มหาวิทยาลัยมหิดล ปัญญาของแผ่นดิน
Mahidol University *Wisdom of the Land*

การเขียนบทความวิจัย เพื่อให้ได้ตีพิมพ์ในวารสารระดับนานาชาติ

ประเวช อรรจวัฒนวงศ์
ภาควิชาจุลชีววิทยา
คณะวิทยาศาสตร์
มหาวิทยาลัยมหิดล

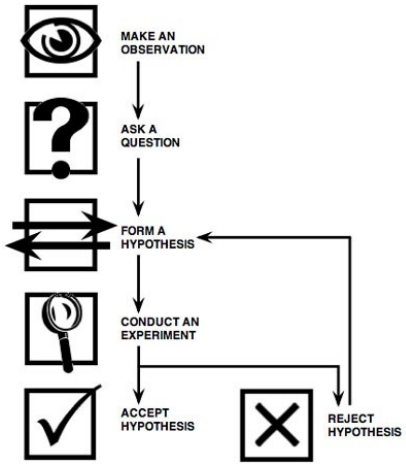
Introducing Myself

- Dream to study Communication Art, but came to Science (in the real life)
- B.Sc.(Microbiology) & M.Sc.(Microbiology)
- worked at BIOTEC, NSTDA
- went to York, UK and moved to Uppsala, Sweden
- (favorite hobby) editor of THAI Bioinformatics e-magazine
- committee in the bioinformatics section, Genetic Society of Thailand
- review a number of grants & manuscripts
- Department of Microbiology, Faculty of Science, Mahidol University

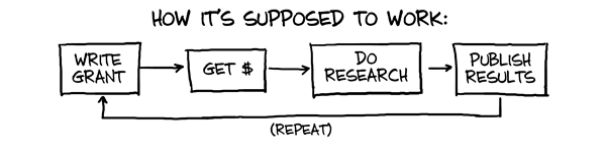
General Process of Academic Research

- What kind of research topic should I do?
  find the problems, state the research question
- How do I get the money to do my research?
  proposal preparation
- Can I do my research alone?
- What should I do if I have no equipment for my research?
  facilities, connection, assistant
- I have no idea to analyze my data in a proper way.
- I cannot write a paper and my boss keeps forcing me to do so.
  summary, report, publication

To Archive the Goal, You Need Scientific Method



THE GRANT CYCLE



JORGE CHAM © 2011

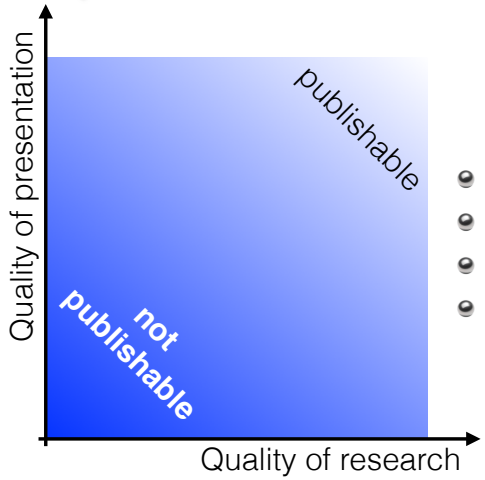
WWW.PHDCOMICS.COM

Networks and Collaborators

- Know who the key people are in your field: *meet and talk with them* (scientists are collegial — make use of this!)
- Develop collaborations with key people who you develop a good rapport with: *start small and grow*
- Identify areas of weakness that need to be addressed and consult on the best ways to address them

Ref: http://www.jbr-pub.org/UploadFile/Nature%20Writing%20Workshop.pdf

Achieve the Goal



- design the focus of manuscript
- choose the readers
- main message
- is research novel/original?

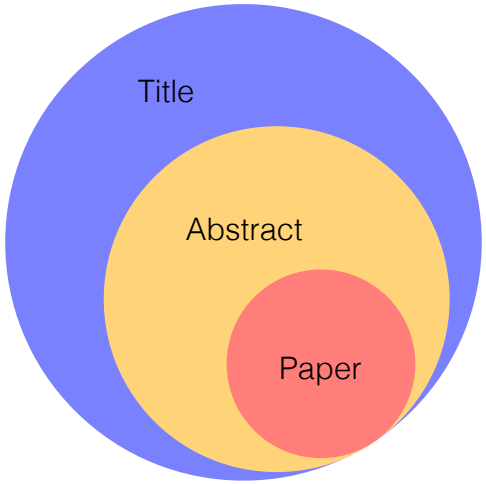
Ref: http://www.jbr-pub.org/UploadFile/Nature%20Writing%20Workshop.pdf

What Makes a Great Paper?

You need to tell stories.

Ref: http://www.jbr-pub.org/UploadFile/Nature%20Writing%20Workshop.pdf

Academic Publication



mini–workshop

abstract

Impact Factor

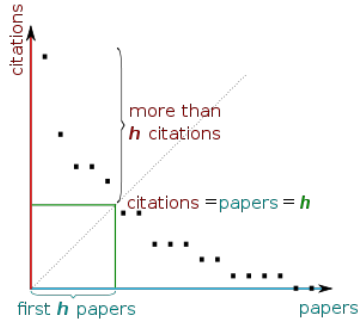
Eugene Garfield, 1925

The **impact factor** (**IF**) of an academic journal is a measure reflecting the average number of citations to recent articles published in that journal.

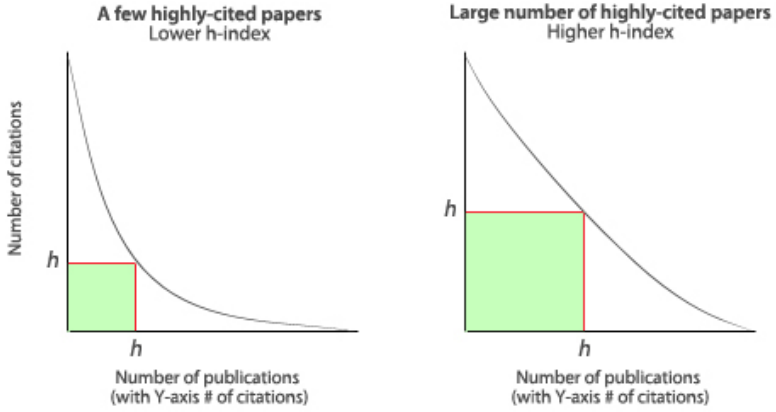
$$\text{2008 Impact Factor} = \frac{\text{number of all items published in 2006–2007 were cited during 2008}}{\text{total number of "citable items" published by that journal in 2006–2007}}$$

H-index—*index of your impact*

The **H-index** an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications.



Impact of Your Index



Example 1

Published: 11-December-2015

Nucleic acid aptamers are novel molecular recognition tools that offer many advantages compared to their antibody and peptide-based counterparts. However, challenges associated with in vitro selection, characterization, and validation have limited their widespread use in the fields of diagnostics and therapeutics. Here, we extracted detailed information about aptamer selection experiments housed in the Aptamer Base, spanning over two decades, to perform the first parameter analysis of conditions used to identify and isolate aptamers de novo. We used information from 492 published SELEX experiments and studied the relationships between the nucleic acid library, target choice, selection methods, experimental conditions, and the affinity of the resulting aptamer candidates. Our findings highlight that the choice of target and selection template made the largest and most significant impact on the success of a de novo aptamer selection. Our results further emphasize the need for improved documentation and more thorough experimentation of SELEX criteria to determine their correlation with SELEX success.

J Mol Evol (2015) 81:150–161
DOI 10.1007/s00239-015-9708-6

CrossMark

ORIGINAL ARTICLE

Analysis of In Vitro Aptamer Selection Parameters

Maureen McKeague[1] · Erin M. McConnell[1] · Jose Cruz-Toledo[2] · Elyse D. Bernard[3] · Amanda Pach[1] · Emily Mastronardi[1] · Xueru Zhang[1] · Michael Beking[1] · Tariq Francis[1] · Amanda Giamberardino[1] · Ashley Cabecinha[1] · Annamaria Ruscito[1] · Rocio Aranda-Rodriguez[3] · Michel Dumontier[2,4] · Maria C. DeRosa[1]

2014 IF = 1.680

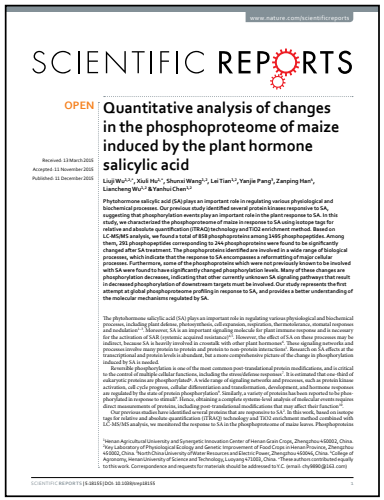
Example 2

Published: 11-December-2015

Phytohormone salicylic acid (SA) plays an important role in regulating various physiological and biochemical processes. Our previous study identified several protein kinases responsive to SA, suggesting that phosphorylation events play an important role in the plant response to SA. In this study, we characterized the phosphoproteome of maize in response to SA using isotope tags for relative and absolute quantification (iTRAQ) technology and TiO2 enrichment method. Based on LC-MS/MS analysis, we found a total of 858 phosphoproteins among 1495 phosphopeptides. Among them, 291 phosphopeptides corresponding to 244 phosphoproteins were found to be significantly changed after SA treatment. The phosphoproteins identified are involved in a wide range of biological processes, which indicate that the response to SA encompasses a reformatting of major cellular processes. Furthermore, some of the phosphoproteins which were not previously known to be involved with SA were found to have significantly changed phosphorylation levels. Many of these changes are phosphorylation decreases, indicating that other currently unknown SA signaling pathways that result in decreased phosphorylation of downstream targets must be involved. Our study represents the first attempt at global phosphoproteome profiling in response to SA, and provides a better understanding of the molecular mechanisms regulated by SA.

Example 2

Published: 11-December-2015



SCIENTIFIC REPORTS

OPEN

Quantitative analysis of changes in the phosphoproteome of maize induced by the plant hormone salicylic acid

Luqi Wu[1,2,*], Xiuli Hu[1,*], Shumei Wang[1,2], Lei Tian[1,2], Yanjie Pang[1], Zanping Han[3], Liancheng Wu[1,2] & Yanhui Chen[1,2]

2014 IF = 5.578

Example 3

Published: 8-December-2015

Hepatitis A virus (HAV) is an ancient and ubiquitous human pathogen recovered previously only from primates. The sole species of the genus Hepatovirus, existing in both enveloped and nonenveloped forms, and with a capsid structure intermediate between that of insect viruses and mammalian picornaviruses, HAV is enigmatic in its origins. We conducted a targeted search for hepatoviruses in 15,987 specimens collected from 209 small mammal species globally and discovered highly diversified viruses in bats, rodents, hedgehogs, and shrews, which by pairwise sequence distance comprise 13 novel Hepatovirus species. Near-complete genomes from nine of these species show conservation of unique hepatovirus features, including predicted internal ribosome entry site structure, a truncated VP4 capsid protein lacking N-terminal myristoylation, a carboxyl-terminal pX extension of VP1, VP2 late domains involved in membrane envelopment, and a cis-acting replication element within the 3Dpol sequence. Antibodies in some bat sera immunoprecipitated and neutralized human HAV, suggesting conservation of critical antigenic determinants. Limited phylogenetic cosegregation among hepatoviruses and their hosts and recombination patterns are indicative of major hepatovirus host shifts in the past. Ancestral state reconstructions suggest a Hepatovirus origin in small insectivorous mammals and a rodent origin of human HAV. Patterns of infection in small mammals mimicked those of human HAV in hepatotropism, fecal shedding, acute nature, and extinction of the virus in a closed host population. The evolutionary conservation of hepatovirus structure and pathogenesis provide novel insight into the origins of HAV and highlight the utility of analyzing animal reservoirs for risk assessment of emerging viruses.

Example 3

Published: 8-December-2015

Evolutionary origins of hepatitis A virus in small mammals

Jan Felix Drexler[a,b,1], Victor M. Corman[a,b], Alexander N. Lukashev[c], Judith M. A. van den Brand[d], Anatoly P. Gmyl[e,f], Sebastian Brünink[a], Andrea Rasche[a], Nicole Seggewiß[g], Hui Feng[h], Lonneke M. Leijten[d], Peter Vallo[i], Thijs Kuiken[d], Andreas Dotzauer[g], Rainer G. Ulrich[j], Stanley M. Lemon[h], Christian Drosten[a,b], and the Hepatovirus Ecology Consortium[2]

PNAS

2014 IF = 9.674

Example 4

Published in October-2015

2014 IF = 0.371

The production of high level *β*-xylosidase with *β*-xylanase by mixed culture was investigated by using low cost rice straw as a substrate. Among 180 Gram's positive spore forming bacteria, *Bacillus amyloliquefaciens* DMKUB24 was selected for its highest production of *β*-xylosidase, 7.9 U/mL, with 2.3 U/mL of *β*-xylanase activity, whereas *B. pumilus* DMKUB39 was selected for its highest production of *β*-xylanase, 10.7 U/mL, with 0.6 U/mL of *β*-xylosidase activity. However, *β*-xylosidase and *β*-xylanase produced by the mixed cultures of strains DMKUB24 and DMKUB39 were 9.8 U/mL and 11.3 U/mL, respectively, which were higher than that of produced by monoculture of each strain. To enhance the production of high level of *β*-xylosidase with *β*-xylanase, the mixed culture strains were therefore employed, using the Plackett-Burman (PB) experimental design to screen important parameters influencing the co production of *β*-xylosidase and *β*-xylanase. NaOH-treated rice straw, peptone, $MgSO_4 \times 7H_2O$ and initial pH medium were the main factors influencing the production of mixed enzymes. Central composite design (CCD) and response surface methodology (RSM) were applied to determine the optimal concentration of each significant variable. The maximal *β*-xylosidase activity of 46.1 U/mL with 24.0 U/mL of *β*-xylanase activity in a 1L stirrer fermentor at 48 h cultivation was obtained from the optimized medium of *β*-xylosidase production, while the maximal *β*-xylanase activity of 49.3 U/mL with 36.0 U/mL of *β*-xylosidase activities was also achieved from the optimized medium of *β*-xylanase production.

Good Abstract—*easy comparison*

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2014 IF = 9.674

Paper Body

- introduction
- materials & methods (methodology)
- results + supplementary data (tests, figures or tables)
- discussion
- conclusion
- acknowledgement
- references

Introduction—*tips*

- very in length, depends on journal and author
- generally, less than 2 pages (of a normal Word document in 12pt, single space)
- simply to introduce the subject in hand, question and the idea being tested
- describe approach in the paper for unfamiliar reader
- very briefly mention the conclusion of the paper

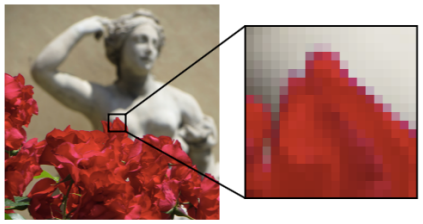
Materials and Methods—*tips*

- cover only what you did & how you did it
- de not include details of published protocol
- include what data you collected and how

Results—*tips*

- begin each paragraph with an opening sentence that tells the reader what question is being tested in the experiments described in that paragraph
- any critical result that include multiple data points should be shown in tables or figures
- results with only a few numbers or simple conclusion should be described in text instead of table or figure

Figure



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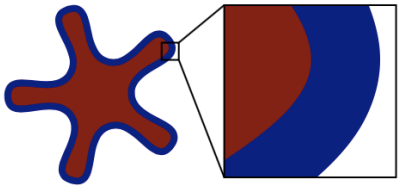

☑ vector

Discussion—*tips*

- do not simply restate the results
- explain your conclusions and interpretations of the results section
- how did your results compare with the expected results?
- what further predictions can be gleaned from the results?

Discussion—*tips*

- do not simply restate the results
- explain your conclusions and interpretations of the results section
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- what further predictions can be gleaned from the results?

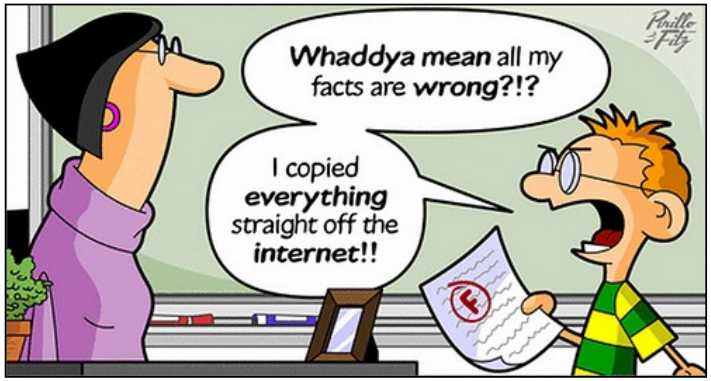
Steps to Organizing Your Manuscript—*tips*

- prepare the **figures** and **tables**
- write the **Methods**
- write up the **Results**
- write the **Discussion** (finalize the Results and Discussion before writing the introduction)
- write a clear **Conclusion**
- write **introduction**
- write the **Abstract**
- compose a concise and descriptive **Title**
- select **Keywords** for indexing
- write the **Acknowledgements**
- write up the **References**

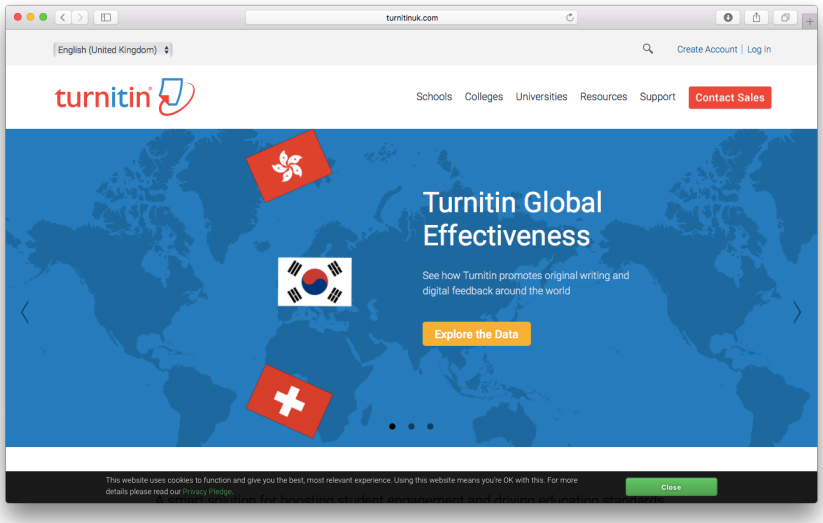
Ref: https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously

Plagiarism and Paraphrase

Avoid Plagiarism!!!



Turn-it-in



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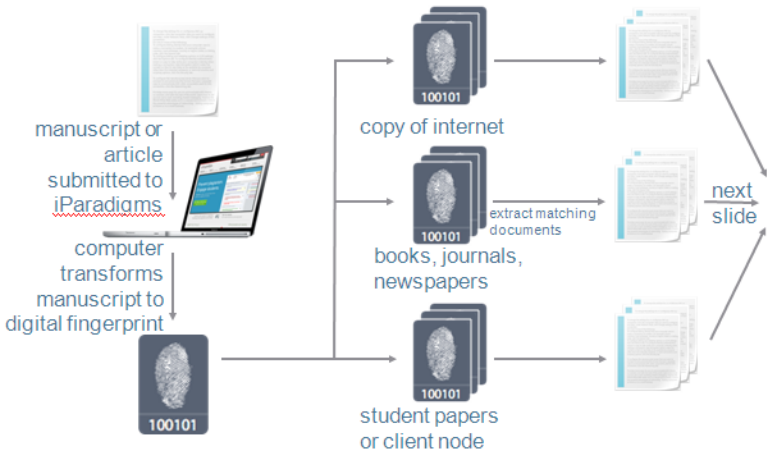


Turn-it-in

Matching passages from 12+ billion Internet web pages: updated at a rate of 60-240 million pages/day

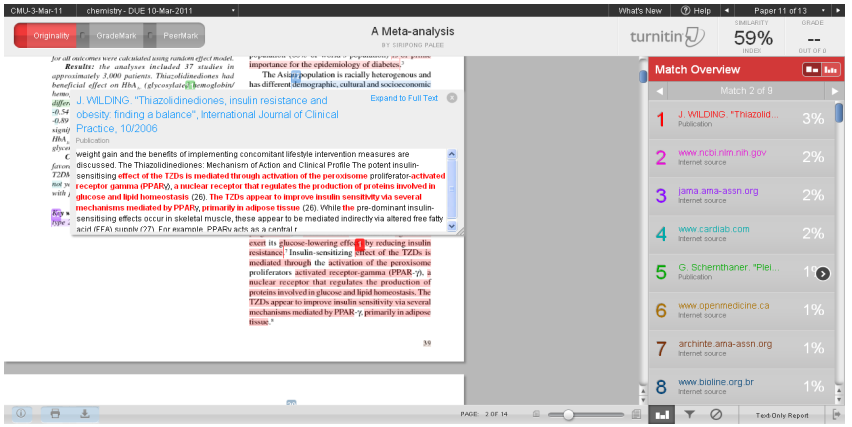
Matching passages from millions of Books, Journals, Newspapers

Matching passages from millions of Student Papers or Client Node

Matching passages compared to original manuscript/article

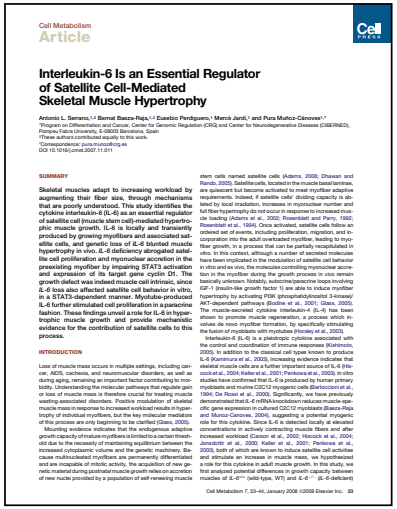
Create Originality Report
Entire process: seconds-minutes

Document Viewer



PubPeer.com

Example 1



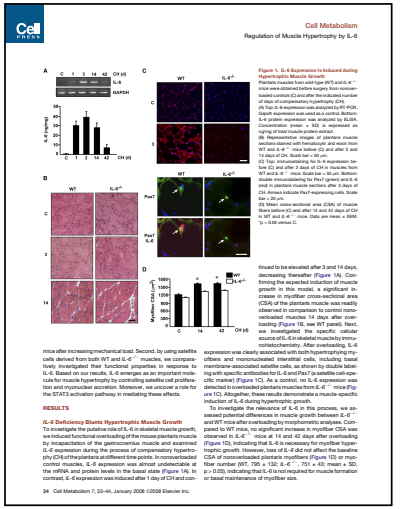
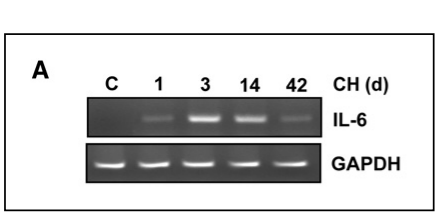
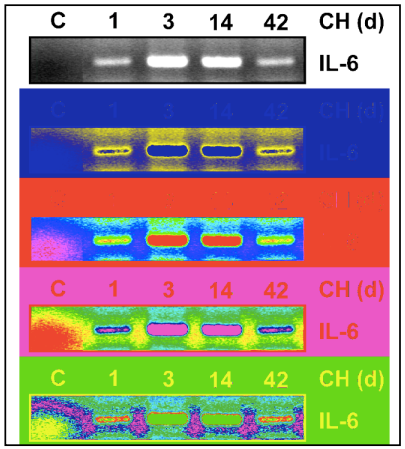


Figure 1A





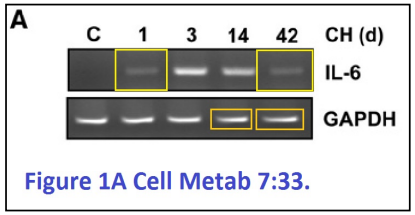


Figure 1A Cell Metab 7:33.

Example 2

Hijacking of Host Calreticulin Is Required for the White Spot Syndrome Virus Replication Cycle

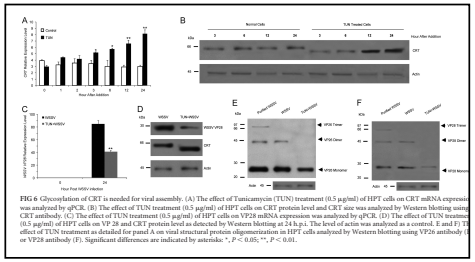
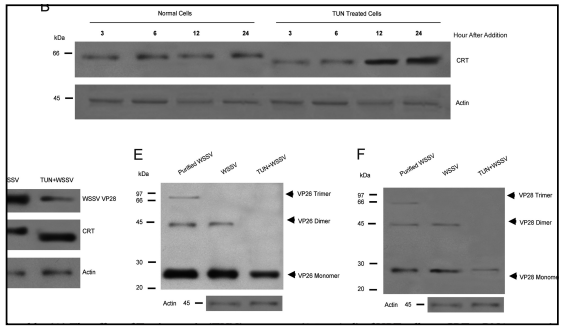
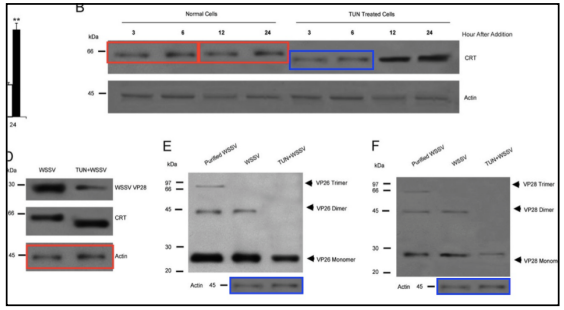


FIG 6 Glycosylation of CRT is needed for viral assembly. (A) The effect of Tunicamycin (TUN) treatment (0.5 μg/ml) of HPT cells on CRT mRNA expression was analyzed by qPCR. (B) The effect of TUN treatment (0.5 μg/ml) of HPT cells on CRT protein level and CRT size was analyzed by Western blotting using CRT antibody. (C) The effect of TUN treatment (0.5 μg/ml) of HPT cells on VP28 mRNA expression was analyzed by qPCR. (D) The effect of TUN treatment (0.5 μg/ml) of HPT cells on VP 28 and CRT protein level as detected by Western blotting at 24 h.p.i. The level of actin was analyzed as a control. E and F) The effect of TUN treatment as detailed for panel A on viral structural protein oligomerization in HPT cells analyzed by Western blotting using VP26 antibody (E) or VP28 antibody (F). Significant differences are indicated by asterisks: *, $P < 0.05$; **, $P < 0.01$.



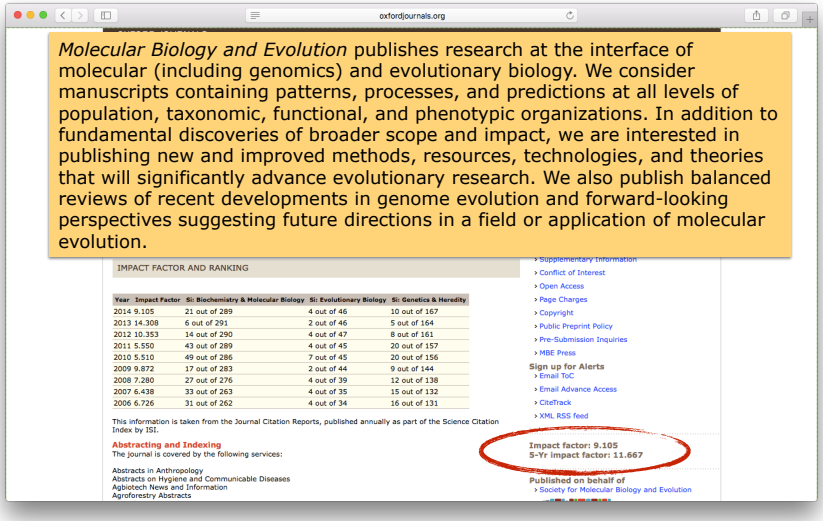


5 Tips for Publishing Your First Academic Article

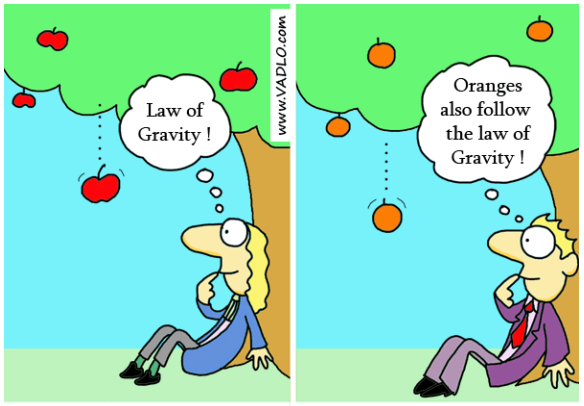
- target an appropriate journal
- say something new
- edit your work extensively
- reference strategically
- make it difficult for reviewers to say “NO”

Ref: http://www.studentpulse.com/blog/posts/51/5-tips-for-publishing-your-first-academic-article/

Target an Appropriate Journal

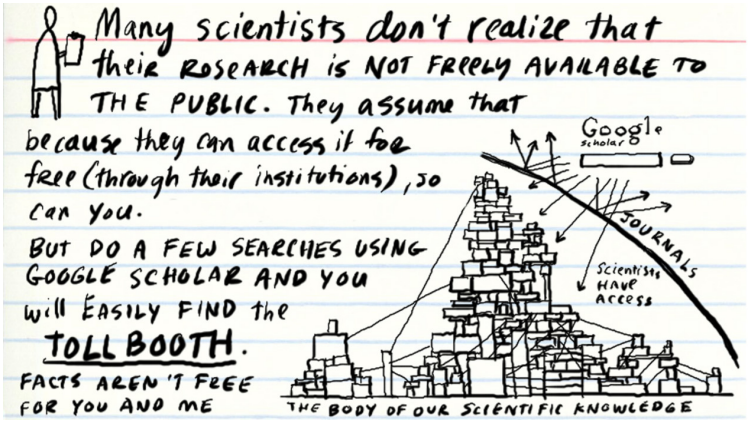


Difference between High & Low Impact Papers



High Impact Paper Low Impact Paper

Not all Journals Are Free



Open Access Journal

Open access (OA) refers to online research outputs that are free of all restrictions on access (e.g., access tolls) and free of many restrictions on use (e.g. certain copyright and license restrictions)

PLOS PUBLIC LIBRARY of SCIENCE
www.plos.org

PLOS Biology	$2,900 USD
PLOS Medicine	$2,900 USD
PLOS Computational Biology	$2,250 USD
PLOS Genetics	$2,250 USD
PLOS Pathogens	$2,250 USD
PLOS Neglected Tropical Diseases	$2,250 USD
PLOS ONE	$1,495 USD (Effective October 1, 2015 10:00 AM)

5 Tips for Publishing Your First Academic Article

- target an appropriate journal
- say something new
- edit your work extensively
- reference strategically
- make it difficult for reviewers to say “NO”

Ref: http://www.studentpulse.com/blog/posts/51/5-tips-for-publishing-your-first-academic-article/

Say Something New

If I have seen further than others,
it is by standing upon the
shoulders of giants.

Sir Isaac Newton

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Editing Your Work

- **Fix Confusing Passages**—*simpler is better*
  - *be specific*
  - *do not ramble*
  - *choose simple words*
  - *write short sentences*
  - *keep paragraphs short*
  - *eliminate fluff words—very, little or rather*
  - *do not be redundant or repeat yourself*
- **Avoid the Passive Voice**—*use active voice instead*

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Tips for picking the right references

- go to the original source
- reference articles that are widely cited
- cite articles from the journal to which you are submitting

- format of reference
- check all spelling
- software for automated manipulation—*EndNote, Papers*

5 Tips for Publishing Your First Academic Article

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อาจารย์(นักวิจัย)สมัยนี้ต้องรู้อะไร

- วิชาชีพ–วิทยาศาสตร์/สังคมศาสตร์
- คณิตศาสตร์ (สถิติ)
- คอมพิวเตอร์
- ภาษาอังกฤษ

TIPS 'n' TRICKS

20 เทคนิค..ทำวิจัยอะไรก็ดีไปหมด


ทานอาหารที่มีประโยชน์
EAT **POLYUNSATURATED** FATTY ACID


SLEEP
พักผ่อนให้เพียงพอ

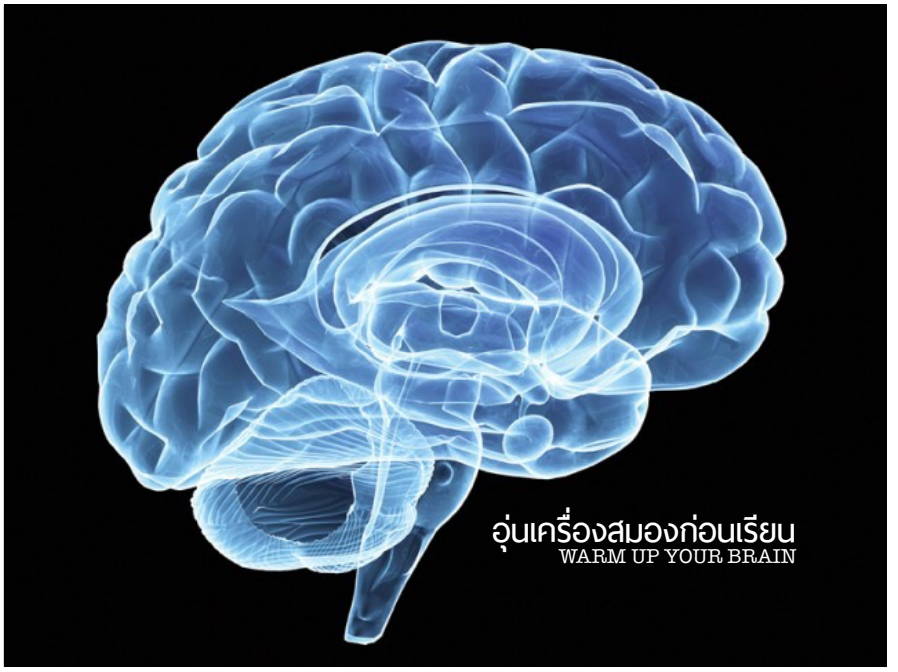

ดื่มน้ำสะอาด
DRINK WATER


มีกิจกรรมยามว่าง
TAKE UP A HOBBY


จัดตารางให้ชีวิต
SET AN AGENDA


หัวเราะ
LAUGH


หัดตั้งคำถาม
ASK THE QUESTION


อุ่นเครื่องสมองก่อนเรียน
WARM UP YOUR BRAIN


หาเพื่อนร่วมทาง
FIND A FRIEND


สร้างบรรยากาศ
SURROUNDING


ทำให้ดี...ทีละอย่าง
DO ONE THING AT A TIME


อย่ากลัวความผิดหวัง
DON'T BE AFRAID TO FAIL


รู้จักทดสอบตัวเอง
TEST YOURSELF

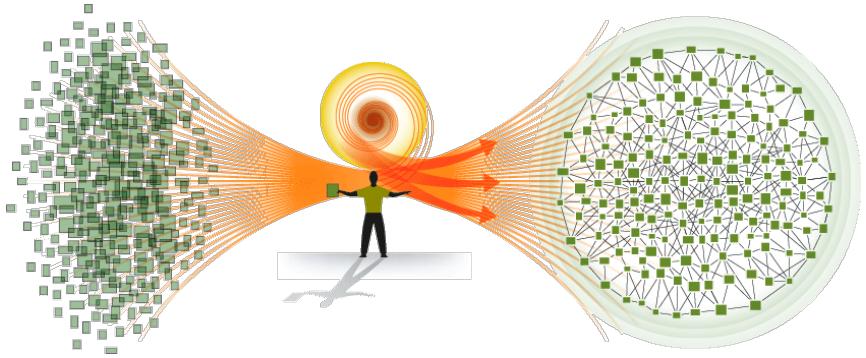

บันทึก ให้เป็น..เน้นที่จุดสำคัญ
ALWAYS BE COMPRESSING (ABC)


รู้จักวิธีการนำความรู้ไปใช้
Conditionalize the Information


ใช้สื่ออย่างชาญฉลาด
USE MULTIPLE MEDIA

เชื่อมโยงความรู้

Connect with Existing Knowledge



Thank you for attending

How to make a good academic publication and get publish in an academic journal

Burapha University Sakaeo Campus

December 17th, 2015