Methods and rules of scientific article writing. Contents and Formats

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Why Publish?

- Research without publication is not only informs the researcher
- Research without publication is used by industry in order to keep exploitable discoveries secret from competitors
- Research funded by the Government, through Universities and Research Institutes has a responsibility to publish results in the Public Domain
- All Academic researchers have a duty to publish their results – Research Code of Conduct

Why Publish?

- Exchange of ideas and results within the academic community
- No single researcher knows the complete answer to anything so sharing is the best policy to improve understanding and knowledge
- Builds academic reputation
- Leads to a good justification for funding of future research
- It is in the Public Good

The Language of publication

- The objective is to expose your research results to as many readers as possible
- Therefore need to publish in a common language – this increasingly is English
- Why English?
  - The majority of the worlds leading researchers are English speakers – UK, Ireland, USA, Australia and most of mainland Europe research academics are English speaking – Germany, Holland, Denmark, France, Norway, Sweden, Spain, Italy
- But there are publications in local languages
  - These can only be read by local academics. English-speaking academics rarely request translations of local language papers.
  - This may be “sad” but it is true

What makes a good manuscript?

- Good, well conducted research makes for good manuscripts and good paper and these are easier get published.

- Good research training (PhD) makes for good research and more publishable papers.

Choosing a Journal

- Journal Impact Factors
  - Journals are very competitive
  - Journals rely on citation ratings to increase their impact
  - Journals promote themselves based on overall Impact Factors published by independent organisations such as Web of Science, Scopus
- International vs Local

Choosing a Journal (2)

- International vs Local
  - Local journals are not likely to have an International Impact Factor
  - International journals are more likely to have an International Impact Factor
- Hierarchy of Impact Factors
  - Established, well respected Journals are likely to have higher Impact Factors
  - High Impact Factor journals have very well respected Editors, Sub-Editors and Reviewers and it is very tough to get published in these journals (even for EU researchers)

Choosing a Journal (3)

- Choose your Journal wisely
  - Think about the quality of your research outputs and choose an appropriate journal
  - Do not aim too high initially but do not aim too low either
  - Remember, if your paper is rejected by a good journal then it is not normally that your research is wrong – it is more likely that they have too many better papers submitted than they can publish.

Rank listings of Journals

- Can get rank listings of Journals according to Impact Factors
- Some countries classify these to their own categories of “quality or reputation”
  - e.g Saudi Arabia, Egypt publish journal lists with A/B/C/D or 10,9,8,7….listings and actively incentivise their academics to aim for A or B listed journals by financial reward

Preparing your manuscript

- Manuscripts normally get better and better the more times they are iterated and the more pairs of eyes read them and constructively criticise them
- Show your manuscript to your co-authors and to colleagues in your research group or Department
- Be sure about what your results tell you – what are the main conclusions

Preparing your manuscript

- All scientific manuscripts have the same basic format
  - Review of relevant literature leading to a justification of why you did your experiment(s)
  - Statement of the aims and objectives
  - Description of the methods and experimental design
  - Presentation of the results
  - Discussion of the results and what they mean
  - Conclusion of what the research shows that is new and exciting

Top tips for good manuscripts

- Literature review section
  - Use up to date cross references – these show that you are reading the most recent literature and that your research is current and topical
  - Do not use the Lit Review section as a copy from a PhD thesis
  - Always make the Lit Review lead to a reason why you did the research – framed as a “Research Question”

Methods section

- Be precise in your methods description so that someone can repeat your work
- Do not repeat other peoples methods when you can cross reference to their papers for precise details (unless the journal specifically asks for these details)
- Explain your experimental design correctly, do not say you used a particular experimental design if you did not use it!
- Put units in the correct format for the journal (normally SI Units conventions apply)

Results section

- Look at your results carefully and think about what they are telling you
- Present the results in the manner that is easy to interpret
- Remember that Figures and Diagrams are often easier to interpret that big Tables of data (consider the following Table)

Table 3: Lipid peroxidation; MDA: (Malondialdehyde nmol g^{-1} F.Wt), hydrogen peroxide; H_2O_2(µM g^{-1} F.Wt) and the activities of antioxidant enzymes (unit g^{-1}F.Wt) examined during the embryogenic cell suspension culture of two date palm genotypes as affected by PEG supplementation levels.

PEG-6000 Levels %	Genotypes	MDA	H_2O_2	SOD	POX	APOX	CAT	GR
0 (Control)	Samani	500	13.64	30.6	25.5	4.50	8.22	50.3
	Sewi	450	12.82	28.9	28.8	5.24	8.54	46.3
	Mean	475	13.23	29.75	27.15	4.87	8.38	48.3
5 %	Samani	700	18.54	50.3	20.2	3.65	6.47	65.2
	Sewi	640	17.46	48.0	24.4	4.34	7.28	60.0
	Mean	670	18.33	49.0	22.3	3.95	6.82	62.5
10 %	Samani	900	22.48	54.5	19.7	2.60	5.45	85.4
	Sewi	830	21.22	52.6	21.6	2.82	6.86	78.5
	Mean	865	21.85	53.7	20.0	2.70	6.27	81.5
15 %	Samani	620	19.24	48.4	20.2	3.45	7.25	68.6
	Sewi	600	19.86	45.2	22.3	3.26	8.68	62.8
	Mean	610	19.55	46.5	21.6	3.35	7.92	65.1
20 %	Samani	520	12.86	32.5	24.6	4.53	7.87	48.0
	Sewi	460	11.24	27.4	28.1	5.40	7.94	46.9
	Mean	490	12.05	29.5	26.3	4.95	7.35	47.4
Mean	Samani	648	17.35	43.26	21.04	3.74	7.05	63.5
	Sewi	596	16.52	40.42	25.04	4.21	7.86	58.9
LSD. at 5 % for								
Genotypes (G)		0.16	0.64	0.37	0.17	0.28	0.20	1.27
PEG-6000 levels (L)		0.26	0.73	0.35	0.19	1.21	0.67	2.16
G x L		0.28	1.43	0.42	0.13	1.96	1.83	4.57

Malondialdehyde (MDA) = lipid peroxidation activities of nmol g^{-1} F.Wt

H_2O_2 = Hydrogen peroxide µM g^{-1} F.Wt SOD Superoxide dismutase unit g^{-1} F. Wt

POX Peroxidase unit g^{-1} F. Wt APOX Ascorbate peroxidation unit g^{-1} F. Wt

CAT Catalase unit g^{-1} F. Wt GR Glutathione unit g^{-1} F. Wt

Discussion section

- Discuss the outcomes of your research experiments in the light of the published research
- Do not go into long discussions about material in the literature that you have not investigated
- Make suggestions for future work that needs to be done either to confirm your work or to take the work to the next phase of understanding – include recommendations on methods if appropriate

Conclusion

- Do not forget to make a conclusion or several conclusions
- State if this is the first time such work has been done either in the world, or on your species or in your field – this defines the uniqueness of the work and justifies publication merit

Abstract/Summary

- Write the Abstract/Summary last
- Do not forget to summarise the most important results that you found and their importance to the subject area

Authors

- Because of the increasing number of manuscripts submitted to good journals, the publication rate (chance of getting accepted) is getting lower
- Editors increasingly looking at the “quality” of the authors to check for the “bona fide” senior authors (they will not admit this, but it happens)
- Always a good idea to have an internationally recognised co-author

Authors

- Senior co-author
  - Best that this person is the corresponding author
  - Best if this person has been involved in the research from the beginning i.e. in the planning, reviewing of results, interpretation of results and the writing of the manuscript
  - “Sleeping/Convenience” authors are not recommended and can lead to problems e.g. Saudi Arabia publication scandal

Read the Instructions to Authors and follow them

- Every Journal has “instructions to authors”
- You **MUST** follow these
- Failure to follow them can lead to instant rejection by the Editor prior to being sent for Review – “Don’t Poke the Bear!”
- Commonest complaints from Editors is that the instructions to authors have not been followed – they are **very very** precise about these
  - Section titles
  - Commas and full stops
  - Unit abbreviations
  - Reference formats

The process of Review of manuscripts

1. Editor reviews manuscript and decides whether or not to send for review
   - Can reject it outright – with reasons given
   - Can request changes before reconsideration for review

2. Editor sends to Reviewers for full Peer Review
   - Normally at least 2 reviewers often one is a Sub-editor with defined subject expertise. 2nd or 3rd reviewers are invited to review

The process of Review of manuscripts

- The Reviewers are given instructions of how to review, what to look for
  - Level of scientific English language
  - Evidence of whether the experiments have been carried out appropriately and statistics applied correctly
  - Whether the results are meaningful
  - Whether the manuscript makes a contribution to the subject
  - Whether the manuscript is publishable with or without minor/major corrections or needs to be rewritten
  - Feedback for the authors
    - General feedback
    - Specific feedback – corrections or challenges to some of the interpretations made

Time for Review

- Most manuscripts take about 2 months to be fully reviewed
- All journals request that the manuscript has not been submitted to another Journal during the reviewing process

Dealing with Rejection

- All academics should expect the rejection of some of their manuscripts
- We have to learn to deal with rejection – it is a normal part of the Peer Review Process
- You can appeal against rejection – but it seldom works!
- Better to send the manuscript to another Journal – but incorporate the corrections suggested by the Reviewers/Editor first. This will increase your chances of easier acceptance in the new Journal

Open Access Publishing

- New trend in academic publishing is Open Access Publishing – leading to easier access, more reads, higher citations, higher Impact
- All International Journals offer the opportunity for authors to publish their accepted articles Online with open access but normally request an up front payment. For established high impact Journals this may be substantial eg $2,000. Cost must be built into Departmental Policies or Funders policies

Open Access Publishing (2)

- New Online only Journals
- In last 5 years many, many New Journals have appeared in every subject area
- Often charge lower publishing fees – making it attractive to potential authors
- Do not have Impact Factors yet and will take 5 years or more to get one
- Often do not have very reknown Editors or Panels of Reviewers – lower standards
- Easier to get published, but not very well respected by established researchers
- 2nd and 3rd division compared to Premier division of established Journals

Impact of Publications

- Translating academic publications into Technical or Societal Impact
- Becoming increasingly important in EU Universities