How to write and publish your paper in high impact journals

Gareth Dyke

March 2018, Beijing

Gareth Dyke

University College Dublin, Ireland (2002-2011)
University of Southampton, UK (2011-2015)
University of Debrecen, Hungary (2014-)

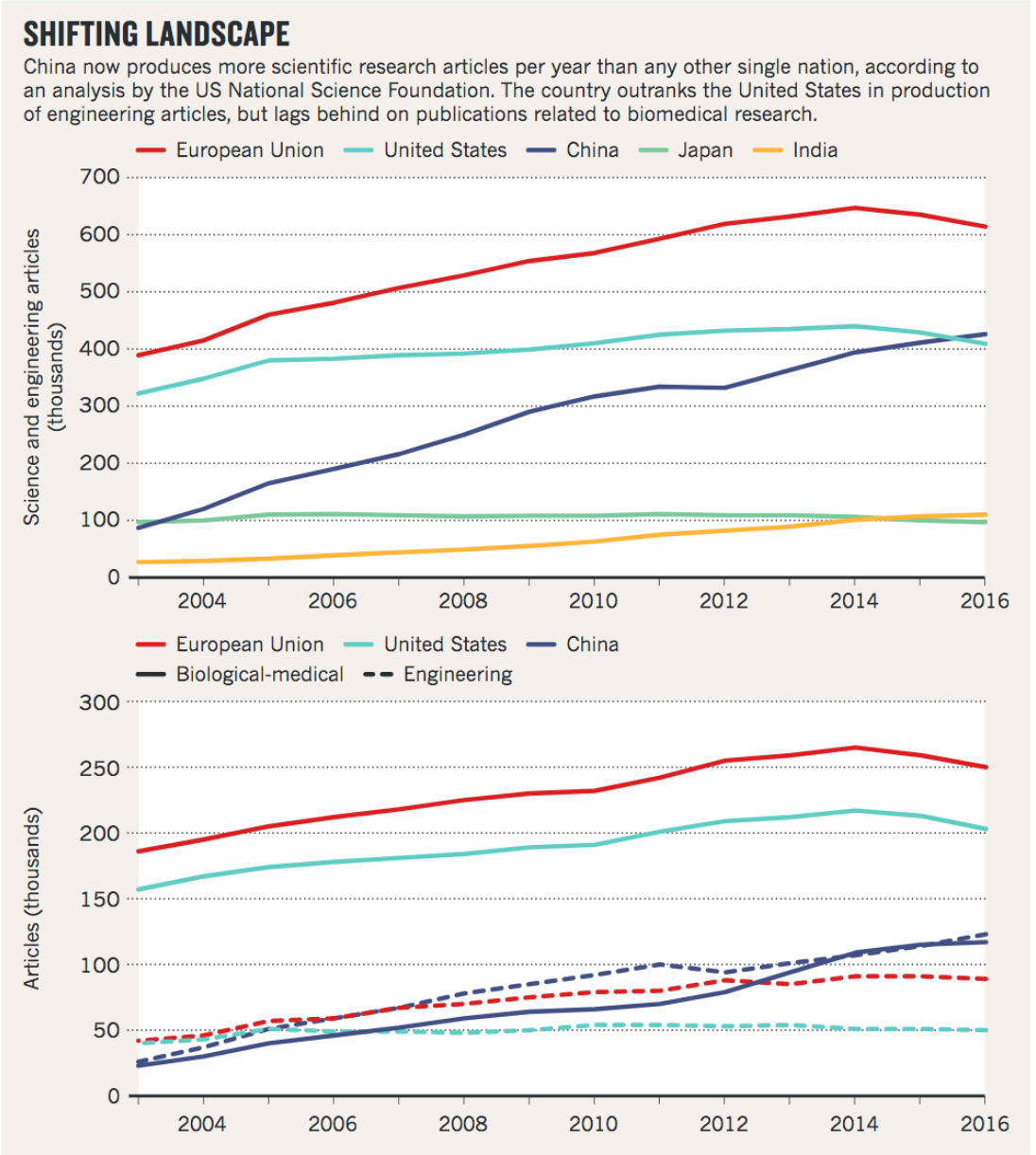
Editor-in-chief *Historical Biology* (Taylor & Francis) (2004-)

Freelance editor (2015-)

garethdyke@gmail.com

http://zoology.unideb.hu/?m=Gareth_Dyke
https://www.linkedin.com/in/gareth-dyke-58a42645/

China declared largest source of research articles (2017)



Nature 390 (2018)

Massive progress since 2004

"China's economy is booming and yet its scientific output isn't"

"Now, given the soundness of the Chinese economy, the steady increase in the government's funding for basic and applied research, and the general appreciation of the importance of scientific development, the time has come for China to make its presence felt on the international research stage."

Nature 428 2004

Getting started

Data from *Elsevier* reveals that Chinese research articles are accepted less often than those from the United States
(ca. 24% for China, versus ca. 55% for United States)

Submission rates are about the same (15—20%)

***Why*? How can this be addressed?**

Please remember

Editors and reviewers are often not professionals
(they are working academics giving up their time)

Your papers will be handled by other working researchers just like you
(please make their job as easy as possible)

and ….

Publishing is a scam
(we will discuss)

Avoiding rejection

Dear Sir,

Many thanks for asking whether we would like to publish your paper.

Your paper is **good** and **original**, but unfortunately we are simply not willing to publish it.

The trouble is that the **good bits were not original and the original bits were not good.**

Yours faithfully,

The Editors

Why do journals reject our groundbreaking, brilliant work?

The paper was so poorly written and so poorly structured that the editor simply couldn't fathom its meaning.

Editors are human beings: impressed by papers that are short, easy to read, and contain a **clear message**.

What's yours?

Why publish *at all*? Motivations

Some stories (i.e. Luis / my numbers)

To get funding
To get promoted
To develop research and development
To get a PhD degree

????

(These considerations are *different* to those of editors and reviewers)

Road map

- **PREPARATION**: things to think about before you even put pen to paper
- **SELLING YOURSELF:** how to capture an editor's attention
- **STRUCTURE:** without a clear structure, you (and the editor) will be lost
- **EFFECTIVE WRITING:** there are some simple rules that can make a *huge* difference

Preparations

Checking the original nature of the results/the story/the take-home message

-Is this new and interesting? *Why*?

-How does your work relate to a currently hot topic?

-What's new and challenging?

-Solutions to difficult problems

It's all in the story

NB: try to assemble this into one/two sentence(s)

What is my message?

If the editors cannot work out your single take-home **message**, they will reject your paper.

They will also reject it if you haven't convinced them of your study's **importance**.

Where will the paper end up? (audience)

- You **MUST** choose a journal and write for that journal's audience.
- Make sure the journal publishes your type of study.
- **What does this audience already know about this topic and what do they want to know now?**
- Read the author guidelines specific for the journal you are submitting to.

Target journal
(this is the one of the most important steps)

“I never start to write until I have decided on a target journal”

-Every journal is different (i.e. scope, audience, lengths, shape of the paper)

-Full article/original article

-Letters/Rapid Communications

Self-evaluate

Talk to others/colleagues/pre-submission enquiries

Who is your audience?

There is a lot of marketing involved in writing scientific papers

-Are you aiming for specialists/multidisciplinary researchers/general audience. Style should be adjusted in each case

-Journals all have different readerships and each has its own style, with different backgrounds (check other similar papers to see what is required)

-Local, national, or worldwide audience?

Journal selection

Ask for advice

Your selection of references in your field will inform your selection

Start at the top and work down *but* no gambling allowed (!!)

Ethics guidelines prohibit ‘scatter submissions’ and people get caught

(some stories from *Taylor & Francis*)

Read the Author Guidelines (professional editors versus journal editors)

The first step: Editorial triage

Criteria

- Is the scope within our journal's interest?
- Does this article have a clear message?
- Is it original?
- Is it important?
- Is it true?
- Is it relevant to our readers?

You have to "sell yourself" to get through triage

The cover letter is crucial

- Don’t waste the opportunity to “sell” your work
- Don’t write something dull or derivative:

“Please consider this manuscript for publication in your esteemed journal”

- Do tell the editor why they should take your work seriously

Preparations

The general structure of a full article

- Title
- Authors
- Abstract
- Keywords

Make them easy for indexing and searching!
(informative, attractive, effective)

- Main text (IMRAD)
  - Introduction
  - Methods
  - Results
  - And
  - Discussion (Conclusions)

Each has a distinct function.

- Acknowledgements

References

Supplementary material

https://www.elsevier.com/__data/promis_misc/international%20publishing%20china.pdf

Preparations

1. Title

- A good title should contain the fewest possible words that adequately describe the contents of a paper. Keep your title short!
- **Effective titles**
  - Identify the main issue of the paper
  - Begin with the subject of the paper
  - Are accurate, unambiguous, specific, and complete
  - Do not contain infrequently-used abbreviations
  - Attract readers

Title: Make it compelling

- Concise and informative
- Should contain the most important words related to the topic
- Entices the reader without giving away the punch-line
- Not overly-sensationalised
- Some journals now insist on including information on study design

The abstract
(Advertisement/Marketing)

A good quality abstract is:

-Honest and precise

-Can stand alone (search engines, sometimes all people read)

-No technical jargon

-Short and specific

-Cites no references

(examples will be provided)

The quality of an abstract *will inform* the editor's decision

The abstract

- MANY JOURNALS NOW BASE THEIR DECISION ON THE ABSTRACT ALONE

- Sadly, many authors write the abstract in a great rush, almost as an afterthought.
- It should be a concise “standalone” piece with a very clear message.
- It must accurately reflect the full text of the paper.
- Why did you do the study? What did you do? What did you find? What did you conclude?

A structured abstract: It can help organise your ideas – try it!

Background Abstract	*Glossina fuscipes fuscipes* is the major vector of human African trypanosomiasis, commonly referred to as sleeping sickness, in Uganda. In western and eastern Africa the disease has distinct clinical manifestations and is caused by two different parasites: *Trypanosoma brucei rhodesiense* and *T. b. gambiense*. Uganda is exceptional in that it harbors both parasites, which are separated by a narrow 160-km belt. This separation is puzzling considering there are no restrictions on the movement of people and animals across this region.
Methodology/Principal Findings Abstract	We investigated whether genetic heterogeneity of *G. f. fuscipes* vector populations can provide an explanation for this disjunct distribution of the *Trypanosoma* parasites. Therefore, we examined genetic structuring of *G. f. fuscipes* populations across Uganda using newly developed microsatellite markers, as well as mtDNA. Our data show that *G. f. fuscipes* populations are highly structured, with two clearly defined clusters that are separated by Lake Kyoga, located in central Uganda. Interestingly, we did not find a correlation between genetic heterogeneity and the type of *Trypanosoma* parasite transmitted.
Conclusions/Significance Abstract	This lack of a correlation between genetic structuring of *G. f. fuscipes* populations and the distribution of *T. b. gambiense* and *T. b. rhodesiense* indicates that it is unlikely that genetic heterogeneity of *G. f. fuscipes* populations explains the disjunct distribution of the parasites. These results have important epidemiological implications, suggesting that a fusion of the two disease distributions is unlikely to be prevented by an incompatibility between vector populations and parasite.

Abstract writing tips

- Many students and researchers use search engines to look for information
- In search engine terms, the title of your article is the most interesting element
- Reiterate key words or phrases from the title in your abstract
- Best to focus on a maximum of 3-4 different keyword phrases in the abstract
    - (examples will be provided)

Structure: The most crucial element

Readers need to know throughout a paper ….

Where they have come from

Where they are now

Where they are going

(A plot is needed: A paper is a story)

Introduction

- Why is this study of scientific interest and what is your objective?

- This section discusses the results and conclusions of previously published studies, to help explain why the current study is of scientific interest.

- The Introduction is organized to move from general information to specific information. The background must be summarized succinctly, but it should not be itemized. Limit the introduction to studies that relate directly to the present study. Emphasize your specific contribution to the topic.

- The last sentences of the introduction should be a statement of objectives and a statement of hypotheses. This will be a good transition to the next section, Materials (data) and methods in which you will explain *how* you proceeded to meet your objectives and test your hypotheses.

Introduction

Grab the reader: draw them immediately to the crucial issue that your paper addresses

Keep it short: 2-3 paragraphs if possible

Avoid a literature review: set the scene and give the state of the art rather than describe everything known on the topic

Introduction tips

Tell the reader:

- Why your research was **needed**
- Why does it **matter** to doctors, patients, policymakers, or researchers
- Were there any **controversies** you were trying to address?
- What did you do that was **new or innovative**?

but without giving away any results or conclusions

Introduction: Good practice points

Opening sentence takes you **straight to the issue**

Contains the **most important details** of the issue

Contains a **brief summary** of the **controversies** and the **best evidence**

Ends in a **crisp and clear research question** and how you set out to answer it

Keeps with the rules of good writing and is written using **active rather than passive tense**

Introduction

5. Introduction: convince readers that your work is important

- **Answer a series of questions:**
  - What is the problem?
  - Are there any existing solutions?
  - Which is the best?
  - What is its main limitation?
  - What do you hope to achieve?
- **Provide sufficient background information to help readers evaluate your work.**
  - General background (review articles cited)→ problems investigated particularly in this piece of research (review the main publications on which your work is based.)
- **Convince readers that your work is necessary.**
  - Use words or phrases like “however”, “remain unclear”, etc., to address your opinions and work

Introduction

Pay attention to the following

- You want to present your new data, but you must put them into perspective first
- Be brief, it is not a history lesson
- Do not mix introduction, results, discussion and conclusions. Keep them separate
- Do not overuse expressions such as “novel”, “first time”, “first ever”
- Citing relevant references is very important

Materials and methods
(Data and methods)

This section provides all the methodological details necessary for another scientist to duplicate your work.

It should be a narrative of the steps you took in your experiment or study, not a list of instructions such as you might find in a cookbook.

An important part of writing a scientific paper is deciding what bits of information needs to be given in detail. Do not quote or cite your laboratory manual!

Sometimes, experimental details are given as supplementary part!

Materials and methods
(Data and methods)

6. Methods: how did you study the problem?

- The basic principle: to provide **sufficient information** so that a knowledgeable reader can **reproduce** the experiment, or the derivation.
  - **Empirical papers**
    - material studied, area descriptions
    - methods, techniques, theories applied
  - **Case study papers**
    - application of existing methods, theory or tools
    - special settings in this piece of work
  - **Methodology papers**
    - materials and detailed procedure of a novel experimentation
    - scheme, flow, and performance analysis of a new algorithm
  - **Theory papers**
    - principles, concepts, and models
    - major framework and derivation

Materials and methods
(Data and methods)

Crucial in the **triage process**

Extremely common for editors to reject a paper because authors used the **wrong method** to answer their question

Give enough detail so that a qualified reader could **repeat the study**

If your methods section is “thin on details” editors worry that you are **hiding something**

What statistical methods did you use to analyse your data?

Materials and methods
(Data and methods)

The editor will focus on *five* things:

Was a qualitative approach appropriate?

- ✓Qualitative: What leads to a change?
- ✓Quantitative: What proportion of land use has changed?

How were the setting and the subjects selected?

Have the authors been explicit about their own views on the issue being studied?

What methods did the researcher use for collecting data, and are these described in enough detail?

What methods did the researcher use to analyze the data, and what quality control measures were implemented?

Results

This section presents the results of the study but does not attempt to interpret their meaning.

As with the Methods section, the trick to writing a good Results section is knowing what information to include or exclude. You will not present the raw data that you collected, but rather you will summarise the data with text, tables and/or figures.

Use the text of the paper to state the results of your study, then refer the reader to a table or figure where they can see the data for themselves.

Note: **Often one section "Results and discussion"**

Results: The facts and nothing but the facts

Should be ordered around primary and secondary outcomes in the same order as listed in the Methods section

State clearly and simply what you found using words and numbers

Use tables and figures for the main numbers

Don’t duplicate information in text and tables

Results: The facts and nothing but the facts

7. Results
– what have you found?

- **The following should be included in this part:**
  - **Main findings** listed in association with the methods
  - **Highlighted differences** between your results and the previous publications (especially in case study papers)
  - Results of **statistical analysis**
  - Results of **performance analysis** (especially in the methodology, or algorithm papers)
  - A set of **principal equations or theorems** supporting the assumptions after a long chain of inferences (especially in the theory papers)

Results: Additional tips

Number tables and figures separately beginning with 1

Do not attempt to evaluate the results in this section. Report only what you found; hold all discussion of the significance of the results for the Discussion section

It is not necessary to describe every step of your statistical analyses. Likewise, cite tables and figures without describing in detail how the data were manipulated. Explanations of this sort should appear in a legend or caption written on the same page as the figure or table.

You must refer in the text to each figure or table in your paper

Tables generally should report summary-level data, such as means ± standard deviations, rather than all your raw data

Only use a figure (graph) when the data lend themselves to a good visual representation. Avoid using figures that show too many variables or trends at once

Discussion

In this section, you are free to explain what the results mean or why they differ from what other workers have found.

You should interpret your results in light of other published results, by adding additional information from sources you cited in the Introduction section as well as by introducing new sources. Ensure you provide accurate citations.

Relate your discussion back to the objectives and questions you raised in the Introduction section. However, do not simply re-state the objectives. Make statements that synthesize all the evidence (including previous work and the current work).

Limit your conclusions to those that your data can actually support. You can then proceed to speculate on why this occurred and whether you expected this to occur, based on other workers' findings.

Suggest future directions for research, new methods, explanations for deviations from previously published results, etc.

Discussion

8. Discussion
– what the results mean

- **Check for the following:**
  - How do your results relate to the original question or objectives outlined in the Introduction section?
  - Can you reach your conclusion smoothly after your discussion?
  - Do you provide interpretation for each of your results presented?
  - Are your results consistent with what other investigators have reported? Or are there any differences? Why?
  - Are there any limitations?
- **Do not**
  - Make statements that go beyond what the results can support
  - Suddenly introduce new terms or ideas

Discussion

How to cite sources in the Discussion:

It is important to cite sources in the discussion section of your paper as evidence of the claims you are making. There are ways of citing sources in the text so that the reader can find the full reference in the literature cited section at the end of the paper, yet the flow of the reading is not badly interrupted (see also Introduction).

Make sure you give a full citation in the Literature Cited section (“references”) for all sources mentioned in the text.

Discussion

Don’t write an expansive essay that extrapolates widely from what you found

Start the discussion with a single sentence that states your main findings

Discuss both strengths and weaknesses

Discussion

Relate your study to what has been already found

- How do your results fit in with what is already known?
- What are the strengths and weaknesses of your study compared to previous studies?
- Why does your paper offer a different conclusion?

Discuss what your study means

- Don’t overstate the importance of your findings; readers will probably come to their own conclusions on this issue

Unanswered questions

- What did your research not address? Avoid using the cliché more research is needed.

Discussion: Be concise

- First Paragraph:
  - Interpretation/answer based on key findings
  - Supporting evidence
- Subsequent paragraphs:
  - Compare/contrast to previous studies
  - Strengths and weaknesses (limitations) of the study
  - Unexpected findings
  - Hypothesis or models
- Last paragraph:
  - Summary
  - Significance/implication
  - Unanswered questions and future research

Discussion: Tips

Watch out with non-quantitative words!

E.g., Low/high; Extremely; Enormous; Rapidly; Dramatic; Massive; Considerably; Exceedingly; Major, minor; …

They are often qualified by very, quite, slightly, etc. **Quantitative description is always preferred.**

- But note subtleties

  'the effect of adding N was minor' – not quantitative;

  'the effect of adding P was to increase dry weight by 60% whereas the effect of adding N was minor' – 'minor' is given a sense of quantitative definition.

Reviewers *will* request revisions

How to respond:

Fully incorporate reviewers' suggestions into a revised manuscript

Address **all** reviewer concerns in your rebuttal letter

Address rebuttal letter to the **editor**

Revisions

Why is revision important and necessary?

- **Which procedure do you prefer?**
  - Send out a sloppily prepared manuscript → get rejected after 4-6 months → send out again only a few days later → get rejected again… → sink into despair
  - Take 3-4 months to prepare the manuscript → get the first decision after 4 months → revise carefully within time limitation…accepted

WRITE and RE-WRITE

-- until you are satisfied

Please cherish your own achievements!

Paper rejected!

This happens more often that not

If you genuinely think that your research was important, well done, well-written and deserves to reach the journal's audience, you can write an appeal letter to the editor

We can discuss approaches to this

Several examples from my own experience

nature COMMUNICATIONS

ARTICLE

Received 10 Jun 2013 | Accepted 22 Aug 2013 | Published 18 Sep 2013

DOI: 10.1038/ncomms3489

Aerodynamic performance of the feathered dinosaur *Microraptor* and the evolution of feathered flight

Gareth Dyke[1,2], Roeland de Kat[3], Colin Palmer[1,4], Jacques van der Kindere[3], Darren Naish[1] & Bharathram Ganapathisubramani[2,3]

MENU

nature
International journal of science

Letter

Skin pigmentation provides evidence of convergent melanism in extinct marine reptiles

Johan Lindgren, Peter Sjövall, Ryan M. Carney, Per Uvdal, Johan A. Gren, Gareth Dyke, Bo Pagh Schultz, Matthew D. Shawkey, Kenneth R. Barnes & Michael J. Polcyn

Nature **506**, 484–488 (27 February 2014)
doi:10.1038/nature12899
Download Citation

Palaeontology

Received: 09 October 2013
Accepted: 22 November 2013
Published: 08 January 2014

Paper rejected!

Revision before submission – *checklist*

Reasons for early rejection: Content (aims and scope)

- Paper is of limited interest or covers local issues only (sample type, geography, specific product, etc.).
- Paper is a routine application of well-known methods
- Paper presents an incremental advance or is limited in scope
- Novelty and significance are not immediately evident or sufficiently well-justified

Reasons for early rejection: Preparation

- Failure to meet submission requirements
- Incomplete coverage of literature
- Unacceptably poor English

The bottom line: You *will* get published if…

You picked an **important research question**

You used the **right method** to answer it

You wrote a **short, clear** account of the study that followed a **tight structure** and used **effective writing** to convey your message **clearly**

You keep in mind that **science** has become **more cross-disciplinary**, but **reviewers have not**

What do we ask reviewers to check?

Methods

Techniques

Concepts

Statistics

Presentation

Conclusions

Ethics

After publication: Understanding impact

- Impact Factor : #citations/#articles
  - ✓**Rates journal, not article**
  - ✓**Not a good measure of individual performance**
  - ✓**Subject to manipulation (denominator)**
  - ✓**Used nonetheless in assessments for funding, promotion and tenure**

- How and where to advance better alternatives?
  - ✓**Promotions committees**
  - ✓**Funding agencies**
  - ✓**Within the scientific community**

Clear writing techniques

- Signal the research question
- Keep a consistent order
- Repeat key terms
- Keep a consistent point of view
- Put parallel ideas in a parallel form
- Use topic sentences with transitions and key terms

Zieger, M. (2000) Essentials of Writing Research Papers, 2nd Edition.

Drilling down: The question

- Lets the reader know explicitly **what is the research question** being addressed
- Sets up an **expectation** for the rest of the paper (or grant)
- Use **explicit phrases**
- Use **question words** (whether or which)
- State the **hypothesised effect**
- Identify the **type of variables and study design**

Useful resources

1. www.phrasebank.manchester.ac.uk (a general resource for academic writers with academic phrases etc.)
2. http://successfulacademic.typepad.com/ writing blog, tips
3. Writing for Academic Journals / Rowena Murray
4. Freewriting: Elbow, P. (1973) Writing without teachers. Oxford: Oxford University Press
5. Recent article (2018) *Nature* https://www.nature.com/articles/d41586-018-02404-4?WT.ec_id=NATURE-20180302&spMailingID=56095976&spUserID=MjA4Njg3NDA0NjgS1&spJobID=1360109627&spReportId=MTM2MDEwOTYyNwS2