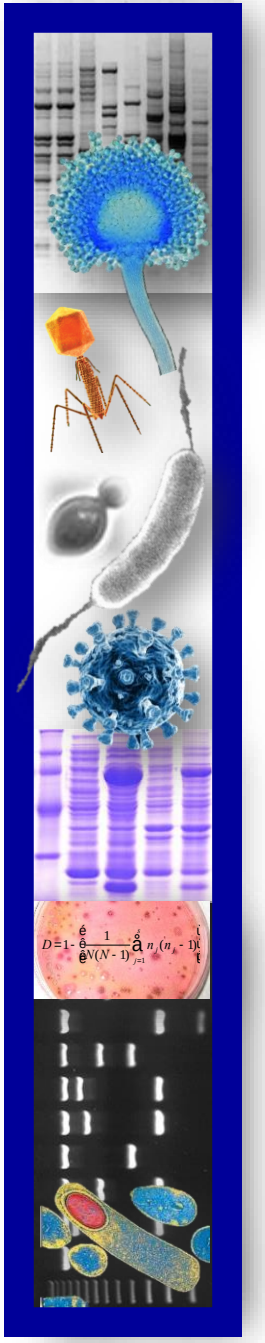
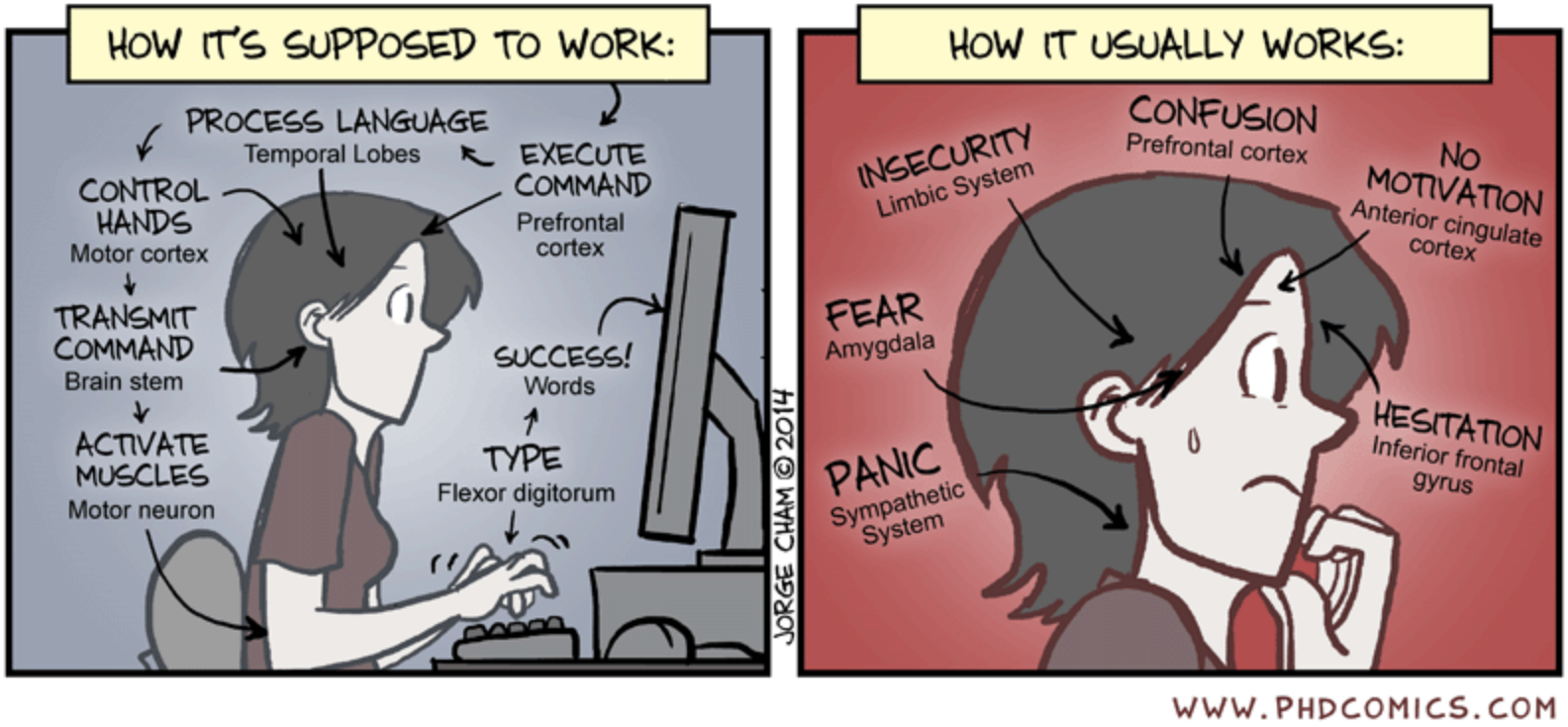


Projeto de Dissertação em Microbiologia Aplicada

Tools to write a Dissertation in Applied Microbiology

Aula 3


THE NEUROBIOLOGY OF WRITING
HOW IT'S SUPPOSED TO WORK:
PROCESS LANGUAGE
Temporal Lobes
EXECUTE COMMAND
Prefrontal cortex
CONTROL HANDS
Motor cortex
TRANSMIT COMMAND
Brain stem
ACTIVATE MUSCLES
Motor neuron
SUCCESS!
Words
TYPE
Flexor digitorum
JORGE CHAM © 2014
HOW IT USUALLY WORKS:
CONFUSION
Prefrontal cortex
INSECURITY
Limbic System
NO MOTIVATION
Anterior cingulate cortex
FEAR
Amygdala
HESITATION
Inferior frontal gyrus
PANIC
Sympathetic System
WWW.PHDCOMICS.COM

- Gestão do tempo
- Quando começar a escrever cada parte do trabalho
- Qual a melhor ordem para escrever as diferentes secções da Dissertação
- Técnicas para ir tirando nota da longo das experiências e que no final sejam úteis para escrever a Dissertação

"Mapianos 2023"

"Mestrados & MBA, 20 Dicas" – Visão 2019

O síndrome da página em branco - writer's block

- *Como a escrita para mim não é fácil de realizar por vezes não sei por onde começar e como organizar o que tenho para escrever.*
- *Como resumir sem perder pontos importantes e manter um fio condutor?*
- *Simplificação de frases, escrita simples mas científica.*

"Mapianos 2023"

Frequentemente, o síndrome da folha em branco é causado não pela falta de ideias, mas pelo seu excesso.

Tomaz Tadeu da Silva. 2002. **Como enfrentar a síndrome da folha em branco**. Porto Alegre: Programa de Pós-Graduação em Educação. Argumentação, Estilo, Composição: Introdução à Escrita Acadêmica. Universidade Federal do Rio Grande do Sul. 8 folhas (Texto digitado).

Nota: Muitas dessas sugestões estão baseadas nas minhas próprias experiências com a síndrome da folha em branco. Outras, recolhi, aqui e ali, na Internet. Em qualquer dos casos, a formulação e o desenvolvimento das sugestões tais como elas aparecem aqui são de minha inteira e exclusiva redação.

1. **Assegure-se de que você tem algo a dizer**
2. **Faça um plano geral do que você pretende escrever**
3. **Não insista em começar do começo**
4. **Divida sua tarefa em uma série de etapas menores**
5. **Organize seu texto em torno de um tema restrito e bem delimitado**
6. **Estabeleça metas exequíveis**
7. **Não espere para escrever apenas quando tiver a forma perfeita em sua cabeça**
8. **Não fique à espera da milagrosa inspiração**

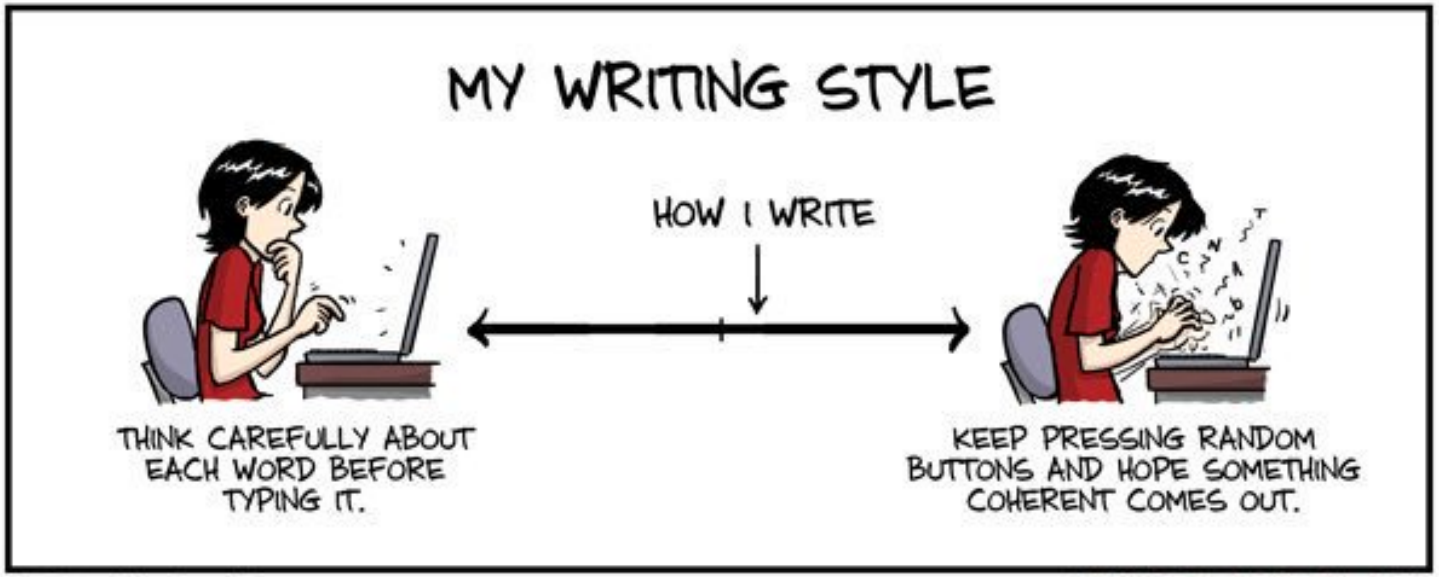
   A inspiração se produz na própria escrita.
9. **Na falta de palavras, desenhe**
10. **Suspenda qualquer censura prévia**
11. **Estabeleça um cronograma de trabalho e cumpra-o à risca**
12. **Mude: de instrumento, de lugar, de horário**
13. **Escreva desordenadamente**
14. **Não procure pretextos para não escrever**

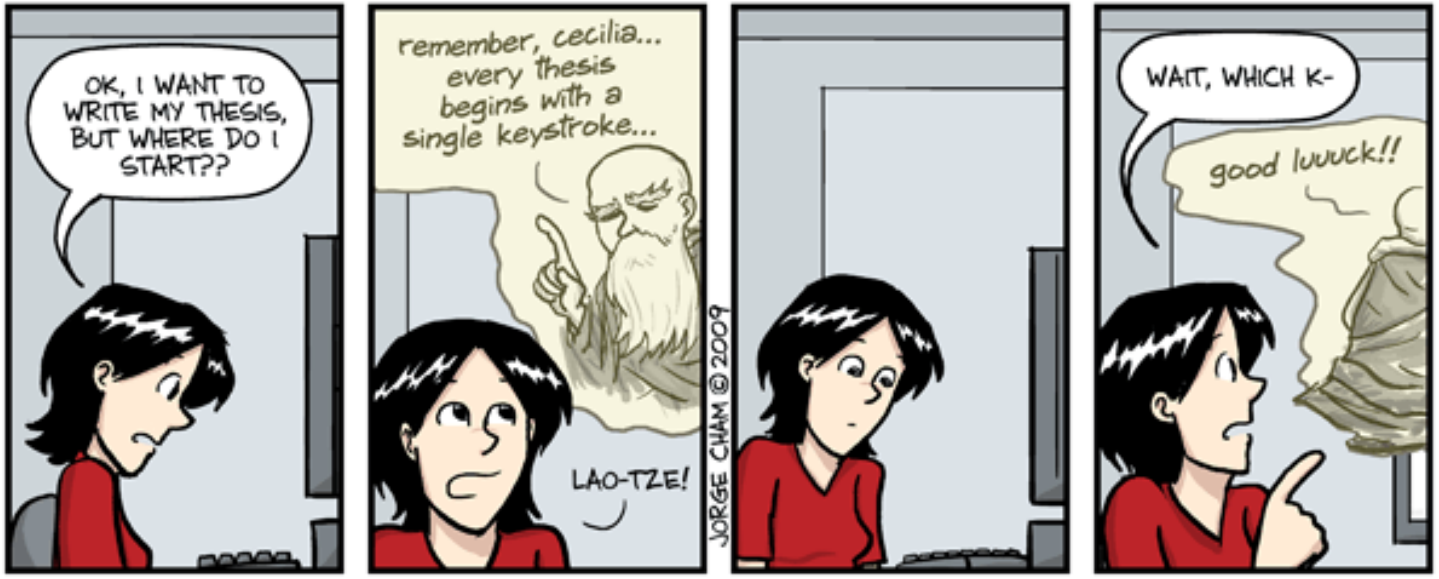
    ... é na hora em que mais faltam ideias para escrever que mais sobram ideias para fazer outras coisas.
15. **Conceda-se, se for preciso, pequenas recompensas por cada etapa concluída**
16. **Encontre o equilíbrio certo entre ler e parar de ler para escrever**
17. **Esteja sempre à espreita de ideias**

    Não deixe de anotar as ideias que lhe surgirem.
18. **Não espere para escrever em um mês o que não escreveu em um ano**

    Ou para escrever em um dia o que não escreveu em um mês.
19. **Pense que você está apenas escrevendo um texto**
20. **Controle o seu perfeccionismo**

    Lembre-se: não há como aperfeiçoar ou melhorar uma ideia na cabeça. Apenas um texto pode ser aperfeiçoado.
21. **Não fantasie que você deveria estar escrevendo uma outra coisa**
22. **Não se considere a única pessoa do mundo a sofrer da síndrome da folha em branco**
23. **Pense em um público-alvo determinado**
24. **Assuma o papel de um personagem**
25. **Tente falar o que você pretende escrever para uma pessoa amiga**
26. **Imagine que está escrevendo uma carta a uma pessoa amiga**


MY WRITING STYLE
HOW I WRITE
THINK CAREFULLY ABOUT EACH WORD BEFORE TYPING IT.
KEEP PRESSING RANDOM BUTTONS AND HOPE SOMETHING COHERENT COMES OUT.
JORGE CHAM © 2017
WWW.PHDCOMICS.COM


OK, I WANT TO WRITE MY THESIS, BUT WHERE DO I START??
remember, cecilia... every thesis begins with a single keystroke...
LAO-TZE!
JORGE CHAM © 2009
WAIT, WHICH K-
good luuuck!!
WWW.PHDCOMICS.COM

- Construção frásica científica
- Organização das diferentes partes da Dissertação
- Como rever textos científicos eficientemente
- Escrita de materiais e métodos: nível de detalhe, tempos verbais, enumerar os materiais, enumerar os métodos utilizados

"Mapianos 2023"

http://www.dgp.toronto.edu/~hertzman/advice/writing-technical-papers.pdf

Strategy of writing a quality research paper

- **The challenges in writing a research paper are:**
  - **trying to keep all the information in the paper revolving around one of the main points**
  - **making sure that all the main points support the thesis**

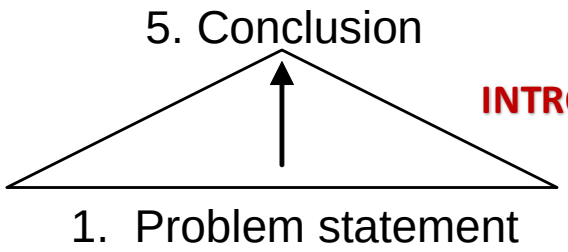
- **This means that while writing every paragraph of the research paper, be sure to tie it all together, explaining why these facts support the thesis statement.**

Using the Pyramid Style of Writing

Traditionally, when composing an essay, we start with a 'foundation' and gradually build to a conclusion in a pyramid style. We might write an essay or article using the following structure:

I
M
R
D

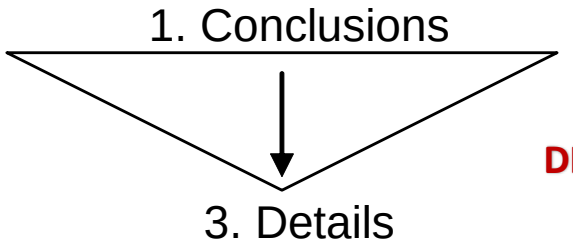
1. Present the problem statement
2. Related or supporting information
3. Methodology- How did something occur?
4. Results
5. Conclusion, outcomes or most important information



INTRODUCTION

Journalists, on the other-hand, use an *inverted pyramid style* of writing. They generally start with the main conclusion or outcomes and get progressively more detailed towards the end of the piece like so:

1. Conclusion or most important information
2. Supporting information
3. Background and technical details



DISCUSSION

https://owl.english.purdue.edu/

http://www9.georgetown.edu/faculty/kingch/how_to_write_a_research_paper.htm

ORGANIZATION

Start with the abstract

Tell your story (Scientific = No storytelling)

⇒ Review the literature **only as necessary**

⇒ Use no more than two levels of headings

End with acknowledgements and references

Writing a research paper is in part about learning how to teach yourself.

The process forces you to ask good questions, find the sources to answer them, present your answers to an audience, and defend your answers against detractors.

http://www.dgp.toronto.edu/~hertzman/advice/writing-technical-papers.pdf

- **Clear writing requires clear thinking;**

  muddled writing is a sign of muddled thought

- **Be kind to your readers**

  good writing can be a joy; bad writing is agony

- **The clearer and more self-contained the paper,**

  the wider the audience

- **Pose the problem, ask a question, pose a solution,**

  note problems that arise, address them, denouement

https://owl.english.purdue.edu/

http://www.stanford.edu/~armin/courses.guidelines.html

STYLE

Use English. Make it simple. Avoid long, complex sentences. (Break them up)

Use the active voice when you can. A good rule: Minimize the proportion of your sentences using the verb 'to be'. For example, write 'depends on' instead of 'is dependent on'.

Treat abstract sentences like a disease. Cure them. For example, write 'species diversity declines at increasing latitude', not 'species diversity is related to latitude'.

Make your sentences convey information.

A sentence should contain no unnecessary words, a paragraph no unnecessary sentences.

http://www4.informatik.tu-muenchen.de/misc/perlen/perlen-folien/paper_writing09.pdf

STYLE

Consistency

- Central thread, subject
- Use standard terminology

Easy to understand

- Correct grammar and syntax
- Choose good, simple words
- Avoid wordy phrases
- Describe intuition for equations and formulas
- *Have a lot of examples*
- *Use figures for illustration*

Scientific

- Write defensively and factually
- No storytelling

Polish, polish, polish

ABSTRACT

- Summarize the paper in a paragraph or two
- Include: contributions, approach, results, advantages
- As short as possible, and no shorter
- Goal: encourage reader to read the paper
- First sentence: summarize the paper

- Rest of paper should stand alone without abstract; repeating text is OK

ACKNOWLEDGEMENTS

Who can I <u>not</u> forget?

"formalidade nos agradecimentos?"

http://www.dgp.toronto.edu/~hertzman/advice/writing-technical-papers.pdf

INTRODUCTION

***Goal*: provide context and encourage reader to read the paper**

1. **Background and motivation**
2. **Overview of the paper and contributions**
3. **More details and summary of the approach**
4. **Summary of the results and conclusions**

DISCUSSION/CONCLUSIONS

- **What can you say about the work that you couldn't before?**
- **What are the broader implications of the work?**
- **Don't just repeat the introduction/abstract**

DISCUSSION/CONCLUSIONS

RELATED WORK

DO

- **Point out both advantages and disadvantages of related work**

– (provides context; defuses objections; be honest)

- **Discuss all references that you cite**

DO NOT

- **Write a list of what you did or did not**
- **Bash the references**
- **Include irrelevant references**
- **Write a paragraph about a very peripheral work**

MATERIALS AND METHODS

- Sufficient **detail** must be provided to allow the **work to be repeated**.
- Suppliers of materials used with and a brief address should be mentioned **if this might affect the results**.
- Specific reference must be given for reagents (*e.g.* plasmids, strains, antibodies) that were not generated in the study.

http://www.stanford.edu/~armin/courses.guidelines.html

EDIT, EDIT, EDIT!!! This cannot be stressed enough.

90% of writing is editing

Mestrados & MBA, 20 Dicas" – Visão 2019

Recast and tighten your material. Have the courage to cut.

Delete every unnecessary word

Break down complex sentences

Refactor sentences for clarity and flow

"Vermont ~~is a state that~~ attracts visitors because of its winter sports."

Correct spelling, punctuation, and typographical errors.

Leave enough time for proofreading before submitting your draft.

Poorly edited and proofread papers show lack of care and will turn off the reader.

REVER O TEXTO

- ... sentimentos no espectador ...
- ... levando a que o espetador ...

- ... como lasse dominante ...
- ... como **c**lasse dominante ...

- ... or a Tv show.
- ... or a T**V** show.

- ... natureza, a tenologia ...
- ... natureza, a te**c**nologia ...

- ... carro do xavier ...
- ... carro do **X**avier ...

- ... melhorar o nosso espirito critico ...
- ... melhorar o nosso esp**í**rito cr**í**tico ...

- ... de 46 litros per capita ...
- ... de 46 litros *per capita* ...

- ... ou sequer existem , imaginar ...
- ... ou sequer existem, imaginar ...

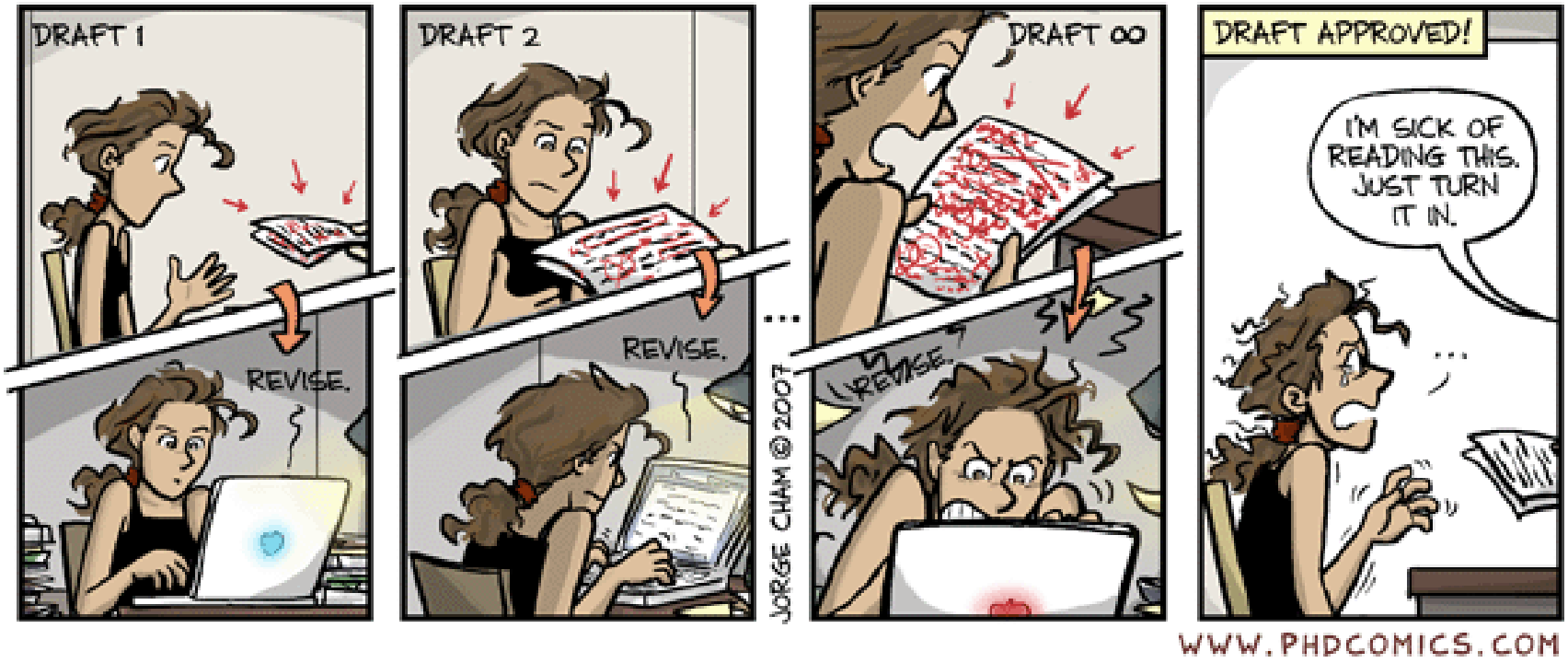
- ... humans and vice versa.
- ... humans and *vice versa*.

- ... between 2 men. These 2 films ...
- ... between two men. These two films ...

- ... o consumo desta bebida era bastante elevada comparativamente ...
- ... o consumo desta bebida era bastante elevad**o** comparativamente ...

I'm not a very good writer,
but I'm an excellent rewriter.

James Michener



Introduction

The purpose of an introduction is to acquaint the reader with the rationale behind the work, with the intention of defending it. It places your work in a theoretical context, and enables the reader to understand and appreciate your objectives.

Writing an introduction

Describe the importance (significance) of the study - why was this worth doing in the first place? Provide a broad context.

Defend the model - why did you use this particular organism or system? What are its advantages? You might comment on its suitability from a theoretical point of view as well as indicate practical reasons for using it.

Provide a rationale. State your specific hypothesis(es) or objective(s), and describe the reasoning that led you to select them.

Very briefly describe the experimental design and how it accomplished the stated objectives.

Style: Use past tense except when referring to established facts. After all, the paper will be submitted after all of the work is completed.

Organize your ideas, making one major point with each paragraph. If you make the four points listed above, you will need a minimum of four paragraphs.

Present background information only as needed in order support a position. The reader does not want to read everything you know about a subject.

State the hypothesis/objective precisely - do not oversimplify.

As always, pay attention to spelling, clarity and appropriateness of sentences and phrases.

Discussion

The objective is to provide an interpretation of your results and support for all of your conclusions, using evidence from your experiment and generally accepted knowledge, if appropriate. The significance of findings should be clearly described.

Writing a discussion

Interpret your data in the discussion *in appropriate depth*. This means that when you explain a phenomenon you must describe mechanisms that may account for the observation. If your results differ from your expectations, explain why that may have happened. If your results agree, then describe the theory that the evidence supported. It is never appropriate to simply state that the data agreed with expectations, and let it drop at that.

Decide if each hypothesis is supported, rejected, or if you cannot make a decision with confidence. Do not simply dismiss a study or part of a study as "inconclusive."

Research papers are not accepted if the work is incomplete. Draw what conclusions you can based upon the results that you have, and treat the study as a finished work.

You may suggest future directions, such as how the experiment might be modified to accomplish another objective.

Explain all of your observations as much as possible, *focusing on mechanisms*.

Decide if the experimental design adequately addressed the hypothesis, and whether or not it was properly controlled.

Writing a discussion

Try to offer alternative explanations if reasonable alternatives exist.

One experiment will not answer an overall question, so keeping the big picture in mind, where do you go next? The best studies open up new avenues of research. What questions remain?

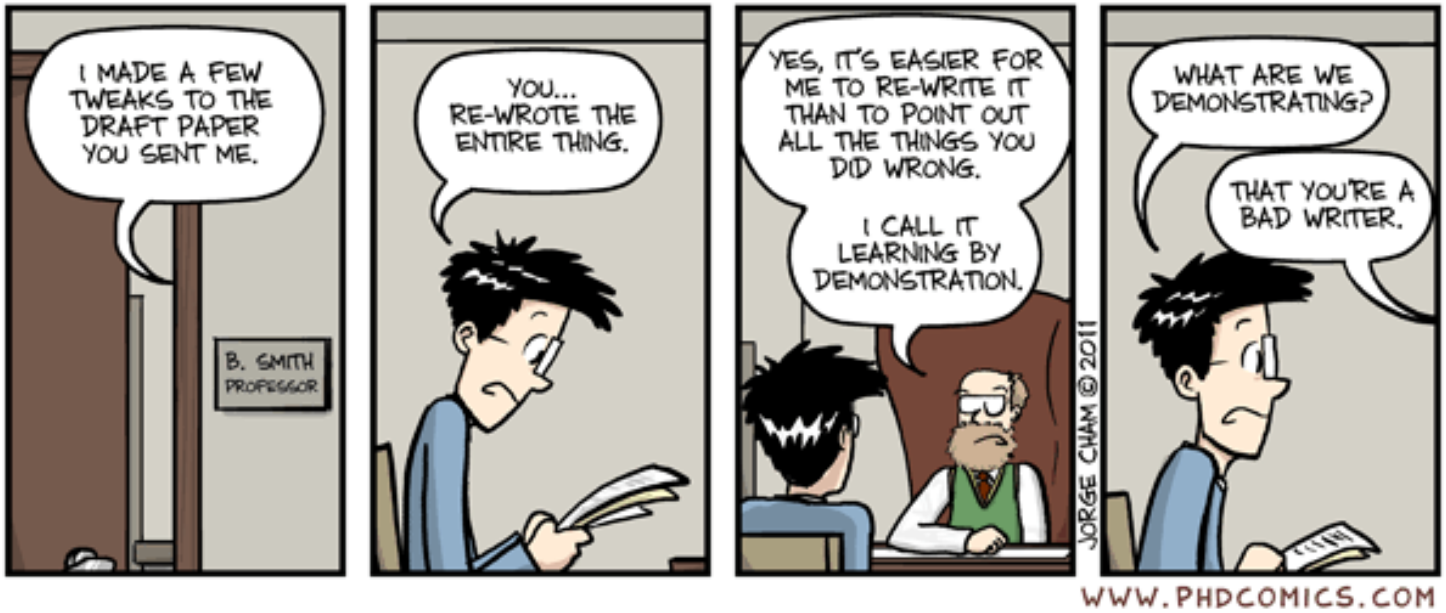
Recommendations for specific papers will provide additional suggestions.

Style: When you refer to information, distinguish data generated by your own studies from published information or from information obtained from other students (verb tense is an important tool for accomplishing that purpose).

Refer to work done by specific individuals (including yourself) in past tense.

Refer to generally accepted facts and principles in present tense. For example, "Doofus, in a 1989 survey, *found* that anemia in basset hounds *was correlated* with advanced age. Anemia *is* a condition in which there *is* insufficient hemoglobin in the blood."

The biggest mistake that students make in discussions is to present a superficial interpretation that more or less re-states the results. It is necessary to suggest *why* results came out as they did, focusing on the mechanisms behind the observations.


I MADE A FEW TWEAKS TO THE DRAFT PAPER YOU SENT ME.
B. SMITH PROFESSOR
YOU... RE-WROTE THE ENTIRE THING.
YES, IT'S EASIER FOR ME TO RE-WRITE IT THAN TO POINT OUT ALL THE THINGS YOU DID WRONG.
I CALL IT LEARNING BY DEMONSTRATION.
JORGE CHAM © 2011
WHAT ARE WE DEMONSTRATING?
THAT YOU'RE A BAD WRITER.
WWW.PHDCOMICS.COM

Normas para elaboração da Dissertação de Mestrado_FCUL

Artigo 28.º

Regras sobre a apresentação e entrega do trabalho final

1 — A apresentação do trabalho final deve respeitar as seguintes normas:

a) A capa do trabalho final deve incluir, o nome da Universidade de Lisboa, da FCUL e do respetivo Departamento, Logótipo da FCUL, o título do trabalho, o nome do estudante, o nome do(s) orientador(es), a designação do curso e, se aplicável, da respetiva área de especialização, a modalidade do trabalho final (dissertação, trabalho de projeto, relatório de estágio), o ano de conclusão do trabalho e, nos casos de graus atribuídos em associação, a identificação das instituições parceiras, de acordo com o template oficial em vigor (anexo A);

máximo

b) O trabalho deve incluir resumos em português e em Inglês, com um ~~mínimo~~ de 300 palavras cada, até 5 palavras-chave em português e em Inglês e índices;

c) Quando o trabalho final for escrito em Inglês, deve ser acompanhado de um resumo mais desenvolvido em português, com uma extensão compreendida entre 1200 e 1500 palavras;

3 — A redação do trabalho final está sujeita ao cumprimento das normas previamente estabelecidas (anexo B).

ANEXO B

Normas de escrita para o trabalho final

1 — Estrutura

O trabalho final (dissertação, trabalho de projeto ou relatório de estágio), redigido em Português ou em Inglês, deverá ter a seguinte sequência de apresentação:

Capa;
Dedicatória e agradecimentos (facultativo);
Resumo e palavras-chave (em Português e em Inglês).
Referência a qualquer «Comunicação de Invenção» que tenha sido submetida no contexto do trabalho final e respetiva decisão da Direção (se aplicável);
Índice;
Lista de quadros e figuras;
Listas de abreviaturas, siglas e símbolos, etc., (se aplicável);
Texto principal (não deverá ultrapassar 80 páginas);
Referências bibliográficas;
Anexo(s), caso exista(m).

- *Quando optar por tabelas e/ou gráficos em vez de texto?*
- *Como complementar as imagens com texto?*
- *Que quantidade de imagens e texto é ideal?*

"Mapianos 2023"

Normas para elaboração da Dissertação de Mestrado_FCUL

2 — Apresentação

A impressão do trabalho final deve obedecer às seguintes regras gerais:

Papel A4 branco;
Capa branca com impressão a preto (modelo em anexo A);
Tipo de letra: Times New Roman;
Páginas de texto com impressão a preto;
Espaçamento a 1,15 linhas;
Tamanho de letra: 11 pontos;
Notas de pé-de-página e legendas de figuras, tabelas, etc. com espaçamento de 1 linha e tipo de letra de 9 pontos;
Margens: 2,5 centímetros nos quatro lados;
Todas as páginas anteriores ao texto do corpo principal do trabalho final (resumos, agradecimentos, índices, etc.) serão numeradas com números romanos, em baixo centrado ou à direita, a partir da página de rosto. Todas as páginas do texto do trabalho final deverão ser numeradas numa sequência contínua em numeração árabe a partir do n.º 1, em baixo centrado ou a direita. A sequência de numeração será extensiva às páginas com tabelas, figuras, anexos, etc. incluídos no trabalho final;
Todas as figuras, quadros, esquemas e tabelas deverão ser numerados e devidamente legendados com título e descrição do seu conteúdo. Para a numeração utilizar-se-ão dois números separados por um ponto (ex.: 3.16). O primeiro algarismo, é o do capítulo a que a figura (ou quadro, etc.) diz respeito e o segundo o número de ordem da figura (ou quadro, etc.) dentro do capítulo. De notar que as figuras e tabelas constituirão duas sequências numéricas distintas. As legendas devem figurar acima das tabelas e em baixo das figuras, quadros e esquemas. Todas as tabelas, gráficos e figuras devem ser apresentadas junto do texto principal a que pertencem, podendo ser impressas a cores.
Quaisquer fotografias inseridas no trabalho deverão ser de boa qualidade e serão designadas por figuras. Todo o material (por exemplo: diagramas, mapas) de dimensão superior a A4 deverá ser apresentado devidamente dobrado de modo a ficar dentro da dimensão do papel e em sequência do texto a que pertencerem.

3 — Capa

A capa deve obedecer à organização apresentada no anexo A.

4 — Equações e Expressões

As equações e expressões deverão ser centradas no texto e identificadas por dois números separados por um ponto (ex.: 2.24). O primeiro algarismo, é o do capítulo a que a equação/expressão diz respeito e o segundo o respetivo número de ordem dentro do capítulo.

Todas as **figuras** e **tabelas** devem ser apresentados no texto principal antes de serem inseridas.

Normas para elaboração da Dissertação de Mestrado_FCUL

Esquemas, figuras, tabelas:

Cor: podem ser usadas cores diversas

Legendas: título e breve descrição

- por baixo das figuras e esquemas
- por cima das tabelas

Numeração: usa-se sequência **número.número** sendo o 1º número o do capítulo a que se refere e o 2º número o da ordem atribuída nesse capítulo. Em cada capítulo a numeração das tabelas é independente da numeração dos restantes elementos.

Imagens: quaisquer imagens, como fotografias, são consideradas **figuras** e devem ter boa qualidade.

Todas as figuras, quadros, esquemas e tabelas deverão ser numerados e devidamente legendados com título e descrição do seu conteúdo. Para a numeração utilizar-se-ão dois números separados por um ponto (ex.: 3.16). O primeiro algarismo, é o do capítulo a que a figura (ou quadro, etc.) diz respeito e o segundo o número de ordem da figura (ou quadro, etc.) dentro do capítulo. De notar que as figuras e tabelas constituirão duas sequências numéricas distintas. As legendas devem figurar acima das tabelas e em baixo das figuras, quadros e esquemas. Todas as tabelas, gráficos e figuras devem ser apresentadas junto do texto principal a que pertencem, podendo ser impressas a cores.

Diário da República, 2.ª série - N.º 167 - 31 de agosto de 2016

Apesar deste texto no DR usar apenas:

Esquemas, figuras, tabelas

References *versus* Bibliography

- A reference list contains only sources you have cited in the text in your assignment.
- A bibliography is a list of all the sources you used to generate your ideas about the topic including those cited in your assignment as well as those you did not cite.

5 — Referências Bibliográficas

As referências bibliográficas deverão ser apresentadas nos moldes adotados internacionalmente, de acordo com a área científica em que se inclui o trabalho final.

Adotar um modelo a usar em todas as referências.

* Lista de Referências Bibliográficas.
* Referências bibliográficas no texto.

References are not nouns; the text should stand without them.

"As shown by [15], there exists …" **NO**

"As shown by Smith and Kumar [15], there exists …"

https://ciencias.ulisboa.pt/pt/como-citar#toc2

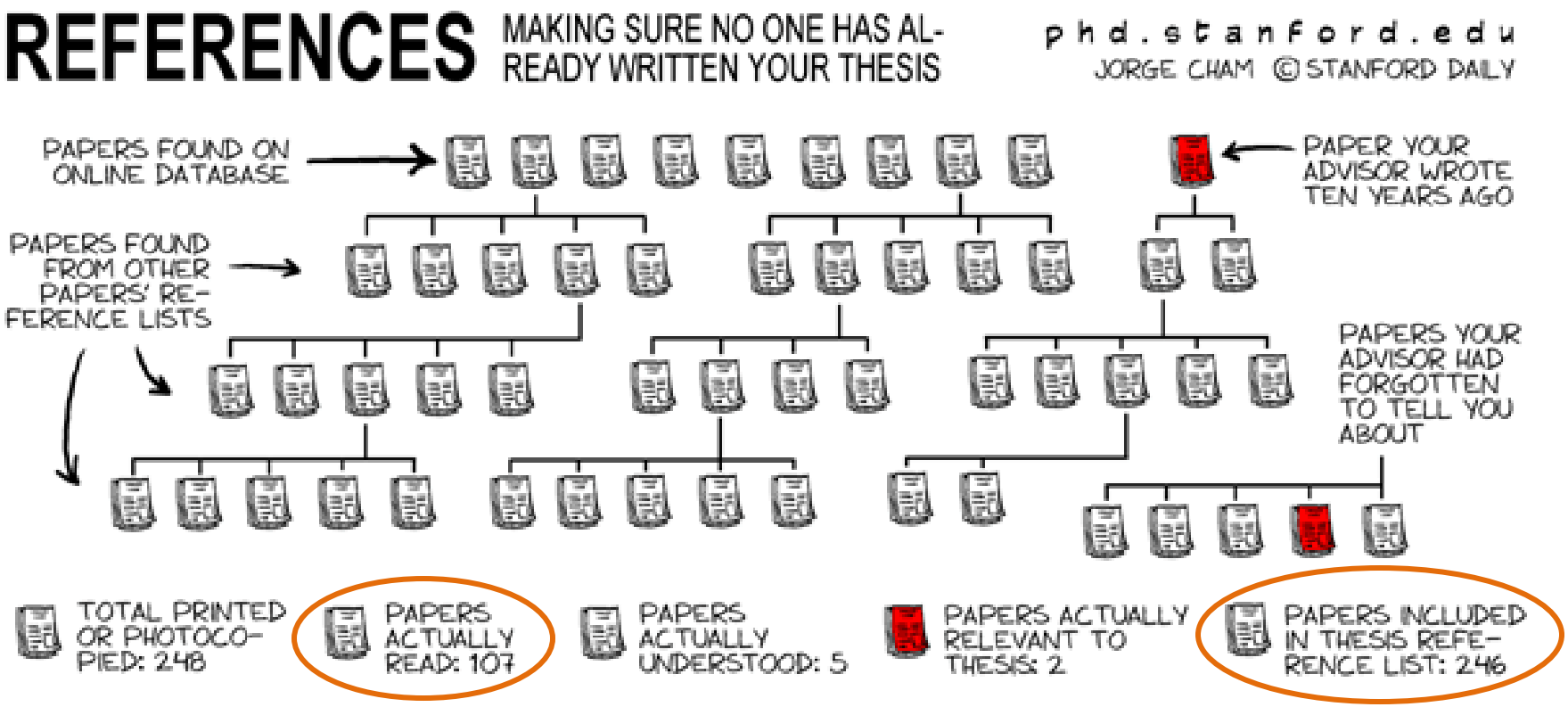
Nesta Página:

- Guia para Elaboração de Citações Bibliográficas
- Exemplos de Referências Bibliográficas
- Gestores de Referências Bibliográficas

MLA Pinto, Daniela, Mário A. Santos, and Lélia Chambel. "Thirty years of viable but nonculturable state research: unsolved molecular mechanisms." *Critical reviews in microbiology* 41.1 (2015): 61-76.

APA Pinto, D., Santos, M. A., & Chambel, L. (2015). Thirty years of viable but nonculturable state research: unsolved molecular mechanisms. *Critical reviews in microbiology*, *41*(1), 61-76.

ISO 690 PINTO, Daniela; SANTOS, Mário A.; CHAMBEL, Lélia. Thirty years of viable but nonculturable state research: unsolved molecular mechanisms. *Critical reviews in microbiology*, 2015, 41.1: 61-76.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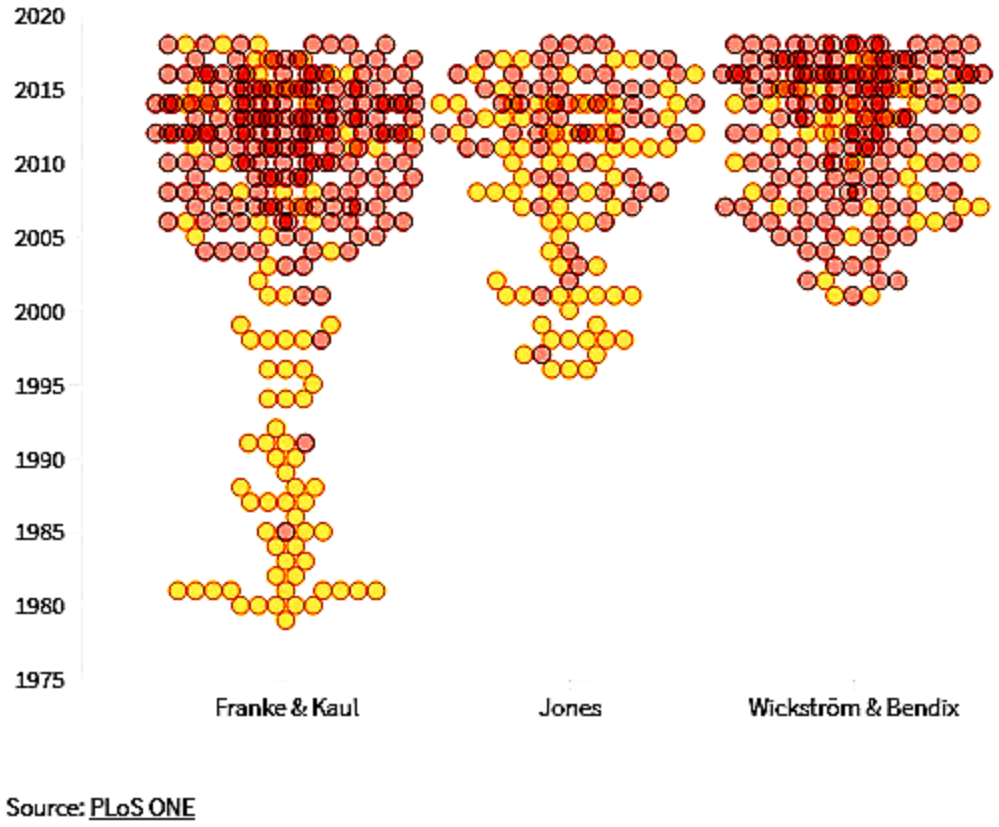
PAPERS ACTUALLY RELEVANT TO THESIS: 2
PAPERS INCLUDED IN THESIS REFERENCE LIST: 246

- Organizar referências bibliográficas e no texto
- Que tipo de referência é melhor
- Distinguir entre boas e más referências
- Referência original ou artigos de revisão
- Regras de citações
- Saber como reestruturar ideias sem copiar frases
- Escolha de artigos e sites seguros e fidedignos

"Mapianos 2023"

Careless citations don't just spread scientific myths – they can make them stronger

21 October 2019
Jon Brock



Source: PLoS ONE

Citations of three papers critiquing the Hawthorne effect

Red indicates that the original paper was mis-cited as affirming the Hawthorne effect

OPEN ACCESS

Citation: Letrud K, Hernes S (2019) Affirmative citation bias in scientific myth debunking: A three-in-one case study. PLoS ONE 14(9): e0222213. https://doi.org/10.1371/journal.pone.0222213

https://www.nature.com/nature-index/news/misciting-scientific-myths-spread-strengthen-hawthorne-effect

NEWS | 28 September 2021

Publishers unite to tackle doctored images in research papers

Eight major publishers have issued joint guidelines for how journal editors can spot and deal with suspicious images or data.

Holly Else

New guidelines list three categories of image manipulation, ranging from "beautified" figures to those that have been altered with an intent to mislead.

https://www.nature.com/articles/d41586-021-02610-7

NEWS | 03 October 2023

AI beats human sleuth at finding problematic images in research papers

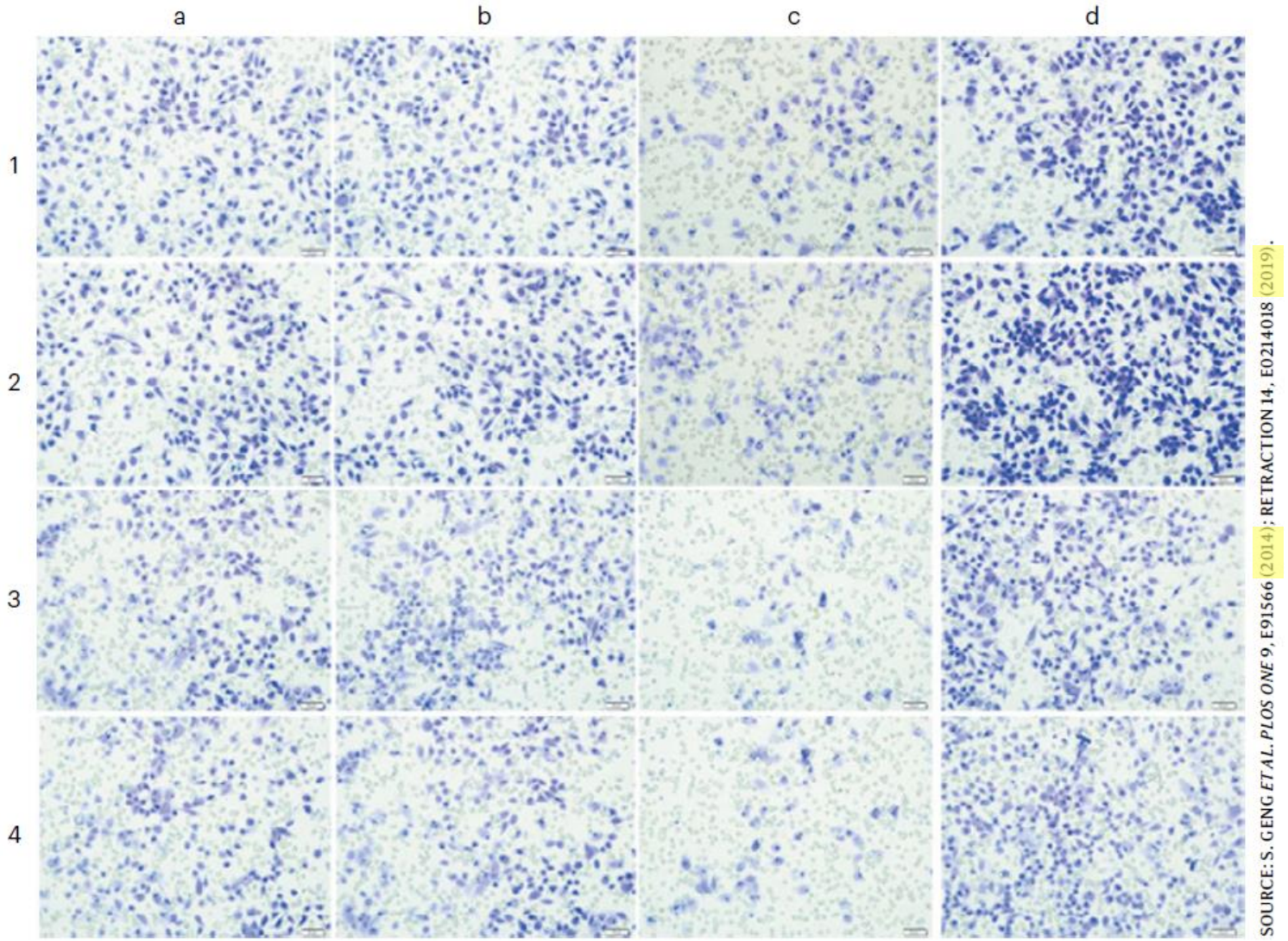
An algorithm that takes just seconds to scan a paper for duplicated images racks up more suspicious images than a person.

Anil Oza

https://www.nature.com/articles/d41586-023-02920-y

ARE YOU A SUPERSPOTTER?

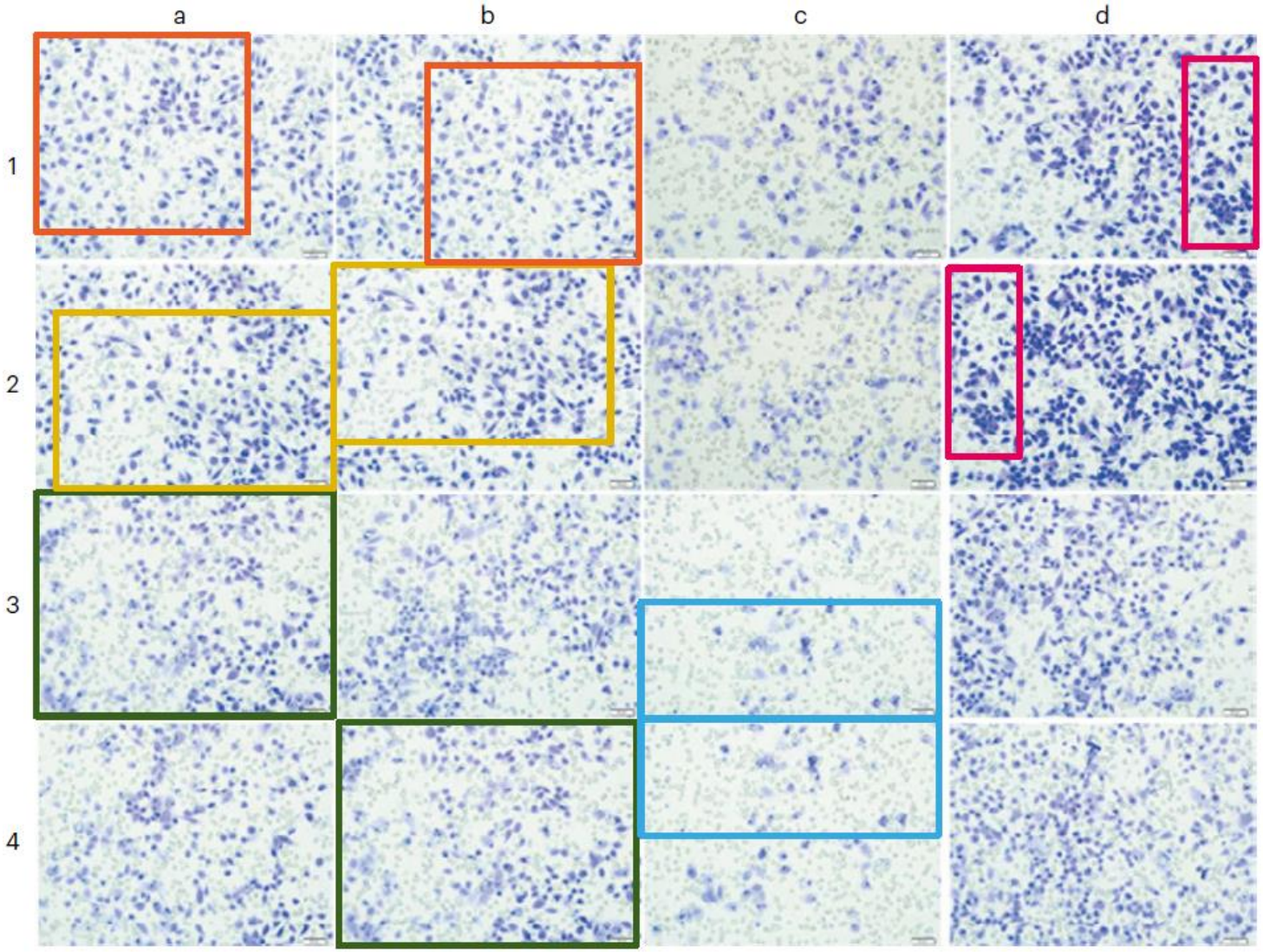
Elisabeth Bik identified five duplicated areas in these cell microscopy images from separate experiments in two figures in a paper. Can you spot the duplications?



SOURCE: S. GENG *ET AL. PLOS ONE* 9, E91566 (2014); RETRACTION 14, E0214018 (2019).

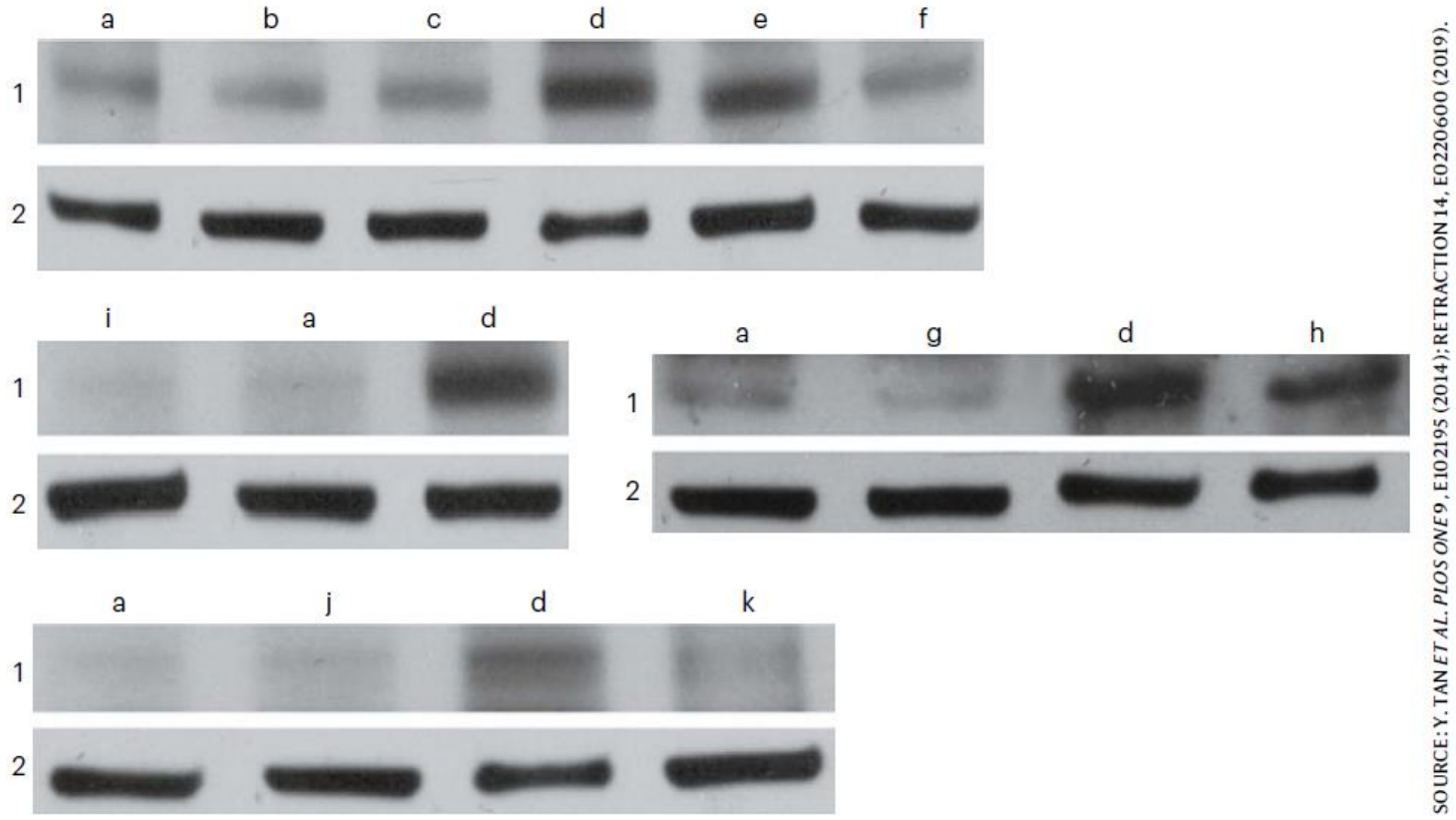
Helen Shen|Seeing Double|Nature|Vol 581|May 2020

DID YOU SPOT THEM?
Here are the duplicated sections Bik saw.



ADVANCED SUPERSPOTTER TEST

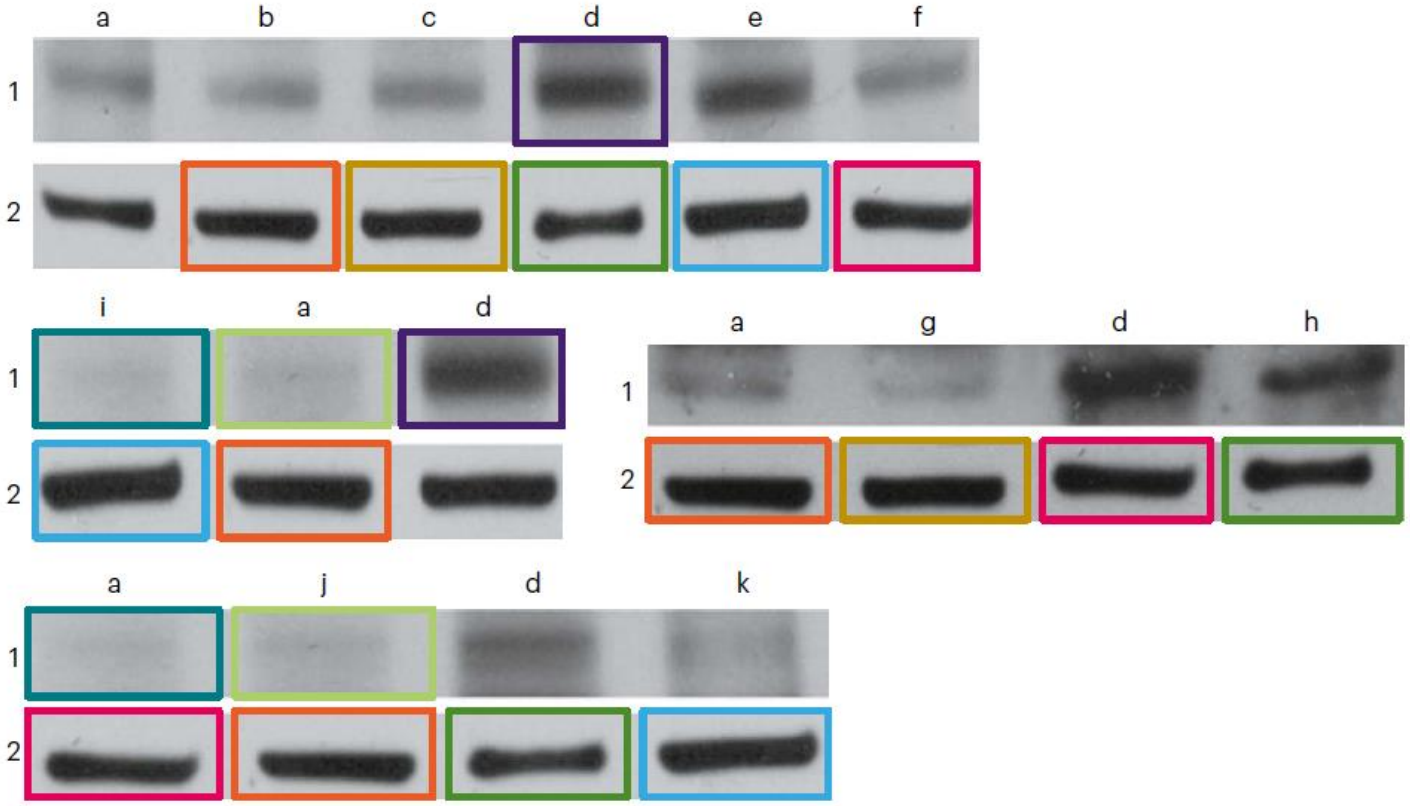
Elisabeth Bik identified eight duplicate areas in these western blot images from separate experiments in four figures in a paper. Can you spot the duplications?



SOURCE: Y. TAN *ET AL. PLOS ONE* 9, E102195 (2014); RETRACTION 14, E0220600 (2019).

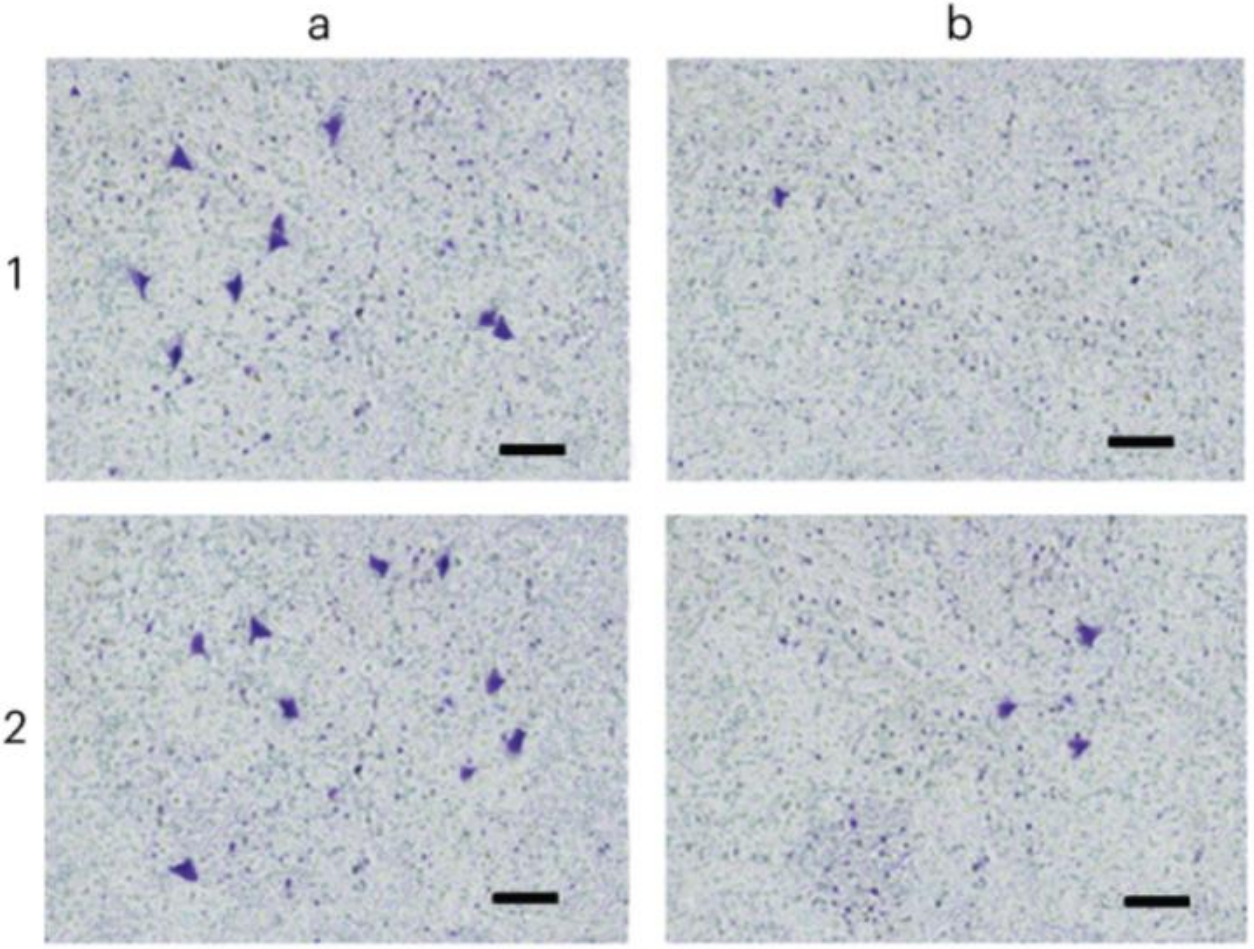
Helen Shen|Seeing Double|Nature|Vol 581|May 2020

DID YOU SPOT THEM?
In the original paper, the figures were far apart. Finding duplicates between papers is even harder.



SUPER-SPOTTER TEST: DUPLICATIONS ALL OVER

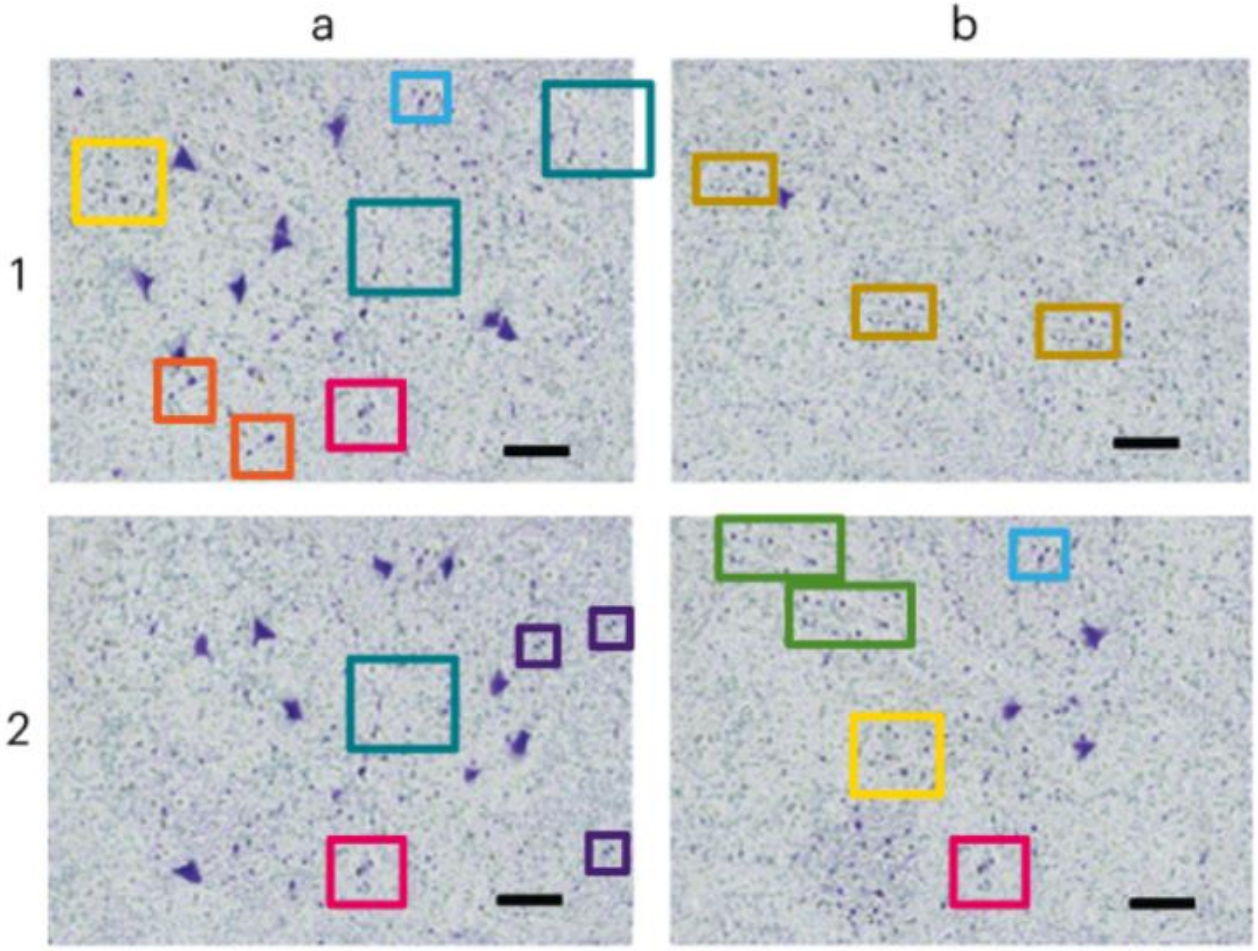
Elisabeth Bik identified numerous duplicated areas in these images representing stained cells. We have simplified the labels and picked out eight duplications.



Source: A. Kawiak *et al. PLoS ONE* **11**, e0164064 (2016); retraction **14**, e0207273 (2019).

https://www.nature.com/articles/d41586-020-01363-z

HOW MANY DID YOU SPOT?



Recommendations for handling image integrity issues

STM Working Group on Image Alteration and Duplication Detection[1]

STM Advancing trusted research

Final Draft - July 21, 2021

A.1 Image integrity principles

Below we provide a number of general integrity principles on how images and data should be prepared for use as underlying evidence for the scholarly record.

- Researchers are responsible for proper data acquisition and FAIR data management[2].
- Researchers are responsible for ensuring that the results displayed objectively represent the data acquired, and that these data are not displayed in a misleading manner
- Researchers are responsible for properly describing the underlying methods used to generate the data to render the experiment reproducible by others.
- Researchers are responsible for proper alignment between article (text) and the data provided in the article to support the claims made.
- Images should accurately reflect the circumstances and conditions of data collection.
- Images should be minimally processed as nonessential modification could have unintended side-effects.
- Images should not be altered to idealize or caricaturize results (aka 'beautification').
- Any image alteration or processing should not be misleading or change the interpretation of the original data.
- Any image alteration or processing has to be described in the caption, legend, or associated article text in a way that allows accurate, unbiased interpretation of the experimental data.
- For image duplication or re-use, the original source and context, as well as the reason for the re-use should be provided.

For images and image alterations, transparency is key. This includes transparency on:

- The experimental method, including the data and image capturing process.
- The results, as represented through the data and images provided.
- The alterations (what, why, and how) made on the data and images.

➢ *Manipulação/edição de imagens, o que é permitido?*
"Mapianos 2022"

LEGENDAR UMA FIGURA

3. Results

3.1. Manipulation of cathepsin S and miR-106b-5p expression by *M. tuberculosis* during macrophage infection

3.1.1. Several cathepsins are relevant for the intracellular survival of mycobacteria

Previous studies have stated that lysosomal cathepsins have a role in the intracellular killing of mycobacteria by macrophages (Welin et al., 2011). As such, we devised an experimental plan to assess intracellular survival of the fast-growth, non-pathogenic *M. smegmatis* inside THP-1 macrophages with knockdowns for several different cathepsins as well as their respective inhibitors: THP-1 macrophages with cathepsin gene knockdowns were infected with *M. smegmatis*, and the intracellular survival of the bacteria was assessed 24 h post-infection. *M. smegmatis* is easier to manipulate than *M. tuberculosis*, since it has a fast growth rate and does not require a biosafety level 3 laboratory; other studies have also demonstrated *M. smegmatis* to be genetically quite similar to *M. tuberculosis*, even regarding some virulence genes (Altaf et al., 2010; Reyrat and Kahn, 2001), which is why we chose this bacterium to perform this preliminary experiment. The results show that THP-1 knockdowns for some cathepsins had significantly higher bacterial intracellular survival rates, indicating that those cathepsins have a role in the killing of mycobacteria during infection (Figure 3).

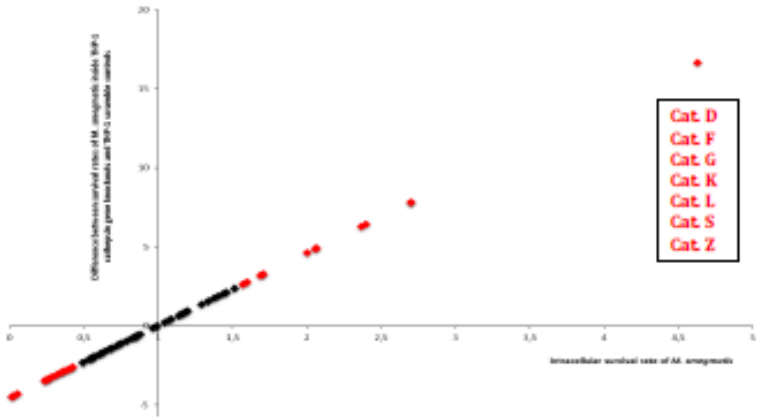


Figure 3. Relative intracellular survival rates of *M. smegmatis* 24 h post-infection in THP-1 macrophages harboring cathepsin gene knockouts. Survival rate values were calculated as (CFUs after the experiment ÷ number of bacteria before the experiment) for each condition. Y-axis values were calculated as ((survival rate – mean survival rate of the scramble controls) ÷ standard deviation of the scramble controls). All values were divided by the mean of survival rates in the scramble controls as normalization. Values of Y greater than 2.5 or less than -2.5 were considered hits and colored red as opposed to black. Positive hits are labeled in the box on the right with their respective cathepsin gene knockdowns. This hit identification method was adapted from Bard et al. (2006).

3.1.2. miR-106b-5p expression is augmented during *M. tuberculosis* infection, while cathepsin S expression is reduced

It was demonstrated in our recent studies that some miRNAs are differentially expressed during mycobacteria infection (Bettencourt et al., 2013). The miRDB online bioinformatics database at http://mirdb.org (Wang, 2008; Wang and El Naqa, 2008) predicts that the CtsS gene transcript is a target for miR-106b-5p, which correlates to the fact that cathepsin S was one of the genes identified in figure 3 that significantly reduced intracellular survival of mycobacteria in macrophages. As such, gene expression of miR-106b-5p was analyzed in human macrophages, after 24 h of infection with both *M. smegmatis* and *M. tuberculosis* via qRT-PCR. The results show that miR-106b-5p is significantly more expressed in cells infected with *M. tuberculosis*, comparatively with non-infected cells and cells infected with *M. smegmatis* (Figure 4).

Following this, we assessed cathepsin quantification during macrophage infection by *M. smegmatis* or *M. tuberculosis* via Western blot. The results were in accordance with our hypothesis, as cathepsin S expression was significantly reduced 24 h post-infection with *M. tuberculosis* in human monocyte derived macrophages (HMDMs): infection with *M. tuberculosis* reduced cathepsin S expression by approximately 40%, in contrast with *M. smegmatis* which reduced cathepsin S expression by less than 10% in comparison with the non-infected control (Figure 5).

DIMENSÃO DAS TABELAS

antibiotic, once the target is modified the antibiotic cannot bind and resistance is acquired (Nikaido 2009).

Some antibiotics are associated with more than one mechanism of resistance. It has been described all three mechanisms of resistance in Tetracycline, its noticeable why bacteria are highly adaptive microorganisms. Bacteria easily uptake tetracycline, however active efflux pumps can just as easily discard any molecule of tetracycline who enters the bacteria (Levy 1992). Another way tetracycline can become obsolete is by a bacteria producing a protein which protects the ribosome blocking the association of the antibiotic with the ribosome, allowing it to resume protein synthesis (Taylor & Chau 1996). Finally, it has been also described inactivation of the molecule by enzymatic activity. Even though it's the rarest of all three, it has been described in human gut *Bacteroides* a gene named *tet (X)* which codifies a 44-kDa cytoplasmic protein which chemically alters tetracycline in the presence of oxygen and NADPH (Speer et al. 1991; Chopra & Roberts 2001).

***Table 1** - Chemical class of antibiotics and their characteristics*

Chemical class	Example	Source	Spectrum	Mode of action
β-Lactams				
Penicillins	Penicillin G	*P. notatum*	Gram-positive Bacteria	Inhibits steps in cell wall synthesis and murein assembly.
Cephalosporins	Cephalothin	Cephalosporium species		
Semisynthetic β-Lactams				
Aminopenicillins	Ampicillin, Amoxicillin		Gram-positive and Gram-negative bacteria	Inhibits steps in cell wall synthesis and murein assembly.
Clavulanic Acid	Clavamox (Clav. Acid + Amoxicillin)	Streptomyces clavuligerus		Suicide inhibitor of β-Lactamases.
Monobactams	Aztreonam	Chromobacter violaceum		Inhibits steps in cell wall synthesis and murein assembly.
Carboxypenems	Imipenem	Streptomyces cattleya		
Peptides				
Polypeptides	Polymyxin	*Bacillus polymyxa*	Gram-negative bacteria	Damages cytoplasmic membranes
	Bacitracin	*Bacillus subtilis*	Gram-positive bacteria	Inhibits steps in murein (peptidoglycan) biosynthesis and assembly
Glycopeptides	Vancomycin	Streptomyces orientalies	Gram-positive bacteria, *Staphylococcus aureus*	
Lincomycins	Clindamycin	Streptomyces lincolnensis	Gram-positive and Gram-negative bacteria anaerobic Bacteroides	Inhibits translation (protein synthesis)
Aminoglycosides				
	Streptomycin	Streptomyces griseus	Gram-positive and Gram-negative bacteria	Inhibit translation (protein synthesis)
	Gentamicin	Micromonospora species	Gram-positive and Gram-negative Pseudomonas	
Macrolides	Erythromycin	Streptomyces erythreus	Gram-positive and Gram-negative bacteria not enteric, Neisseria, Legionella, Mycoplasma	Inhibit translation (protein synthesis)
Polyenes				
	Amphotericin B	Streptomyces nodosus	Fungi (Histoplasma)	Inactivates membranes containing sterols
	Nystatin	Streptomyces noursei		
Rifamycins	Rifampicin	Streptomyces mediterranei	Gram-positive and Gram-negative	Inhibits transcription
			bacteria, Mycobacterium tuberculosis	(eubacterial RNA polymerase)
Tetracyclines	Tetracycline	Streptomyces species	Gram-positive and Gram-negative bacteria, Rickettsias	Inhibit translation (protein synthesis)
Semisynthetic Tetracyclines	Doxycycline		Gram-positive and Gram-negative bacteria, Rickettsias Ehrlichia, Borrelia	Inhibit translation (protein synthesis)
Chloramphenicols	Chloramphenicol	Streptomyces venezuelae	Gram-positive and Gram-negative bacteria	Inhibit translation (protein synthesis)
Quinolones	Nalidixic acid	Synthetic	Mainly Gram-negative bacteria	Inhibits DNA replication
Fluoroquinolones	Ciprofloxacin	Synthetic	Gram-negative and some Gram-positive bacteria (Bacillus anthracis)	Inhibits DNA replication
Growth factor analogues				
	Sulfanilamide, Gantrisin, Trimethoprim	Synthetic	Gram-positive and Gram-negative bacteria	Inhibits folic acid metabolism (anti-folate)
	Isoniazid (INH)	Synthetic	Mycobacterium tuberculosis	Inhibits mycolic acid synthesis; analog of pyridoxine (Vit B6)
	para-aminosalicylic acid (PAS)	Synthetic		Anti-folate

Source: (Todar 2008)

1.3 *Research and development of antibiotic agents*

There are several phases during antibiotic research and development (R&D) that a new drug applicant (NDA) has to be submitted to before being accepted into the market. A novel approach in drug discovery is trending where small scientific of academic groups focus on the early stages of antibiotic development, namely the preclinical stage (Livermore 2011) and once promising results regarding a NDA are found, a bigger, industrial company, previously associated with the research group, takes control of the project, mainly because the next phases require a bigger monetary investment (Tralau-Stewart et al. 2009; Rosenblatt 2013). During the first phase of drug discovery, the most important issue to be addressed is making sure that the NDA is active against a broad range of organisms and also that it isn't toxic when administered. Initial susceptibility testing begins with a regular "dip-disk" test or a "drop test", which is applied to a freshly inoculated lawn of a bacterial strain to an agar plate. After the plates are incubated at optimal growth conditions halos of inhibition are measured to assess the presence of antimicrobial activity (Dougherty & Pucci 2012). Toxicity assays are usually

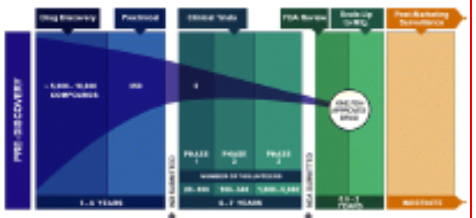


Fig. 1 - The research and development process. (Rosenblatt 2013)

USAR FIGURAS DE OUTROS AUTORES

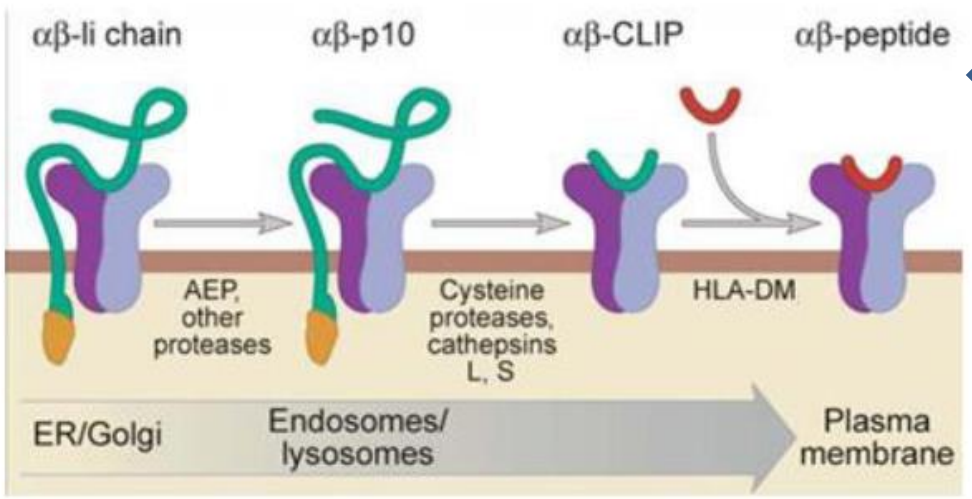


Figure 2. xxxx xxxx xxx xxxxx xxxxxx xxxxx xxxx xxxx xxxxx. This figure was adapted from Trombetta and Mellman (2005).

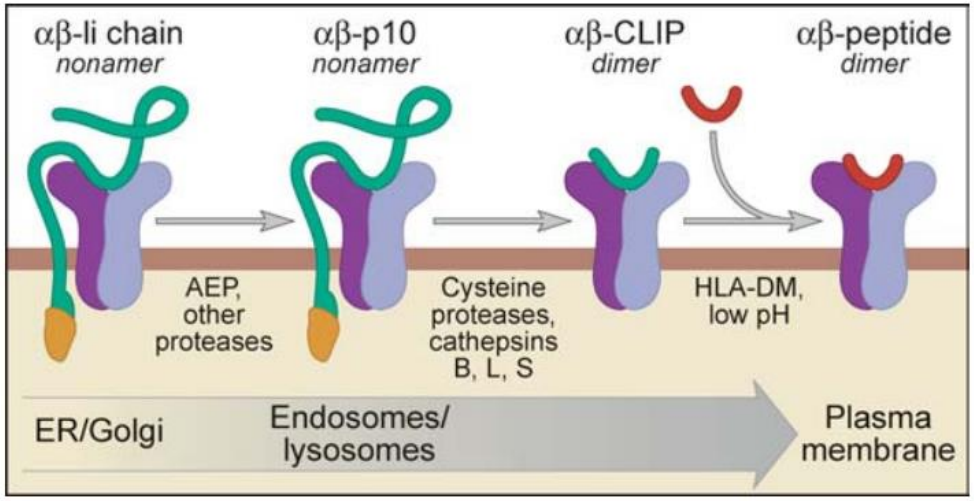


Figure 8 Overview of MHC-II-invariant chain processing. The cleavage of the non-

PARA QUE SERVE UMA IMAGEM?

- A fase α (imediata precoce). A expressão dos genes é activada pela ligação de α-TIF a proteínas celulares, formando um complexo activador transcricional que se liga aos promotores destes genes. Ocorre a transcrição de 5 genes α, sendo o RNAm transportado para o citoplasma e traduzido em 5 proteínas (ICP0, ICP4, ICP22,ICP27 e ICP47). Estas proteínas são levadas para o núcleo tendo funções de regulação e activação dos genes β. A síntese proteica atinge o seu pico entre as 2 e as 4 horas pós-infecção (h.p.i.) (Cleator et al. 2004; Resende 2012).

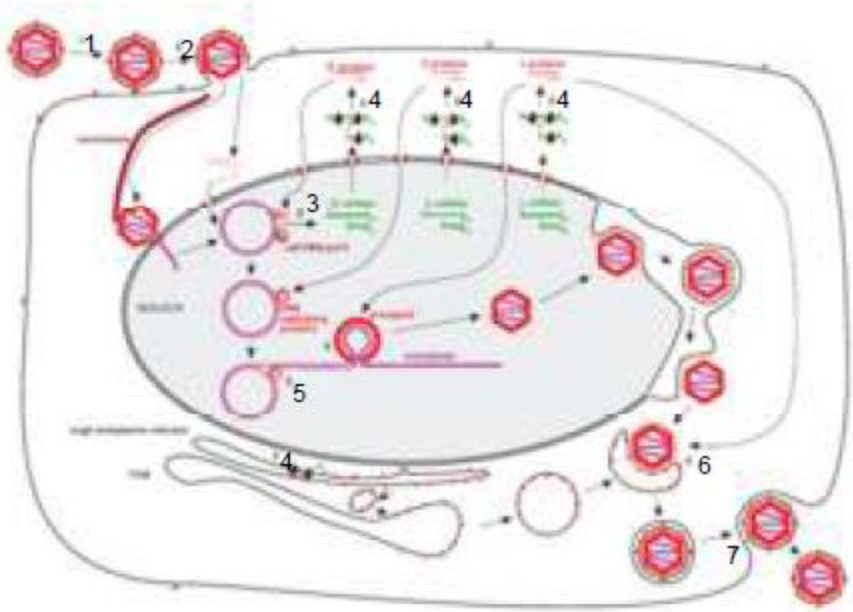


Figura 4 - Ciclo replicativo do HSV; **(1)** Adsorção;**(2)** Penetração; **(3)** Transcrição;**(4)** Tradução; **(5)** Replicação do genoma; **(6)** Montagem; **(7)** Saída (Adaptado de: Carter et al. 2007)

- Fase β (precoce). A expressão deste genes resultam na produção de enzimas

Má qualidade da imagem

PARA QUE SERVE UMA IMAGEM?

1.3. Ciclo replicativo

Os vírus do herpes simples são caracterizados pelo seu ciclo replicativo curto (entre 18 e 20 horas) e citolítico (Cleator et al. 2004). A primeira etapa da infecção consiste na adsorção do vírus à célula, ocorrendo uma interacção entre as glicoproteínas virais gC (para HSV-1) e gB (para HSV-2) com os receptores presentes na superfície celular (proteoglicanos), especialmente com moléculas de sulfato de heparina (Cleator et al. 2004; Acheson et al. 2007[a]). Na segunda etapa ocorre uma alteração conformacional em que a glicoproteína gD fica próxima do complexo, interagindo com os receptores secundários das células. Na terceira etapa temos a penetração, em que o invólucro viral se funde com a membrana citoplasmática (acção de algumas glicoproteínas virais como gB

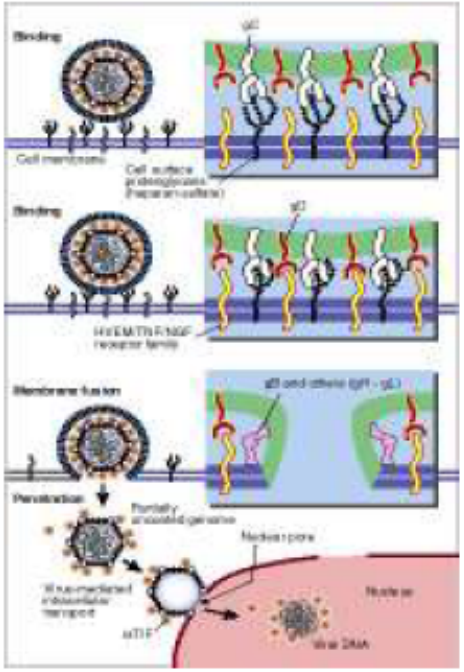


Figura 3 – Infecção fases iniciais: adsorção, fusão e penetração (Adaptado de:http://darwin.bio.ci.edu/ ~faculty/wagner/hsv4f.htmL)

Má qualidade da imagem

OS MESMOS DADOS: TABELAS E GRÁFICOS?

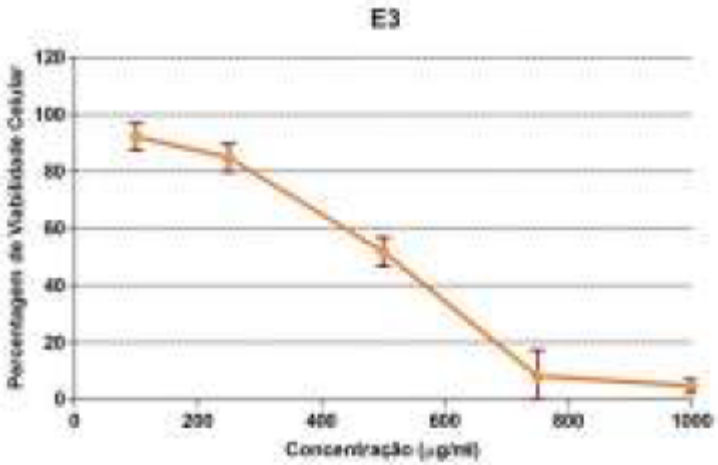


Fig. 12 - Representação gráfica (GraphPad Prims 5) da citotoxicidade do extracto E3.

Tabela 4 – Percentagem de viabilidade celular obtida nos ensaios MTT após incubação com diferentes concentrações do extracto E3. Os resultados são expressos em média ± d.p. de 7 experiências, com 4 réplicas por experiência.

Concentração (µg/mL)	E3 Viabilidade (%)
1000	4.74 ± 2.50
750	8.27 ± 9.09
500	51.89 ± 5.06
250	84.93 ± 5.02
100	92.28 ± 4.69

Dados: uso incorreto do **ponto**

Má qualidade da imagem

O DNA plasmídico foi visualizado em gel de agarose a 0.7%.

- *Quando optar por tabelas e/ou gráficos em vez de texto?*

"Mapianos 2023"

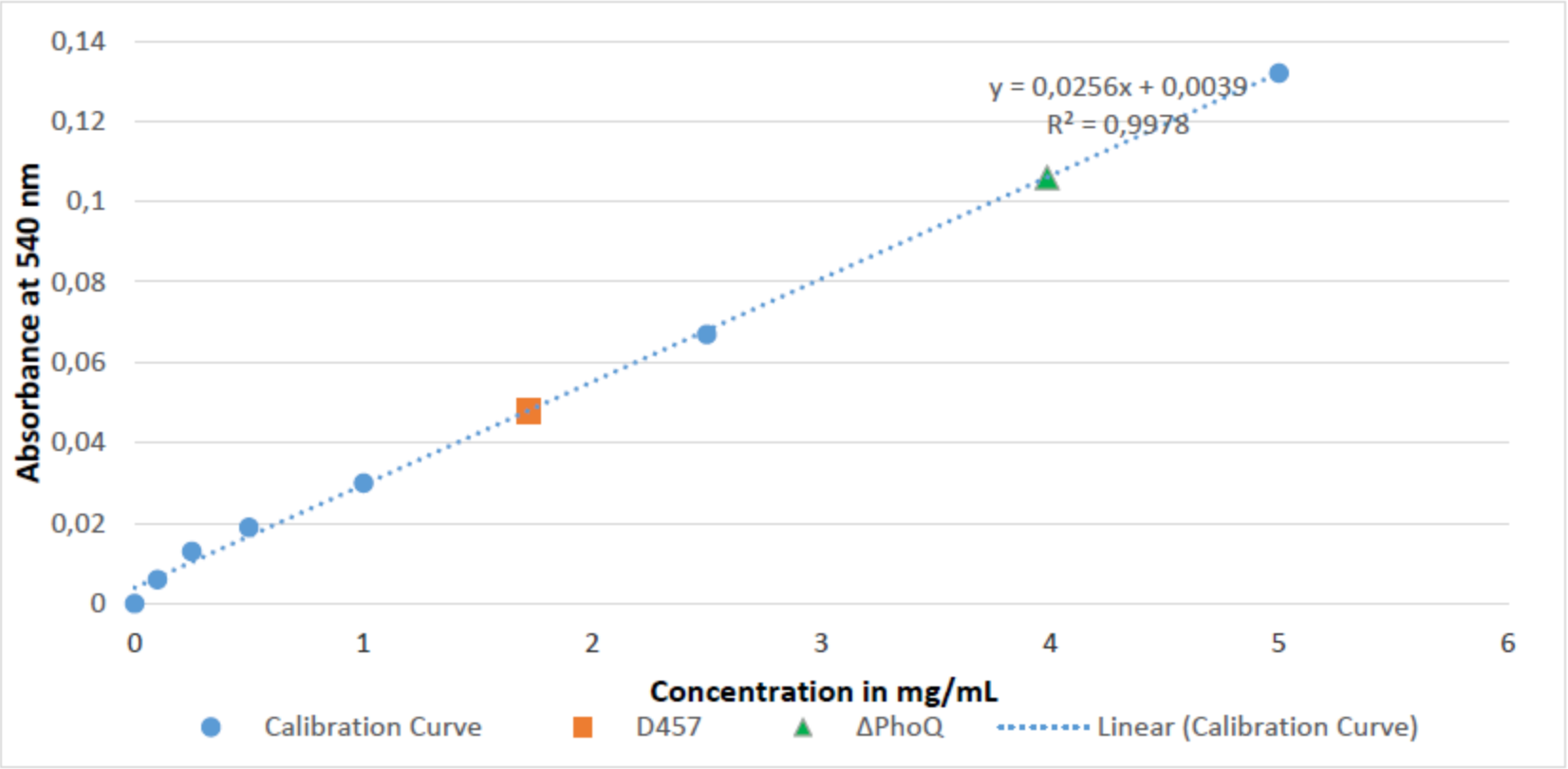


***Fig. 8** – Quantification of protein by the biuret assay. In the graphic are represented the calibration curve and the points where the sample's (D457 and ΔphoQ) absorbance intersect.*

Dados: uso incorreto da **vírgula**

ALGARISMOS SIGNIFICATIVOS: PARA QUE SERVEM?

Tabela I – Massas moleculares observadas e médias calculadas a partir do *software Image Lab*. Cada linha representa um ensaio experimental distinto.

	Isolados Virais						
	BoA	**MaP3**	**Ma3A**	**Ma3B**	**2000/99**	**FV3**	**LMo**
Ensaio 1	65,4	65,7	65,7	66,2	65,4		
Ensaio 2	64,6	65,2	64,9	65,2	65,5		
Ensaio 3	65,7	65,1	65,4	65	65,4		
Ensaio 4	65,1	65,1	65,6	64,9	66,4	139,7	136
Média	***65,2***	***65,275***	***65,4***	***65,325***	***65,675***	***139,7***	***136***

De acordo com a Tabela I, as massas moleculares observadas são de 65,2 pb para BoA, 65,275 pb para MaP3, 65,4 pb para Ma3A, 65,325 pb para Ma3B, 65,675 pb para 2000/99, 139,7 pb para FV3 e 136 pb para LMo.

Géis de agarose: 65,275 pb?

Tabela 3.8 – Poder discriminatório da técnica MLVA e dos *loci* utilizados.

Painel MLVA	Número de alelos	HGDI	IC 95 %
MLVA – 11 (este estudo)	55	0.989	0.979 - 0.999
MLVA – 8 (Pinho *et al.*, 2012)	47	0.978	0.962 - 0.994
MLVA – 9 (Spergser *et al.*, 2013)	47	0.978	0.961 - 0.994
MLVA – 4 (Becker *et al.*, 2015)	16	0.786	0.694 - 0.887
Locus			
MbovTR14	4 (0 - 3)	0.574	0.518 - 0.629
MbovTR29	7 (0 - 6)	0.664	0.593 - 0.735
MbovTR30	3 (0, 2, 3)	0.439	0.321 - 0.558
MbovTR31	6 (0, 2, 3, 5 - 7)	0.427	0.286 - 0.567
MbovTR35	4 (0, 1, 2, 4)	0.400	0.280 - 0.520
MbovTR40-41	6 (0 - 2, 5 - 7)	0.650	0.578 - 0.722
MbovTR52	5 (0, 2 - 4, 7)	0.377	0.242 - 0.512
MbovTR59	7 (0 - 6)	0.655	0.555 - 0.754
MbovTR147	5 (0 - 4)	0.442	0.306 - 0.578
MbovTR148	4 (0 - 3)	0.585	0.526 - 0.644
MbovTR427	7 (0 - 6)	0.777	0.726 - 0.828

Legenda: HGDI – Hunter and Gaston Diversity index. IC – Intervalo de confiança.

Painel de 8 loci: MbovTR14 a MbovTR59; Painel de 9 loci: MbovTR29 a MbovTR52 e MbovTR147 a MbovTR427; Painel de 4 loci: MbovTR30 a MbovTR35 e MbovTR52. Entre parênteses estão os alelos obtidos no presente estudo com base na Tabela 3.6.

Dados: uso incorreto do **ponto**

Algarismos significativos

GRÁFICOS: ESCOLHA DO MODELO MAIS ADEQUADO

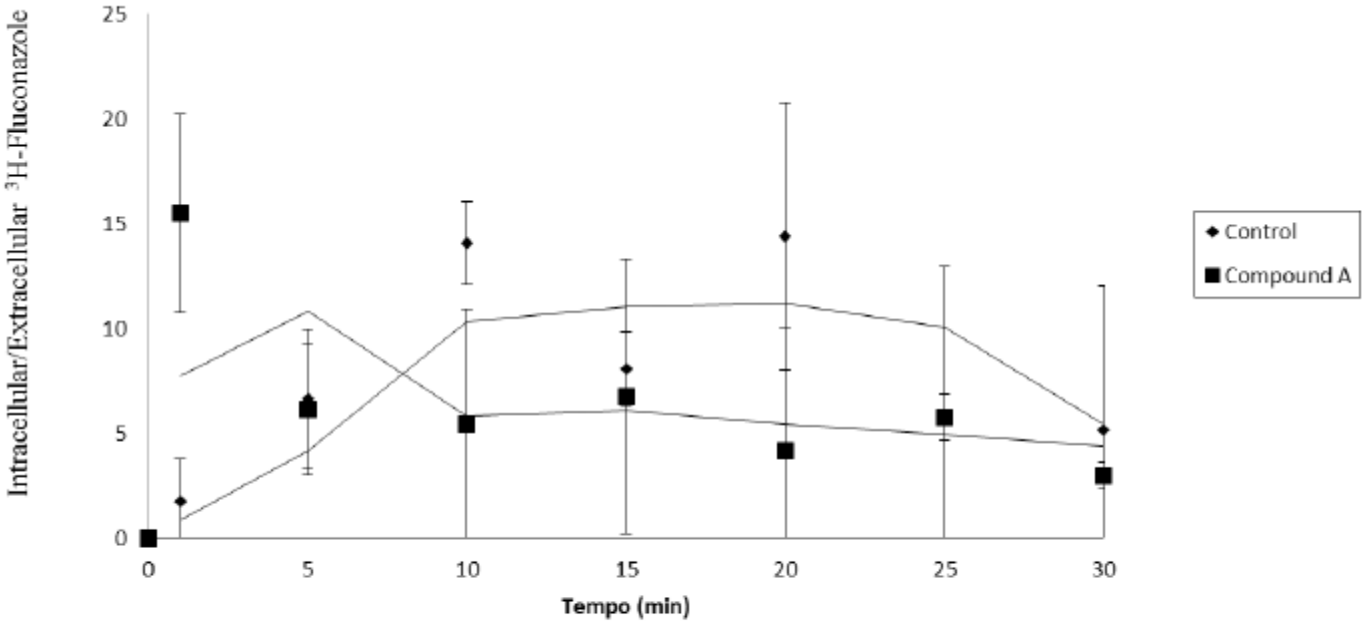


Figure 3.12: Intracellular accumulation of fluconazole inside *Candida glabrata* cells potentiated by the Ag(I)-based drugs. *Candida glabrata* cells don't accumulate more fluconazole intracellular with the RPMI supplemented with camphorimine compound than cells without the supplementation. The results obtained were representative of, at least, three independent experiments.

As linhas estão a ligar que pontos?

EDIT, EDIT, EDIT

LIST OF TABLES

IUPAC COLOR BOOKS

The IUPAC Color Books are the **world's authoritative resource for chemical nomenclature, terminology, and symbols.** Terminology definitions published by IUPAC are drafted by international committees of experts in the appropriate chemistry sub-disciplines, and ratified by IUPAC's Interdivisional Committee on Terminology, Nomenclature and Symbols (ICTNS).

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

Chemical Terminology (Gold book)

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Compendium of Terminology and Nomenclature of Properties Clinical Laboratory Sciences (Silver Book)

Biochemical Nomenclature (White Book)

Guide for the Use of the International System of Units (SI)

NIST Special Publication 811 • 2008 Edition

Ambler Thompson and Barry N. Taylor

Slideplayer.com

Remember the Mars Climate Orbiter incident from 1999?

Newspaper cartoon depicting the incongruence in the units used by NASA and Lockheed Martin scientists that led to the Mars Climate Orbiter disaster.

The Metric System

-why do we need to learn this?

Metric mishap caused loss of NASA orbiter

Orbiter
NASA's Climate Orbiter was lost
September 23, 1999

By Robin Lloyd
CNN Interactive Senior Writer

(CNN) -- NASA lost a $125 million Mars orbiter because a Lockheed Martin engineering team used English units of measurement while the agency's team used the more conventional metric system for a key spacecraft operation, according to a review finding released Thursday.

https://www.google.pt/search?q=metric+mishap+caused+loss+of+nasa+orbiter

4.1 SI base units

Table 1 gives the seven base quantities, assumed to be mutually independent, on which the SI is founded, and the names and symbols of their respective units, called "SI base units." Definitions of the SI base units are given in Appendix A. The kelvin and its symbol K are also used to express the value of a temperature interval or a temperature difference (see Sec. 8.5).

Table 1. SI base units

	SI base unit	
Base quantity	**Name**	**Symbol**
length	meter	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
thermodynamic temperature	kelvin	K
amount of substance	mole	mol
luminous intensity	candela	cd

Table 6. Non-SI units accepted for use with the SI by the CIPM and this *Guide*

Name		Symbol	Value in SI units
minute	time	min	1 min = 60 s
hour	time	h	1 h = 60 min = 3600 s
day	time	d	1 d = 24 h = 86 400 s
degree	plane angle [(a)]	°	1° = (π/180) rad
minute	plane angle [(a)]	'	1' = (1/60)° = (π/10 800) rad
second	plane angle [(a)]	"	1" = (1/60)' = (π/648 000) rad
hectare[(h)]		ha	1ha = 1 hm^2 = 10^4 m^2
liter		L[(b)], l	1 L = 1 dm^3 = 10^{-3} m^3
metric ton [(c)]		T	1 t = 10^3 kg
neper		Np[(d,f)]	[see footnote (g) regarding the numerical value of logarythmic ratio quantities such as the neper, the bel, and the decibel]
bel		B[(e,f)]	
decibel		dB[(e,f)]	

(*a*) See also Sec. 7.2.

(*b*) The alternative symbol for the liter, L, was adopted by the CGPM in order to avoid the risk of confusion between the letter l and the number 1 (see Ref. [1] or [2]). Thus, although both l and L are internationally accepted symbols for the liter, to avoid this risk the symbol to be used in the United States is L (see Refs. [2] and [6]). The script letter ℓ is not an approved symbol for the liter.

(*c*) This is the name to be used for this unit in the United States (see Refs. [2] and [6]); it is also used in some other English-speaking countries. However, this unit is called "tonne" in Ref. [1] and is the name used in many countries.

(*d*) The statement LA = n Np (where n is a number) is interpreted to mean that $\ln(A_2 / A_1) = n$. Thus when $L_A = 1$ Np, $A_2 / A_1 = e$. The symbol A is used here to denote the amplitude of a sinusoidal signal, and L_A is then called the Napierian logarithmic amplitude ratio, or the Napierian amplitude level difference.

(*e*) The statement $L_X = m$ dB = $(m / 10)$ B (where m is a number) is interpreted to mean that $\lg(X / X_0) = m/10$. Thus when $L_X = 1$ B, $X / X_0 = 10$, and when $L_X = 1$ dB, $X / X_0 = 10^{1/10}$. If X denotes a mean square signal or power-like quantity, L_X is called a power level referred to X_0. (See Sec. 8.7.)

(*f*) In using these units it is important that the nature of the quantity be specified, and that any reference value used be specified. These units are not SI units, but they have been accepted by the CIPM for use with the SI. For additional information on the neper and bel, see Ref. [5: IEC 60027-3], and Sec. 8.7 of this *Guide*.

(g) The numerical values of the neper, bel, and decibel (and hence the relation of the bel and the decibel to the neper) are rarely required. They depend on the way in which the logarithmic quantities are defined.

(h) This unit and its symbol are used to express agrarian area.

7.2 Space between numerical value and unit symbol

In the expression for the value of a quantity, the unit symbol is placed after the numerical value and a *space* is left between the numerical value and the unit symbol.

The only exceptions to this rule are for the unit symbols for degree, minute, and second for plane angle: °, ', and ", respectively (see Table 6), in which case no space is left between the numerical value and the unit symbol.

Example: $\alpha = 30°22'8"$

Note: α is a quantity symbol for plane angle.

This rule means that:

(a) The symbol °C for the degree Celsius is preceded by a space when one expresses the values of Celsius temperatures.

Example: $t = 30.2$ °C *but not*: $t = 30.2$°C or $t = 30.2°$ C

(b) Even when the value of a quantity is used as an adjective, a space is left between the numerical value and the unit symbol. (This rule recognizes that unit symbols are not like ordinary words or abbreviations but are mathematical entities, and that the value of a quantity should be expressed in a way that is as independent of language as possible—sees Secs. 7.6 and 7.10.3.)

Examples: a 1 m end gauge *but not*: a 1-m end gauge
a 10 kΩ resistor *but not*: a 10-kΩ resistor

"Peso molecular" e Massa molecular

"Molecular weight" and Molecular mass

massa = propriedade de um corpo que está relacionada com a quantidade de matéria e o tipo de partículas que constitui esse corpo (é característica do corpo)

peso = força gravitacional que a Terra exerce sobre o corpo que tem essa massa

$$\vec{P} = m \times \vec{g}$$

$\vec{P}$ **peso**

m **massa**

$\vec{g}$ **aceleração da gravidade**

It is not English, it is Latin

Latin	Abbreviation	Translation	Notes
circa	*c.* or *ca.*	around	In the sense of "approximately" or "about". Usually used of a date.
cis		on this side of	A prefix used in the names of chemical compounds that are geometric isomers having two identical atoms or groups attached on the same side of a molecule divided by a given plane of symmetry.
et alii	*et al.*	and others	From Latin *et* ("and") + *alii* ("others"). Used similarly to *et cetera* ("and the rest") to denote names that, usually for the sake of space, are unenumerated/omitted. American Psychological Association (APA) style uses et al. (normal font) if the work cited was written by more than six authors; Modern Language Association (MLA) style uses et al. for more than three authors; AMA style lists all authors if ≤6, and 3 + et al if >6. American Medical Association (AMA) style forgoes the period (because it forgoes the period on abbreviations generally) and it forgoes the italic; many journals that follow AMA style do likewise.
et cetera	*etc.* or *etc*	and the rest	Translated literally from Latin, *et* means 'and', while *cētera* means 'the rest'; thus the expression means 'and the rest (of such things)'. In modern usage, used to mean "and so on", "and more", "and other similar things" or "and so forth".
ex vivo		out of or from life	Used in reference to the study or assay of living tissue in an artificial environment outside the living organism.
exempli gratia	*e.g.* or *eg*	for the sake of example, for example	*Exempli gratiā* , 'for example', is usually abbreviated "*e.g.*" (less commonly, *ex. gr.*). The abbreviation "*e.g.* "often is interpreted anglicised as "example given". The *e.g.* is often confused with *i.e.* (*id est*).
id est	*i.e.* or *ie*	that is, in other words	"That is (to say)" in the sense of "that means" and "which means", or "in other words", "namely", or sometimes "in this case", depending on the context.
idem	*id*	the same	Used to refer to something that has already been cited.
in loco		in the place, on the spot	That is, "on site". "The nearby labs were closed for the weekend, so the water samples were analyzed *in loco* ."
in silico		in silicon	Coined in the late 1980s for scientific papers. Refers to an experiment or process performed virtually, as a computer simulation. The term is Dog Latin modeled after terms such as in vitro and in vivo. The Latin word for silicon is silicium, so the correct Latinization of "in silicon" would be in silicio, but this form has little usage.
in situ		in the place	In the original place, appropriate position, or natural arrangement.
in vitro		in glass	An experimental or process methodology performed in a "non-natural" setting (*e.g.* in a laboratory using a glass test tube or Petri dish), and thus outside of a living organism or cell. Alternative experimental or process methodologies include *in vitro* , *in silico* , *ex vivo* and *in vivo* .
in vivo		in life, in a living thing	An experiment or process performed on a living specimen.
locus (plural *loci*)			A *locus* (plural *loci*) in genetics is the position of a gene on a chromosome.
trans		across, beyond, through	Indicating that a chemical compound has a molecular structure in which two groups or atoms are on opposite sides of a double bond.
versus	*vs, vs.* or *v.*	as opposed to, in contrast with	Against, facing, confronting, as opposed to, in contrast with.
vide		see or refer to	The word is used in scholarly citations.
vide infra	*v.i.*	see below	The word is used in scholarly works.
vide supra	*v.s.*	see above	The word is used in scholarly works to refer to previous text in the same document. It is sometimes truncated to "*supra* ".

Nomenclature of prokaryotes

LPSN bacterio.net

Anexos:
se são importantes devem ser fáceis de ler e conter a informação corretamente apresentada

CHAPTER VII - APPENDIXES

Supplementary Table 7.1 – Matrix of microbiota variables (OTUs) based in presence/absence of every hierarchical bacterial level.

	HI383	HI388	HI396	HI399	HI460	HI462	HI463	HI466	HI467	HI471	HI501	HI502	HI504	HI505	HI508	HI509	HI516	HI519	HI636	HI675
Bacillus_anthracis	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0
Bacillus_kokeshiiformis	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Clostridium_perfringens	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Clostridium_septicum	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Clostridium_tertium	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0
Delftia_lacustris	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Enterococcus_faecalis	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	1	0	0	0
Enterococcus_faecium	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Enterococcus_mundtii	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Lysinibacillus_fusiformis	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paenibacillus_borealis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Paeniclostridium_tenue	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Pantoea_eucrina	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Peptoclostridium_bifermentans	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Propionibacterium_acnes	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Psychrobacillus_soli	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ralstonia_insidiosa	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Ralstonia_pickettii	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Robinsoniella_peoriensis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Rummeliibacillus_stabekisii	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0
Sporosarcina_newyorkensis	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Bacillus	0	0	1	0	0	0	1	1	0	1	1	1	1	0	1	1	1	1	0	0
Carnobacterium	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0

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Regras de nomenclatura ...

Anexos:
se são importantes devem ser fáceis de ler e conter a informação corretamente apresentada

Uma tabela em várias páginas → Repetir o cabeçalho

Clostridium	0	1	1	0	1	0	1	0	0	0	1	0	1	0	1	1	1	1	1	1
Delftia	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Enterococcus	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0
Lysinibacillus	0	1	0	0	0	0	1	1	0	1	0	0	1	1	1	0	0	0	0	0
Paenibacillus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Paeniclostridium	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Pantoea	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Peptoclostridium	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Propionibacterium	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pseudomonas	1	0	1	0	0	1	0	1	1	0	0	0	0	1	0	0	0	1	0	0
Psychrobacillus	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ralstonia	0	0	0	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0
Robinsoniella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Romboutsia	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Rummeliibacillus	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0
Sporosarcina	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Staphylococcus	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stenotrophomonas	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Bacillaceae	0	1	1	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0
Burkholderiaceae	0	0	0	0	1	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0
Carnobacteriaceae	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Clostridiaceae	0	1	1	0	1	0	1	0	0	0	1	0	1	0	1	1	1	1	1	1
Comamonadaceae	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Enterobacteriaceae	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Enterococcaceae	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	0	1	0
Lachnospiraceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Xanthomonadaceae	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0
Paenibacillaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Uma tabela em várias páginas → Repetir o cabeçalho

	HI519 HI675			
Sum of all media	HI501	↑	IX	9
	HI504			8
	HI509			5
	HI460 HI519	↑	XI	12

These results were obtained from a statistical analysis of data represented in Figures 3.6, 3.7, and 3.8, using a two-way ordinary ANOVA (α=0.05), with a Tukey's Multiple Comparison post-test and had a p-value<0.05. * These results had a p-value<0.01.

Supplementary Table 7.5 – Information on the 16S rDNA nucleotide sequences of a selected group of bacterial isolates.

Isolate	Animal	Phenotypic Identification[1]	Nucleotide Sequence Length	Closest Reference Sequence Match	Query cover	E-value	Nucleotide Sequence Identity	Accession Number	Assigned Phylotype*
8	462	IX	1087	Pseudomonas plecoglossicida strain NBRC 103162 16S ribosomal RNA gene, partial sequence	99%	0.0	99%	NR_114226.1	Pseudomonas
9	467	VII	638	[Clostridium] bifermentans strain JCM 1386 16S ribosomal RNA gene, partial sequence	97%	0.0	99%	NR_113323.1	Paraclostridium
11	466	II	246	Enterococcus faecium strain NBRC 100486 16S ribosomal RNA gene, partial sequence	95%	0.0	99%	NR_113904.1	Enterococcus
22	462	I	1136	Staphylococcus saprophyticus subsp.	100%	0.0	99%	NR_041324.1	Staphylococcus

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Regras de nomenclatura ...

Table 2.2: Reaction mixtures used for amplification in PCR.

16S rRNA	*pufM*	5' terminus of *lacZ*
5-10 ng DNA template	5-10 ng DNA template	3 µL lysate
0.5 µL dNTPs (10 mM)	0.5 µL dNTPs (10 mM)	0.5 µL dNTPs (10 mM)
0.2 µL primer forward (50 µM)	0.5 µL primer forward (50 µM)	0.5 µL primer forward (50 µM)
0.2 µL primer reverse (50 µM)	1 µL primer reverse (50 µM)	0.5 µL primer reverse (50 µM)
2.5 µL PCR buffer (10X)[a] (Invitrogen)	2.5 µL PCR buffer (10X)[a] (Bioline)	2.5 µL PCR buffer (10X)[a] (Invitrogen)
0.75 µL $MgCl_2$ (50 mM)[a] (Invitrogen)	1 µL $MgCl_2$ (50 mM)[a] (Bioline)	1 µL $MgCl_2$ (50 mM)[a] (Invitrogen)
0.2 µL Taq DNA Polymerase (5 U μL^{-1}) (Invitrogen)	0.4 µL Taq DNA Polymerase (5 U μL^{-1}) (Bioline)	0.2 µL Taq DNA Polymerase (5 U μL^{-1}) (Invitrogen)
1.25 µL BSA (0.1%)	1.25 µL BSA (0.1%)	----------
ddH_2O up to 25 µL	ddH_2O up to 25 µL	ddH_2O up to 25 µL

[a] supplied by polymerase manufactures. dNTP-deoxynucleoside triphosphate (Invitrogen). BSA-bovine serum albumin (Invitrogen)

Template DNA dilutions are performed with UltraPure DNsase/RNase-Free Distilled Water (Invitrogen).

The amplifications were executed applying the following program provide in table 2.3 and table 2.4.

conc μl^{-1}

Comparing the maximum nitrite concentration produced by the AOB cultures in both niches (Table 2), soil AOB cultures had higher maximum nitrite concentrations (3.59 mg/l) than root surface AOB cultures (1.35 mg/L), though significant differences were not found (ANOVA p=0.95, table 3 in annex). 1 ml 1 mL
g/ml g ml^{-1}
No texto: escrita dos números. Zero, um, dois, três, quatro, cinco, seis, sete, oito, nove, 10, 11 …
… with application of 5 µL sample (2 µL of Gel Loading Dye Orange 6x (BioLabs)) and 1 Kb Plus DNA Ladder (Invitrogen). [aaaaaa (bbbb)]
48 h post-seeding macrophages were incubated. 1 µl of DNA was used in the PCR reaction.

Concentration (promastigotes/ml) of *L. infantum* culture was calculated by optical microscopy using a Neubauer Chamber as described in 1.2.. The …
Para a análise de SNPs, usaram-se 11 destas 53 estirpes *Map* isoladas de bovinos, congeladas a -80°C em meio líquido *Middlebrook* 7H9 com 10% de glicerol. (Tabela 5)
gut flora gut microbiota Na mesma Dissertação; origem das referências.
Patogénico Patogéneo
O surgimento e prevalência de estirpes com diversas formas de multiresistência a antibióticos, e o consórcio oportunista entre o *Mycobacterium tuberculosis* e o vírus da imunodeficiência humana (VIH), foram as principais causas apontadas para este ressurgimento.

To note that the higher growth rate happens in S2N2 medium, which suggests a higher fermentative metabolic capacity of *L. thermotolerans* yeasts for high sugar levels. Curiously, a higher number of organoleptically active compounds, are produced in S1N2 medium.
A ORF1 está localizada na cadeia positiva, orientada no sentido do relógio e codifica proteínas essenciais … A ORF2 está localizada na cadeia complementar, no sentido anti-horário e codifica a proteína estrutural …
Clostridium difficile é atualmente considerado a principal causa de doenças nosocomiais intestinais em adultos, associadas à toma de antibióticos, bem como uma preocupação crescente na comunidade. *C. difficile* é uma bactéria Gram-positiva, anaeróbia obrigatória e formadora de esporos.

Thus, it appears that all three methods would have been useful to screen the compounds. Still the novel flow cytometric methods, despite a larger inter-compound variability may be more suitable to detect discrete inhibitory effects, which may be masked by assays with long incubation periods [75].

75. Wein, S., Maynadier, M., Ba, C. T. Van, Cerdan, R., Peyrottes, S., Fraisse, L., & Vial, H.

Esta conclusão é de quem?

These data also suggest that we can exclude the possibility of bistability for the VraSR regulatory system, as we did not observe a split of cells with different expression levels into two coexisting subpopulations [62].

Ref 62 não é "dos autores".


My manuscript is written in
ow!
Blood
Sweat
what am i doing with my life??
Tears
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