

# Writing with Integrity

Susan Porter - Assoc Dean, Faculty of Graduate Studies  
Beth Haverkamp - Assoc Dean, Faculty of Education



Integrity:

From Latin *integer* (whole, complete)

What you

value  
say  
do



# Writing with Integrity

**Values?** (implicit in all academic writing)

- honesty, objectivity, clarity, accuracy
  - completeness - no relevant information held back
  - authors are the ones who did the work
  - words, results, and ideas are authors' unless stated otherwise

## Referencing:

- allows readers to examine original material
- demonstrates respect and gratitude to originator and acknowledges their influence
- gives credit where credit due
- may be a means to refute



# Writing with Integrity

**Values?** (implicit in all academic writing)

- The work represents the author's synthesis and critical analysis of the subject



# Writing with Integrity

Values? (implicit in all academic writing)

- published papers
- course essays
- theses
- grant applications
- other applications (grad school, scholarships, etc)
- ...



An ethical writer acknowledges the relevant contributions of others and the source of his/her ideas and information.

Roig, M. 2006. *Avoiding plagiarism, self-plagiarism, and other questionable writing practices: a guide to ethical writing.*  
<http://ori.dhhs.gov/education/products/plagiarism/>



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These perceived benefits have resulted in research into the structural and fire performance of concrete-filled hollow steel columns in several organizations around the world [1-8].



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At what point does collaboration become collusion and “fair use” become “plagiarism,” and how consistent are we across a department or campus in making these distinctions clear (Auer & Krupar 2001)?

Plagiarism of ideas:

- unintentional / intentional

[http://kuscholarworks.ku.edu/dspace/bitstream/1808/230/1/RCR\\_Final.pdf](http://kuscholarworks.ku.edu/dspace/bitstream/1808/230/1/RCR_Final.pdf)



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Johann Sebastian Bach came from a long line of musicians, and was a part of large extended family with musical talent. ■ His uncle, Johann Christoff Bach, in particular was a well known musician, and introduced Johann Sebastian to the organ (Wolff, 1983).



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- even if unpublished

These conditions were chosen, as they are thought to be most representative of the real-life situation (D. Tsang, personal communication).



*An ethical writer acknowledges sources by summarizing, paraphrasing appropriately, or enclosing in quotations marks.*

Students hear about global responsibility while being educated in institutions that often invest their financial weight in the most irresponsible things. The lessons being taught are those of hypocrisy and ultimately despair. - Orr, 1991

Students are being taught lessons of hypocrisy and despair because they hear about global responsibility while being educated in institutions that often invest their financial weight in irresponsible things (Orr, 1991).



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Universities have been known to preach global responsibility, all the while absolving themselves of any such responsibility in practice. What does this teach students? That hypocrisy is acceptable, and that the gap between ideals and reality is insurmountable (Orr, 1991).



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What about Materials/Methods or detailed technical descriptions?

Reverse transcription was performed using RT-PCR Master Mix (GE Healthcare). Briefly, 1 µg of total RNA was reverse-transcribed with random primers, and first strand reverse-transcribed cDNA was diluted 1:200 in water before use. Real-time PCR was carried out with LightCycler 480 SYBR Green I Master kit using a LightCycler 480 system (Roche Applied Science) as recommended by the manufacturer.

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“Please note that verbatim copying of entire paragraphs (even in the “Methods” section) whether from other authors’ or one’s own prior work is never tolerated.”

*Pharmaceutical Research*



# An ethical writer performs his/her own synthesis and analysis of the subject OR presents another's with acknowledgment.

## LETTERS

### Production of p53 gene knockout rats by homologous recombination in embryonic stem cells

Chang Tong<sup>1</sup>, Ping Li<sup>1†</sup>, Nancy L. Wu<sup>2</sup>, Youzhen Yan<sup>2</sup> & Qi-Long Ying<sup>1</sup>

The use of homologous recombination to modify genes in embryonic stem (ES) cells provides a powerful means to elucidate gene function in disease models. Application of this technology to engineer genes in rats has not previously been possible because of the absence of germline-competent ES cells in this species. We have recently established authentic rat ES cells<sup>1</sup>. Here we report the generation of gene knockout rats using the ES-cell-based gene targeting technology. We designed a targeting vector to disrupt the tumour suppressor gene p53 (also known as Trp53) in rat ES cells by means of homologous recombination. p53 gene-targeted rat ES cells can be routinely generated. Furthermore, the p53 gene-targeted mutation in the rat ES-cell genome occurred naturally through the germ line via ES-cell rat chimaera to create p53 gene knockout rats. The rat is the most widely used animal model in biological research<sup>2,3</sup>. The establishment of gene targeting technology in rat ES cells, in combination with advances in *in vitro* fertilisation, opens up a new potential pathway for the study of human disease.

In the past two decades, gene targeting in mouse ES cells has been used as a unique and powerful tool for elucidating gene function and adding fundamental biological questions in mammalia<sup>4</sup>. This ES-cell-based gene targeting technology allows us to create precise and conditional gene deletions (knock-out) or loss-of-function mutations (knock-out) of the chosen locus. So far, this technology is only available for the mouse because of the inability to establish germline-competent ES-cell lines from other species. The rat is a more widely used model for studying human normal and disease processes and for testing drug efficacy and toxicity before human clinical trials<sup>5</sup>. Although several technologies have been used to alter rat genomes<sup>6,7</sup>, our ability to manipulate the rat genome and create rat disease models is greatly limited without the ES-cell-based gene targeting technology. Recently, we developed the 3T3 culture system that enabled the derivation of germline-competent rat ES cells for the first time<sup>1</sup>—an innovation with which the ES-cell-based gene targeting technology developed for the mouse can be generally applied to the rat; we targeted the p53 gene in rat ES cells.

p53 is a tumour suppressor, and mutations in the p53 gene are the most frequently observed genetic lesions in human cancer<sup>8</sup>. The rat p53 gene locates on chromosome 10 on a site of homology with its orthologous start codon located within exon 2 (Fig. 1a). We designed a targeting vector to disrupt the p53 gene via homologous recombination in rat ES cells (Fig. 1a). The vector contained 6.7 kilobase (kb) 5' and 1.6-kb 3' homology arms which were amplified from dark agouti (DA) rat ES-cell genomic DNA. Positive selection was provided by a CAG-EGFP-3'UTR cassette and negative selection by a phosphoglycerate kinase 1- $\alpha$  (PGK-DTA) selection cassette. Correctly targeted rat ES cells expressed puromycin resistance

into the chromosome when homologous recombination occurred. Random integration of PGK-DTA was expected to reduce the number of puromycin-resistant ES cell clones with random targeting vector integrations, enabling the enrichment of correctly targeted cells<sup>9</sup>.

In the targeted cells, CAG-EGFP-3'UTR replaced exon 2–5 of p53 (Fig. 1b), resulting in a loss-of-function mutation (p53<sup>EGFP-3'UTR</sup>). Polymerase chain reaction (PCR) primers were used to screen puromycin-resistant rat ES cells for homologous recombination with the 3' arm of homology. The 5' PCR primer (TGCGG TGG GGT CTAT GGCT TCT) was located in the Rat gene. The 3' PCR primer (CGGACGATGGACATCTGGTGGG) was located between exon 8 and exon 9. The size of the expected PCR product in correctly targeted cells was 2,140 base pairs (bp). We also designed 5' and internal hybridisation probes to further confirm the rat p53 gene targeting by Southern blot analysis (Fig. 1a, b).

To test whether the rat p53 gene could be disrupted via homologous recombination, we introduced the p53 gene targeting vector into DA rat ES cells by electroporation. Puromycin was added to the culture medium to select for transfected cells. We picked and expanded puromycin-resistant colonies and identified correctly targeted cells by PCR and Southern blot analysis. We transfected two male DA rat ES cell lines, DA63 and DA68, with the p53 vector. As summarised in Supplementary Table 1, we obtained 14 p53 gene-targeted DA rat ES-cell clones. Targeting efficiency in DA63 and DA68 ES cells were 1.12% and 3.70%, respectively. Detailed PCR and Southern blot screening results are provided in Supplementary Figs 1 and 2.

The p53 gene-targeted rat ES-cell clone, DA68-p53-1, was used to generate transmission of p53<sup>EGFP-3'UTR</sup> through the rat germ line. DA68-p53-1 rat ES cells were GFP positive as expected (Fig. 2a). The correct targeting event in the DA68-p53-1 cells was also verified by Southern blot analysis using 5', 3' and internal probes (Fig. 2b). To

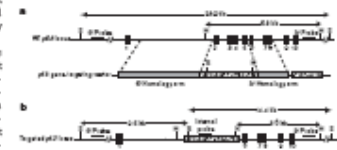


Figure 1 | Schematic diagram showing the strategy to disrupt the rat p53 gene via homologous recombination. a, Structure of the wild-type (WT) rat p53 gene and the targeting vector. b, Structure of the targeted rat p53 gene.

**Richter, D. (1982) Opportunities for Women in Science . In D. Richter (Ed.), *Women Scientists: The Road to Liberation* (p. 1). London:Macmillan.**

The proportion of women engaged in scientific work varies greatly in different countries. In some places they form a large part of the effective work-force engaged in science teaching and research, while in other parts of the world there are practically no women scientists at all. There is still a vast amount of suffering in the world which could be prevented if more trained scientists were available in the areas where they are needed, and if the standard of scientific education of the general population could be raised. In considering what could be done to improve the situation, it appears that one of the most helpful things would be for more women to be brought into the scientific field and encouraged to take up a scientific career. Clearly traditional attitudes play an important part in determining the roles regarded as acceptable for women in any particular community, but other factors, including educational facilities and economic pressures, also play a part.

Different countries have varying degrees of female participation in the scientific workforce; there are many women scientists in some countries, but in others, there is virtually no participation by women in science teaching or research. Much suffering in the world could be prevented if more scientists were trained in needed areas, and the general level of public education in science were raised; the encouragement of women to take up scientific careers could be one of the most helpful ways to accomplish this. In addition to traditional attitudes, factors such as economics and the availability of educational facilities play a role in determining the acceptability of roles for women in science.



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“You plagiarize when you use words so close to those in your source, that if your work were placed next to the source, it would be obvious that you could not have written what you did without the source at your elbow.”



ARTICLE

Mediator and cohesin connect gene expression and chromatin architecture

Robert H. Kugel Jr., Daniel S. Bonner, ... David A. Golenbock, ...

Transcription factors control cell-specific gene expression programs through interactions with diverse co-repressors and co-activators. Gene sets that are broadly expressed by all cells in the body are often controlled by a common set of transcription factors...

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Mediator and cohesin contribute to 3D cell entry. The results suggest that Mediator and cohesin contribute to 3D cell entry by mediating interactions between transcription factors and the chromatin architecture...

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REPORTS

Differential Arginylation of Actin Isoforms Is Regulated by Coding Sequence-Dependent Degradation

Actin is a central cytoskeletal component that is essential for cell motility and division. The actin cytoskeleton is highly dynamic and its function is regulated by a variety of post-translational modifications...

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Receptor 9 Protein 3

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Many of today's ills, particularly in the developing world, can be attributed in part to a lack of technological knowledge and infrastructure, and more generally a lack of scientific literacy in the population. An answer to this would seem to lie in countries' increasing their scientific workforces, yet in many countries, the workforce is drawn only from the 50% of the population that is male; women are effectively excluded from contributing to the welfare of their country in this manner. Of all the factors that have been proposed to contribute to this situation, we can discount one: that women lack the inherent ability to be successful scientists.



# An ethical writer does not plagiarize him/herself.\*

## Redundant publication

- "share the same hypothesis, data, discussion points or conclusions"
- the same paper for different courses

## Salami publication ('least publishable unit')

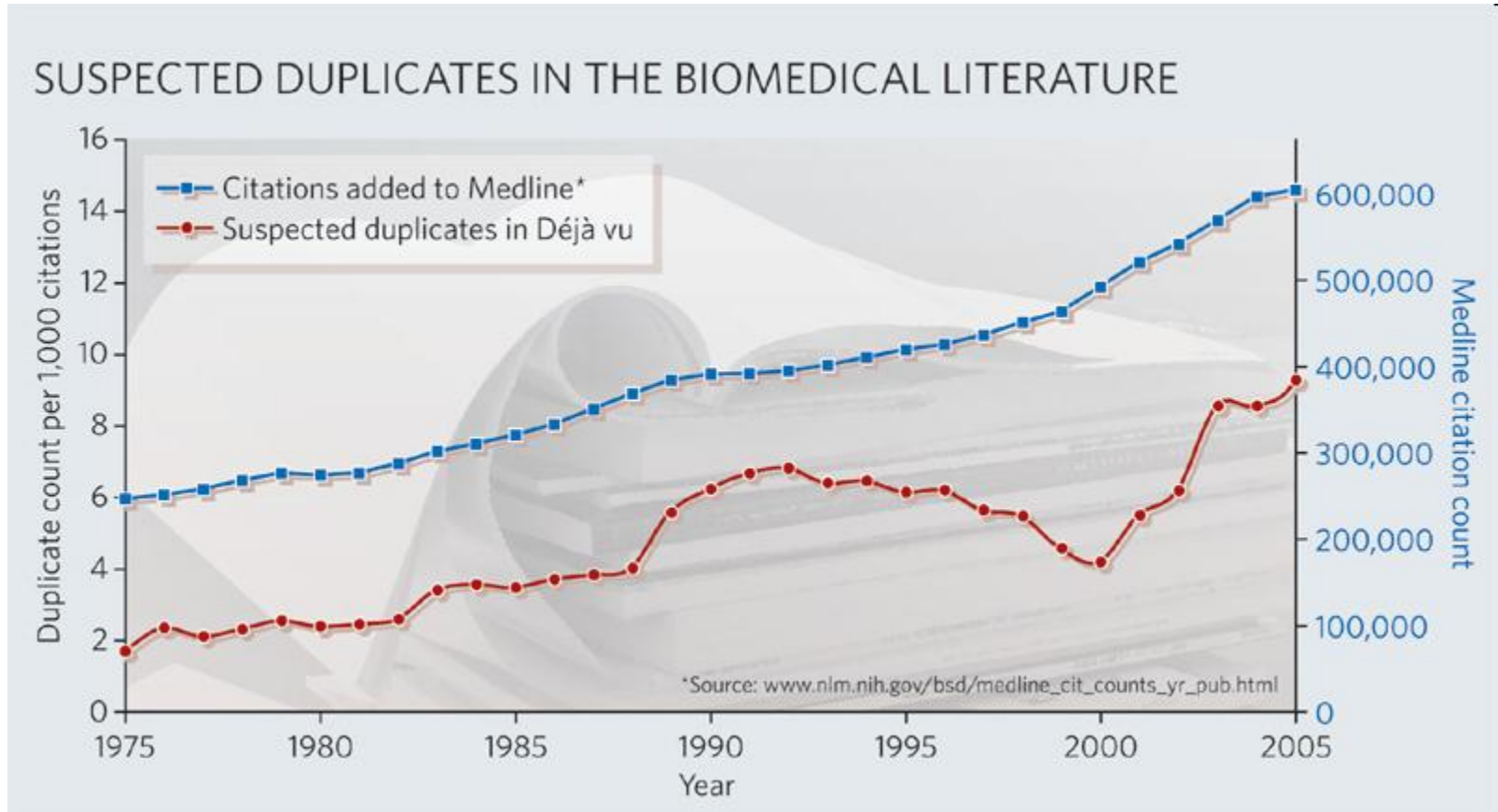
- publishing parts of the same study in separate papers

## Reuse of previously published text

\*Unless certain conditions hold, eg, doesn't violate copyright, the duplication is made explicit



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Errami & Garner 2008, Nature 451:397



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“Researchers should avoid dividing a project into 'least publishable units', which misinforms the public on the importance and value of the research, and wastes time and money.”

- APA Publication Practices

“Deception is the key issue in all forms of self-plagiarism”

- The Lancet



When paraphrasing or summarizing other work, an ethical writer reproduces the exact meaning of the others' ideas or facts

Smith et al, 2007:

We found that children who were breast-fed for more than 8 months were less likely to develop respiratory infections in their second year of life.

~~Breast-feeding for more than 8 months has been shown to improve immune function (Smith et al., 2007)~~

~~Breast-feeding for more than 8 months has been shown to reduce respiratory infections in the second year of life (Smith et al., 2007).~~

...consistent with Smith et al (2007), who found extended breast-feeding to be associated with reduced respiratory illness in the second year of life.

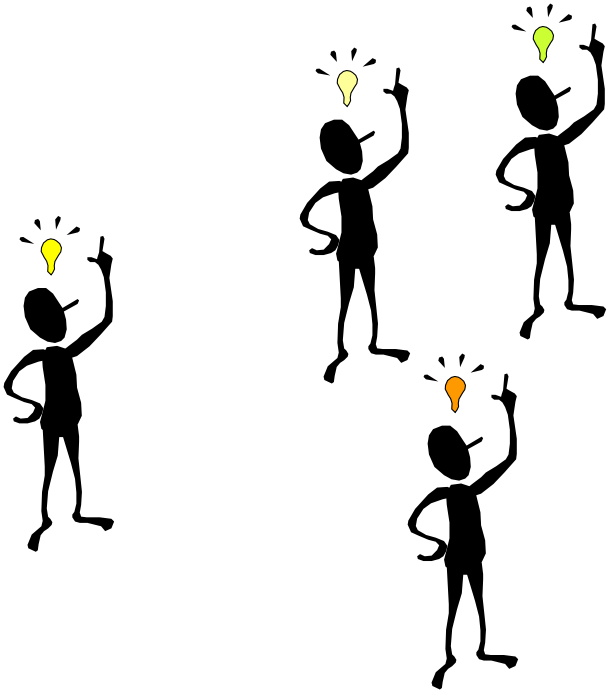


An ethical writer has read and understood  
all work cited.

The crystal structure of the nucleosome core particle was determined at 2.8 Å thirteen years ago<sup>8</sup>, and since then structures of nucleosome core particles containing histone proteins from different species and variant DNA sequences of the original human  $\alpha$ -satellite sequence have provided structural insight<sup>9,10,11,12,13,14,15,16,17</sup>



An ethical writer ensures that credit is given to those who first reported the finding or who first had the idea.



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An ethical writer reports evidence or ideas  
contrary to their own.

When describing one's own studies or  
supporting studies, any potential flaws or  
limitations must be described.

The preceding experiments establish a clear role  
for pRb in determining the fate of cells *in vivo* and  
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The preceding experiments establish a clear role  
for pRb in determining the fate of cells *in vivo* and  
*in vitro*. However, because this analysis was  
conducted in p53-deficient cells, it is unclear  
whether *Rb* alone is sufficient to determine this  
plasticity...



# An ethical writer includes all information necessary for the research to be replicated.

## METHODS

**Mice and rats.** CF-1 (Charles River Laboratory Stain Code 023) and Tg(DR4)1Jae/J (Jackson Laboratory Stock number 003208) (DR-4) strains of mice were used to prepare mouse embryonic fibroblasts (MEFs). MEFs prepared from the DR-4 mouse strain are resistant to G418, 6-thioguanine, puromycin and hygromycin. E4.5 timed-pregnant Fischer 344 inbred rats (F344/NHsd) and E3.5 pseudo-pregnant Sprague-Dawley outbred rats (Hsd:Sprague Dawley) were purchased from Harlan Laboratories. Animal experiments were performed according to the investigator's protocols approved by the USC Institutional Animal Care and Use Committee (IACUC).

**Rat ES cell culture.** Rat ES cells were cultured at 37 °C in a humidified 5% CO<sub>2</sub> incubator. They were routinely maintained on mitotically inactivated CF-1 MEFs with N2B27 medium supplemented with 3 μM CHIR99021 and 1 μM PD0325901 (2i medium)<sup>2,3,15</sup>. Rat ES cells attach loosely to the feeders, so it is very easy to detach rat ES cells from the feeders by mechanical pipetting. Rat ES cells were passaged every 2–3 days. For passaging, rat ES cells were detached from feeders by pipetting and harvested by centrifugation. 0.025% trypsin/EDTA was added to the cell pellet to prepare a single cell suspension. 0.025% trypsin/EDTA

Rat ES cells attach loosely to the feeders, so it is very easy to detach rat ES cells from the feeders by mechanical pipetting.



An ethical writer includes all information necessary for the research to be replicated (or applied to new contexts).

Transcripts were read another time with the intention to mark or underline meaning units as they applied to the question under investigation (Wertz, 2005). This process was accomplished through utilizing a word processing commenting tool on the transcripts. Next, meaning units were read and rewritten to capture their essential elements; this is done by free imaginative variation.



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During the first stage of analysis, concepts were labeled through the process of open coding (Strauss & Corbin, 1998). This stage involves breaking down interview transcripts into small, distinct parts, such as a word, a phrase, or a sentence or group of sentences. Concept labels were kept as close to the interviewee's own words as possible. "My mentor helped me learn" is an example of the concept generated from the statement, "He [my mentor] was receptive to helping me learn." [and became part of the general category "traits of a good mentor."]



An ethical writer does not exclude valid  
contrary results.

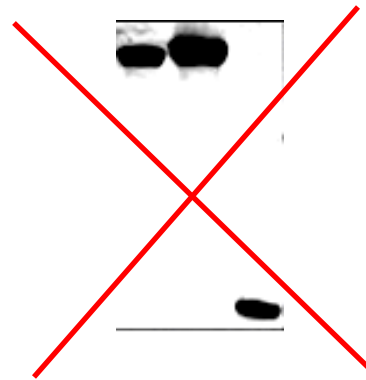
All statistical practices, interpretation and  
graphical or other representations are  
appropriate, honest and objective.

" [Good science requires] a specific, extra type of integrity that is  
[more than just] not lying, but bending over backwards to show how  
you're maybe wrong" - Richard Feynman, Nobel Laureate

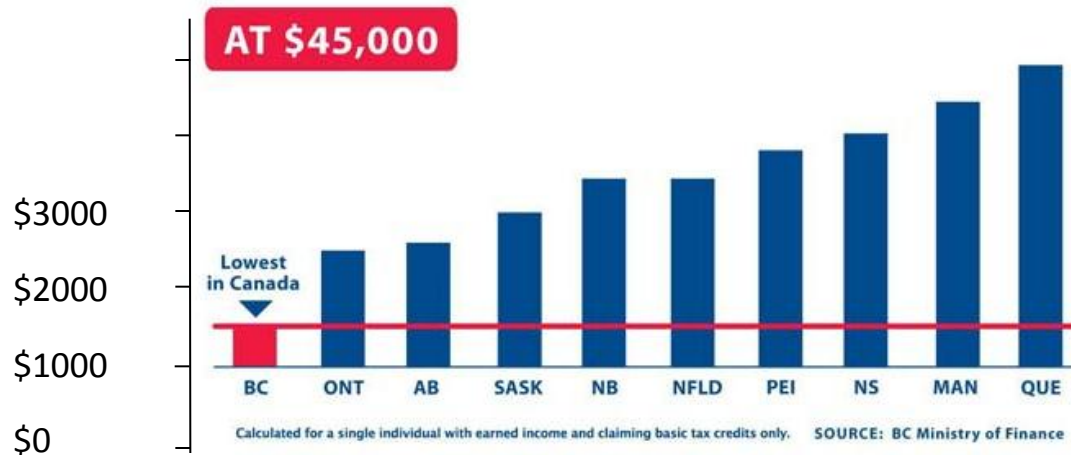


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# PROVINCIAL PERSONAL INCOME TAXES



## THE VANCOUVER SUN

Premier's tax charts misleading, deceptive, experts say

Made difference between B.C. and other provinces look greater than it is

BY CHAD SKELTON, VANCOUVER SUN OCTOBER 29, 2010



An ethical writer is clear and concise  
and does his/her best to help the readers  
understand

On the contrary to the previous reports, in one study, IL-6 did not change the cytotrophoblastic secretion of total hCG, but induced a dose-dependent stimulation of leptin secretion and increased the activity, but not the immunoreactivity, of the matrix metalloproteinases MMP-9 and MMP-2 which were involved in trophoblastic invasion during implantation [11]. These results indicate that IL-6 could be considered as an endometrio-trophoblastic regulator of cytotrophoblastic gelatinases.



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In contrast to previous reports [9,10], Meisser et al [11] showed that IL-6 did not induce hCG production in cytotrophoblastic cells grown *in vitro*. A possible role for IL-6 in trophoblastic invasion, however, was indicated by their findings that IL-6 induced the activity (but not levels) in these cells of two metalloproteinases involved in trophoblastic invasion, MMP-9 and MMP-2.



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We should listen to the intertextual, multivocalities of postcolonial others outside of Western culture in order to learn about the phallogocentric biases that mediate our identities.



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We should listen to the views of people outside of Western society in order to learn about the cultural biases that affect us.

Stephen Katz, “How to Speak and Write Postmodern”



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understand

In academic writing -

“[T]he real risk-taking...is in precise statements and explicitly articulated arguments, since the point of such formality is to make errors maximally easy to spot. If you are afraid of being caught out, take refuge behind a smokescreen of vagueness and obscurity.”

- Timothy Williamson, TLS March 20, 2009 “Plato goes pop”



An ethical writer follows norms of authorship and is conscious of (and reports as required) conflicts of interest.

*International Committee of Medical Journal Editors:*

Authorship credit should be based on:

- 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- 2) drafting the article or revising it critically for important intellectual content; and
- 3) final approval of the version to be published.

Authors should meet conditions 1, 2, and 3.

Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.



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**APA:**

An author is considered anyone involved with

- initial research design
- data collection and analysis
- manuscript drafting
- final approval

The following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself.



# An ethical writer

- acknowledges the relevant contributions of others and the source of his/her ideas and information.
- acknowledges sources by summarizing, paraphrasing appropriately, or enclosing in quotations marks.
- does not self-plagiarize
- reproduces the exact meaning of the others' ideas or facts when summarizing.
- has read and understood all work cited.
- ensures that credit is given to those who first reported the finding or who first had the idea.
- reports evidence or ideas contrary to their own.
- describes any potential flaws or limitations.
- includes all information necessary for the research to be replicated.
- does not exclude valid contrary results
- ensures statistical practices, interpretation and graphical or other representations are appropriate, honest and objective
- is clear, concise and easily understood
- follows norms of authorship and reports/is conscious of conflicts of interest

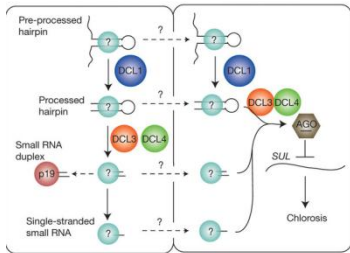


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**REPORTS**

**Differential Arginylation of Actin Isoforms Is Regulated by Coding Sequence-Dependent Degradation**

Y. Wang, C. Chen, S. Wang, & S. Wang

**Abstract**

Actin is a highly conserved cytoskeletal protein that is essential for cell motility, division, and signaling. The actin cytoskeleton is a dynamic network of actin filaments that is regulated by a variety of actin-binding proteins. The actin cytoskeleton is also regulated by post-translational modifications, including phosphorylation, nitrosylation, and arginylation. Arginylation is a post-translational modification of actin that involves the addition of an arginine residue to the actin protein. Arginylation is a reversible modification that is regulated by a variety of factors, including pH, temperature, and the presence of arginylase. Arginylation of actin is thought to play a role in the regulation of actin filament stability and function. In this study, we have investigated the regulation of actin arginylation by coding sequence-dependent degradation. We have found that the rate of actin arginylation is regulated by the presence of a specific coding sequence in the actin protein. This coding sequence is located in the actin protein's actin-binding domain and is thought to play a role in the regulation of actin filament stability and function. Our findings suggest that coding sequence-dependent degradation is a novel mechanism for the regulation of actin arginylation and may play a role in the regulation of actin filament stability and function.

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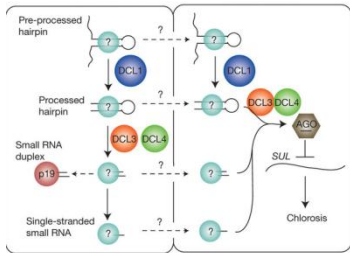


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Actin is a major cytoskeletal component that is essential for cell motility and division. It exists in two major isoforms,  $\alpha$ -actinin and  $\beta$ -actinin, which are encoded by different genes. The two isoforms are highly similar in sequence and function, but they differ in their post-translational modification patterns. In particular,  $\alpha$ -actinin is highly arginylated, while  $\beta$ -actinin is not. This differential arginylation is regulated by a coding sequence-dependent degradation mechanism. The authors show that the degradation of  $\alpha$ -actinin is mediated by a specific protease that recognizes a unique sequence in the coding region of the  $\alpha$ -actinin gene. This mechanism ensures that  $\alpha$ -actinin is rapidly degraded and replaced by newly synthesized, unmodified  $\alpha$ -actinin, resulting in a high level of arginylation. In contrast,  $\beta$ -actinin is not targeted by this protease and remains unmodified. The authors also show that this mechanism is conserved in other actin isoforms and is essential for the proper function of the cytoskeleton.

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# Consequences of unethical practices

## For others:

- undermining of research record
- loss of trust in scholarship by the public and scholarly community
- waste of resources and time
- possible harm to individuals
- tarnished reputation of institution, others involved
- other students are disadvantaged (academic work)
- other authors don't receive credit



# Consequences of unethical practices

## For yourself:

- retraction of paper
- loss of reputation
- feelings of guilt or shame
- student academic penalty: 0% in assignment or course  
suspension  
notation on transcript - "academic misconduct"
- rescinding of degree
- loss of position
- a return of research funds and/or ineligibility to apply for new grants for a period of time



# Factors contributing to questionable practices



- competition
- lack of time
- need to convince reviewers and readers
- grants, graduation, promotion & tenure, etc
- financial or other conflicting interests
- difficulty with subject matter or skills
- lack of organization
- lack of familiarity with English



# Strategies for ethical writing

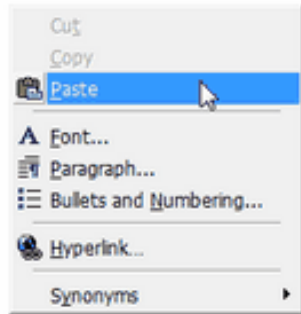


Avoid getting yourself in a situation where you're pressed for time

- allow time for thorough research
- allow time for revision
- allow time for feedback if appropriate



# Strategies for ethical writing



**NEVER** copy and paste material from other sources into your working document



# Strategies for ethical writing

If you struggle at all with writing, develop your abilities:

- read (not just the academic literature)
- listen attentively to articulate broadcasting or lectures
- practice writing (letters, diary, etc)
- get feedback from those with a good command of English
- take workshops (eg, GPS, Writing Centre)



# Strategies for ethical writing

- Thoroughly review the literature
- Find, read and understand any references you're considering citing
- Double check the accuracy of your references
- When writing or making notes, immediately reference others' ideas, information, etc
- Separate your literature research from your writing
- Read the document and ask
  - unless cited appropriately, "Are these ideas and words my own?"
  - "Did I bend over backwards to show how maybe I'm wrong?"
  - "Can others replicate this?" (scientific papers)
  - "Will others understand this easily?"



# References, Resources

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- Modern Language Association (1992/Rev. 2004)“Statement of Professional Ethics.” *Profession* 92. New York: MLA, 1992. 75-78. Available at [http://www.mla.org/repview\\_profethics](http://www.mla.org/repview_profethics).



# References, Resources

## York University Academic Integrity Tutorial:

30-40 minute self study tutorial, followed by a self-test to assess comprehension.

Available at: [www.yorku.ca/tutorial/academic\\_integrity/how.html](http://www.yorku.ca/tutorial/academic_integrity/how.html)

## Style manuals:

### APA Style

- *Publication Manual of the American Psychological Association*. 6th ed. Washington, DC: American Psychological Association, 2010. Official APA style guide.

### MLA Style

- *MLA Handbook for Writers of Research Papers*. 7th ed. New York: Modern Language Association of America, 2009. A somewhat simplified guide, adequate for undergraduate and most other research papers.
- *MLA Style Manual and Guide to Scholarly Publishing*. 3rd ed. New York: Modern Language Association of America, 2008. For graduate students, scholars, and professional writers (more depth on copyright, legal issues, and writing theses, dissertations, and scholarly publishing).

### Turabian Style

- Turabian, Kate L. *A Manual for Writers of Term Papers, Theses, and Dissertations*, 6th edition. Chicago: University of Chicago Press, 1996.

### Chicago Style

- *The Chicago Manual of Style*. 15th ed. Chicago: University of Chicago Press, 2003.

