

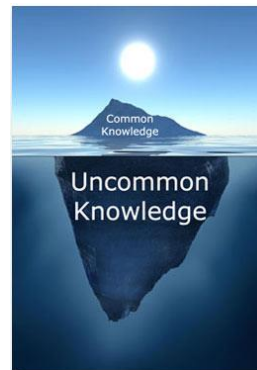
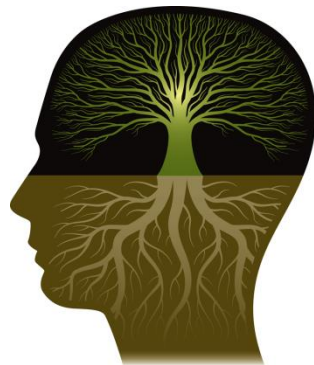
Do and Don't in Scientific Publication

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1 December 2021

What is research?

Research is searching for and gathering information, usually to answer a particular question or problem. Research projects of various types and complexity are an integral part of the college experience and offer you the opportunity to learn a valuable set of skills. In fact, the ability to locate and evaluate information - which is the essence of research and a valuable skill in many areas of life - is a large part of what it means to be an educated person.



การวิเคราะห์ → การสังเคราะห์ความรู้ → การบังเกิดความรู้
การวิเคราะห์ คือ การหาความเข้าใจปรากฏการณ์
การสังเคราะห์ คือ การหาคำอธิบาย เพิ่มคุณค่าแก่งานวิจัย
คุณภาพ vs คุณค่า (quality vs value)

Think about the followings

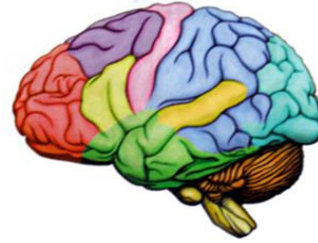
(Prof. Aran Pathanothai)

1. What is it you are trying to **find out**?
2. What is/are your **questions**?
3. Has anyone worked on this problems **before**?
4. If someone has already done it, **why** do you have to do it again?
5. What are the **differences** in your work from the others?
6. What is the **novelty** in your work?
7. What will you sell, **new knowledge vs. new methodology**?
8. Work on **local problems** but make them global or generic

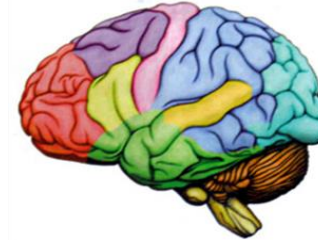
Essentials for research

HEAD (S)

=



+



HEART



=

LOVE &

DEVOTION

COLLABORATION

HAND

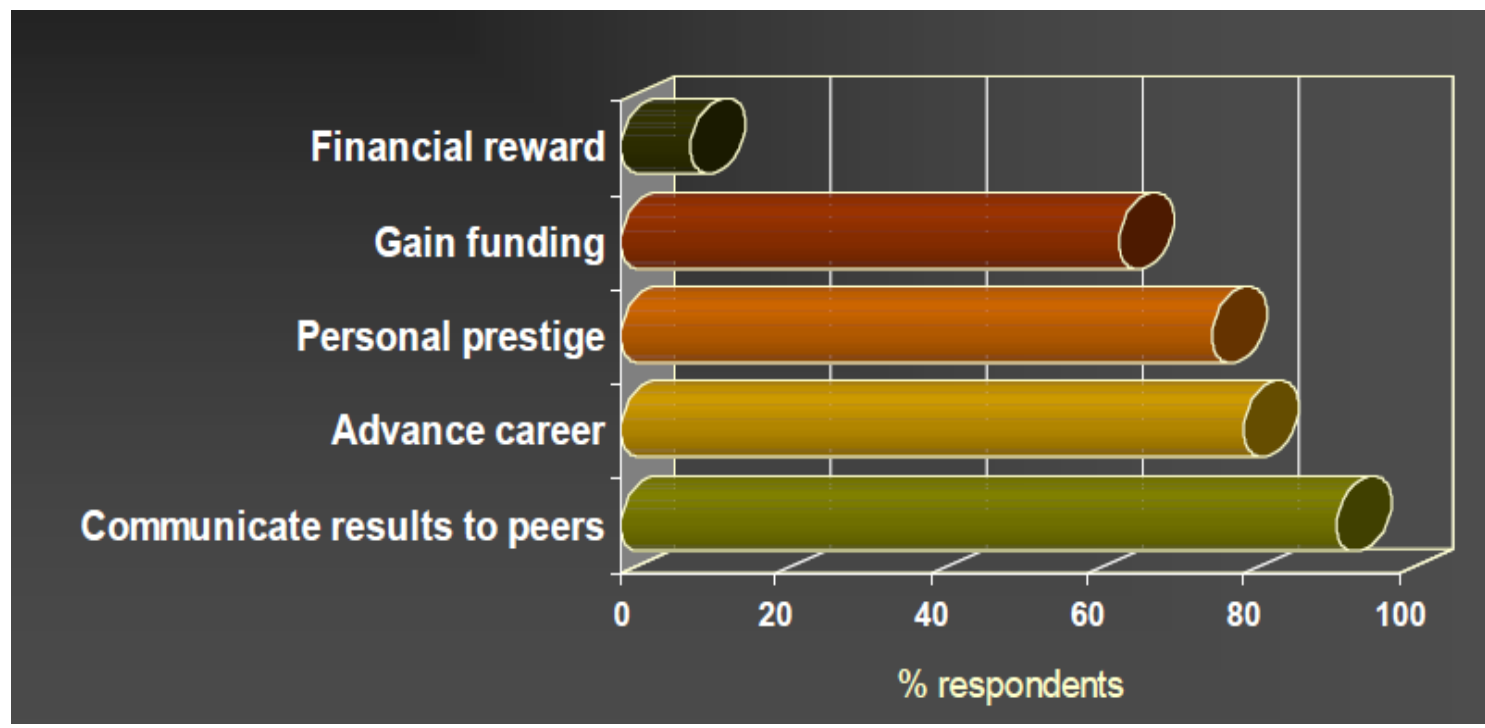
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RESEARCH BRIDGES THE GAP OF KNOWLEDGE



Why do we publish?



Why bother to write well?

- To communicate your work well

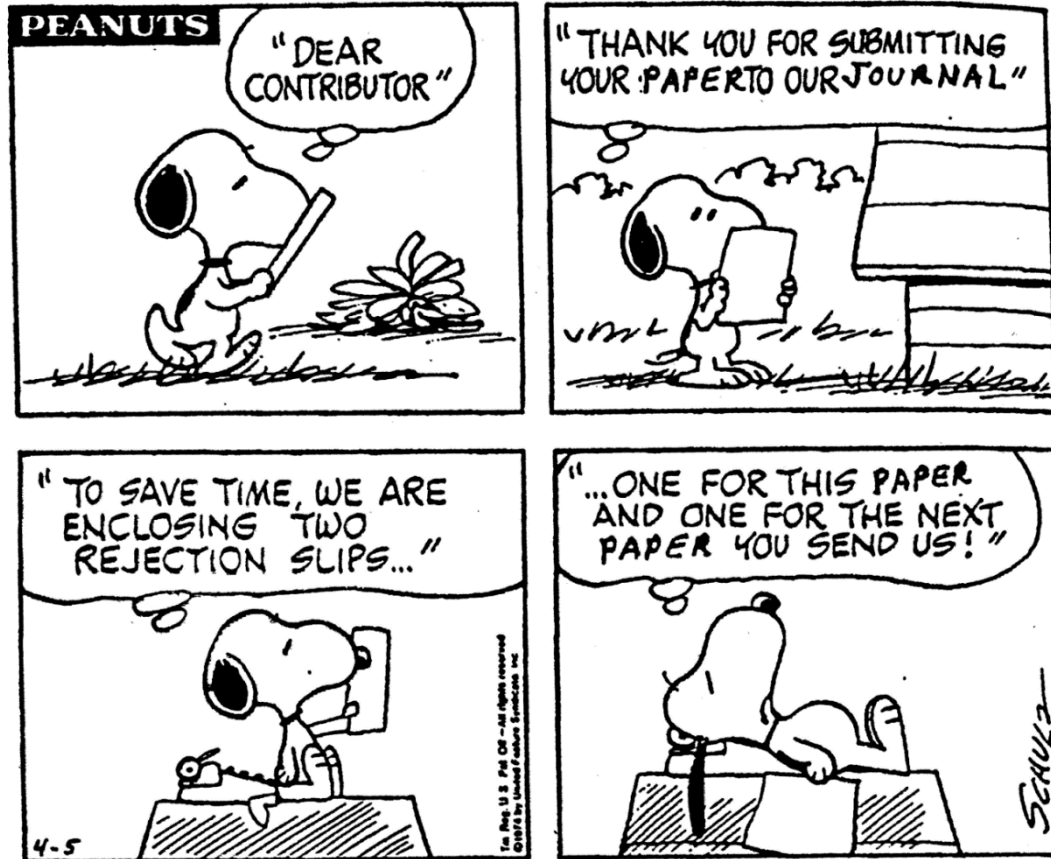


Reason for not writing

- **Difficulties knowing where to start**
- **Not knowing how to start**
- **Anxiety about writing skill**
- **Lack of confidence**

Get our work published

100 *How to Write and Publish a Scientific Paper*



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Right journal
Right manuscript

Points to consider

1. Journal age
2. Journal names with ISSN number
3. Publishers names (check with Beall's list)
4. Aims and scope and journal policy (should be specific)
5. Indexed by ISI (Thomson Reuters) and Scopus databases
6. Journal impact factors by Journal Citation Reports® of the Thomson Reuters
7. Editors and contact addresses
8. List of Editorial Board member
9. Update home page and online submission available
10. Indication of peer-review process

Examples of good academic publishers

1. Elsevier

2. John Wiley and Sons

3. Taylor and Francis

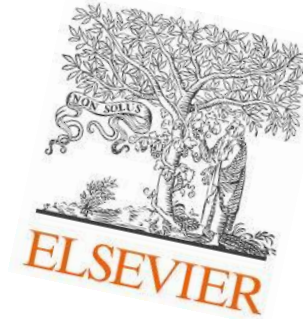
4. Springer

5. Sage

6. Emerald

7. Societies

8. Others that are fully specified.



Journal Editor's Viewpoint

- o Scope of journal in relation to problem studied
- o Is there significant new information ?
- o Soundness of experimental design
- o Correctness of results
- o Validity of conclusions
- o Clear and concise writing
- o Correct style and format



The most important criteria are

- 1. The importance of the study or report to the existing body of knowledge**
- 2. The scientific merit of the study**

Manuscript compositions

- Title page: title, author (s) & addresses
- Abstract and keywords
- **Introduction**
- **Experimental**
- Results & Discussion
- Conclusion
- Acknowledgments
- References
- Tables
- Figures or Illustrations or line drawing

Title

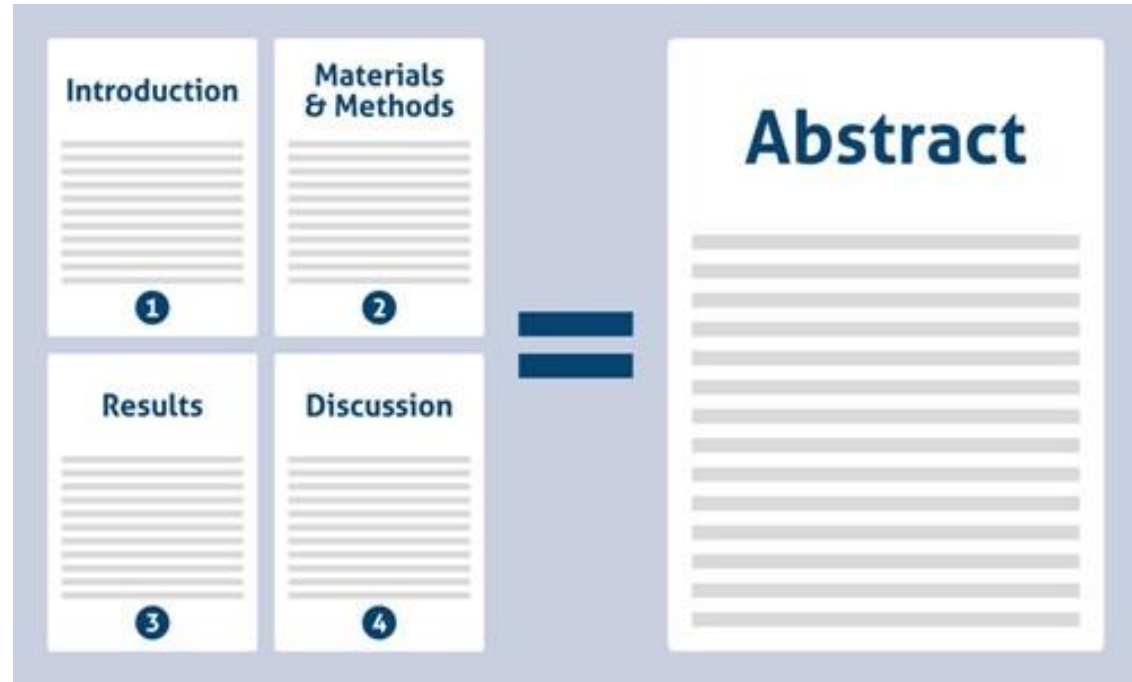
Guideline for producing a good title

- The **simpler** is the title, the better it is
- Consider the target readership
- Be **brief** --- short title is clearer and more interesting (12 words)
- Avoid excessive adjectives
- Use **phrase** rather than sentence whenever possible
- Do not make it sensational

- **Simultaneous and sensitive analysis of aliphatic carboxylic acids by ion-chromatography using on-line complexation with copper(II) ion**
- **Improved antitumor effect of paclitaxel administered in vivo as pH and glutathione-sensitive nanohydrogels**
- **Determination of aldehydes in food by high-performance liquid chromatography with biosensor coupling and micromembrane suppressors**

Abstract

What is an abstract?



Key fact of your research → Boosting visibility of your research

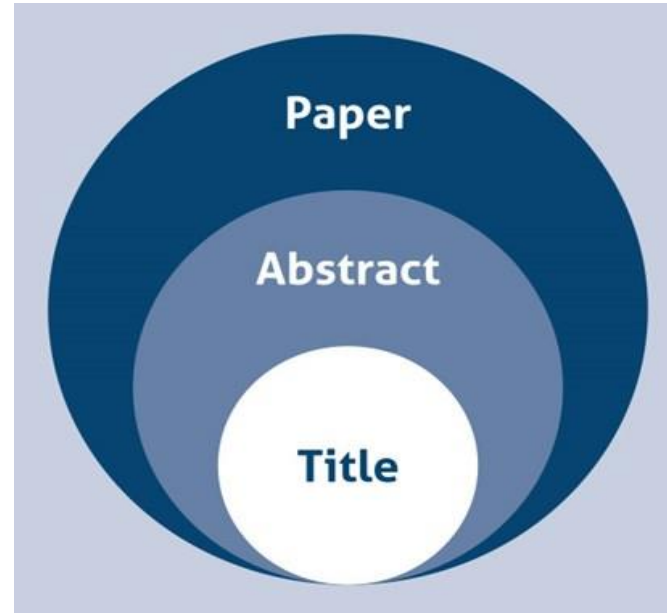
What is an abstract?

- An abstract is a very concise statement of the major elements of your research projects.

- An abstract is a condense version of a full scientific paper.

- It states

the purpose
methods
finding



of your research project.

Four C's for writing an abstract

1. **Complete** (covers major parts of the project)
2. **Concise** (no excess unnecessary information)
3. **Clear** (readable, well organized, no jargon)
4. **Cohesive** (flow s smoothly between the parts)

Abstract

- 1. Write the paper first**
- 2. Provide introductory background information that leads into a statement of your aim**
- 3. Briefly describe your methodology**
- 4. Clearly describe the most important findings of your study**
- 5. State the conclusion concisely and avoid overstatements**

Abstract

Things to **avoid** in an abstract

For example, the abstract **should not contain:**

- **Lengthy background** information (readers peruse your abstract to learn about your current work, not the previous work of other researchers)
- **Citations/references**
- Details about **routine laboratory procedures**
- **Details about the statistical methods** or software used (unless this is the focus of your study)
- **Undefined abbreviations or acronyms** (most journals will provide a list of common abbreviations/acronyms that do not need to be defined; some journals do not allow the use of abbreviations/acronyms in the abstract)
- **Results or interpretations that are not discussed in the text**

Introduction

```
graph TD; A[Introduction] --- B[Background]; A --- C[Significance of study]; A --- D[Objective]; A --- E[Problem statement]; A --- F[Hypothesis]
```

Background

Significance of study

Objective

Problem statement

Hypothesis

Introduction

Tell readers:

Why you have undertaken the study?

What has really interested you?

Make clear how your work adds, importantly to what has gone before.

Choose references that are appropriate not simply to demonstrate that you have done a lot of reading.

Make clear to the editor and readers in a few words why your study is superior to previous ones and convince them that you are aware of earlier studies.

Last paragraph is critical and should show what was done in your study and why it is interesting.

Method

```
graph TD; Method[Method] --- RD[Research design]; Method --- P[Population and sampling]; Method --- DC[Data collection]; Method --- ED[Experimental details]; Method --- SA[Statistical analysis];
```

Research design

Population and sampling

Data collection

Experimental details

Statistical analysis

Methods

How the study was designed :

- **Name the study design and keep the description short**
- **Say how randomisation was done (if any)**
- **Details of chemicals, materials, instruments, etc.**

Methods

How the study was designed :

- Name the study design and keep the description short
- Say how randomisation was done (if any)
- Details of chemicals, materials, instruments, etc.


Keep it short, but describe in sufficient details so that experiments can be **repeated by others**

Describe in complete details only new methods

For commonly used materials and methods, a reference is sufficient

Methods (continue)

It is useful to identify method as well as reference.

“cells were broken by ultrasonic treatment as previously described (6)” 

“cells were broken as previously described (6)”

For centrifugation experiment, include centrifuge, rotor type, temperature, time at maximum speed and centrifugal force (g).

Results

- **The text should tell the story in logical and coherent manner.**
- **Present only data related to the objectives**
- **Select only good quality data**
- **Think as a reader as you write.**

Results

- The text should tell the story in logical and coherent manner.
- Present only data related to the objectives
- Select only good quality data
- Think as a reader as you write.
- The type of **statistical test** and **statistical significance** need to be brought out to emphasize the difference between various mean values.
- Figures (photographs) and Tables will summarize the evidence; for a particular set of data, **use either Figures or Tables, not both.**

Discussion

- Summarize the **major/significant findings**
- Discuss **possible problems** with the methods used
- **Compare** your results with previous work and **interpret** the results in relation to previously published work
- Should **not contain extensive repetition** of **RESULTS** or statements from **INTRODUCTION**

Do's and Don'ts in Discussion

- Interpret your results, referring to figures & tables of results
- Make explanations complete
- Give evidence for each conclusion
- Discuss possible reasons for expected and unexpected findings

Do's and Don'ts in Discussion

- Interpret your results, referring to figures & tables of results
- Make explanations complete
- Give evidence for each conclusion
- Discuss possible reasons for expected and unexpected findings
- **Do not** just repeat the results again
- **Do not** review literature, since this was done in introduction
- **Do not** over-generalize
- **Do not** ignore deviations in your data or unexpected results
- **Avoid** speculation that cannot be tested in foreseeable future
- Results & Discussions can be combined to save space

Tables

- Is there enough information to justify a Table?
- Controls come first, then Experimental results
- Units should come under the column heading
- Align numbers on decimal point
- Include standard deviation & significant differences
- Use footnotes to explain methods, details, abbreviations

Table 2 Assay data of disinfectant levels in fumigation solution

Fumigation solution	Disinfectant level (mM)			<i>P</i> value ^b
	Expected value	Fabricated device (<i>n</i> = 3)	Microplate reader (<i>n</i> = 3)	
Dilution from concentrate fumigation solution				
1:350	1.38	1.36 ± 0.04	1.31 ± 0.07	0.11
1:200	2.41	2.52 ± 0.15	2.65 ± 0.06	0.75
1:150	3.21	3.17 ± 0.09	3.21 ± 0.11	0.25
In-field fumigation solutions ^a				
Solution 1		2.32 ± 0.09	2.39 ± 0.05	0.44
Solution 2		2.52 ± 0.08	2.51 ± 0.25	0.95

^a Solutions 1 and 2 were prepared at 1:200 dilution of concentrated disinfectant solutions from two different days

^b *t*-test at 95% confidence interval

Figures

- Independent variable should be on the x-axis.
- Dependent variable should be on the y-axis.
- Each axis labelled with name of the variable and the units
- Different symbol shapes for different data sets
- Axes that are scaled appropriately
- Figure legends should be clear and self-explanatory

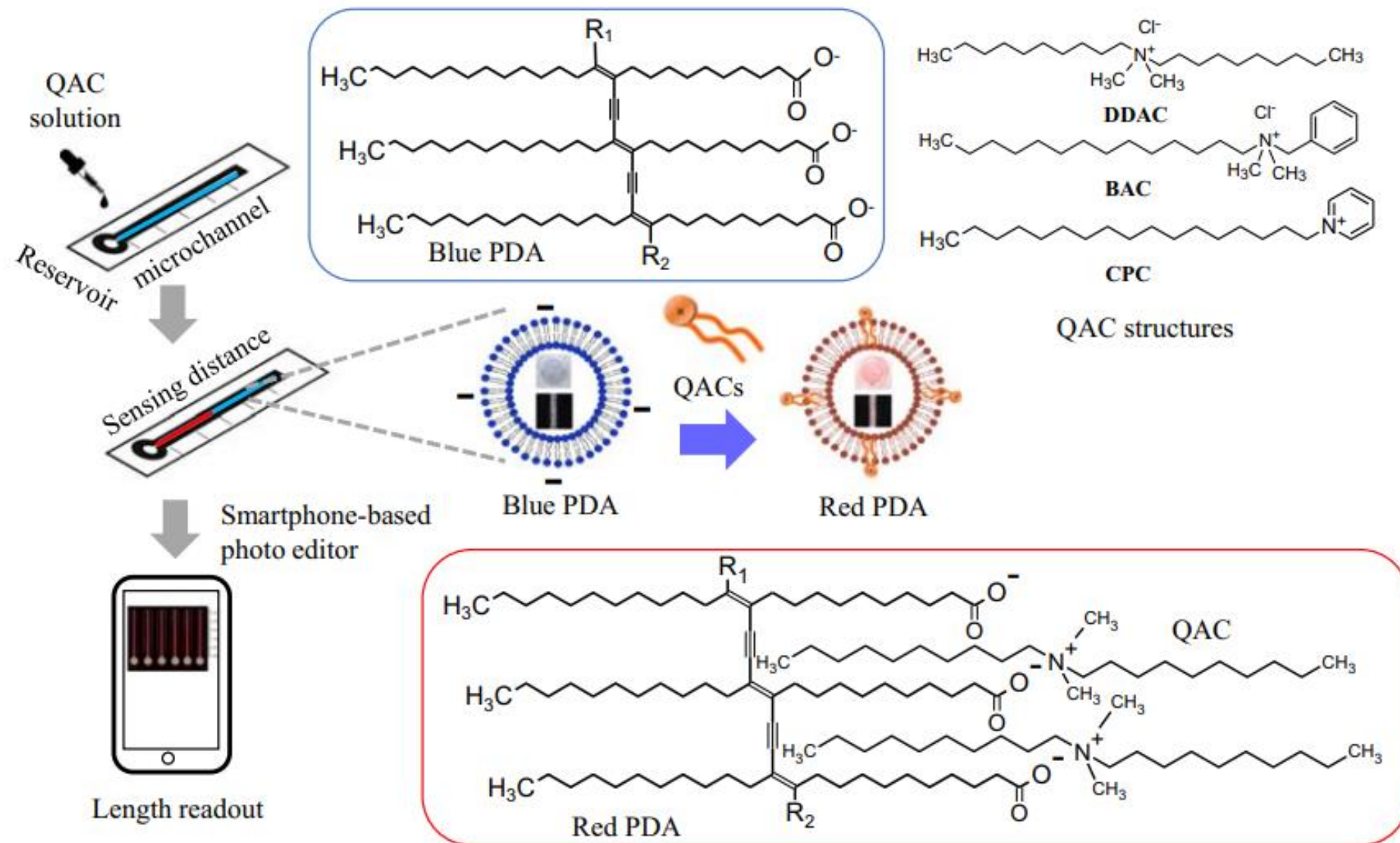


Fig. 1 a Fabrication and quantification schemes of PDA-sensing distance-based μ PADs for QAC measurements and b structures of blue and red PDA vesicles in the presence of QACs

Conclusions

- Some journals have Conclusions Section, but if not, you should still make conclusions at end of discussion
- Conclusion should outline the main discoveries, their benefits or impact, and their implications for the future

- **Not an abstract (again)**
- **One to two sentences of significant findings**
- **Strengths and limitations of the current work**

ACKNOWLEDGEMENTS

- **Source of research funding (this is a MUST) including grant no.**
- **Colleagues, nurse, technician, editing team**
- **Should not be viewed as a “catch-all” for anyone you wish to flatter or do not wish to offend**

REFERENCES

Guidelines for producing a useful reference list:

- Restrict the list to those reference with a direct bearing on the work described
- Check the house style on whether the Vancouver or Harvard system is used
- Check the “Instructions to authors” to make sure that you have included all the necessary details of each reference

Do not

- Include references that are not referred to, mentioned or numbered in the text
- Refer to articles that you have not read

Internet and Software for References

Databases & Websites for Searching Literature

- o **ISI-Web of Science:** <http://isiknowledge.com/wos>
- o **Scopus:** <http://www.scopus.com>
- o **Google Scholar:** <http://scholar.google.com>
- o **PubMed:** <http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed>

Many Programs Assisting with References, e.g.

- o **Endnote** (<http://www.endnote.com/>)
- o **Library master** (<http://www.balboa-software.com>)
- o **Procite** (<http://www.procite.com>)
- o **Reference manager** (<http://www.risinc.com/>)

Writing style

House style gives individual publications their identity

- The **longer the sentence**, the greater likelihood of confusion.
- Never use a long word when a **short one** will do.
- **Avoid** idioms or jargon words
- Use **abbreviations** with care

Some writing tips

- **Eliminate unnecessary words.**
 - *The novel compound was firstly identified in our group, which has not been discovered earlier.*
- **Ensure that verb tenses are consistent and correct**
 - *Drug B ~~shows~~ ^{showed} IC₅₀ of 9 and 15 ng/mL in the animal studies, which ~~was~~ ^{were} performed in mice and rabbits, respectively.*

Some writing tips

- **Active voice** is preferable to **passive voice**

- *We studies 15 patients with lung disease.*

- *Fifteen patient with lung disease were studied.*



- Always use the **full term** before you refer to it by acronym

- *HPLC was used for the determination of substance P.*



- *High performance liquid chromatography (HPLC) was used for the determination of substance P.*

Grammar

Use **past tense** to describe procedures, observations and data of your work.

Use **present tense** for general conclusions, conclusions of previous researchers, and generally accepted facts.

Thus, most of the Abstracts, Materials and Methods and Results will be in the **past tense**,

and most of the Introduction and some of the Discussion will be in the **present tense**.

“White (10) demonstrated that ABC cells grow at pH 6.8”

“On the other hand, in this study ABC cells failed to grow at pH 6.8 (Figure 1)”.

“Air was removed from the chamber and the mice died, which proves that mice require air.”

“The values for different concentrations of drug on the number of ABC cells are statistically different, indicating that the drug inhibited their growth.”

Aspects and Difficulties in English Usage

- English language is important, but not as important as clear thinking and good organization of material
- Active voice is often OK, don't always use passive
- Correct use of articles (a, an, the, this)
- Proper tenses (present, past, present perfect, future)
- Prepositions (at, to, from, in, of, before)
- Word choice (clarity, connotation)
- Correct spelling & typographical errors
- Cohesion - the way phrases, sentences & paragraphs are joined together to make clear and meaningful text
- Style - correct use of language to achieve a particular objective when communicating

Before finalizing

- **Get help from mentors**
- **Make revision based on the feedback**
- **Have others read your draft to check for technical errors such as spelling and grammar mistakes**

Prior to submission

- Follow the instructions
- Included headings exactly as stated in the instructions/template

1. Introduction

Materials and methods

Results

Discussion

vs

vs

vs

I. Introduction

Experimental

Results and Discussion

Prior to submission

- **Use short, clear sentences; one idea per sentence**
- **Limit your abstract to the word count/character count requirement**
- **Edit, edit, edit**
- **Check grammar, syntax and punctuation**

Does a manuscript merit publication?

- **Accept**
 - Rare decision, nearly every manuscript would need some work
- **Accept with Revision**
 - If authors address queries and criticisms, will generally be accepted
- **[Conditional Acceptance] (Editor only)**
 - Will accept but authors **MUST** address certain key issues
- **Reject Request Resubmission**
 - Not suitable now, and may not ever be, but could be worth a second look--undergoes repeat formal peer review
- **Reject**
 - Poor science, report without value, redundant or duplicate publication, “me too” reports, clear bias, too esoteric even for lab rats, or good/great paper but wrong audience

Q & A

