

- How to success
- How to do research
- How to write

How to success

Three rules

ตรงต่อเวลา

อิทธิบาท ๔

รู้คุณค่าของงาน

# การทำงาน

พระบรมราโชวาท

พระราชทานเนื่องใน

โอกาสวันข้าราชการพลเรือน

1 เมษายน 2532

"...เมื่อทำงาน ต้องมุ่งถึง

จุดมุ่งหมาย ที่แท้จริงของงาน

งานจึงจะสำเร็จ

๑.ได้รับประโยชน์ครบถ้วน

ทั้งประโยชน์ของงาน

และประโยชน์ของผู้ทำ..."

# Impact Factor vs True Impact

## Why Impact Factor?

Number is easier to understand than Science.  
For example: signal transduction

# What is true impact study?

- Interesting - Cloning
- Knowledge - Signal Transduction
- Application - A Green Fluorescent

**New**

Broad **vs** Specific Condition

Living organism – Eukaryote – Human – Race – Regional

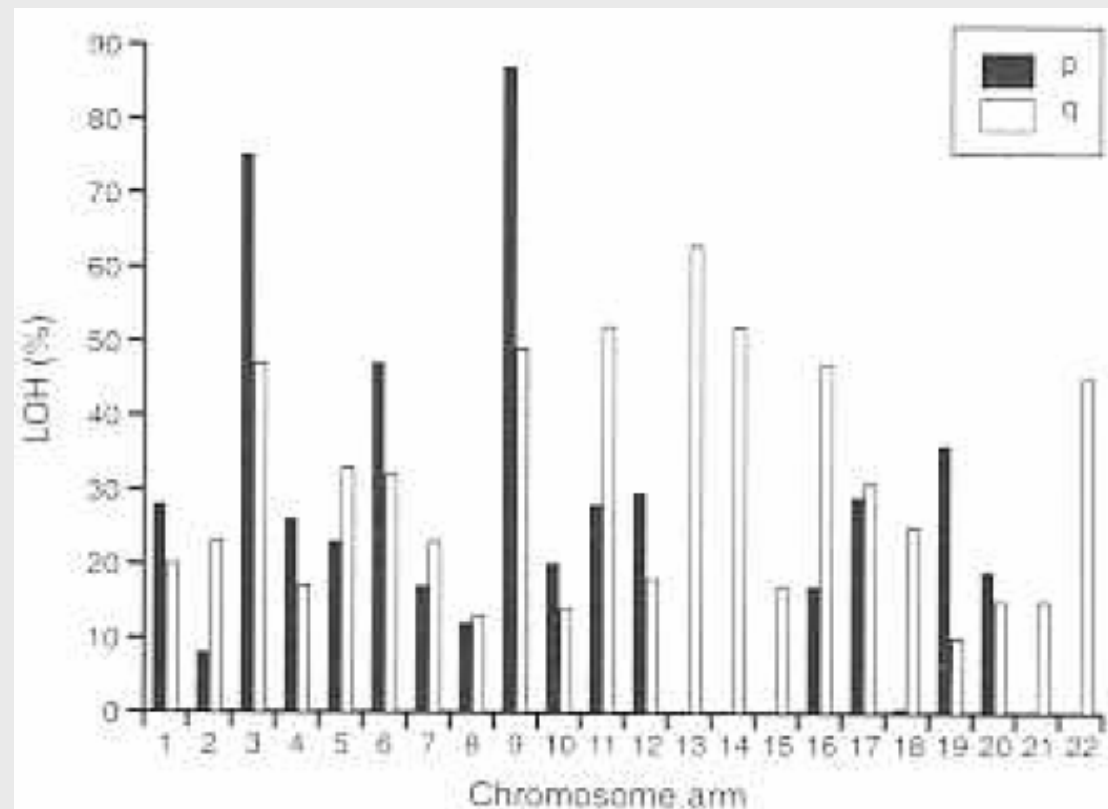
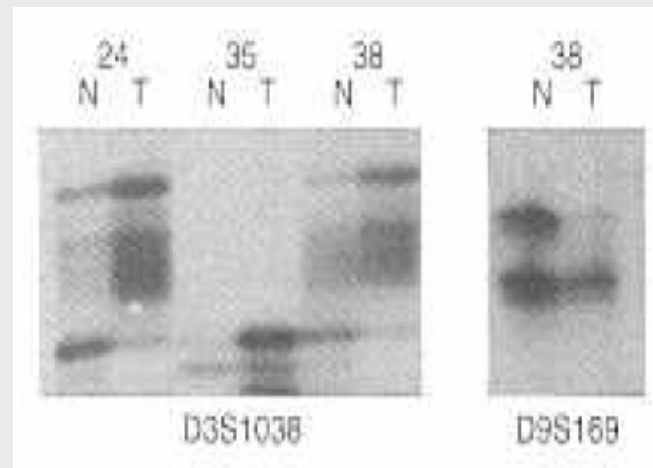
- p53 mutation in cancer
- p53 mutation in breast cancer
- p53 mutation in breast cancer in Thailand

# How to conduct research

- ตามหลังผู้ใหญ่ (อย่างสร้างสรรค์)  
หมาไม่กัด

**The main article of my first TRF grant.**

**Mutirangura A, Tanunyutthawongese C, Pornthanakasem W,  
Kerekhanjanarong V, Sriuranpong V, Yenrudi S, et al.  
Genomic alterations in nasopharyngeal carcinoma: loss of  
heterozygosity and Epstein-Barr virus infection.  
Br J Cancer. 1997;76(6):770-6.**

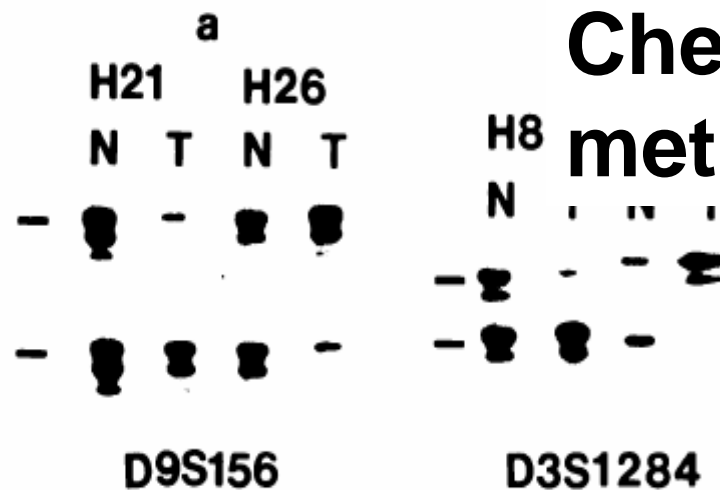




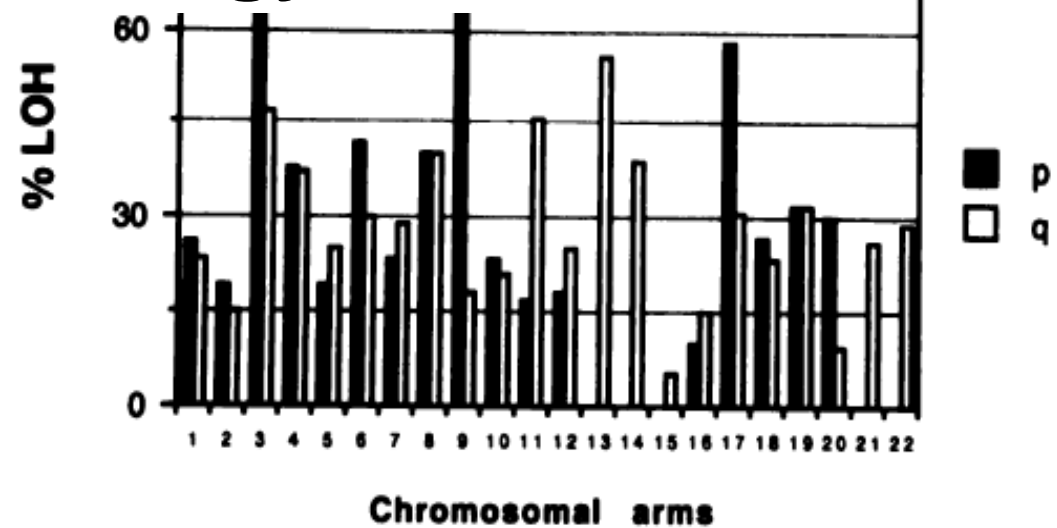
## Allelotype of Head and Neck Squamous Cell Carcinoma<sup>1</sup>

Homaira Nawroz, Peter van der Riet, Ralph H. Hruban, Wayne Koch, J. Michael Ruppert, and David Sidransky<sup>2</sup>

*Department of Otolaryngology, Division of Head and Neck Cancer Research, Johns Hopkins University, Baltimore, Maryland 21205-2196 [H. N., P. V. D. R., W. K., J. M. R., D. S.], and Department of Pathology, Johns Hopkins Hospital, Baltimore, Maryland 21205 [R. H. H.]*



Check and set up  
methodology



# How to conduct research

- จັบแพะชนแกะ

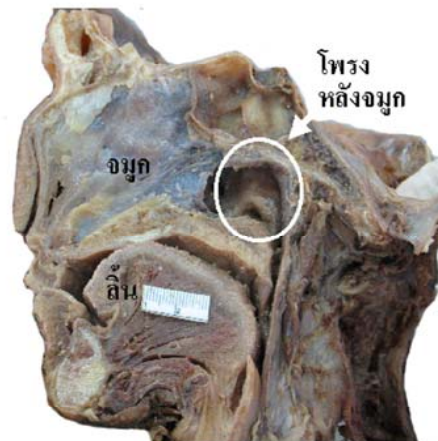
## การค้นพบโดยสมมุติฐาน

ค้นพบ DNA ของไวรัสอีบีวี ในน้ำเหลืองของผู้ป่วยมะเร็งโพรงหลังจมูก

1. ไวรัส อีบีวี ใน มะเร็งโพรงหลังจมูก
2. DNA ของมะเร็ง ใน น้ำเหลือง (serum or plasma)

### มะเร็งโพรงหลังจมูก

ตำแหน่ง

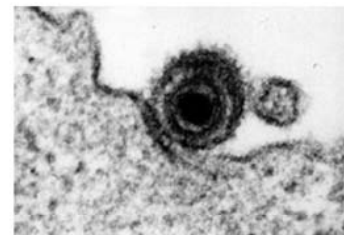


สาเหตุ

พบบ่อยในคนจีน

พบปานกลางในคนไทย

พบน้อยในฝรั่ง



ไวรัสเอพสไตน์บาร์

# **Tumor-specific DNA in serum/plasma of cancer patients**

**Anker P et al Gastroenterology** 1997, 112:1114-1120

**Chen XQ et al Nat Med** 1996, 2(9):1033-5

**Nawroz H et al Nat Med** 1996, 2(9):1035-7



## **Epstein-Barr viral DNA in serum/plasma of nasopharyngeal cancer patients**

**Mutirangura et al Clin Cancer Research** 1998, 4:665-669



## **Quantitative EBV DNA in plasma of NPC patients as a tumor marker.**

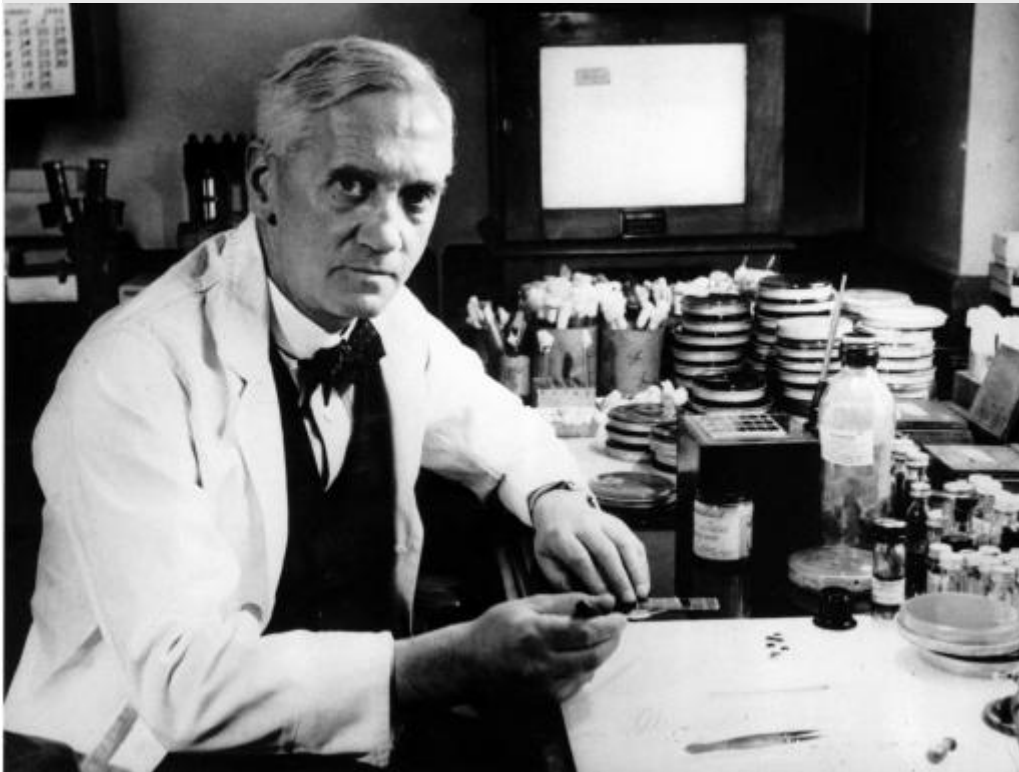
**Lo YM et al, Cancer Res.** 1999 **Nov** 1;59(21):5452-5.

**Cancer Res.** 1999 **Mar** 15;59(6):1188-91.

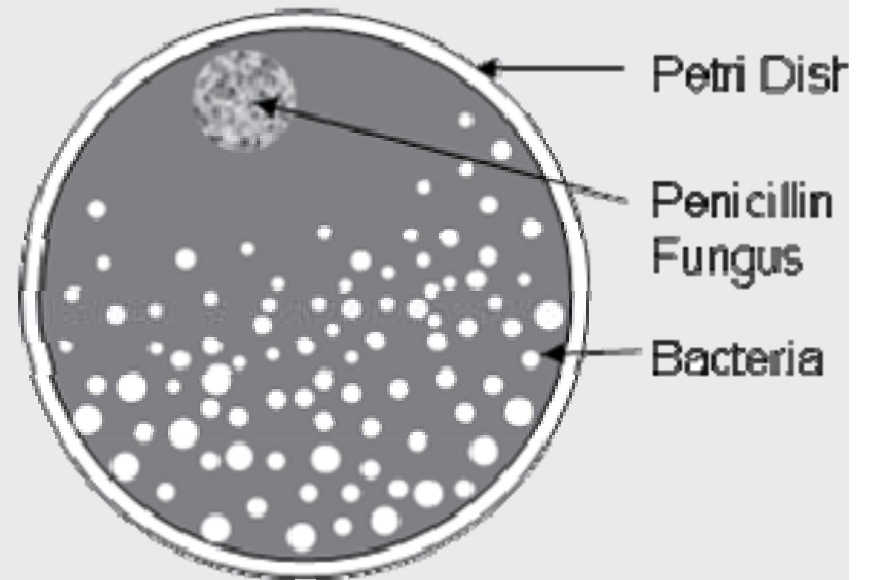
# How to conduct research

- โดยบังเอิญ

## Serendipitous Discovery (การค้นพบโดยบังเอิญ)

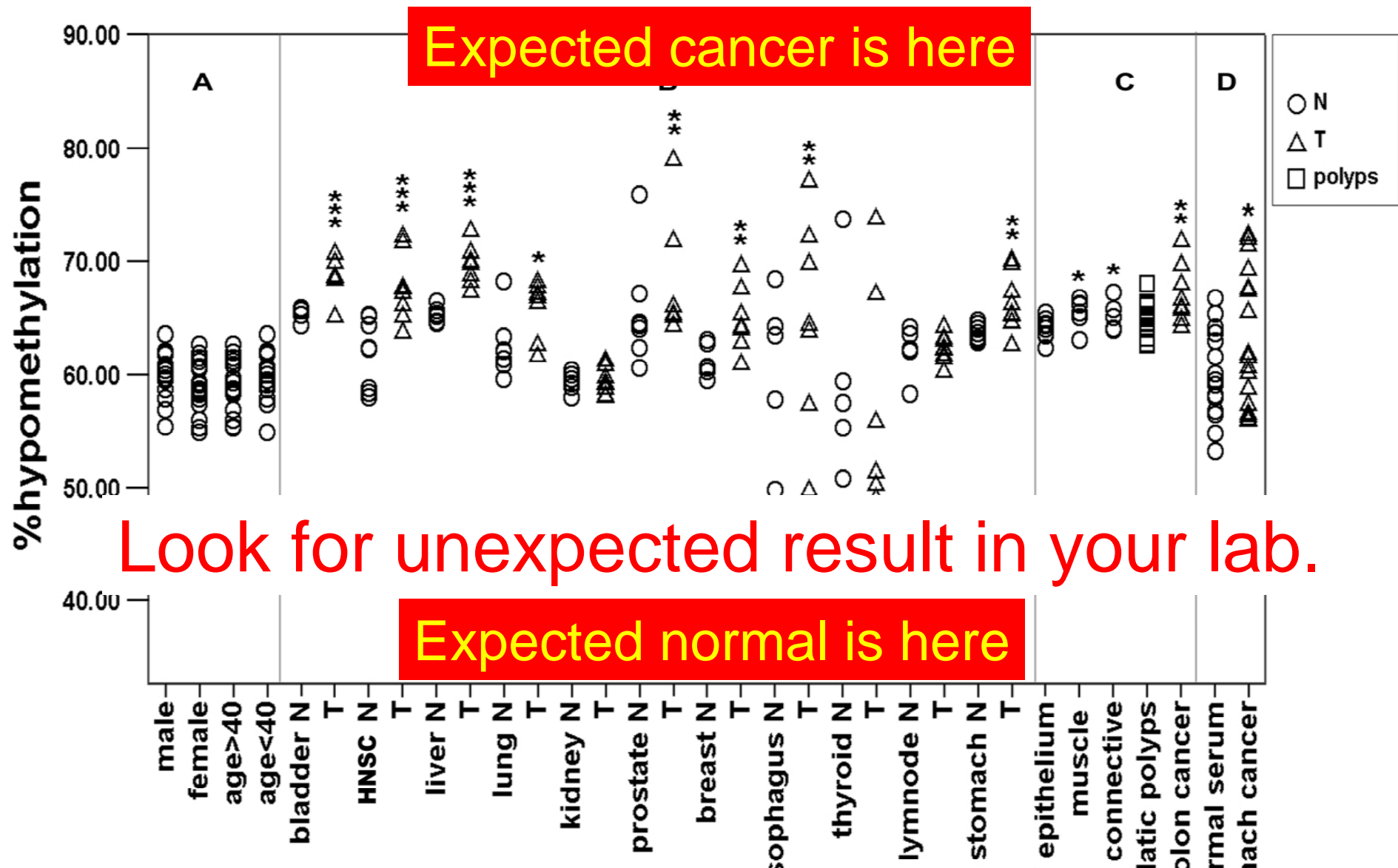


Sir. Alexander Fleming



Discover of Penicillin

"When I woke up just after dawn on September 28, 1928, I certainly didn't plan to revolutionize all medicine by discovering the world's first antibiotic, or bacteria killer," Fleming would write later, "But I guess that was exactly what I did."



Title: [Distinctive pattern of LINE-1 methylation level in normal tissues and the association with carcinogenesis](#)

Author(s): Chalitchagorn K, Shuangshoti S, Hourpai N, et al.

Source: **ONCOGENE** Volume: 23 Issue: 54 Pages: 8841-8846 Published: **NOV** 18 2004

Times Cited: [106](#)

## ของขวัญสำหรับนักวิทย์รุ่นใหม่

- **تابอดคล่าช้า**  การทดลองด้วยเทคโนโลยีใหม่แม้จะเป็นการศึกษาสิ่งที่เคยศึกษาแล้ว มักจะพบปรากฏการณ์ที่ไม่เคยพบมาก่อน
- **สังเกต**  อย่าละทิ้งสิ่งที่ไม่ได้เกิดขึ้นตามที่หวัง (**เหนือความคาดหมาย**)
- **เข้าใจ**  สามารถเชื่อมโยงหาสาเหตุและความสำคัญของสิ่งที่สังเกตพบ



# How to conduct research

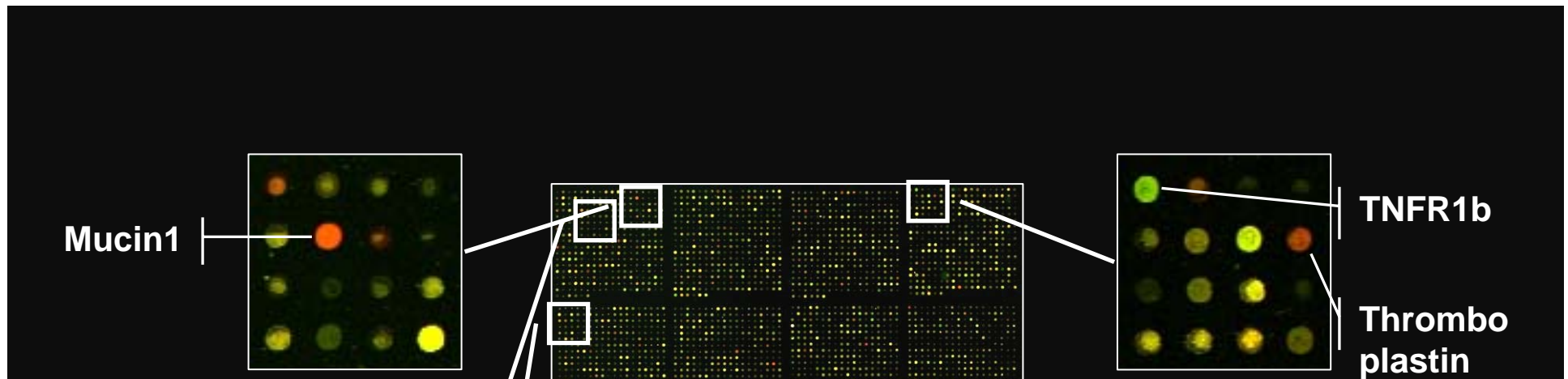
- ยืมจมูกผู้อื่นหายใจ

เพื่อ

- ขนอมผสมกับน้ำยา

# **Gingivitis vs Interferon**

- Do gingivitis increase interferon action?**
- What genes are regulated by interferon in gingivitis?**
- What experiments are needed?**
- Several graduate students and several months or years are needed.**

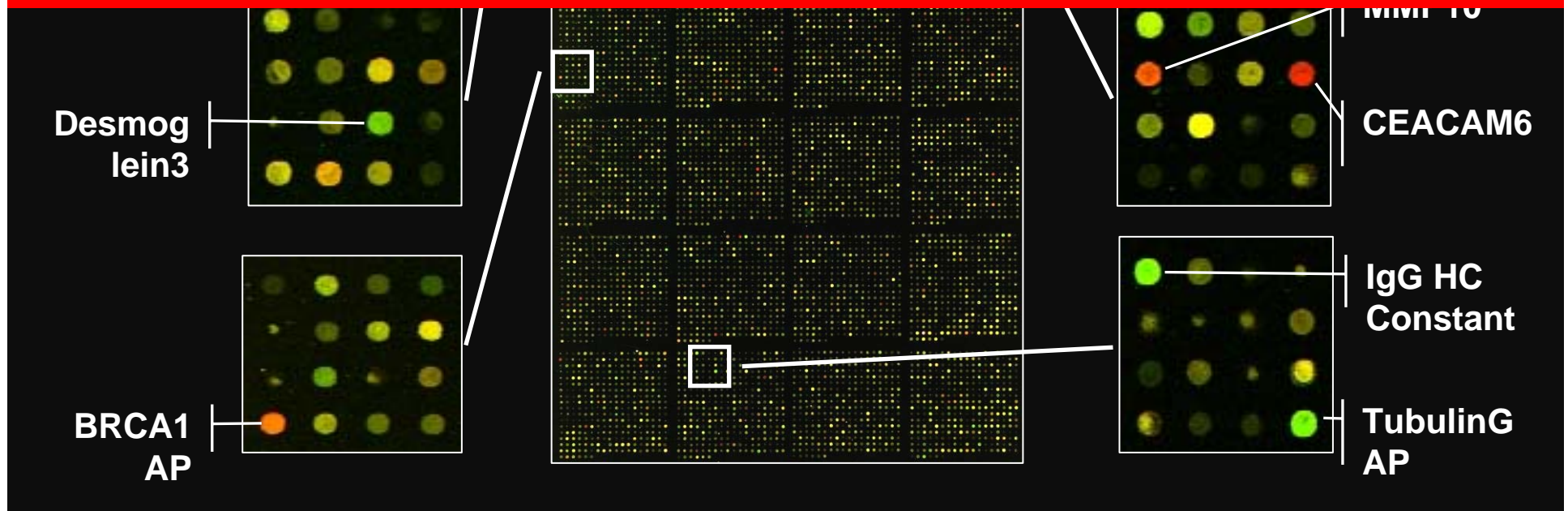


Expensive microarray expression experiments

Illumina 90,000 bahts/12 sample chip


Affymetrix 5,250 bahts/sample

<http://pioneer.netserv.chula.ac.th/~achatcha/cu-dream>



# CU-DREAM step 1: find GSE of interest

<http://www.ncbi.nlm.nih.gov/geo/> = Gene Expression Omnibus

 National Center for Biotechnology Information

Search

---

**Series GSE9764** [Query DataSets for GSE9764](#)

Status	Public on Jun 23, 2008
Title	Carcinoma Associated Fibroblast Like Differentiation of Human Mesenchymal Stem Cells
Organism	<a href="#">Homo sapiens</a>
Experiment type	Expression profiling by array

---

Samples (11) [Less...](#)

<a href="#">GSM246355</a>	hMSC 30 days TCM replicate 1
<a href="#">GSM246356</a>	hMSCs 30 days TCM replicate 2
<a href="#">GSM246357</a>	hMSC 30days TCM replicate 3
<a href="#">GSM246358</a>	5-Aza hMSCs replicate 1
<a href="#">GSM246359</a>	5-Aza hMSCs replicate 2
<a href="#">GSM246360</a>	5-Aza hMSCs replicate 3
<a href="#">GSM246361</a>	hMSC DMEM replicate 1
<a href="#">GSM246362</a>	hMSCs DMEM replicate 2
<a href="#">GSM246363</a>	hMSCs DMEM replicate 3
<a href="#">GSM246364</a>	hMSCs MEM replicate 1
<a href="#">GSM246365</a>	hMSCs MEM replicate 2

## CU-DREAM step 2: set template & download files

	A	B	C	D
1	<b>Please fill the following boxes.</b>			
2				
3	<b>GSE file:</b>	GSE9764_series_matrix.txt	Series matrix file downloaded from <a href="http://www.ncbi.nlm.nih.gov">www.ncbi.nlm.nih.gov</a>	
4	<b>Annotation file:</b>	GPL570-39741.txt	Annotation file downloaded from <a href="http://www.ncbi.nlm.nih.gov">www.ncbi.nlm.nih.gov</a>	
5	<b>T-test parameter (tail):</b>	Two-tailed distribution	Parameter for ttest() in Microsoft Excel	
6	<b>T-test parameter (type):</b>	Paired	Parameter for ttest() in Microsoft Excel	
7	<b>Differential expression:</b>	Up	Direction of differential expression	
8	<b>P-value threshold:</b>	0.05	P-value threshold for t-test	
9				
10	<b>Warning for paired t-test: subjects in the same row are paired.</b>			
11				
12	<b>Experimental group</b>	<b>Note (optional)</b>	<b>Control group</b>	<b>Note (optional)</b>
13	GSM246358	5-Aza hMSCs replicate 1	GSM246361	hMSC DMEM replicate 1
14	GSM246359	5-Aza hMSCs replicate 2	GSM246362	hMSCs DMEM replicate 2
15	GSM246360	5-Aza hMSCs replicate 3	GSM246363	hMSCs DMEM replicate 3
16				
17				
18				
19				
20				

## CU-DREAM step 3: execute

GSE # 1

Test vs Control

T-test

Up or Down

GSE#2

Test vs Control

T-test

Up or Down

			<b>GSE#1</b>
		Up	Not Up
	Up	Xxa	XXb
<b>GSE#2</b>	Not Up	XXc	XXd

**Odd ratio > 1 or < 1 and ? significant**

	Gingivitis	
Interferon	Down	Not down
Down	16	495
Not down	216	12,331
P-value		0.018059
Odd Ratio		1.845267
Upper 95% CI		1.101765
Lower 95% CI		3.090506

CU-DREAM  
result

a	b	c	d
SNX3	CYP2A6	RPL35	DDR1
COX4I1	EIF4G2	RPL24	RFC2
PPP1CA	EIF3D	HNRNPA1	HSPA6
CLPTM1	EIF3F	FNTA	PAX8
CIB1	DDX5	ANAPC5	GUCA1A
PMF1	OAZ1	GPX1	UBA7



## **Gingivitis vs Interferon**

**-Do gingivitis increase interferon action? YES**

**- What genes are regulated by interferon in gingivitis? List provided**

**- What experiments are needed?**

**CU-DREAM program and a PC**

**- 1 student and 10 minutes are needed.**



## CU-DREAM-X: execute

GSE # X

Test vs Control

T-test

Up or Down

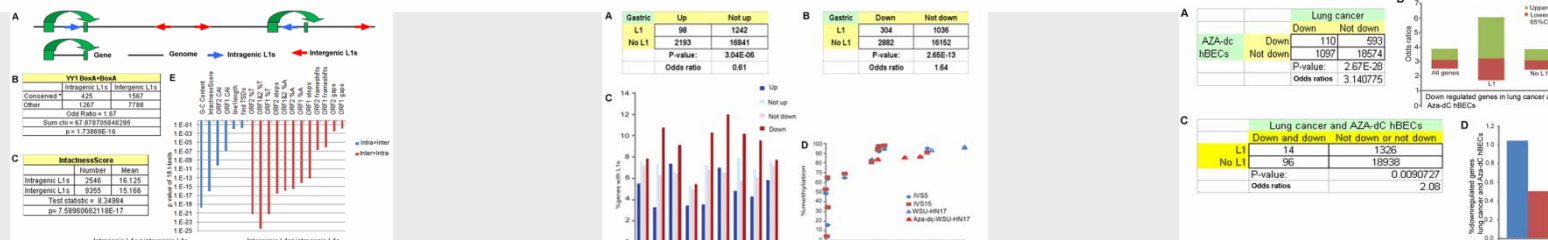
		GSE # X	
		Up	Not Up
Gene	list	Xxa	XXb
Not in	list	XXc	XXd

Odd ratio  $> 1$  or  $< 1$  and ? significant

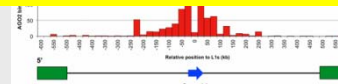
# Hypomethylation of Intragenic LINE-1 Represses Transcription in Cancer Cells through AGO2

Chatchawit Apornthewan<sup>1</sup>, Chureerat Phokaew<sup>2</sup>, Jittima Piriyaopongsa<sup>3</sup>, Chumpol Ngamphiw<sup>3</sup>, Chupong Ittiwut<sup>4</sup>, Sissades Tongsimas<sup>3</sup>, Apiwat Mutirangura<sup>4\*</sup>

**1** Department of Mathematics, Faculty of Science, Chulalongkorn University, Bangkok, Thailand, **2** Inter-Department Program of BioMedical Sciences, Faculty of Graduate School, Chulalongkorn University, Bangkok, Thailand, **3** National Center for Genetic Engineering and Biotechnology, Genome Institute, Thailand Science Park, Pathumtani, Thailand, **4** Department of Anatomy, Faculty of Medicine, Center of Excellence in Molecular Genetics of Cancer and Human Diseases, Chulalongkorn University, Bangkok, Thailand



402 X 5,025 = **2,110,500** bahts  
+ sample collection and preparation



# How to conduct research

- นำฟังหยดเดียว

# From 1 paper Oncogene 2004, 23:8841-8846

## Epigenomic patterns

**Normal and cancer**  
*Nucleic Acids Res* 2008,  
36:5704-5712.

## Aging

*Physiol Genomics* 41:  
194–200, 2010.

## Cancer diagnosis

*Clin Chim Acta* 2007,  
379:127-133.

*Int J Gynecol Cancer*  
2008, 18:711-717.

*Oral Oncol* 2009,  
45:184-191.

*Asian Pac J Cancer  
Prev* 2007, 8:307-309.  
*Oral Dis*, 16(3):286-291.

## Researches in carcinogenesis (and aging)

```
graph TD; A[From 1 paper Oncogene 2004, 23:8841-8846] --> B[Epigenomic patterns]; A --> C[Researches in carcinogenesis (and aging)]; C --> D[Gene expression]; C --> E[Instability & Mutation]; D --> F[New way of prevention and treatment of cancer (and aging)]; E --> F;
```

**Gene expression**  
*Plos One*

**Instability & Mutation**  
*Nucleic Acids Res*  
2008, **36**:3667-3675.  
*Molecular Cancer*  
**9**(1):70.

**New way of prevention and  
treatment of cancer (and aging)**

## SOME TIPS FOR BEGINNER:

- **Writing well:**  
Short and concise is always better than long and vague.
- **Verb tense:**  
Past & present tenses.
- **Introduction & Discussion:** Present tense.
- **Abstract, Materials/Methods and Results:**  
Past tense, because you are describing your own work.
- **When you refer to other people:** you may use the past tense: "*Apiwat found that this bacterium is highly sensitive to pH*".
- **Tables, Figures of your own paper:** present tense: "*Figure 1 illustrates that ...*".
- **All tables and figures should be numbered and referenced in the text. They should also have brief captions explaining their contents.**
- Start drafting your paper **conduct the investigation** equipment or input files.
- Start drafting the paper **you feel most comfortable and confident with.**
- **Use active voice, avoid passive.**
- **Avoid repetition.**
- **Design the tables even before conducting your experiment** and fill in your data when the results are obtained.
- **Check all information** appearing in the paper **at least three times.** If you have a co-author, have him/her check the information as well.
  - References, names of scientists.
  - Equations, symbols.
  - Figures caption, Tables.
  - Basis set specifications.
  - Beware! Any factual statement is the author's responsibility if it is not ascribed to somebody else through a citation. "...et al." is acceptable in the text, but not as a reference
  - Etc.,

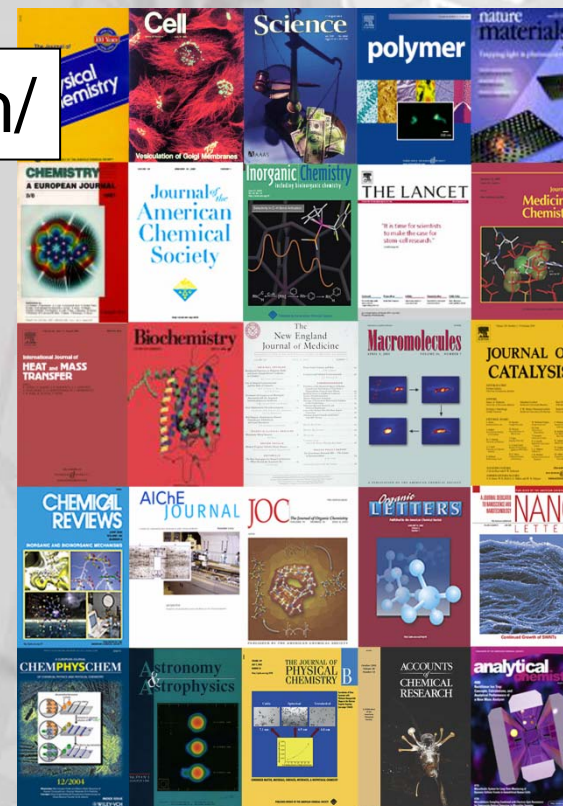


Talent is a gift that many people have.  
It is our intention to identify such

<http://biomed.md.chula.ac.th/>

them in making the best out of it.

## Guidelines for writing a good scientific paper



## Conclusion:

Once you have identified your favorite research areas and investigated them in detail, you can begin to control them.



**Peer Review:** *What does an editor/reviewer look for when he/she reviews a manuscript ?*

Is it **ORIGINAL**?

Is it **CORRECT/ACCURATE**?

Is it **INTERESTING**?

Are the data **REPRODUCIBLE**?

Are previous works properly **CITED**?

**Will this article be cited?**

Should be informative and “specific”

**TITLE:** Should be informative and “specific”

**VAGUE:** Chemical reactions of CNTs

**SPECIFIC:** Diels-Alder cycloadditions of single-wall carbon nanotubes with electron-rich dienes: a combined experimental and theoretical study

### **Abstract**

The most important section but can be the last to be written. *Make it informative and brief.*

- *Briefly state the problem or purpose of the research.*
- *Indicate the theoretical or experimental plan used.*
- *Summarize the major findings and point out major conclusions.*



**Introduction:** In general, ovarian clear cell carcinoma (OCCC) has a history of poor response to standard platinum-based chemotherapy regimens, and advanced cases have short survival periods. Therefore, the discovery of a biomarker for the pretreatment prediction of OCCC is crucial. Loss of methylation of a retrotransposable sequence, such as long interspersed repetitive sequence 1 (LINE-1), frequently occurs in cancers, including ovarian cancer, and it has been proven to be associated with poor survival. The expressions of human endogenous retrovirus (HERV) K and E were found to be increased in tissues from patients with OCCC. Here, we propose that methylation levels of HERV are associated with treatment response and prognosis of OCCC.

**Methods:** Twenty-nine patients with OCCC were enrolled. Methylation levels of HERV-K, HERV-E, and LINE-1 were measured from microdissected cancer and normal ovarian tissues. The methylation levels were correlated with stage, treatment response, and prognosis.

**Results:** Methylation levels of HERV-K, HERV-E, and LINE-1 were decreased in tissues from patients with advanced stage cancer ( $P = 0.0179$ ,  $P = 0.0021$ , and  $P = 0.0307$ , respectively). Human endogenous retrovirus K demonstrated significantly lower methylation levels in the platinum-resistant group ( $P = 0.0004$ ). Patients with lower levels of methylated (hypomethylated) HERV-K had a shorter mean overall survival ( $P = 0.006$ ). In advanced OCCC cases, patients with hypomethylated HERV-K had shorter mean progression-free survival ( $P = 0.018$ ) and mean overall survival ( $P = 0.018$ ) than did patients with higher methylation levels of HERV-K.

**Conclusions:** Methylation levels of HERV-K, HERV-E, and LINE-1 are decreased during OCCC multistep carcinogenesis. Moreover, HERV-K hypomethylation is a promising biomarker for predicting OCCC treatment response and prognosis.

One or two sentences providing a basic introduction to the field, comprehensible to a scientist in any discipline.

Two to three sentences of more detailed background, comprehensible to scientists in related disciplines.

One sentence clearly stating the general problem being addressed by this particular study.

One sentence summarising the main result (with the words 'here we show' or their equivalent).

Two or three sentences explaining what the main result reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more general context.

Two or three sentences to provide a broader perspective, readily comprehensible to a scientist in any discipline, may be included in the first paragraph if the editor considers that the accessibility of the paper is significantly enhanced by their inclusion. Under these circumstances, the length of the paragraph can be up to 300 words. (The above example is 190 words without the final section, and 260 words with it).

During cell division, mitotic spindles are assembled by microtubule-based motor proteins<sup>1,2</sup>. The bipolar organisation of spindles is essential for proper segregation of chromosomes, and requires plus-end-directed homotetrameric motor proteins of the widely conserved kinesin-5 (BimC) family<sup>3</sup>. Hypotheses for bipolar spindle formation include the 'push-pull mitotic muscle' model, in which kinesin-5 and opposing motor proteins act between overlapping microtubules<sup>1,5,6</sup>. However, the precise roles of kinesin-5 during this process are unknown. Here we show that the vertebrate kinesin-5 Eg5 drives the sliding of microtubules depending on their relative orientation. We found in controlled *in vitro* assays that Eg5 has the remarkable capability of simultaneously moving at  $\approx 20 \text{ nm s}^{-1}$  towards the plus-ends of each of the two microtubules in crosslinks. For anti-parallel microtubules, this results in relative sliding at  $\approx 40 \text{ nm s}^{-1}$ , comparable to spindle pole separation rates *in vivo*<sup>4</sup>. Furthermore, we found that Eg5 can tether microtubule plus-ends, suggesting an additional microtubule-binding mode for Eg5. Our results demonstrate how members of the kinesin-5 family are likely to function in mitosis, pushing apart interpolar microtubules as well as recruiting microtubules into bundles that are subsequently polarized by relative sliding. We anticipate our assay to be a starting point for more sophisticated *in vitro* models of mitotic spindles. For example, the individual and combined action of multiple mitotic motors could be tested, including minus-end-directed motors opposing Eg5 motility. Furthermore, Eg5 inhibition is a major target of anti-cancer drug development, and a well-defined and quantitative assay for motor function will be relevant for such developments.

# Method

**Complete detail but concise.**

## Trick

**Read as many as possible papers with the same approach. Then follow the good one.**

- Use **specific**, informative language and include precisely what you have done. This assists other scientists in reproducing your results.
- **Omit unwanted information:** the reader is not interested in superfluous details or asides. These waste space and raise printing costs.
- If you modified the method, say exactly what the difference of your results is from what the original method would have given, even if it is a minor one.

# Introduction

- It is the place where your work is put into the proper perspective. A clearly written section builds the foundation for **keeping the interest of the reader.**

Writing rules: NO cookbook recipe:

Begin by answering the following Q's:

- What is new and why is your work important?
- Familiarize the reader by summarizing pertinent works in the field.
- What is already known about the system that you are investigating? Reference the most important experimental/theoretical previous work.
- How is your research significantly different from those described in the other papers?
- The contribution that your paper will have to the advancement of science and technology in general.
- What are the major objectives of your paper?

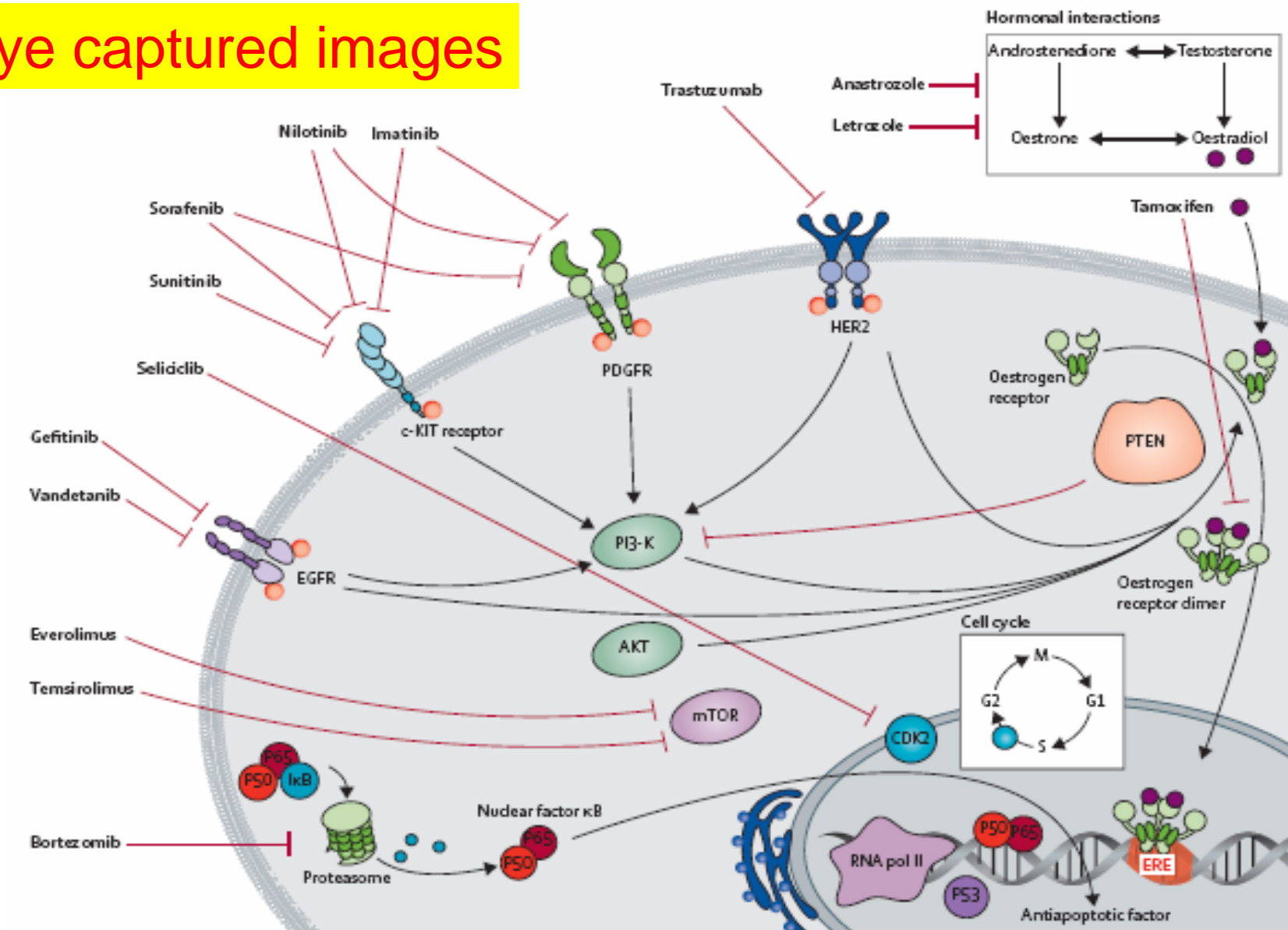
# For those who are new.

1. Gather information from literatures.
2. Short note sentences to be cited.
3. Grouping information together with planning sequence of paragraphs.
4. Structure each paragraph with topic sentence, detail and conclusion.

# Illustrations (from hand out)

*“One picture is indeed better than a thousand words”.*

# eye captured images



Manchana T, Ittiwut C, Mutirangura A, Kavanagh JJ: Targeted therapies for rare gynaecological cancers. *Lancet Oncology* 2010, 11(7):685-693.



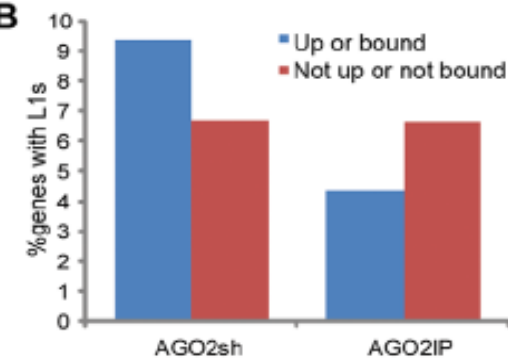
# storytelling illustration

*PLoS One* 2011, 6(3):e17934.

**A**

AGO2sh	Up	Not up	AGO-IP	Bound	Not bound
L1	125	633	L1	38	1302
No L1	1207	8825	No L1	833	18201
	P-value:	0.000398		P-value:	0.008675
	Odds ratio	1.443822		Odds ratio	0.637709

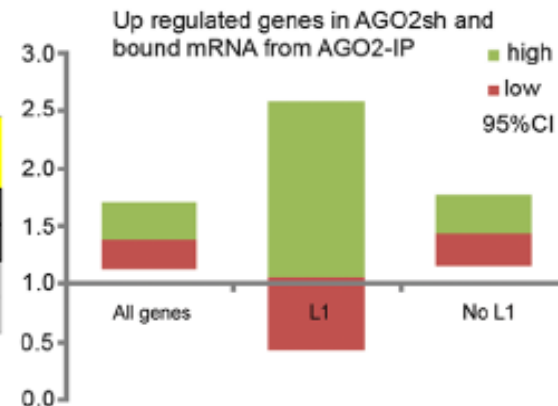
**B**



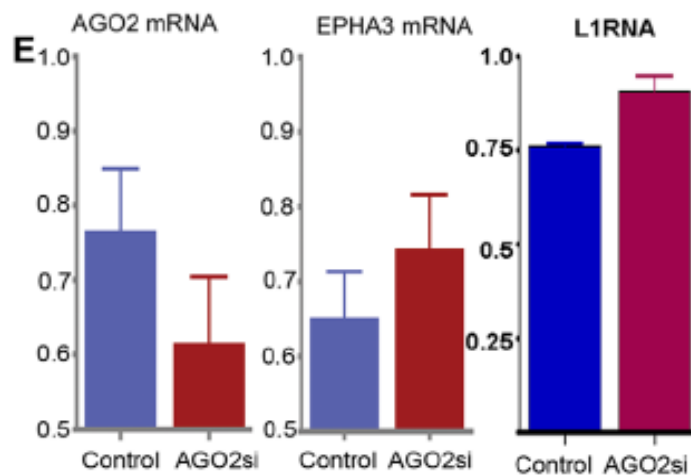
**C**

	AGO2sh			AGO2sh	
L1	Up	Not up	No L1	Up	Not up
AGO2IP	6	119	AGO2IP	112	1095
Not bound	29	604	Not bound	589	8236
	P-value:	0.89914		P-value:	0.001078
	Odds ratio	1.05013		Odds ratio	1.430227

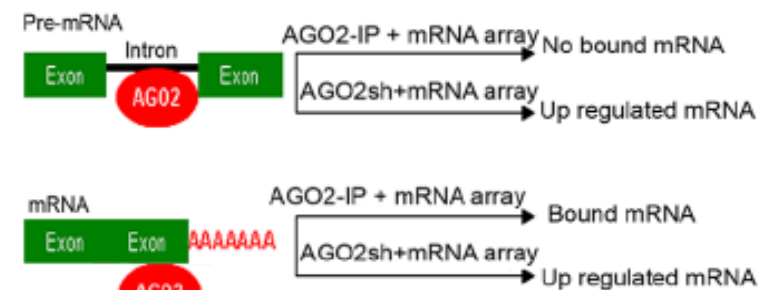
**D**



**E**



**F**



# Result

- Summarize and illustrate your findings.
  - Integrate quantitative data with the text.
- Similar to you are telling interesting story or making the story interesting.
  - Thus result should include a bit of introduction, method and discussion.
  - More importantly there should be interesting scientific reason connecting between each section. So it should look as if your first experimental result lead to the second and the second lead to third and fourth, respectively.

# Discussion (from Hand-out)

- Interpret your findings and support your conclusions with solid evidence (DO NOT speculate).
- Refer to your data, citing tables and figures where necessary; *use these materials as evidence to support your major arguments.*

# Discussion

- Analysis (Interpret your findings and support your conclusions with solid evidence (DO NOT speculate).
- Comparison (with others)
- Advertise (How do your results fit into the bigger picture?)
- Correction and declare limitation (only if needed or reviewers request.)
- Discussion แปลว่าวิจารณ์ไม่ใช่จับผิด

## Remarks:

- Are your findings consistent with those of other researchers?
- How do your results fit into the bigger picture? (defined in the Introduction).
- Do not present every conceivable explanation.
- Recognize the importance of “negative” results.
- Cases that do not conform to the expected pattern might represent something “breaking a new ground”.
- No section or subsection of the paper should be more than five pages long, around a total of 15 pages. You need to help the readers find the material they want.
- Papers have to end up with a section called “Conclusions”.

Papers have to end up with a section called “Conclusions”

## Conclusion

3'Rs

Restate: *your findings more concisely*

Recap: *give a summary of the main points of the discussion*

Recommend & benefit: *e.g.,*

*The results derived in the present study suggest that the KU-method yields an accurate and practical model for exploring the reaction mechanisms of nanostructured zeolite catalysts.*

# Supplements

Reviewers do not read it.

The more you have the better your study looks

# Letter to editor

**Very important.**

**The more editor likes your work,  
the better chance to get reasonable  
reviewers.**



**Peer Review:** *What does an editor/reviewer look for when he/she reviews a manuscript ?*

Is it **ORIGINAL**?

Is it **CORRECT/ACCURATE**?

Is it **INTERESTING**?

Are the data **REPRODUCIBLE**?

Are previous works properly **CITED**?

**Will this article be cited?**

Suggest reviewers

Suggest who you met.

If you do not know anyone,  
don't try .....

Keywords

# Acknowledgements

# Editing

- Grammar and spelling
- Concise (giving much information in few words), Thesaurus
- Be patient.
- Ask your English spoken friends for help.
- Try professional

## SOME TIPS FOR BEGINNER:

- **Writing well:**  
Short and concise is always better than long and vague.
- **Verb tense:**  
Past & present tenses.
- **Introduction & Discussion:** Present tense.
- **Abstract, Materials/Methods and Results:**  
Past tense, because you are describing your own work.
- **When you refer to other people:** you may use the past tense: "*Apiwat found that this bacterium is highly sensitive to pH*".
- **Tables, Figures of your own paper:** present tense: "*Figure 1 illustrates that ...*".
- **All tables and figures should be numbered and referenced in the text. They should also have brief captions explaining their contents.**
- Start drafting your paper **when you decide to conduct the investigation** or, set up the equipment or input files.
- Start drafting the paper from the section that **you feel most comfortable and confident with.**
- **Use active voice, avoid passive.**
- **Avoid repetition.**
- **Design the tables even before conducting your experiment** and fill in your data when the results are obtained.
- **Check all information** appearing in the paper **at least three times.** If you have a co-author, have him/her check the information as well.
  - References, names of scientists.
  - Equations, symbols.
  - Figures caption, Tables.
  - Basis set specifications.
  - Beware! Any factual statement is the author's responsibility if it is not ascribed to somebody else through a citation. "...et al." is acceptable in the text, but not as a reference
  - Etc.,

## Conclusion:

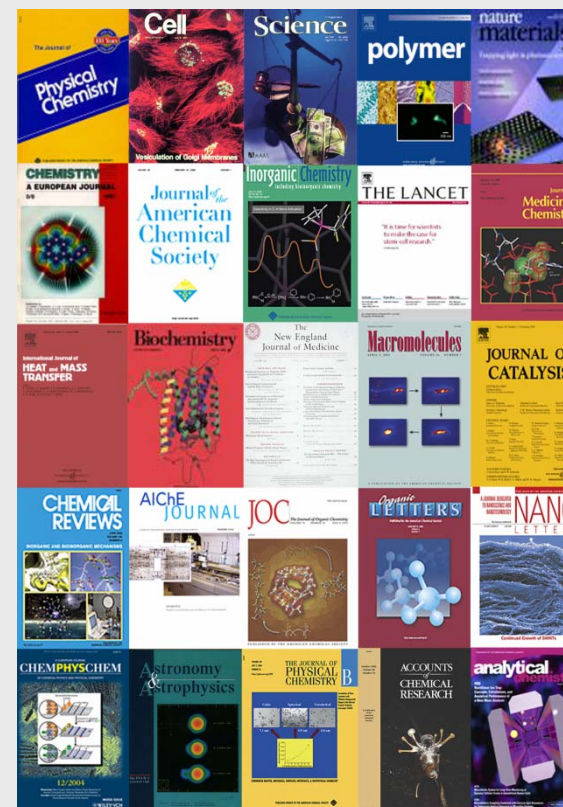
Once you have identified your favorite research areas and investigated them in detail, you can begin to control them.



**Talent is a gift that many people have. It is our intention to identify such talent in young people and assist them in making the best out of it.**



# Guidelines for writing a good scientific paper





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**“Research Chair Grant 2011, National Science and Technology Development Agency (NSTDA), ”**  
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**" Four Seasons Hotel Bangkok's 4th Cancer Care charity fun run in coordination with the Thai Red Cross Society."**

**Center of Excellence in Molecular Genetics of Cancer and Human Diseases**  
**Department of Anatomy, Faculty of Medicine**  
**Chulalongkorn University**





## กิตติกรรมประกาศ

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