



**Organização:** Pró-Reitoria de Pesquisa - USP



# Workshop de Capacitação em Escrita Científica

## *Módulo 5*

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*USP, 2012*

**Módulo 1:** O Gênero Literário

Seções de Um Artigo Científico

**Módulo 2:** Estrutura 1: *Abstract*

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Linguagem 1: Especificidade, Complexidade e Ambiguidade

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# Módulo 5

- Estilo

- Linguagem 1:

Especificidade, Complexidade e Ambiguidade



# *Scientific Writing Style*

Define the abbreviation in parentheses the first time you use it:  
**Green Fluorescent Protein (GFP)**

Use Abbreviations / acronyms with discretion

Ex: Use of combined 5-PAS and BTR3 increased the OP toxicity for MD14+ cells

??????

Words “day”, “week”, “month” and “year” are not abbreviated.

Except in the case of footnotes, tables and captions, spell out all months **with** or **without** a specific day :

**Ex:** Data were collected in January, 2000.

U.S. citizens;  
U.K. football team  
(Adjectives)

or

“The citizens from United States....”  
“The football team of United Kingdom....”  
(nouns)



Units of measure are abbreviated : **2 mm.**; **10 min.**

In a non-measurable context: "we measured length in millimeters"

OBS: Never add an "s" to the measure unit.

## Latin abbreviations:

- *i.e.*, *id est* (that is),
- *e.g.*, *exempli gratia* (for example),
- *etc.* (so on),
- *vs* (versus),
- *et al.*, *et alli*, and others,
- *via* (road),
- *in situ* (in a place)

**Controversy:** Some authors agree that **a period** is used only if the last letter of the abbreviation is not the last letter of the word:

Ex.: **Prof.** , **Vol.** 1, **p.** 23-25 , **2nd ed.** , **et al.** , **etc.**  
**Dr** , **Mr** , **Ms** , **vs**

A good reference material may be found at:

The *ACS Style Guide*, *Dodd, J. S.*, Ed;  
American Chemical Society, Washington, DC, 2006

Use a space between the number and the unit:

6 min, 0.3 g, 80 mL, etc.

Exception: %, \$ and °

50%, \$400, 180° (Obs: 90 °C, 180 °F).

Use **past tense** for sentences concerning your findings.

Ex: This study **was** aimed at investigating.. (**The study**)

Present forms preferable in  
**Conclusion Section**

**Present and even Future Tenses may be used!!**

Passive voice **almost** always requires more words than  
Active voice:

**ACTIVE:** “the melting processing *consumed* polymeric material at a higher rate..” (10 words)

**PASSIVE:** “Polymeric material *was consumed* by the melting process at a higher rate..” (12 words)

Mathews, JR and Mathews RW, *Successful Scientific Writing*, Cambridge University Press; 3 edition 2007)

Dodd, J. S., Ed. *The ACS Style Guide*; American Chemical Society: Washington, DC, 1986.).



**Sometimes first person may be used to emphasize important information**

Our research group has investigated....

We have demonstrated that....

**Avoid:** “we believe”, “we feel”, “we can see”

<b>Avoid</b>	<b>Better</b>
nowadays	presently, currently
on the contrary	in contrast
(up) until now	to date



# *Language I*

*Lets face it, English is a stupid language.  
There is no egg in the eggplant.  
No ham in the hamburger.  
And neither pine nor apple in the pineapple.  
English muffins were not invented in England.  
French fries were not invented in France.*

<http://www.gray-area.org/Research/Ambig/#HEAD>

## The efficient writing is specific

*“Novel strategies have been proposed to overcome the limitations regarding diseases diagnosis.”*

Too general!!

What were the strategies?  
What are the limitations?  
What are the diseases?

The use of carbon nanotubes-based biosensors has been proposed to overcome the poor selectivity exhibited by conventional systems used for cancer detection.

**Better !!**

Carbon nanotubes-based biosensors exhibit high selectivity for cancer detection.

Efficient Scientific Writing!!



# *The right emphasis on details*



Possible ways of emphasizing details:

Repetition, wording, illustration and placement

Source: Michael Alley *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



## 1. Repetition

**Title, abstract, discussion and conclusions ??**

## 2. Wording

Stress the most important details in a sentence!!

*Ex: High levels of the protein were found in the blood samples from patients with hemorrhagic infections.*

**What is the most important detail?**

**The protein, the levels or the infection?**



# *The right emphasis on Details*



Unexpected high levels of a protein were found in the blood samples from patients with hemorrhagic infections.

High levels of a very specific S100 family protein were found in the blood samples from patients with hemorrhagic infections.

High levels of a specific protein were found in the blood samples from examined patients. This may be the cause of the hemorrhagic infection.



## A huge problem: **Long Sentences**

The mechanical analyses had been carried out using stress-strain measurements and indicated that the copper-based alloys are more resistant than the silver-based ones, which may be due to the fabrication process used for each composite material, since the copper alloys had been produced via casting, whereas the silver composites had been fabricated via reactive extrusion under high pressures, controlled atmosphere, and at temperatures ranging from 300 – 400 °C.

?????????

Too long!, Too wordy!

Too many ideas in a single sentence!!



# Complexity: Sentences

## Streamlining it:

### First half of the sentence:

The mechanical analyses had been carried out using.....

### Second half :

.....



The proposed memetic algorithm that combines search by an ES [44] on the upper level **and** nonlinear local optimizations to handle complex nonlinear equality constraints **and** to realize a Lamarckian learning principle is a promising concept for general design optimization problems in which a large number of nonlinear model equations and constraints as well as discrete design decisions and possibly discontinuous value functions are present, well beyond the domain of chemical engineering. While the selection of the representation as well as of the mutation and recombination operators is of course problem specific **and** has to be modified for different applications, **and** the use of other local solvers may also require small changes to the algorithm, the general principle can be transferred to any similar problem, **and** significant gains in computational performance and robustness (probability of finding the best as well as most of the local optima) can be expected.

Urselmann, et al., IEEE Transactions on Evolutionary Computation, 15, 2011, 659

A new methodology for protein purification is presented. Isolation techniques using HPLC are discussed. The amount of protein purified in each cycle is revealed.

This study describes a new methodology for protein purification using novel techniques based on HPLC experiments. Each purification cycle provided a total amount of 1.2 mg of protein.

**Better!!**

**Active voice is straightforward**



Words/phrases with more than one meaning



Chickens are ready to eat

????

## Word Choice:

Be careful with:

as, only

## Word Choice:

*“Tissue temperature increased as the particles released the phytotherapics”*

????

The word “**as**” may be interpreted as “because” or “while”

“Tissue temperature increased because the particles released the phytotherapics”

Better

Only I tested the device yesterday  
I only tested the device yesterday  
I tested only the device yesterday

“ In low water temperatures and high toxicity levels of oil, we tested how well the microorganisms survived”

**Better:** “We tested how well the microorganisms survived in low water temperatures and high toxicity levels of oil”

Extracted from: Michael Alley *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).

“The train left the station crowded and dirty.”

**Better:** “The train was crowded and dirty when it left the station”

[www.1-language.com/eslquizzes/ambiguoussentences.htm](http://www.1-language.com/eslquizzes/ambiguoussentences.htm)



## Unclear Pronoun

Since the platform has a support system connected to the equipment, **it** was mounted inside the lab.

*What was mounted inside the lab????*

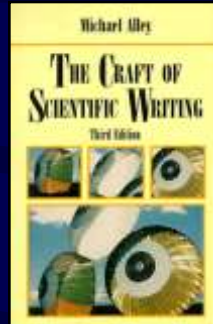
*It = The platform or the support system??*



Exercises at:

<http://www.writing.engr.psu.edu/handbook/exercises/exercise4.html>

-Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



Mathews, JR and Mathews RW, *Successful Scientific Writing*, Cambridge University Press; 3 edition 2007)

Dodd, J. S., Ed. *The ACS Style Guide*; American Chemical Society: Washington, DC, 1986.).

Brawand et al., *Nature*, 2011, 478, 343

Urselmann, et al., *IEEE Transactions on Evolutionary Computation*, 15, 2011, 659



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## *Módulo 6*

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# Módulo 6

## Linguagem 2:

Redundâncias, Ação no Verbo, Fluidez da Escrita, Ritmo de Escrita



# *Language II*

***During the data collection phase of the study, all experimental measurements were performed in a period of time of 3 months. All the obtained results were further analyzed and possible errors were completely eliminated.***

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



**Better:**

*During the data collection, all measurements were performed in 3 months. The results were further analyzed and possible errors were eliminated.*

Best:

*All measurements were performed in 3 months.*



# Redundancies



## Efficient Scientific Writing:



## Common redundancies from Non-Native Speakers

*Alternative choices*

*Basic fundamentals*

*Completely eliminate*

*Currently underway*

*Empty space*

*Introduced a new*

*Mix together*

*Never before*

*Period of time*

*Separate entities*

*Still persists*

*Quite unique*

*Very similar*

*Join together*

*Completely full*

*Obtained Results*

*Definitely proved*

*Exactly true*

*First of all*

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).

**Strong nouns provide a “visual image” to the reader.**

A short list of abstract nouns:

*Ability, approach, capability, concept, environment,  
factor, nature, parameter,....*

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition  
(Springer-Verlag, 1996).

Não-Nativos tendem a “Substantivar”  
os Verbos

Replace verb phrases by the correspondent strong verb

## Weak verb phrase

Made the arrangement for  
Made the decision  
Made the measurement of  
Performed the development of

## Strong Verb

Arranged  
Decided  
Measured  
Developed

“A continuous improvement in patient’s condition was observed”

Better:

“Patient’s condition improved”

Adapted from Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



Administration of dopamine produced a decrease in the frequency of convulsions

**Better:**

Administration of dopamine decreased convulsions frequency

The new phytotherapics exert their action by blocking the cells communications.

**Better:**

The new phytotherapics block cells communications.

A Clear and Effective Writing is made of Smooth Transitions between Ideas, Sentences, Paragraphs

**Problem:** Complementary ideas disconnected and/or placed far way from each other.

The **level of the proteins** found in the blood samples is similar to that observed by other researchers. Due to its ability to form complexes with DNA and RNA, such proteins had been extensively investigated by a number of research groups, including the group from Harvard, which estimated that the normal level of the protein in blood should be **around 1 mg/dL.**

????

## Better:

The level of the proteins found in the blood samples was 1 mg/dL, which is similar to that observed by Harvard's group.

The word **which** brings the ideas closer to each other!

## Transitional words within a sentence

### 1) Reason:

Because, since, due to,....

**Example:** The size of the nanoparticles was ca. 5 nm because of the synthetic route employed.

## Transitional words within a sentence

### 2) Consequence:

therefore, as a consequence,....

**Example:** The enzymes showed a high specificity to pesticides, therefore allowing its use in biosensors.

## Transitional words within a sentence

### 3) Concession:

Although, even though, ....

**Example:** Although individual residues in the repeated-sequence blocks in the core have diverged, the patterns of amino acids are identical.



## Smooth Transition between sentences

1) **Continuation:** Movement of ideas in the same direction:

### Examples:

Also;

Moreover;

first, second...;

In addition;

.....

## Smooth Transition between sentences

### 2) Pause:

#### Examples:

For example;

In other words;

.....

## Smooth Transition between sentences

3) **Reversal:** Movement of ideas reverses direction.

### Examples:

However;

In contrast;

On the other hand;

Conversely;

Contrarily;

## Smooth Transition between sentences

### 4) Conclusion:

#### Examples:

In summary

Concluding

.....



# *Rhythm*



## Sentence Openers: **Rhythm**

DNA sensing has been considered a powerful tool to diagnose cancer. Cancer diagnosis is usually not straightforward due to a large number of pathologies variations as well as to the very low amount of DNA molecules expressed in the beginning of disease. Sensors capable of detecting specific types of tumoral cells may represent a breakthrough in medicine. **This paper describes** the development of special sensors for cancer detection. **The sensors comprise** immobilized antibodies that recognizes specific types of proteins produced by cancer cell. **The sensor systems were produced** using different immobilization strategies. **The results show** that different types of cancer cells can be detected at very low limits of detection. **The experiments were carried out** in triplicate. **The systems we developed** will be evaluated in clinical trials in a few months. Many medicine areas will benefit from our new technologies.

????



## Vary sentence openers

Topic of Sentence	←	Subject
Time of action	←	Prepositional Phrase
Location of action	←	Prepositional Phrase
Manner of action	←	Adverb
Subordinate action	←	Dependent Clause
Reason for action	←	Infinitive Phrase

Source: Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).



adverb

**Recently**, DNA sensors....

dependent clause

**Although cancer diagnosis** is not straightforward ,....

infinitive phrase

**To optimize the systems**....

subject-verb

**The results** show that....

prepositional phrase

**In a few months**, the systems will be....





**Recently**, DNA sensing has been considered a powerful tool to diagnose cancer. **Although** cancer diagnosis is not straightforward, due to a large number of pathologies variations, this strategy may be very efficient for some cancer types. **Sensors** capable of detecting specific types of tumoral cells may represent a breakthrough in medicine. **In this paper we** describe the development of special sensors for cancer detection. The sensors comprise immobilized antibodies that recognizes specific types of proteins produced by cancer cell. **To optimize** the systems, the sensor were produced using different immobilization strategies. **The results** show that different types of cancer cells can be detected at very low limits of detection. The experiments were carried out in triplicate. **In a few months**, the systems will be evaluated in clinical trials in a few months. **Since highly** sensitivity and specificity were achieved by the sensors, clinical areas may benefit from our new technologies.

Rhythm !!!!



## Rewrite the following Abstract improving rhythm

**The development** of new antimicrobial peptides (AMPs) has arisen as a novel, promising strategy to overcome the effects of antibiotic resistance developed by several pathogens. **The efficient** design and development of such biomolecules, however, requires an understanding of the mechanisms of interactions between the peptides and cell membrane. In this study we examined the interactions of the cationic antimicrobial peptide dermaseptin 01 with three membrane systems. **The membrane** systems had been investigated in the form of Langmuir monolayers. **The degree** of interaction of DS 01 with the different biomembrane models was quantified from equilibrium and dynamic liquid-air interface parameters, such as: minimum molecular area and dilatational elasticity modulus. **The interaction** between DS 01 and the zwitterionic phospholipid, as well as with the LRE-La monolayers were very weak at low peptide concentrations, whereas with negatively charged phospholipids the interactions were stronger. **The latter** is in agreement with previous literature for vesicles and planar lipid bilayers, and with the greater activity of AMPs against bacterial membranes, as compared to mammalian cell membranes.



# Sources



-Michael Alley. *The Craft of Scientific Writing*, 3rd edition (Springer-Verlag, 1996).

Science Research Writing for Non-Native Speakers of English, Hilary Glasman-Deal, Imperial College Press, 2009

Mathews, JR and Mathews RW, *Successful Scientific Writing*, Cambridge University Press; 3 edition 2007)



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