cell survival rates were higher in the tissue periphery and lower in the center.

Activity 2: Effective writing

2. Based on the stress and topic positions, how would you logically organize these four sentences ?

- A. Centrally located cells likely received lower drug concentrations due to decreased drug bioavailability.▲
- ★ B. Application of the drug decreased cell movement but increased cell survival.■
- ▲ C. Increasing the bioavailability of the drug is an important area of future research.
- D. Cell survival rates were higher in the tissue periphery and lower in the center.●

Activity 2: Effective writing

2. Based on the stress and topic positions, how would you logically organize these four sentences ?

Application of the drug decreased cell movement but increased cell survival. The survival rates were higher in the tissue periphery and lower in the center. Centrally located cells likely received lower drug concentrations due to decreased drug bioavailability. Increasing the bioavailability of the drug is an important area of future research.

Activity 2: Effective writing

3. Replace the complicated words and incorrect words in the following sentences with the words from the list

To determine whether our hypothesis was correct, we analyzed the data.

To ~~ascertain~~ whether our hypothesis was correct, the data ~~was~~ carefully analyzed ~~with the appropriate methods~~.

passive

We tried to conduct our study with a smaller sample size.

We ~~endeavored~~ to conduct our study with a smaller sample size ~~that contained fewer~~ participants.

Use *'fewer'*, not *'less'*, for plural nouns

It was clear that the drug was more effective compared with the control.

~~As a matter of fact~~, it was ~~apparent~~ that the drug was more effective compared ~~to~~ the control.

with

Activity 2: Effective writing

3. Replace the complicated words and incorrect words in the following sentences with the words from the list

To decide if the statistical test was appropriate, we assessed the normality of the data distribution.

~~In order to make a decision~~ if the statistical test was appropriate, we ~~conducted an assessment of~~ the normality of the data distribution.

We ended the experiments once enough data were collected.

The experiments were ~~terminated~~ once ~~a sufficient amount of~~ data ~~was~~ collected. **passive**

Our results show that this new method is more efficient compared with current methods.

Our results show that ~~the utilization of~~ this new method is more efficient compared to ~~currently utilized~~ methods.

with

used

current

Session 2

Journal selection

When should you choose a journal?

1. *After* you have written your manuscript?
2. *Before* you write your manuscript?

Choose your journal first!

Author guidelines

- Manuscript structure
- Word limits
- Reference style

Aims and scope

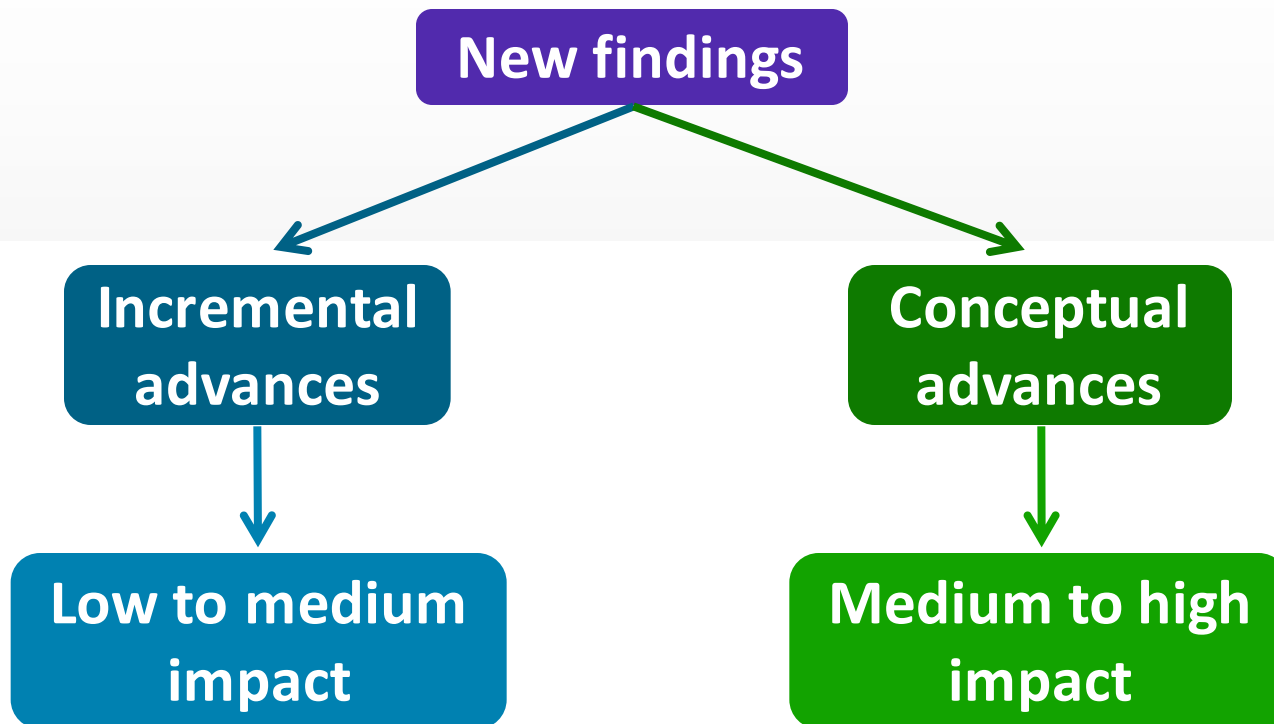
- Topics
- Readership
- Be sure to *emphasize*

Relevant references

Writing style

Evaluating significance: Novelty

How new are my results compared with those already published?



Evaluating significance: Relevance

How broadly relevant is your work?

Biology

**Specific to cell-type or organism?
Relevant to human condition?**

Medicine

Population specific? Restricted geographical location? Disease prevalence/incidence?

Engineering

**How broadly applicable is the design?
Is it cost-effective?**

International or regional journal?

Broad- or narrow-focused journal?

Evaluating significance: Importance

**Area of popular
appeal**

**Stem cells, tissue engineering, global
warming, artificial intelligence**

**Important real-
world applications**

**Rice resistant to high salt conditions,
shrimp resistant to viral infections**

Broad vs. narrow focus

Aims and scope

Broad focus



Make sure your findings will be of *broad* interest

Narrow focus



Make sure your findings will be of interest to *specific* area(s)

PLOS ONE

Aims and scope

PLOS ONE is an international, peer-reviewed, open-access, online publication. *PLOS ONE* welcomes reports on primary research from any scientific discipline.

BMC Cardiovascular Disorders

Aims and scope

BMC Cardiovascular Disorders is an open access, peer-reviewed journal that considers articles on all aspects of the prevention, diagnosis and management of disorders of the heart and circulatory system, as well as related molecular and cell biology, genetics, pathophysiology, epidemiology, and controlled trials.

General or specialized – writing the introduction

PLOS ONE: 'atherosclerosis and pollution'

Cardiovascular disease (CVD) is the most important cause of morbidity and mortality in the developed world, and atherosclerosis is the central underlying pathology. Atherogenesis is a life-long process involving a range of mechanisms including lipid peroxidation and inflammation affecting the vascular wall. The clinically most relevant results of this pathology are myocardial infarction and stroke. Evidence for acute cardiovascular effects of air pollution has substantially increased in recent years...

General or specialized – writing the introduction

BMC Cardiovascular Disorders: 'atherosclerosis and pollution'

Atherosclerosis is an inflammatory disease that accounts for nearly 50% of deaths in western societies. Initiation of atherosclerotic plaque formation is a complex process. It involves secretion of chemokines such as the Monocyte Chemoattractant Protein–1 (MCP-1) and expression of adhesion molecules on the surface of monocytes and endothelial cells. Circulating monocytes are recruited to sites of injured endothelial cells, adhere to them, and migrate into the subendothelial space. Monocytes in the arterial wall differentiate into activated macrophages...

International/regional – writing the introduction

BMC Family Practice: Worldwide relevance

Health workforce shortages may be felt most keenly by developing nations, but are a concern for all. Developed nations are particularly worried about the number of general practitioners (GPs) available to service their ageing populations.

International/regional – writing the introduction

Asia-Pacific Family Medicine: Geographically restricted

All citizens in Japan are covered by a national health insurance system in which there are no official “gatekeepers”. Patients can freely choose between attending a local physician’s office (clinic) or a hospital and Japanese physicians can freely practice internal medicine. But recently, Japan has faced the problems of a rapidly aging population...

Factors to consider when choosing a journal

Aims & scope

Readership

Indexing

Open access

Impact factor

Varies by field

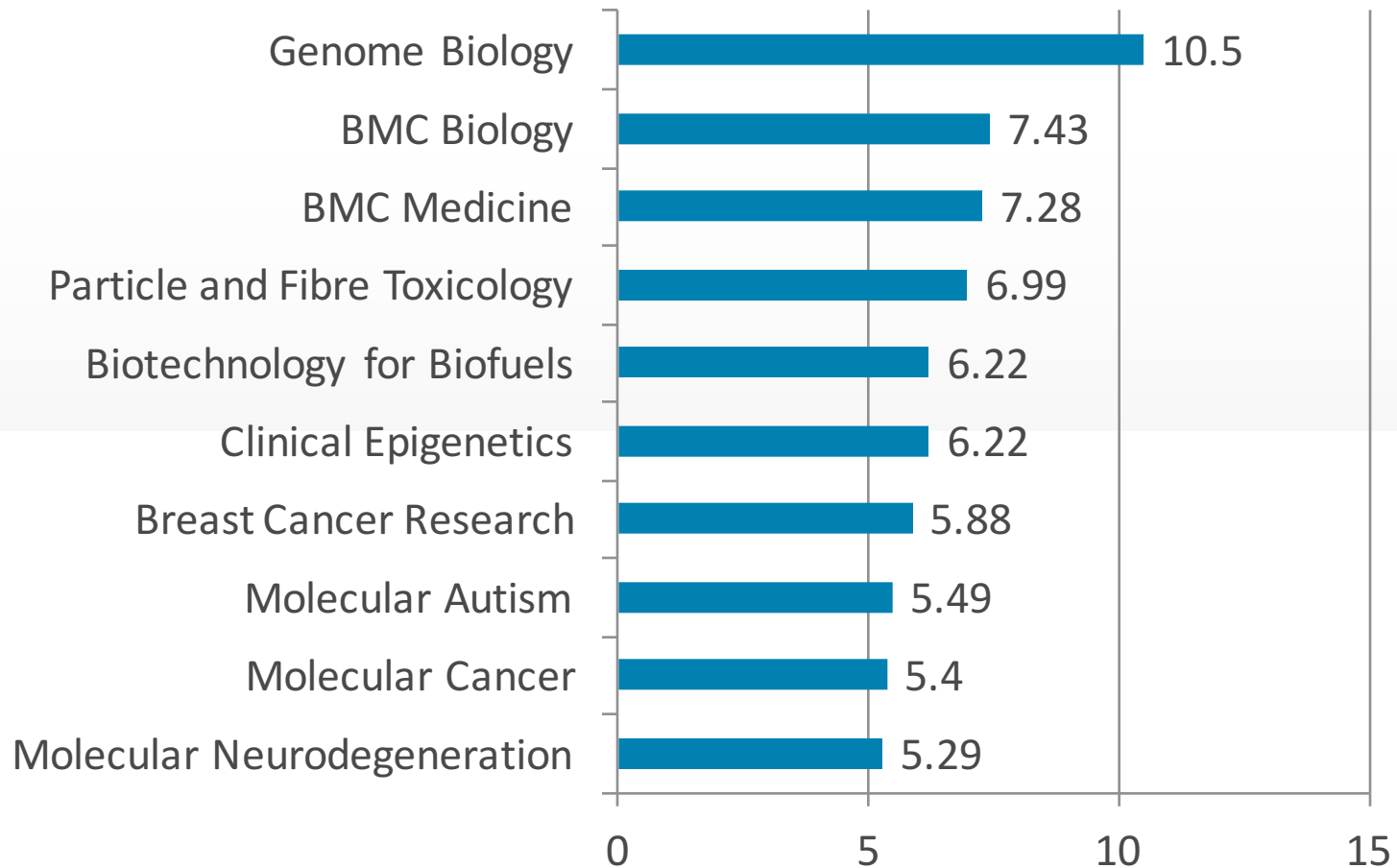
Which factor is most important to you?

The quality of OA journals is not good

- ❖ OA journals have the same peer review process as subscription-based journals
- ❖ IFs are lower partly because they are newer
 - Less visibility in the field
 - Fewer citations

Journal selection

164 BMC journals have a 2013 IF



Predatory journals

*Some OA journals **are** not good*

Easy way to get money from authors

- Promise quick and easy publication
- Often ask for a 'submission/handling' fee

**If you are ever unsure, please check the
*Beall's List of Predatory Publishers***

<http://scholarlyoa.com/2012/12/06/bealls-list-of-predatory-publishers-2013/>

Predatory journals

International Journal of Agriculture and Crop Sciences

Search

- Home
- General Information
- Editorial Board
- Instruction to Authors
- Contact
- Abstracting and Indexing
- Join to our reviewers team
- publication ETHICS

Welcome to IJACS

Index Copernicus ICV: 4.83
Global Impact Factor: 0.576
Journal Citation Value (JCV): 1.48
Universal Impact Factor: 0.205
RES B Impact factor: 0.84

International Journal of Agriculture and Crop Sciences (IJACS) (ISSN: 2227-670X)
Abbreviation: Intl J Agri Crop Sci

>>>Certificate of journal indexing in ISC for 2013<<<
>>>Certificate of journal indexing in ISC for 2012<<<

[Online Submission](#)

ONLINE ISSUE

- ▶ [Archive](#)

IJACS

International Journal of Agriculture and Crop Sciences

IJACS
International Journal of Agriculture and Crop Sciences

www.IJAGCS.com

<http://ijagcs.com/>

Predatory journals

International Journal of

Search

to all of our customers and visitors we provide services to colleges, universities, research institutes and corporate level organizations in the management and all related tasks of books, journals, magazines, thesis and all kind of documents processing. We not only...

Contact

Abstracting and Indexing

Join to our reviewers team

Publication ETHICS

to all of our customers and visitors. we provide services to colleges, universities, research institutes and corporate level organizations in the management and all related tasks of books, journals, magazines, thesis and all kind of documents processing. We not only provide quality but also quantity within given time period to satisfy our clients and compete in the international market. With each passing day, thousands of pages of literature are added in the world wide libraries and knowledge warehouses. with careful management of each document, formatting, composing, and choosing distribution medium can add much beauty to these

Editing:

we also provide editing in already processed documents.

ishing. Composing:
ping:

Publishing your documents online on your website with simple html format and manage any mistakes or corrections at any time instantly. **Scanning:**

Old or hand written documents often need to be scanned and typed again to produce a new look.

Editing:

we also provide editing in already processed documents.

Trustworthy journals

Reputable publisher

Springer, Elsevier, Wiley, PLoS, etc.

Editorial board

International and familiar

Indexed

Indexed by common databases

Authors

Do you recognize the authors?

Fees

Only paid *after* acceptance

How many journals are there?

How many journals are indexed by ISI (have impact factors)?

Science Citation Index

8693

Social Science Citation Index

3168

Arts and Humanities Citation Index

1747

13,608*

*Jan 2015

Journal selection

Journal Selector

www.edanzediting.com/journal_selector

Edanz Journal Selector

Search over **28,000** journals and **7.5** million abstracts to find the journal that's right for you

Abstract/Keywords

directionality of lumen elongation. we used an original minimal organ approach comprising of hepatocyte doublets cultured in artificial micro-niches to precisely control the 3D spatial organization of cellular adhesions to the extracellular matrix. During de novo lumenogenesis, we unraveled a mechanical crosstalk that couples the basal adhesions, the intercellular mechanical stress and the osmotically driven apical elongation. This process is mediated by α -catenin and accounts for the microenvironmental anisotropic guidance of canaliculi development along the direction of the lowest tension across cell-cell contacts.

Go

Insert your proposed abstract
or keywords

Edanz Journal Selector

Search over **28,000** journals and **7.5** million abstracts to find the journal that's right for you

Abstract/Keywords: novoformationsecretorylumensorganogenesis. Lumenogenesisconcomitantly apico-basal polarity elongationluminalcavities cell-cellcontacts.molecularenvironmental cellpolarizationheavilyscrutinized. , extra cellular (ECM) essential polarity. cues guiding anisotropic growth lumen . intercellular tension control directionality lumen elongation. comprising hepatocytedoubletsculturedartificial micro-

Go

Journal's aims & scope, IF, and publication frequency

Journal Matching Options

Only journals with

Field of Study

With an Impact Factor Range ?

0 to 100

Indexed in SCI-E ?

Indexed in SCI ?

With Open Access options ?

Frequency:

Any

15 Results

Sort by



Journal of Cell Science

Journal of Cell Science is committed to publishing the full range of topics in cell biology, and the single most important criterion for acceptance is scientific excellence. Articles must therefore pose and test a significant hypothesis that will provide novel perspectives and approaches to understanding cell biology, and will stimulate the interest of the broad readership of the Journal. The Journal does not publish purely descriptive articles on the expression of specific genes or proteins in particular cell types, articles that demonstrate the effect of a particular substance on a given cell line without having any broad biological significance, or articles that simply describe a method or reagent. The Journal does not publish purely descriptive articles on the expression of specific genes or proteins in particular cell types, articles that demonstrate the effect of a particular substance on a given cell line without having any broad biological significance, or articles that simply describe a method or reagent.

Impact Factor: 5.3 | Impact Factor Year: 2013

Published by The Company of Biologists Ltd.

Open Access options | Frequency: Bimonthly

ISSN: 0021-9533 | EISSN: 1477-9137

- Filter by:
- Field of study
 - Impact factor
 - Indexed in SCI
 - Open access
 - Publishing frequency

Journal Selector

www.edanzediting.com/journal_selector

Edanz Journal Selector

Search over **28,000** journals and **7.5** million abstracts to find the journal that's right for you

Abstract/Keywords:

Go

Journal Matching Options

Only journals with

Field of Study

With an Impact Factor Range ?

0 to 100

Indexed in SCI-E ?

Indexed in SCI ?

With Open Access options ?

Frequency:

Any

15 Results

Impact Factor (High - Low)



Developmental Cell

Developmental Cell is a broad-spectrum journal that covers the fields of cell biology and developmental biology. It publishes research reports describing novel results of unusual significance in all areas of these two fields, and at the interface between them. Each issue also contains review articles tailored to the journal's broad readership. With this wide coverage, Developmental Cell is a unique cross-disciplinary resource for researchers in both these fields, and for the general scientific community. Developmental Cell will consider papers in any area of cell biology and developmental biology. Examples of these include cell proliferation, intracellular targeting, cell polarity, membrane traffic, cell migration, stem cell biology, morphogenesis, developmental roles of genes or pathways and differentiation. The primary criterion for publication in Developmental Cell, as for all Cell Press journals, is new biological insight. We recognize that there are many ways in which such insight can be obtained, and Developmental Cell is interested in studies using the full range of methodologies available to the cell and developmental biology communities. We are happy to consider any study that leads to important new conclusions about biological function. Developmental Cell is a complementary partner for its companion journal Molecular Cell, and has similar standards for publication. Visit the Developmental Cell website to find out more - <http://www.developmentalcell.com>.

Impact Factor: 10.366 | Impact Factor Year: 2013

Published by Elsevier

Open Access options | Frequency: Bimonthly

ISSN: 1534-5807 | EISSN: 1878-1551

Sort by:

- Relevance
- Impact Factor
- Frequency

Journal selection

Journal Selector

www.edanzediting.com/journal_selector

- Author guidelines
- Journal website



[Author submission URL >](#)
[Submission platform URL >](#)
Society name and URL Currently Not Available

Similar articles from this journal

[-] Blood vessel tubulogenesis requires Rasip1 regulation of GTPase signaling.

Published 2011 - Apr

Cardiovascular function depends on patent blood vessel formation by endothelial cells (ECs). However, the mechanisms underlying vascular "tubulogenesis" are only beginning to be unraveled. We show that endothelial tubulogenesis requires the Ras interacting protein 1, Rasip1, and its binding partner, the RhoGAP Arhgap29. Mice lacking Rasip1 fail to form patent lumens in all blood vessels, including the early endocardial tube. Rasip1 null angioblasts fail to properly localize the polarity determinant Par3 and display defective cell polarity, resulting in mislocalized junctional complexes and loss of adhesion to extracellular matrix (ECM). Similarly, depletion of either Rasip1 or Arhgap29 in cultured ECs blocks in vitro lumen formation, fundamentally alters the cytoskeleton, and reduces integrin-dependent adhesion to ECM. These defects result from increased RhoA/ROCK/myosin II activity and blockade of Cdc42 and Rac1 signaling. This study identifies Rasip1 as a unique, endothelial-specific regulator of Rho GTPase signaling, which is essential for blood vessel morphogenesis.

[+] A mechanoresponsive cadherin-keratin complex directs polarized protrusive behavior and collective cell migration.

Published 2012 - Jan

[+] Canonical Wnt signaling and its antagonist regulate anterior-posterior axis polarization by guiding cell migration in mouse visceral endoderm.

Published 2005 - Nov

[+] Cadherin adhesion, tissue tension, and noncanonical Wnt signaling regulate fibronectin matrix organization.

Published 2009 - Mar

[+] Beta1 integrin establishes endothelial cell polarity and arteriolar lumen formation via a Par3-dependent mechanism.

Published 2010 - Jan

[+] Planar cell polarity planes the inconveniences of cell division into a smooth morphogenetic process.

Similar published articles

- ✓ Are they currently publishing similar articles?
- ✓ Have you cited any of these articles?

Tips to identify the most suitable journal

Identify the interests of the *journal editor*

- Editorials
- Review articles
- Special issues

Tips to identify the most suitable journal

Journal editor's interests

Journal A

- Editorials
- Review articles
- Special issues

Journal B

- Editorials
- Review articles
- Special issues

Journal C

- Editorials
- Review articles
- Special issues

Manuscript

Tips to identify the most suitable journal

Identify the interests of the *journal editor*

- Editorials
- Review articles
- Special issues

Identify the interests of the *readers*

- Most viewed
- Most cited

Tips to identify the most suitable journal

Reader's interests

Journal A

- Most viewed
- Most cited

Journal B

- Most viewed
- Most cited

Journal C

- Most viewed
- Most cited

Manuscript

Advancing your career

Publishing in the same journal

Peer reviewer

Guest Editor

- Publishing 2–3 manuscripts in the same journal
- Meet journal editors at conferences
- Write good peer review reports
- Member of the editorial board

Journal selection activity

Please see Activity 3 in your Workbook

Activity 3: Journal selection

Based on the summary in your handout, which journal do you think is most appropriate and why?

- 1. Journal of Sleep Research*
- 2. Science*
- 3. Current Biology*
- 4. BMC Biology*

Activity 3: Journal selection

Based on the summary in your handout, which journal do you think is most appropriate and why?

1. *Journal of Sleep Research*
2. *Science*
3. *Current Biology*
4. *BMC Biology*

Activity 3: Journal selection

Based on the summary in your handout, which journal do you think is most appropriate and why?

1. *Journal of Sleep Research*

2. *Science (IF 31.477)* **Too high**

3. *Current Biology*

4. *BMC Biology*

Activity 3: Journal selection

Journal of Sleep Research (2.949)

The *Journal of Sleep Research* is a subscription-based journal dedicated to basic and clinical sleep research. This journal publishes original research papers in all areas of sleep research and aims to promote the exchange of ideas between basic and clinical sleep researchers.

Features

- Lower impact factor
- Targeted audience
- Subscription-based

- Likely *not* appropriate for this targeted audience
- Study also concerned with metabolic disorders and depression

Activity 3: Journal selection

Current Biology (9.916)

Current Biology is a subscription-based general journal that publishes original research across all areas of biology. A primary aim of the journal is to foster communication across fields of biology, both by publishing important findings of general interest from diverse fields.

Features

- Higher impact factor
- Broad audience
- Subscription-based

Appropriate if:

- Findings are more novel
- Editor/reader interests
- You published previously in this journal

Activity 3: Journal selection

***BMC Biology* (7.43)**

BMC Biology is an open access journal publishing peer-reviewed research and methodology articles of special importance and broad interest in any area of biology.

Features

- Higher impact factor
- Open access
- Broad audience

Appropriate if:

- Findings are more novel
- Reach broadest audience
- Editor/reader interests
- Cost is not an issue

Methods, Results, and Figures

Study design

Corresponding Author Name:

Manuscript Number:

Reporting Checklist For Life Sciences Articles

This checklist is used to ensure good reporting standards and to improve the reproducibility of published results. For more information, please read [Reporting Life Sciences Research](#).

▶ Figure legends

Check here to confirm that the following information is available in all relevant figure legends (or Methods section if too long):

- the **exact sample size (n)** for each experimental group/condition, given as a number, not a range;
- a **description of the sample collection** allowing the reader to understand whether the samples represent **technical or biological replicates** (including how many animals, litters, culture, etc.);
- a **statement of how many times the experiment shown was replicated in the laboratory**;
- **definitions of statistical methods and measures**: (For small sample sizes ($n < 5$) descriptive statistics are not appropriate, instead plot individual data points)
 - o very common tests, such as t -test, simple χ^2 tests, Wilcoxon and Mann-Whitney tests, can be unambiguously identified by name only, but more complex techniques should be described in the methods section:

outcomes) and how

11b Similarity of interventions - If relevant, description of the similarity of i

12a Statistical methods - Statistical methods used to compare groups for primary and secondary outcomes

12b Additional analyses - Methods for additional analyses, such as subgroup analyses and adjusted analyses

<http://www.nature.com/authors/policies/checklist.pdf>

Study design

**What/who
was used**

**Samples or participants
Materials**

**How it was
done**

**General methods
Specific techniques
(discuss controls)**

**How it was
analyzed**

**Quantification methods
Statistical tests**

Surveyed 25 editors from high impact medical journals

“...respondents expressed concern over researchers’ choice of statistical tests. Specifically, frequent problems exist in the appropriateness of statistical tests ...”

When in doubt, consult a statistician

Statistics notes

Latest from The BMJ

Research Methods & Reporting
Uncertainty and sampling error
Published 25 November 2014

Research Methods & Reporting
Uncertainty beyond sampling error
Published 25 November 2014

Research Methods & Reporting
Statistics Notes: Missing outcomes in randomised trials
Published 06 June 2013

Research Methods & Reporting
Brackets (parentheses) in statistical notation
Published 11 August 2011

Research Methods & Reporting
How to obtain the P value from a confidence interval
Published 08 August 2011

Research Methods & Reporting
How to obtain the confidence interval from a P value
Published 08 August 2011

1 2 3 4 5 6 7 8 9 ... next

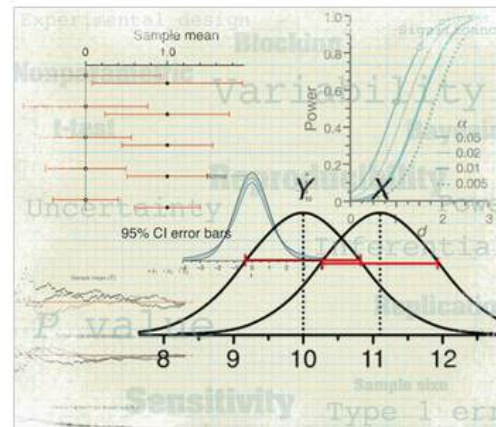
<http://www.bmj.com/specialties/statistics-notes>

<http://www.nature.com/collections/qghhqm>

WEB COLLECTION

Statistics for biologists

Home | Practical guides | Statistics in biology | Points of Significance | Other resources



There is no disputing the importance of statistical analysis in biological research, but too often it is considered only after an experiment is completed, when it may be too late.

This collection highlights important statistical issues that biologists should be aware of and provides practical advice to help them improve the rigor of their work.

Nature Methods' **Points of Significance** column on statistics explains many key statistical and experimental design concepts. **Other resources** include an online plotting tool and links to statistics guides from other publishers.

Image Credit: Erin DeWalt

Common statistical problems: normality

Distribution of data affects analysis and presentation

- Parametric tests (e.g., t-test and ANOVA) can only be used with normally distributed data
- The mean \pm SD only for normally distributed data

Simple guide:

- If SD is \geq mean, most likely not normally distributed
- If SD is $> 0.5 \times$ mean, may not be normally distributed

Use Shapiro-Wilk's W test for normality

Statistical tests

2 categorical endpoints

**Paired
(within sample)**

McNemar

**Unpaired
(between sample)**

Fisher's exact test
2 treatment groups

Chi-square test*
2+ treatment groups

*for sample sizes > 60

Continuous endpoints

Parametric

Nonparametric

Paired

Unpaired

Paired

Unpaired

2 groups:
Paired t-test

2 groups:
Unpaired t-test

2 groups:
Wilcoxon rank
sum test

2 groups:
Mann–Whitney
U test

>2 groups:
ANOVA

>2 groups:
ANOVA

>2 groups:
Friedman
test

>2 groups:
Kruskal–Wallis
test

Common statistical problems: *P*-values

***Statistical significance does not
equal biological significance!***

“When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as *confidence intervals*).”

“Avoid relying solely on statistical hypothesis testing, such as *P values*, which fail to convey important information about effect size and precision of estimates.”

Common statistical problems: *P*-values

***Statistical significance does not
equal biological significance!***

“Drug A significantly reduced LDL cholesterol by 28% ($p < 0.05$). Therefore, Drug A is effective in reducing cholesterol levels...”

- How much is 28%? Is this a clinically relevant reduction?
- How does this effect generalize to the population? What is the 95% CI?

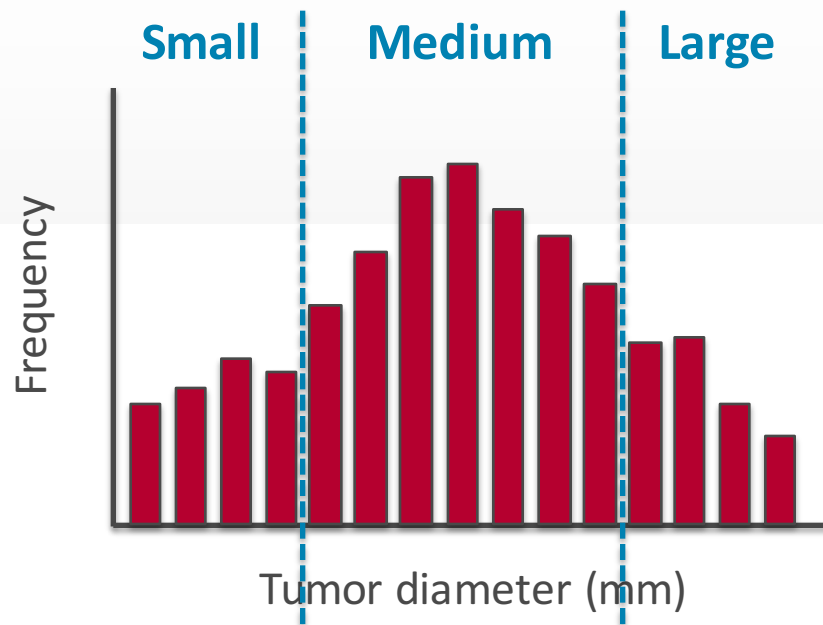
Common statistical problems: *P*-values

“Drug A significantly reduced LDL cholesterol levels from 4.7 ± 0.3 mmol/L to 3.2 ± 0.6 mmol/L ($p=0.02$, 95% CI: 0.8–2.2). Because a minimal reduction of 1.4 mmol/L is required to be **clinically effective**, the efficacy of Drug A is still unclear.”

- Use absolute values
- State exact *P*-values
- State 95% CI and minimal clinically relevant difference

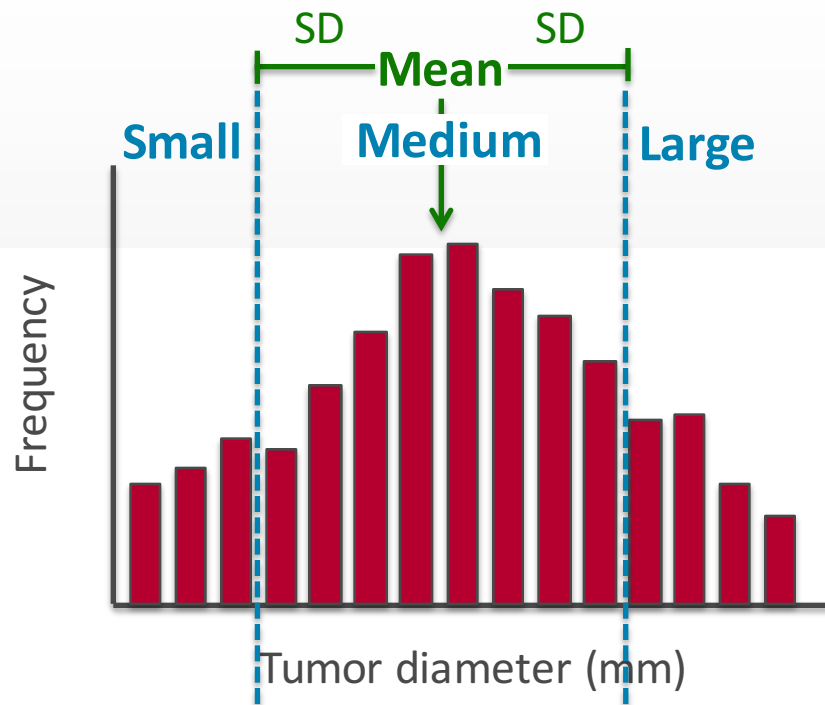
Categorizing continuous data

Need to justify why and how continuous data was categorized



Categorizing continuous data

Need to justify why and how continuous data was categorized



Logical presentation

1. Novel observation
2. Characterization
3. Application

Example:

1. New gene expressed in the heart
2. Regulation of gene expression, when it is expressed, function of the produced protein
3. Role of the gene in heart development

Results

Logical presentation

1. **Novel observation**
2. **Characterization**
3. **Application**

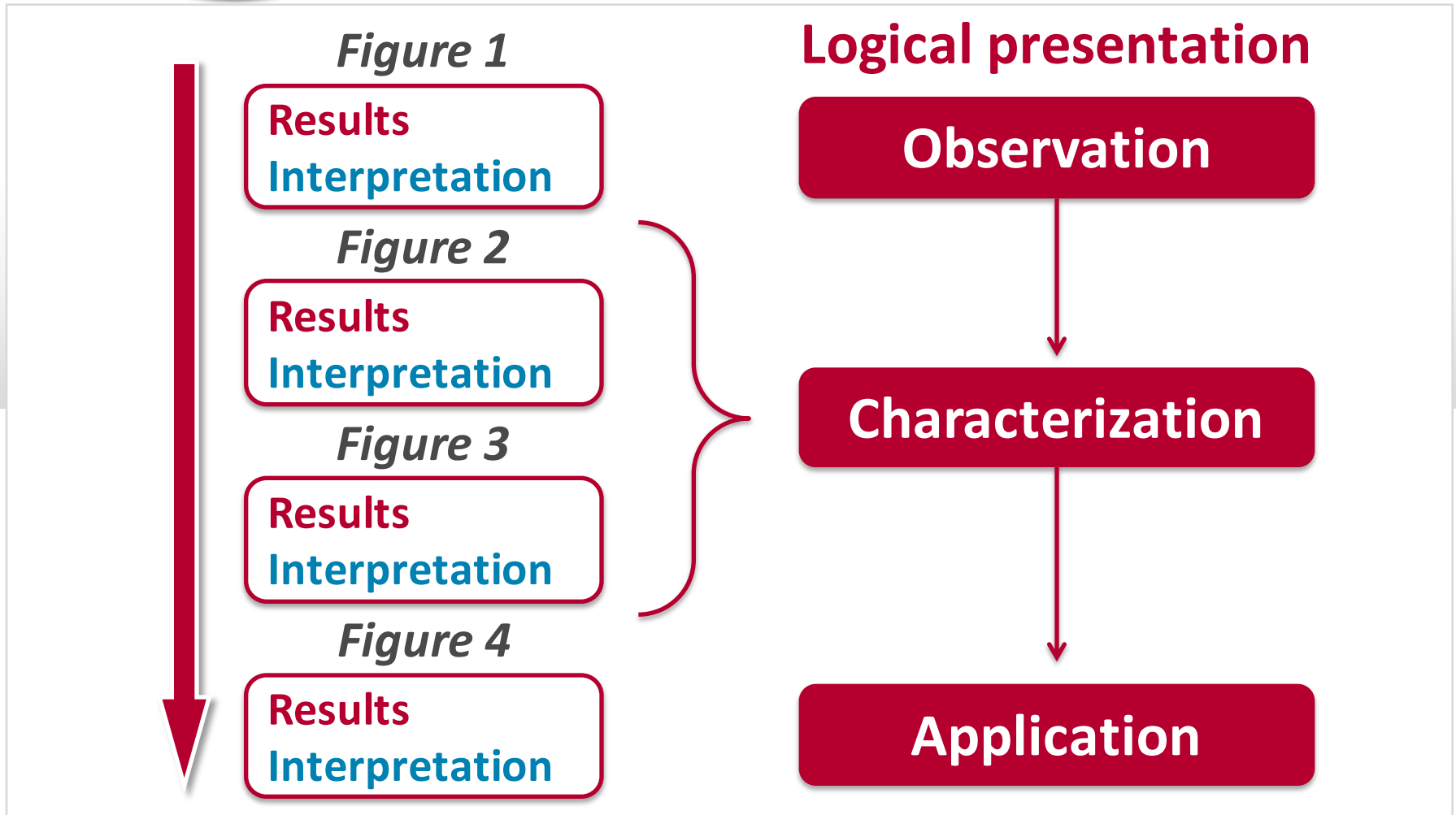
Subsections

Each subsection
corresponds to
one figure

Factual description

What you found, *not*
what it means

Combined Results and Discussion



Which of these statements should be used in the Results section?

Interpretation

1. Drug A is more effective in treating liver cancer as we observed a 32.7% decrease in tumor size compared with only a 22.1% decrease after Drug B treatment.
2. The efficacy of Drug A was higher than that for Drug B, with decreased tumor sizes of 32.7% and 22.1%, respectively.

Describe relationships among your results

Drug A reduced tumor volume by 32.7%, increased blood pressure by 12.3%, and increased the patient's weight by 7.3 kg.

Drug B reduced tumor volume by 22.3%, increased blood pressure by 15.6%, and increased the patient's weight by 2.4 kg.

Drug C reduced tumor volume by 38.1%, increased blood pressure by 6.9%, and increased the patient's weight by 9.2 kg.

Describe relationships among your results

Drug A reduced **tumor volume** by 32.7%, increased **blood pressure** by 12.3%, and increased the **patient's weight** by 7.3 kg.

Drug B reduced **tumor volume** by 22.3%, increased **blood pressure** by 15.6%, and increased the **patient's weight** by 2.4 kg.

Drug C reduced **tumor volume** by 38.1%, increased **blood pressure** by 6.9%, and increased the **patient's weight** by 9.2 kg.

Describe relationships among your results

Patients treated with Drug C showed the *greatest reduction* in **tumor volume** (28.1%) compared with those treated with Drug A (32.7%) or Drug B (22.3%).

Drug C also had the *lowest increase* in **blood pressure** (6.9%) compared with that seen after treatment with Drug A (12.3%) or Drug B (15.65%).

However, patients treated with Drug C had the *highest weight gain* among the three groups (Drug A, 7.3 kg; Drug B, 2.4 kg; Drug C, 9.2 kg).

Methods, Results & Figures

Present large amount
of data *quickly* and
efficiently

Usually the *first* thing
readers will look at

Figures, graphs & tables

Keep it *simple*: use
separate panels if
necessary

Must be able to *stand
alone*: clear labels
and figure legends

Is this a clear figure?

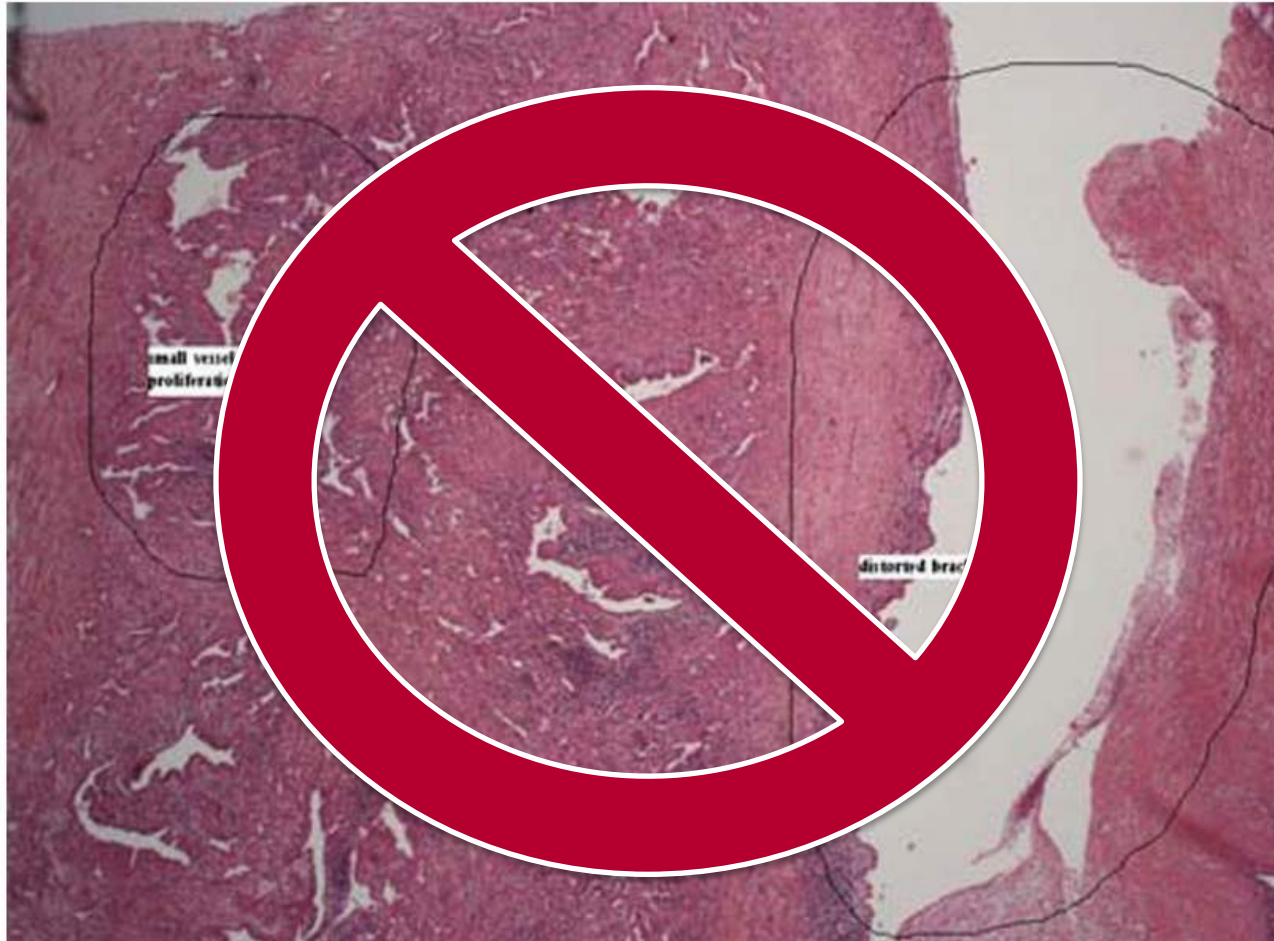
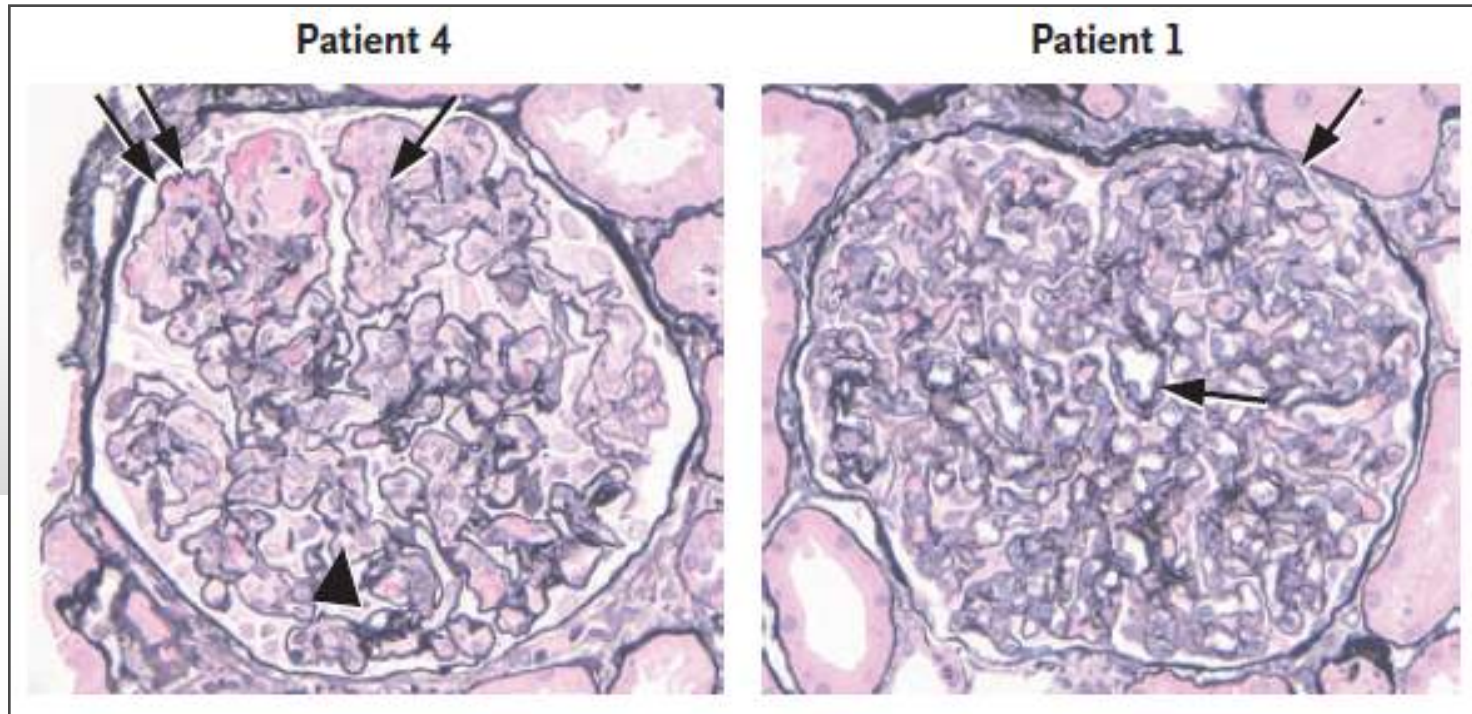


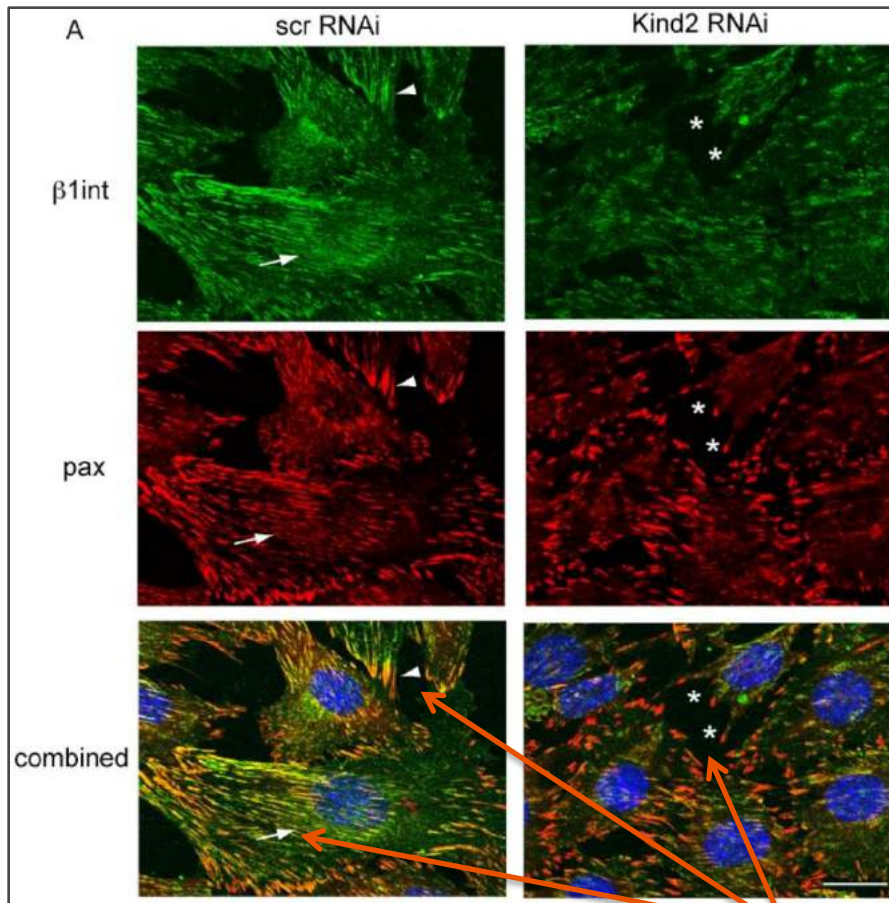
Figure 1 AHLE demonstrating distorted brachial artery and classical small vessel proliferation.

Is this a clear figure?



“Panel B shows silver staining of two representative glomeruli in biopsy specimens from patients. In Patient 4 (*left*), mesangiolysis (*single arrow*), prominent endothelial swelling (*arrowhead*), red-cell fragments (*double arrows*), and thrombi are visible in some capillary loops. In a specimen from Patient 1 (*right*), the double contours of capillary basement membranes (*arrows*) can be seen.”

Clear figure legend



Kindlin-2 knockdown and focal adhesion localization. Confocal immunofluorescent microscopy with anti- β 1 integrin and anti-paxillin on C2C12 cells transfected with RNAi and then changed to differentiation media for 2 days. Control cells show linear staining consistent with localization to costameres (arrows), as well as punctate focal contact staining (arrowheads). Focal contact proteins in the kindlin-2 RNAi cells fail to form linear structures and instead are concentrated in unusual appearing puncta (*). (Scale bar = 20 μ M).

Title of the experiment

Brief methodology

Key findings

Clear indicators

Table formatting

Clear and concise
table caption

Table 3. Risk of Squamous-Cell Cervical Cancer Associated with the Presence of Human Papillomavirus (HPV) DNA.*

Country	Patients		Controls		Odds Ratio (95% CI)†‡
	no.	% HPV-positive	no.	% HPV-positive	
Brazil	169	97.0	196	17.5	177.0 (65.5–478.3)
Mali	65	96.9	12	33.3	109.2 (10.6–1119.0)
Morocco	175	97.1	176	21.6	113.7 (42.3–305.3)
Paraguay	106	98.1	91	19.8	208.1 (46.4–932.8)
Philippines	331	96.4	381	9.2	276.8 (139.7–548.3)
Thailand	339	96.5	261	15.7	163.5 (82.0–325.9)
Peru	171	95.3	175	17.7	115.9 (48.6–276.4)
Total‡	1356	96.6	1292	15.6	158.2 (113.4–220.6)
Spain	316	77.8	329	5.2	63.4 (36.4–110.6)
Invasive	159	82.4	136	5.9	75.7 (32.9–174.2)
In situ	157	73.2	193	4.7	58.9 (27.4–126.7)
Colombia	246	74.4	307	13.4	19.1 (12.3–29.6)
Invasive	111	78.4	126	17.5	17.7 (9.1–34.3)
In situ	135	71.1	181	10.5	21.1 (11.5–38.8)

Dependent
variable

Independent
variable

Abbreviations
defined

* Testing was performed with the GP5+/6+ primers, except in Spain and Colombia, where the MY09/MY11 primers were used. For all countries except Spain and Colombia, only invasive cancer was studied.

† The odds ratios have been adjusted for age. CI denotes confidence interval.

‡ The odds ratio has been adjusted for age and center.

Bar graphs

CXCR5⁺ T helper cells mediate protective immunity against tuberculosis

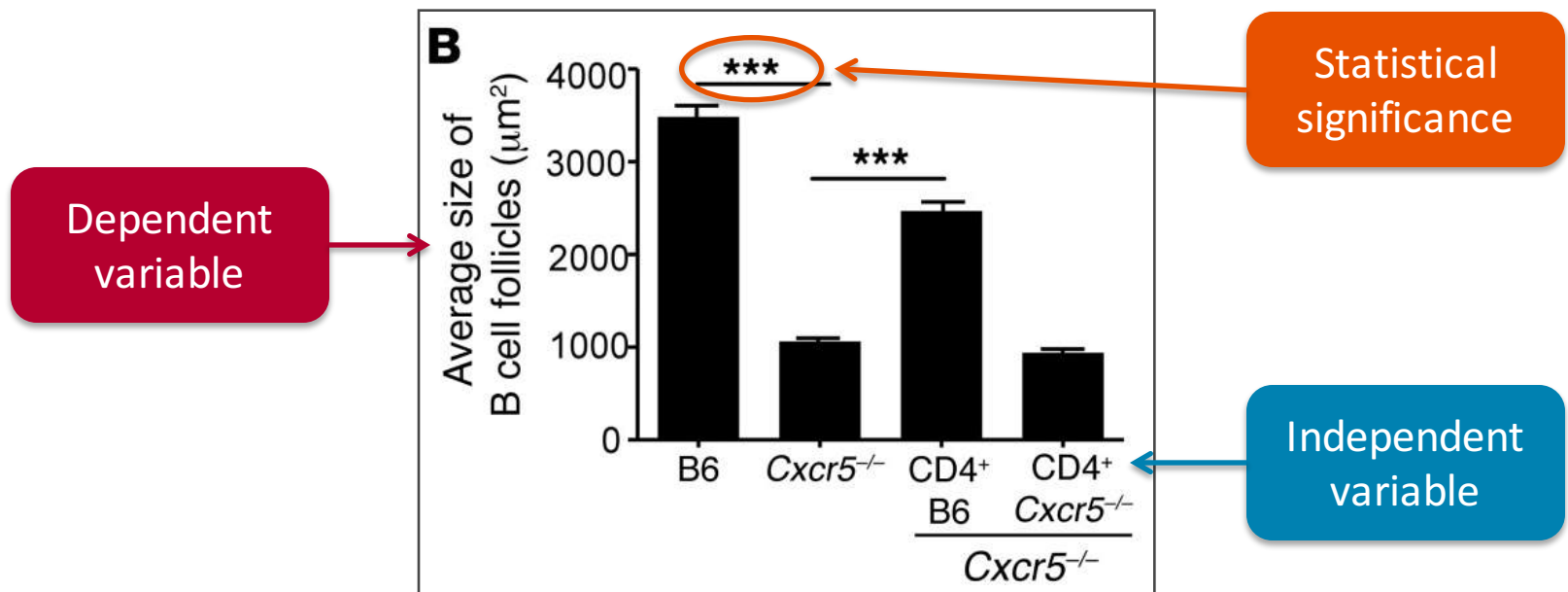


Figure 7 Adoptive transfer of B6 but not *Cxcr5*^{-/-} CD4⁺ T cells rescues T cell localization and protection in *Cxcr5*^{-/-} *Mtb*-infected mice... (B) The average size of B cell lymphoid follicles in FFPE lung sections on day 50 using the morphometric tool of the Zeiss Axioplan microscope... *** $P = 0.0005$.

Slight et al. J Clin Invest. 2013; doi: 10.1172/JCI65728.

When *not* to use bar graphs

Bar graphs

Mean \pm SD
Normally distributed data

What if you don't have normally distributed data?

Should present median and
interquartile range (IQR)

Box plots

Box plots

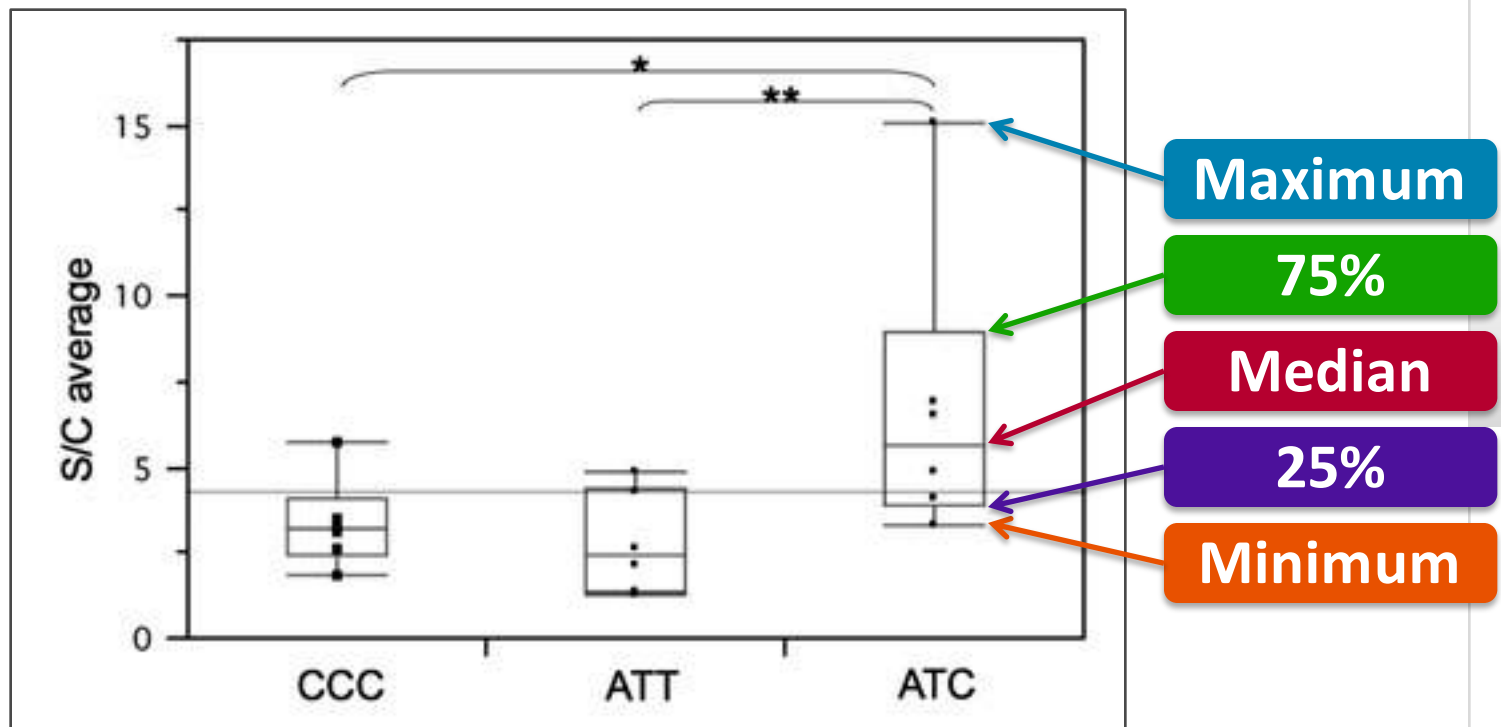


Figure 2 Dual luciferase reporter assays. The ratios of Firefly luciferase activity (signal S) to Renilla luciferase (control C) are displayed using *box and whisker plots*...

Hijikata et al. Hum Genetics. 2012; 131: 675–682.

What to do with additional figures or related data?

Supplementary information

- Integrated into article
- Not discoverable

Data repositories

- May be linked to article
- Discoverable/citable

Data journals

- May be linked to article
- Discoverable/citable
- Peer-reviewed

Data repositories – Dryad

- Only data associated with published article
- Discoverable independent of article
- Receives DOI/citable
- Curated/monitored
- Updatable

Search for data

Enter keyword, author, title, DOI, etc

[Advanced search](#)

Browse for data

Recently published

Popular

By Author

By Journal

Recently Published Data

Rebar D, Rodriguez RL (2015) Data from: Insect mating signal and mate preference phenotypes covary among host plant genotypes. *Evolution*
<http://dx.doi.org/10.5061/dryad.6c1h2>

Denmead LH, Barker GM, Standish RJ, Didham RK (2014) Data from: Experimental evidence that even minor livestock trampling has severe effects on land snail communities in forest remnants. *Journal of Applied Ecology*
<http://dx.doi.org/10.5061/dryad.60q61>

Golkar A, Castro V, Olsson A (2015) Data from: Social learning of fear and safety is determined by the demonstrator's racial group. *Biology Letters*
<http://dx.doi.org/10.5061/dryad.n9v18>

Data repositories – Figshare

- All data
- Increased
- Can save
- Received
- Updated

Private space
1 GB
Public space
Unlimited



PRISMA 2009 Checklist

Section/topic	#	Checklist Item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria; participants; and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4,5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5,6,7
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	6,7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6,7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	7
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	7,8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I ²) for each meta-analysis.	7,8



3 / 3



download

PRISMA checklist.

Schmucker, et al. PLoS ONE. 2014; 9: e114023.

waste

Upload

J. Robens

File types:

- All types
- All types
- Figure
- Media
- Dataset
- Poster
- Paper
- Thesis
- Code
- Presentation
- Fileset

Data journals

Scientific Data

- Published by Nature Publishing Group
- Does not host data

Data in Brief

- Published by Elsevier
- Hosts data < 10 GB

Peer reviewed

- Clear data descriptions
- Clear protocols
- Utility explained
- Reusable data format

Results activity

Please see Activity 4 in your Workbook

Activity 4: Results

Results

Food consumption

The first behavioral abnormality we noticed was a significant increase in food consumption immediately after the main earthquake (Figure 2A). Measuring the food consumption of mice after earthquakes and other natural disasters has long been ignored in the literature. Daily food consumption per mouse was measured by subtracting the weight of the food at the end of the eating period with the weight at the beginning of the eating period. The day before the earthquake, food consumption was 1.7 ± 0.13 (mean \pm SD) g. However, the day after the earthquake, food consumption increased to 2.2 ± 0.19 g. Shockingly, two days after the seismic event, food consumption continued to increase to 2.3 ± 0.11 g. Three days after the earthquake, mean food consumption was 2.5 ± 0.16 g (Figure 2A). Analysis using a paired t-test revealed that the increase in food consumption was significant after the earthquake ($t(5) = 18.5$, $p < 0.001$). This demonstrates that earthquakes can dramatically affect the food consumption in laboratory animals, likely caused by increased stress hormone levels. Even though food consumption continued for over one month, the body weight of earthquake-experienced mice increased only slightly during that period.

Activity 4: Results

Results

Food consumption

More descriptive heading

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Activity 4: Results

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Increased food consumption

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Activity 4: Results

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Increased food consumption

“significant increase”

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Activity 4: Results

Results

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Activity 4: Results

Results

Increased food consumption

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Group results

Spacing

Inappropriate words

Activity 4: Results

Results

Increased food consumption

The first behavioral abnormality we noticed was a considerable increase in food consumption immediately after the main earthquake (Figure 2A). The day before the earthquake, food consumption was 1.7 ± 0.13 (mean \pm SD) g. However, there was a significant increase in food consumption after the earthquake, with mean consumptions of 2.2 ± 0.19 , 2.3 ± 0.11 , 2.5 ± 0.16 g at one, two, and three days following the seismic event ($t(5) = 18.5$, $p < 0.001$). This demonstrates that earthquakes can dramatically affect the food consumption in laboratory animals, likely caused by increased stress hormone levels. Even though food consumption continued for over one month, the body weight of earthquake-experienced mice increased only slightly during that period.

Activity 4: Results

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Belongs in Discussion

Activity 4: Results

Results

Increased food consumption

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Activity 4: Results

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Should show the data

Activity 4: Results

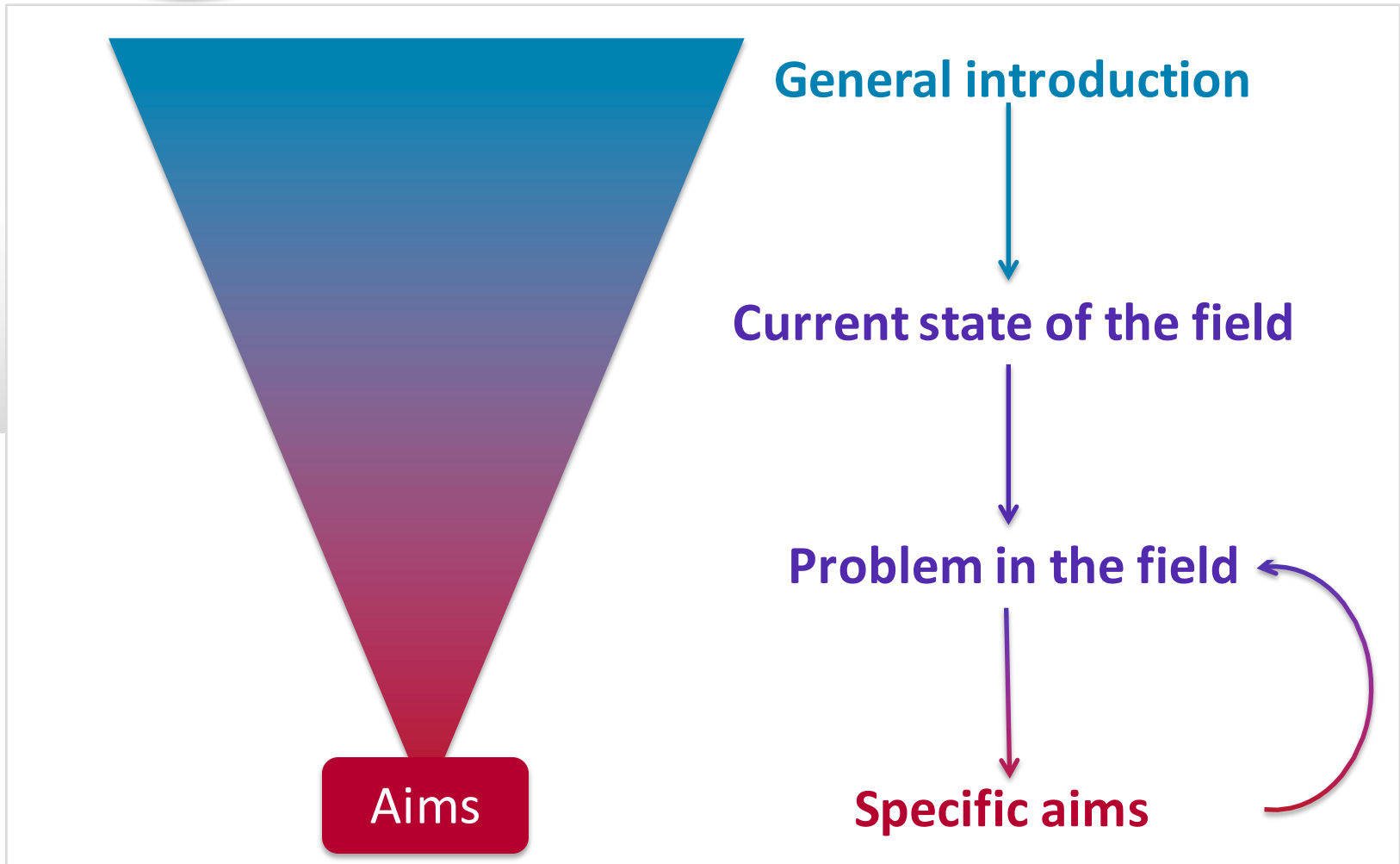
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Introduction and Discussion

Introduction



Writing the Introduction

Modify the beginning of the introduction for your target journal

Background

Familiar to the reader

*Logically guide from
known to unknown*

Aims

Why study is necessary

Writing the Introduction

Beginning should demonstrate
relevance/interest

Interest

Lung cancer is the leading cause of cancer mortality for men and women. Despite smoking prevention and cessation programs and advances in early detection, the 5-year survival rate for lung cancer is only 16% with current therapies. Although lung cancer incidence rates have recently declined in the United States, more lung cancer is now diagnosed when considered together in former- and never-smokers than in current smokers. Thus, even if all of the national anti-smoking campaign goals are met, lung cancer will remain a major public health problem for decades. New ways to treat or prevent lung cancer are therefore needed.

Identified problem is directly related to the Aims and scope

BMC Cancer

BMC Cancer is an open access, peer-reviewed journal that considers articles on all aspects of cancer research, including the pathophysiology, prevention, diagnosis and treatment of cancers. The journal welcomes submissions concerning molecular and cellular biology, genetics, epidemiology, and clinical trials.

Broad to specific

Broad introduction

Lung cancer is the leading cause of cancer mortality for men and women. Despite smoking prevention and cessation programs and advances in early detection, the 5-year survival rate for lung cancer is only 16% with current therapies. Although lung cancer incidence rates have recently declined in the United States, more lung cancer is now diagnosed when considered together in former- and never-smokers than in current smokers. Thus, even if all of the national anti-smoking campaign goals are met, lung cancer will remain a major public health problem for decades. New ways to treat or prevent lung cancer are therefore needed.

Stress sentence



One potential therapeutic target for lung cancer is the Wnt signaling pathway.

Specific introduction The Wnt signaling pathway in mammals consists of a family of secreted lipid-modified wnt protein ligands that bind to a family of 7-pass transmembrane Frizzled (Fzd) receptors, as reviewed...

Broad to specific

Link with previous information

Effective pharmacological inhibitors of the Wnt pathway have only recently become available. Screens for small-molecule antagonists of the Wnt pathway found two enzymes to be key mediators of Wnt signaling. These are poly-ADP-ribose polymerase (PARP) enzymes, tankyrase (TNKS) 1 and TNKS2, which attach poly-ADP-ribose (PAR) to their substrates. Their roles in regulating telomerase function and mitotic spindle formation are known, but their role in PARsylating axin so as to maintain the optimal level for canonical Wnt signaling has only recently been recognized. PARP inhibition is a tractable pharmacological target *in vivo*, as antagonists of other PARP homologs exert antineoplastic responses in breast and ovarian cancer.

More specific introduction

Stress sentence

This study explored the hypothesis that inhibition of TNKS by pharmacological or genetic means would inhibit lung cancer growth *in vitro* and *in vivo*...

Study objectives

Lung cancer is the leading cause of cancer mortality for men and women. Despite smoking prevention and cessation programs and advances in early detection, the 5-year survival rate for lung cancer is only 16%. In the United States, more lung cancer is now diagnosed than in current smokers. Thus, even if all of the national anti-smoking campaign goals are met, lung cancer will remain a major public health problem for decades. New ways to treat or prevent lung cancer are therefore needed.

General introduction

One potential therapeutic target for lung cancer is the Wnt signaling pathway. The canonical Wnt signaling pathway in mammals consists of a family of secreted lipid-modified Wnt protein ligands that bind to a family of 7-pass transmembrane Frizzled (Fzd) receptors. In brief, in the absence of ligand, glycogen synthase kinase-3 (GSK3), in complex with axin and adenomatous polyposis coli (APC), constitutively phosphorylates β -catenin, the primary Wnt signaling effector, targeting it for ubiquitination and proteasomal destruction. Ligand binding engages a pathway involving Dishevelled (Dvl) that inhibits GSK3, allowing β -catenin to accumulate in a hypophosphorylated form. This stabilized form of β -catenin can translocate to the nucleus, where it activates target gene transcription by complexing with T cell factor (TCF) and lymphoid enhancer factor (LEF). In addition to key mediators of embryonic development, these target genes include critical growth-regulatory genes.

Introduce WNT

Aberrant Wnt signaling due to mutations in β -catenin or APC drives deregulated growth in both familial and non-hereditary colorectal cancers. However, non-small cell lung cancers (NSCLC), the most common type of lung cancer, rarely harbor APC or β -catenin mutations. Rather, aberrant Wnt activity in lung cancer is linked to increased expression of upstream Wnt signaling effectors such as Dvl or decreased expression of Wnt antagonists such as Wnt-inhibitory factor 1 (Wif-1).

Effective pharmacological inhibitors of the Wnt pathway have only recently become available. Screens for small-molecule antagonists of the Wnt pathway found two enzymes to be key mediators of Wnt signaling. These are poly-ADP-ribose polymerase (PARP) enzymes, tankyrase (TNKS) 1 and TNKS2, which attach poly-ADP-ribose (PAR) onto substrate proteins. Their roles in cell cycle regulation and mitotic spindle formation are known, but their role in PARsylating axin so as to maintain the optimal level for β -catenin stabilization has only been recognized. The compounds identified in these screens, XAV939, IWR-1 exo, and IWR-1 endo, act by specifically inhibiting the PARP activity of TNKS1 and TNKS2. IWR-exo is a stereoisomer of IWR-1 endo with ~ 14 -fold lower EC_{50} . PARP inhibition is a tractable pharmacological target *in vivo*, as antagonists of other PARP homologs exert antineoplastic responses in breast and ovarian cancer.

Introduce TNKS

This study explored the hypothesis that inhibition of TNKS by pharmacological or genetic means would inhibit lung cancer growth *in vitro* and *in vivo* in clinically-relevant transgenic mouse models of lung cancer that were previously developed. Using comprehensive microarray analyses, we found that TNKS were overexpressed in murine lung cancers relative to adjacent normal lung tissues. These results were confirmed by semi-quantitative real-time polymerase chain reaction (qPCR) assays. Individual treatment of human and murine lung cancer cell lines with the TNKS inhibitors XAV939 or IWR-1 inhibited cell growth, reduced cell viability, and decreased luciferase activity of a viral luciferase construct, and stabilized protein levels of axin and both TNKS. Genetic inhibition of TNKS was independently achieved by use of siRNA or shRNA-mediated knockdown in lung cancer cells. This resulted in axin stabilization, marked growth inhibition, and repressed lung cancer formation in murine xenograft and transgenic syngeneic lung cancer models. Taken together, the findings presented here uncover TNKS as new antineoplastic lung cancer targets.

Objectives

Relevance of the aims

- Identify an important problem
- State aims that directly address this problem

Problem

Currently, the standard procedure used to evaluate hepatic steatosis is the histopathological examination of cross-liver sections...
...this is an **invasive practice** that presents inherent **risks**...
Therefore, it is essential to establish **new non-invasive approaches** to accurately determine **hepatic fat concentration**...

Aims

The purpose of our prospective study...was to evaluate the potential of **multi-echo MRI** to quantitate the **hepatic triglyceride concentration**.

Discussing other studies

Problem in the field

However, conventional thin-film materials limit the use of such thin-film transistors in flexible backplane-circuitry because of their fragility and relatively low mobility.

Published work to address problem

Two-dimensional layered semiconducting chalcogenides (such as MoS₂) have attracted attention because of their having an intrinsically high carrier mobility, mechanical flexibility, and a finite bandgap.

However, improvements for MoS₂ transistors have been hampered by the presence of a Schottky barrier...

Current problem

Aims to address the problem

...hampered by the presence of a Schottky barrier...

Aims

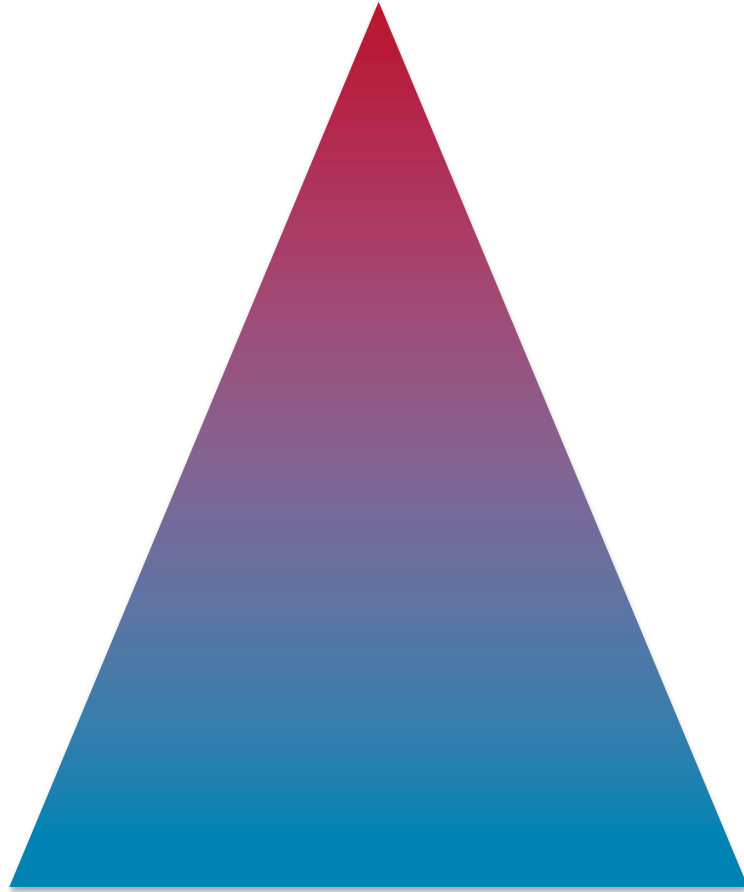
In this research, we investigated the high-temperature electrical behavior of a MoS₂ transistor with a high Schottky barrier... High temperature leads to a larger thermionic emission that transports electrons over the energy barrier.

Propose a solution to the current problem

Common mistakes in the Introduction

- ❖ Ideas are not logically organized **Why study needs to be done?**
- ❖ Introduce topics that are not discussed later (Results/Discussion) **Keep focused**
- ❖ Not introduce important topics that are discussed later (topics introduced in the Discussion) **Write last**
- ❖ Cited studies are not up-to-date **<5 years**
- ❖ Cited studies are geographically biased **International**

Discussion



Summary of findings



Relevance of findings



Similarities/differences
Unexpected results
Negative results
Limitations

Implications for the field

State the major conclusion of the study

Re-introduce the topic

Re-introduce the problem

State major conclusion to answer the problem

Summarize key data to support conclusion

Writing the beginning of your Discussion

State the *major conclusion* of the study

Re-introduction

GPER is an E₂ binding, G-protein coupled membrane receptor that was reported to be overexpressed in breast, endometrial, ovarian and thyroid cancers. However, it is currently unclear if different types of lung cancers including adenocarcinomas, **Problem** carcinoma and large cell carcinomas express higher GPER than normal lung tissue. Here, we demonstrate for the first time that GPER is overexpressed in lung tumors and lung adenocarcinoma cell lines relative to normal lung and immortalized normal lung cell lines, although the expression of GPER transcript in HPL1D cells is higher than HBECs. **Conclusion**

Writing the middle of your Discussion

Compare your findings with those published by others

GPER has been postulated to be involved in E₂-activation of EGFR. Filardo's group showed a link between GPER expression and tumor progression and increased tumor size in breast cancer patients. Recently, GPER overexpression was reported to be independent of ER α expression in breast cancer patient samples, indicating the importance of GPER in ER α negative tumors. GPER and EGFR expression were correlated in endometrial adenocarcinoma. Further, overexpression of GPER in advanced stage endometrial adenocarcinoma correlated with poor survival. Other studies also suggest increased GPER in breast, ovarian and endometrial cancers correlates with disease severity and reduced survival. These results are in agreement with studies demonstrating association of GPER overexpression in other cancers, although the scoring patterns and correlation of expression levels to disease state may vary among these studies.

Writing the middle of your Discussion

Describe any *unexpected/negative* results

In western blots, rather than rely on one GPER antibody in our study, we used 3 different commercial antibodies to determine the correlation between mRNA and protein levels. It is indeed evident from our western blot data that GPER appears to have different MW forms, likely due to glycosylation, dimerization, and interaction with other membrane proteins, and levels in the lung adenocarcinoma cell lines. More trivial explanations for the different staining patterns of GPER in western blots may be due to differential purity/affinity of the three GPER antibodies as well as their capacity to bind to secondary antibodies. It will be important to determine the nature of these forms by proteomic analysis and gene sequencing to evaluate their biological significance.

Unexpected results

Suggest future directions

Writing the middle of your Discussion

Describe any *negative* results

Why?

Reporting transparency

- Allows complete evaluation of your study
- Prevents others from repeating those experiments
- Allows others to modify those experiments
- Prevents funding agencies from wasting money

Data repositories

Writing the middle of your Discussion

Describe your *limitations*

A limitation of our study is that the average GPER staining scores among different lung cancer grades (I (10 cases), II (30 cases), III (16 cases)) were not significantly different. One other limitation of the current study is that we cannot conclude at this time whether GPER overexpression is cause or consequence of cancer. It is also possible that overexpression may reflect a defense mechanism to counteract cancer. As noted, a recent report by Krakstad *et al.* showed that GPER expression in endometrial cancers is associated with poor prognosis. We also noted that the GPER agonist G-1 inhibited E₂-induced uterine epithelial cell proliferation in mice by repressing MAPK activation, indicating that GPER effects are tissue specific. Because our studies were performed on commercial TMAs, the results cannot be extrapolated to correlate GPER expression levels to disease outcomes. Clearly, this is a next logical step in light of the novel findings.

Limitations related to:

- Study design
- Data analysis

Future directions

Writing your limitations

Identify limitations

Important limitations of our study include an inadequate sample size and duration to detect differences in the incidence of diabetes

myocardial infarction, stroke, or death. The protocol specifies further follow-up at 5 years for all patients, which should allow

Sentence structure

of even longer-term efficacy and safety. Despite these limitations, we conclude that bariatric surgery represents a potentially useful strategy for the management of type 2 diabetes, allowing many patients to reach and maintain therapeutic targets of glycemic control that otherwise would not be achievable with intensive medical therapy alone.

Writing your limitations

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Sentence structure

of even longer-term efficacy and safety. Despite these limitations, we conclude that bariatric surgery represents a potentially useful strategy for the management of type 2 diabetes, allowing many patients to reach and maintain therapeutic targets of glycemic control that otherwise would not be achievable with intensive medical therapy alone.

State the major conclusion of the study

Re-state your major conclusion

Describe the key implications

Recommend future research

Writing a strong conclusion paragraph

*Why your study is **important***

In conclusion, we found an independent, graded association between lower levels of the estimated GFR and the risks of death, cardiovascular events, and hospitalization. These risks were evident at an estimated GFR of less than 60 ml per minute per 1.73 m² and substantially increased with an estimated GFR of less than 45 ml per minute per 1.73 m². Our findings support the validity of the National Kidney Foundation staging system for chronic kidney disease but suggest that the system could be further refined, since all persons with stage 3 chronic kidney disease (GFR, 30 to 59 ml per minute per 1.73 m²) may not be at equal risk for each outcome. Our findings highlight the clinical and public health importance of chronic kidney disease that does not necessitate dialysis.

Conclusion

Key finding

Implications

**Future
directions**

**Clinical
importance**

Marketing your conclusions

Journal of Cardiovascular Magnetic Resonance

...publishes articles on all aspects of basic and clinical research on the design, development, manufacture, and evaluation of magnetic resonance methods applied to the cardiovascular system.

Topical areas include, but are not limited to:

- New applications of magnetic resonance to *improve diagnostic strategies* and the characterization of diseases affecting the cardiovascular system.

Marketing your conclusions

For *narrow-focused* journals, be sure to market your conclusions towards the aims of the journal

Improve diagnostic strategies

Atrial dimensions vary mainly by body surface area, with lesser effects of gender and age. Identification particularly of early abnormality requires reference ranges which normalize for all 3 variables. These ranges are supplied with this report in both tabular and graphical form and are of significant clinical and research utility for the interpretation of cardiovascular magnetic resonance studies. Also, best predictors of left atrial enlargement are provided.

Interesting to readership

Common mistakes

Do not restate your results

We showed that tumor volumes in Groups A, B, and C were 34.6, 74.2, and 53.9 mm³, respectively, after a 4-month drug treatment, reflecting only a 8.6% decrease. However, after a 12-month drug treatment, the tumor volumes in Groups A, B, and C were 16.3, 18.7, and 16.9 mm³, respectively, which reflects a 45.2% decrease ($p < 0.05$). This demonstrates that a 12-month treatment is necessary for the drug to effectively reduce tumor size among the three groups.

The results presented in this study demonstrate that Drug X more effectively reduces tumor size after 12 months of treatment (45.2% reduction) than it does after 4 months (8.6% reduction).

Common mistakes

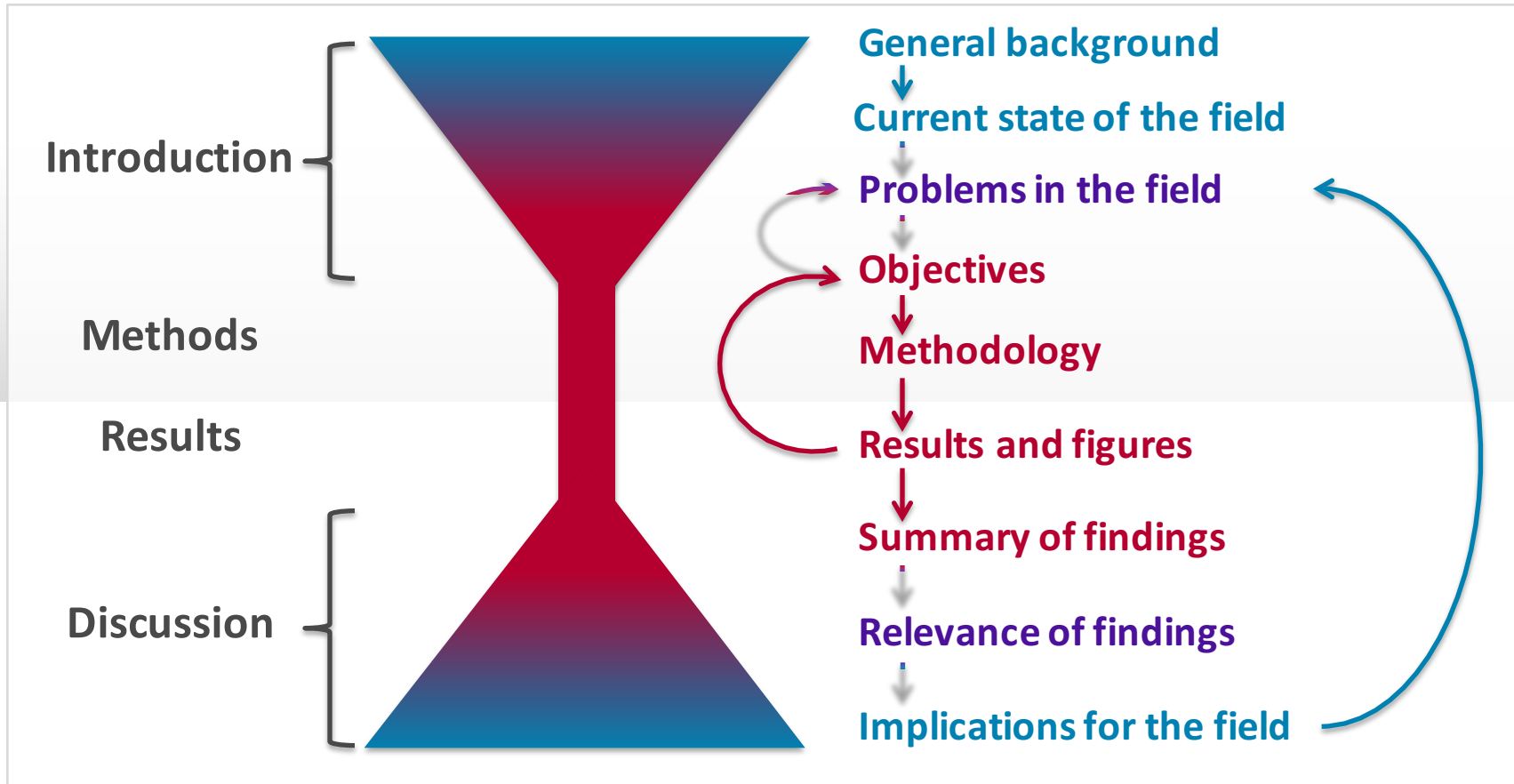
Do not overgeneralize your findings

Result: Drug A reduced breast cancer cell growth *in vitro*

In this study, we demonstrated that Drug A effectively reduced tumor growth. Therefore, this drug should have therapeutic applications in breast cancer treatment.

In this study, we demonstrated that Drug A effectively reduced the growth of various breast cancer cell lines. This **suggests** that this drug **may** have therapeutic applications in breast cancer treatment.

Linking your ideas in your manuscript



Logically link your ideas throughout your manuscript

Linking your ideas

Introduction

New ways to treat or prevent lung cancer are therefore needed.

This study explored the hypothesis that inhibition of TNKS...would inhibit lung cancer growth...

Discussion

Pharmacological or genetic inhibition of TNKS1 and TNKS2...reduces lung cancer proliferation...

Problem

Objectives

Conclusion

Writing effective conclusions

Your conclusion is a ~~summary~~ of your findings

*Your conclusion should be the **answer** to your research problem that is **supported** by your findings*

*Emphasizes how your study will help
advance the field*

Introductions & Discussions activity

Please see Activity 5 in your Workbook

Activity 5: Discussion

Review these concluding paragraphs and give advice on how you would recommend to improve them.

The scaffold market is in the initial market stage of research and technology development progressing actively, and market is difficult to identify accurately due to the frequent M&A by the companies in the market and many problems that need to be overcome technologically, but many specialized companies and research institutes, both in Korea and in other parts of the world, are actively conducting research to develop scaffolds for regenerative medicine that can perform a similar role as the extracellular matrix, and policies and systems on stem cells and regenerative medicine are quickly expanding and being established cross-nationally for the quick commercialization of products. Therefore, the future prospects of the stem cells and regenerative medicine industry and other relevant industries are very bright.

Activity 5: Discussion

Review these concluding paragraphs and give advice on how you would recommend to improve them.

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To improve this conclusion:

- ✓ Use short sentences
- ✓ State the conclusion
- ✓ Don't review the field
- ✓ State how this study contributes to the field

Activity 5: Discussion

Review these concluding paragraphs and give advice on how you would recommend to improve them.

In our study, we observed higher expression of genes related to cell migration, angiogenesis and invasiveness such as, angiopoietin 1, Integrin β 3 and MMP9 in oralspheres as compared to parental cells. Slug expression was found to be higher in oralspheres as compared to parental cells, implicating activation of EMT in oralspheres. Enhanced EMT characteristic is associated with a poor prognosis overall and metastatic free survival in patients with HNSCC^{7, 29}. High MMP9 protein levels have been observed in human oral cancers, and MMP9 is a marker of malignant human oral cancer^{30, 31}. Enhanced expression of MMP9 was observed in oralspheres suggesting the possibility of higher rate of malignancy in HNSCC. Although a soluble secreted enzyme, MMP9 has been reported to localize at the cell surface via CD44 in murine mammary carcinoma cells and facilitate tumor invasion and angiogenesis by proteolytic activation of latent TGF- β ^{32, 33}. We observed that tumors from oralspheres display higher level of VEGFR1. VEGFR1 expression and activation is associated with increased malignant potential in osteosarcoma cells³⁴. We also observed downregulation of angiogenic suppressor gene, THBS1. Interestingly, it has been shown that absence of THBS1 resulted in increased association of VEGF with its receptor VEGFR2 and higher levels of active MMP9, to facilitate both angiogenesis and tumor invasion³⁵. In addition, THBS1 suggested being a negative regulator of tumor vasculature which is supported by higher tumor vascularization in tumors from oralspheres by our gross observation. Surprisingly, we observed the overexpression of c-Fos in oralspheres. AP-1 complex formed by association between c-Fos and c-Jun is recently implicated in maintenance of colon cancer stem cells³⁶. The transcription of MMP9 gene is regulated by upstream regulatory elements, such as AP-1, STAT3, and NF- κ B binding sites^{37, 38, 39}. It is possible that c-Fos can associate with MMP9 promoter through AP1 transcription factor to promote tumor cell invasion in oralspheres. Further studies need to be performed to elucidate the role of these factors in HNSCC CSCs. In conclusion, our studies suggest the enhanced expression of molecular signatures associated with tumor progression, invasion and metastasis in CSCs derived from HNSCC and development of drugs targeting CSCs needs further investigation.

Activity 5: Discussion

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In our study, we observed higher expression of genes related to cell migration, angiogenesis and invasiveness such as, angiopoietin 1, Integrin $\beta 3$ and MMP9 in oralspheres as **compared to** parental cells. Slug expression was found to be higher in oralspheres as **compared to** parental cells. **compared with** activation of EMT in oralspheres. Enhanced EMT characteristic is associated with a poor prognosis and decreased overall survival in patients with HNSCC^{7, 29}. High MMP9 protein levels have been observed in human oral cancers, and MMP9 is a marker of malignant human oral cancer^{30, 31}. Enhanced expression of MMP9 was observed in oralspheres suggesting the possibility of higher rate of malignancy in HNSCC. Although a soluble secreted enzyme, MMP9 has been reported to localize at the cell surface via CD44 in murine mammary carcinoma cells and facilitate tumor invasion and angiogenesis by proteolytic activation of latent TGF- β ^{32, 33}. We observed that tumors from oralspheres display higher level of VEGFR1. VEGFR1 expression and activation is associated with increased malignant potential in osteosarcoma cells³⁴. We also observed downregulation of angiogenic suppressor gene, THBS1. Interestingly, it has been shown that absence of THBS1 resulted in increased association of VEGF with its receptor VEGFR2 and higher levels of active MMP9, to facilitate both angiogenesis and tumor invasion³⁵. In addition, THBS1 suggested being a negative regulator of tumor vasculature which is supported by higher tumor vascularization in tumors from oralspheres by our gross observation. **Surprisingly**, we observed the overexpression of c-Fos in oralspheres. AP-1 complex formed by association between c-Fos and c-Jun is prominently implicated in maintenance of colon cancer stem cells³⁶. The transcription of MMP9 gene is regulated by upstream regulatory elements, such as AP-1, STAT3, and NF- κ B binding sites^{37, 38, 39}. It is possible that c-Fos can associate with MMP9 promoter through AP1 transcription factor to promote tumor cell invasion in oralspheres. Further studies need to be performed to elucidate the role of these factors in HNSCC CSCs. In conclusion, our studies suggest the enhanced expression of molecular signatures associated with tumor progression, invasion and metastasis in CSCs derived from HNSCC and development of drugs targeting CSCs needs further investigation.

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MMP9

VEGFR1

c-Fos

Too many ideas

Activity 5: Discussion

Review these concluding paragraphs and give advice on how you would recommend to improve them.

Conclusion

In our study, we observed higher expression of genes related to cell migration, angiogenesis and invasiveness such as, angiopoietin 1, Integrin β 3 and MMP9 in oralspheres as compared to parental cells. Slug expression was found to be higher in oralspheres as compared to parental cells, implicating activation of EMT in oralspheres. Enhanced EMT characteristic is associated with a poor prognosis. MMP9 protein levels have been observed in HNSCC. Although enhanced expression of MMP9 was observed in HNSCC. Although a soluble secreted enzyme, MMP9 is known to degrade extracellular matrix and facilitate tumor cell invasion. In our study, we observed that oralspheres display increased malignant potential in osteosarcoma. Interestingly, it has been shown that active MMP9, to facilitate tumor cell invasion, is a regulator of tumor vascularization. Surprisingly, our observation between c-Fos and c-Jun is regulated by upstream regulatory elements, such as AP-1, STAT3, and NF- κ B binding sites. It is possible that c-Fos can associate with MMP9 promoter through AP1 transcription factor to promote tumor cell invasion in oralspheres. Further studies need to be performed to elucidate the role of these factors in HNSCC CSCs. In conclusion, our studies suggest the enhanced expression of molecular signatures associated with tumor progression, invasion and metastasis in CSCs derived from HNSCC and development of drugs targeting CSCs needs further investigation.

To improve this conclusion:

- ✓ Use shorter paragraphs
- ✓ Don't review & interpret your findings in the concluding paragraph
- ✓ Clearly state how study contributes to the field

Future directions

Any questions?

Thank you!

Daniel McGowan: dmcgowan@edanzgroup.com



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Effectively Communicating Your Research – Day 2

UNAM

23 February 2016

Daniel McGowan, PhD
Science Director

Workshop outline

Day 1	Day 2
Ethics	Writing skills
Writing skills	Titles & Abstracts
Effective writing	Cover letters
Journal selection	Peer review
Methods & Results	Promoting your work
Introductions & Discussions	

Workshop outline

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Section 7

Titles and abstracts

Effective titles

Important points

- ✓ Summarize key finding
- ✓ Contains keywords
- ✓ Less than 20 words

Avoid

- ✗ Questions
- ✗ Describing methods
- ✗ Abbreviations
- ✗ “New” or “novel”

*Your title should be a concise summary of
your most important finding*

Effective titles

*Articles with short titles describing
the results are cited more often*

Paiva et al. Clinics 2012; 67: 509–513.

**Analyzed 423 research articles published in Oct
2008 and analyzed the citations in Dec 2011**

Higher citations

- ✓ Short titles
- ✓ Described results

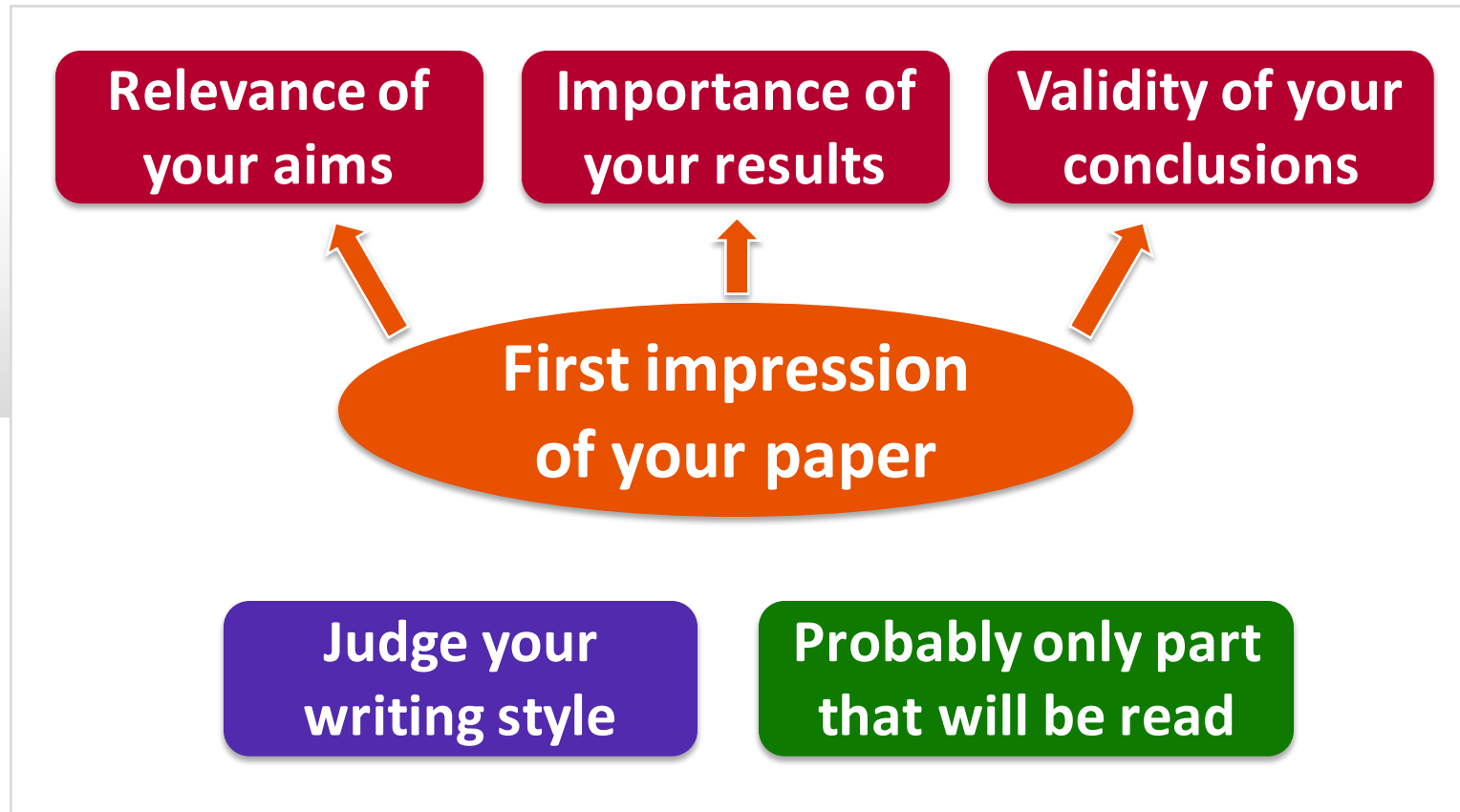
Lower citations

- ✗ Questions
- ✗ Geographically restricted

Search Engine Optimization

- ❖ Identify 7–8 keywords (include synonyms)
- ❖ Use 2 in your title, 5–6 in the keyword list
- ❖ Use 3 keywords 3–4 times in your abstract
- ❖ Use keywords in headings when appropriate
- ❖ Be consistent throughout your paper
- ❖ Cite your previous publications when relevant
 - *Google Scholar ranks results by citations*

Abstract



Sections of an abstract

Concise summary of your research

Background



Why the study was done

Aims



Your hypothesis

Methods



Techniques

Results



Most important findings

Conclusion



Conclusion/implications

Unstructured abstract

Our understanding of the mechanisms by which ducts and lobules develop is derived from model organisms and three-dimensional (3D) cell culture models wherein mammalian epithelial cells undergo morphogenesis to form multicellular spheres with a hollow central lumen. However, the mechanophysical properties associated with epithelial morphogenesis are poorly understood. We performed multidimensional live-cell imaging analysis to track the morphogenetic process starting from a single cell to the development of a multicellular, spherical structure composed of polarized epithelial cells surrounding a hollow lumen. We report that in addition to actively maintaining apicobasal polarity, the structures underwent rotational motions at rates of 15–20 $\mu\text{m}/\text{h}$ and the structures rotated 360° every 4 h during the early phase of morphogenesis. Rotational motion was independent of the cell cycle, but was blocked by loss of the epithelial polarity proteins Scribble or Pard3, or by inhibition of dynein-based microtubule motors. Interestingly, none of the structures derived from human cancer underwent rotational motion. We found a direct relationship between rotational motion and assembly of endogenous basement membrane matrix around the 3D structures, and that structures that failed to rotate were defective in weaving exogenous laminin matrix. Dissolution of basement membrane around mature, nonrotating acini restored rotational movement and the ability to assemble exogenous laminin. Thus, coordinated rotational movement is a unique mechanophysical process observed during normal 3D morphogenesis that regulates laminin matrix assembly and is lost in cancer-derived epithelial cells.

Unstructured abstract

Our understanding of the mechanisms by which ducts and lobules develop is derived from model organisms and three-dimensional (3D) cell culture models wherein mammalian epithelial cells undergo morphogenesis to form multicellular spheres with a hollow central lumen. However, the mechanophysical properties associated with epithelial morphogenesis are poorly understood.

Background

We performed multidimensional live-cell imaging analysis to track the morphogenetic process starting from a single cell to the development of a multicellular, spherical structure composed of polarized epithelial cells surrounding a hollow lumen.

Methods

We report that in addition to actively maintaining apicobasal polarity, the structures underwent rotational motions at rates of 15–20 $\mu\text{m}/\text{h}$ and the structures rotated 360° every 4 h during the early phase of morphogenesis. Rotational motion was independent of the cell cycle, but was blocked by loss of the epithelial polarity proteins Scribble or Pard3, or by inhibition of dynein-based microtubule motors. Interestingly, none of the structures derived from human cancer underwent rotational motion. We found a direct relationship between rotational motion and assembly of endogenous basement membrane matrix around the 3D structures, and that structures that failed to rotate were defective in weaving exogenous laminin matrix. Dissolution of basement membrane around mature, nonrotating acini restored rotational movement and the ability to assemble exogenous laminin.

Results

Thus, coordinated rotational movement is a unique mechanophysical process observed during normal 3D morphogenesis that regulates laminin matrix assembly and is lost in cancer-derived epithelial cells.

Conclusion

Writing your abstract

Write the results section first

- ✓ Key findings that directly support your aims
- ✓ Will be interesting to the readers

We report that in addition to actively maintaining apicobasal polarity, the structures underwent rotational motions at rates of 15–20 $\mu\text{m}/\text{h}$ and the structures rotated 360° every 4 h during the early phase of morphogenesis. Rotational motion was independent of the cell cycle, but was blocked by loss of the epithelial polarity proteins Scribble or Pard3, or by inhibition of dynein-based microtubule motors. Interestingly, none of the structures derived from human cancer underwent rotational motion. We found a direct relationship between rotational motion and assembly of endogenous basement membrane matrix around the 3D structures, and that structures that failed to rotate were defective in weaving exogenous laminin matrix. Dissolution of basement membrane around mature, nonrotating acini restored rotational movement and the ability to assemble exogenous laminin.

Writing your abstract

Write the background section second

✓ **Explain *why* this study needed to be done**

Our understanding of the mechanisms by which ducts and lobules develop is derived from model organisms and three-dimensional (3D) cell culture models wherein mammalian epithelial cells undergo morphogenesis to form multicellular spheres with a hollow central lumen. **However,** the mechanophysical properties associated with epithelial morphogenesis are poorly understood.

Problem

Writing your abstract

Write the methods section third

- ✓ **General techniques used to obtain the *presented* results**

We performed multidimensional live-cell imaging analysis to track the morphogenetic process starting from a single cell to the development of a multicellular, spherical structure composed of polarized epithelial cells surrounding a hollow lumen.

Writing your abstract

Write the conclusion section last

- ✓ Major conclusion that answers the problem
- ✓ Implications for the readers

However, the mechanophysical properties associated with epithelial morphogenesis are poorly understood.

Conclusion

Thus, coordinated rotational movement is a unique mechanophysical process observed during normal 3D morphogenesis that regulates laminin matrix assembly and is lost in cancer-derived epithelial cells.

Implications

Writing your abstract

Our understanding of the mechanisms by which ducts and lobules develop is derived from model organisms and three-dimensional (3D) cell culture models wherein mammalian epithelial cells undergo morphogenesis to form multicellular spheres with a hollow central lumen. However, the mechanophysical properties associated with epithelial morphogenesis are poorly understood. We performed multidimensional live-cell imaging analysis to track the morphogenetic process starting from a single cell to the development of a multicellular, spherical structure composed of polarized epithelial cells surrounding a hollow lumen. We report that in addition to actively maintaining apicobasal polarity, the structures underwent rotational motions at rates of 15–20 $\mu\text{m}/\text{h}$ and the structures rotated 360° every 4 h during the early phase of morphogenesis. Rotational motion was independent of the cell cycle, but was blocked by loss of the epithelial polarity proteins Scribble or Pard3, or by inhibition of dynein-based microtubule motors. Interestingly, none of the structures derived from human cancer underwent rotational motion. We found a direct relationship between rotational motion and assembly of endogenous basement membrane matrix around the 3D structures, and that structures that failed to rotate were defective in weaving exogenous laminin matrix. Dissolution of basement membrane around mature, nonrotating acini restored rotational movement and the ability to assemble exogenous laminin. Thus, coordinated rotational movement is a unique mechanophysical process observed during normal 3D morphogenesis that regulates laminin matrix assembly and is lost in cancer-derived epithelial cells.

Writing your abstract

Our understanding of the mechanisms by which ducts and lobules develop is derived from model organisms and three-dimensional mammalian epithelial cells undergo morphogenesis to form multicellular spheres with a hollow central lumen. However, the mechanophysical properties associated with epithelial morphogenesis are poorly understood. We performed multidimensional live-cell imaging analysis to track the morphogenetic process starting from a single cell to the development of a 3D structure composed of polarized epithelial cells surrounding a hollow lumen. We report that in addition to actively maintaining apicobasal polarity, the structures underwent rotational motions at rates of 15–20 $\mu\text{m}/\text{h}$ and the structures rotated 360° every 4 h during the early phase of morphogenesis. Rotational motion was independent of the cell cycle, but was blocked by loss of the epithelial polarity proteins Scribble or Pard3, or by inhibition of dynein-kinesin. Interestingly, none of the structures derived from human cancer underwent rotational motion. We found a direct relationship between rotational motion and assembly of endogenous basement membrane matrix around the 3D structures, and that structures that failed to rotate were defective in weaving exogenous laminin matrix. Dissolution of basement membrane around mature, nonrotating acini restored rotational movement and the ability to assemble exogenous laminin. Thus, coordinated rotational movement is a unique mechanophysical property of epithelial cells that regulates morphogenesis that regulates laminin matrix assembly and is lost in cancer-derived epithelial cells.

Why needed to be done

What you did

What you found

How advances the field

Titles and Abstracts

References

Abbreviations

Don't include...

Jargon

Non-essential numbers & statistics

Do not include a lot of numbers and statistics

The effect of high vacuum on the mechanical properties and bioactivity of collagen fibril matrices

Results

The cell area histogram and mean cell areas for the HV-treated fibril matrices ($2030 \mu\text{m}^2 \pm 137 \mu\text{m}^2$) are comparable to the cell areas of untreated fibril matrices measured here ($2165 \mu\text{m}^2 \pm 206 \mu\text{m}^2$) and elsewhere... Cells on LV-treated fibril matrices have larger average surface areas ($3450 \mu\text{m}^2 \pm 175 \mu\text{m}^2$) than the control untreated matrices, and their spread area is significantly larger (area of $4348 \mu\text{m}^2 \pm 287 \mu\text{m}^2$).

*Summarize and simplify
your results*

The modulus results are significantly smaller, but statically significant ($p < 0.001$) and a modulus of $8.1 \text{ kPa} \pm 2.2 \text{ kPa}$ and HV-treated matrices are approximately a factor of 2.5 stiffer ($20.2 \text{ kPa} \pm 3.7 \text{ kPa}$). The modulus results for the second analysis (table 2) indicate that LV-treated fibril matrices ($34.7 \text{ kPa} \pm 3.7 \text{ kPa}$) are nearly as mechanically stiff ($p = 0.20$) as the dehydrated matrices ($36.4 \text{ kPa} \pm 4.2 \text{ kPa}$), and are considerably less compliant than the untreated matrices ($11.2 \text{ kPa} \pm 3.7 \text{ kPa}$) in this experiment.

Abstract

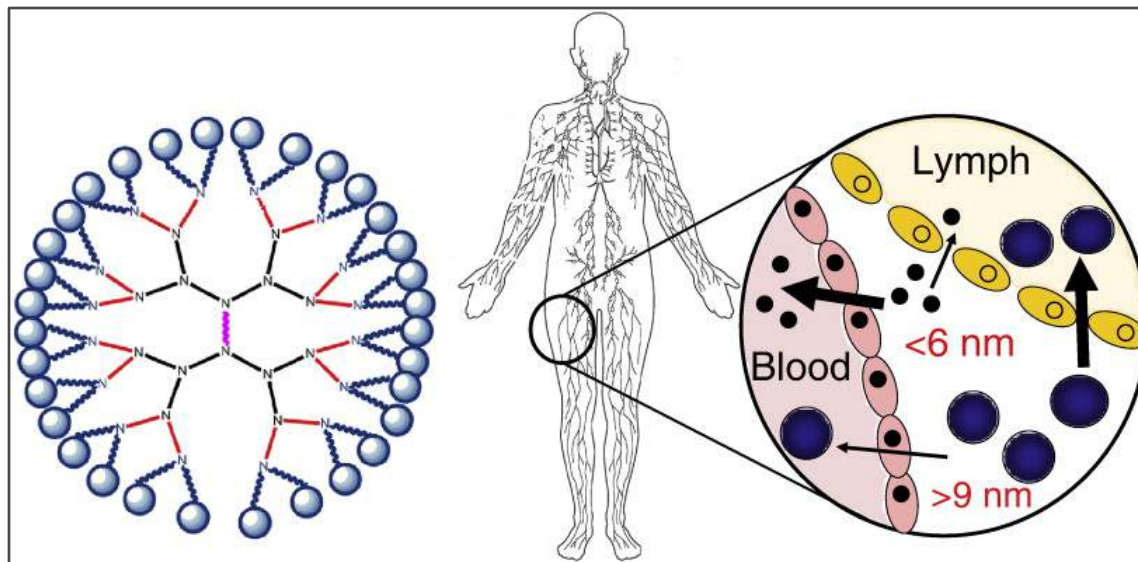
We find that HV exposure has an unappreciable affect on the cell spreading response and mechanical properties of these collagen fibril matrices. Conversely, low vacuum environments cause fibrils to become mechanically rigid as indicated by force microscopy, resulting in greater cell spreading.

Graphical abstracts

<http://www.elsevier.com/journal-authors/graphical-abstract>

- ✓ Visually demonstrate key features of the study
- ✓ Help readers quickly identify suitable articles

Targeting the lymphatics using dendritic polymers



Titles & Abstracts activity

Please see Activity 6 in your Workbook

Activity 6: Abstract

How is this related to mice?

A devastating earthquake and tsunami hit Japan on March 11, 2011. In the present study, the effects of this earthquake on laboratory mice behavior were investigated. “Earthquake-experienced” mice displayed a marked increase in food consumption without gaining body weight. The food was purchased from a company based in New Zealand. The mice also displayed enhanced anxiety. Maze performance of earthquake-experienced mice showed quicker acquisition of the task compared with that of earthquake-naive mice. Stress hormone levels, which were measured three times, were elevated compared with the naive mice. This indicated that the earthquake and aftershocks were stressful for the mice.

Activity 6: Abstract

How is this related to mice?

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Activity 6: Abstract

How is this related to mice?

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Activity 6: Abstract

How is this related to mice?

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No conclusions

- Appropriate journal*
- Logically organized manuscript*
- Clear English*

Ready to submit!

Journal editors are busy!



Section 8

Cover letters

Cover letters

**Significance
Relevance**



**Why your work
is important!**

**Cover letter:
First impression for journal editors**

**Interesting to
their readers?**

Level of English

Building your cover letter

Marc Lippman, MD

Editor-in-Chief

Breast Cancer Research and Treatment

3 September 2013

Dear Dr Lippman,

Please find enclosed our manuscript entitled “Evaluation of the Glasgow prognostic score in patients undergoing curative resection for breast cancer liver metastases,” which we would like to submit for publication as a **Original Article** in *Breast Cancer Research and Treatment*.

Journal editor’s name

- Did you read the aims and scope?
- Did you read the author guidelines?

Manuscript title

Article type

Building your cover letter

Second paragraph:

- ✓ **Current** state of the field
- ✓ **Problem** researchers are facing

The Glasgow prognostic score (GPS) is of value for a variety of tumours. Several studies **Introduction** the prognostic value of the GPS in patients with metastatic breast cancer, but few studies have performed such an investigation for patients undergoing liver resection for liver metastases. **Problem** there are currently no studies that have examined the prognostic value of the modified GPS (mGPS) in these patients. The present study evaluated the mGPS in terms of its prognostic value for postoperative death in patients **Objectives** undergoing liver resection for breast cancer liver metastases.

Building your cover letter

Third paragraph:

- ✓ **Briefly** describe your methodology
- ✓ **Summarize** your key findings

A total of 318 patients with breast cancer liver metastases who underwent hepatectomy over a 15-year period were included in this study. The mGPS was **Methods** the levels of C-reactive protein and albumin, and the disease-free survival and cancer-specific survival rates were evaluated in relation to the mGPS. Overall, the results showed a significant association between cancer-specific survival and the **Key results** embryonic antigen level. A higher mGPS was associated with increased aggressiveness of liver recurrence and poorer survival in these patients.

Building your cover letter

Fourth paragraph:

✓ Why *interesting* to the journal's readership

This study is the first to demonstrate that the preoperative mGPS, a simple clinical tool, is a **Conclusion** for postoperative survival in breast cancer patients undergoing curative resection for liver metastases. This information is immediately clinically applicable for surgeons and medical oncologists treating such patients. As a premier journal in **Relevance** cancer treatment, we believe that *Breast Cancer Research and Treatment* is the perfect platform from which to share our results with all those concerned with breast cancer.

Building your cover letter

Fourth paragraph:

✓ Why *interesting* to the journal's readership

This study is the first to demonstrate that the preoperative mGPS, a simple clinical tool, is a useful prognostic factor for postoperative survival in breast cancer patients undergoing curative resection for liver metastases. This information is immediately clinically applicable for surgeons and medical oncologists treating such patients. As a premier journal covering breast cancer treatment, we believe that *Breast Cancer Research and Treatment* is the perfect platform from which to share our results with all those concerned with breast cancer. **Target your journal –**

keywords from the aims and scope

Building your cover letter

Last paragraph:

- ✓ Disclaimers related to *publication ethics*
- ✓ Source of *funding*
- ✓ *Conflicts of interest*

We confirm that this manuscript has not been published elsewhere and is not under consideration elsewhere. All authors have approved the manuscript and agree with submission to the *Breast Cancer Research and Treatment*. This study was funded by the Japanese Ministry of Health, Labour and Welfare. The authors have no conflicts of interest to declare.

Ethics

Funding

Conflicts of interest

Building your cover letter

Other important information:

- ✓ Recommended reviewers
- ✓ Author's contact information

We would like to recommend the following reviewers to evaluate our manuscript:

Reviewers

1. Reviewer 1 and contact information
2. Reviewer 2 and contact information
3. Reviewer 3 and contact information
4. Reviewer 4 and contact information

Please address all correspondence **Contact information**

Cover letters

A good cover letter

Manuscript information

Marc Lippman, MD
Editor-in-Chief
Breast Cancer Research and Treatment

3 September 2013

Dear Dr Lippman,

Please find enclosed our manuscript entitled "Evaluation of the Glasgow prognostic score in patients undergoing curative resection for breast cancer liver metastases," which we would like to submit for publication as an Original Article in *Breast Cancer Research and Treatment*.

The Glasgow prognostic score (GPS) is of value for a variety of tumor types, including breast cancer patients with metastatic breast cancer, but few studies have performed such an investigation for patients undergoing liver resection. We examined the prognostic value of the modified GPS (mGPS) in these patients. The present study evaluated the mGPS in terms of its prognostic value for postoperative death in patients undergoing liver resection for breast cancer liver metastases.

A total of 318 patients with breast cancer liver metastases who underwent curative resection were included in the study. The mGPS was calculated based on the levels of C-reactive protein and albumin, and the disease-free survival and cancer-specific survival were respectively analyzed by univariate and multivariate analyses. Overall, the results showed a significant association between cancer-specific survival and the mGPS and carcinoembryonic antigen level. Furthermore, we demonstrated that a higher mGPS was associated with increased aggressiveness of liver recurrence and poorer survival in these patients.

This study is the first to demonstrate that the preoperative mGPS, which is a simple and easily obtainable score, is a prognostic factor for breast cancer patients undergoing curative resection for liver metastases. This information is immediately clinically applicable for surgeons and medical oncologists treating such patients. As a premier journal covering breast cancer treatment, we believe that *Breast Cancer Research and Treatment* is the perfect platform from which to share our results with all those concerned with breast cancer.

We confirm that this manuscript has not been published elsewhere and we declare that we are the authors of the manuscript and agree with submission to *Breast Cancer Research and Treatment*. This study was funded by the Japanese Ministry of Health, Labour and Welfare.

We would like to recommend the following reviewers to evaluate our manuscript:

Reviewer 1 and contact information
Reviewer 2 and contact information
Reviewer 3 and contact information
Reviewer 4 and contact information

Please address all correspondence to:

We look forward to hearing from you at your earliest convenience.

Yours sincerely,

Background

Key findings

Relevance

Disclaimers

Recommended reviewers

Additional points

Highlight recent issues in the media

“Given the considerable attention climate change has received worldwide, it will be important to...”

Highlight recently published articles in their journal

“It has recently been shown that PMS2 mutations cause Lynch Syndrome (ten Broeke et al. J Clin Oncol. 2015;33:319). However, it still remains unclear...”

Highlight recent policy changes

“Recently, the Mexican government has implemented new incentives to promote entrepreneurship ...”

Highlight current controversies

“Currently, there is disagreement on the effect of substrate rigidity on stem cell differentiation. Our study aims to address this controversy with a novel...”

Specific cover letter styles

nature

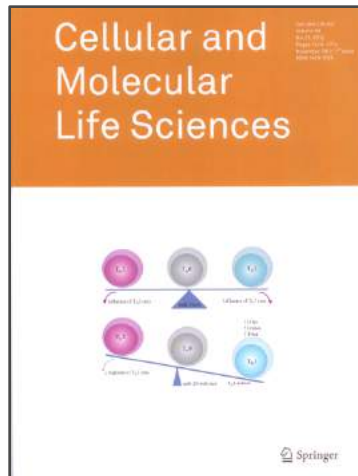
5. Cover Letter

Submissions should be accompanied by a brief covering letter from the corresponding author including full postal address, telephone number and e-mail address. This letter should contain two (100-word or shorter) summaries a concise paragraph to the editor indicating the scientific grounds why the paper should be considered for a topical, interdisciplinary journal rather than for a single-discipline or archival journal; and a separate, 100-word summary of the paper's appeal to a popular (non-scientific) audience.

The cover letter should state clearly what is included as the submission, including number of words in the text and number of display items (figures, tables, boxes) in the print version of the paper; number of additional words in the text (full Methods and Extended Data legends) and number of Extended Data figures and tables for the online-only version; any Supplementary Information (specifying number of items and format); number of supporting manuscripts.

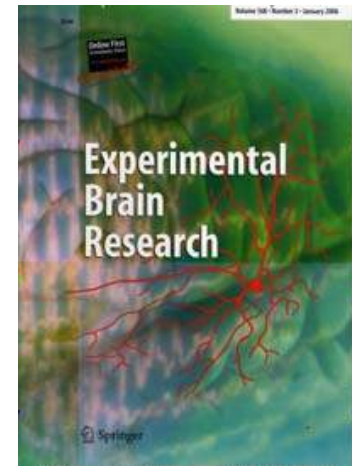
<http://www.nature.com/nature/authors/submissions/subs/#a6>

Recommending reviewers



“Authors are requested to provide the names and full addresses (including e-mail address) of up to **four** potential referees...”

“When submitting your paper, you must provide the names, affiliations, and valid e-mail addresses of **five (5)** reviewers. If you do not do so, your paper will be returned, **unreviewed.**”



Recommending reviewers – PNAS

Editorial Policies

Submission Guidelines

Direct Submission.

The standard mode of transmitting manuscripts is Direct Submission. Authors must recommend **three appropriate Editorial Board members**, **three NAS members** who are expert in the paper's scientific area, and **five qualified reviewers**. The Board may choose someone who is or is not on that list or may reject the paper without further review. Authors are encouraged to indicate why their suggested editors are qualified to handle the paper. A directory of PNAS member editors and their research interests is available at pro88.nas.edu/pnas_search. The editor

<http://www.pnas.org/site/authors/editorialpolicies.xhtml>

Recommending reviewers

Where to find them?



From your reading/references, networking at conferences

How senior?



Aim for mid-level researchers

Who to avoid?



Collaborators (past 5 years), researchers from INSP

International list:

1 or 2 from Asia, 1 or 2 from Europe, and 1 or 2 from North America

Have they published in your target journal?

Why recommend reviewers?

Reviewers recommended by authors are usually more favorable

1. Scharschmidt et al. *J Clin Invest.* 1994; 93: 1877–1880.
2. Earnshaw & Farndon. *Ann R Coll Surg Engl.* 2000; 82: 133–135.
3. Grimm. *Science* 2005; 309: 1974.
4. Wager et al. *BMC Med.* 2006; 4: 13.
5. Schroter et al. *JAMA* 2006; 295: 314–317.
6. Rivara et al. *J Pediatr.* 2007; 151: 202–205.
7. Bornmann & Daniel. *Res Eval.* 2009; 18: 262–272.
8. Bornmann & Daniel. *PLoS One* 2010; 5: e13345.

Why recommend reviewers?

Reviewers recommended by authors are usually more favorable

	Accept		Reject	
	Author	Editor	Author	Editor
<i>JAMA (n=329)</i>	56.9%	46.0%	12.9%	23.6%
<i>BMC Med (n=200)</i>	47.0%	35.0%	10.0%	23.0%
<i>J Pediatr (n=280)</i>	63.6%	42.9%	14.3%	25.0%

Cover letter activity

Please see Activity 7 in your Workbook

Activity 7: Cover letters

No name

Editor-in-Chief

Anxiety, Stress & Coping: An International Journal

20 November 2014

Dear Editor,

Please find enclosed our manuscript entitled “Job stress impairs the working efficiency among Mexican employees”, which we would like to submit for publication in *Anxiety, Stress & Coping: An International Journal*.

No article type

Activity 7: Cover letters

Why is this study being done?

This study examined the relationships between common mental health symptoms and working efficiency among young Mexican employees, and also the effects of job strain and workplace social support.

No methodology

We found that:

- Previous mental health symptoms were not a predictor of low working efficiency
- Job stress significantly impaired the working efficiency only in inexperienced employees
- Workplace social support improved the working efficiency in stressed employees

Avoid bullet points

Activity 7: Cover letters

Therefore, we feel this manuscript is particularly suitable for *Anxiety, Coping & Stress* and will be of great interest to its readers.

We look forward to hearing from you at your earliest convenience.

Yours sincerely,

Daniel McGowan, PhD

No conclusion

Why is it suitable?

Incorrect journal name!

No disclaimers regarding ethics

No recommended reviewers

No corresponding address

Section 9

Peer review & revisions



What reviewers are looking for

The science

- ✓ Relevant hypothesis
- ✓ Good experimental design
- ✓ Appropriate methodology
- ✓ Good data analysis
- ✓ Valid conclusions

The manuscript

Discussion

- ✓ High readability

Formatting

Unclear decision letter

30 August 2014

Dear Dr. McGowan,

Manuscript ID NRL-11-7839: "Gene regulatory networks in living cells"

Decision

Your manuscript has been reviewed, and we regret to inform you that based on our Expert reviewers' comments, it is not possible to further consider your manuscript in its current form for publication in *Neurogenetics*.

Reason

Although the reviews are not entirely negative, it is evident from the extensive comments and concerns that the manuscript, in its current form, does not meet the criteria expected of papers in *Neurogenetics*. The results appear to be too preliminary and incomplete for publication at the present time.

Comments

The reviewer comments are included at the bottom of this letter. I hope the information provided by the reviewers will be helpful in future. Thank you for your interest in the journal and I regret that the outcome has not been favorable at this time.

Editor *may* be interested in your work

- ✓ The Reviewer comments are **not** entirely negative.
- ✓ It is not possible to consider your manuscript in its **current** form.
- ✓ I hope the information provided will be helpful when you **revise** your manuscript.
- ✓ I regret that the outcome has not been favorable at **this time**.

Editor is *not* interested in your work

- ✗ We cannot publish your manuscript
- ✗ Your study does not contain novel results that merit publication in our journal.
- ✗ We appreciate your interest in our journal. However, we will not further consider your manuscript for publication.
- ✗ We wish you luck in publishing your results elsewhere.

Why send an unclear decision letter?

Publication time

Statistics about publishing with BMJ

We endeavour to process your papers as quickly as possible and have some of the best lead times for peer review and publication. We support you by publishing your research quickly, efficiently and painlessly.

Long revisions = long publication times

Editors hope you fully revise and then resubmit as a new submission

Clear decision letter

10 November 2015

Dear Dr. Robens,

Manuscript ID number

Manuscript ID 10.1007/s10850-556 "Prediction of nonlinear seismic responses of asymmetric structures under stress"

Decision

Your manuscript has been reviewed, and we believe that after revision your manuscript may become suitable for publication in *Journal of Seismology*. The reviewer concerns are included at the bottom of this letter.

You can submit a revised manuscript that takes into consideration these comments. You will also need to include a detailed commentary of the changes made. Please note that resubmitting your manuscript does not guarantee eventual acceptance, and that your resubmission may be subject to re-review by the reviewers before a decision is made.

To revise your manuscript, log into <https://www.editorialmanager.com/JSeis/> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

How to re-submit

...

Clear decision letter

...You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using bold or colored text. Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

How to respond

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to *BBE*, your revised manuscript should be uploaded by 10 December. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

Due date for resubmission

Once again, thank you for submitting your manuscript to *Journal of Seismology* and I look forward to receiving your revised manuscript.

Should you resubmit to the same journal?

Can I answer all the reviewer comments and fully revise my manuscript before the deadline?

Yes

Resubmit to the same journal

- Fully revise manuscript
- Point-by-point responses

Should you resubmit to the same journal?

Can I answer all the reviewer comments and fully revise my manuscript before the deadline?

No

Submit to a different journal

- Revise manuscript as much as possible
- Reformat manuscript

Organize the reviewers' comments

Group similar comments together

Experimental

References

Writing

Reviewer 1: “Re-analyze the data in Figure 3 using a Mann–Whitney U test.”

Reviewer 3: “Repeat the experiments in Figure 3 with additional controls.”

Note: the comments of one reviewer may affect the comments of another

- Mann–Whitney U test: 2 groups
- Kruskal–Wallis test: >2 groups

Writing response letters

*Read by the journal editor,
not the reviewers*

Respond to **every** reviewer comment

Easy to see
changes

Refer to line and page numbers

Use a different color font

Highlight the text

~~Strikethrough font for deletions~~

Writing response letters

Marc Lippman, MD
Editor-in-Chief
Breast Cancer Research and Treatment

Address editor personally

3 September 2013

Dear Dr Lippman,

Manuscript ID number

Re: Resubmission of manuscript reference No. WJS-07-5739

Thank reviewers

Please find attached a revised version of our manuscript originally entitled "Evaluation of the Glasgow prognostic score in patients undergoing curative resection for breast cancer liver metastases," which we would like to resubmit for consideration for publication in the *Breast Cancer Research and Treatment*.

The reviewer's comments were highly insightful and enabled us to greatly improve the quality of our manuscript. In the following pages are our point-by-point responses to each of the comments.

Revisions in the manuscript are shown as underlined text. In accordance with the first comment, the title has been revised and the entire manuscript has undergone substantial English editing.

We hope that the revisions in the manuscript and our accompanying responses will be sufficient to make our manuscript suitable for publication in the *Breast Cancer Research and Treatment*.

Highlight major changes

Agreeing with reviewers

Reviewer Comment: In your analysis of the data you have chosen to use a somewhat obscure fitting function (regression). In my opinion, a simple Gaussian function would have sufficed. Moreover, the results would be more instructive and easier to compare to previous results.

Agreement

Response: We agree with the reviewer's assessment of the analysis.

Agreeing with reviewers

***Reviewer Comment:** In your analysis of the data you have chosen to use a somewhat obscure fitting function (regression). In my opinion, a simple Gaussian function would have sufficed. Moreover, the results would be more instructive and easier to compare to previous results.*

Agreement

Response: We agree with the reviewer's assessment of the analysis. Our tailored function, in its current form, makes it difficult to tell that this new **Why you agree** constitutes a significant improvement over previously reported values. We describe our new analysis using a Gaussian fitting function in our revised Results section (Page 6, Lines 12–18).

Revisions

Location

Disagreeing with reviewers

***Reviewer Comment:** In your analysis of the data you have chosen to use a somewhat obscure fitting function (regression). In my opinion, a simple Gaussian function would have sufficed. Moreover, the results would be more instructive and easier to compare to previous results.*

Response: It is clear that the reviewer is not familiar with the current analytical methods in the field. I recommend that you identify a more suitable reviewer for your manuscript.



Disagreeing with reviewers

Reviewer Comment: *In your analysis of the data you have chosen to use a somewhat obscure fitting function (regression). In my opinion, a simple Gaussian function would have sufficed. Moreover, the results would be more instructive and easier to compare to previous results.*

Response: Although a simple Gaussian fit would facilitate comparison with the results of other studies, our tailored function allows for the analysis of the data in terms of the Smith model [Smith et al., 1998]. We have now explained the use of this function and the Smith model Discussion section (Page 12, Lines 2–6).

Evidence

Revisions

Location

“Hidden” questions

Reviewer comment: The authors looked for polymorphisms in the promoter region of the gene; however, they didn't evaluate the untranslated regions. That is one of my concerns about this methodology.



Is this a question?

If you are unsure about a reviewer's comment, ask a colleague

“Hidden” questions

Reviewer comment: *The authors looked for polymorphisms in the promoter region of the gene; however, they didn't evaluate the untranslated regions. That is one of my concerns about this methodology.*

Rephrased question: *Why didn't the authors evaluate polymorphisms in the untranslated regions of the gene?*

“Hidden” questions

***Reviewer comment:** The authors looked for polymorphisms in the promoter region of the gene; however, they didn't evaluate the untranslated regions. That is one of my concerns about this methodology.*

Response: In **Evidence**, we decided to focus on the promoter region of this gene because previous studies [Yajima et al., 2010; Jackson et al., 2011] have shown that its trans **Revisions** particularly affected. This has now been clarified in the Discussion section of our manuscript (Page 16, Line 24–28).

Location

“Unfair” reviewer comments

Reviewer comment: Currently, the authors' conclusion that this gene is involved in heart development is not completely validated by their in vitro analyses. They should do additional in vivo experiments using a genetic mouse model to show that heart development is regulated by this gene.

Reasons why reviewers might make these comments

- ❖ **Current results are not appropriate for the scope or impact factor of the journal**
- ❖ **Reviewer is being “unfair”**

“Unfair” reviewer comments

What you should do

First, contact the journal editor if you feel reviewer is being unfair

- ❖ Do the experiments, revise, and resubmit
- ❖ Withdraw submission and resubmit current manuscript to a journal with a different scope or lower impact factor

If rejected, what should you do?

Option 1: New submission to the same journal

- ❖ Fully revise manuscript
- ❖ Prepare point-by-point responses
- ❖ Include the original manuscript ID number

Option 2: New submission to a different journal

- ❖ Revise manuscript
- ❖ Reformat according to the author guidelines

Peer review

Can you appeal a rejection?

差出人: journals <journals@faseb.org>

件名: FW: REMINDER-FW: FASEB Journal - Manuscript Decision

日時: 2014年8月22日 0:45:57 JST

Dear Dr. Kido,

The FASEB Journal • Research Communication

The thermosensitive TRPV3 channel contributes to rapid wound healing in oral epithelia

Reona Aijima,^{*,†,‡} Bing Wang,^{*} Tomoka Takao,^{*} Hiroshi Mihara,[§] Makiko Kashio,[§] Yasuyoshi Ohsaki,^{*} Jing-Qi Zhang,^{*} Atsuko Mizuno,[¶] Makoto Suzuki,[¶] Yoshio Yamashita,[†] Sadahiko Masuko,[‡] Masaaki Goto,[†] Makoto Tominaga,[§] and Mizuho A. Kido^{*,1}

Please revise the manuscript according to the attached sub-edited PDF--in which I have indicated text and figures to be deleted as well as text that should be revised to account for the absence of the immunofluorescence data. The journal will invite you to resubmit a revision and I will do my best to get you a decision quickly thereafter.

██████████

Associate Editor

The FASEB Journal

Peer review activity

Please see Activity 8 in your Workbook

Activity 8: Peer review

The journal editor has returned your manuscript along with a question from the Reviewer. Choose the most appropriate response and explain why.

Reviewer 2: The concept of using conformity to explain effective policy implementation is not new. The authors should discuss what has been published previously regarding this issue, such as Stow et al. Int Policy Rev. 2008; 12: 45–52 and Yajima et al. J Res Policy. 2005; 62: 284–296.

Activity 8: Peer review

Response A: We thank the reviewer for their opinion. However, we have decided to not include these references as they are **not relevant** to our study.

If you decide not to include Reviewer recommended studies, you need to explain **why**.

Activity 8: Peer review

Response B: We thank the reviewer for their comment. We have reviewed the suggested papers; however, we do not feel that these papers should be cited in our manuscript. Although these papers address conformity, they do so in a socialist context that is not appropriate for our paper. The studies by Jackson et al. (*J Policy Studies*. 2007; 43: 120-127) and Pack et al. (*Int Econ Rev* 2011; 6: 67-71) are more relevant as they discuss the concept of conformity in a similar context as our paper. Therefore, we have included these references and added text to the Discussion of our revised manuscript.

- ✓ Explains why not appropriate
- ✓ Suggests other relevant studies

Activity 8: Peer review

Response C: We thank the reviewer for their valuable suggestions. We have conducted a thorough literature search and have added the two suggested references to our revised manuscript. **Where?**

If you decide to include Reviewer recommended studies, you should explain **why** you feel they are relevant. You should also state **where** they are discussed.

Activity 8: Peer review

Response D: We thank the reviewer for their valuable suggestions. We have conducted a thorough literature search and have added the two suggested references to our revised manuscript. We have also expanded our Discussion section to clarify how our findings differ from those reported previously. Briefly, although the studies from Stow et al. and Yajima et al. discuss the role of conformity to effectively implement new policies, they do so only in a socialist context. Therefore, we have discussed the novelty of our findings with regard to different government systems.

- ✓ Discusses where added
- ✓ Briefly explains discussion of new ideas

Next steps

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Networking and collaborations

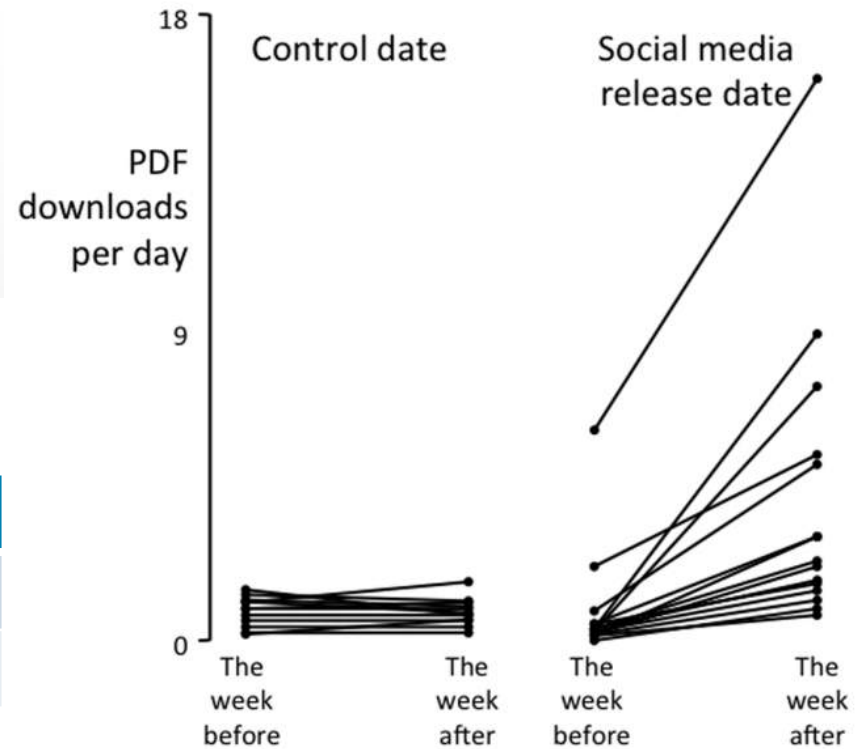
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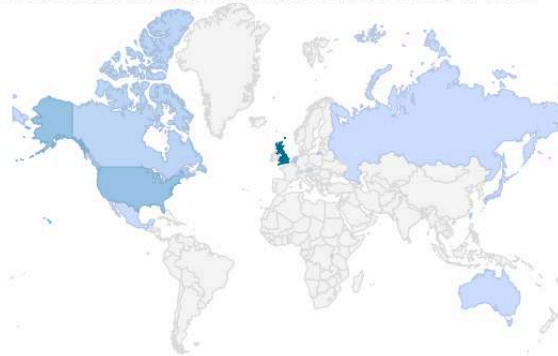


Estimating the returns to UK publicly funded cancer-related research in terms of the net value of improved health outcomes.

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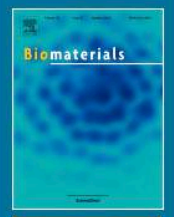
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Matthew Glover, Martin Buxton, Susan Guthrie, Stephen Hanney, Alexandra Pollitt and Jonathan Grant
BMC Medicine 2014, **12**:99

Next steps

Promote your work

Respond to post-publication comments

RESEARCH

Severe bereavement stress during the prenatal and childhood periods and risk of psychosis in later life: population based cohort study

BMJ 2014; 348 doi: <http://dx.doi.org/10.1136/bmj.f7679> (Published 21 January 2014)

Cite this as: *BMJ* 2014;348:f7679

■ Psychotic disorders (incl schizophrenia) ■ Child and adolescent psychiatry

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