

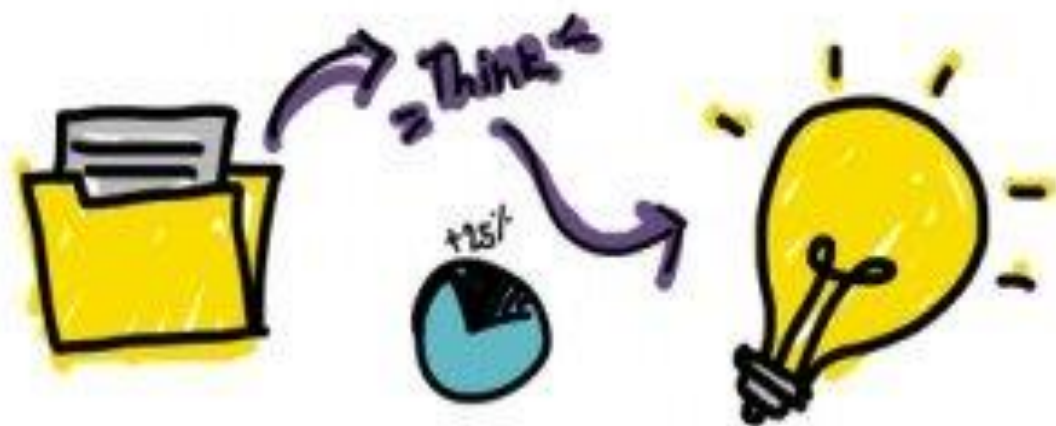
5 challenges faced by Ph.D. students

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A PH.D. Student

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- SOLUTION
- DEVELOPMENT
- INFORMATION



RESEARCH

ANALYSIS OF ACTION



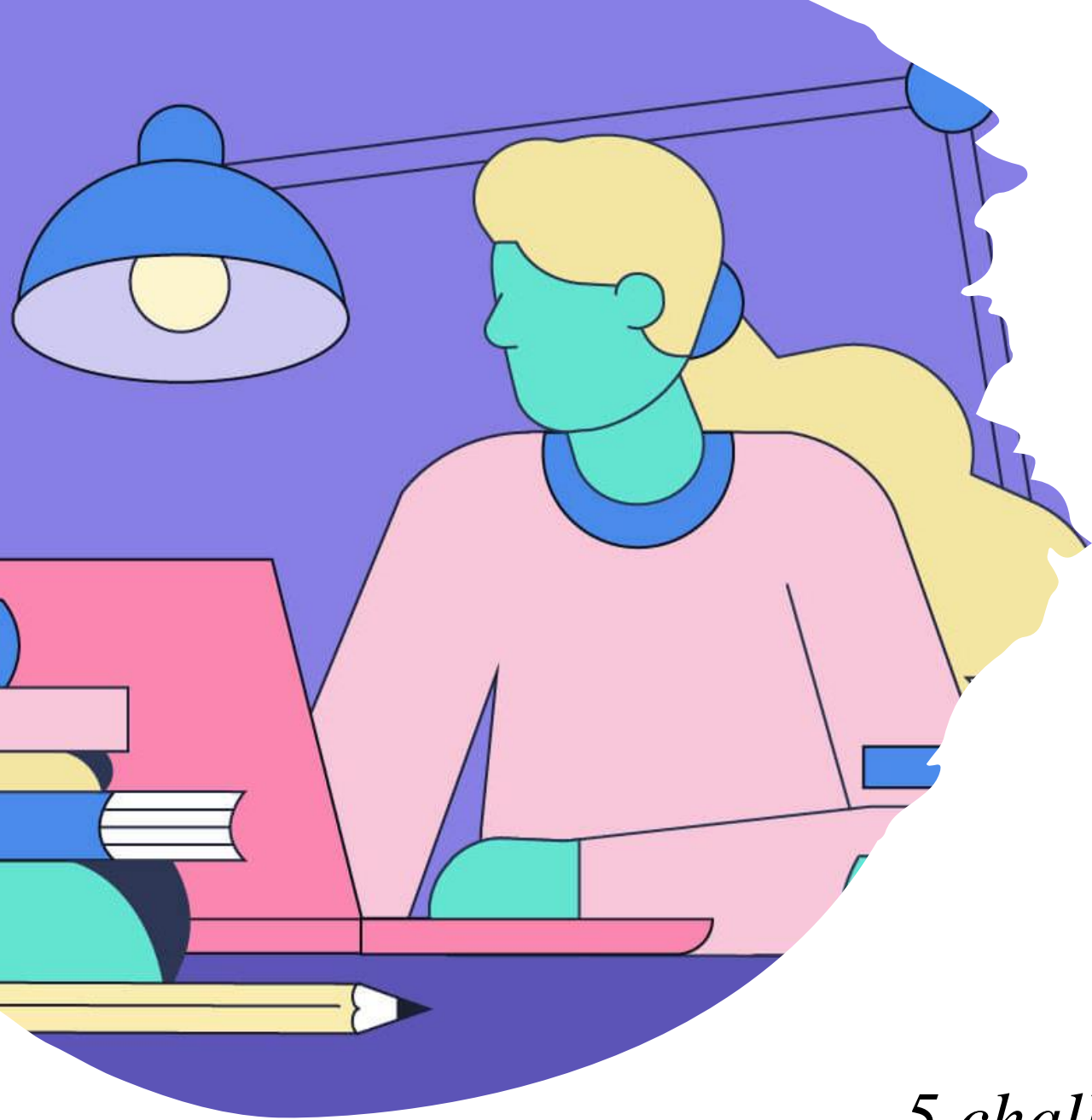
In short....

Research is spending 6 hours reading 35 papers, so you can write one sentence containing 2 references.



*What we are going
to talk about is...*

- 5 challenges faced by a new researcher
- 10 Simple steps to write a scientific paper
- Opening your mind to novel ideas




5 challenges faced by a new researcher



*The way to get started is to,
quit talking and begin doing.*

Walt Disney

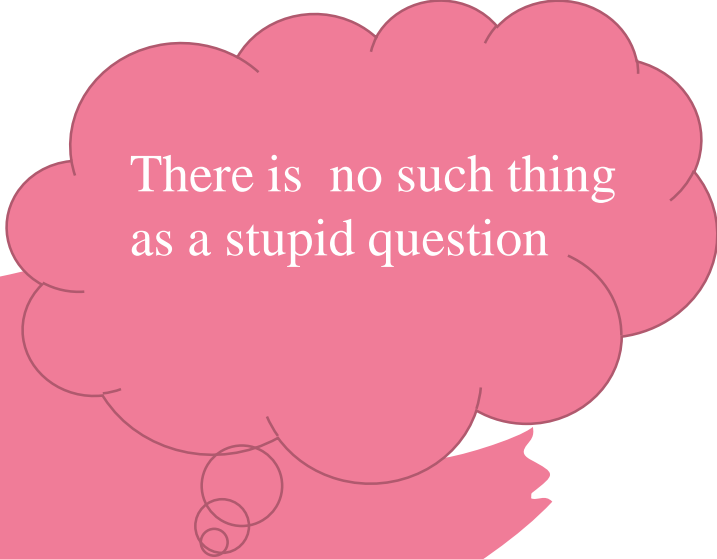
By undertaking Doctoral research, you'll likely be presented with many obstacles along the way - to prepare for life as a PhD student, discover how to overcome these five potential problems



*Wait!! Before stepping into
research ask yourself, are
curious about science and
discovering new things? can
you, do it?*



*Curiosity to unveil new
things is the key to research*



There is no such thing
as a stupid question

1. Finding the right supervisor
2. Selecting the right topic
3. Keeping your plan realistic with a proper timeline
4. Writing research paper
5. Workload and Stress



1. Finding the right supervisor

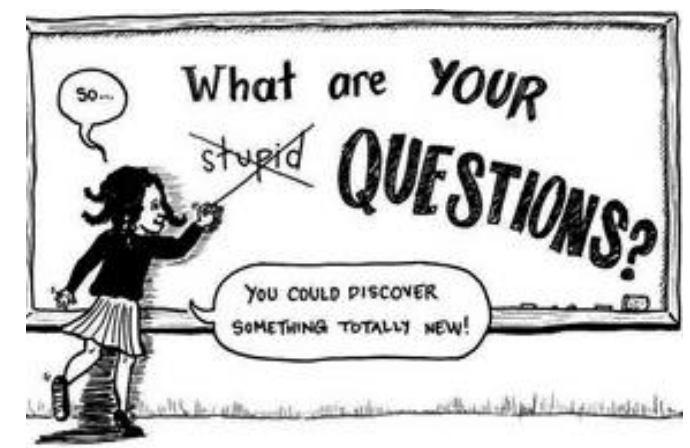
1. Finding the right supervisor

- Shared interests are the building blocks of your relationship.
- Supervisors should be compassionate and approachable.
- Having the ability to communicate in a clear and concise manner.
- Choose a supervisor who excites you.
- Personal chemistry is important.
- See a variety of people.

A positive student-supervisor relationship is paramount to your Ph.D.'s success. However, it's not uncommon for problems to develop. These include:

- **Absence** - Your supervisor may be frequently unavailable; you'll need to demand more regular contact - either online or in person.
- **Conflict** - If your research is interdisciplinary and you've been allocated two leading supervisors, they may give you conflicting advice. If so, you could meet with them separately - but whatever you do, don't take sides.
- **Intimidation** - Your supervisor may actually be playing a more active role in your research than necessary. Don't be afraid of discussing your own interests openly.

Don't be shy, ask!



Have no clue about how to do a research project? That's totally OKAY!!

- Don't try to hide your weakness.
- Communicate your weakness openly to your supervisor and warn him/her in advance about it.
- “No question is stupid,” it is ultimately your responsibility to communicate with your supervisor and ask as many questions as you need to.



2. Selecting the right topic

2. Select the right topic

Your topic will determine your project.

- It should be of your own interest.
- Never rely on others for recommendations.
- Try to read and think a lot.
- Explore your inner self, even if it takes time.
- Start gathering your thoughts and realize what you are interested in researching.





3. Keep your plan realistic with a proper timeline

3. *Keep your plan realistic with a proper timeline*

Your topic could be the best in the field, but...

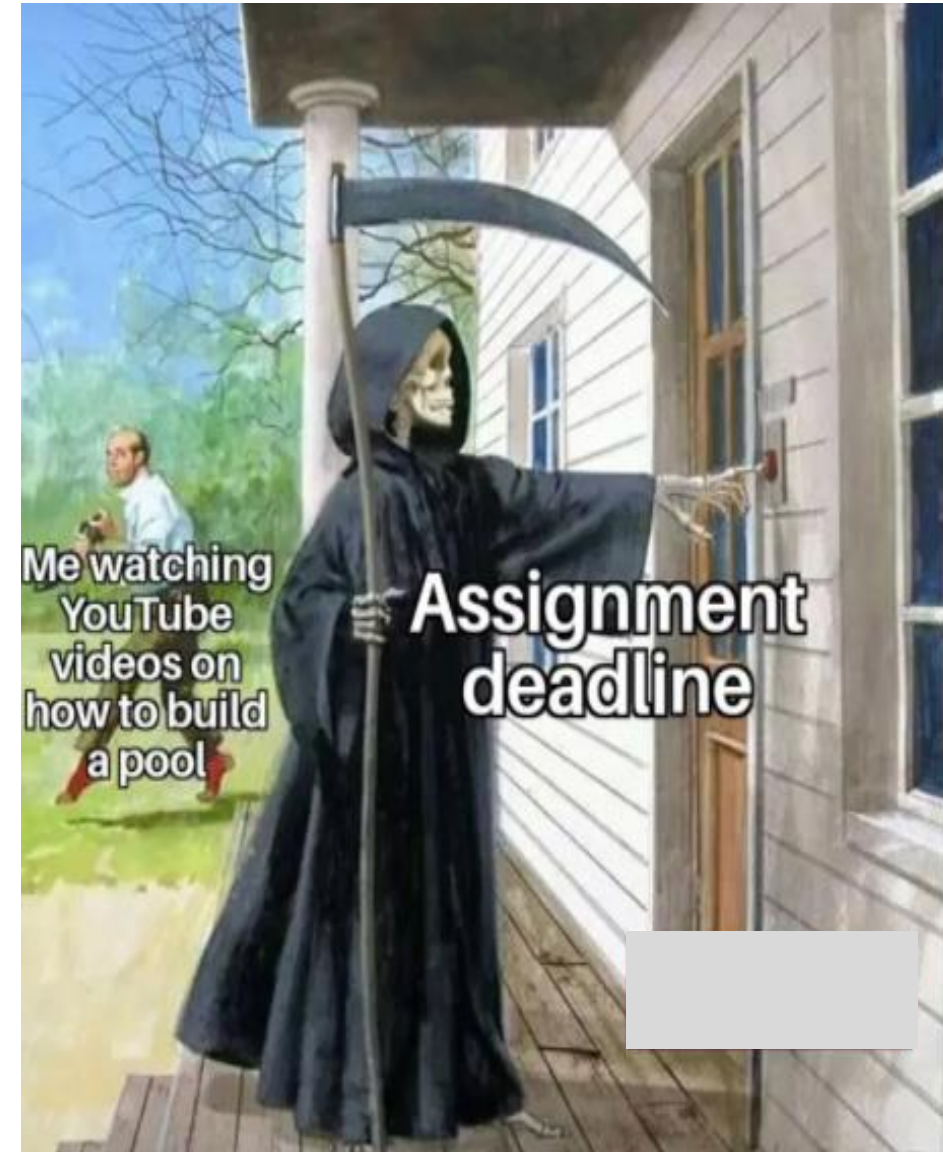
- Do you have enough resources to finish the project?
- Can I afford that much time and money?
- If not, then no matter how brilliant your idea is, you need to think of something else.
- Save this one for when you receive a healthy research grant.

planning research
with your team like:



3. *Keep your plan realistic with a proper timeline*

- You should have a timeline set out in the first week.
- Stating targets of your research project.
- Ask your supervisor about what kind of targets you should set.
- Try to achieve these on a weekly basis.
- View your Doctorate the same as a full-time job.
- Plan your time on campus carefully to get the most out of the opportunity.
- it's okay to reject the opportunity to do new things while you haven't satisfactorily finished your previous task.

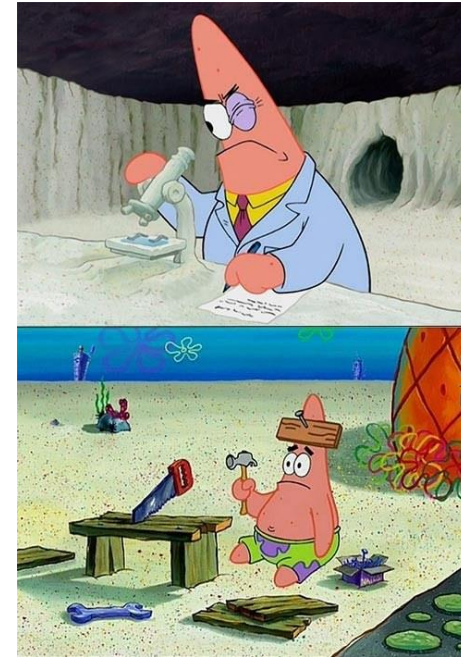




4. WRITING

4. Writing

- Not to leave the writing stage until last. Start writing from day one.
- It is important to write down whatever you do and make notes of whatever you read.
- Documenting the whole process as you go will help you finalize the project in a very effective way.
- Don't worry about writing things that are "wrong" or that don't make sense.



**Critically
evaluating
someone else's
research article**

**Writing a paper
explaining my
own research**



5. Feeling lonely or stressed

5. *Feeling lonely or stressed*

A Ph.D. student will often work alone or with limited collaboration

- Aim to accept any support that's offered to you.
- Join relevant clubs and societies; growing your network of doctoral students.
- Blogging your research is another fantastic way of reaching out and making valuable new contacts.
- Finally, you may need to explain your busy schedule to your friends and family.
- You shouldn't be afraid to reject any opportunity to socialize.
- you can boost your confidence by presenting at conferences or online seminars and help to alleviate any lack of motivation



But before all that Keep a check on your health first !

- Eat as healthily as possible and exercise regularly -
- Make sure you're getting enough sleep.
- Keep your living space tidy.
- Don't take too much on.
- Set achievable goals.
- Keep in touch.
- Join a club or society.
- Find outlets that work for you -
- Seek support early.

Some challenges faced by cug students

- Communication gap with supervisor due to language barrier.

- Supervisors not providing the outline of the whole project effectively.

- New research field, no background.

- Courses in the Chinese language.

- Not fully aware of the procedures.

- Try to communicate online, present your difficulties with some work, and make a weekly report.

- Ask him explicitly before starting your project.

- Do comprehensive research before stepping in.

- The solution for this I am also searching.



- Ask the IEC office or your tutor about each step and requirements.

Challenges I faced during my research

Working in the chemistry field with a background in physics.

I studied tons of literature about chemistry, which was my least favorite subject.

A newbie to experimental work.

Learned how to do material synthesis had many failed experiments.

Having two supervisors with different interests.

Learned to communicate effectively to reduce conflict and present what I actually wanted to do.

Work pressure.

Tried to timeline the work and made it my primary goal.

Different routine than others

Told my supervisor my preferred working hours (9 AM-7PM).

No senior who can guide

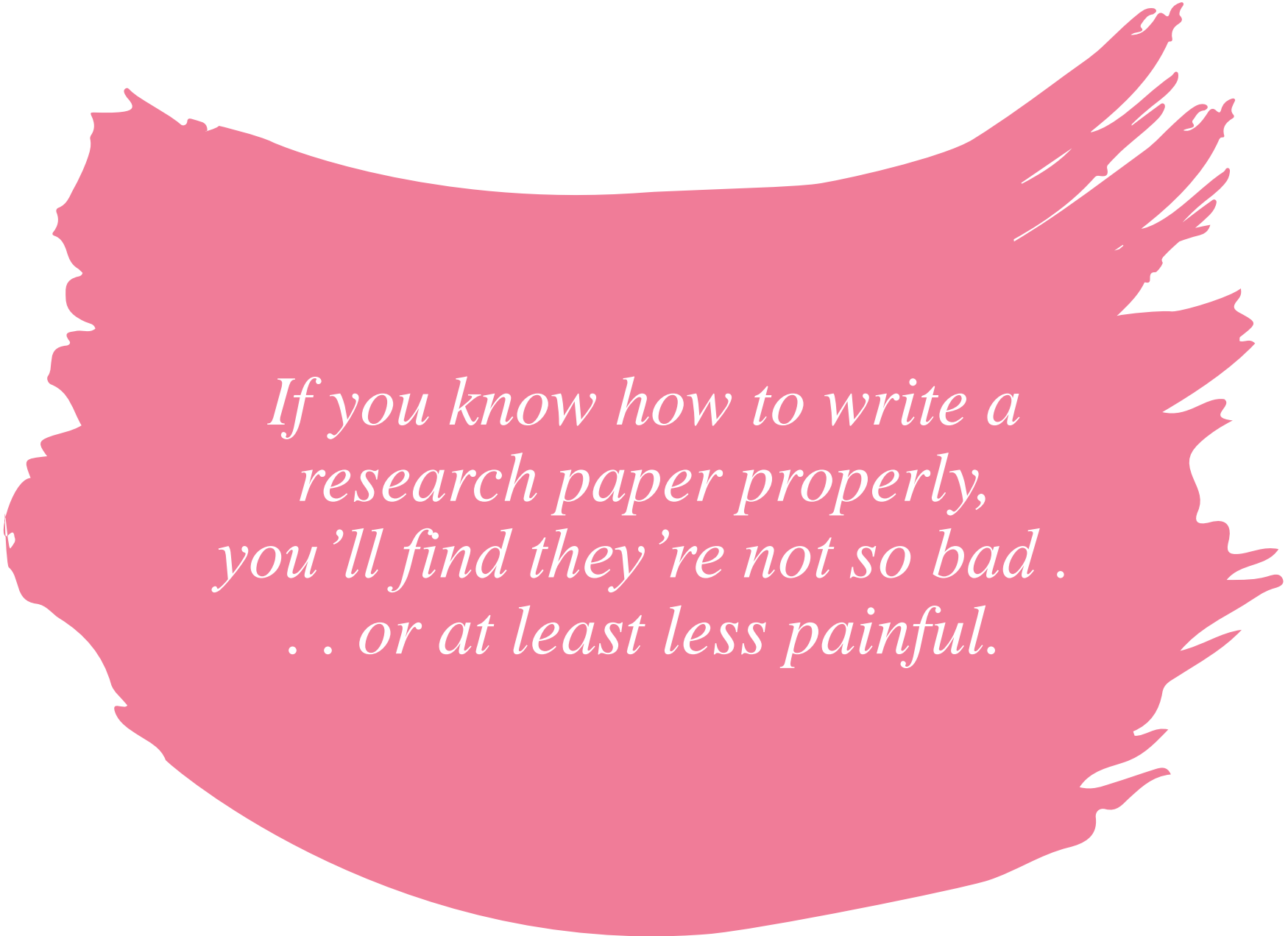
Asked my lab mates, searched online.

Language barrier.

Learned Chinese and tried to communicate as clearly as possible.



10 simple steps to writing a scientific paper



*If you know how to write a
research paper properly,
you'll find they're not so bad .
... or at least less painful.*

1. Write a Vision Statement

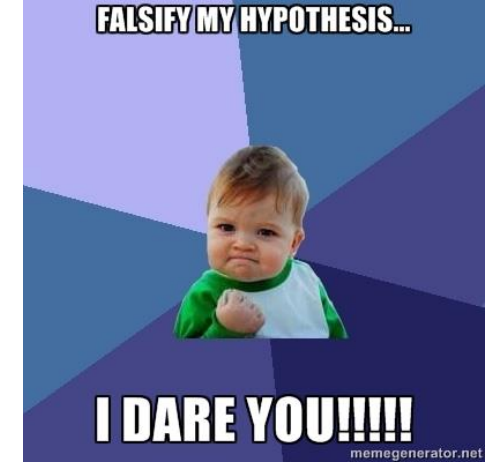
What is the key message of your paper?

- Be able to articulate it in one sentence.
- Think of your paper as a press release: What would the subhead be?

The vision statement should guide your next important decision:

- Where are you submitting it?

Every journal has a different style and order of sections. Making this decision before you write a single word will save you a lot of time later on. Once you choose a journal, check the website for requirements with regards to formatting, length limits, and figures.



2. *Don't Start at the Beginning*

Finalize the Results and Discussion before writing the introduction.

Project proposal :

To design an effective and novel weather forecasting system

Final project:



3. Figures

- The figures should be arranged in a logical order to support your hypothesis statement.
- Avoid crowded plots, using only three or four data sets per figure; use well-selected scales.
- Include clear symbols and data sets that are easy to distinguish.
- Never include long boring tables (e.g., chemical compositions of emulsion systems or lists of species and abundances). You can include them as supplementary material.

4. *Write the Methods Section*

- Of all the sections, the methods section is simultaneously the easiest and the most important section to write accurately.
- Any results in your paper should be replicable based on the methods section.
- write it out in excruciating detail, including setup, controls, and protocols, also manufacturers and part numbers, if appropriate.
- If you're building on a previous study, there's no need to repeat all of those details; that's what references are for.
- One common mistake when writing a methods section is the inclusion of results. The methods section is simply a record of what you did.

5. Write the Results and Discussion Section

Here you get the chance to sell your data...

A good place to start is to write a few paragraphs about each figure, explaining:

1. The results
 2. The relevance of the result to your hypothesis
 3. The relevance to the field
- You should be quantitative and specific
 - Especially when compared to prior work.
 - Any experimental errors should be calculated and presented.

Few tips:

- 1. Avoid statements that go beyond what the results can support.
- 2. Avoid unspecific expressions such as "higher temperature", "at a lower rate", and "highly significant". Quantitative descriptions are always preferred (35 °C, 0.5%, $p < 0.001$, respectively).
- 3. Avoid sudden introduction of new terms or ideas; you must present everything in the introduction, to be confronted with your results here.
- 4. Speculations on possible interpretations are allowed, but these should be rooted in fact, rather than imagination.

A few questions have to be answered in this section:

- How do these results relate to the original question or objectives outlined in the Introduction section?
- Do the data support your hypothesis?
- Are your results consistent with what other investigators have reported?
- Discuss weaknesses and discrepancies. If your results were unexpected, try to explain why
- your results consistent with what other investigators have reported?
- Discuss weaknesses and discrepancies. If your results were unexpected, try to explain why
- Is there another way to interpret your results?
- What further research would be necessary to answer the questions raised by your results?
- Explain what is new without exaggerating.

6. Write the Conclusion

- In the conclusion, summarize everything you have already written.
- Emphasize the most important findings from your study and restate why they matter.
- State your vision statement.
- The essence of your whole study, including your results and their significance.
- Don't repeat the abstract, or just list experimental results.
- Trivial statements of your results are unacceptable in this section.
- You should provide a clear scientific justification for your work in this section
- You can suggest future experiments and point out those that are underway.

7. Now Write the Introduction

The introduction sets the stage for your article. A good introduction should answer the following questions:

- What is the problem to be solved?
- Are there any existing solutions?
- Which is the best?
- What is its main limitation?
- What do you hope to achieve?



Few tips :

- Be concise and to the point. Long introductions put readers off.
- Give the whole picture at first.
- State the purpose of the paper and the research strategy adopted to answer the question.
- Do not mix introduction with results, discussion, and conclusion.
- Hypothesis and objectives must be clearly remarked at the end of the introduction.

8. Assemble References

The first thing is to pick a good electronic reference manager.

Don't cite the same couple of papers from the same couple of groups.

You need to make sure that your references include both foundational papers as well as recent works.

9. Write the Abstract

- Most abstracts are 150–300 words or 10–20 sentences.
- It should describe the importance of the field, the challenge that your research addresses,
- Together with the title, it's the advertisement for your article.
- A clear abstract will strongly influence whether or not your work is further considered.
- Make it interesting and easily understood without reading the whole article.
- It is very important to remind that the abstract offers a short description of the interpretation/conclusion in the last sentence.
- However, the abstracts must be kept as brief as possible

10. The Title Comes Last

- The title should capture the essence of the paper.
- If someone was interested in your topic, what phrase or keywords would they type into a search engine? Make sure those words are included in your title.
- keep the title informative and concise (clear, descriptive, and not too long).
- You must avoid technical jargon and abbreviations, if possible.



Revise , Revise and Revise

Revision of the article is not just paperwork. You may do further experiments, derivations, or simulations. Sometimes you cannot clarify your idea in words because some critical items have not been studied substantially.

Structural edit:

- Is your thesis statement clear and concise?
- Is your paper well-organized, and does it flow from beginning to end with logical transitions?
- Do your ideas follow a logical sequence in each paragraph?
- Have you used concrete details and facts and avoided generalizations?
- Do your arguments support and prove your thesis?
- Have you avoided repetition?
- Are your sources properly cited?
- Have you checked for accidental plagiarism?

Word choice, grammar, and spelling edit:

- Is your language clear and specific?
- Have you checked for proper grammar, spelling, and punctuation?
- your sentences flow smoothly and clearly?
- Have you avoided filler words and phrases

Sources to find literature

- <https://www.sciencedirect.com/>
- <http://www.lib.cug.edu.cn/>
- <https://onlinelibrary.wiley.com>
- <https://connect.springerpub.com>
- <https://pubs.acs.org>
- <https://www.researchgate.net/>
- <http://www.6453.net>
- <https://scholar.google.com/>
- <https://sci-hub.tw/>

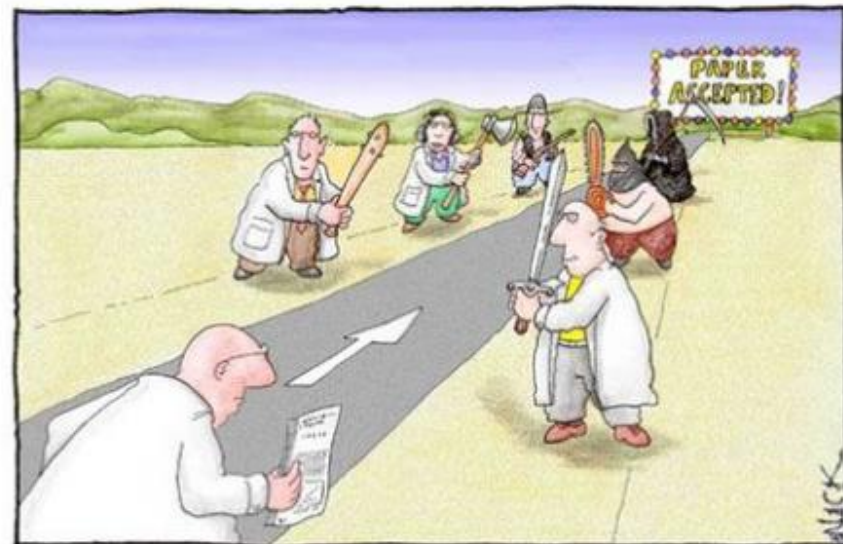
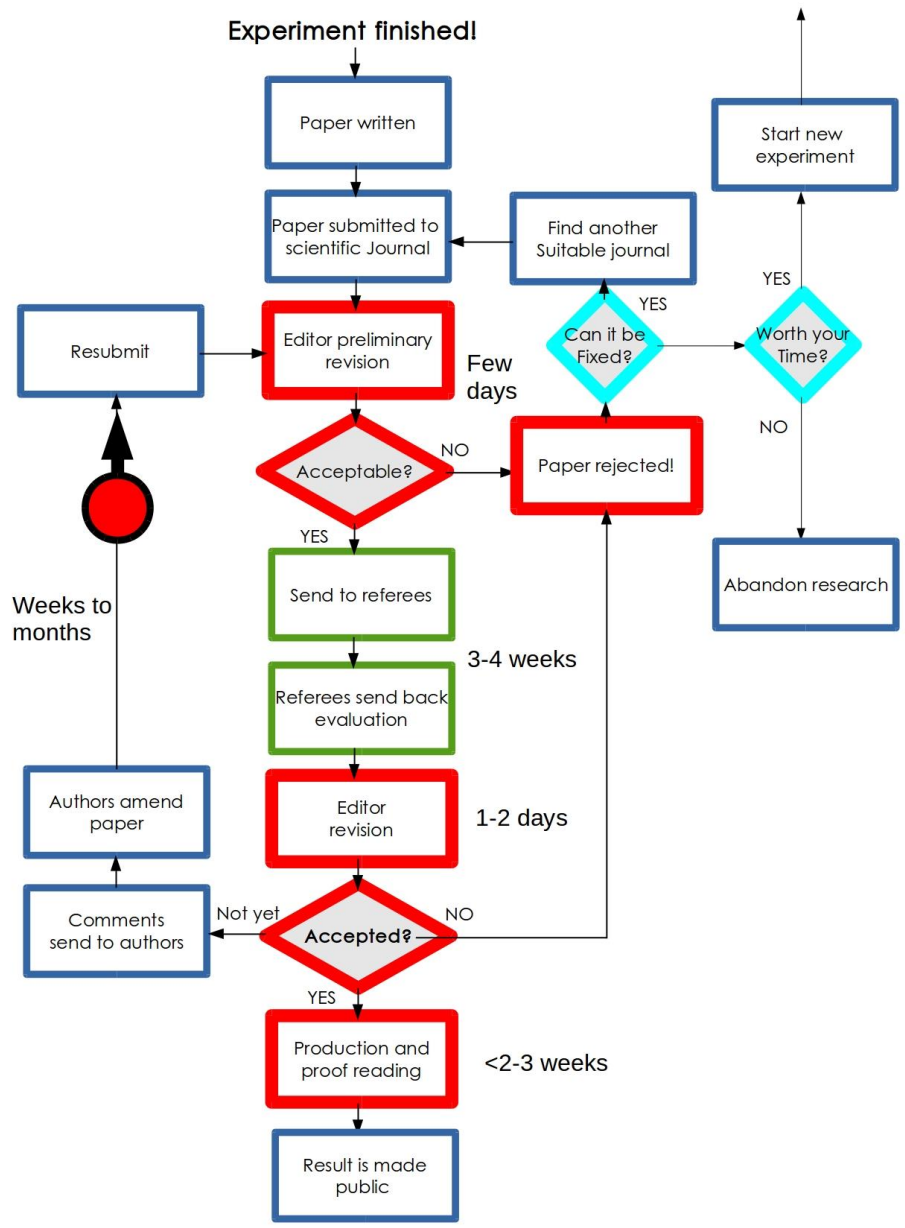
Submission

Identifying the best place to publish research involves consideration of many factors, including:

- Journal aim and scope
- Publication of similar work
- Journal rankings and measures of journal impact
- Demonstration of good publishing practices



Reviewer's expectations



Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

Opening your mind to novel ideas

- 3WH strategy What, Why, Where, and how
- List and Map
- Free write
- Attending public seminars.
- Chatting with other graduate students.
- Reading deeply with why? in mind.
- Read future work and conclusions of the papers.
- Capture the Big Picture.
- Ask Questions.

DON'T GIVE UP!
THE HARD WORK
PAYS OFF!

– Unknown

WORK
hard
IN
Silence
LET
Success
MAKE THE
Noise

Summary

persistence is the key.

You may feel like giving up when things go off track but stick with it and you'll not only emerge with a completed project, but you'll also gain lots of invaluable skills along the way.

Acknowledgement



Thank you

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Things to **NOT** ask a PhD Student:

1. When will you graduate?
2. Are you writing your thesis?
3. How is your research going?
4. Did your paper get published yet?
5. What year are you again?