

RESPONSIBLE PEER REVIEW
EXPECTATIONS, FORMAL AND
INFORMAL PRACTICES

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Why Most Published Research Findings Are False

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Summary

There is increasing concern that most current published research findings are false. The probability that a research claim is true may depend on study power and bias, the number of other studies on the same question, and, importantly, the ratio of true to no relationships among the relationships probed in each scientific field. In this framework, a research finding is less likely to be true when the studies conducted in a field are smaller; when effect sizes are smaller; when there is a greater number and lesser preselection of tested relationships; where there is greater flexibility in designs, definitions, outcomes, and analytical modes; when there is greater financial and other interest and prejudice; and when more teams are involved in a scientific field in chase of statistical significance. Simulations show that for most study designs and settings, it is more likely for

factors that influence this problem and some corollaries thereof.

Modeling the Framework for False Positive Findings

Several methodologists have pointed out [9–11] that the high rate of nonreplication (lack of confirmation) of research discoveries is a consequence of the convenient, yet ill-founded strategy of claiming conclusive research findings solely on the basis of a single study assessed by formal statistical significance, typically for a p -value less than 0.05. Research is not most appropriately represented and summarized by p -values, but, unfortunately, there is a widespread notion that medical research articles

It can be proven that most claimed research findings are false.

is characteristic of the field and can vary a lot depending on whether the field targets highly likely relationships or searches for only one or a few true relationships among thousands and millions of hypotheses that may be postulated. Let us also consider, for computational simplicity, circumscribed fields where either there is only one true relationship (among many that can be hypothesized) or the power is similar to find any of the several existing true relationships. The pre-study probability of a relationship being true is $R/(R+1)$. The probability of a study finding a true relationship reflects the power $1 - \beta$ (one minus the Type II error rate). The probability of claiming a relationship when none truly exists reflects the Type I error rate, α . Assuming that c relationships are being probed in the field, the expected values of the 2×2 table are given in Table 1. After a research

SPECIAL REPORT

Korean scandal will have global fallout

The possibility that Woo Suk Hwang's cloning experiments were faked threatens to undermine confidence in stem-cell research.

In one of the biggest scientific scandals of recent times, South Korea's star cloner Woo Suk Hwang last week asked to retract his landmark paper on the creation of embryonic stem cells from adult human tissue. The request, along with new doubts about his earlier work, confirms what researchers in the field were already starting to realize — that the advance marked by Hwang's research, with all it promised for therapeutic cloning, may amount to nothing.

Worse, scientists fear that the episode will damage not only public perceptions of stem-

Hwang claimed to have extracted the first stem-cell line from a cloned human embryo (W. S. Hwang *et al. Science* 303, 1669–1674; 2004), figures supposedly showing cloned cell lines are identical to those in an earlier paper showing normal embryonic stem cells (J. H. Park *et al. Molecules and Cells* 17, 309–315; 2004). *Nature* has also announced an investigation into Hwang's paper on the first cloned dog (see 'Dogged by doubts', page 1059).

Hwang admitted on 16 December that there were errors in the 2005 stem-cell paper, but denied fraud. He maintains that 11 patient-



INTEGRITY OF WHAT?

Integrity of the authors

Integrity of the scientific record

Integrity of the reviewer

Integrity of the journal

Is integrity the opposite of misconduct?

Negeren	Verwijderen	Beantwoorden	Allen beantwoorden	Reageren	Doorsturen	Snelle stappen	Verplaatsen	Regels	OneNote	Acties	Markeren als ongelezen	Opvolgen	Codes	Vertalen	Bewerken	In-/uitzoomen	Zoomen
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Van: Pharmacology and Therapeutics <ajpt@austinopenaccess.org>

Verzonden: Wed 28-11-2018 10:00

Aan: s.horbach@science.ru.nl

CC:

Onderwerp: Write 900 words Short Communication on "Post-marketing Surveillance"

Bericht SpamAssassinReport.txt (1 kB)

Respected Dr. Serge Horbach ,

Greetings for the day!

We are pleased to announce a special edition on **"Post-marketing Surveillance"** from the Journal of Pharmacology and Therapeutics.

In this special issue, we are inviting front-line researchers and authors to submit their manuscript on the special issue's methods to be follow after a drug came into market and the safety procedure.

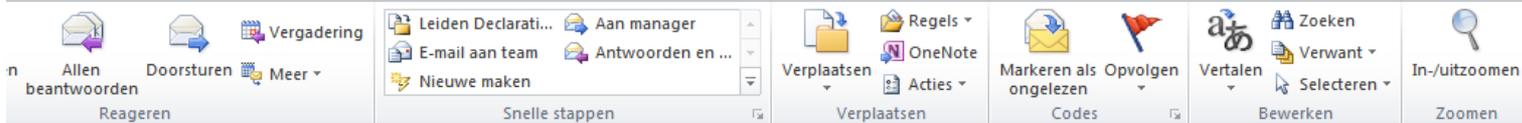
Article can be of Original Research/ Review/Case Reports/ Images that explore latest research development in The Journal of Pharmacology and Therapeutics.

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**IJERD publish paper online as well as print versions (hard copy) of the Journal.
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Sl.No	Process Description	Last Date	Status
1	Manuscript Submission	30th October, 2019	In Processing
2	Manuscript Review Feedback	Within 5 to 7 days	(To be Processed)
3	Date of Publication	10th November, 2019	(To be Processed)
4	Indexing & book delivering	Within 7 days	(To be Processed)

With
Best Regards

**HOW TO STOP
PROBLEMATIC SCIENCE
SPREADING THROUGH
THE LITERATURE?**

PEER REVIEW!

INTEGRITY CHALLENGES ARISING DURING REVIEW

Objective review? Reviewers' conflicts of interest

- Delaying publication
- Rejecting manuscripts
- Favouring certain authors/methods/topics etc.

Fake peer review or no review at all

Plagiarism of ideas or text by reviewers

Forcing references upon authors

Sufficient expertise?

SOM

CTIVE

PHILOSOPHICAL
TRANSACTIONS:
GIVING SOMB
A C C O M P T
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
I N G E N I O U S
IN MANY
CONSIDERABLE PARTS
OF THE
W O R L D.

Vol I.

For *Anno* 1665, and 1666.

In the *SAVOY*,
Printed by T. N. for John Martyn at the Bell, a little with-
out *Temple-Bar*, and James Allestry in *Duck-Lane*,
Printers to the *Royal Society*.

PEER REVIEW: NOT AS OLD AS YOU MIGHT THINK

Single editor made decisions

Aimed as a service to the king, resembling book censorship

Only in the late 19th century (1893) did external reviewers emerge in BMJ

Nature installed peer review in 1973

The term 'peer review' was not even used before the 1960's

PEER REVIEW CHANGES BASED ON DIVERSE EXPECTATIONS

Who is reviewing?

Single editor (peer? review)

↳ Editorial committee



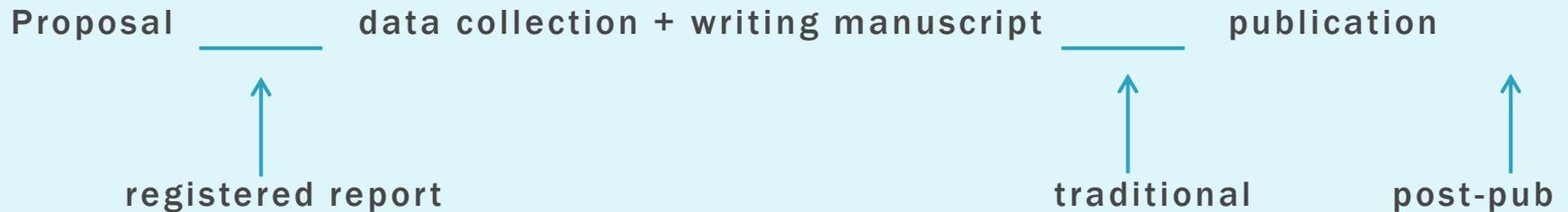
External reviewers (1890s - 1970s)

Anonymous or open?



Strategies to tackle bias and inequality:
Double-blind or (radically) open review

PEER REVIEW CHANGES BASED ON DIVERSE EXPECTATIONS



Assistance, cooperation and specialisation

Usage of IT-tools: plagiarism, image manipulation, references, ...

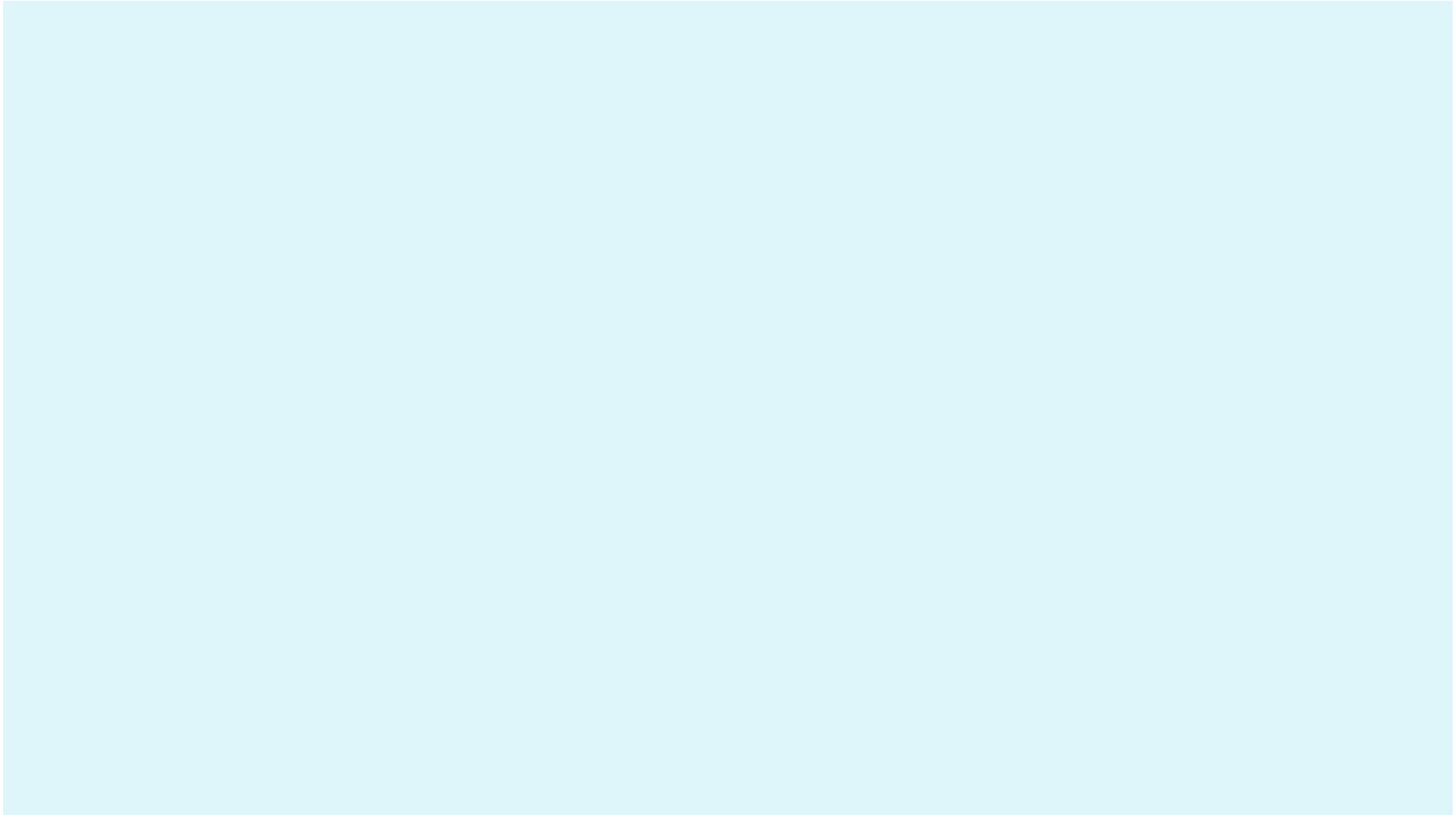
Commercial services and cooperation: badges for 'good science', cascading review

Statistics reviewers: additional reviewer or computer program

Who gets to be involved in peer review?

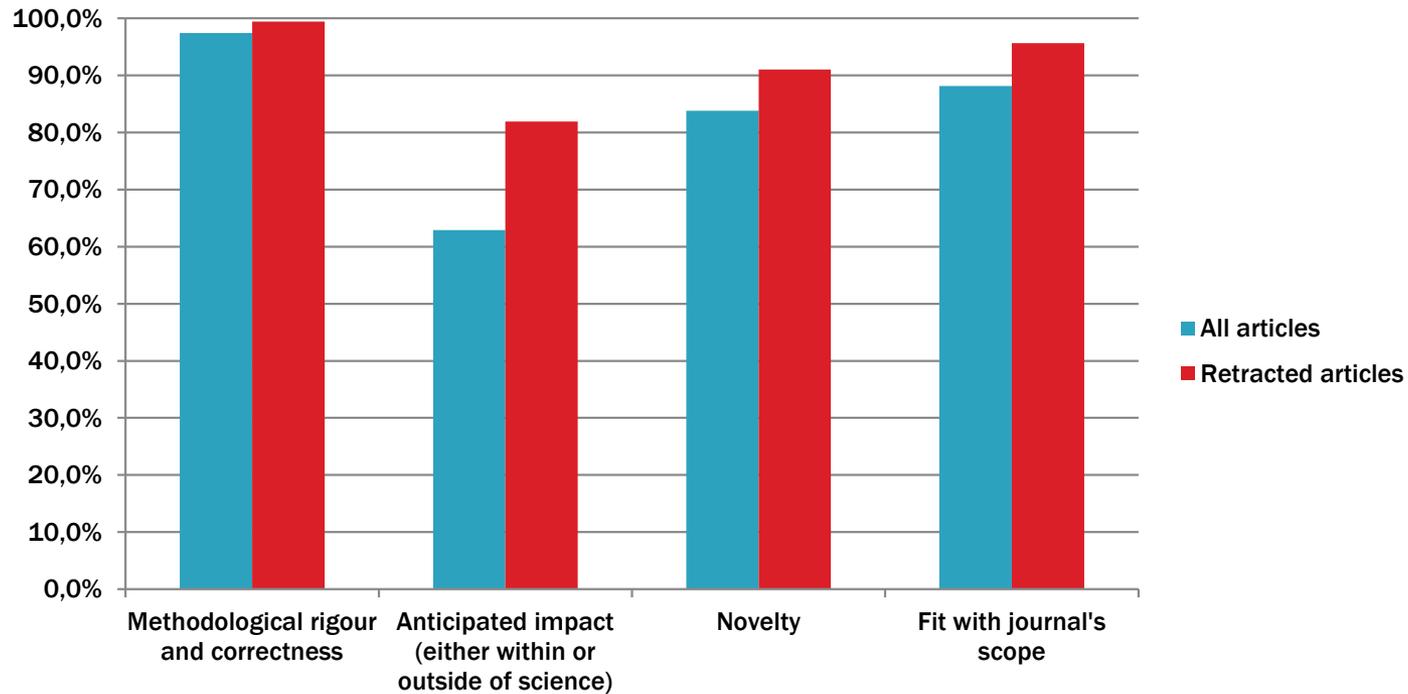
→ Are these still 'peers'?

IS THAT EFFECTIVE? SOME EVIDENCE



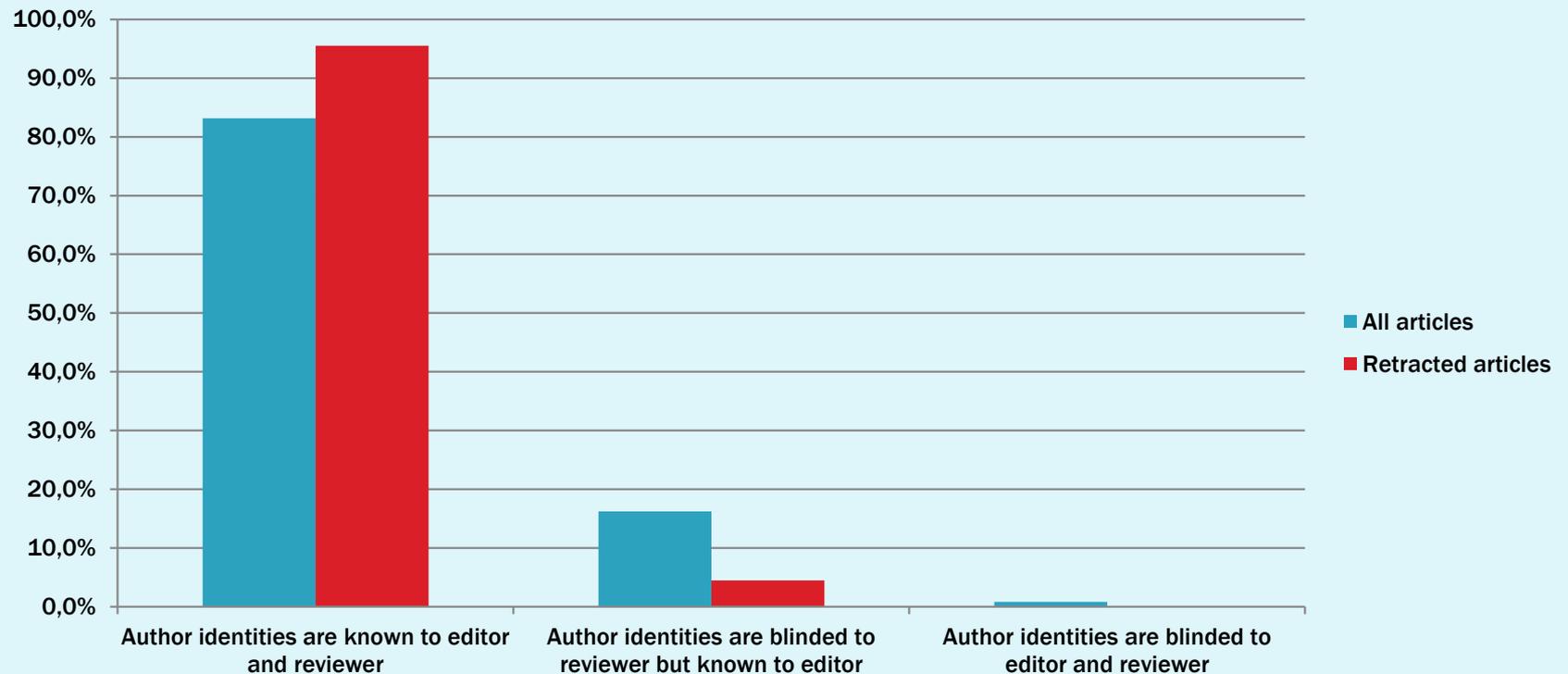
EFFECTS OF PEER REVIEW PRACTICES ON RETRACTIONS

What quality criteria does your journal use for peer review?



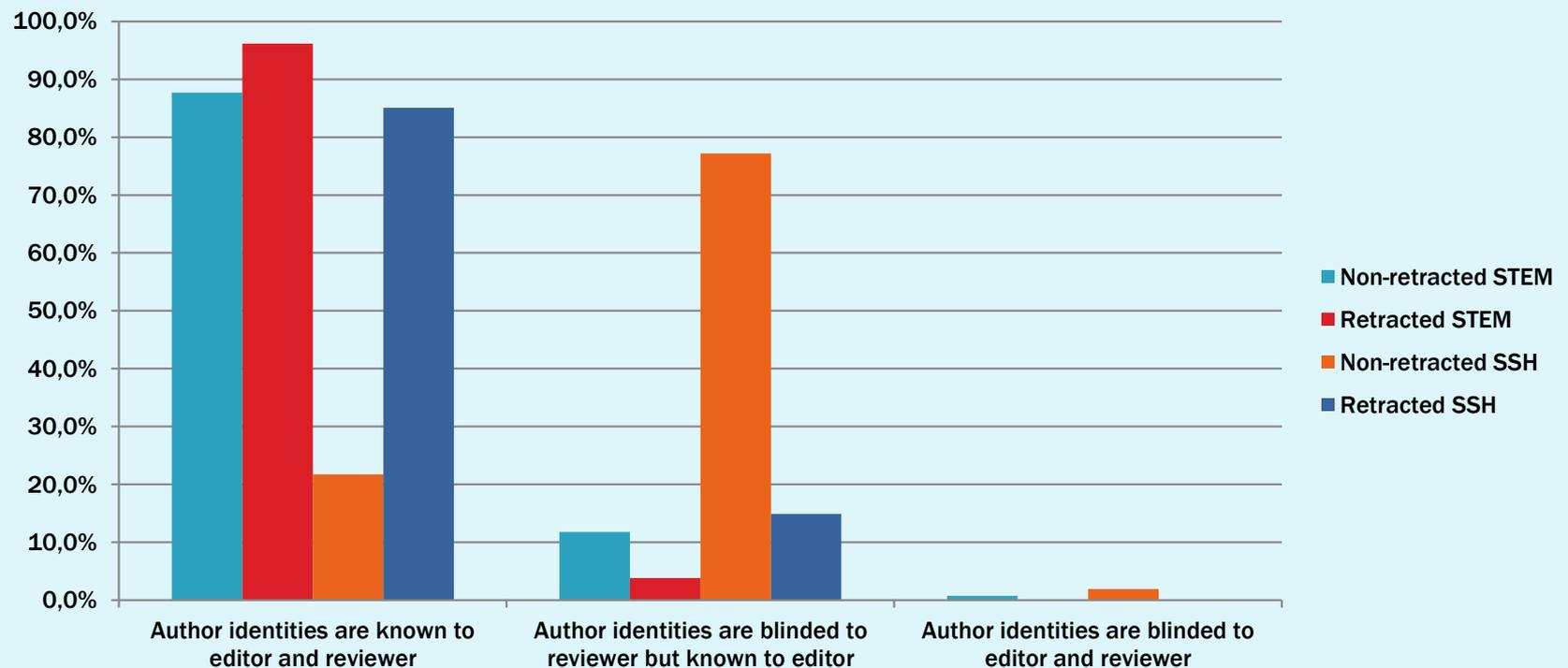
EFFECTS OF PEER REVIEW PRACTICES ON RETRACTIONS

To what extent are authors anonymised in your journal's review process?



EFFECTS OF PEER REVIEW PRACTICES ON RETRACTIONS

To what extent are authors anonymised in your journal's review process?



LESSONS LEARNED

Concerns about problematic science spreading through the academic literature

Various kinds of peer review can be effective mechanisms to prevent this

But the system is not infallible

Improvement can start with our own daily practices:
Reading, Citing, Reviewing

TIME FOR DISCUSSION

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SURELY, ONCE WE FIND OUT, WE WILL CORRECT THE LITERATURE?

Contents lists available at ScienceDirect

Biosensors and Bioelectronics

Journal homepage: www.elsevier.com/locate/bios

ELSEVIER

Single cell imprinting on the surface of Ag-ZnO bimetallic nanoparticle modified graphene oxide sheets for targeted detection, removal and photothermal killing of *E. Coli*

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ABSTRACT

A very cost-effective, fast, sensitive and specific imprinted polymer modified electrochemical sensor for the targeted detection, removal and destruction of *Escherichia coli* bacteria was developed onto the surface of Ag-ZnO bimetallic nanoparticle and graphene oxide nanocomposite. The nanocomposite played a dual role in this work, as a platform for imprinting of bacteria as well as a participated in their laser-light induced photo killing. In terms of sensitivity, our proposed sensor can detect *E. Coli* as few as 10^3 CFU mL⁻¹ and capture 98% of targeted cells from their very high concentrated solution (10^9 CFU mL⁻¹). Since the quantitative detection, we have also investigated the quantitative destruction of *E. Coli* and observed that 150 cm² area of polymer modified glass plate is sufficient enough to kill 10^9 CFU mL⁻¹ in a small amount of time of 5 minutes. The obtained results suggest that our proposed sensor have potential to be a promising candidate for specific and quantitative detection, removal as well as destruction of variety of bacterial pathogens.

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1. Introduction

With the increase in microbiological contamination in water or food beverages, their detection, as well as removal and destruction, has become a very important topic related to the health of common peoples (Altintas et al., 2015). According to the literature, approximately 500 billion pillsular have been consumed by the worldwide food production industry due to the presence of food-borne bacteria (Chen et al., 2015). These microorganisms have taken the place as a nightmare for the food industries as well as common peoples. Various known bacterial strains, like *Escherichia coli* (*E. coli*), *Staphylococcus* spp. and *Salmonella* spp., *E. coli* is treated as model bacteria. They are a member of a large group of bacterial strains that inhabit the intestinal tract of humans and other warm-blooded animals (Lin and Hattme, 2015). A very low infection dose (few 10 cells only) of these bacteria can effectively able to cause serious disease and leads to the lethality

polymerase chain reaction (PCR) (Bej et al., 1990)) for the identification of pathogenic bacteria are limited due to long analysis time, cost and versatility constraints (Chen et al., 2015). Therefore, it is an urgent need to develop some reliable approaches to not only identify but also remove and kill these harmful bacteria with high specificity and sensitivity.

In this regard, we have tried to prepare polymeric bacteria catcher using a combination of molecular imprinting and nanomaterials as a cost-effective, stable, selective, safe and three-in-one system, which could catch, remove and kill the bacteria. Earlier, some molecularly imprinted polymer (MIP) matrices have been developed for detection of different bacterial (Finesse et al., 2012) and virus (Altintas et al., 2015) strains; however, there combination with nanomaterials is currently in their infant stage (Ren and Zare, 2012). MIPs consist of a tailored polymer matrix, formed in the presence of a template; once the template molecule was removed, a binding cavity form, which have high selectivity

CONTAMINATED LITERATURE

(Nearly) none of the papers has been marked.

Why not?

- “The problem is fading away”
- “Only a problem in low quality labs”
- “Many of the papers are not used in future research or medication”
- “Researchers should not use ‘old’ literature”
- “Researchers will be careful when using contaminated literature”
- “No misconduct”

SURELY, RESEARCHERS WILL BE CAREFUL WHEN USING THE LITERATURE?

Evidence suggests otherwise:

- The spread of academic urban myths

SUPPLY
CAREFUL

WILL BE
TEMPERATURE?

Evidence suggests

- The spread
-



SURELY, RESEARCHERS WILL BE CAREFUL WHEN USING THE LITERATURE?

Evidence suggests otherwise:

- The spread of academic urban myths
- Questionable citing practices: researchers are willing to admit them
- Early citations largely decide on future usage of academic articles
- Retracted articles keep being cited
-

PROBLEMATIC CITING PRACTICES

From our own recent study:

- Authors show very little engagement with the actual content of the cited reference
- Citation accuracy decreases over time
- Only 6% of all citation contexts demonstrates awareness of issues related to the cited study
- ...