Workshop on Scientific Writing in Field Epidemiology

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WORKSHOP ON SCIENTIFIC WRITING IN FIELD EPIDEMIOLOGY

4-8 February 2013

Novotel Hua Hin Cha Am Beach Resort and Spa, Phetchaburi Province, Thailand

Time / Date	08:30-09:30	09:30-12:00	12:00-13:30	13:30-15:30	15:30-17:30	17:30-19:30	19:30-20:30	Submission of Output
Sun 3 Feb	Travel from MOPH to Cha Am				Meeting with writing coaches (17:00-18:00)	*Dinner at restaurant*		
Mon 4 Feb	- Opening Session - Introduction of participants - Orientation of workshop - Introduction to ASEAN+3 FETN and OSIR - Group photo	Lecture 1: Introduction to - Scientific writing - Component - Abstract guideline *Dr. Sanipa* OSIR Editorial Board Meeting	*Lunch*	Drafting of manuscript *One by one coaching*	Presentation and discussion: one-page abstract (30 min each)	*Welcome reception at Hotel*	Revise manuscript with writing coaches (Optional)	Submit One-page abstract by 20:30
Tue 5 Feb	Lecture 2: Introduction *Dr. Sanipa*	Exercise: Introduction *One by one coaching*	*Lunch*	Presentation and discussion: Introduction (30 min each)	Revise manuscript with writing coaches	*Dinner on individual basis*	Revise manuscript with writing coaches (Optional)	-
Wed 6 Feb	Lecture 3: Material and method, result *Dr. Sanipa*	Exercise: Material and method, result *One by one coaching*	*Lunch*	Presentation and discussion: Material and method, result (30 min each)	Revise manuscript with writing coaches	*Dinner on individual basis*	Revise manuscript with writing coaches (Optional)	-
Thu 7 Feb	Lecture 4: Discussion *Dr. Sanipa*	Exercise: Discussion *One by one coaching*	*Lunch*	Presentation and discussion: Discussion (30 min each)	Revise manuscript with writing coaches	*Farewell dinner at restaurant*	Revise manuscript with writing coaches (Optional)	Submit manuscript by 20:30
Fri 8 Feb	Special lecture Award selection meeting		*Lunch*	Course evaluation	- Certificate presentation - OSIR Award announcement - Closing ceremony	*Dinner on individual basis*		

Introduction to scientific writing

An introduction to scientific writing
Component of the research articles
Drafting your paper

Scientific Inquiry

The process that scientists use to learn about the natural world is characterized by

1. **Asking questions** that can be answered through investigations,
2. Designing and carrying out scientific investigations,
3. Thinking logically to make relationships between evidence and explanations, and
4. **Communicating procedures and explanations**.

Formats of scientific writing

- Grant proposals
- Peer-reviewed journal articles (presenting primary research)
- Literature review articles (summarizing and synthesizing research that has already been carried out)
- Popular science articles (communicating scientific discoveries to a non-scientific audience)

***Goal** : to present data and/or ideas with a level of detail that allows a reader to evaluate the validity of the results and conclusions based only on the facts presented.*

The reader should be able to easily follow both the methods used to generate the data (if it's a primary research paper) and the chain of logic used to draw conclusions from the data.

Source: The Writing Center, University of North Carolina at Chapel Hill

Key elements

- **Precision:**
  - ambiguities in writing cause confusion and may prevent a reader from grasping crucial aspects of the methodology and synthesis
- **Clarity:**
  - concepts and methods in the sciences can often be complex; writing that is difficult to follow greatly amplifies any confusion on the part of the reader
- **Objectivity:**
  - any claims that you make need to be based on facts, not intuition or emotion

Source: The Writing Center, University of North Carolina at Chapel Hill

Science of scientific writing

* Readers expectations 1

In tracking the temperature of a liquid over a period of time, an investigator takes measurements every three minutes and records a list of temperatures.

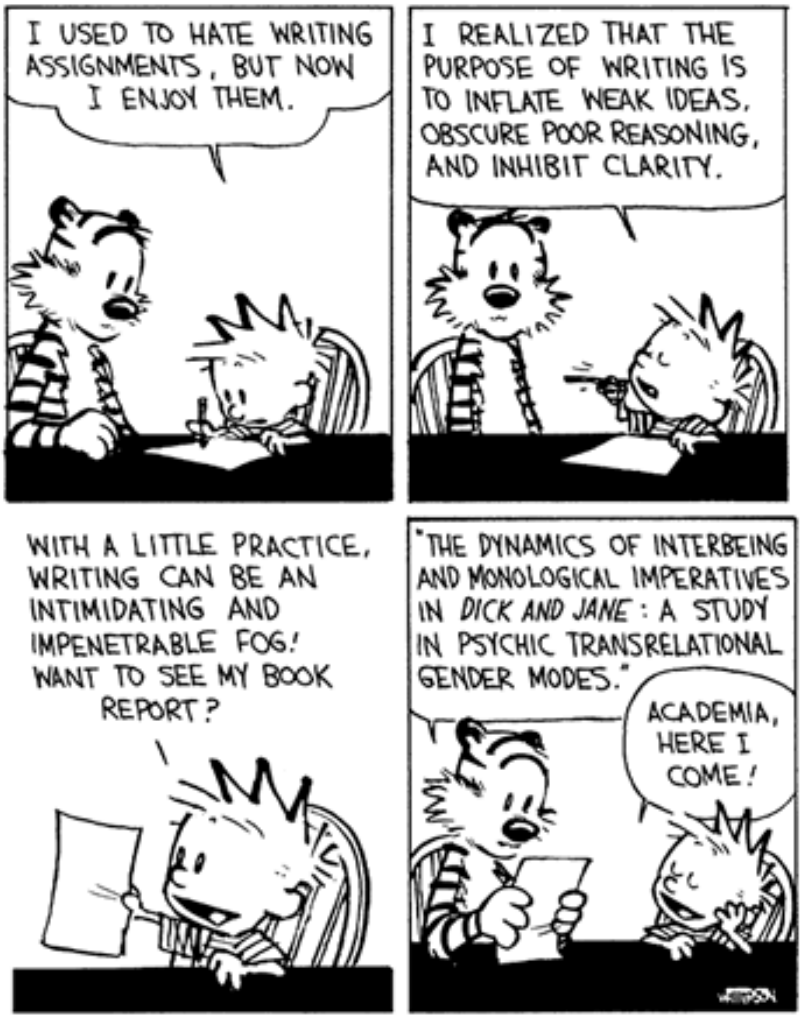
temperature (°C)	time (min)
25	0
27	3
29	6
31	9
32	12
32	15

time (min)	temperature (°C)
0	25
3	27
6	29
9	31
12	32
15	32

Science of scientific writing

* General readers expectations 2
  * WRITTEN English, please (http://sana.tkk.fi/awe/style/vocabulary/index.html)
  * Left >> Right
  * Subject >> verb
  * Course >> Effect
  * 1 paragraph, 1 topic
  * Old information >> New findings
  * Topic vs context (right thing in the right place)

A > B, B > C, c >D vs D>A, A>C, B>C



http://www.chocolatesparalucia.com/wp-content/uploads/2011/07/calvin-hobbes-writing.png

Science of scientific writing

* Information is interpreted more easily and more uniformly if it is placed where most readers expect to find it.
  * Beware of subject-verb interruption
  * **Past tense, active voice**, and brevity please

* The goal is to report your findings and conclusions clearly, and with as few words as necessary.

Choosing tense

Past tense

* **Work done**
  - We collected blood samples from . . .
  - Groves et al. determined the growth rate of . . .
  - Consequently, astronomers decided to rename . .
* **Work reported**
  - Jankowsky reported a similar growth rate . . .
  - In 2009, Chu published an alternative method to . . .
  - Irarrázaval observed the opposite behavior in . .
* **Observations**
  - The mice in Group A developed, on average, twice as much . . .
  - The number of defects increased sharply . . .
  - The conversion rate was close to 95% . . .

Present tense

* **General truths**
  - Microbes in the human gut have a profound influence on . . .
  - The Reynolds number provides a measure of . . .
  - Smoking increases the risk of coronary heart disease
* **Atemporal facts**
  - This paper presents the results of . . .
  - Section 3.1 explains the difference between . . .

Behbood's 1969 paper provides a framework for . . .

Future tense

* **Perspectives**
  - In a follow-up experiment, we will study the role of . . .
  - The influence of temperature will be the object of future research . . .

http://www.nature.com/scitable/topicpage/effective-writing-13815989

Watch out your writing …

* Subjects and verbs too far apart
* Overabundance of nominalizations
  * *We performed data analysis vs. We analysed the data*
* Poor flow (misplacement of old and new information)
* Excessive/unnecessary use of passive voice

NOT the complexity of the topic!

* Things that make science writing unclear

https://cgi.duke.edu/web/sciwriting/index.php?action=lesson3

Example

The TRANSFAC database has been subject to different improvements, modifications, and extensions in structure and content over the years.

The TRANSFAC database has been improved, modified, and extended in both structure and content over the years.

Example

Significant positive correlations were evident between the substitution rate and a nucleosome score from resting human T-cells.

In resting human T-cells, the substitution rate correlated with a nucleosome score.

http://mediazone.brighttalk.com/comm/ReedElsevier/6df160b9de-28220-2251-31265

Plagiarism

- **Plagiarise** - To take somebody else's ideas or words, and use them as if they were one's own. (The Oxford advanced learner's dictionary (5th edition, 1995)

- Type of plagiarisms
  - **outright copying**: uses exactly the same words as the original author without using quotation marks or saying where the words are from
  - **paraphrase plagiarism**: changing some of the words and grammar but leaving most of the original text the same
  - **patchwork plagiarism**: when parts of the original author's words are used and connected together in a different way
  - **stealing an apt term**: a short phrase from the original text has been used

- Example: http://www.uefap.com/writing/writfram.htm

Avoiding plagiarisms

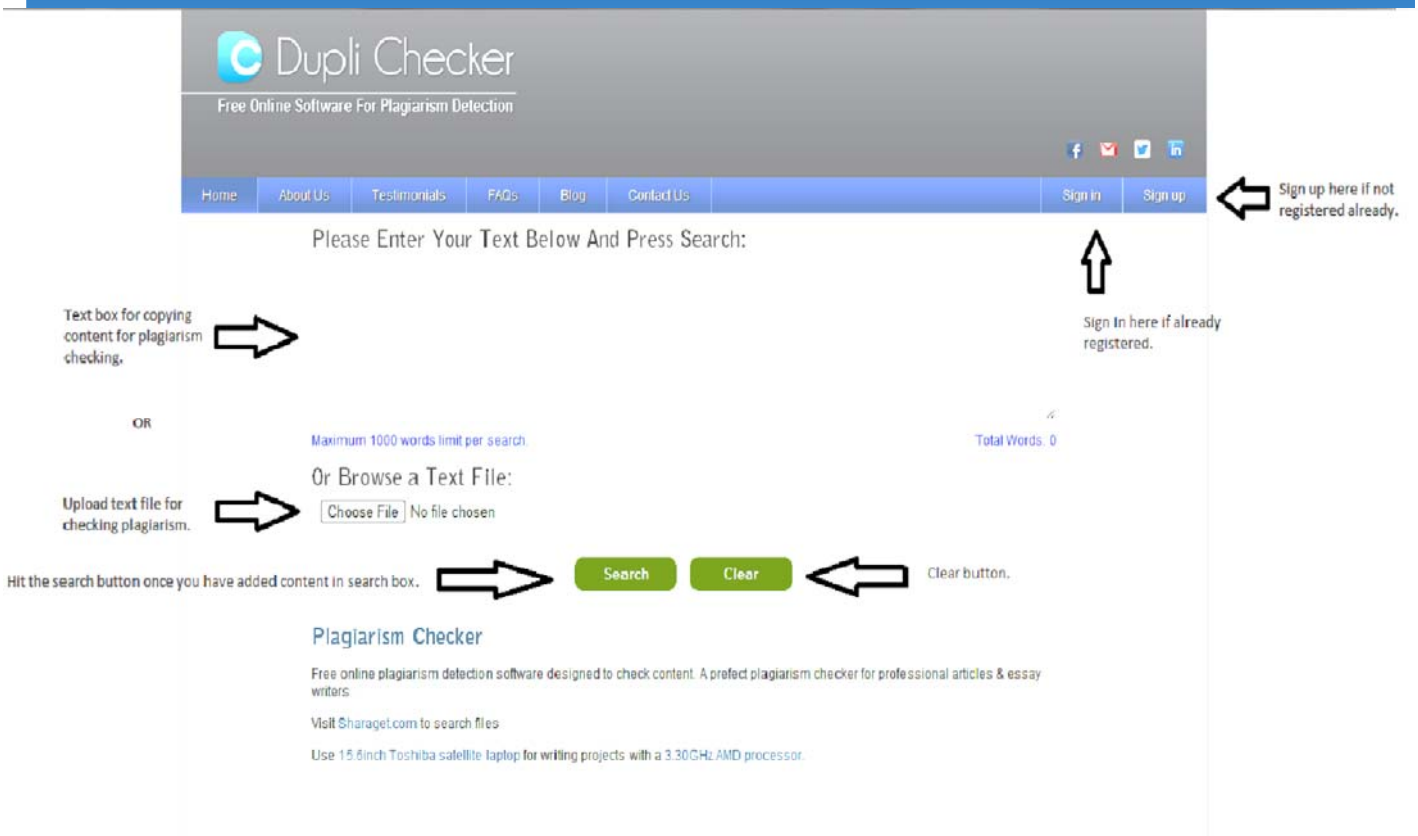
- Plagiarism is a “serious offence” for scientific community and it is illegal.

- Practice paraphrasing. Take notes in your own words.
  - read, put away your books and think, and then write your notes.

- Acknowledge quotations, even in your own notes.

- If you use ideas of other people, be explicit about it. Always cite the relevant author at the relevant point in your writing.

Online tool



http://www.duplichecker.com/#

Good resources

- http://www.uefap.com/writing/writfram.htm
- http://sana.tkk.fi/awe/style/vocabulary/index.html
- https://cgi.duke.edu/web/sciwriting/index.php?action=lesson3
- http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtoc.html
- http://www.emeraldinsight.com/authors/guides/index.htm
- http://www.nature.com/scitable/topic/scientific-communication-14121566

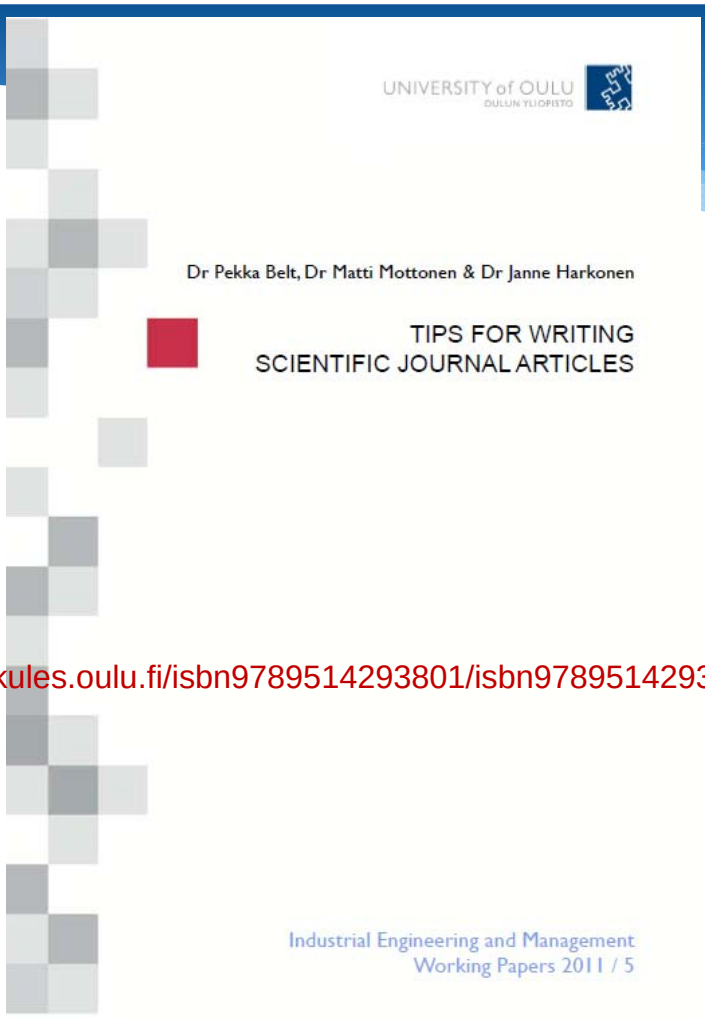
Introduction to manuscript writing

How to Write a Paper in Scientific Journal Style and Format

Table of Contents

Greg Anderson

http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtoc.html



http://herkules.oulu.fi/isbn9789514293801/isbn9789514293801.pdf

Scientific format

* There are **rigid structure** in scientific writing.
* The strict format helps to insure that at whatever level a person reads your paper (beyond title skimming), they will likely get the key results and conclusions.

Before starting…

* What is the significance of the future article ?
* Who is the target audience?
* What is the practical implications of your research?
* A scientific article must be based on research that is conducted scientifically by using accepted methods. An article wraps up research by presenting it clearly and concisely to the scientific community.

A persuasive narrative

Before writing the manuscript…

* Organize the information you wish to present >> **write your story line**
* Outline >> ordering the data (Logic, Logic, Logic)
  * What is the topic ?
  * Why is it significant ?
  * What background material is relevant ?
  * What is the thesis/study purpose
  * What plan will best support my purpose
* **Select the journal: download the Guide to Authors from the Journal's website. (Check for requirement and limitations)**
  * For this workshop, please refer to "Guideline for OSIR Publication"

Must have contents….

* What is the problem that is addressed?	Research Question
* Why is it important?	Introduction
* How did you study the problem?	M&M
* What are your results?	Result
* What are the implications of the results?	Discussion
* What do you recommend as further study for others?	Recommendation

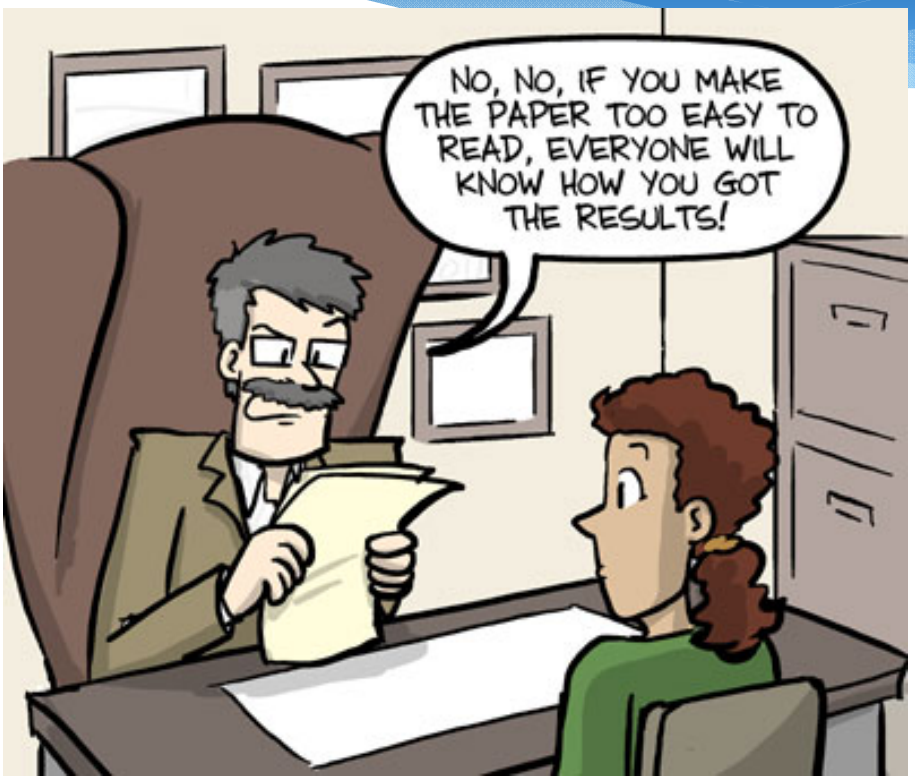
Note: The beginning and the end of an article must match, i.e. the stated problem or research questions must be addressed at the end.

General format of scientific papers

Section of Paper
Abstract
Introduction
Materials and methods
Results
Discussion
Acknowledgement (optional)
Literatures cited
Appendix (optional)

General format of scientific papers

Experimental process	→	Section of Paper
What did I do in a nutshell ?		Abstract
What is the problem ?		Introduction
How did I solve the problem ?		Materials and methods
What did I find out ?		Results
What does it mean?		Discussion
Who helped me out?		Acknowledgement (optional)
Whose work did I refer to?		Literatures cited
Extra Information		Appendix (optional)



Source:
http://www.nature.com/scitable/content/ne0000/ne0000/ne0000/ne0000/14239512/ECS_scientific-papers_ksm.jpg

"Improving the English will not get a poor piece of research published – it is the research method, rigor and appropriateness of analysis and findings that are the important things.

A paper's structure, the English, format and style can always be improved. But little can be done if there is a poor conceptual framework, shallow literature underpinning, inappropriate data collection methods and techniques of analysis, and which culminate in superficial conclusions."

Dr David Parker
editor, based in Queensland, Australia

Source:http://www.emeraldinsight.com/authors/guides/write/english.htm

Title & Authorship

Title

* **An advertisement of your paper**
* The title should be short and unambiguous, yet be an adequate description of the work.
* A general rule-of-thumb is that the title should contain the key words describing the work presented.

Authorship

* Any individual to be included as an author should have made a substantial intellectual contribution to either the design, execution or analysis of the project.
* In General: Student/PI (1st name), Supervisor (Last name)
* Corresponding author
* Beware: sequence of the name list

I. Abstract

Abstract

- Can be in different format
  - Structured
  - Non-structured
- 200-300 words (depending on the format)
- Usually come last in the writing process

- **Style**:
  - Use concise, but complete, sentences, and get to the point quickly
  - Use the active voice when possible
  - Use **past tense**, no reference please
  - Ask your friend to read it !!

Count your words !!

Guideline for OSIR Publication

Articles submitted to OSIR should be between 1200 and 2200 words. Target audience is Asian public health practitioners, and those who understand basic epidemiologic methods.

Abstract is non-structured abstract and may not exceed 200 words in length. This word count does not include the title, author list, information in the heading and key words.

(1). Title (Suggested length: no more than 75 characters)

Your title may either describe the study or pose a question expressing your primary objective. Please include:

- Disease or event
- Time occurred
- Place occurred

frontiers in IMMUNOLOGY

Multiple Treg suppressiv

James B. Wing[1] and Shimon Sakaguchi[1,2]*

[1] Laboratory of Experimental Immunology, WPI Immunology Front
[2] Department of Experimental Pathology, Institute for Frontier Med

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Foxp3+ regulatory
for the control of
Treg suppression
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pressive functions
adaptability and p
this flexibility may
behavior.

Keywords: Tregs, suppr

MINI REVIEW ARTICLE

Hübner et al. BMC Infectious Diseases 2010, 10:250
http://www.biomedcentral.com/1471-2334/10/250

RESEARCH ARTICLE

Effectiveness of alcol
in a public administr
work performance re
symptoms and diarrl

Nils-Olaf Hübner[1*], Claudia Hübner[1], Michael W

Abstract

Background: The economical impact of absen
and gastrointestinal disease is normally not in
underestimated. However, large community stu
have a great impact on morbidity and lead to
disinfection is acknowledged as key element fo
unclear.

Methods: Our study involved a prospective, co
epidemiological and economical impact of alco
administrations in the municipality of the city
intervention group were provided with a alcohol
and gastrointestinal symptoms and days of wo
On the whole, 1230 person months were evalu

Results: Hand disinfection reduced the numbe
This effect became statistically significant for co
[0.14-0.99], p = 0.035) and coughing (OR = 0.4
reported less days ill for most symptoms assess
0.037) and cough (1.85 vs. 2.00%, p = 0.024). Fo
significant too (0.11 (CI 0.01 - 0.93).

Conclusion: Hand disinfection can easily be in
hand hygiene. Therefore it appears as an intere
support programmes.

Trial registration number: ISRCTN: ISRCTN96

BMC

COMPARISON OF PCV2 VIREMIA BETWEEN HEAVY AND LIGHT WEIGHT PIGS AT MARKETING AGE IN FARMS WITH ROUTINE PCV2 VACCINATION

KS Lyoo[1], HS Joo[1], B Caldwell[2], P Davies[1]

[1]Department of Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota, St. Paul, [2]Choice Connection, Mapleton, MN, United States, loovs001@umn.edu

Introduction
Because of the economic significance, PCV2 vaccine has now been routinely used on swine farms. Although the vaccinated pigs performed significantly better in terms of survivability and growth performance, small proportions of light weight pigs in late finishing phase have been observed in the farms even with routine PCV2 vaccination[1]. Swine producers and veterinarians have expressed concerns over this problem and questioned whether protection by the PCV2 vaccine may be insufficient in some cases. Therefore, it is hypothesized that the light weight pigs could be related to PCV2 infection at late finishing age.

Materials and Methods
Seven different finishing farms with routine use of a commercial PCV2 vaccine and without major PCV2 related problem were selected. At less than 2 weeks before the marketing, 30 pigs each of the lightest and the heaviest pigs in a group were identified visually by each farm manager, and blood samples from the 60 pigs in each farm were collected. PCV2 IFA titer was tested by a protocol used routinely in our laboratory. A differential nested PCR assay for PCV2a and 2b was conducted as previously described method[2]. For PCV2b specific real-time PCR, a PCV2b specific primer set was used, and the assay was performed using PerfeCTa SYBR Green SuperMix and Mx3005P. One-way repeated measure ANOVA and student *t-test* was used to prove that the groups had significant difference.

Results
A comparative result for mean IFA antibody titers between the heavy and the light weight pigs in the 7 finishing farms is illustrated in Fig. 1. Overall, the IFA titers of the light pigs were higher than those of the heavy weight. Percentages of PCV2a and PCV2b viremic pigs in the 7 different finishing units tested by nPCR are shown in Table 1. There was no significantly different in PCV2a viremic pigs between the light and the heavy weight groups. However, percentages of PCV2b viremic pigs were higher in the light pigs than the heavy pigs in 6 of the 7 farms. The real-time PCR results for the pigs in each farm showed that average amount of PCV2b genomic DNA was higher in the light pigs than in the heavy pigs.

Figure 1. Comparison of the mean PCV2 IFA titers between light and heavy weight pigs at marketing age.

Table 1. Numbers and percentages of viremic pigs with PCV2a and 2b in finishing pigs

Farm	PCV2a genotype viremic: Light weight pigs	PCV2a genotype viremic: Heavy weight pigs	P-value	PCV2b genotype viremic: Light weight pigs	PCV2b genotype viremic: Heavy weight pigs	P-value
A	3 (10) 30*	5 (17) 30	0.137	8 (27)30	2 (7)30	0.014
B	1 (3) 30	1 (3) 30	1.0	18 (53)30	7 (23)30	0.013
C	3 (10) 30	4 (13) 30	0.337	28 (93)30	28 (93)30	1.0
D	3 (10) 28	0 (0) 28	0.083	27 (96)28	16 (57)28	0.001
E	2 (7) 29	0 (0) 29	0.157	28 (97)29	3 (10)29	0.001
F	2 (7) 28	2 (7)28	1.0	16 (57)28	12 (43)28	0.366
G	0 (0) 30	0 (0)30	1.0	6 (20)30	4 (13)30	0.157
Total	14(7)205	12(6)205	0.157	121(60)205	72(35)205	0.001

Conclusions and Discussion
The present results indicate a potential association between PCV2 infection and the marketing weight in swine farms. Although statistical significance was not always observed, higher PCV2 IFA titers and more viremic pigs were evident in the light weight pigs at marketing age. This finding suggests that PCV2 vaccination program should be adjusted to protect pigs from PCV2 infection until near marketing age.

References

1. Hurd RA et al.: 2007, Vet Pathol 39: 721.
2. Lyoo, K.S., et al., 2008, J Vet Diagn Invest 20, 283-288.

Abstract

- the ***question(s) you investigated*** (or purpose), (**from** Introduction)
  - state the purpose very clearly in the first or second sentence.
- the ***experimental design*** *and* ***methods*** used, (**from** Methods)
  - clearly express the basic design of the study.
  - Name or briefly describe the basic methodology used without going into excessive detail-be sure to indicate the key techniques used.
- the ***major findings*** including ***key quantitative results***, or ***trends*** (**from** Results)
  - report those results which answer the questions you were asking
  - identify trends, relative change or differences, etc.
- a brief summary of your ***interpretations*** and ***conclusions***. (from Discussion)
  - clearly state the implications of the answers your results gave you.

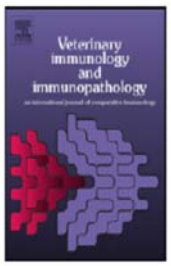
http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html#title

Veterinary Immunology and Immunopathology 133 (2010) 170–182

Contents lists available at ScienceDirect

Veterinary Immunology and Immunopathology

journal homepage: www.elsevier.com/locate/vetimm



Research paper

Induction of inducible $CD4^+CD25^+Foxp3^+$ regulatory T lymphocytes by porcine reproductive and respiratory syndrome virus (PRRSV)

P. Wongyanin [a], S. Buranapraditkun [a], K. Chokeshai-usaha [a], R. Thanawonguwech [b], S. Suradhat [b,*]

Introduction

Methods & Result 1, 2, 3, 4, 5

Summary

ABSTRACT

COUNT YOUR WORDS

Increases in numbers or activities of regulatory T lymphocytes (Tregs) have been linked to the establishments of several persistent infections. It has been previously shown that porcine reproductive and respiratory syndrome virus (PRRSV) can negatively modulate the host immune responses, resulting in persistent infection and secondary immunodeficiency. Recently, the existence of porcine $CD4^+CD25^+$ Tregs has been demonstrated. We investigated the effect of PRRSV on the $CD4^+CD25^+$ Tregs. The $CD4^+CD25^+Foxp3^+$ T lymphocytes in the peripheral blood mononuclear cells (PBMCs) were identified, using the anti-human anti-Foxp3 monoclonal antibody.[1] *In vitro* culture of porcine PBMC in the presence of PRRSV, but not classical swine fever virus, significantly increased the numbers of $Foxp3^+$ lymphocytes, particularly in the $CD4^+CD25^{high}$ subpopulation.[2] The time-course study revealed that PRRSV significantly increased the numbers of viral-specific $CD4^+CD25^{high}Foxp3^+$ subpopulation in the culture starting from 12 h through the end of the observation period. Consistent to the results obtained by flow cytometry, enhanced Foxp3 gene expression was observed in the PBMC cultured with PRRSV in a time-course manner.[3] The presence of monocyte-derived DC in the co-culture significantly enhanced the induction of $CD4^+CD25^+$ $Foxp3^+$ T lymphocytes.[4] The PRRSV-induced $CD4^+CD25^{high}$ T lymphocytes exhibited suppressive activity when co-cultured with PHA-activated, autologous peripheral blood leukocytes, indicating the suppressive activity of the PRRSV-specific Tregs.[5] In addition, PRRSV exposure significantly increased the numbers of PRRSV-specific $CD4^+CD25^+Foxp3^+$ subpopulation in the PBMC of infected pigs at 10 days post-infection. In summary, the results indicated that PRRSV could increase the numbers of viral-specific, inducible regulatory T lymphocytes in the porcine PBMC, both *in vitro* and *in vivo*. The findings suggested the novel immunomodulatory mechanism induced by PRRSV.

Journal of General Virology (2012), **93**, 1236–1246 DOI 10.1099/vir.0.040287-0

Role of porcine reproductive and respiratory syndrome virus nucleocapsid protein in induction of interleukin-10 and regulatory T-lymphocytes (T_{reg})

Piya Wongyanin,[1,2] Supranee Buranapraditkul,[1] Dongwan Yoo,[3] Roongroje Thanawongnuwech,[2] James A. Roth[4] and Sanipa Suradhat[2]

Correspondence
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[2]Faculty of Veterinary Science, Chulalongkorn University, Bangkok 10330, Thailand

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[4]College of Veterinary Medicine, Iowa State University, Ames, IA 50011, USA

Abstract

Porcine reproductive and respiratory syndrome virus (PRRSV) infection induces interleukin (IL)-10 production and increased numbers of PRRSV-specific regulatory T-lymphocytes in infected pigs. In the present study, the roles of the nucleocapsid (N) protein in induction of IL-10 and $CD4^+CD25^+Foxp3^+$ lymphocytes (T_{reg}) were investigated. Transfection of porcine monocyte-derived dendritic cells (MoDCs) and pulmonary alveolar macrophages (PAMs) with a plasmid encoding N protein resulted in significant upregulation of IL-10 gene expression in the gene-transfected cells. Structural conformation, but not nuclear localization, of the expressed N protein was indicated to be essential for the ability to induce IL-10. Furthermore, the presence of recombinant N proteins in cultured PBMCs increased the number of IL-10-producing lymphocytes. Strong induction of IL-10-producing cells and T_{reg} was observed when using N protein-pulsed MoDCs, suggesting an important role of MoDCs in induction of IL-10 and T_{reg} by the N protein. Neutralization of IL-10 by addition of an anti-IL-10 antibody in the culture system resulted in marked reduction of PRRSV-induced T_{reg} in the cultured PBMCs. Together, the data demonstrate the immunomodulatory properties of the PRRSV N protein and the linkage between IL-10 production and development of PRRSV-induced T_{reg}. Our results reveal an immunomodulatory function of the PRRSV N protein that may contribute to the unique immunological outcome observed following PRRSV infection.

Wongyanin et al., Journal of General Virology (2012), 93, 1236–1246.

Writing the conference abstract

* Read the Call for Papers carefully
  * Check that your work is relevant
  * **CHECK THE SUBMISSION DEADLINE and REQUIREMENT**
    * Allow plenty of time to write a draft
    * Allow plenty of time for your supervisor to read and comment on a draft
  * Check the submission guidelines for details of required formatting, content etc
  * If necessary, download the relevant forms

Warm Up exercise

Short communication

A comparison of jump performances of the dog flea, *Ctenocephalides canis* (Curtis, 1826) and the cat flea, *Ctenocephalides felis felis* (Bouché, 1835)

Abstract
Jump performances of *Ctenocephalides canis* and *Ctenocephalides felis felis* have been measured and compared on unfed young imagos. The mean length of the *C. felis felis* jump was 19.9±9.1 cm; minimum jump was 2 cm, and the maximum was one 48 cm. The *C. canis* jump was significantly longer (30.4±9.1 cm; from 3 to 50 cm). For height jump evaluation, grey plastic cylindric tubes measuring 9 cm in diameter were used. Their height was increasing from 1 to 30 cm by 1 cm. Groups of 10 fleas of the same species were deposited on the base of the tube. The number of fleas which succeeded in jumping above the tube was recorded. The mean height jump carried out by 50% of fleas was calculated after linearisation of the curves: it was 15.5 and 13.2 cm for *C. canis* and *C. felis*, respectively. The highest jump was 25 for *C. canis* and 17 cm for *C. felis*.

Author Keywords: *Ctenocephalides canis*; *Ctenocephalides felis felis*; Jump performance

How to write a bad abstract ?

* It's not clear why this work is important
  * There's no theory, or it's not related to other work, or it's not related to other work in an interesting way

* The research is unsound
  * It's not clear what exactly the authors have done
  * The theory is unclear or unsound
  * The work hasn't actually been carried out yet
  * The results aren't statistically significant
  * The conclusions don't follow from the data

An Outbreak of *Brucella melitensis* among Goat Farmers in Thailand, December 2009

A) Three additional cases of human brucellosis were identified from 38 contacts (AR = 10.3%) and one goat tested positive for Brucella. Most of the patients experienced myalgia and arthalgia. The study showed that all cases had history of unprotected exposure to goat carcasses or meat (PR undefined, P-value = 0.006).

B) Sera samples of goats from three farms associated with the fatal case were collected. The fatal case was a 79-year-old male with hypertension, gout and renal calculi. He had been raising goats since 2007 until onset of the symptoms, without any protective equipment. He developed peritonitis and acute renal failure in June 2009, and eventually died from respiratory failure on 9 Sep 2009. Hemoculture of his specimen revealed positive for *Brucella melitensis* a month after his death.

C) On 19 Oct 2009, the Thailand Bureau of Epidemiology received a notification of a confirmed and fatal case of brucellosis in a goat farmer. An investigation was launched to identify the magnitude and risk factors of the disease. A cross-sectional study among persons in contact with goats from the same marketing chain as the fatal case was performed.

D) This outbreak of brucellosis among goat farmers emphasizes the importance of health education for goat farmers and the prompt sharing of data between human and animal health professionals.

E) Goat farming has increased substantially in Thailand as a result of government's agricultural policies in the past.

The correct sequence: ……

Source: Wongphruksasoong et al., OSIR. 2012. 5: 14-21.

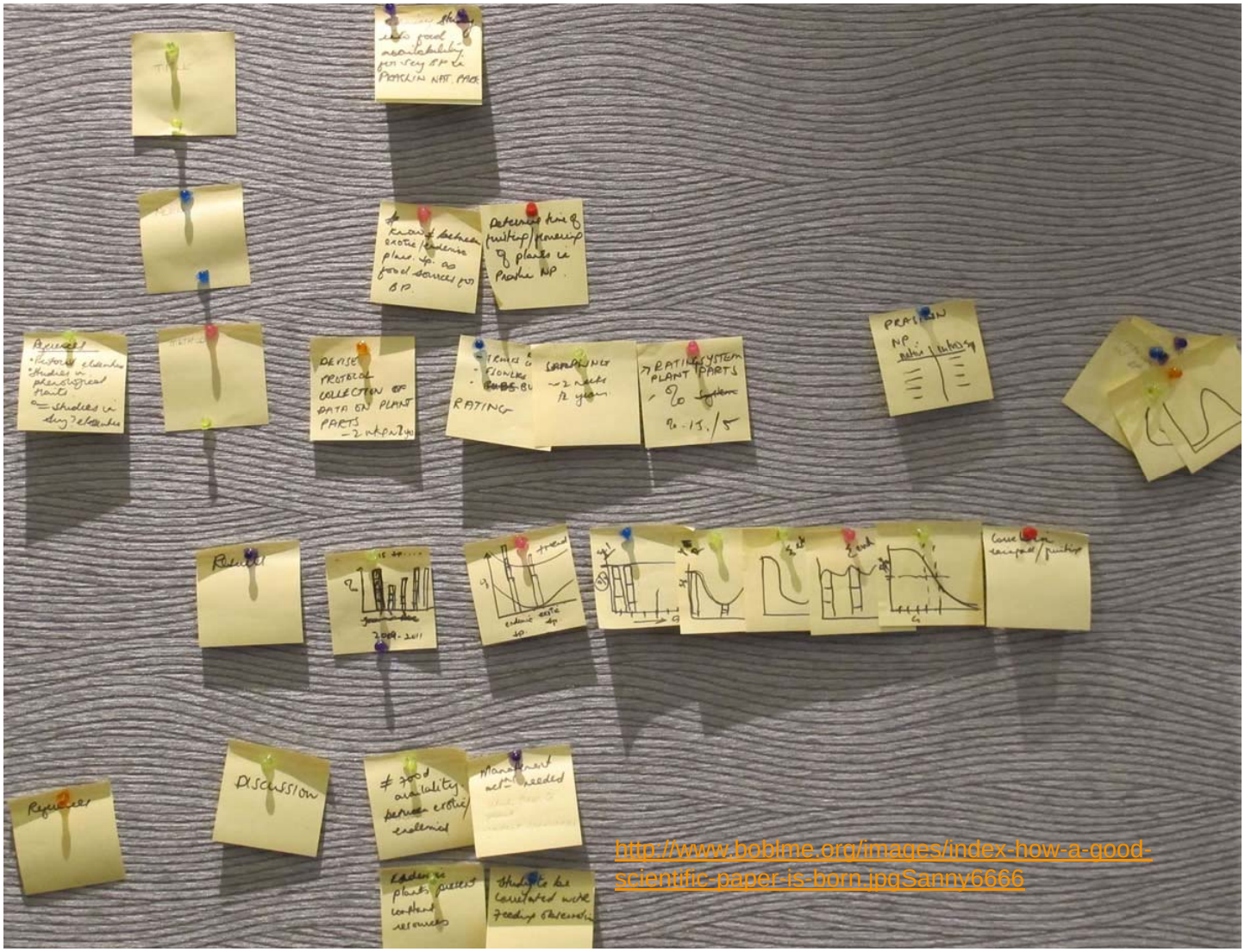
An Outbreak of Brucella melitensis among Goat Farmers in Thailand, December 2009 (Wongphruksasoong et al., OSIR. 2012. 5: 14-21.)

Goat farming has increased substantially in Thailand as a result of government's agricultural policies in the past. On 19 Oct 2009, the Thailand Bureau of Epidemiology received a notification of a confirmed and fatal case of brucellosis in a goat farmer. An investigation was launched to identify the magnitude and risk factors of the disease. A cross-sectional study among persons in contact with goats from the same marketing chain as the fatal case was performed. Sera samples of goats from three farms associated with the fatal case were collected. The fatal case was a 79-year-old male with hypertension, gout and renal calculi. He had been raising goats since 2007 until onset of the symptoms, without any protective equipment. He developed peritonitis and acute renal failure in June 2009, and eventually died from respiratory failure on 9 Sep 2009. Hemoculture of his specimen revealed positive for Brucella melitensis a month after his death. Three additional cases of human brucellosis were identified from 38 contacts (AR = 10.3%) and one goat tested positive for Brucella. Most of the patients experienced myalgia and arthalgia. The study showed that all cases had history of unprotected exposure to goat carcasses or meat (PR undefined, P-value = 0.006). This outbreak of brucellosis among goat farmers emphasizes the importance of health education for goat farmers and the prompt sharing of data between human and animal health professionals.

Key words: brucellosis, goat farming, risk factors, animal and human health.

Exercise 1: Drafting

- Drafting your manuscript in consultation from you primary coach, using a 1-page format abstract
  - Rethinking and planning
  - What is the significance of your work ?
  - How will you structure your persuasive narrative ?
- Class presentation and discussion on the proposed
- You may prepare OSIR abstract as well, if ready



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II. Introduction

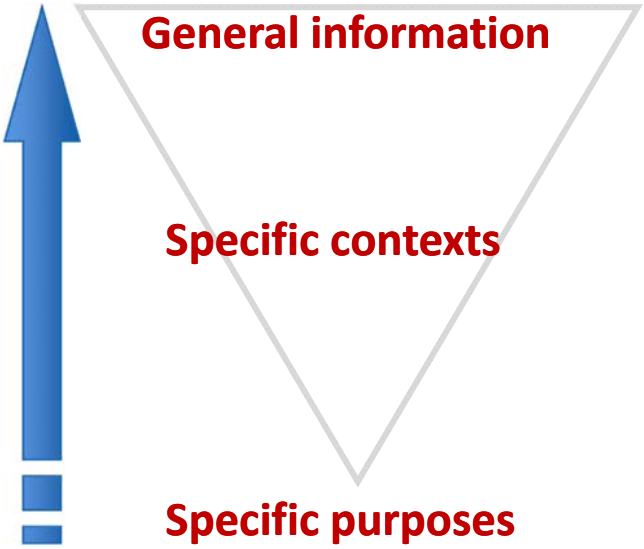
Introduction

* **AIM: TO MOTIVATE YOUR READER !**

* The Introduction justifies the significance of the subject matter and connects your work to previous research.
* To state the purpose of the work (hypothesis, question, problem)
* Briefly explain the rational or approaches

* Tips: Use keyword(s) from the title
* It should conclude with the starting point of the investigation.

The logical funnel



General information

Identifying the subject area of interest

Specific contexts

To summarize what we knew about the specific problem, before you did the exp.
(No discussion please)

Specific purposes

State the hypothesis or purpose of the study
State the rational of the study and what are the scientific merit of the study

More info

* OSIR guidelines
* Supplementary document
* Reference clinic

Exercise: Introduction

III. Materials and Methods

Materials and Methods

* A good place to start
* Should be described in sufficient detail to permit another investigator to repeat your experiments
* Not a step-by-step lab protocols, No date and location
* **Past tense throughout** - the work being reported is done, and was performed in the past.

Logical flow: A chronological order: Material > Protocol > Data analysis

* Subject used, pre-exp. handling and cares (Animals, Cells, Viruses etc.)
* Study site/location (for field study)
* Experimental or sampling design
* Protocol for collecting data (experimental procedures)
  * Give final concentrations, not how much you added !!
* How the data were analyzed: **Beware of illegal/unlicensed software**.

Materials and Methods

- explain *clearly* how you carried out your study in the following *general* structure and organization (details follow below):
  - the **the organism(s) studied** (plant, animal, human, etc.) and, when relevant, their pre-experiment handling and care, and when and where the study was carried out (*only* if location and time are important factors); note that the term "subject" is used ONLY for human studies.
  - if you did a field study, provide a **description of the study site**, including the significant physical and biological features, and the precise location (latitude and longitude, map, etc);
  - the **experimental OR sampling design** (i.e., how the experiment or study was structured. For example, controls, treatments, what variable(s) were measured, how many samples were collected, replication, the final form of the data, etc.);
  - the **protocol for collecting data**, i.e., how the experimental procedures were carried out, and,
  - **how the data were analyzed** (qualitative analyses and/or statistical procedures used to determine significance, data transformations used, what probability was used to decide significance, etc).

Results

- To objectively present your key results, *without* interpretation, in an orderly and logical sequence using both text and illustrative materials (Tables and Figures).
- The results section always begins with text, reporting the key results and referring to your figures and tables as you proceed. Summaries of the statistical analyses may appear either in the text (usually parenthetically) or in the relevant Tables or Figures (in the legend or as footnotes to the Table or Figure).
- The Results section should be organized around Tables and/or Figures that should be sequenced to present your key findings in a logical order. The text of the Results section should be crafted to follow this sequence and highlight the evidence needed to answer the questions/hypotheses you investigated.
- Important negative results should be reported, too. Authors usually write the text of the results section based upon the sequence of Tables and Figures.

Results

* **Let your key results define the article focus.**
* Consider what the key results and present them clearly. Build the Result section of your article around these key results.
* Present your results in such an order that their logic is as easy for an outsider to understand as possible. Should you not have any better way to decide the order of presentation, use the funnel principle; from more general to more specific points.
* Remember to highlight the key results by using visual elements, such as lists, illustrations and tables.

Tips for writing Result: Arrange (assign number, sequence) the draft of each Table, Figure (the 1-2 key results) you want to address in the text portion of the results.

Belt, Mottonen & Harkonen, 2011

Results

* Present your key results in an orderly and logical sequence, without interpretation. The key results must answer your questions !
* Text-based presentation which includes reference to the illustrative materials (Fig., Table)
  * Table legends go above the table
  * Figure legends go below the figure
* Passive voice is OK,…**Past tense** please
* Beware of over using the statistically related words. Statistical tests are usually reported in parenthesis:
  * Beware of using the word: significant(ly), correlated
  * Ex. X is higher than Y (t-test, $p<0.001$).

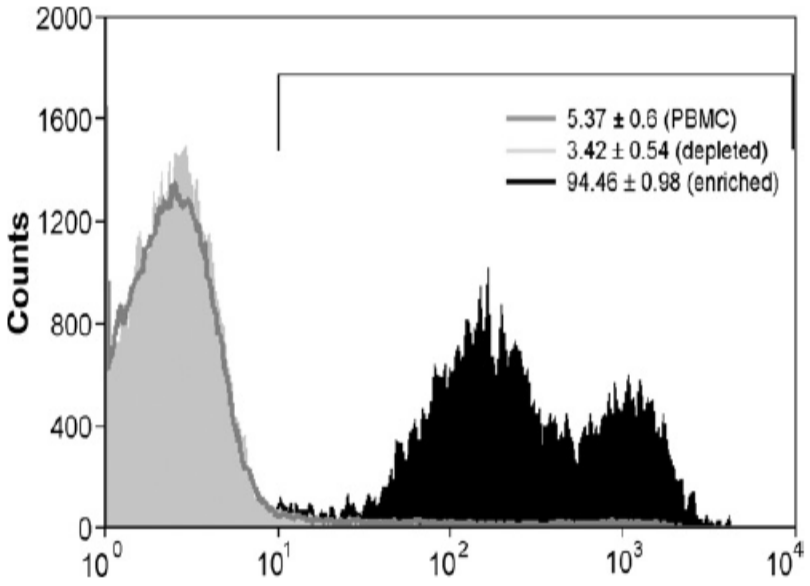


Fig. 3. CD25 expression of the enriched lymphocyte population. Following the *in vitro* culture, the $CD25^+$ subpopulations were enriched by immunomagnetic beads (see Section 2). Histograms show staining patterns of $CD25^+$ lymphocytes in the cultured PBMCs (dark-grey line), the CD25 enriched population (filled black), and the CD25 depleted population (filled grey). Numbers in the histograms indicate percentages (mean ± SEM) of the indicated populations from 3 pigs.

Wongyanin, P., *et al.* Vet. Immunol. Immunopathol. (2009), doi:10.1016/j.vetimm.2009.07.012

Table 1
Percentages of $CD4^+CD25^+Foxp3^+$ cells in the CD25 enriched population[a].

Pig no.	*In vitro* treatment		Ratio[b] (PRRSV/mock)
	Mock lysate	PRRSV	
1	12.79	22.12	1.73
2	13.61	23.63	1.74
3	19.62	29.32	1.49

[a] Porcine PBMCs were cultured in the presence of PRRSV or mock MARC-145 infected lysate for 48 h prior to immunomagnetic cell enrichment and fluorescent labeling (see Section 2).

[b] % CD4+CD25+Foxp3+ cells from the cells cultured with PRRSV/those from the cells cultured with mock infected, MARC-145 cell lysate.

Wongyanin, P., *et al.* Vet. Immunol. Immunopathol. (2009), doi:10.1016/j.vetimm.2009.07.012

How to Write a Paper in Scientific Journal Style and Format

Table of Contents | On-Line Resources Home

Almost Everything You Wanted to Know About Making Tables and Figures

[PDF Version]

Definitions | Getting Organized | Referencing from Text | Abbreviation of "Fig." | Numbering Figures and Tables | Placement in paper | Legends | Legend Postion | Anatomy of a table | Anatomy of a graph | | Compound Figures | Bar Graphs | Frequency Histograms | Scatterplots | Line Graphs |

http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWtablefigs.html#examples

Table 4. Population variation in hatch success (mean percent) of unfertilized eggs for females from populations sampled in1997. N = number of females tested.

<--Table legend

Population	mean (%)	Standard deviation	Range	N
Beaver Creek [T]	7.31	13.95	0-53.16	15
Honey Creek [T]	4.33	7.83	0-25.47	11
Rock Bridge Gans Creek [T]	5.66	13.93	0-77.86	38
Cedar Creek [P]	6.56	9.64	0-46.52	64
Grindstone Creek [P]	8.56	14.77	0-57.32	19
Jacks Fork River [P]	5.28			
Meramec River [P]	5.49			
Little Dixie Lake [L]	7.96			
Little Prairie Lake [L]	6.86			
Rocky Forks Lake [L]	3.31			
Winegar Lake [L]	10.73			
Whetstone Lake [L]	7.36			

<--Column titles

<--Table body

[T] = temporary stream, [P] = permanent streams, [L]

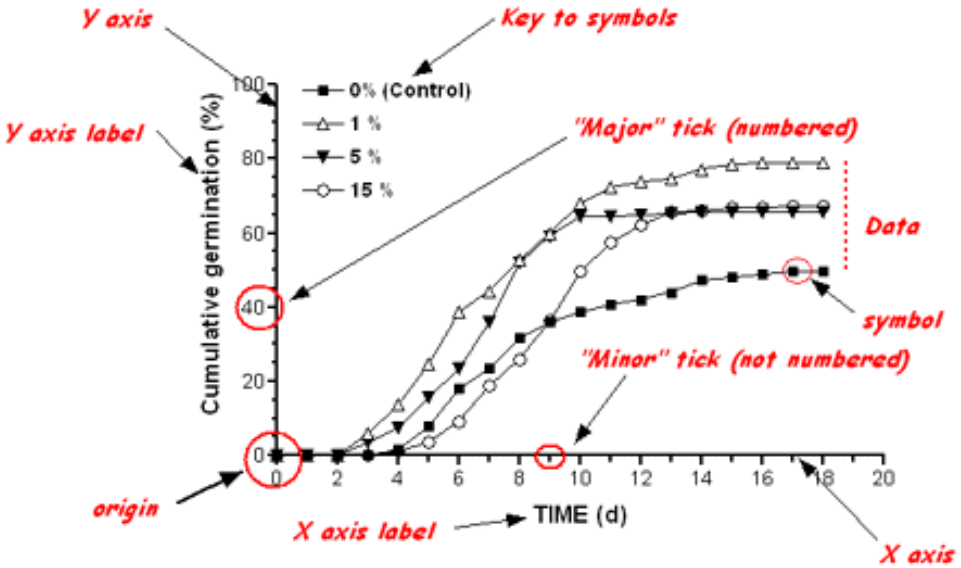


Figure 1. Cumulative germination of *Chenopodium* seeds after pregermination treatment of 2 day soak in NaCl solutions. n = 1 trial per treatment group (100 seeds/trial.)

Results: content

Each set of exp. Should presented as followed;

* Why you did the exp ?
  * Ex. In order to determine whether…..
* How you did it ?
  * Western blot analysis was performed as described in M&M, using antibody AB001 as a probe.
  * Do not repeat M&M
* Presentation of the data (refer to Fig or Table)
* Conclusions from data
  * What were your data telling you ?
* NO interpretation please

Result: Do not

* Repeat each value from Figure or Table (only state the key result or trends that each conveys)
* Present the same data on both Table and Figure
* Report raw data values when they can be summarized as means, percents, etc.

Exercise: M&M and Results

IV. Discussion

Discussion

* To interpret your results in light of what was already known about the subject of investigation, and to explain our new understanding of the problem after taking your results into consideration.

* Always connect to the Introduction by way of the question(s) or hypotheses you posed and the literature you cited,

Discussion

* Not a repeat or rearranged the introduction, discussion tells how your study has moved us forward from the place you left at the end of the introduction.
* Interpret and explore the findings, relate your work to others
* State your conclusion and explain why they are novel and important

* Guide questions to answer;
  * Do your results provide answer to your hypothesis ? How do you interpret the findings?
  * Do your findings agree with what other have shown? If not, why ? (alternative explanation, exp. design, etc.)
  * Given your conclusions, what is our new understanding of the problem ?
  * What should be investigated in the next step ?

Discussion

* Do not restate the result, use “bridge sentences” to relate the result to the interpretation
  * The increased ADG in the treatment group suggested that …
* Do not introduce the new result in this section
* Avoid speculative comments, overclaiming of the observation
* Be organized, logical and **KEEP IT SHORT PLEASE**

Conclusion

* **State the most important outcome of your work**
* Show whether, or to what extent, you have succeeded in addressing the need stated in the Introduction.
* **Do not** simply summarize the points already made in the body — instead, interpret your findings at a higher level of abstraction. Show what your findings mean to readers.
* At the end of your Conclusion, consider including perspectives — that is, an idea of what could or should still be done in relation to the issue addressed in the paper.

Acknowledgements

* For those who significantly help in thinking up, designing, or carry out the work
* For those who provided materials or reagents
* Outside reviewer of the draft manuscript
* Source of funding: ask your supervisor !!

* Brief and never flowery !

References

* Refer to the format of the journals (Guides to author) or graduate school website for the proper style of the references.
* Be consistent, and complete
* Use the management software (EndNote etc.)
* References ≠ Bibliography (not used in scientific papers)

* Avoid extensive self-citation to the exclusion of the work of others in the field.

Appendices

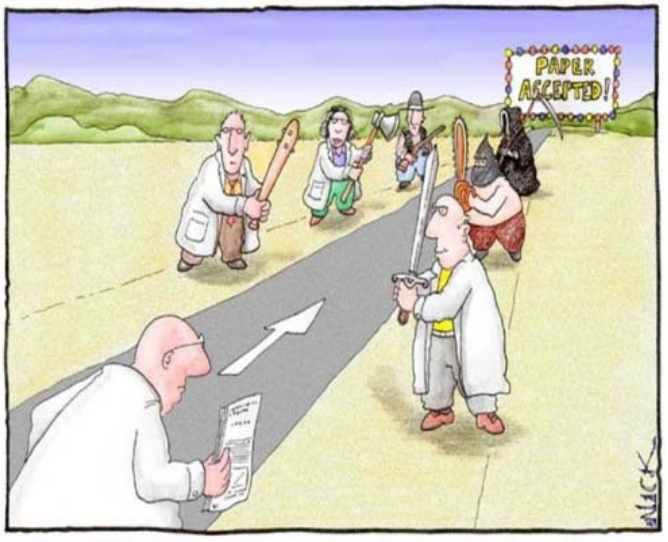
- Non-essential to understanding of the paper
- Optional part (rarely found in the published papers)
  - Raw data
  - Maps
  - Extra photographs
  - Explanation of formulas
  - Etc.

Other tips

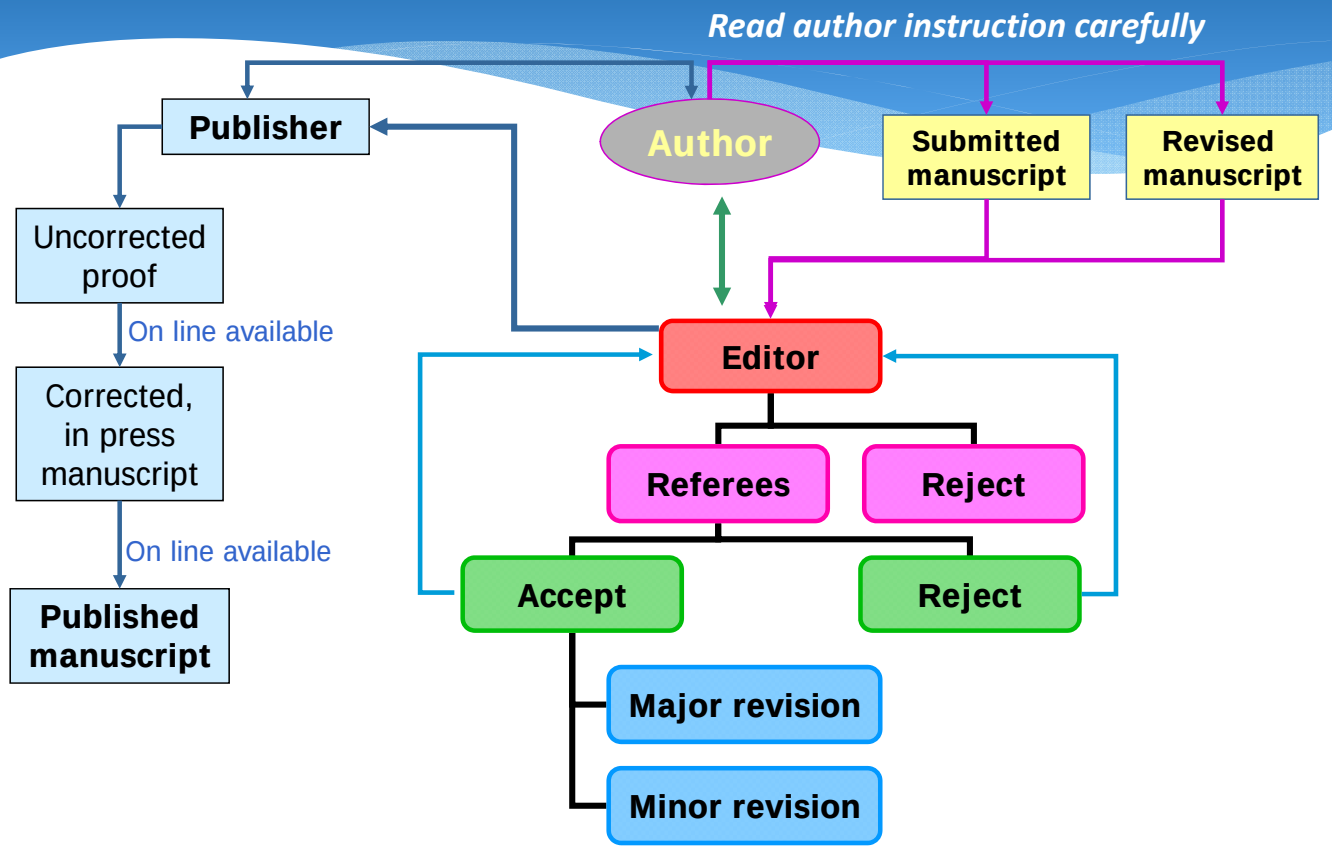
- Write for an extended period of time
- Take your time: once you finish the first draft, leave it for a while. When come back, look for
  - Flaws in logic/sequence
  - Misquoted or misremembered facts
  - Excess verbiage
- Always polish your paper
- Select a fitting target journal, and go through all the journal's requirements

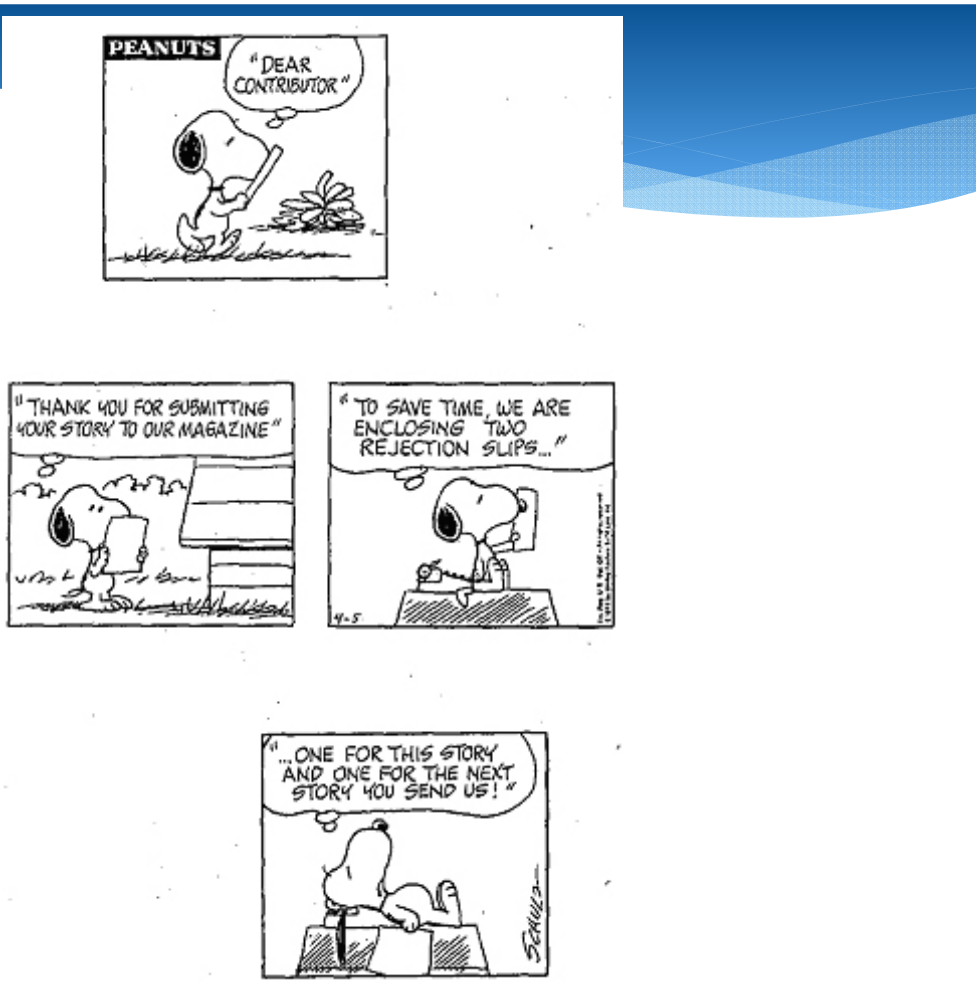
What reviewers are looking for…

- Well justified research questions
- Good science (rational and methodology)
- Intellectual logical continuum or a plot-line
- Well written and comprehensible result and discussion
- if the stated problem/s and research questions are actually answered



Publication process…be careful, it takes longer than you think





http://www.sccs-cam.org/Cartoons/snoopy.jpg

Exercise: Discussion