

從違反學術倫理案例中學習

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(<https://daais.sinica.edu.tw/ae/ch/index.php>)

107. 4. 11

臺北醫學大學「學術倫理宣導」演講

投影片來源

1. 科研不當行為案例與經驗學習
孫以瀚（中研院分生所）
2. Scientific Misconduct: Stories and
Lessons Learned
張典顯（中研院基因體中心）

研究人員學術倫理規範 (國科會) 102.02.08

1. **研究人員的基本態度**：研究人員應確保研究過程中（包含研究構想、執行、成果呈現）的**誠信**、**負責**、專業、客觀、嚴謹、**公正**，並尊重被研究對象，避免利益衝突。
2. **違反學術倫理的行為**：研究上的不當行為包含範圍甚廣，本規範主要涵蓋核心的違反學術倫理行為，即**造假**、**變造**、**抄襲**（**fabrication, falsification, plagiarism**）及與研究成果發表（publishing）、作者定義（authorship）相關之不當行為。
3. **研究資料或數據的蒐集與分析**：研究人員應盡可能客觀地蒐集與分析研究資料或數據，不得捏造竄改，並避免對資料或數據作**選擇性**處理。如需處理原始數據，應詳實揭露所做之完整過程，以免誤導。研究人員應根據研究內容描述研究方法與結果，不做無根據且與事實不合的詮釋與推論。
4. **研究紀錄的完整保存與備查**：研究人員應當以能夠**使他人驗證和重複**其工作的方式，清楚、準確、客觀、完整記錄其研究方法與數據，並於相當期間內妥善保存原始資料。
5. **研究資料與結果的公開與共享**：研究人員在有機會確立其優先權後，應當儘速公開分享其研究資料與結果。用國家研究經費所蒐集之資料，應公開給學術社群使用。

研究人員學術倫理規範 102.02.08

6. **註明他人的貢獻**：如引用他人資料或論點時，必須尊重智慧財產權，註明出處，避免誤導使人過度認定自己的創見或貢獻。如有相當程度地引用他人著述卻未引註而足以誤導者，將被視為抄襲。此節有以下四點補充：

- a. 如抄襲部分非著作中核心部分，例如背景介紹、一般性的研究方法敘述，或不足以對其原創性構成誤導，應依該領域之慣例判斷其嚴重性。
- b. 未遵守學術慣例或不嚴謹之引註，也許是撰寫者草率粗疏，其行為應受學術社群自律（或由本會學術處去函指正），雖不至於需受本會處分，但應極力避免，並應習得正確學術慣例及引註方式。
- c. 同一成果如為多人共同研究且共同發表，當然可算做個人的研究成果。如為多人共同研究成果但分別發表（例如同樣調查數據，但以不同方法或角度分析），則**應註明其他人的貢獻**（例如註明調查數據的來源），如未註明則有誤導之嫌。
- d. 共同發表之論文、共同申請之研究計畫、整合型計畫總計畫與子計畫，皆可視為共同著作（全部或部分），對共同著作之引用不算抄襲。如依該領域慣例所指導學生論文由老師及學生共同發表，則**指導老師可視為所指導學生論文之共同作者**，但援用時應註明學生之貢獻。

研究人員學術倫理規範 102.02.08

7. **自我抄襲**：研究計畫或論文均不應抄襲自己已發表之著作。研究計畫中不應將已發表之成果當作將要進行之研究。**論文中不應隱瞞自己曾發表之相似研究成果，而誤導審查人對其貢獻與創見之判斷。**自我抄襲是否嚴重，應視抄襲內容是否為著作中創新核心部分，亦即是否有誤導誇大創新貢獻之嫌而定。此節亦有以下兩點補充：
- a. 某些著作應視為同一件（例如研討會論文或計畫成果報告於日後在期刊發表），不應視為抄襲。計畫、成果報告通常不被視為正式發表，亦無自我引註之需要。研討會報告如於該領域不被視為正式發表，亦無自我引註之必要。
 - b. 同一研究成果以不同語文發表，依領域特性或可解釋為針對不同讀者群而寫，但**後發表之論文應註明前文**。如未註明前文，且均列於著作目錄，即顯易誤導為兩篇獨立之研究成果，使研究成果重複計算，應予避免，但此應屬學術自律範圍。
8. **一稿多投**：一稿多投（包括論文及計畫）將造成審查資源的重複與浪費，應該避免。研究計畫亦應避免以相同**內容重複申請補助**。**同一研究計畫若同時申請不同經費，應於計畫中說明。**如果均獲通過且補助內容重疊，應擇一執行。若計畫內容相關但有所區隔，**應明確說明。**

研究人員學術倫理規範 102.02.08

9. **共同作者**：共同作者應為對論文有相當程度的實質學術貢獻（如構思設計、數據收集及處理、數據分析及解釋、論文撰寫）者。單純提供研究經費、研究環境及設備、行政支援、已發表之研究材料，不應列為共同作者。論文的通訊作者應將論文稿給共同作者審閱，並取得其同意後，始得將其列為共同作者。基於榮辱與共的原則，共同作者在合理範圍內應對論文內容負責。
10. **同儕審查保密**：研究人員參與同儕審查時，應**保密**並給予及時、公正、嚴謹的評價，並遵守利益迴避準則。審查中所獲研究資訊，不應在未獲同意之下洩露或用於自身之研究。
11. **利益迴避與揭露**：研究人員應揭露有可能損及其計畫或評審可信性之相關資訊，以落實利益迴避原則。
12. **舉報違反學術倫理行為**：若發現涉嫌偽造、篡改、剽竊或其他違反學術倫理的研究行為，研究人員有責任向適當主管單位舉報。
13. **處理違反學術倫理行為**：研究相關工作的機構、出版社和專業組織，應建立完善機制，以受理違反學術倫理行為之舉報，予以及時、公正、專業、保密的處理，並對善意舉報人保密與保護。

科技部學術倫理案件處理及審議要點 106.4.10

三、(研究人員違反學術倫理之行為類型) 本要點所稱違反學術倫理，指研究人員有下列情形之一，致有嚴重影響本部審查判斷或資源分配公正之虞者：

- (一)造假：虛構不存在之申請資料、研究資料或研究成果。
- (二)變造：不實變更申請資料、研究資料或研究成果。
- (三)抄襲：援用他人之申請資料、研究資料或研究成果未註明出處。註明出處不當情節重大者，以抄襲論。
- (四)隱匿其部分內容為已發表之成果或著作。
- (五)未經註明而重複發表，致研究成果重複計算。
- (六)研究計畫或論文大幅引用自己已發表之著作，未適當引註。
- (七)以違法或不當手段影響論文審查。
- (八)其他違反學術倫理行為，經本部學術倫理審議會議決通過。

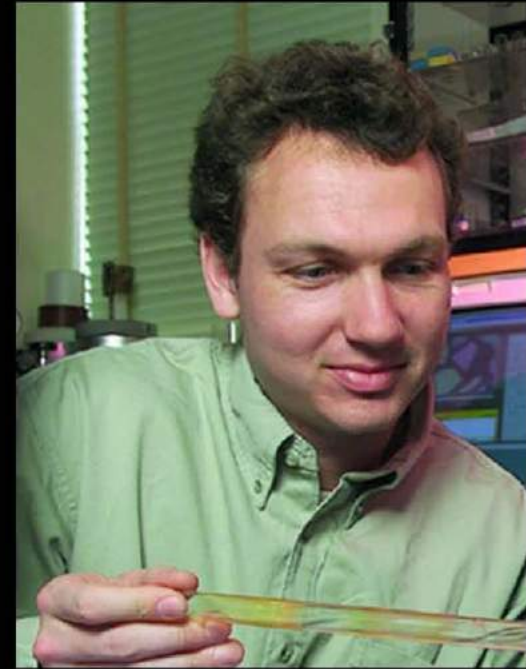
教育部「專科以上學校學術倫理案件處理原則」2017.6.2

三、**學生**或教師之學術成果有下列情形之一者，違反學術倫理：

- (一) 造假：虛構不存在之申請資料、研究資料或研究成果。
- (二) 變造：不實變更申請資料、研究資料或研究成果。
- (三) 抄襲：援用他人之申請資料、研究資料或研究成果未註明出處。註明出處不當，情節重大者，以抄襲論。
- (四) 由他人代寫。
- (五) 未經註明而重複出版公開發行。
- (六) 大幅引用自己已發表之著作，未適當引註。
- (七) 以翻譯代替論著，並未適當註明。
- (八) 教師資格審查履歷表、合著人證明登載不實、代表作未確實填載為合著及繳交合著人證明。
- (九) 送審人本人或經由他人有請託、關說、利誘、威脅或其他干擾審查人或審查程序之情事，或送審人以違法或不當手段影響論文之審查。
- (十) 其他違反學術倫理行為。

Hendrik Schön Scandal

Schön claimed spectacular on/off behavior, far beyond anything achieved thus far with organic materials used as an FET. His measurements in most cases confirmed various theoretical predictions, for example that the organic materials could be made to display superconductivity or be used in lasers.



- Ph.D. (1997) University of Konstanz, Germany, revoked in 2011
- Worked in Bell Lab from 1997 to 2002
- One paper every 8 days in 2001
- Papers withdrawn: *Science* (9), *Nature* (7), *Physics Review* (6) and some others

Baltimore Case: A 10-Years Ordeal

- 1986 Imanishi-Kari / Baltimore CELL paper;
Question raised at MIT
- 1986-89 Forensic analysis by Secret Service
US Congress hearings
- 1991 NIH OSI: “serious scientific misconduct”;
CELL paper retracted
- Dec. 1991 Baltimore resigned from Rockefeller presidency
- 1993 Scientists validated CELL paper’s findings
- 1994 NIH ORI final report: data fabrication and cover-ups
- 1996 Dept Health and Human Services overturns ORI’s verdict
- Aug. 1996 Tufts University re-instated Imanishi-Kari



1975 Nobel Laureate in
Physiology or Medicine

Hwang Woo-suk (黃禹錫)

Until November 2005, he was considered one of the pioneering experts in the field, best known for two articles published in the journal *Science* in 2004 and 2005 where he reported he had succeeded in creating human embryonic stem cells by cloning. He was called the "Pride of Korea" in South Korea.



- committed ethical violations by using eggs from his graduate students and from the black market
- All 11 of Hwang's stem cell lines published in *Science* were fabricated
- Hwang was dismissed from the university on March 2006
- Hwang was sentenced by South Korean court for 18 months with suspension.

World Record: Fujii Yoshitaka (藤井 善隆)

- M.D., Anesthesiology
- Tokyo Medical and Dental U., Tsukuba U., and Toho U.
- Falsified data from 1993
- Peter Kranke, Christian Apfel, and others blew whistle in 2000
- **183 retractions** in 2012 (world record by single author)



Haruko Obokata (小保方 晴子)

She claimed to have developed a radical and remarkably easy way to make stimulus-triggered acquisition of pluripotency (STAP) cells that could be grown into tissue for use anywhere in the body.



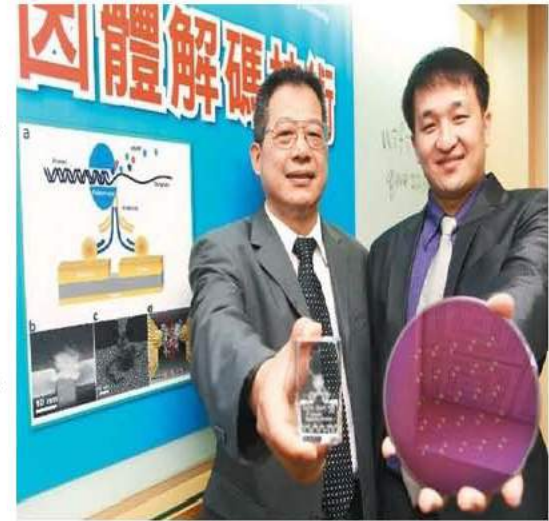
- Ph.D., Waseda University (2011)
- Known for STAP cells
- Two *Nature* papers retracted in June 2014
- On August 5, 2014, Obokata's mentor and co-author Yoshiki Sasai committed suicide by hanging
- Obokata announced her resignation from Riken in December 2014

交大教授「神研究」太完美 遭疑造假

聯合報 陳皓嫻 2014.11.19

根據交大回覆科技部的調查報告，研究團隊表示，實驗是第一作者、交大生物科技系助理教授陳昱勳在台南關廟，碰到稱為Steve之人士，Steve出借兩個類似貨櫃屋的實驗室，並借儀器給陳做出實驗結果。報告指出，Steve不准陳了解各項儀器的品牌和資訊，也不准取得完整數據，且取得的部分數據只供製圖用，陳唯一能確認的，是取得數據的電腦品牌為戴爾；黃國華去過該實驗室一次，但他再次造訪時，實驗室已不知去向。

陳昱勳說，他簽了保密協定，無法透露實驗室細節，至於研究是否為他本人所做，他也不方便說；僅表示團隊保留原始數據，但礙於專利和商業機密，現階段無法公開。他說，團隊再重現實驗，結果都和原先相吻合。



交大黃國華教授
陳昱勳助理教授

Nature Nanotechnology,
2013

關廟神秘貨櫃屋、神秘
Steve

陳震遠事件

2011年，陳震遠至屏東教育大學任教，開始在 Journal of Vibration and Control (JVC) 大量發表論文。

2012年2月，陳震遠升任屏東教育大學副教授。

2013年，JVC主編Ali H. Nayfeh審查陳震遠論文，發現問題帳號，逐一清查，發現130個問題帳號可能皆是陳震遠假造。9月，JVC 所屬的英國賽吉公司，發函屏東教育大學，要求協助調查，屏大資訊科學系於10月成立專案委員會調查。11月，陳震遠向屏東教育大學請辭副教授職位，於2014年2月開學後離職。

2014年5月，Ali H. Nayfeh結束調查，向 JVC 提出調查報告後，請辭主編職務，同時向自己任教的大學申請退休，以負起此次事件的責任。

7月8日，賽吉出版公司懷疑陳震遠利用這種方式來通過同儕審查，撤銷與陳震遠有關的60篇論文。

7月11日，因為遭撤銷論文中，有5篇為蔣偉寧發表，陳震遠掛名共同作者，蔣偉寧召開記者會澄清。

7月14日，中華民國行政院發布，蔣偉寧辭去教育部長。

2015年2月6日，科技部決議陳震武停權十年並追回三件計畫的研究主持費，蔣偉寧停權一年。

郭明良事件

2016年11月，國外網站「學界同行審論平臺」（PubPeer）揭露臺灣大學教授郭明良研究癌症論文實驗涉造假，後續又被發現過往多篇論文亦有造假情形；校長楊泮池也因共同掛名而捲入風波，但他公開否認涉及論文造假。

2017年2月24日，台大公布審議結果：認定郭明良、張正琪、查詩婷、林明燦、譚慶鼎、郭亦炘、蘇振良、陳百昇等人違反學術倫理，分別就情節輕重予以處分；其中郭明良和張正琪遭解聘。而楊泮池於接受調查之論文中擔任共同作者是合宜的，不須為論文中郭明良實驗室產出的錯誤數據負責。

2017年3月30日，教育部和科技部分別公布審議結果，對該事件違反學術倫理者做出議處，教育部並扣減台大106年度補助經費計新臺幣5,400萬元。

2017年6月21日，楊泮池在任期屆滿後不續任校長，表示為不讓台大因為學術倫理案繼續受到誤解和攻擊。

陳慶士事件

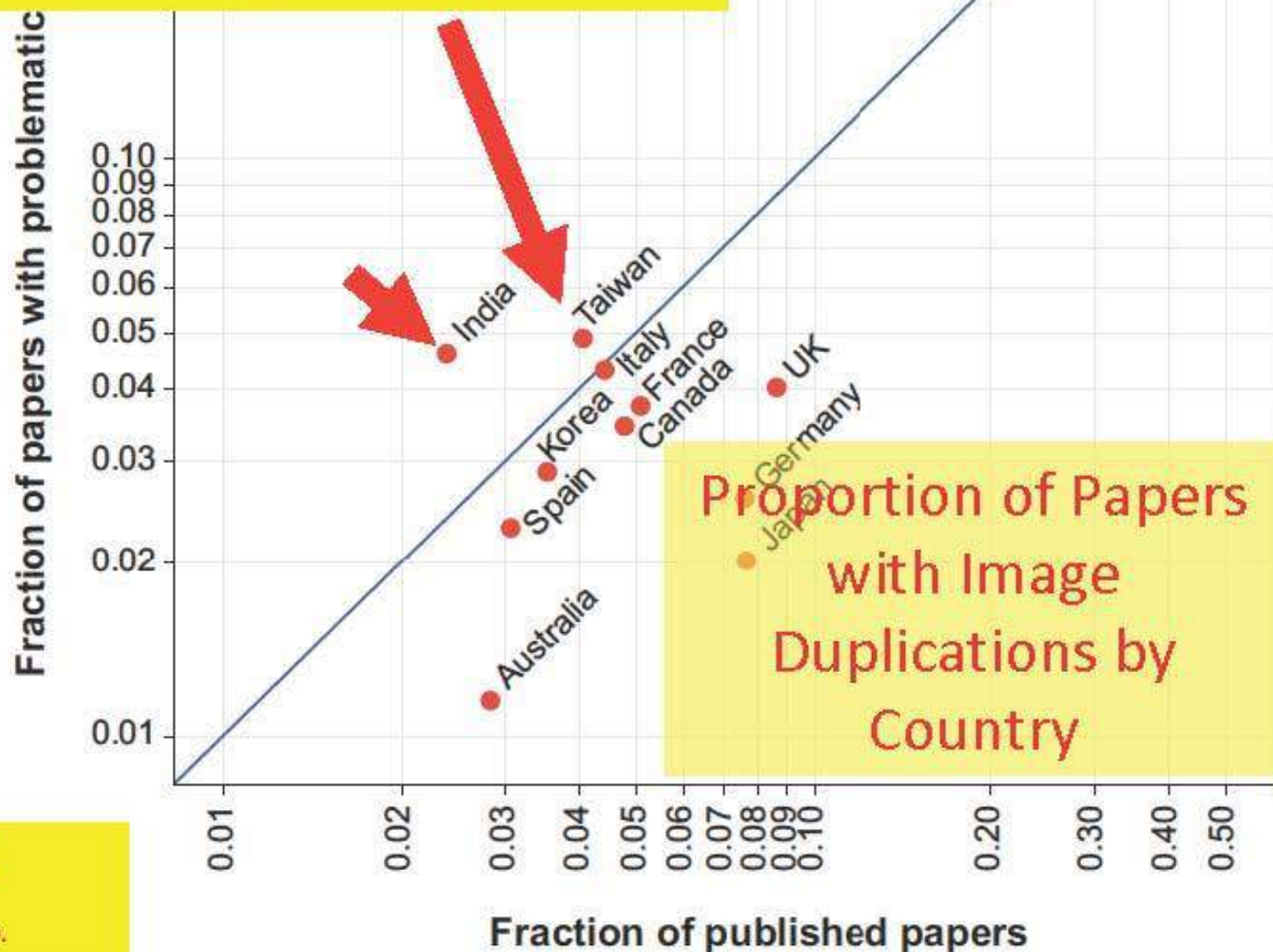
美國俄亥俄州立大學學生報「明燈」(Lantern)報導，該校的癌症頂尖研究員、台灣學者陳慶士自二〇〇一年起研究就開始造假。陳慶士被迫辭去俄亥俄州立大學藥學院及癌症研究中心職務，因為該校內部調查發現，他有十四項研究專案刻意且「魯莽」造假。

陳慶士東窗事發，源起於有人匿名電郵檢舉，提出六項造假指控。調查追溯至二〇〇一年，陳慶士個人筆電和外接硬碟也被查扣，成為重要證據，因為實驗室的電腦和伺服器並未留存資料。陳慶士把問題歸咎博士後研究員或其他實驗室工作人員，但調查證明，有十四項不同的研究遭造假，陳慶士須單獨負起責任。

調查委員會自二〇一七年三月廿九日起研究相關指控，至九月八日作成結論並建議開除陳慶士，當時他已認錯並辭職。

2018年3月底，俄亥俄州大上周五宣布陳慶士離職消息，並公開調查文件，距離他辭職逾五個月。中研院學術倫理委員會開始調查其於中研院任職內發表之論文。

We are NOT Faring
Too Well! ☹️



World Record: Fujii Yoshitaka (藤井 善隆)

- M.D., Anesthesiology
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違反學術倫理案件樣態及處分情形統計

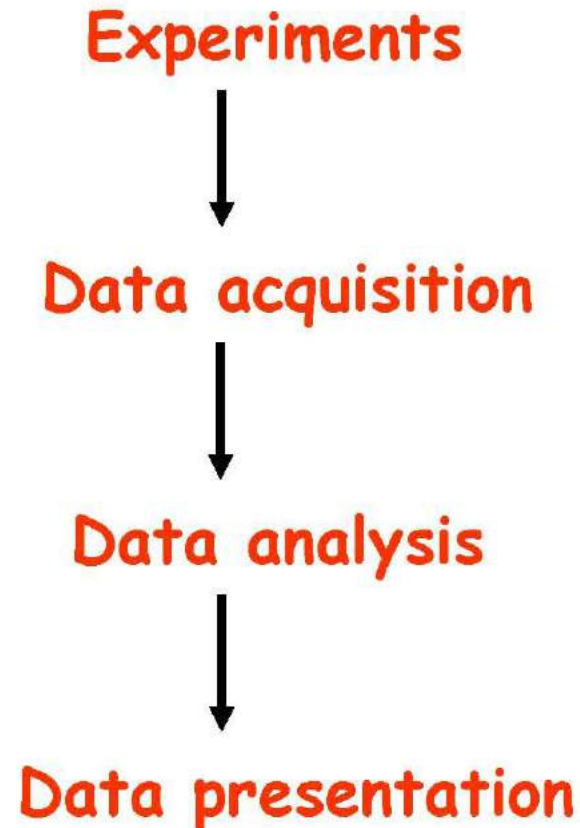
總人數：23 人

(單位：人次)

違反樣態	造假	8
	變造	3
	抄襲	11
	隱匿	1
	重複發表	0
	未適當引註	0
	影響審查	0
	其他	5
處分情形	書面告誡	10
	停權 1~5 年	9
	停權 6~10 年	3
	追回補助費用、獎勵(費)、獎金或獎勵金	5
	撤銷獎項	1

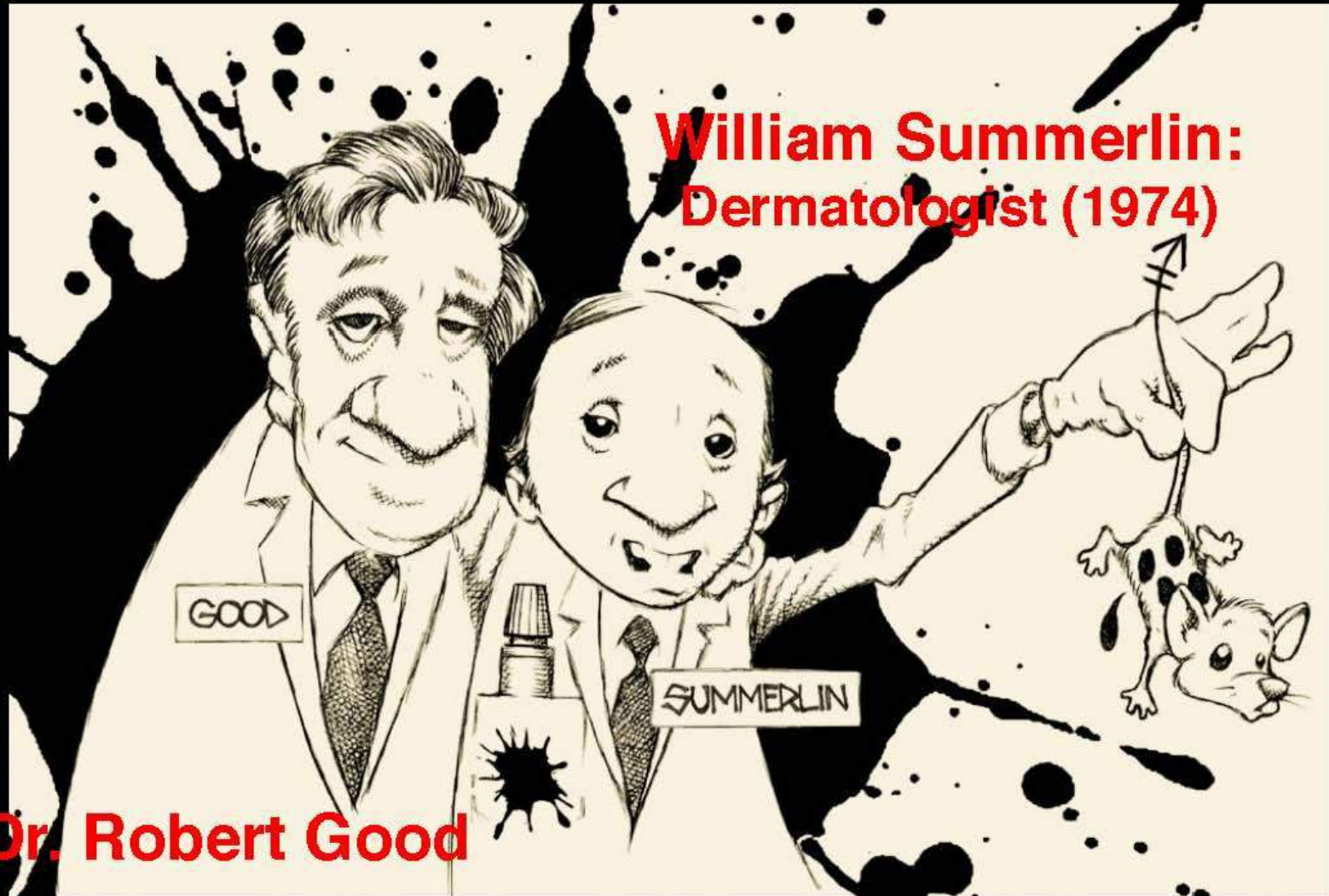
The most prevalent problems

- Sloppy experimentation and misrepresentation of data
- Data acquisition (data selection or questionable statistics)
- Improperly handling data (image)



Fabrication (Faking): Painting the White Mice Black

Memorial Sloan-Kettering Cancer Center in New York City



Falsification: Doctoring Data to Make Believe

Published July 6, 2004

JCB Feature **2004 JCB Guideline of Image Manipulation**

What's in a picture? The temptation of image manipulation

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It's all so easy with Photoshop¹. In the days before imaging software became so widely available, making adjustments to image data in the darkroom required considerable effort and/or expertise. It is now very simple, and thus tempting, to adjust or modify digital image files. Many such manipulations, however, constitute inappropriate changes to your original data, and making such changes can be classified as scientific misconduct. Skilled editorial staff can spot such manipulations

ing or modifying a band in a polyacrylamide gel image) can represent falsification or fabrication.

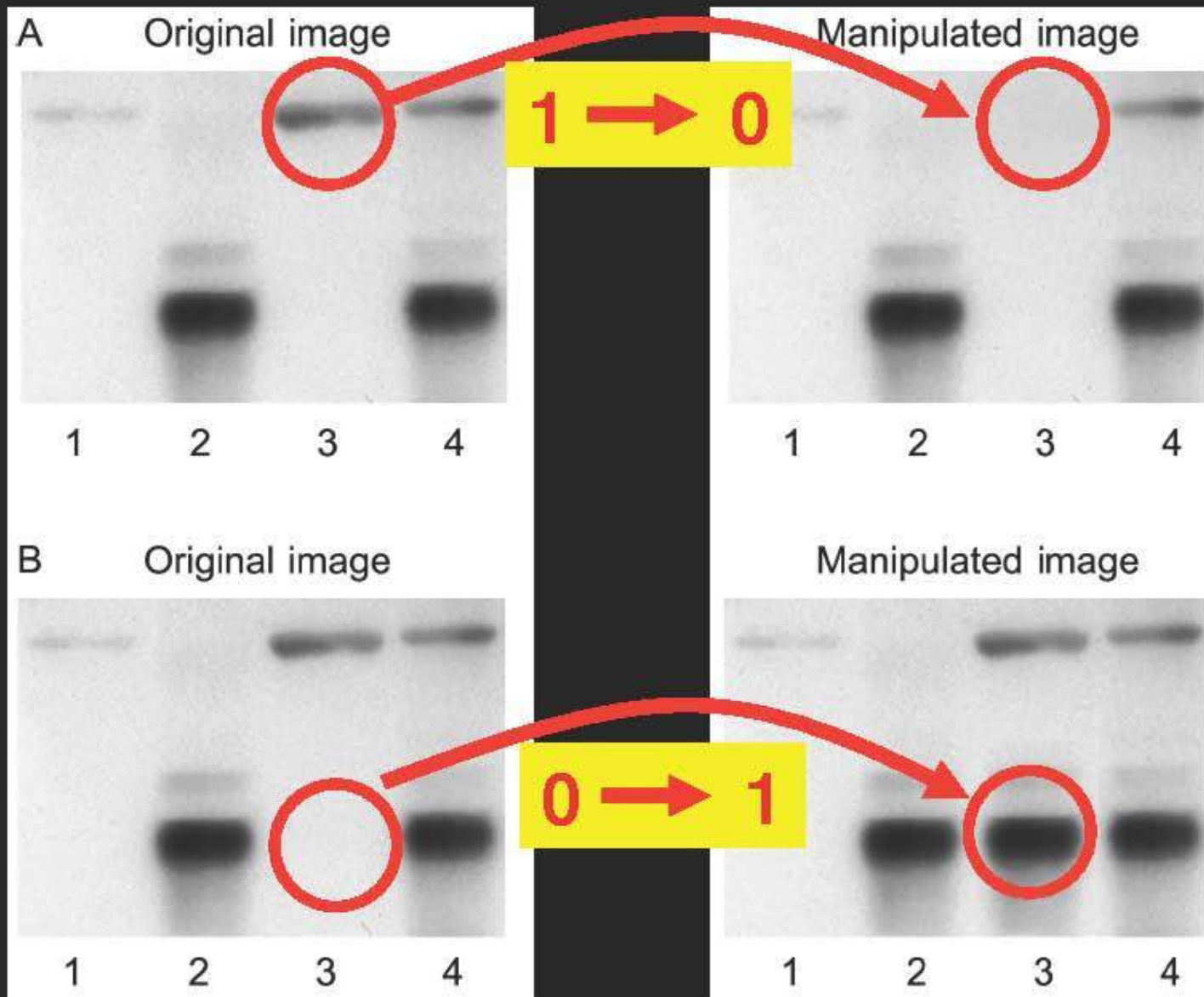
Being accused of misconduct initiates a painful process that can disrupt one's research and career. To avoid such a situation, it is important to understand where the ethical lines are drawn between acceptable and unacceptable image adjustment.

Here we present some general guidelines for the proper handling of digital image data and provide some specific

age usually carries information beyond the specific point being made. The quality of an image has implications about the care with which it was obtained, and a frequent assumption (though not necessarily true) is that in order to obtain a presentation-quality image, you had to carefully repeat an experiment multiple times.

Manipulating images to make figures more simple and more convincing may also deprive you and your colleagues of seeing other information that is often

Gross Manipulation of Blot



Plagiarism (抄襲)

- Plagiarism is passing off someone else's work as your own (Wikipedia)
- idea, text, data, figure
- paper, grant, report, course work, thesis, test

In other words, plagiarism is an act of fraud. It involves both stealing someone else's work and lying about it afterward.

Exceptions: the source is obvious or common knowledge, so there is not mistake that you are taking credit for it.

- To be , or not to be.
- $E=mc^2$

Self-plagiarism -1

- Infringe on the copyright of the publisher.
- Mis-representation of one's contribution.
presenting one's own previously published work as though it were new (American Psychological Association, 2010)

Case 1: Paper A reports a clinical study of 60 patients, but 40 of these have already been reported in a previous paper B by the same author.

Proper: clearly disclose.

Results for 40 of the 60 patients have been reported in our previous study (xxx, 2012).

Did not disclose: self plagiarism; intention to cheat the reviewers.

Self-plagiarism -2

Case 2: Copy and paste of Introduction and Material and Methods sections from one paper to another paper/grant by the same author.

Proper way:

Introduction: try use different ways to present the material, even for the same content.

Material and Methods: cite previous publications.

Case 3: Publishing a Chinese translation of a previous English paper by the same author.

Should: clearly disclose it is a translation of a previous publication. (maybe acceptable by the journal, e.g. for a different reader population)

Self-plagiarism -3

Case 4: A journal paper has many sections duplicated from a grant or conference abstract or presentation.

Depends on the tradition of the field. In life sciences, the conference presentation is usually not considered real publication (not listed in your publication list). A grant or a progress report of a grant is not considered publication, hence no need to be cited.

Case 5: A grant or paper has large portions taken from a student's thesis.

Depends on the tradition of the field. In experimental sciences, often the student's thesis can be considered joint publication with the advisor.

OK: if the student is a coauthor on the paper, or included in the grant.

Trouble: if the student is not included in the paper (coauthor or acknowledged) or grant.

共同作者

- 共同作者該負多少責任？
- 怎樣才該列為共同作者？

共同作者

共同作者應為對論文有相當程度的實質學術貢獻（如構思設計、數據收集及處理、數據分析及解釋、論文撰寫）者。單純提供研究經費、研究環境及設備、行政支援、已發表之研究材料，不應列為共同作者。論文的通訊作者應將論文稿給共同作者審閱，並取得其同意後，始得將其列為共同作者。基於榮辱與共的原則，共同作者在合理範圍內應對論文內容負責。（國科會研究人員學術倫理規範 102.02.08）

列名為共同作者之理由：

1. **分享成果 (credit)**：具有實質貢獻，其貢獻應當獲得公開表彰，作為其研究成果。
2. **擔負責任 (accountability)**：應當對其貢獻部分（尤其是材料、方法或數據的真實性）負責。

基於以上兩點理由，只有「相當程度(substantive)的實質學術貢獻」的人，始得列為共同作者（分享榮耀），且必須列為共同作者（擔負責任）。

共同作者

- Who should be a coauthor? (or acknowledged?)
- Order of coauthors?
- Co-first authors, co-corresponding authors
- Should I be coauthor on a paper?
 - **Responsibility** for your contribution.
 - **Risk.**
- 陳冠宇事件：陳建仁（共同作者，國科會主委，請辭獲慰留）、楊泮池（指導教授，通訊作者，台大醫院副院長）
- 陳震遠事件：蔣偉寧（共同作者，教育部長，辭職）因未善盡監督之責，遭科技部停權1年。
- 郭明良事件：楊泮池（共同作者，台大校長，不續任）

教育部「專科以上學校學術倫理案件處理原則」 2017.6.2

四、對所發表著作具實質貢獻，始得列名為作者。學生學位論文之部分或全部為其他發表時，學生應為作者。所有作者應確認所發表論文之內容，並對其負責。著作或學位論文違反學術倫理經查證屬實時，相關人員應負下列責任：

- (一) 列名作者應對所貢獻之部分，負全部責任。
- (二) 列名作者其列名未符合國內外標準者，雖未涉及或認定其違反學術倫理，惟於因列名於發表著作而獲益時，應負擔相應責任。
- (三) 重要作者兼學術行政主管、重要作者兼計畫主持人，對所發表著作，或指導教授對其指導學生所發表之學位論文，應負監督不周責任。

1. 助理A聽命於老師操作實驗，一般而言不被列為論文共同作者。但A於實驗中自作主張改變了實驗條件，使得實驗成功，建了大功。如果其改變是基於某種研究上的理由，一般會認為應當被列為共同作者，因為有智力上的貢獻。如果只是單純疏失的改變實驗條件，卻陰錯陽差的讓實驗成功，也許有的老師就認可其功勞，列為共同作者。何為單純疏失，何為有道理的改變，也可能屬主觀認定。
2. 學生A做了一系列的實驗，但都是負面的結果（藥物的某些濃度無效），讓另一位學生B接續研究同一題目，得以避開這些無效的條件（測試更高濃度），得以成功。B的論文發表，A應該列名作者嗎？
3. 學生A做了一系列的實驗，寫好了論文稿，投稿至期刊，就離開實驗室至國外擔任博士後。指導老師找了學生B幫忙補了一些期刊要求的實驗，因為後續的實驗很重要，因此將B列為第一作者，A為第二作者。合理嗎？
4. 實驗室發表了一篇論文，幾年前離職的助理說他也有貢獻，卻被忽略未列名，但老師認為他的貢獻不足以列名作者，該如何認定？誰做裁決？

5. 學生A、B、C做了一系列的實驗，整合成為一篇論文要投稿，但誰的貢獻度大，排名先後，爭論不休，誰該做最後裁決？學生不同意最後的排名次序，可以控告老師（或通訊作者）嗎？兩個實驗室的合作，最後論文排名次序有爭議，如何決定？誰來決定？一個實驗室不滿意排名的安排，可以撤回合作另外單獨發表嗎？

6. 老師A於參加老師B的學生進度報告時，提供了一個新的實驗想法，使得研究節省時間與花費，當學生的成果寫成論文發表，老師A的貢獻是否該列名作者？如果老師A提供了一個意見，使得學生放棄一個可能無效的研究途徑，老師A的貢獻（避免做虛工）是否該列名作者？如果這些建議，是老師A與B在私下聊天時提出，並無書面證明，他人並不知情，老師B於論文寫作時把老師A列為作者，恰當嗎？不列為作者，是否是吞沒了老師A的貢獻？如果老師B沒有把老師A列名作者，但老師A認為自己確有貢獻重要想法，老師B說我本就有同樣的想法，該如何處理？

7. 學生A做了一系列實驗，寫成論文要發表，指導老師說同實驗室的學生B沒有實驗結果，但需要論文才能畢業，把B列為共同第一作者，可以嗎？

8. 指導老師把學生A的論文指導委員C列為共同作者，因為C於進度報告中有提出有用的建議，合理嗎？如果學生A同意或不同意C確實有貢獻，有差別嗎？如果老師C被列為第一作者，學生A被列為第二作者，合理嗎？如果老師C並非學生A的論文指導委員，但幫忙修改了要投稿的論文，如果只是英文文法上的修改，應當被列為共同作者嗎？如果是大幅改動文章架構，讓論文的重要觀點得以清楚呈現，應當被列為共同作者嗎？可以被列為第一作者嗎？

9. 學生A的學位論文（單一作者），與其發表於期刊的論文完全相同，但期刊論文上多了很多共同作者，有同一實驗室的同學，有隔壁實驗室的同學，有他系他校的老師或學生，因為這些人都有參與討論。合理嗎？參與討論的貢獻要如何界定？誰來決定這些人的貢獻？學生A？指導老師？

10. 幾乎所有期刊都規範已發表之研究材料（例如抗體、細胞株、基因轉殖小鼠），該如有其他研究者要求，應提供給其他研究者使用。國外某大牌學者A的一篇論文中描述了一個該實驗室產生的抗體，B寫信向他要，三個月內寄了五封信都未獲回覆。(a) B想向期刊抗議，但又怕被大牌教授報復。聽說A會要求要掛名，B不得已，只好寫信主動提出願意合作，將來論文發表時將A列為共同作者。信寄出一週之後，A就把抗體寄來了。合作是B主動提出的，可以指責A嗎？(b) B向期刊抗議之後，期刊編輯要求A要提供抗體，A確實寄來了，三個月之後寫信來說抱歉，助理搞錯了，寄給你的是錯的，現在補上正確的，但B已浪費三個月時間。B能夠告A嗎？

11. 學生A的研究中，需要用到老師B的一台高階儀器，B要求要在論文上列名，合理嗎？如果B花很多時間指導A如何使用這儀器，應當列名嗎？如果B幫A解決了儀器使用上的問題，或是指導結果如何分析，應當列名嗎？

12. 系主任、院長提供行政及經費支援，應該列名於論文上嗎？整合型計畫的總主持人，負責整合協調，參與討論，是否該列名於該整合計畫的所有成果論文上？

13. 你參與了合作計畫，提供了部分的研究數據，但你不同意最後論文的結論，可以把你的數據部分撤出及除名嗎？如果你撤出，論文就無法成立，你受到合作者的壓力，你該怎麼辦？

14. 醫學研究需要基礎與臨床合作，尤其需要臨床醫師提供病人檢體。A醫師提供的檢體標示不清，未附詳盡的臨床診斷資訊，B醫師提供的檢體標示明確，保存完善，還附上詳盡的臨床診斷資訊以及後續的追蹤資訊，兩位都該列名為共同作者嗎？

15. 你參與國際大型合作，共20個實驗室合作，合作成果要發表時，你是50位共同作者中之一位，為求慎重及負責，你是否應去信要求所有合作實驗室提供所有研究的原始數據供你檢驗是否可靠？因為合作對象很多，你並不親自熟識，並不能信任每個參與實驗室的人，因此你應該放棄這樣的合作機會嗎？

16. 三個實驗室分工合作，將原本一個實驗室可做的工作分由三個實驗室執行，每個實驗室專供一項實驗，效率增加，每篇論文三個實驗室的老師及學生都列名為共同作者（三位共同第一作者、三位共同通訊作者）。這樣可以嗎？

17. 老師A派一位助理到B實驗室去做研究，得以列名為B發表論文共同作者。如果A只是出助理薪水，應當列名嗎？如果A每週都跟助理討論研究進度，可以列名嗎？

18. 藥廠找臨床醫師，說我們幫你做實驗寫論文，你掛名就好，不費力氣，就賺到一篇論文。這樣可以嗎？

19. 你向廠商買試劑，實驗作不出來，找廠商幫忙解決，乾脆請廠商代做實驗，提供實驗結果，也寫實驗報告。廠商的貢獻該如何於論文中呈現？

Keep clear lab notes (Belong to the lab)

- Organize your thoughts
- Historical records
- Helps you to remember
- Allows other people to replicate your experiment
- Defense against fraud

Content:

- Date (**bound note book, not loose leaf**; numbered pages)
- Title of the experiment
- Brief statement of purpose
- Description of the experiment
- Summary (interpretation) of the results

Record everything on the daily basis

Ref: At the Bench: A Laboratory Navigator. Chapter 5, Laboratory Notebooks. CSHL Press

Always preserve raw data

Microscopy Society of America on ethical digital image processing
(as published in [Microscopy Today](#) Nov/Dec 2003, p61):

Ethical digital imaging requires that **the original uncompressed image file be stored on archival media (e.g., CD-R) without any image manipulation or processing operation.** All parameters of the production and acquisition of this file, as well as any subsequent processing steps, must be documented and reported to ensure reproducibility.

Generally, acceptable (non-reportable) imaging operations include gamma correction, histogram stretching, and brightness and contrast adjustments. All other operations (such as Unsharp-masking, Gaussian blur, etc.) must be directly identified by the author as part of the experimental methodology. However, for diffraction data or any other image data that is used for subsequent quantification, all imaging operations must be reported.

Data selection

It is easy to see the results you expect, and ignore the rest.
Don't fool yourself ! The unexpected, unfit data may be meaningful.

某人的血壓 => 決定是否可以吃大餐？

300/150, 145/103, 138/97, 125/85, 60/60

Which data point do you choose?

Mendel's peas?

Millikan's oil drops?

Selecting or discarding certain data should have explicit rationale.

Best to describe the rationale clearly.

Double-blind test

Demands by high-profile journals

Many high-profile journals now demand authors to provide assurance of documentation, including methods, statistics (details), and computational code, which must be made available to the reviewers and eventually to the readers. Some journals now require authors to upload, once the paper is accepted, all raw data (unprocessed scans) onto the designated website for complete transparency.

Experimenter's Responsibility: Keep Detailed Raw Data

8/27/08

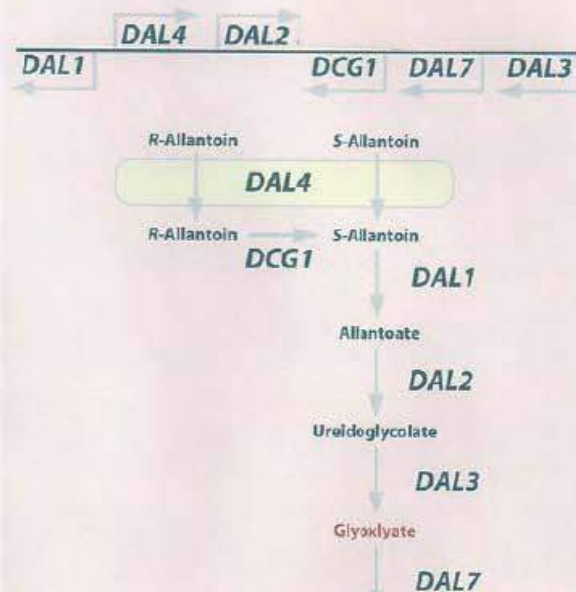
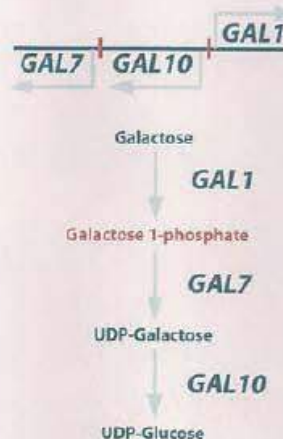
Date

Exp. Title

OPERON-LIKE ORGANIZATION OF THE GAL GENES

Although eukaryotes lack true operons, there are examples of operon-like gene clusters. Three examples of galactose utilization genes in *S. cerevisiae* (GAL1, GAL7, GAL10), the allantoin degradation genes in *S. cerevisiae* (DAL1, DAL2, DAL3, DAL4, DCG1), and the thalianol synthesis genes in *Arabidopsis* (THAS, THAH, THAD):

Thoughts



I want to show that disruption of the operon-like organization of the GAL genes:

- (1) leads to less co-ordinated expression
- (2) reduces fitness
- (3) leads to a buildup of pathway intermediates

Thoughts

The strategy for (1) & (2) is to tag the genes with fluorescent proteins or delete the GAL genes both in cis and in trans.

I have put a lot of thought into how to do the strain construction. Some of the issues:

- strain bkg: W303 or S288c
- auxotrophs or prototrophs
- HAP1+?
- delete all 3 genes (GAL1, 10, 7) in each strain? or just pairs (i.e. GAL1 & 10)
- leave drug markers in place or popout? (Report reg. gal induction of Cre)
- Fitness assays: indirect (FACS) or direct (sequencing)

8/28/08

NOTES ON STRAINS

Exp. Planning

I have decided upon a strain construction strategy. I will use prototrophic Hap1+ strains of S288c. FACS-based fitness assays will be more difficult since S288c has bkg fluorescence - also I can not use my standard (W303) reference. I would like

8/28/08

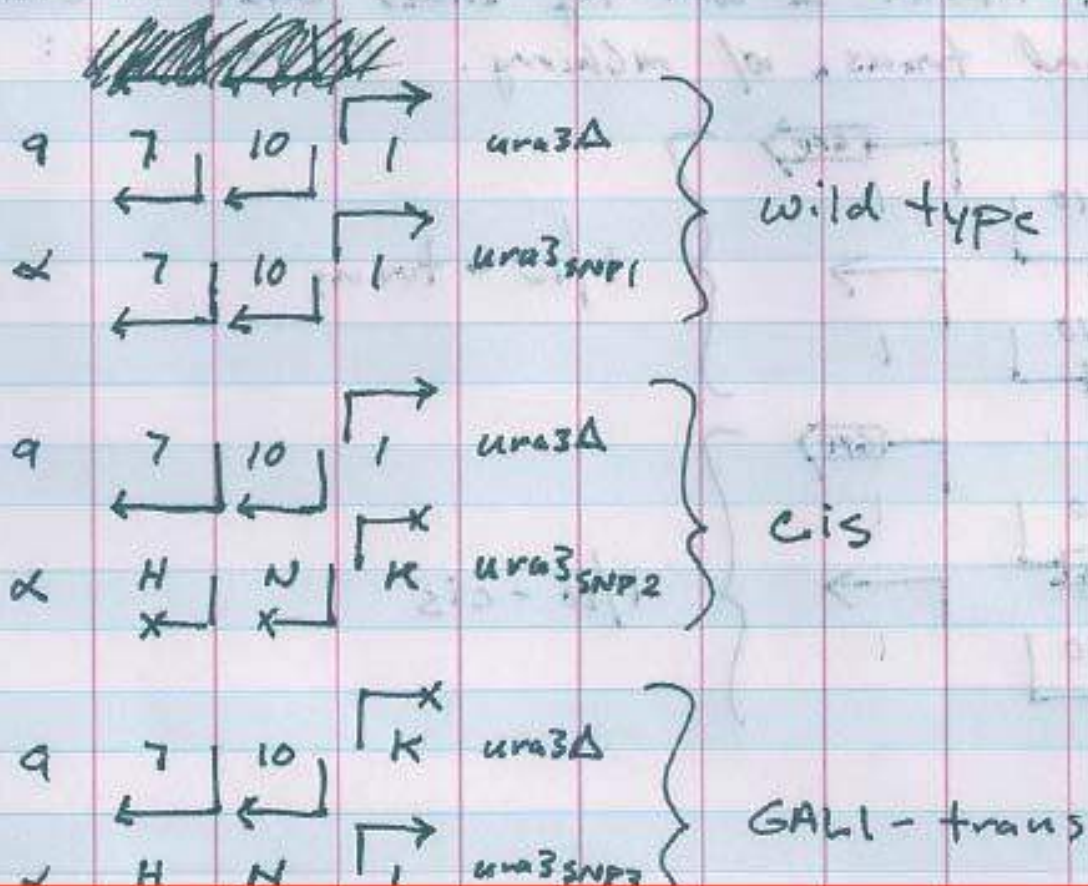
Date

STRAINS TO BE CONSTRUCTED - FOR GENE DELETION/FITNESS

1 - GAL1 K - KanMX

7 - GAL7 H - HygMX

10 - GAL10 N - NatMX

Exp. Planning

10/10/08

TRANSFORMATION OF ~~FWW~~ FY4 & FY5 w/ gal7Δ::HphMX

On Tuesday (10/7) I streaked FY4 & FY5 from frozen stock

Last night I inoculated 3mL YPD w/ single colony of FY4 & FY5

This morning I diluted each o/n 1:100 (100μL into 10mL) ~ 9:15



LANE

- 1 gal1Δ::Not
 - 2 gal10Δ::Kpn
 - 3 gal7Δ::Hph
 - 4 pAG25
 - 5 pAG32
- } primers on p. 5

RAW data

→ PCR prep → elute 30μL EB

Coulter count ~ 3:00 pm

Bkg	2.724E6	
FY4	4.192E7	4.222E7
FY5	3.947E7	3.968E7
Post Bkg	3.742E6	3.362E6

RAW data

10/21/08

SOME DISCUSSION

Soon I will have the strains I need to start doing experiments. First I will need to cross the strains to produce the diploids described on p. 3 & 4 (note that I ended up using Nat for GAL1 and Kan for GAL10).

↳ For the deletion strains I can build two indep. sets since I built everything in both mating types

- Possible control exp - mating types I can sure that there are

- The 1st expt. will provide that I can get a good idea of what glucose/galactose concentrations to use

- I will do all expts in ~~mix~~ glucose, galactose, and a mixture of glucose & galactose

Discussion of Exp. Outcome, Thoughts, and Planning

Reproducibility

A reliable result should be reproducible (by you and by others).

A paper should describe the methods clearly such that other people can reproduce the study.

Extraordinary claims demand extraordinary proof.

證明為真的責任在作者

PI's Responsibilities:

Keep the Records for 20 Years

- Regular discussion of and insist on research integrity
- Insist on seeing raw data
- Cross-check finalized figures with raw data in great detail
- Avoid creating an “oppressive” lab culture
- Do **NOT** serve as honorary co-author
- Mis-management: You are responsible!

New types of fraud in publishing

Journals try to inappropriately raise IF

asking authors to cite journal articles

bogus IF <http://scholarlyoa.com/2013/08/06/bogus-impact-factor-companies/>

Predatory Open Access Journals *Science* 2013.10.4

no real review; making profit from publication fee

Hijacked Journals (faked website of real journals)

Authorship for Sale *Science* 2013.11.29

Peer Review and Citation Ring

J. Vibration and Control retracted 60 papers by 陳震遠 (2011-14)

Tumor Biology retracted 107 papers (2012-16)

Ghostwriting

by pharmaceutical companies

Reference links

- 教育部校園學術倫理教育與機制發展計畫
- 科技部學術倫理網頁
- ORI - Office of Research Integrity (U.S.A.)
- ESF - European Science Foundation (Europe)
- COPE - Committee on Publication Ethics (U.K.)
- ICSU - International Council for Science



**Thank you for
your attention!**



**Wish you a great
success in your
HONORABLE
research!**



References

GUIDELINES, STATEMENTS AND CODES

- Singapore Statement on Research Integrity
<http://www.singaporestatement.org/statement.html>
- The European Code of Conduct for Research Integrity, ALLEA, 2017
<http://www.allea.org/wp-content/uploads/2017/04/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>
- US Office of Research Integrity, Introduction to the Responsible Conduct of Research, N. Steneck
<http://ori.hhs.gov/sites/default/files/rcrintro.pdf>
- Doing Global Science – A Guide to Responsible Conduct in the Global Research Enterprise, InterAcademy Partnership, 2016
<http://www.interacademycouncil.net/24026/29429.aspx>

Singapore Statement on Research Integrity

PRINCIPLES

Honesty in all aspects of research

Accountability in the conduct of research

Professional courtesy and fairness in working with others

Good stewardship of research on behalf of others

Singapore Statement on Research Integrity

- 1. Integrity:** Researchers should take responsibility for the trustworthiness of their research.
- 2. Adherence to Regulations:** Researchers should be aware of and adhere to regulations and policies related to research.
- 3. Research Methods:** Researchers should employ appropriate research methods, base conclusions on critical analysis of the evidence and report findings and interpretations fully and objectively.
- 4. Research Records:** Researchers should keep clear, accurate records of all research in ways that will allow verification and replication of their work by others.
- 5. Research Findings:** Researchers should share data and findings openly and promptly, as soon as they have had an opportunity to establish priority and ownership claims.

Singapore Statement on Research Integrity

6. *Authorship:* Researchers should take responsibility for their contributions to all publications, funding applications, reports and other representations of their research. Lists of authors should include all those and only those who meet applicable authorship criteria.

7. *Publication Acknowledgement:* Researchers should acknowledge in publications the names and roles of those who made significant contributions to the research, including writers, funders, sponsors, and others, but do not meet authorship criteria.

8. *Peer Review:* Researchers should provide fair, prompt and rigorous evaluations and respect confidentiality when reviewing others' work.

9. *Conflict of Interest:* Researchers should disclose financial and other conflicts of interest that could compromise the trustworthiness of their work in research proposals, publications and public

Singapore Statement on Research Integrity

10. Public Communication: Researchers should limit professional comments to their recognized expertise when engaged in public discussions about the application and importance of research findings and clearly distinguish professional comments from opinions based on personal views.

11. Reporting Irresponsible Research Practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification or plagiarism, and other irresponsible research practices that undermine the trustworthiness of research, such as carelessness, improperly listing authors, failing to report conflicting data, or the use of misleading analytical methods.

Singapore Statement on Research Integrity

12. Responding to Irresponsible Research Practices: Research institutions, as well as journals, professional organizations and agencies that have commitments to research, should have procedures for responding to allegations of misconduct and other irresponsible research practices and for protecting those who report such behavior in good faith. When misconduct or other irresponsible research practice is confirmed, appropriate actions should be taken promptly, including correcting the research record.

13. Research Environments: Research institutions should create and sustain environments that encourage integrity through education, clear policies, and reasonable standards for advancement, while fostering work environments that support research integrity.

14. Societal Considerations: Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work.

REPORTS and ARTICLES

- UK Parliamentary Office of Science and Technology POSTnote on Research Integrity, January 2017
<http://researchbriefings.files.parliament.uk/documents/POST-PN-0544/POST-PN-0544.pdf>
- D S Kornfeld, S L Tituts, Stop ignoring misconduct, Nature, Vol. 537, Issue 7618, August 2016
<http://www.nature.com/news/stop-ignoring-misconduct-1.20498>
- M Baker, Problematic images found in 4% of biomedical papers, Nature News, April 2016
<http://www.nature.com/news/problematic-images-found-in-4-of-biomedical-papers-1.19802>
- A McCook, Why do scientists commit misconduct?, Retraction Watch, August 2016
<http://retractionwatch.com/2016/08/29/why-do-scientists-commit-misconduct/#comment-1102955>

GUIDELINES ON AUTHORSHIP ISSUES

- Defining the Role of Authors and Contributors, International Committee of Medical Journals Editors ICMJE
<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>

ISSUES RELATED TO RESEARCH INVOLVING ANIMALS

- AAALAC Reference Resources
<https://www.aaalac.org/accreditation/resources.cfm>
- ARRIVE Guidelines – Reporting of In Vivo Experiments
<https://www.nc3rs.org.uk/sites/default/files/documents/Guidelines/NC3Rs%20ARRIVE%20Guidelines%202013.pdf>
- The 3Rs
<http://3rs.ccac.ca/en/about/three-rs.html>
- Animal welfare
<http://3rs.ccac.ca/en/about/animal-welfare.html>

USEFUL RESOURCES ON MENTORING

- Entering Mentoring – A Seminar to Train a New Generation of Scientists:
http://www.hhmi.org/sites/default/files/Educational%20Materials/Lab%20Management/entering_mentoring.pdf
- Adviser, Teacher, Role Model, Friend – On being a mentor to students in science and engineering, National Academy of Sciences, 1997 (free as PDF):
<https://www.nap.edu/read/5789/chapter/1>
- RCR module on Mentoring, Columbia University:
http://ccnmtl.columbia.edu/projects/rcr/rcr_mentoring/foundation/index.html
http://ccnmtl.columbia.edu/projects/rcr/rcr_mentoring/introduction/index.html
- Resources for Research Ethics and Education (RREE) – Mentoring:
http://ccnmtl.columbia.edu/projects/rcr/rcr_mentoring/introduction/index.html