

**USC Center for Excellence in Research**

# **How to Publish in the Best Journals? Scientific and Ethical Standards**

**Yves A. DeClerck, MD**  
**December 2, 2011**

# Disclosure:

I am a senior editor for *Cancer Research* and receive an annual honorarium for this function

# A Changing World

1455

1665

1822-1895

1970

2000's

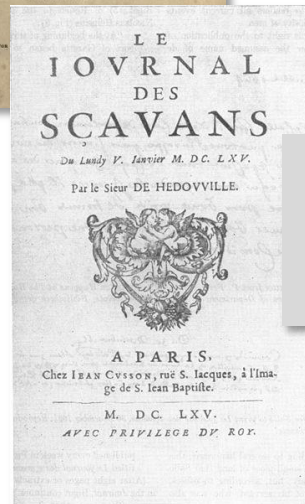
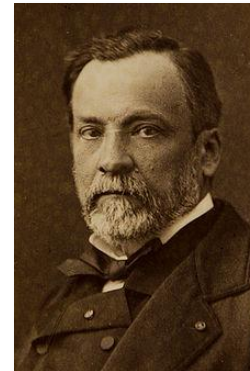
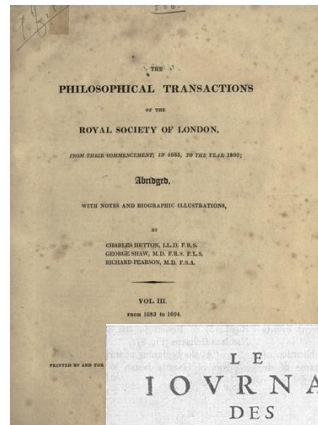
Printing  
42-line Guttenberg Bible

First 2 Scientific  
Journals

Louis Pasteur

From Descriptive to Methodological

Gyricon  
Electronic paper



Reproducibility of Experiments  
IMRAD structure  
Introduction, Methods, Results And Discussion

# What is a Scientific Publication?

- A first disclosure containing sufficient information to enable peers
  - To assess observations
  - To repeat experiments
  - To evaluate intellectual processes

# I. SCIENTIFIC STANDARDS

- 1. The anatomy of a scientific paper
- 2. How and when to start?
- 3. Which journal?
- 4. How to submit and prevent rejection without review?

# **1. The Anatomy of a Scientific Paper**

# In Contrast to Papers in the Humanities, Scientific Papers have a Rigid Structure

Experimental Process	Section
What did we do in brief?	Abstract
What is the problem?	Introduction
How did we solve the problem?	Materials and Methods
What did we find out?	Results, figures/tables, legends
What does it mean?	Discussion
Who helped us out?	Acknowledgments
Whose work did we refer to?	Literature cited (references)
Extra information	Supplemental material

I

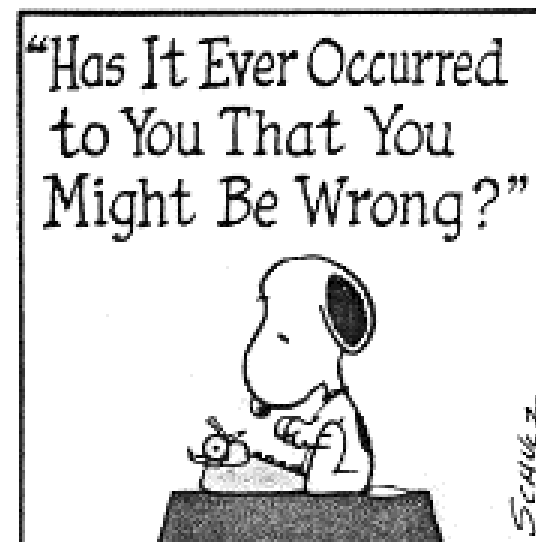
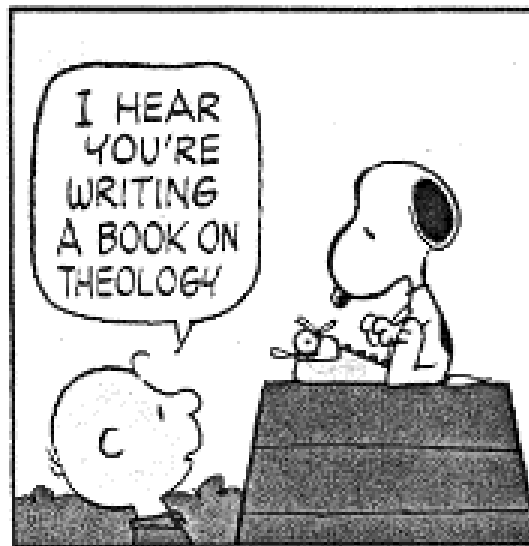
M

R

A

D

# The Title





# The Title

- Should be succinct
- Should contain key words that an electronic search will find
- Should be conclusive and not descriptive
- Most journals impose a word or space limit

## **A Nonconclusive Title:**

Effect of Interleukin-6 on Drug Resistance  
in Neuroblastoma via STAT-3

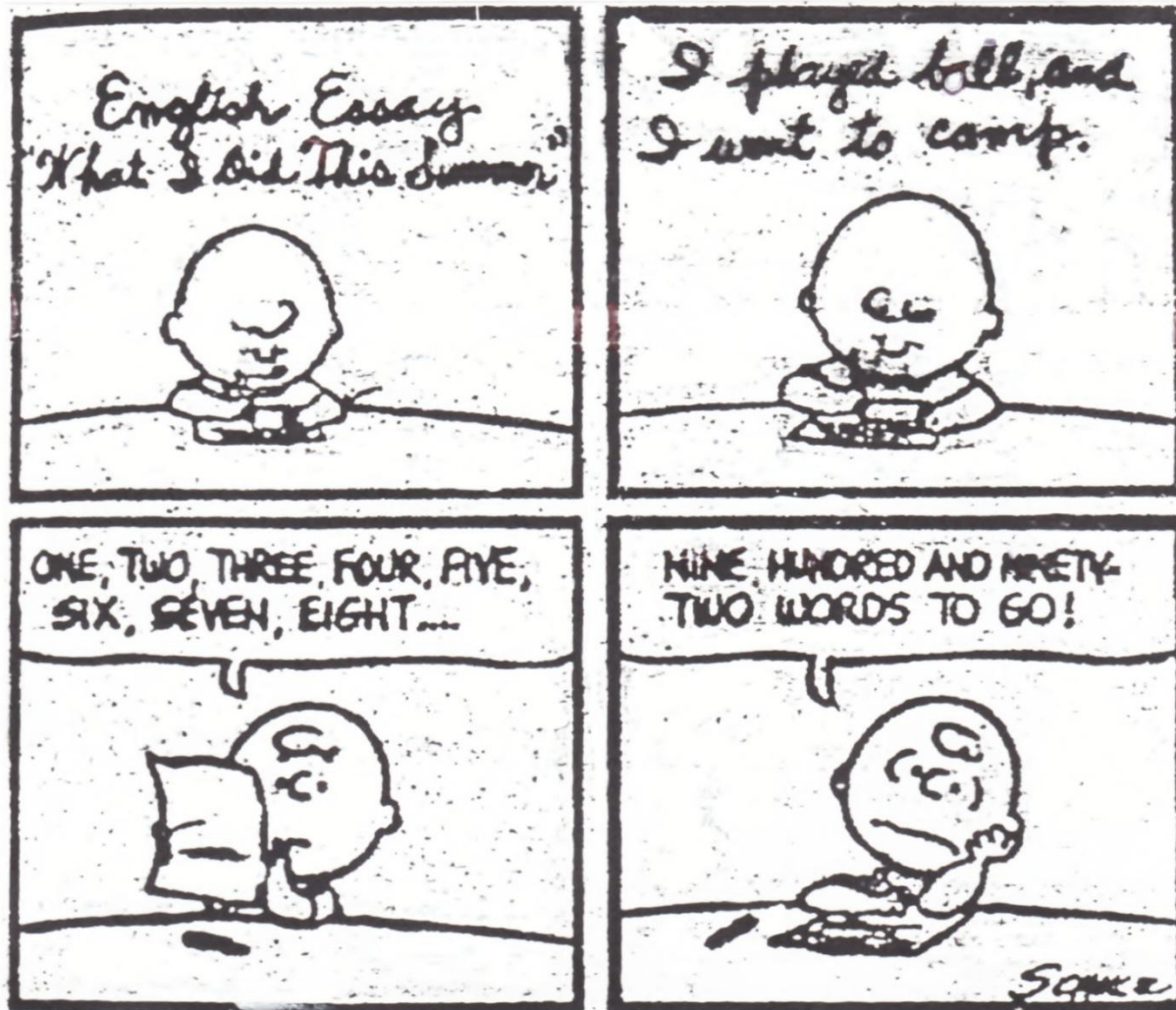
## **A Conclusive Title:**

STAT-3 is Necessary for Interleukin-6 -  
Mediated Drug Resistance in Neuroblastoma

# The Authors and Affiliations

- Be consistent with your name and use a middle initial
- The order of the authors remains important (see Ethical Standards)
- Affiliation should recognize the institution(s)/department(s) supporting your work

# The Abstract



# The Abstract

- A concise summary of the entire paper (introduction, methods, results, discussion and conclusion)
- Must contain all key words and be attractive to a broad audience
- Will influence the editor/senior editor in making the decision to "reject without review"

# To Avoid in the Abstract

- Lengthy background: suggests you have little data
- Abbreviations that are unfamiliar to the reader
- Lack of clarity
- Excessive experimental detail,
- "*We have previously reported...*" suggests incremental work
- A conclusion that is speculative or not justified by the data

# The Introduction - An Inverted Triangle

**The Big Picture**

*"How relevant is my work?"*

**Gap in Knowledge**

*"What is known and not known so far?"*

**The Specific Topic**

*"What am I studying?"*

**The Rationale**

*"Why am I studying this?"*

**The Hypothesis**

**The Approach**

*"How did I study this?  
Did I develop a new methodology?"*

# What an Introduction Is Not...

- An extensive review of the literature
- An abstract
- A discussion



# Materials and Methods

- Organism(s) used
  - Cell lines in culture: authentication
  - Animals: Species, sex, age, source, protocol approval
  - Human subjects: Age, gender, ethnicity, protocol approval
- Reagents
  - Antibodies, recombinant proteins, chemicals
  - Source, method of preservation, stock concentration
- Methods
  - Focus on new methods and avoid lengthy description of standard methods
  - Controls, timing, biological vs. experimental replicate
- Data analysis
  - Statistics: summary and variability, transformation, tests, graphical techniques
  - Bioinformatics, data base, data repository

# The Results

- A logical story
  - Which specific question was asked and how it was tested? *"To determine whether ... we tested ... using ..."*
  - What are the data? *"This experiment demonstrated an increase in ... ( $p < 0.001$ ) ..."*
  - The next logical question that leads to the next set of data: *"These data raised the question whether ..."*
- Follow the order of figures and tables
- Use same subheadings as title of figures/tables

# Results ... Don't

- Interpret the data
- Repeat the methodology
- Reiterate each value from a figure or table
- Omit to report negative results

# The Discussion



Interpretation  
of the data

How they compare  
with others?

How they fill a gap in knowledge?

What new questions are raised?

# Literature Cited (not Bibliography)

- Limit to relevant papers
- Avoid over-usage of review articles
- Refer to original piece of work
- Make sure to include major contributors to the field (may be a reviewer of your paper)
- Use Reference Manager, End Note or other bibliography software
- Each journal has its own rules as to format

# Acknowledgments

- People (those who contributed but not as authors - see Ethical Standards)
  - Laboratory personnel
  - Mentor, reviewer of the draft
  - Person providing reagent, technical help
- Funding
  - non-philanthropic: NIH, NSF, etc.
  - philanthropic
- People in acknowledgment section should be notified

# Figures and Tables

- Order should follow logic and not necessarily chronology
- A composite figure with panels (A, B, C) should support one conclusion/observation
- Test their reduction to journal size to verify legibility (do not use font <12)
- Proper use of statistics and error bars

# “Syntax must be bad, having both *sin* and *tax* in it”

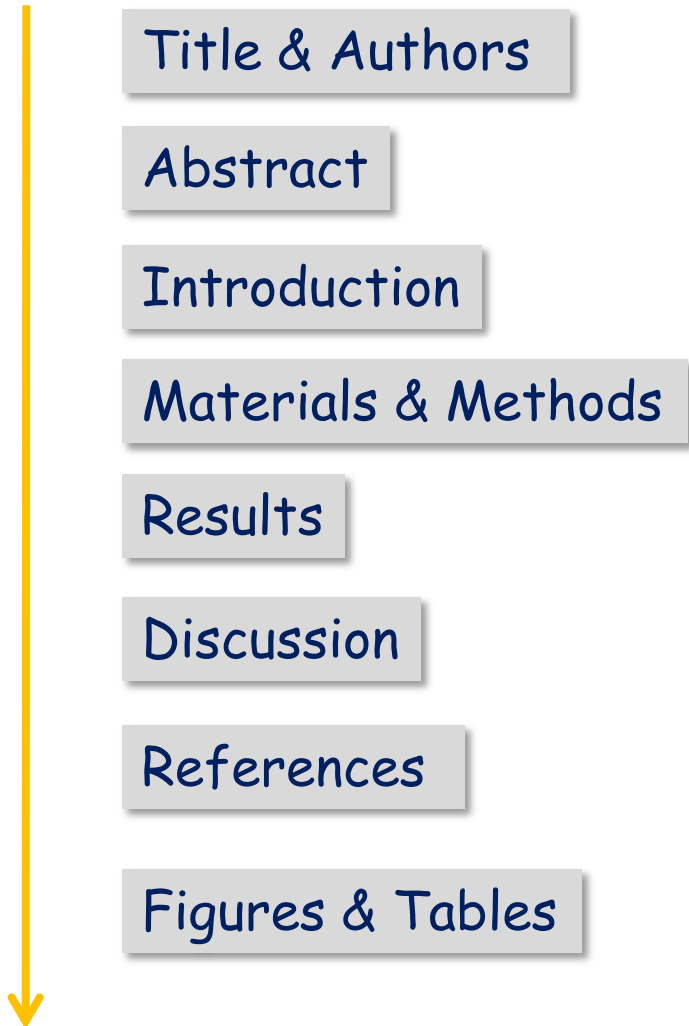
*Will Rogers*

	Tense	Voice	To use	To avoid
Abstract	Past>Tense	Active	key words,	We have previously reported, abbreviations, detailed numbers
Introduction	Present	Active>Passive	We hypothesized that,	
Materials and Methods	Past	Active	We used, we developed	was used,
Results	Past	Active	We observed, the experiment revealed	The data suggest, the data show, it was found,
Discussion	Present>Past	Active>Passive	The data suggest, we conclude	

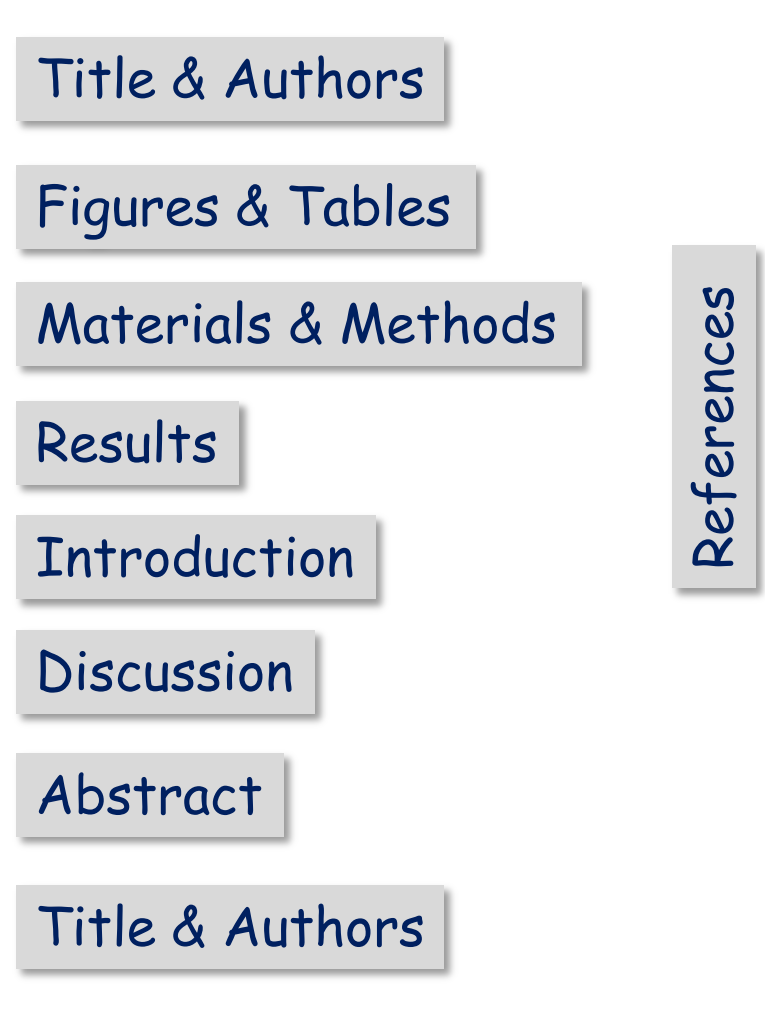


## **2. How Do I Start?**

## Order of Submission



## Order of Preparation



### 3. Which Journal?

- The prestige factor: Impact Factor
- The frequency factor: weekly, monthly, quarterly
- The audience factor
- The circulation factor: snail and e-mail, number of subscribers, public access

# The Impact Factor

A = The number of times articles published in 2009-2010 were cited in indexed journals during 2011

B = The number of articles, reviews, proceedings or notes published by the journal in 2009-2010

The 2011 2 year Impact Factor is  $A/B$

# Impact Factor

Specialized

Leading in the Field

Top

IF    1            5            10          15          20          25          30          35          40



Int. J Cancer  
Euro. J Cancer

Blood  
Cancer Res  
JBC  
Oncogene  
PNAS

JEM  
JNCI  
JCO  
JCB

Science  
Cancer Cell

NEJM  
JAMA  
Nature  
Cell

# Some Major Scientific Journals

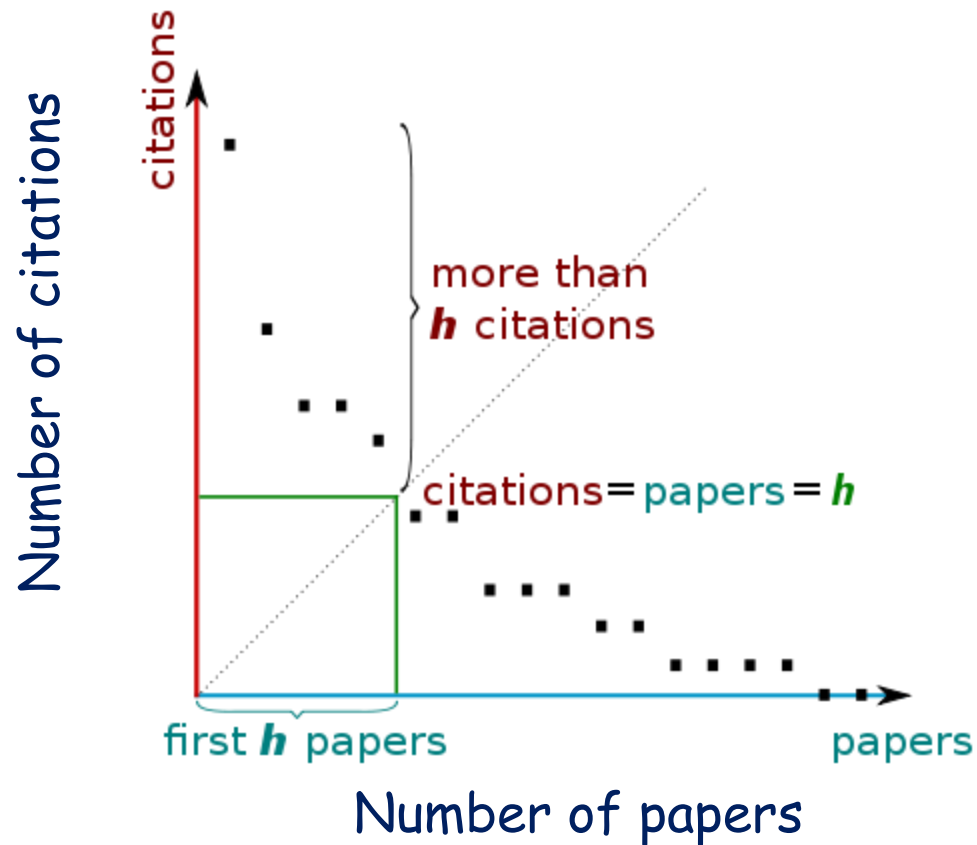
Journal Title	Impact Factor 2008	News	Commentary/Perspectives	Research Watch	Research Articles	Reviews
<i>New England Journal of Medicine</i>	50.017	N	Y	N	Y	Y
<i>Nature Reviews Molecular Cell Biology</i>	35.423	N	Y	Y	N	Y
<i>Journal of the American Medical Association</i>	31.718	Y	Y	N	Y	Y
<i>Nature</i>	31.434	Y	Y	Y	Y	Y
<i>Cell</i>	31.253	N	Y	N	Y	Y
<i>Nature Reviews Cancer</i>	30.762	N	Y	Y	N	Y
<i>Nature Genetics</i>	30.259	N	Y	Y	Y	Y
<i>Nature Reviews Drug Discovery</i>	28.690	Y	Y	Y	N	Y
<i>Science</i>	28.103	Y	Y	Y	Y	Y
<i>Cancer Cell</i>	24.962	N	N	N	Y	Y
<i>Journal of Clinical Oncology</i>	17.157	N	Y	N	Y	Y
<i>Journal of the National Cancer Institute</i>	14.933	Y	Y	N	Y	Y
<i>The Lancet Oncology</i>	13.283	Y	Y	N	Y	Y
<i>PNAS</i>	9.380	N	Y	N	Y	Y
<i>Cancer Research</i>	7.514	N	N	N	Y	Y
<i>Oncogene</i>	7.216	N	N	N	Y	Y



ISI Web of  
**KNOWLEDGE**  
*Transforming Research*

# Your Own Impact Factor

## The Hirsh Index



# 4. How to Submit?

- Review journal policy early on
- Look for a friend on the editorial board
- Check electronic submission and requirements: which files are accepted (text, TIFF, ppt, PDF)
- Contact all co-authors and get approval
- Introductory letter: make the important points
  - Highlight of the paper
  - Mechanism
  - Novelty
- Suggest reviewers without conflict
- Indication of people who should not review is OK but needs to be well justified
- Suggest section, senior associate editor



# The Decision

- Accept
- Accept with minor revisions
- Not accepted in present form
- Reject after review
- Reject without review

# Rejection Without Review



# What The Editor Is Looking At

- Abstract
  - Novelty of the paper and the field
  - Relevance to the audience of the journal
  - Do the data justify the conclusion
  - Style, spelling, grammar
- Figures/Tables
  - Overall quality
  - Amount of data
- Literature cited
  - Where is similar literature published
  - Potential reviewer

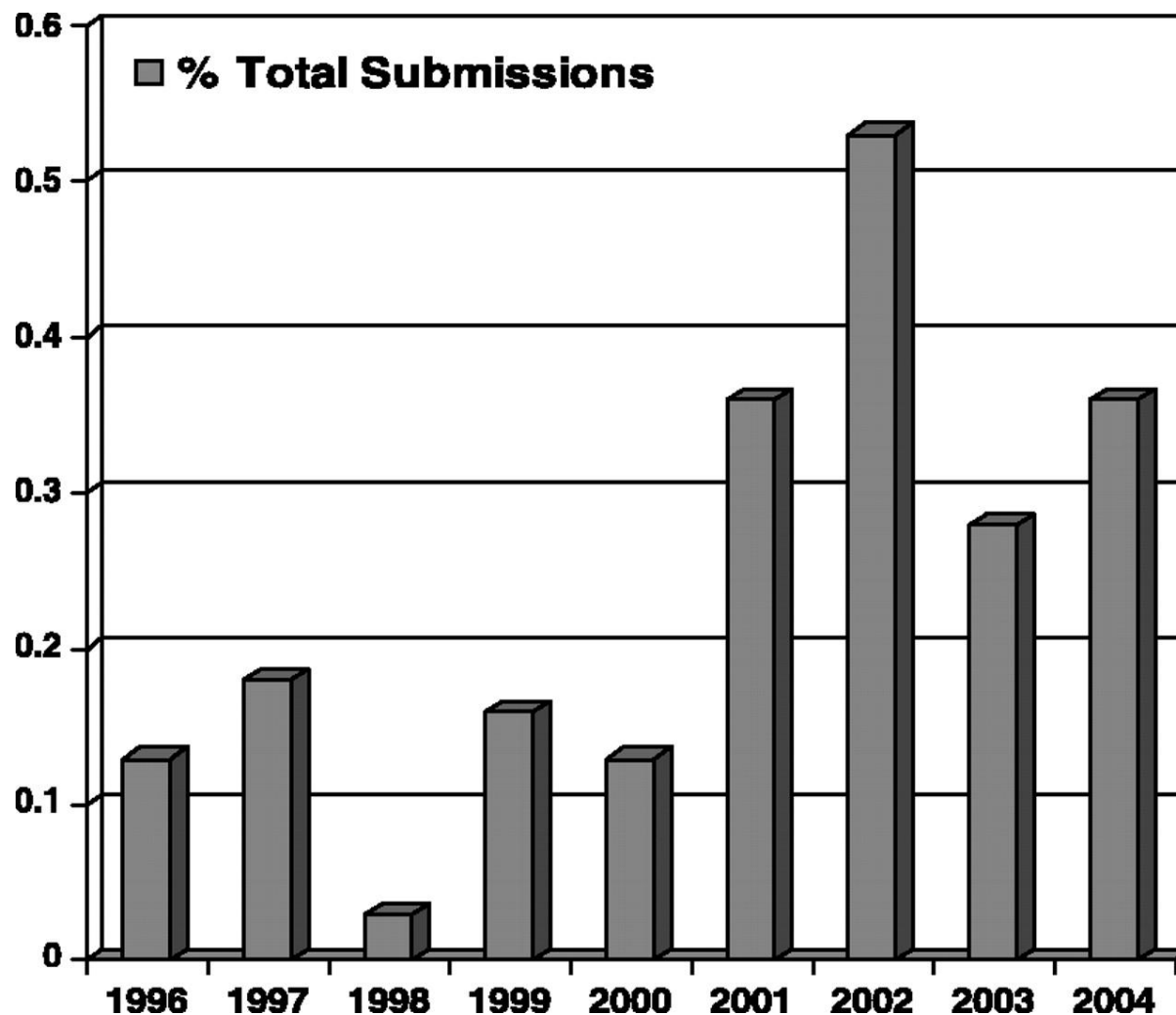
# Rejection Without Review

- Findings previously published in another model
- Studies performed with one cell line
- Incremental work
- Title and Abstract that do not reflect impact and significance
- Work without incisive rationale
- Redundant or confirmatory work
- Work performed solely *in vitro*
- Work done with a single specific siRNA

## II. ETHICAL STANDARDS

1. What are the ethical issues in publications?
2. Redundancy and duplication
3. Authorship and contributorship
4. Human and animal welfare
5. Conflict of interest
6. Misconduct
7. Ethics in peer review

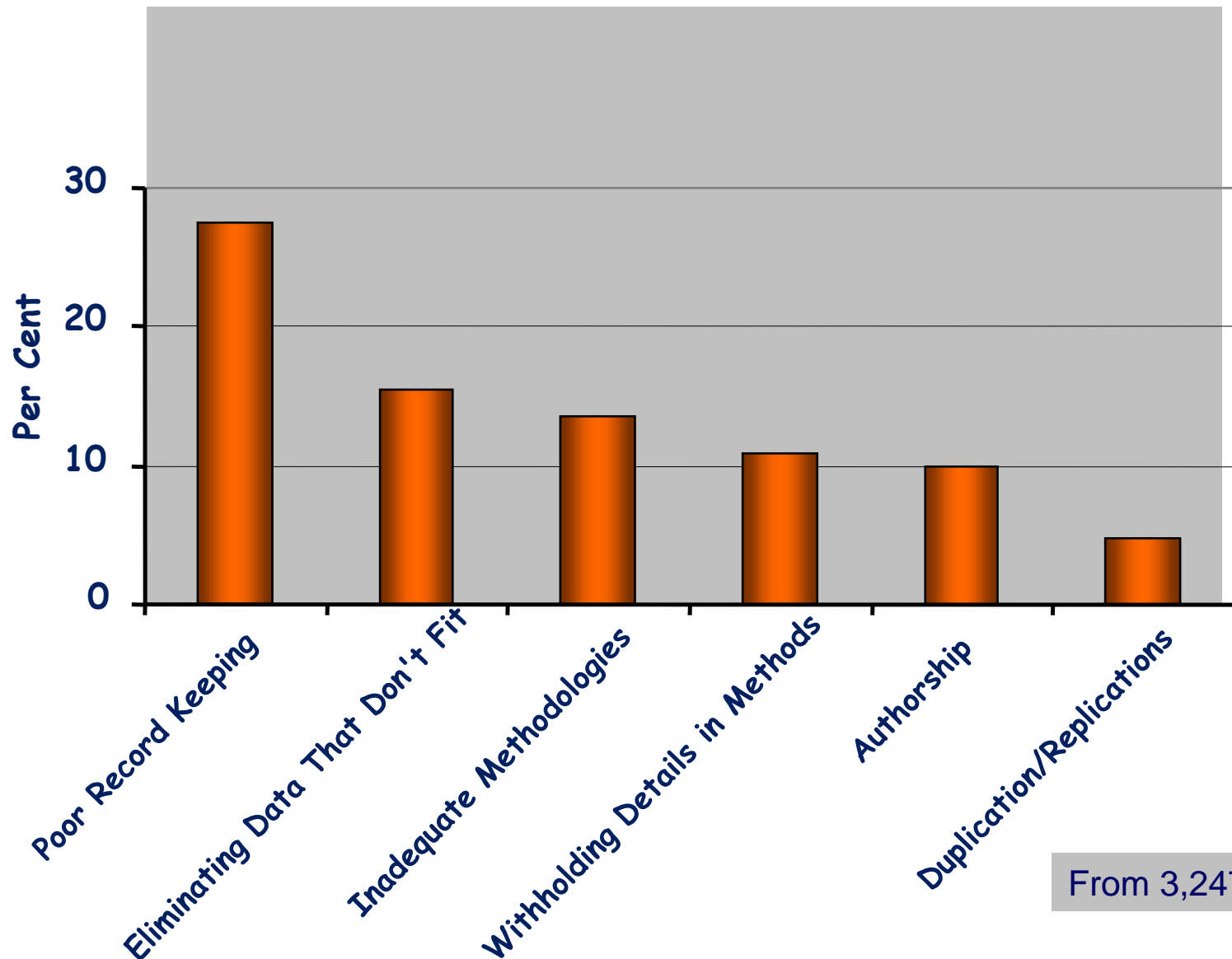
# Incidence of Ethical Issues in Journals, 1996-2004



Benos, D. J. et al. Advan. Physiol. Edu. 29: 59-74 2005;  
doi:10.1152/advan.00056.2004

# **“Scientists Behaving Badly”**

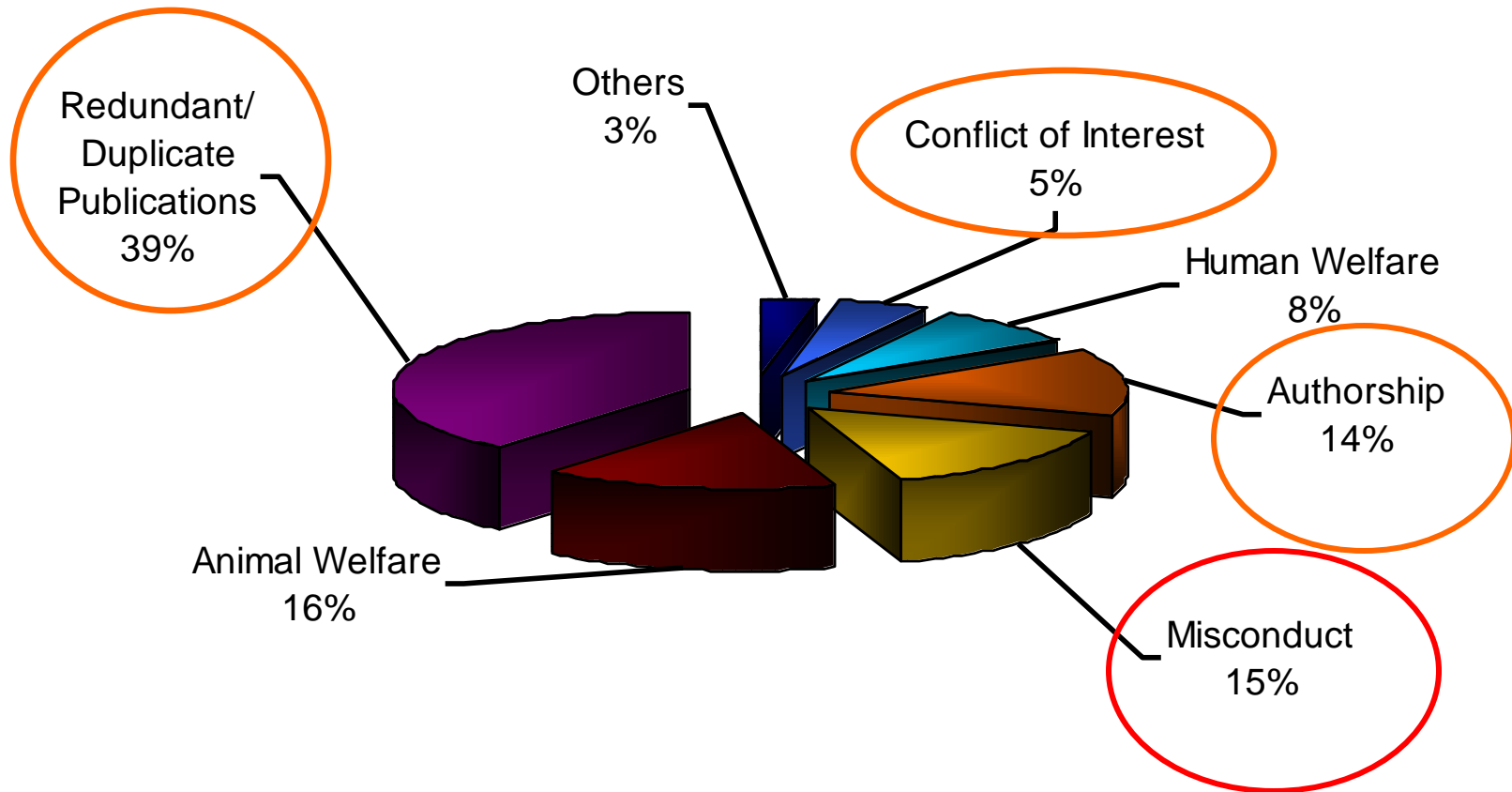
## **The Most Frequent ‘Borderline’ Behaviors**



From 3,247 interviews

# What Are The Issues?

From a total of 270 issues  
< 0.5% of yearly submission





# Transparency in Publication - 3 Questions

- Has the work been published before?
  - Duplication
  - Redundancy
- Who did the work?
  - Authorship
  - Contributorship
- Who funded the work?
  - Acknowledgment
  - Conflict of interest

## **2. Has the Work Been Published Before?**

*Duplication and Redundancy in Publications*

# Duplication is Misconduct (*Self-plagiarism*)

- Attempt to inflate one's own publication record
- Potential to skew the evidence base
- Critical in clinical trials reports as it can lead to over (or under) estimation of a drug efficacy and safety

# Redundant Publications

- Publication of copyrighted material with additional new or unpublished data
- Ethical aspects:
  - Can infringe international copyright law
  - Waste of time and energy
  - Needless expansion of the literature
  - Source of confusion
  - Overemphasis of findings
  - May “boost” patient or experimental numbers

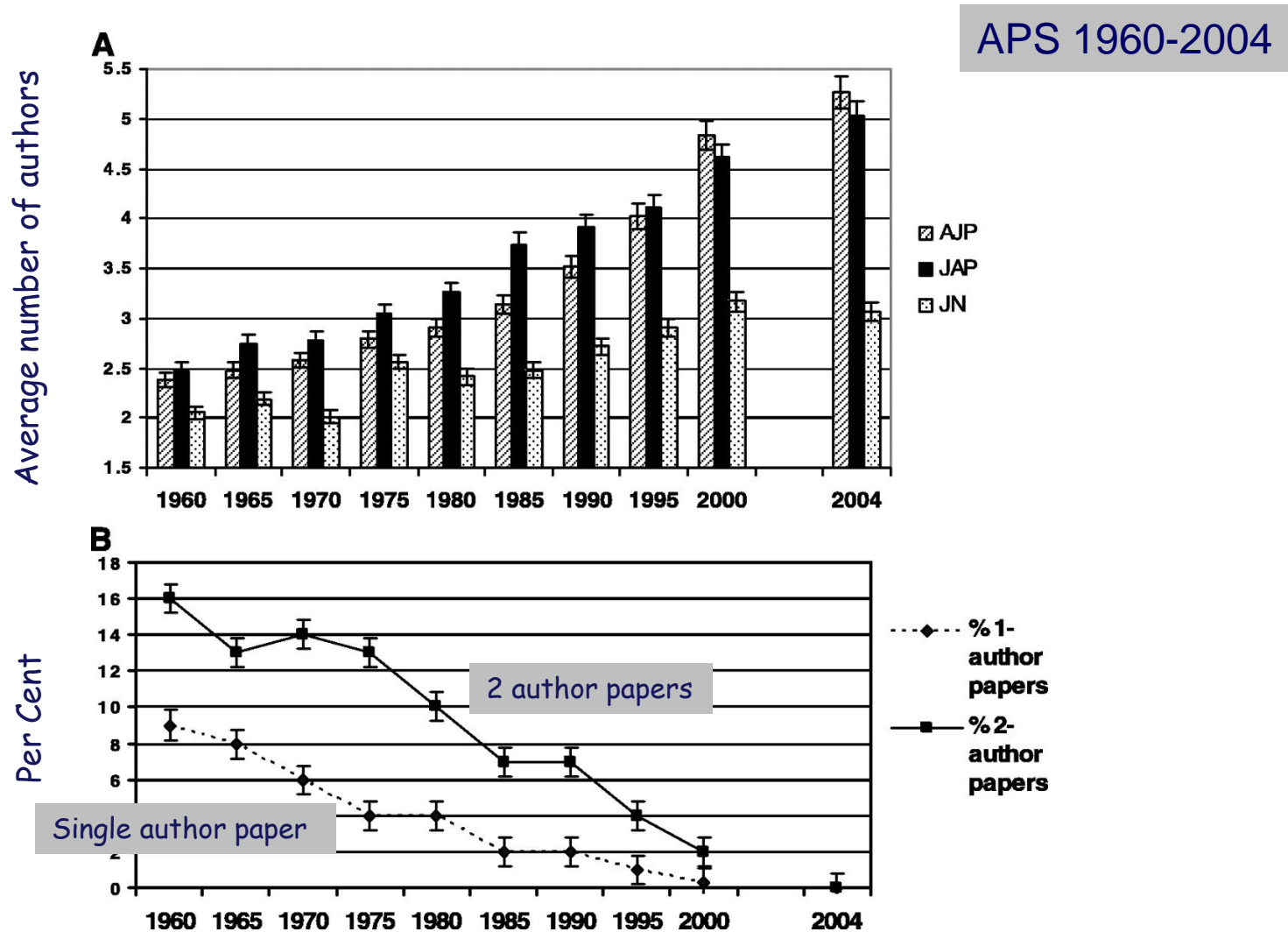
## **When Duplication of Publications Is Acceptable but Needs to be Clearly Acknowledged**

- Publications in more than one language
- Publications intended for different audiences
- Review articles
- Meeting presentation

### **3. Who Did the Work?**

*Authorship and Contributorship*

# The Problem in Authorship -- Increase in number of authors per publication over time



Benos, D. J. et al. Advan. Physiol. Edu. 29: 59-74 2005;  
doi:10.1152/advan.00056.2004

# Authorship Issues

- Guest, gift or honorary authorship
- Ghost authorship: professional writers
- Denial of authorship: a form of plagiarism
- Order in authorship
  - More assumptions than rules
  - First author, second author and last author
  - Corresponding author is the responsible author



# Authorship

1. Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data
2. Drafting the article or reviewing it and, if appropriate, revising it critically for important intellectual content
3. Final approval of the version to be published.

Authors should meet conditions (1) *and* (2) *and* (3).

Participation solely in the acquisition of funding or data collection does not justify authorship.

*"There is abundant evidence that the concept of authorship, when applied to co-investigators in biomedical research, is inadequate and the system is truly broken"*

*Drummond Rennie  
Deputy Editor JAMA, 2000*

# Contributorship

- **Guarantor:** One person who assumes the responsibility for the entirety of the research being reported
- **Contributors:** Listed by order of importance with a definition of their role
- Policy adopted by journals like JAMA, PNAS, Nature, British Medical Journal

# Contributorship

- Recommendations

- Contributorship list should be published
- An author is a contributor but a contributor is not necessarily an author
- Acknowledgment section should be restricted to funders and corporate bodies
- Journals should develop uniform methods of collecting/analyzing data
- Professional societies should identify categories for contributorship
- Academic centers and funding agencies should follow the same line

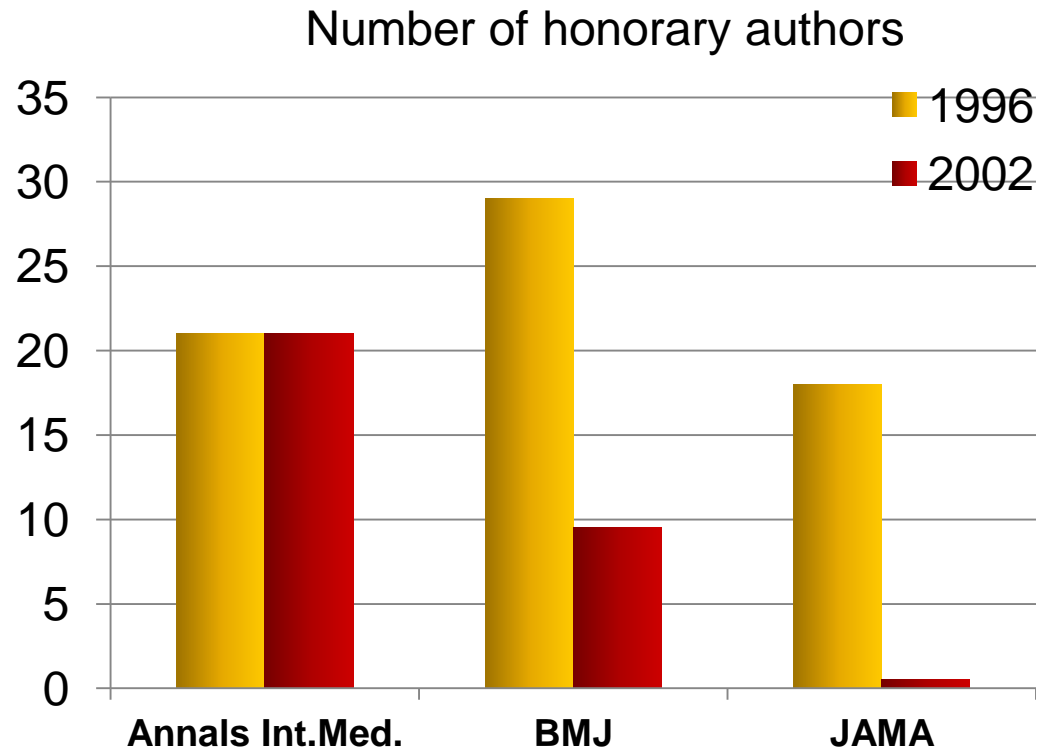
# ICMJE Guidelines for Authorship/Contributorship

- **Authorship** • 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.
  - When a large, multicentre group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript. These individuals should fully meet the criteria for authorship/contributorship defined above, and editors will ask these individuals to complete journal-specific author and conflict-of-interest disclosure forms. When submitting a manuscript authored by a group, the corresponding author should clearly indicate the preferred citation and identify all individual authors as well as the group name. Journals generally list other members of the group in the Acknowledgments. The NLM indexes the group name and the names of individuals the group has identified as being directly responsible for the manuscript; it also lists the names of collaborators if they are listed in Acknowledgments.
  - Acquisition of funding, collection of data, or general supervision of the research group alone does not constitute authorship.
  - All persons designated as authors should qualify for authorship, and all those who qualify should be listed.
  - Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content.
- **Contributorship** • All contributors who do not meet the criteria for authorship should be listed in an **acknowledgments section**. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chairperson who provided only general support. Editors should ask corresponding authors to declare whether they had assistance with study design, data collection, data analysis, or manuscript preparation. If such assistance was available, the authors should disclose the identity of the individuals who provided this assistance and the entity that supported it in the published article. Financial and material support should also be acknowledged.
  - Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under such headings as 'clinical investigators' or 'participating investigators', and their function or contribution should be described—for example, 'served as scientific advisors', 'critically reviewed the study proposal', 'collected data', or 'provided and cared for study patients'. Because readers may infer their endorsement of the data and conclusions, these persons must give written permission to be acknowledged.

# Long Term Evaluation

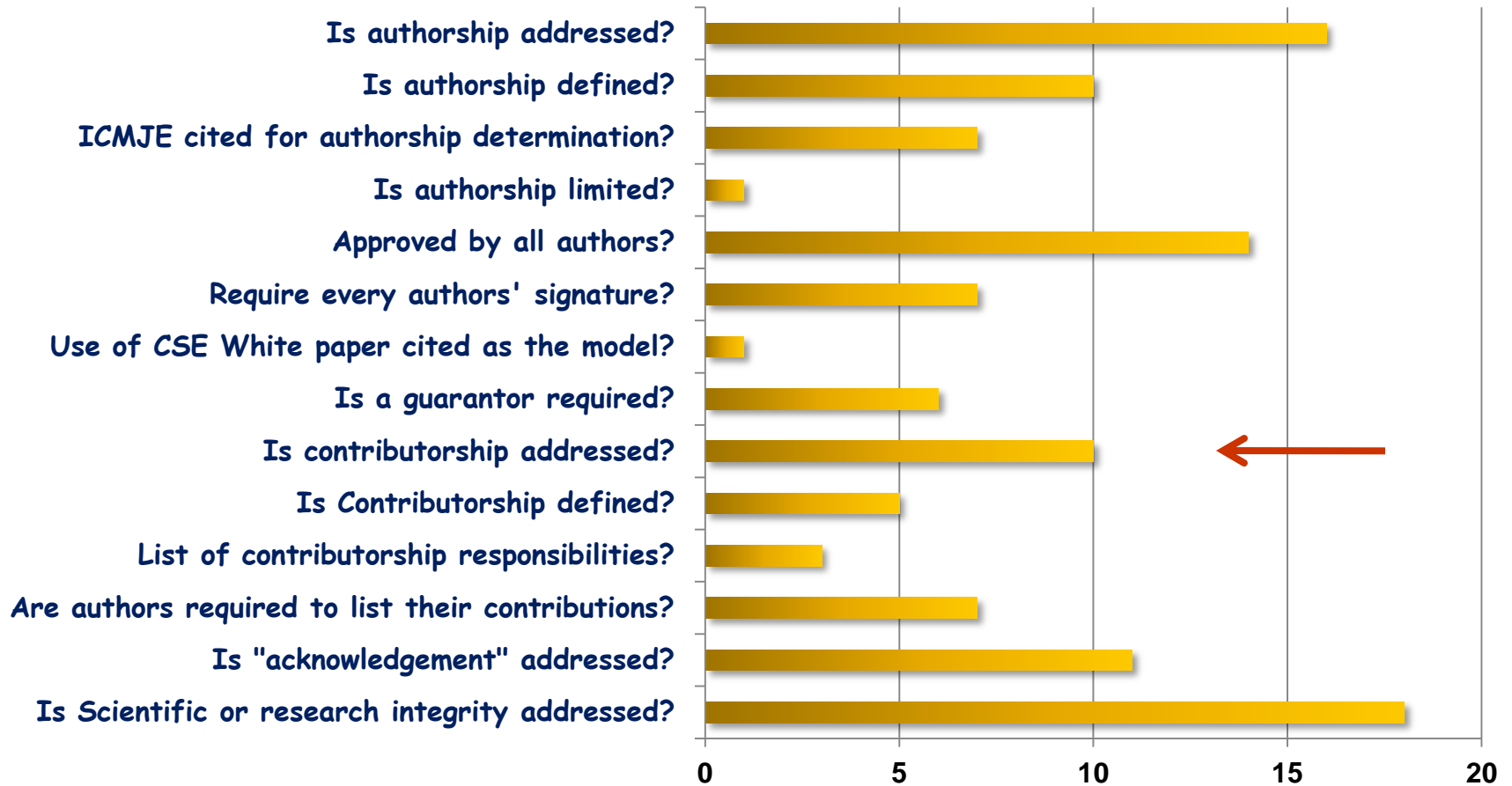
*(A. Marusic JAMA 2004)*

- 260 papers published in 2002 in 3 medical journals: BMJ, Annals Int Med and JAMA
- Comparison 1996 with 2002 on 'honorary authorship'



# What Are Other Journals Doing?

## 20 Journals Surveyed



(Source: D. Scott-Lichter, Editor in Chief, AACR journals)

# Taxonomy for Contributor

- Conceived, designed or coordinated the study
- Collected, managed, performed quality control or analyzed/interpreted the data
- Performed statistical analysis
- Performed laboratory, clinical or epidemiological analysis
- Wrote the paper
- Advised on the study
- Secured funding
- Recruited study participants
- Performed previous work that was foundation for current study
- Obtained permission
- Performed training
- Provided data




# Common Sense in Authorship

- Authorship inclusion/position should be discussed as much as possible at the beginning of a study
- The senior author/guarantor should play a leadership role in an atmosphere of honesty and openness
- Academic institutions/departments should establish guidelines
- Realize that editors cannot step in

# MEMORANDUM

**To:** Faculty  
Academic Deans  
Department Chairs  
Institute/Center Directors

**From:** Elizabeth Garrett 

**Date:** November 28, 2011

**Subject:** Guidelines for Assigning Authorship

## USC Guidelines

The Academic Senate has endorsed the attached Guidelines for Assigning Authorship and for Attributing Contribution to Research Products and Creative Work. They were formulated by the Provost-Academic Senate joint University Research Committee.

1. Everyone who is listed as a creator or author should have made a substantial, direct, intellectual contribution to the work. For example they should have contributed to the conceptualization of the research or creative program, the creation, design, analysis, interpretation of data, and/or the writing of the published results, and/or the final creative product.
3. Acquisition of funding and provision of technical services, patients, or materials, if these actions were not accompanied by creative intellectual contributions, are not in themselves sufficient contributions to justify identification as a creator or author. This is so even if these actions may

....

# **Guidelines for Publications and Authorship at CHLA (October 2002)**

- Discussion on authorship should occur early on and be re-evaluated periodically
- It is the responsibility of the senior author to initiate such discussion
- Authorship should be based on intellectual contribution and not financial contribution
- Co-authorship of individuals who have provided reagents, instruments or patients for the research is discouraged

## 4. Who Funded the Work?

*Acknowledgments and Conflict  
of Interest*

# Acknowledgments

- Acknowledging ALL sources of funding: federal, private, philanthropic, industry
- Accuracy: matching publication content with support
- Acknowledging people who contribute in the non-author category
- Should obtain permission to acknowledge

# Conflict of Interest

- Conflict between an official responsibility and a private interest; risk of bias
- Can be because of money but also political affiliation, religious conviction or personal relationship
- Can be real or perceived but the importance is the acknowledgment

# Why an Increased Concern?

- 1980: Bayh-Dole encourages commercialization of federally funded research and interaction between academia and industry
- 1995: NIH removes restriction on its own employees in regard to outside consulting
- This was followed by an alarming series of improprieties in COI

# Conflict of Interest - Journal Policies

- Presently mainly focused on financial support (employment, grant, commercial support, honorarium as speaker, ownership, consultant fee)
- Applies to authors and reviewers
- Relevant: means same, similar or competing subject/ drug/device/asset
- Major: > \$10,000 per year; Minor: < \$10,000 per year
- The existence of a financial interest does not necessarily mean conflict of interest
- Most journals have implemented an electronic process for all authors at the time of submission



## **5. Protection of Subjects, Patients and Experimental Animals**

- Statement that a study involving human subjects has been approved by IRB and that consent was obtained is required
- Statement that the study was approved by IACUC must be included

# Registering Clinical Trials

(Recommendation of the International Committee of Medical Journal Editors)

- All clinical trials should be registered at inception in a publicly accessible data base (such as the international trial registry [www.clinicaltrials.gov](http://www.clinicaltrials.gov); <http://clinicaltrials-dev.ifpma.org>; <http://isrctn.org> )

## 6. Misconduct in Publications

*To protect the integrity of science, we must look beyond falsification, fabrication and plagiarism, to a wider range of questionable research practices.*



Science March 2004  
681 citations

## Evidence of a Pluripotent Human Embryonic Stem Cell Line Derived from a Cloned Blastocyst

Woo Suk Hwang,<sup>1,2\*</sup> Young June Ryu,<sup>1</sup> Jong Hyuk Park,<sup>3</sup>  
Eul Soon Park,<sup>1</sup> Eu Gene Lee,<sup>1</sup> Ja Min Koo,<sup>4</sup> Hyun Yong Jeon,<sup>1</sup>  
Byeong Chun Lee,<sup>1</sup> Sung Keun Kang,<sup>1</sup> Sun Jong Kim,<sup>3</sup> Curie Ahn,<sup>5</sup>  
Jung Hye Hwang,<sup>6</sup> Ky Young Park,<sup>7</sup> Jose B. Cibelli,<sup>8</sup>  
Shin Yong Moon<sup>5\*</sup>

Science June 2005  
citations

## Patient-Specific Embryonic Stem Cells Derived from Human SCNT Blastocysts

Woo Suk Hwang,<sup>1,2\*</sup> Sung Il Roh,<sup>3</sup> Byeong Chun Lee,<sup>1</sup>  
Sung Keun Kang,<sup>1</sup> Dae Kee Kwon,<sup>1</sup> Sue Kim,<sup>1</sup> Sun Jong Kim,<sup>3</sup>  
Sun Woo Park,<sup>1</sup> Hee Sun Kwon,<sup>1</sup> Chang Kyu Lee,<sup>2</sup> Jung Bok Lee,<sup>3</sup>  
Jin Mee Kim,<sup>3</sup> Curie Ahn,<sup>4</sup> Sun Ha Paek,<sup>4</sup> Sang Sik Chang,<sup>5</sup>  
Jung Jin Koo,<sup>5</sup> Hyun Soo Yoon,<sup>6</sup> Jung Hye Hwang,<sup>6</sup>  
Youn Young Hwang,<sup>6</sup> Ye Soo Park,<sup>6</sup> Sun Kyung Oh,<sup>4</sup> Hee Sun Kim,<sup>4</sup>  
Jong Hyuk Park,<sup>7</sup> Shin Yong Moon,<sup>4</sup> Gerald Schatten<sup>7\*</sup>

D. Kennedy  
Editor in Chief  
Science January 2006

## LETTERS

edited by Etta Kavanagh

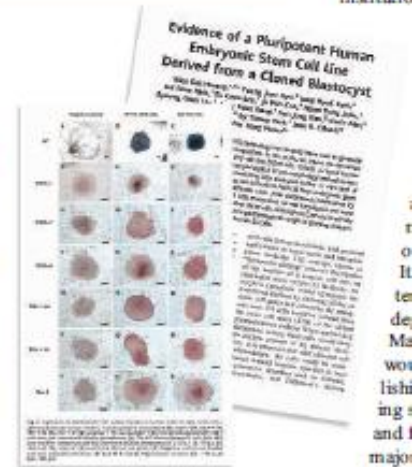
## Editorial Retraction

THE FINAL REPORT FROM THE INVESTIGATION COMMITTEE of Seoul National University (SNU) (1) has concluded that the authors of two papers published in *Science* (2, 3) have engaged in research misconduct and that the papers contain fabricated data. With regard to Hwang *et al.*, 2004 (2), the Investigation Committee reported that the data showing that DNA from human embryonic stem cell line NT-1 is identical to that of the donor are invalid because they are the result of fabrication, as is the evidence that NT-1 is a bona fide stem cell line. Further, the committee found that the claim in Hwang *et al.*, 2005 (3) that 11 patient-specific embryonic stem cells line were derived from cloned blastocysts is based on fabricated data. According to the report of the Investigation Committee, the laboratory "does not possess patient-specific stem cell lines or any scientific basis for claiming to have created one." Because the final report of the SNU investigation indicated that a significant amount of the data presented in both papers is fabricated, the editors of *Science* feel that an immediate and unconditional retraction of both papers is needed. We therefore retract these two papers and advise the scientific community that the results reported in them are deemed to be invalid.

As we post this retraction, seven of the 15 authors of Hwang *et al.*, 2004 (2) have agreed to retract their paper. All of the authors of Hwang *et al.*, 2005 (3) have agreed to retract their paper.

*Science* regrets the time that the peer reviewers and others spent evaluating these papers as well as the time and resources that the scientific community may have spent trying to replicate these results.

DONALD KENNEDY  
Editor-in-Chief



# Lessons from Science

## The Good, the Bad and the Ugly

- 45 retraction notices since 1997 covering 53 papers (~20 resulting from investigations)
- Five Editorial Expressions of Concern since January 2006
- Author behaviors spanned the entire spectrum from good to ugly to delusional

Monica Bradford  
Executive Editor, Science  
Council of Science Editors meeting, May 2011

# We've seen it all:

- **Good:** the original authors initiate and/or agree to retract the paper
- **Bad:** one or more authors refuse to sign retraction
- **Ugly:** authors refuse to retract despite institutional findings and/or try to inappropriately characterize the status of the work

# The 3 Major Forms of Misconduct

1. **Fabrication:** “de novo” creation of data not generated by an experiment
2. **Falsification:**
  - Altering existing data
  - Throwing out “unwanted data” or “unwanted subjects”
  - Not including appropriate controls
  - Lack of proper statistical analysis
3. **Plagiarism:**
  - Use of idea, methods or text/verbatim without proper acknowledgment
  - “Cut and paste”

# Fabrication

- “de novo” creation of data not generated by an experiment
- Importance in keeping “raw data” in lab books



# Falsification

- Altering existing data
- Throwing out “unwanted data” or “unwanted subjects”
- Not including appropriate controls
- Lack of proper statistical analysis

# Plagiarism

- 25% of all allegations received by ORI
- Use of idea, methods or text/verbatim without proper acknowledgment
- Do not “cut and paste” text
- Proper use of reference, quotation marks

# Misconduct: What Could the Editor Do?

- Ask corresponding author for a clarification (inquiry)
- Reject the paper
- Publish a notice of duplication or retraction
- Legal suit (copyright violation)
- Inform the home institution of the publication infraction and request an investigation

# What About Correcting the Cause?

- "Publish or Perish"
- Academic promotion committees should pay more attention to:
  - Quality of publications rather than quantity
  - Developing better criteria to appropriately recognize co-authorship in research that is team-based
- Study sections should evaluate quality of the productivity rather than quantity (and they increasingly do)

## 7. A Two-Sided Coin: Ethics in Review

- It is unethical to publish bad science
  - Critical and thorough review of the paper
- It is unethical to fail to publish good and important science
  - Absence of bias
  - Willingness to support negative but relevant data
- It is unethical to give credit to the wrong people
  - Accurate bibliography

**“A scientist must be  
ingenuously honest”**

Walter Cannon, *"The Way of an Investigator"*

# The Joy of Publishing

If we view knowledge as a house, scientific knowledge will tell us how to construct the house, but we need artistic knowledge to make the house beautiful and humanistic knowledge so that we can appreciate life within the house.

*Robert A. Day*

*How to Write and Publish a Scientific Paper*

We are here to help young people learn to be readers, and writers and storytellers even though the methods of learning are changing. Young women and men who can read and write with a sophistication and clarity appropriate for our age. Who can read and write with insight. Who can read or tell a story not just with traditional words on a traditional page, but new digital forms of fictional and factual information.

*USC President Max C. Nikias*

*Pullias Lecture 2009*

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