Scientific Paper Writing

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- Associate Professor
- Director of EMGEN
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- Editorial Board member of AIMC (ISI)
- Editorial Board member of Drug Design (Omics Group)
- Pasteur Institute

- 2012

Introduction

- **FEATURES OF WORKSHOP:**
- Lectures on fundamental concepts
- Case studies on challenges
- Exercises for learning reinforcement
- Sharing of real life examples

Why should you publish ?

- Publishing your research results is important
- A crucial step in the **scientific process**.
- The growth of knowledge can only happen if people **communicate** what they've found out to one another.
- Giving talks and going to conferences helps, but the published paper gives people a chance to really take in what you have to report.
- Your career **success** in academic field and beyond will be enhanced
- Will help you **build networks** with other researchers who **share** your interests, and
- **Increase the career options** available

Background: Author's Perspective

Motivation to publish:

- Dissemination (54% 1st choice)
- Career prospects (20% 1st choice)
- Improved funding (13% 1st choice)
- Ego (9% 1st choice)
- Patent protection (4% 1st choice)
- Other (5% 1st choice)

Bryan Coles (ed.) The STM Information System in the UK, BL Report 6123, Royal Society, BL, ALPSP, 1993

Misconceptions

- Prospectively:
- Good research = Good paper ?

- Retrospectively:
- Good paper = Good research?

You will be judged by how well you write because nobody really knows how well you think

(Gray, 1998, 140)

Critical Thinking

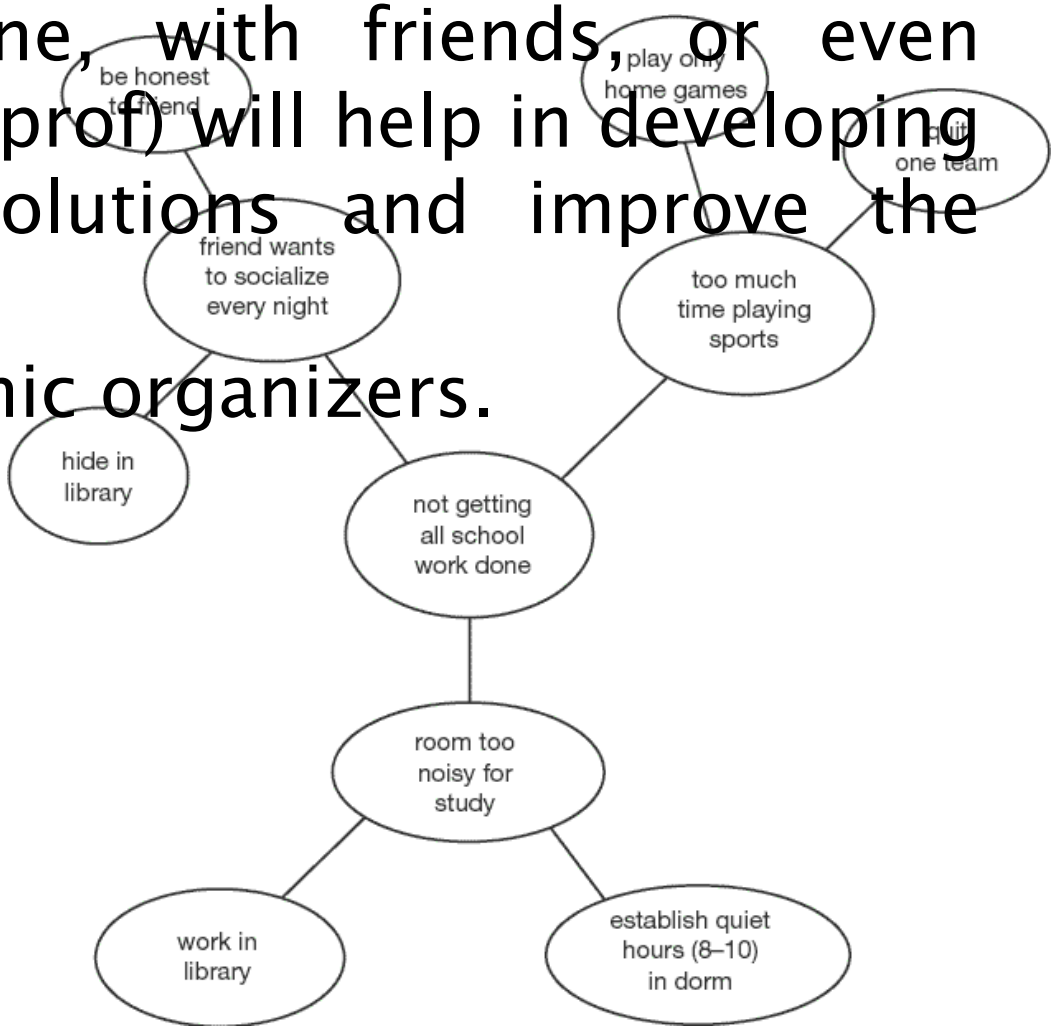
- ✓ Application
- ✓ Analysis
- ✓ Synthesis
- ✓ Evaluation

From idea to the lab
Project

- How well the idea is
- How well the idea is set into a project
- Funding
- How well the steps taken (student/researcher)
- How well the results are recorded and analyzed

Brain Storming (BS)

- BS sessions (alone, with friends, or even together with the prof) will help in developing the ideas and solutions and improve the project finally.
- Diagrams of graphic organizers.

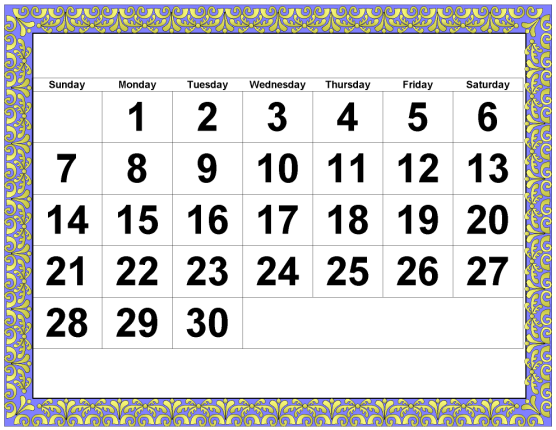


The Process:

Organizing
Writing a Paper
Managing a Project

Organizing

- Materials
- Time
- Ideas



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Calendar – Tab

- Takes into account paper **deadlines**
- Timetable for reading, notes, drafts etc.can be developed
- Connects to other events in scholar's life
- Can be kept in personal Daytimer

Bibliography – Tab

- Work on as paper progresses
- Finish bibliography before begin writing paper
- Can accomplish something on things-to-do list without having to think
- Links to notes and things-to-do list

Review – Organizing

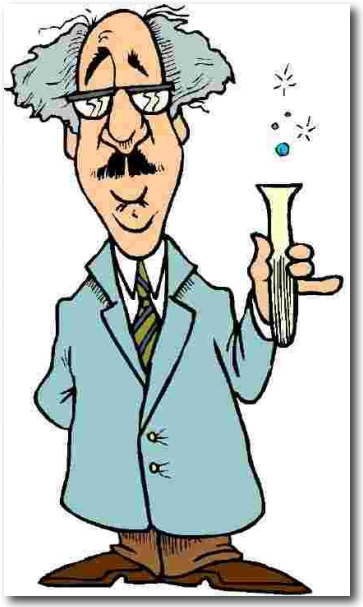
Time	*Materials*	*Ideas*
•Things-to-do list •calendar	All of the tabs in the notebook	•Things-to-do list •Notes •Integrated Outline **Key tabs**

BACK UP YOUR DATA

- Flash/CDs and DVDs
- Free online backup services
  - HP Upline, iDrive, Mozy
- Paid online backup services
  - Carbonite, .mac iDisk, HP Upline, iDrive, Mozy, SOS
- Cheap home solutions
  - Under $100 for a portable hard drive
  - **Don’t be that guy.**

Formal Hypotheses

- **Linked to research purpose**
- Most research methods texts implicitly assume formal hypotheses are the framework used in a research project.
- **Associated with experiments** and the scientific method.



From lab to the draft
Notebook checklist

- **Keep up** with the table of contents
- **Date each page**
- **Number each page** consecutively
- Use continuation notes when necessary
- Properly void **all** blank pages or portions of pages (front and back)
- Enter all information **directly** into the notebook
- Properly introduce **and** summarize each experiment
- Include complete details of all first-time procedures
- **Include calculations**

7 Main Sections

1. Abstract
2. Introduction
3. Materials and Methods
4. Results (Data)
5. Discussion
6. Conclusion
7. References (works cited)

Abstract

- Why the experiment was done
- **What questions/problem** was addressed
- **How the research** was done
- **What major results** were obtained (quantify)
- What major conclusions were drawn

- Don't be fooled, this paragraph could make or break your entire paper!!!

Introduction

- **Background information** from previous studies that directly relates to your research
- Should anticipate any questions that are discussed later
- Should **end with a clear statement of the specific issues** that will be addressed in the report

Materials and Methods

- Must be descriptive
  - Anyone should be able to **read** this section and **replicate** your experiment
- Include all details that may have influenced your results
- Should NOT include details that are irrelevant
  - i.e. we used #2 pencils to write in our notebooks

Results

- Summarize **your findings**
  - Use **tables**, **graphs**, illustrations, and **words**
- Draw readers attention to **major observations**, **trends**, and **important points**
- Be selective about including **tables and graphs**
  - **Present data only once**
- DO NOT INTERPRET DATA HERE!!!

Discussion

- **Interpret your own results**
- Why were your results different than expected?
- How do your results **compare to other similar studies**
- How do your results **contrast to other similar studies**
- Ideas for **future research**
- Ways to improve your experiment for future studies

Conclusion

- Reiterate your **original hypothesis** or question statement
  - **Did you answer/solve** your question?
- **Sum up** your findings
- Suggest ways this study can be built upon in the future

From draft to submission

What Do Journal **Editors Want**?

A report of work that is…

- Important
- Original
- Truthful
- Complete
- Accurate
- Relevant to the journal's readers

How to choose the Journal

- ***Focus:*** What type of research does the journal publish? Is its focus broad or narrow? Which disciplines are represented? What is the journal's orientation – for example, is it clinical or basic, theoretical or applied?
- ***Indexing:*** Is the journal indexed in the major electronic databases such as Medline, Biological Abstracts, Chemical Abstracts, or Current Contents?
- ***Availability:*** Is the journal broadly available? Is there an online version of the journal? Are papers provided in pdf format?
- ***Reputation:*** Although it can be rather subjective, there are several ways to gauge the reputation of a journal. Ask colleagues which journals they respect. Look at recent articles and judge their importance.
  - Determine the journal's *impact factor*

How to choose a Journal

- ***Time to Print:*** Using the "date submitted" and a "date accepted" that are published on the article, along with the date of the issue, you can estimate the length of the review process as well as the time from acceptance to publication in print.
- ***Charges:*** Some journals bill the author for *page charges*, a cost per final printed page.
  - Most journals have a separate *charge for color plates*. This may be as much as $1000 per color plate.
  - Many journals will waive page charges if this presents a financial hardship for the author; color plate charges are less readily waived and would at least require evidence that the color is essential to the presentation of the data (e.g., to show a double-labeled cell).

Impact Factor

- *Impact factor* is an annual measure of **the extent to which articles in a given journal are cited**. How selective is the journal in accepting papers for publication?
  - Note however, these ratings can be artificially inflated in journals that publish review articles, which tend to be cited more than research articles. See www.isinet.com)
- The *JCR* provides quantitative tools for ranking, evaluating, categorizing, and comparing journals.
  - The impact factor is one of these; it is a measure of the frequency with which the "average article" in a journal has been cited in a particular year or period.

- **The copyright form (see journals webpages)**

- Authors must declare that the submitted work is their own and that copyright has not been breached in seeking its publication.

- Authors should declare that the submitted work has not previously been published in full, and is not being considered for publication elsewhere.

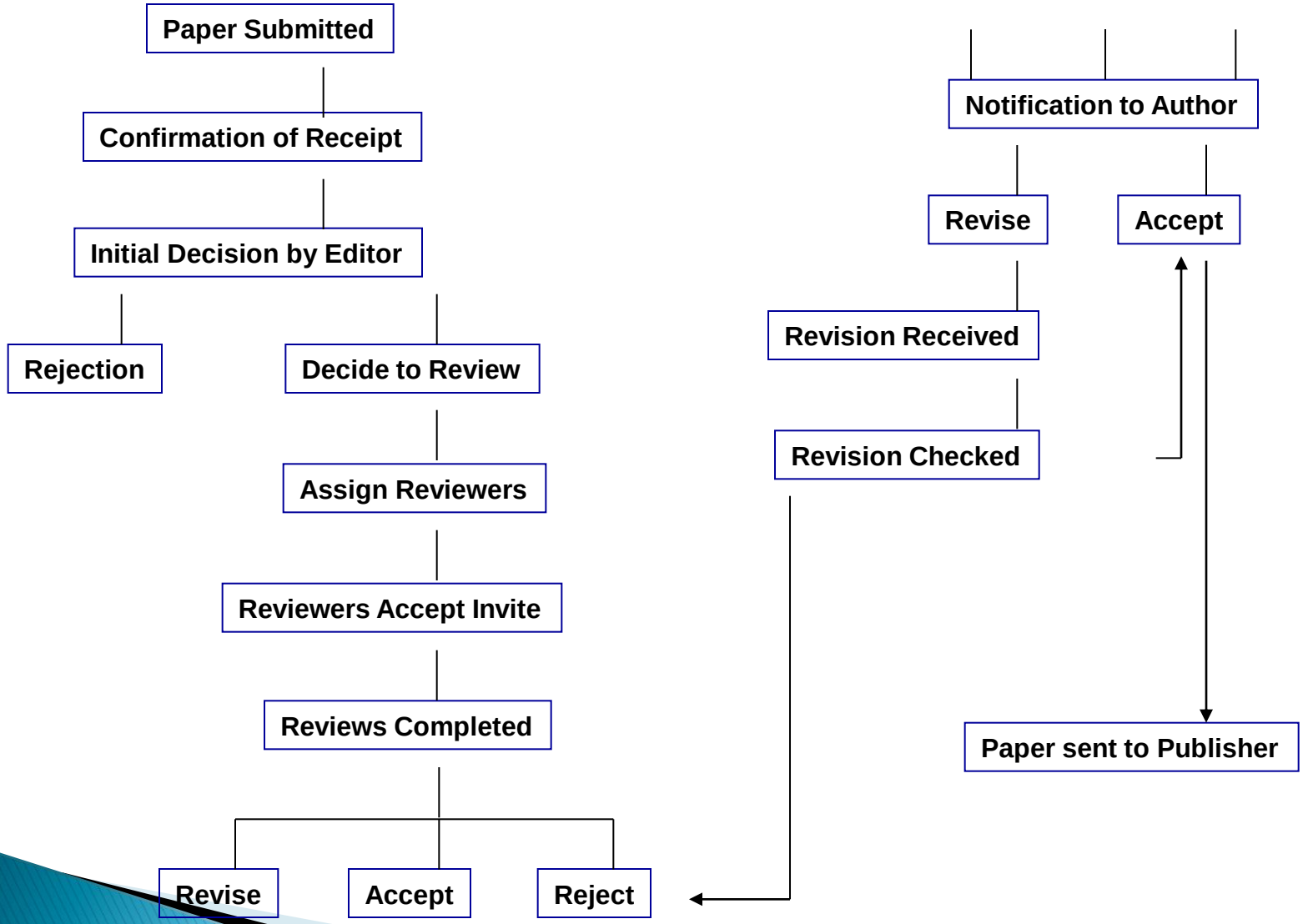
- By signing you delcare that the copyright belong to PUBLISHER not the author
- Although intelectual property is still yours as the author

After the submission

After Submission

- Most journal editors will make an **initial decision** on a paper – to review or to reject
- Most editors appoint two referees
- Refereeing speed varies tremendously between journals
- Authors should receive a decision of Accept, Accept with Revision (Minor or Major), or Reject
- If a paper is rejected, most editors will write to you explaining their decision
- After rejection, authors have the option of submitting the paper to another journal – editor's suggestions should be addressed

Overview of Peer Review Process



- **Responding to the editor:**

- **Acceptance without revision**
- You need take no further action untile the proofs reach you, except prehaps write a note thanking the editor.

- **Minor revisions requested ("accepted")**
- Consider the suggestions carefully, and if you agree that they will improve the paper, modify or rewrite sentences or sections as necessary. Retype any heavily corrected pages before you return the paper to the editor, but enclose the original corrected paper as well as the retyped copies. In your covering letter sent with the revised version, thank the editor and referees for their help and enclose a list of the substantial changes made in response to their suggestions; if you have rejected one or more of the recommendations, explain why.

- **Major revisions requested ("further consideration")**
- You will have to think hard if the effort is worth while. You may eventually decide that the paper is better as it is, and proceed to try another editor (another journal) in the hope that he will agree with you.

- **Rejection**
- If the editor says the article is too specialized or outside the scope of the journal, your best course is to send it to another journal, first modifying the style to comply with the instructions of that journal.
- If the article is rejected because it is said to be **too long** and in need of changes, consider shortening and modifying it according to the criticism – and then submit it to a different journal (**unless the editor had wanted to see a shorter version** he would have offered to reconsider it after revision!).

Rejection (continued)

- If the editor thinks the **findings reported are unsound or that the evidence is incomplete**, put the paper aside until you have **obtained more and better information**, unless you are sure that the editor and his advisers are wrong.

- **Consider contesting** the decision **only if** you honestly think, after considerable reflection and **at least one night's sleep**, that the editor and referees have made a superficial or wrong judgement. In this case write a polite letter explaining as briefly as possible why you think the editor should reconsider his decision.


Thank you