PAUL SCHERRER INSTITUT

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Workshop Research Integrity PSI, 2012
Plagiarism

Monday June 11 2012, 13.30 – 17.00

Marc Zbinden SNF, Louis Tiefenauer PSI

Program

Welcome Head HR Karsten Bugmann	5 min	13.40
Louis Tiefenauer: *Avoiding plagiarism*	40 min	14.20
Marc Zbinden: *SNF policy on plagiarism, self-plagiarism and recycling of text in research proposals*	40 min	15.00
Coffee break, informal discussions	20 min	15.20
2 parallel group discussions in rooms 401 & 402 "Paraphrasing" and "Procedures in plagiarism"	40 min	16.00
Presentation of outcomes be back at 16.00 to room 401	10 min	16.10
General discussion moderated by L. Tiefenauer, M. Zbinden	30 min	16.40

Motivation

Why integrity is important ?

- It is basic for acceptance of science
- It is an integral part of your work contract

Directors PSI, WSL, EMPA and eawag have

- released *guidelines* (distributed since 2010)
- released the *procedure* for alleged violation of integrity
- assigned a *ombudsperson*: Heinz Gäggeler for PSI

Research Integrity at PSI, EMPA, eawag, WSL

Guidelines for Good Scientific Practice

ON FRONT PAGE

Honesty, openness, self-criticism and fairness are the basis for credibility and acceptance in science. Researchers at PSI are committed to these values and to the guidelines which derive from them.

Wahrhaftigkeit, Offenheit, Selbstkritik und Fairness sind die Grundlage für die Glaubwürdigkeit und Akzeptanz der Wissenschaft. Wir Forschende am PSI sind diesen Werten verpflichtet und halten uns an die daraus abgeleiteten Richtlinien.

Background: ethical principles

Fairness

- *Give credit where credit is due. Honor to whom honor is due*.
- Publication list (bibliometry) is a main criteria to fill a position
- Cited references: select the most important, avoid extensive self-citations

Maximize benefit for the society*, minimize damage, respect autonomy* and rights of persons

- Rigor but fair selection of projects; best distribution of scare means; disclose selection criteria
- Avoid misconduct: Salami slicing, plagiarism, fabrication, falsification or duplication
- Avoid damage: to health people (safety), to environment, violation of privacy, animal protection, respect legal and ethical rules
- Keep independency: disclose conflict of interest (payments, industrial interests), keep freedom of research (by contract); avoid bias as a referee of papers submitted by others

Foster credibility of science

What to do?

Guidelines RI PSI, p. 29

References

- Authors must indicate *the sources of material and methods* they have used, and cite any work of others that has been used.
- *Full or partial use of work of others, without correct citation, is plagiarism and impermissible*.
- The sources of financial support for the project form third parties should be fully acknowledged.

Quellenangaben S. 12

Die Autoren haben die Herkunft aller verwendeten Materialien und Methoden anzugeben und zitieren die von ihnen erwähnten Arbeiten anderer.

Die ganze oder teilweise Verwendung eines fremden Werks ohne Angabe der Quelle ist Plagiat und unzulässig.

Die Herkunft der finanziellen Unterstützung Dritter sollen vollständig erwähnt werden.

Avoiding plagiarism

Research misconduct is
"fabrication, falsification, or plagiarism [(FFP)] in proposing, performing, or reviewing research, or in reporting research results" U.S. Department of Health and Human Services definition

Plagiarism classifications

- *Severe:* not citation of *idea*, only partially citation of central issues; not declaration of sources in *all* form of publications (papers, presentations, grants!)

- *Mild:* verbatim citation without quotation marks, not adequate paraphrasing and summarizing

Guidelines plagiarism I

1. An ethical writer ALWAYS acknowledges the contributions of others and the source of his/her ideas.

2. Any verbatim text taken from another author must be enclosed in quotation marks.

3. *We must always acknowledge every source that we use in our writing; whether we paraphrase it, summarize it, or enclose it quotations*.

4. When we *summarize*, we condense, *in our own words*, a substantial amount of material into a short paragraph or perhaps even into a sentence.

5. Whether we are paraphrasing or summarizing we must always identify the source of our information.

Guidelines plagiarism II

6. When paraphrasing and/or summarizing others' work we must reproduce the exact meaning of the other author's ideas or facts using our words and sentence structure.

7. In order to make substantial modifications to the original text that result in a proper paraphrase, the author must have a thorough understanding of the ideas and terminology being used.

8. A responsible writer has an ethical responsibility to readers, and to the author/s from whom s/he is borrowing, to respect others' ideas and words, to credit those from whom we borrow, and whenever possible, to use one's own words when paraphrasing.

Self-plagiarism

Duplications

- Two parallel submissions are not acceptable.
  Allowed: conference paper followed by a full paper with citation of conference paper
- Grants: Copy past is not acceptable.
  Allowed: Text recycling in material and methods, using quoting marks for verbatim cited text. Short summarizing with citations of published work.

Citation practice

- *Read* the paper to be cited carefully
- Cite the *original* paper, not a review
- Cite also *contradicting* papers and discuss this in respect to own findings
- *Avoid* extensive self-citations
- Check citations carefully, if there are *appropriately* cited
- In doubt: give a citation

Conclusions

- Do not use the *number* of publications as a major evaluation criteria
- *Educate* mentors: importance of appropriate conduct
- *Educate* scholars: correct practice
- *Promote* a self-checking system (established at funding and research institutions)
- Adapt the evaluation/selection practice (give appropriate incentives)
- Contact the department head or the ombudsperson in case of severe alleged plagiarism in your research group (e.g. plagiarism of idea or extensive duplication practice).

Consequences, if rules are not respected

- Fairness affected
  - not given deserved credit to others
  - deception of readers and decision makers
  - self-plagiarism: save of time, not adequate information given (quality)
- Baning or delay on publishing and funding of your project
- Loss of reputation in the scientific community
- Loss of doctoral degree (e.g. zu Guttenberg)
- Copyright infringences
- Waste of time of referre's or to reproduce published results (duplication)
- Loss of trust in scientific community and society

Practical guidelines* to avoid plagiarism

1. An ethical writer ALWAYS acknowledges the contributions of others and the source of his/her ideas.
2. Any verbatim text taken from another author must be enclosed in quotation marks.
3. We must always acknowledge every source that we use in our writing; whether we paraphrase it, summarize it, or enclose it quotations.
4. When we *summarize*, we condense, in our own words, a substantial amount of material into a short paragraph or perhaps even into a sentence.
5. Whether we are *paraphrasing or summarizing* we must always identify the source of our information.
6. When *paraphrasing and/or summarizing* others' work we must reproduce the exact meaning of the other author's ideas or facts using our words and sentence structure.
7. In order to make substantial modifications to the original text that result in a proper paraphrase, the author must have a thorough understanding of the ideas and terminology being used.
8. A responsible writer has an ethical responsibility to readers, and to the author/s from whom s/he is borrowing, to respect others' ideas and words, to credit those from whom we borrow, and whenever possible, to use one's own words when *paraphrasing*.

*** Office of Research Integrity (ORI), Miguel Roig**

Practical guidelines* to avoid plagiarism

09. When in *doubt* as to whether a concept or fact is common knowledge, provide a citation.

10. Authors who submit a manuscript for publication containing data, reviews, conclusions, etc., that have already been disseminated in some significant manner (e.g., published as an article in another journal, presented at a conference, posted on the internet) must clearly indicate to the editors and readers the nature of the *previous dissemination.*

11. Authors of *complex studies* should heed the advice previously put forth by Angell & Relman (1989). If the results of a single complex study are best presented as a 'cohesive' single whole, they should not be partitioned into individual papers. Furthermore, if there is any doubt as to whether a paper submitted for publication represents *fragmented data*, authors should enclose other papers (published or unpublished) that might be part of the paper under consideration (Kassirer & Angell, 1995).

12. Because some instances of plagiarism, *self-plagiarism*, and even some writing practices that might otherwise be acceptable (e.g., extensive paraphrasing or quoting of key elements of a book) can constitute *copyright infringement*, authors are strongly encouraged to *become familiar* with basic elements of *copyright law*.

*** Office of Research Integrity (ORI), Miguel Roig**

Practical guidelines* to avoid plagiarism

13. While there are some situations where *text recycling* is an acceptable practice, it may not be so in *other situations*. Authors are urged to adhere to the spirit of ethical writing and avoid reusing their own previously published text, unless it is done in a manner consistent with standard scholarly conventions (e.g., by using of quotations and proper paraphrasing).
14. Authors are strongly urged to *double-check their citations*. Specifically, authors should always ensure that each reference notation appearing in the body of the manuscript corresponds to the correct citation listed in the reference section and that each source listed in the reference section has been cited at some point in the manuscript. In addition, authors should also ensure that all elements of a citation (e.g., spelling of authors' names, volume number of journal, pagination) are derived directly from the original paper, rather than from a citation that appears on a secondary source. Finally, authors should ensure that credit is given to those authors who *first reported* the phenomenon being studied.
15. The references used in a paper should only be those that are directly related to its contents. The intentional inclusion of references of questionable relevance for purposes of manipulating a journal's or a paper's impact factor or a paper's chances of acceptance is an *unacceptable practice*.

*** Office of Research Integrity (ORI), Miguel Roig**

Practical guidelines* to avoid plagiarism

16. Authors should follow a *simple rule:* Strive to obtain the actual published paper. When the published paper cannot be obtained, cite the specific version of the material being used, whether it is conference presentation, abstract, or an unpublished manuscript.
17. Generally, when *describing others' work*, do not rely on a secondary summary of that work. It is a deceptive practice, reflects poor scholarly standards, and can lead to a flawed description of the work described.
18. If an author must rely on a *secondary source* (e.g., textbook) to describe the contents of a primary source (e.g., an empirical journal article), s/he should consult writing manuals used in her discipline to follow the proper convention to do so. Above all, always indicate the actual source of the information being reported.
19. When borrowing heavily from a source, authors should always craft their writing in a way that makes clear to readers which *ideas are their own* and which are derived from the source being consulted.
20. When appropriate, authors have an *ethical responsibility* to report evidence that runs contrary to their point of view. In addition, evidence that we use in support of our position must be methodologically sound. When citing supporting studies that suffer from methodological, statistical, or other types of shortcomings, such flaws must be pointed out to the reader.

*** Office of Research Integrity (ORI), Miguel Roig**

Practical guidelines* to avoid plagiarism

21. Authors have an *ethical obligation* to report all aspects of the study that may impact the independent replicability of their research.
22. Researchers have an *ethical responsibility* to report the results of their studies according to their a priori plans. Any post hoc manipulations that may alter the results initially obtained, such as the elimination of outliers or the use of alternative statistical techniques, must be clearly described along with an acceptable rationale for using such techniques.
23. *Authorship* determination should be discussed prior to commencing a research collaboration and should be based on established guidelines, such as those of the International Committee of Medical Journal Editors.
24. Only those individuals who have made *substantive contributions* to a project merit authorship in a paper.
25. *Faculty-student collaborations* should follow the same criteria to establish authorship. Mentors must exercise great care to neither award authorship to students whose contributions do not merit it, nor to deny authorship and due credit to the work of students.

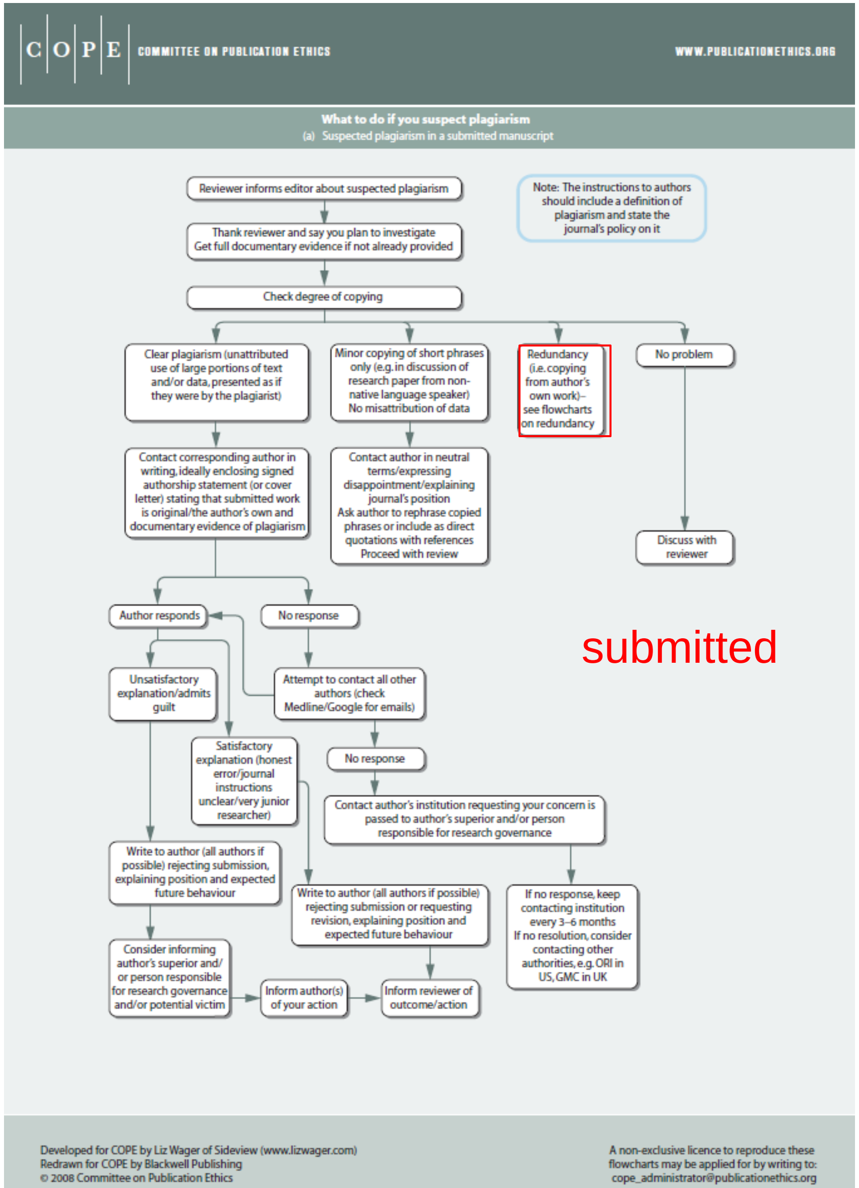
*** Office of Research Integrity (ORI), Miguel Roig**

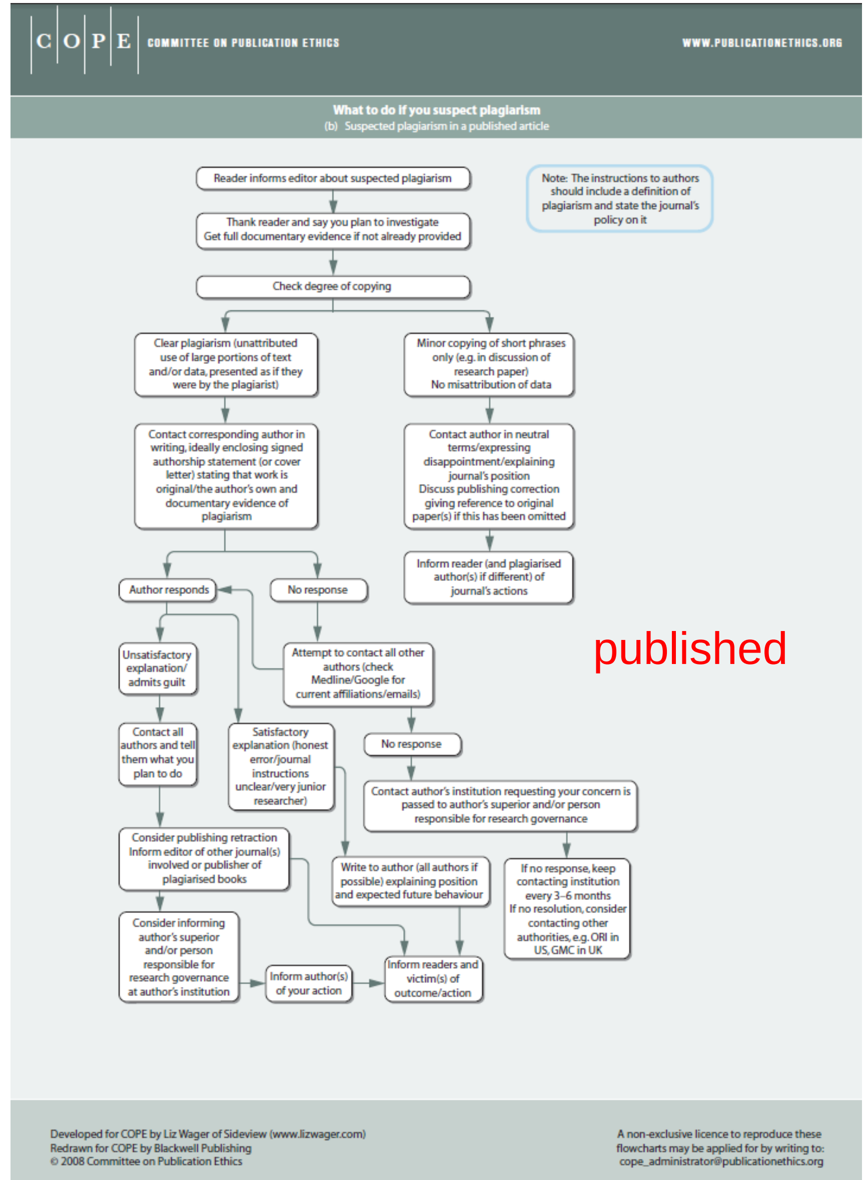
Practical guidelines* to avoid plagiarism

26. *Academic or professional ghost authorship* in the sciences is ethically unacceptable.

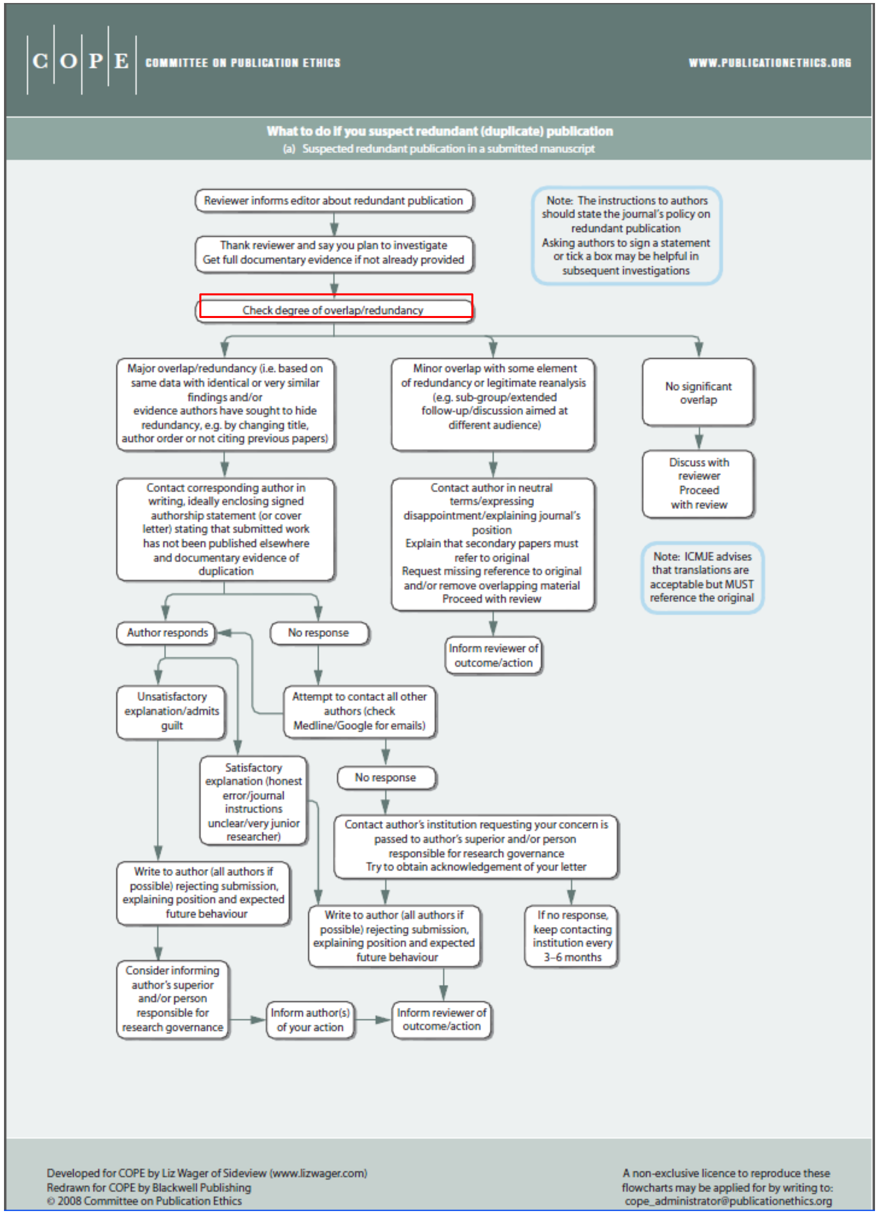
27. Authors must become aware of possible *conflicts of interest* in their own research and to make every effort to disclose those situations (e.g., stock ownership, consulting agreements to the sponsoring organization) that may pose actual or potential conflicts of interest."

Editor guidelines: flow charts plagiarism





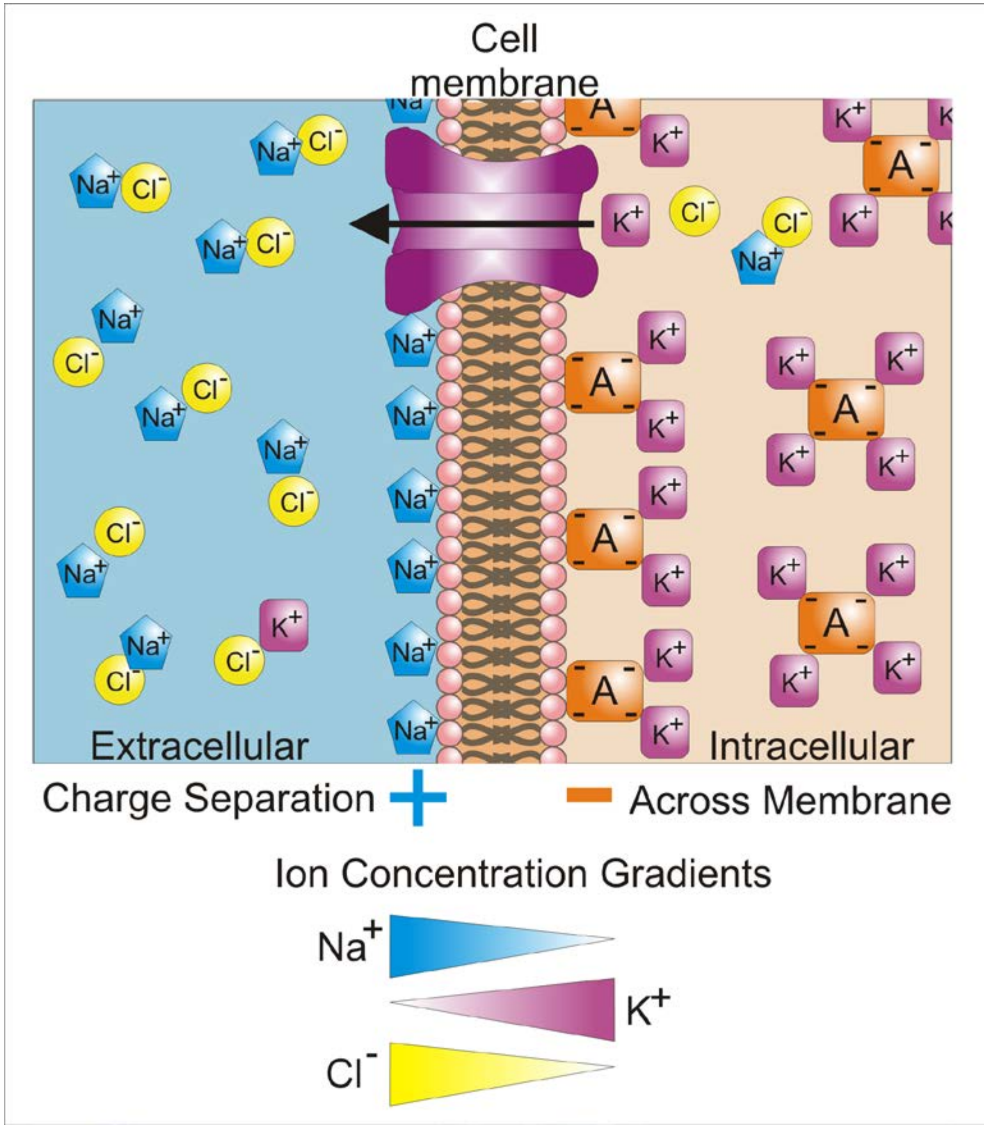
Editor guidelines plagiarism



Summary

- Editors of many journals have committed to COPE-guidelines
- *Suspected* plagiarism will cause a *delay*
- Programs can easily detect plagiarism
- *Reviewers* or *readers* can inform
- Duplication (redundancy) is self-plagiarism and will induce discussions (e.g. removal of overlapping material)

Paraphrasing: The membrane potential



Membrane potential (also **transmembrane potential** or **membrane voltage**) is the difference in electrical potential between the interior and the exterior of a biological cell.

Source: Wikipedia

http://creativecommons.org/licenses

Figure description in Wikipedia

Differences in concentration of ions on opposite sides of a cellular membrane lead to a voltage called the membrane potential. Many ions have a concentration gradient across the membrane, including potassium (K^+), which is at a high inside and a low concentration outside the membrane. Sodium (Na^+) and chloride (Cl^-) ions are at high concentrations in the extracellular region, and low concentrations in the intracellular regions. These concentration gradients provide the potential energy to drive the formation of the membrane potential. This voltage is established when the membrane has permeability to one or more ions. In the simplest case, illustrated here, if the membrane is selectively permeable to potassium, these positively charged ions can diffuse down the concentration gradient to the outside of the cell, leaving behind uncompensated negative charges. This separation of charges is what causes the membrane potential. Note that the bulk solutions of either side of the membrane are electo-neutral. Likewise, the system as a whole is electro-neutral. The "uncompensated" positive charges outside the cell, and the uncompensated negative charges inside the cell, physically line up on the membrane surface and attract each other across membrane. Thus, the membrane potential is physically located only in the immediate vicinity of the membrane. It is the separation of these charges across them membrane that is the basis of the membrane voltage. Note also that this diagram is only an approximation of the ionic contributions to the membrane potential. Other ions including sodium, chloride, calcium and others play a more minor role, even though they have strong concentration gradients, because they have more limited permeability than potassium. Key: Blue pentagons - sodium ions; Purple squares - potassium ions; Yellow circles - Choloride ions; Orange rectangles - Anions (these arise from a variety of sources including proteins). The large purple structure with an arrow represents a transmembrane potassium channel and the direction of net potassium movement. (Source: Wikipedia)

Paraphrasing I

Examples from: Office of Research Integrity (ORI), Miguel Roig

Because the intracellular concentration of potassium ions is relatively high, potassium ions tend to diffuse out of the cell. This movement is driven by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is significantly more permeable to potassium ions than to sodium ions. As a result, potassium ions diffuse out of the cell faster than sodium ions enter the cytoplasm. The cell therefore experiences a net loss of positive charges, and as a result the interior of the cell membrane contains an excess of negative charges, primarily from negatively charged proteins."[1] (p. 204). (taken from Martini & Bartholomew, 1997) .

A textbook of anatomy and physiology[1] reports that the concentration of potassium ions inside of the cell is relatively high and, consequently, some potassium tends to escape out of the cell. Just the opposite occurs with sodium ions. Their concentration outside of the cell causes sodium ions to cross the membrane into the cell, but they do so at a slower rate. According to these authors, this is because the permeability of the cell membrane is such that it favors the movement of potassium relative to sodium ions. Because the rate of crossing for potassium ions that exit the cell is higher than that for sodium ions that enter the cell, the inside portion of the cell is left with an overload of negatively charged particles, namely, proteins that contain a negative charge.

Comment: Stylistic changes ok., scientifically?

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Paraphrasing II

Examples from: Office of Research Integrity (ORI), Miguel Roig

Because the intracellular concentration of potassium ions is relatively high, potassium ions tend to diffuse out of the cell. This movement is driven by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is significantly more permeable to potassium ions than to sodium ions. As a result, potassium ions diffuse out of the cell faster than sodium ions enter the cytoplasm. The cell therefore experiences a net loss of positive charges, and as a result the interior of the cell membrane contains an excess of negative charges, primarily from negatively charged proteins."[1] (p. 204). (taken from Martini & Bartholomew, 1997)

Because the intracellular concentration of potassium ions is high, potassium ions tend to diffuse out of the cell. This movement is triggered by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is much more permeable to potassium ions than it is to sodium ions. As a result, potassium ions diffuse out of the cell more rapidly than sodium ions enter the cytoplasm. The cell therefore experiences a loss of positive charges, and as a result the interior of the cell membrane contains a surplus of negative charges, primarily from negatively charged proteins.[1] (p. 204).

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Paraphrasing III

Because the intracellular concentration of potassium ions is relatively high, potassium ions tend to diffuse out of the cell. This movement is driven by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is significantly more permeable to potassium ions than to sodium ions. As a result, potassium ions diffuse out of the cell faster than sodium ions enter the cytoplasm. The cell therefore experiences a net loss of positive charges, and as a result the interior of the cell membrane contains an excess of negative charges, primarily from negatively charged proteins."[1] (p. 204). (taken from Martini & Bartholomew, 1997) .

The concentration gradient for sodium (Na) ions tends to promote their movement into the cell. Similarly, the high intracellular concentration of potassium (K) ions is relatively high resulting in K's tendency to diffuse out of the cell. Because the cell membrane is significantly more permeable to K than to Na, K diffuses out of the cell faster than Na enter the cytoplasm. The cell therefore experiences a net loss of positive charges and, as a result the interior of the cell membrane now has an excess of negative charges, primarily from negatively charged proteins.[1] (p. 204).

The concentration gradient for sodium (Na) ions tends to promote their movement into the cell. Similarly, the high intracellular concentration of potassium (K) ions is relatively high resulting in K's tendency to diffuse out of the cell. Because the cell membrane is significantly more permeable to K than to Na, K diffuses out of the cell faster than Na enter the cytoplasm. The cell therefore experiences a net loss of positive charges and, as a result the interior of the cell membrane now has an excess of negative charges, primarily from negatively charged proteins.[1] (p. 204).

Paraphrasing IV

Examples from: Office of Research Integrity (ORI), Miguel Roig

Because the intracellular concentration of potassium ions is relatively high, potassium ions tend to diffuse out of the cell. This movement is driven by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is significantly more permeable to potassium ions than to sodium ions. As a result, potassium ions diffuse out of the cell faster than sodium ions enter the cytoplasm. The cell therefore experiences a net loss of positive charges, and as a result the interior of the cell membrane contains an excess of negative charges, primarily from negatively charged proteins."[1] (p. 204). (taken from Martini & Bartholomew, 1997) .

The relatively high concentration gradient of sodium ions outside of the cell causes them to enter into the cell's cytoplasm. In a similar fashion, the interior concentration gradient of potassium ions is also high and, therefore, potassium ions tend to scatter out of the cell through the cell's membrane. But, a notable feature of this process is that Potassium ions tend to leave the cell faster than sodium ions enter the cytoplasm. This is because of the nature of the cell membrane's permeability, which allows potassium ions to cross much more freely than sodium ions. The end result is that the interior of the cell membrane's loss of positive charges results in a greater proportion of negative charges and these made up mostly of proteins that have acquired a negative charge.[1]

The relatively high concentration ~~gradient~~ of sodium ions outside of the cell causes them to enter into the cell's cytoplasm. *In a similar fashion*, the interior concentration ~~gradient~~ of potassium ions is ~~also~~ high and, therefore, potassium ions tend to *scatter out* of the cell through the cell~~'s~~ membrane. ~~But, a notable feature~~ of this process is that potassium ions *tend to leave the cell faster* than sodium ions enter the cytoplasm. *This is because of the nature of the cell membrane's permeability*, which allows potassium ions to *cross much more freely* than sodium ions. *The end result* is that the interior of the cell membrane's loss of positive charges results in *a greater proportion of negative charges* and these *made up mostly* of proteins *that ~~have acquired~~* a negative charge.

corrected by L. Tiefenauer, *questionable formulations*

Paraphrasing V

Examples from: Office of Research Integrity (ORI), Miguel Roig

A textbook of anatomy and physiology[1] reports that the concentration of potassium ions inside of the cell is relatively high and, consequently, some potassium tends to escape out of the cell. Just the opposite occurs with sodium ions. Their concentration outside of the cell causes sodium ions to cross the membrane into the cell, but they do so at a slower rate. According to these authors, this is because the permeability of the cell membrane is such that it favors the movement of potassium relative to sodium ions. Because the rate of crossing for potassium ions that exit the cell is higher than that for sodium ions that enter the cell, the inside portion of the cell is left with an overload of negatively charged particles, namely, proteins that contain a negative charge.

~~A textbook of anatomy and physiology[1] reports that~~ The concentration of potassium ions inside of the cell is relatively high and, consequently~~, some~~ potassium ions diffuse ~~tends to escape~~ out of the cell across the cell membrane. ~~Just the opposite occurs with~~ sodium ~~ions.Their~~ The high concentration ~~outside of the cell causes~~ of sodium ions outside is the raison for diffusion into the cell. ~~to cross the cell membrane into the cell, but they do so at a slower rate than potassium ions~~. ~~According to these authors~~, ~~this is because the relatively higher permeability of the cell membrane is such that it favors the movement of for potassium relative to sodium ions~~. Because the diffusion rate ~~of crossing for~~ of potassium ions across membranes ~~that exit the cell~~ is higher than that for sodium ions ~~that~~ entering the cell, the inside ~~portion~~ of the cell becomes negative ~~left with an overload of particles, namely, proteins that contain a negative charge~~ mainly due to negatively charged proteins.

Paraphrasing VI

Because the intracellular concentration of potassium ions is relatively high, potassium ions tend to diffuse out of the cell. This movement is driven by the concentration gradient for potassium ions. Similarly, the concentration gradient for sodium ions tends to promote their movement into the cell. However, the cell membrane is significantly more permeable to potassium ions than to sodium ions. As a result, potassium ions diffuse out of the cell faster than sodium ions enter the cytoplasm. The cell therefore experiences a net loss of positive charges, and as a result the interior of the cell membrane contains an excess of negative charges, primarily from negatively charged proteins."[1] (p. 204). (taken from Martini & Bartholomew, 1997)

It is well known that the concentration of potassium ions inside of the cell is higher than outside, resulting in *preferential potassium ions diffusion* out of the cell. The sodium ion gradient is in the opposite direction. Since the diffusion rate of potassium ions across lipid bilayer membranes is higher than that of sodium ions, a *electrochemical gradient* is established, predominately due *to negatively charged proteins* inside the cell.