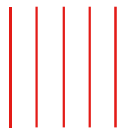
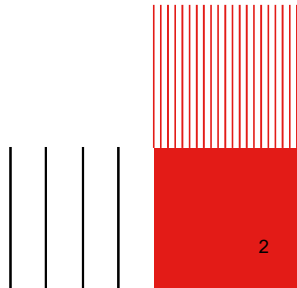
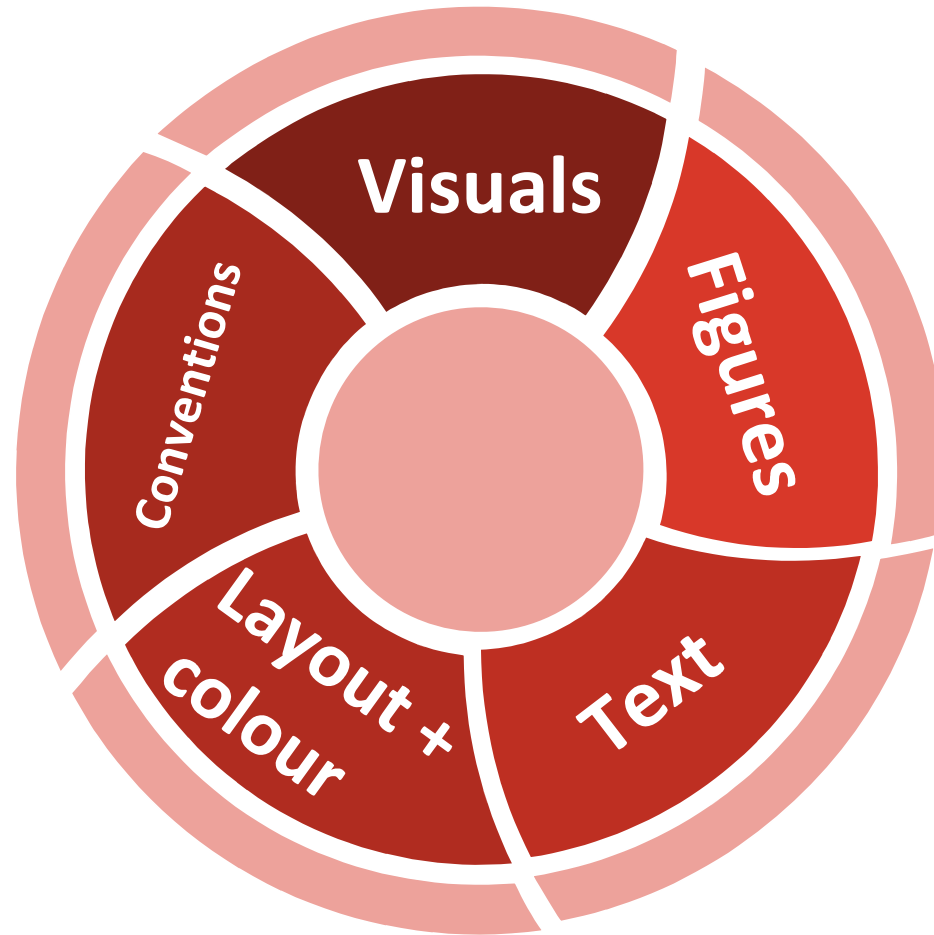
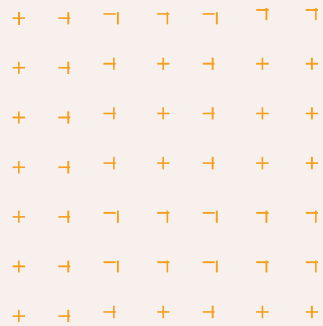


Designing slides for scientific research presentations

4th Year Scientific English Module







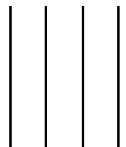
Create visual slides



Break up the slide into multiple slides with more visuals

Each slide should communicate one message

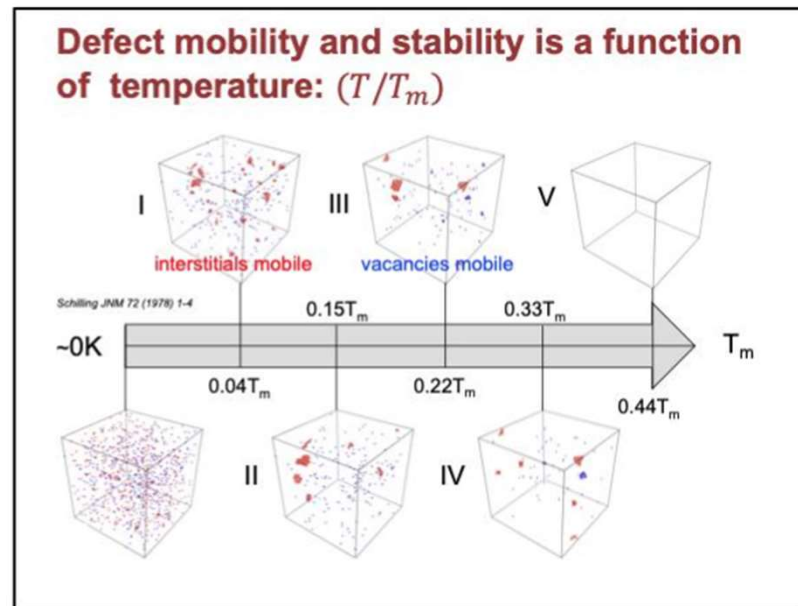
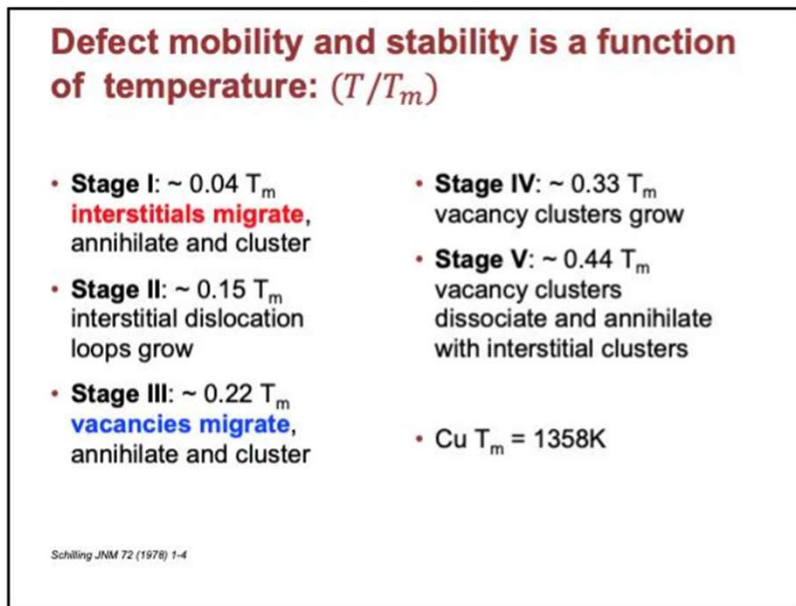
There is no maximum number of slides...but less can be more effective



Replace text with figures

Graphical content is the most efficient and memorable way to convey information to your audience

The challenge is to turn words into figures!



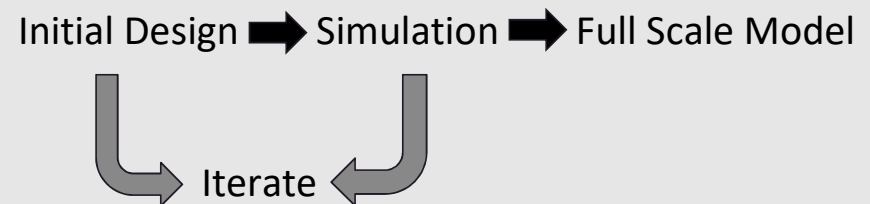


Eliminate all but keywords and phrases

Project Schedule

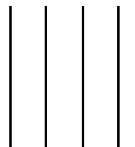
- Initial design with low-fidelity iterative flow simulation
- High fidelity numerical simulation
 - CFD, FEA
- Iterate
- Full scale model

Project Schedule



Text is for the audience to remember key points, not notes for the speaker

Visual representation, only keywords





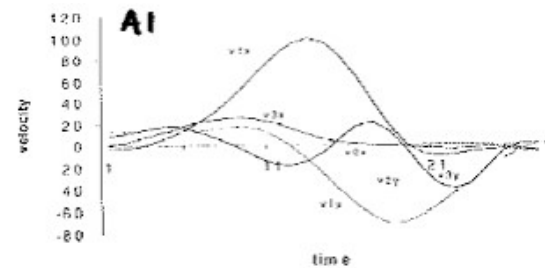
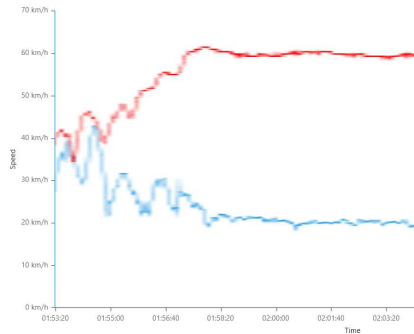
Include readable visual aids that serve a purpose

Everyone in the audience should be able to read all the information on the slides

All visuals should be large and high quality - reproduce figures if necessary

No more than one visual per slide, unless there is a good reason

Do not include visuals you don't talk about



1

INSA

INSTITUT NATIONAL
DES SCIENCES
APPLIQUÉES
TOULOUSE

D) France's scientific community at the forefront

3) A complex and specialized industrial process

Cannabis factories



Tweed Inc. (Ontario, Canada)

a former chocolate factory transformed into an 8500-plant greenhouse.



2

"Cannabis factories" are an economic engine



Tweed Inc. (Ontario, Canada), a former chocolate factory transformed into an 8500-plant greenhouse.

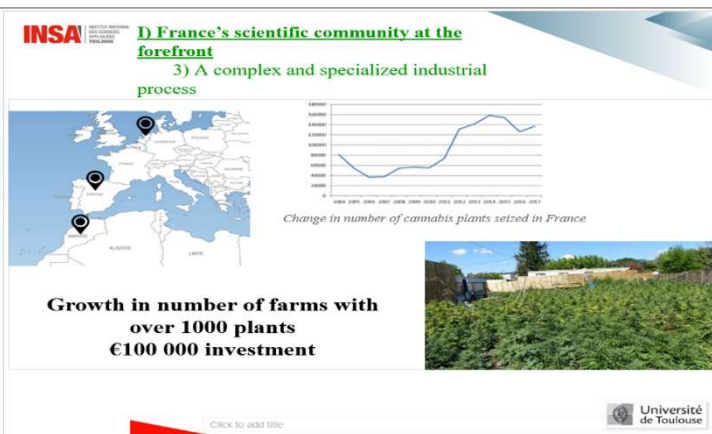


I. Science at the forefront

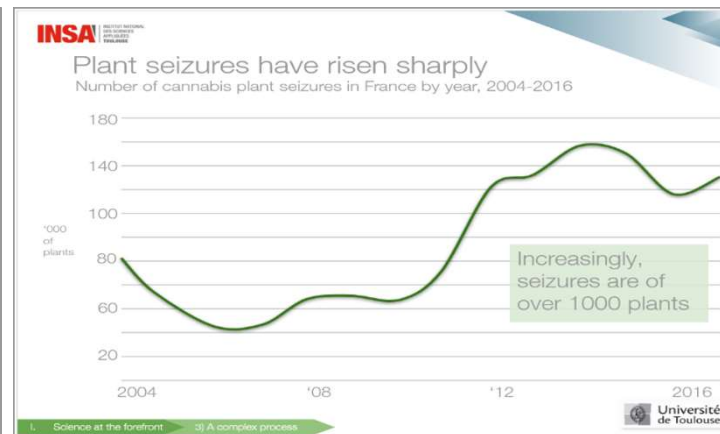
3) A complex process



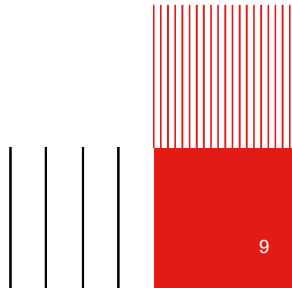
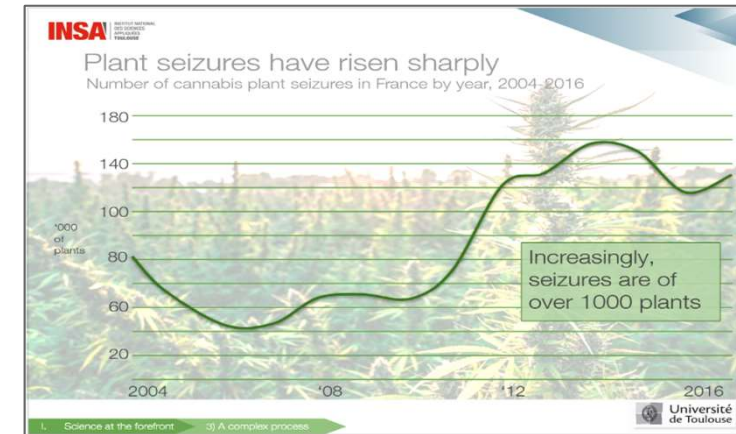
1

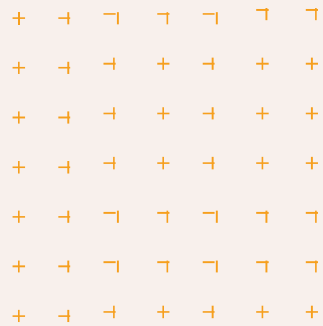


2



3

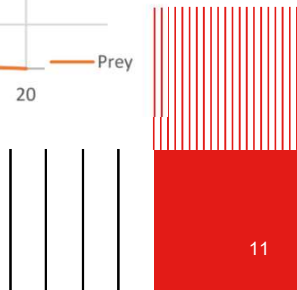
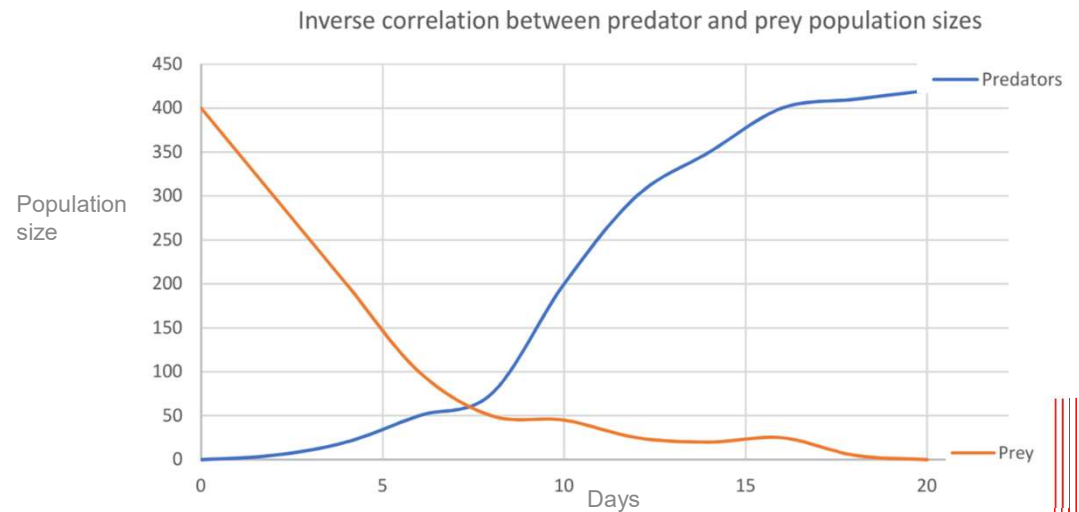
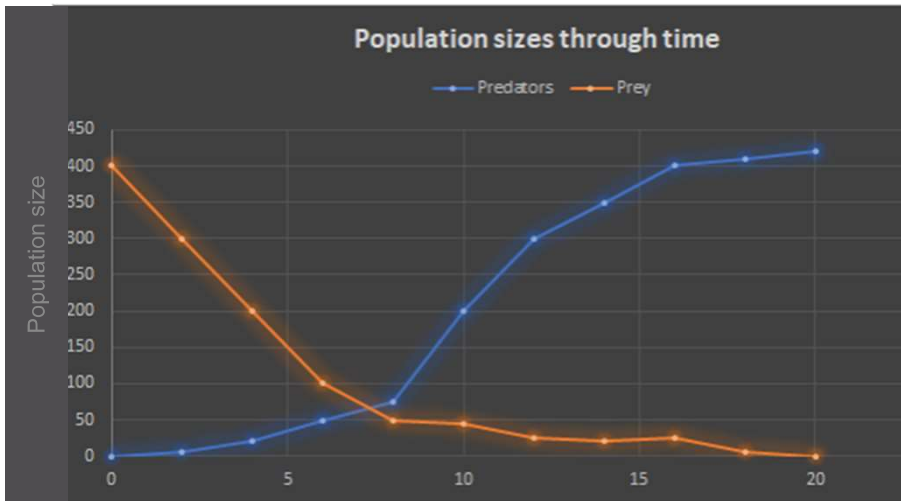




Simplify your figures

Simplify your figures: 1

- Delete grid lines if appropriate
- Delete keys – label lines
- Minimise tick marks on axes
- Avoid coloured backgrounds



Simplify your figures: 2

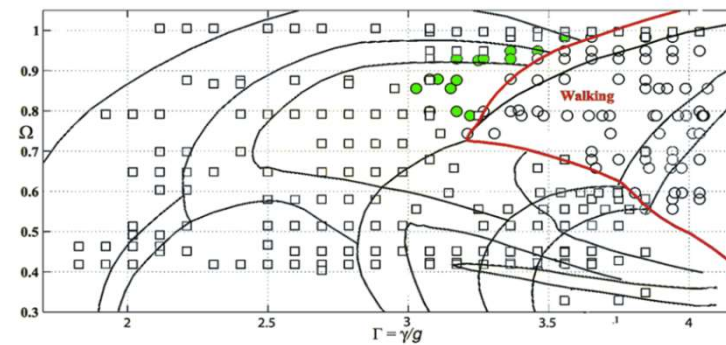
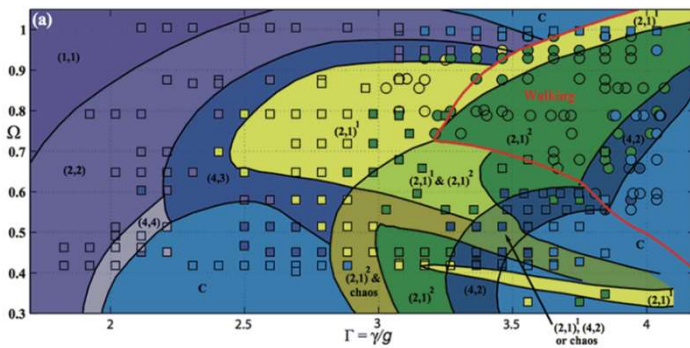
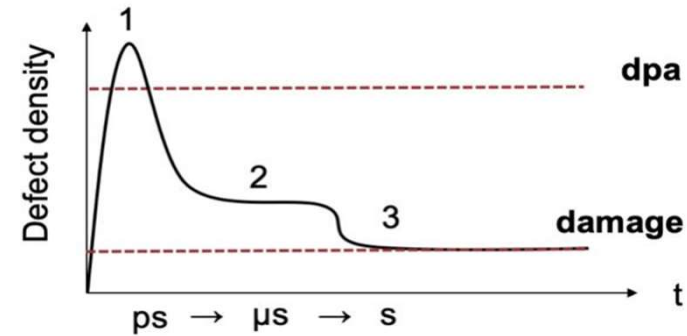
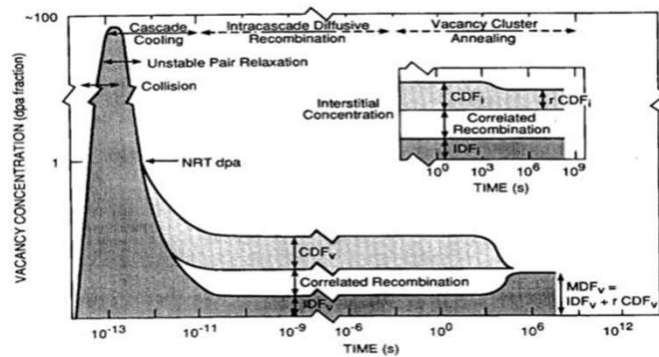
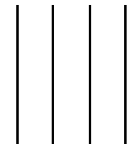


Figure adapted for presentations:
key parts highlighted + labelling

Figure suitable for article:
complete model or data





Highlight key parts of figures

Use colours, arrows, shading, labels or animation

- ✓ Shows the reader what to focus on
- ✓ Increases readability
- ✓ Minimises supplementary text

dpa is not a measure of damage

- dpa is *calculated* from irradiation parameters, it isn't *measurable*:

$$\text{dpa} = \int_0^\tau \int_0^{\hat{E}} \Phi(E, t) \int_{\hat{T}} \sigma_D(E, T) \nu(T) dT dE_i dt$$

Was, Fundamentals of Radiation Materials Science, Springer (2016)



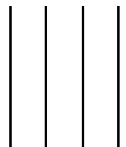
dpa is not a measure of damage

- dpa is *calculated* from irradiation parameters, it isn't *measurable*:

The diagram shows the equation $\text{dpa} = \int_0^\tau \int_0^{\hat{E}} \Phi(E, t) \int_{\hat{T}} \sigma_D(E, T) \nu(T) dT dE_i dt$ with three components highlighted in red boxes: $\Phi(E, t)$, $\sigma_D(E, T)$, and $\nu(T)$. Lines connect these boxes to their definitions:

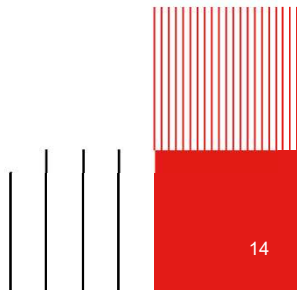
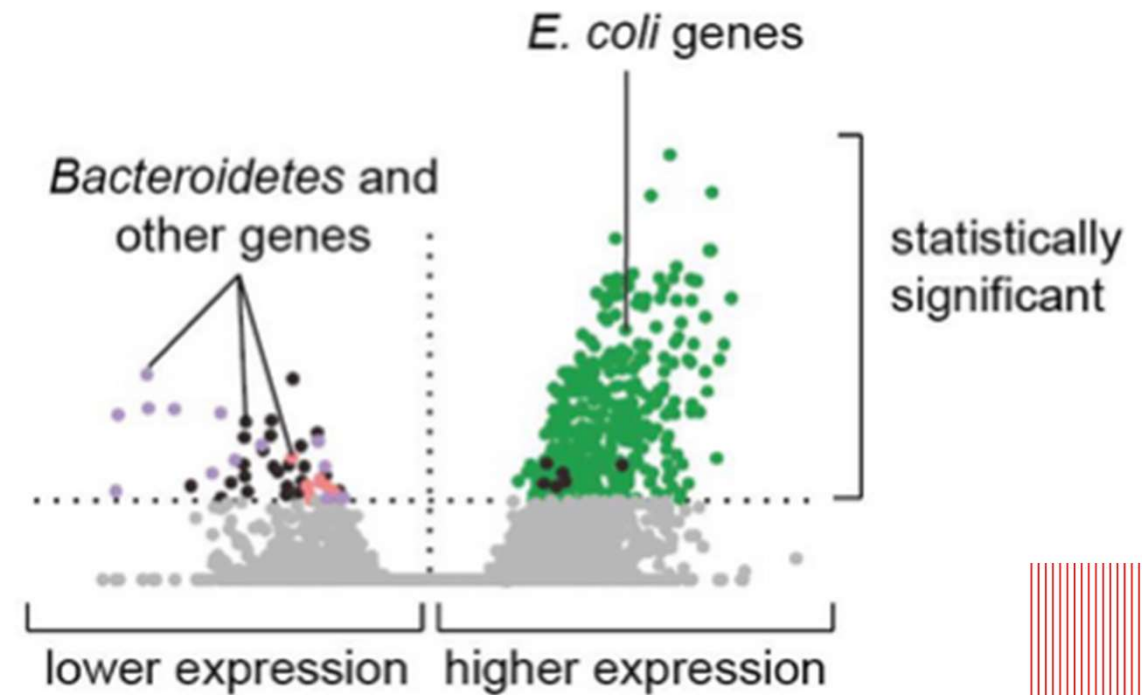
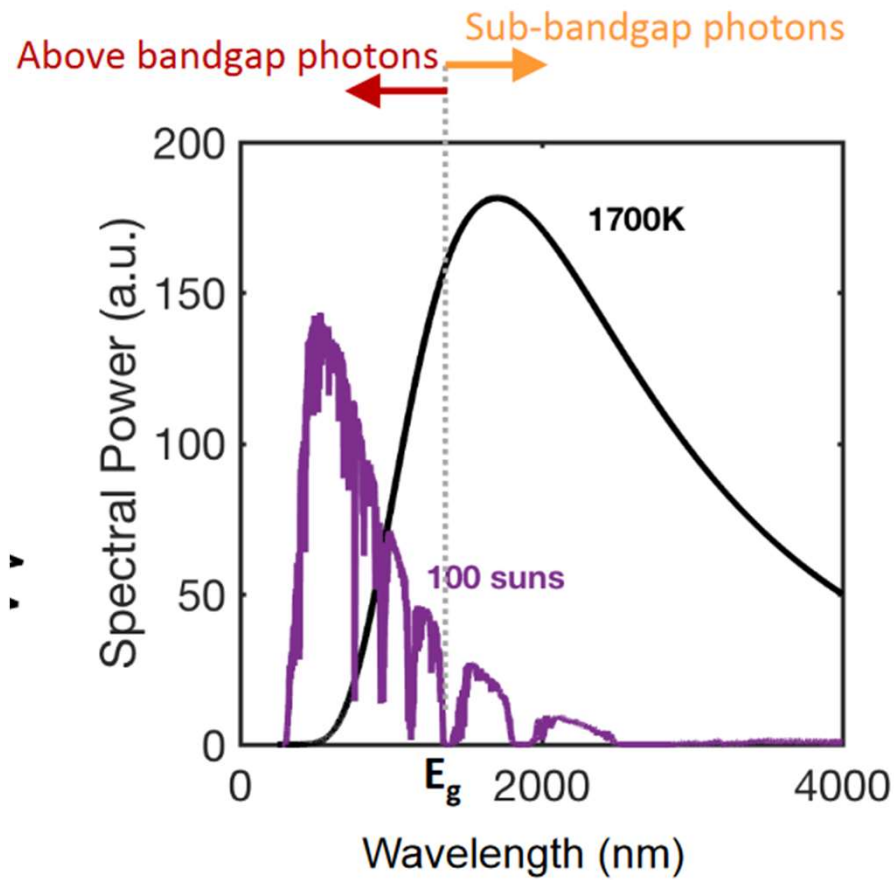
- $\Phi(E, t)$ is connected to "Flux of particles with energy E ".
- $\sigma_D(E, T)$ is connected to "Number of displacements per primary knock-on atom".
- $\nu(T)$ is connected to "Probability an atom is displaced gaining recoil energy T ".

Was, Fundamentals of Radiation Materials Science, Springer (2016)



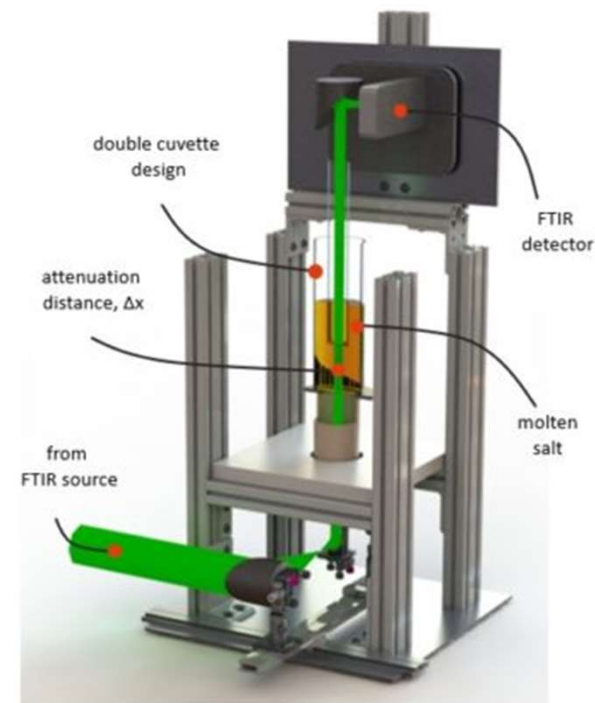
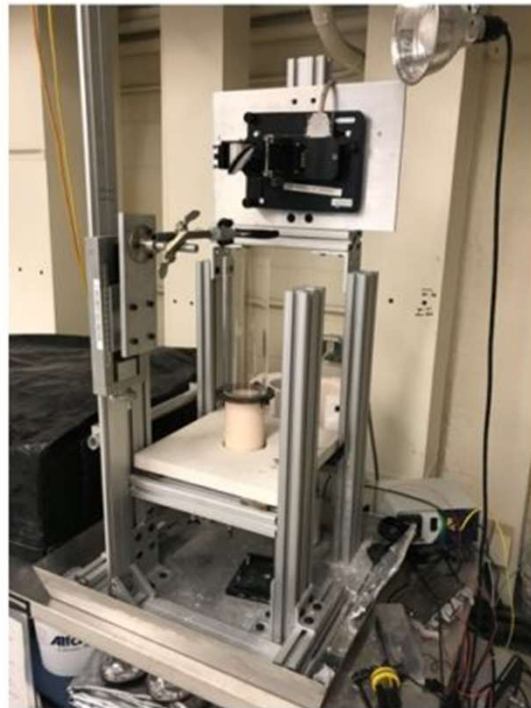


Highlight key parts of figures: other examples



Replace photos with diagrams

Photographs contain many details that interfere with the technical description of your setup

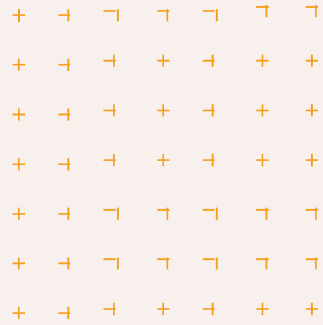


Consider creating a diagram to accompany/replace your photo

Use realistic but contrasting colours to help the components stand out

Label even if your audience knows the structure well

Add a scale bar



Text: clear + concise to convey your message

Think of readability and legibility



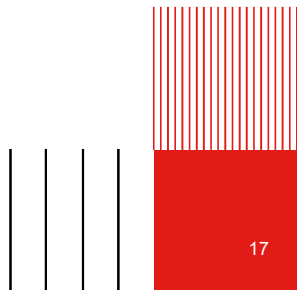
Text should be as large as possible (18-28-point font for ‘normal’ text).

Use san serif fonts = Century Gothic, Arial, Tahoma, Calibri, Lucida Sans, Verdana.

Avoid having many font sizes and styles – go for a consistent look

Use **bold**, *italics* and **colour** sparingly. Avoid underlined text.

Use sentence case. Avoid ALL CAPS text.



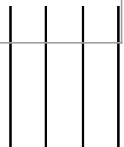


Create message titles not topic titles

The assertion-evidence model of slide design (1)

Build talk on messages ➡ **Support message with visual evidence** ➡ **Explain your evidence**

Context in presentation	Weak topic title	Strong message title	Why?
Background slide	Background Introduction	First Order Linear Stability	It tells the audience where you are and what concept your are illuminating
Conclusions slide	Conclusions	Model predicts the free vibration damping behavior of 3D knitted fabrics	You say 'in conclusion' with your words, tone and body language. There's no need to repeat it.

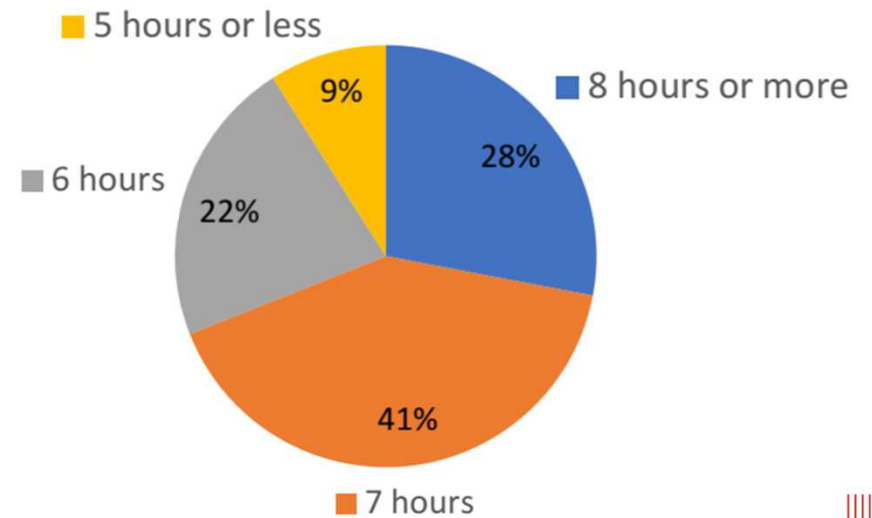
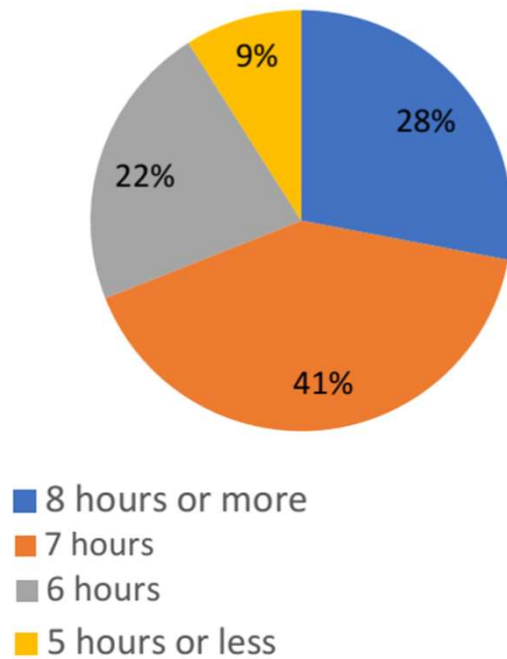


Message titles for results slides

Message titles usually have a verb (past simple tense)

Distribution of the number of sleep hours for adults

Only 28% of adults slept the recommended 8 hours





Do not overuse bullet points

Slides shouldn't have too much text.

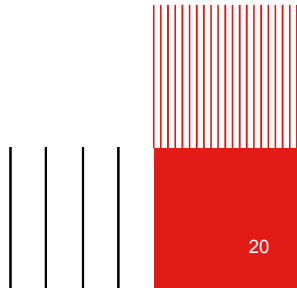
But good slides don't just convert text into bullet points.

- * Current approaches:
 - * MILP based encoding (Sherlock), satisfiability modulo solvers (Reluplex)
- * Challenges:
 - * Scalability with respect to the network size
 - * MILP/SMT solving is expensive, and size of the constraints is proportional to the size of the network



You have to be more judicious

- Prioritize bullets for lists
- Don't use bullets for slide titles/subheading
- Be creative and display your text visually (see slides 5-7)





Create word tables for ideas and concepts

APOPTOSIS

- Genetically Programmed cell death Deletion of individual cells by fragmentation into membrane-bound particles, which are phagocytized.
- apoptosis elicits no inflammatory response in adjacent cells and tissues.
- Besides being genetically programmed, apoptosis can be:
 - Induced by injury to cellular DNA, as by irradiation and cytotoxic agents
 - Suppressed by naturally occurring factors (e.g., Prot. Kinase AKT) and by some drugs (e.g., prostaglandin E2).

- 13 -

What is Apoptosis & how does it happen?

Definition

Death of individual cells by fragmentation into membrane-bound particles, which are phagocytized.

Note: apoptosis elicits no inflammatory response in adjacent cells, tissues.

How it happens

Typically genetically programmed

Induced by injury to cellular DNA – e.g., by irradiation and cytotoxic agents

Note: Can be suppressed by naturally occurring factors (e.g., Prot. Kinase AKT) and by some drugs (e.g., prostaglandin E2).

- 15 -

Create a table with rows + columns
Define categories

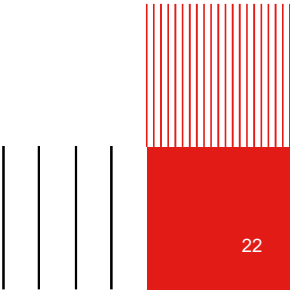


Check your grammar if you do use bullet points

Make sure the first word in each bullet is grammatically the same:

- An infinitive verb (always used for list of objectives/aims)
- A verbs in –ing form (preferred form)
- A noun
- An adjective or past participle

Incorrect grammar (different grammatical forms)	Incorrect grammar (all nouns)
A Java infrastructure for: <ul style="list-style-type: none">• MPEG-7 features processing• XML database managing• Algorithms ontology exploiting• Functions integrating	A Java infrastructure for: <ul style="list-style-type: none">• MPEG-7 features processing• XML database management• Algorithms ontology exploitation• Functions integration
Good example (all verbs in gerund –ing form)	
A Java infrastructure for: <ul style="list-style-type: none">• Processing MPEG-7 features• Managing XML databases• Exploiting algorithm ontology• Integrating functions	



English language

All text must be in English, including graphs

Correct spelling and grammar

Correct scientific vocabulary

**This is the minimum
You need to go further...**



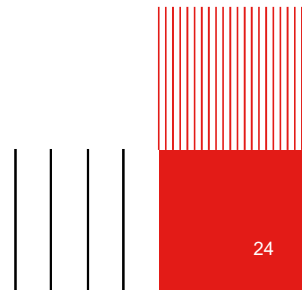
Choose your words carefully

Think about the clearest way to convey your message.

Use simple English, as long as it does not distort the science.

Be ready to change your wording—your first version is rarely the best...

Student version	Femtosecond lasers: a safe technique regarding heat management
Version 2	Femtosecond laser pulses do not reach temperatures dangerous to the eye
Version 3	Femtosecond lasers do not produce enough heat to burn the eye
Version 4	Femtosecond lasers cause a negligible temperature increase in surrounding eye tissue





1

Introduction: Why laser refractive surgery?


EVERYDAY LIFE

Glasses and lenses

Usually used for:

- myopia
- hyperopia
- astigmatism

2 solutions to correct vision defect




LONG-TERM


LASIK technique

Purpose

Reshape the cornea

*Why particularly LASIK?
A widespread technique*

 **150 000 - 200 000** refractive surgeries / year
80% using LASIK technique

 **20 million** LASIK surgeries since the beginning of the 21st century

23/13

2

Why get laser refractive surgery?

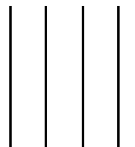
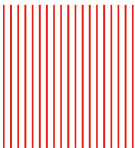
Laser refractive surgery is...

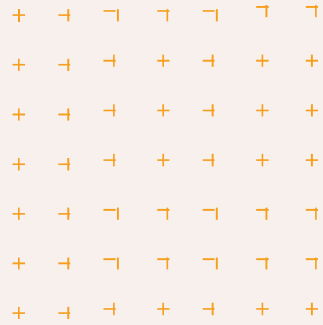
Permanent
unlike glasses and contact lenses

Effective
on three common eye conditions:
myopia, hyperopia and astigmatism

Common
150 000 - 200 000 refractive surgeries / year in France
80% use the LASIK technique

There have been 20 million LASIK surgeries since the beginning of the 21st century





Layout: aligned, easy to navigate and open
Colour: consistent and muted palette

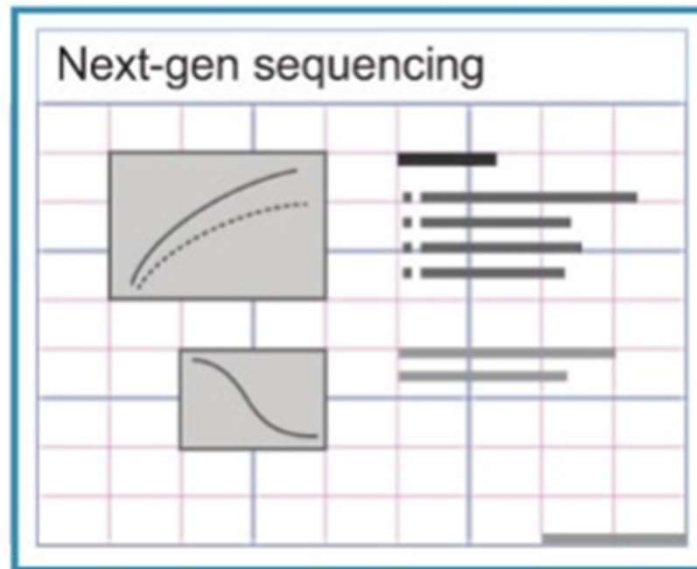
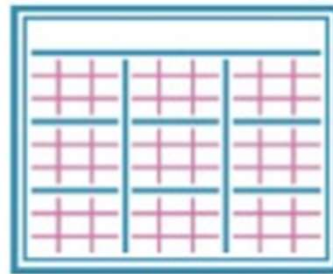
Lay out the elements in an aligned, logical order

Make sure there is enough white space

Use a grid system to align elements = visually appealing + easy to navigate

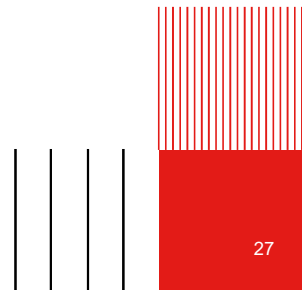
Natural tendency = to read from left to right, then top to bottom

Slide titles should be consistently located



White space = improves the visual appeal and readability of your slides

Provide a wide gap between each element on your slide



Use colour wisely

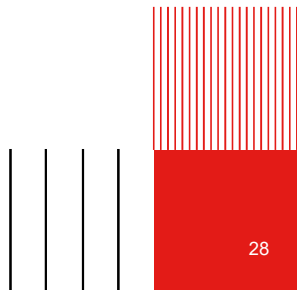


Use dark letters on a white / light-coloured background = professional look

Avoid overly bright colours: they attract attention, but are tiring! Use a muted palette

Don't overuse colour. Stick to a colour theme. 2-3 colours. No more!

Easiest to read





Conventions

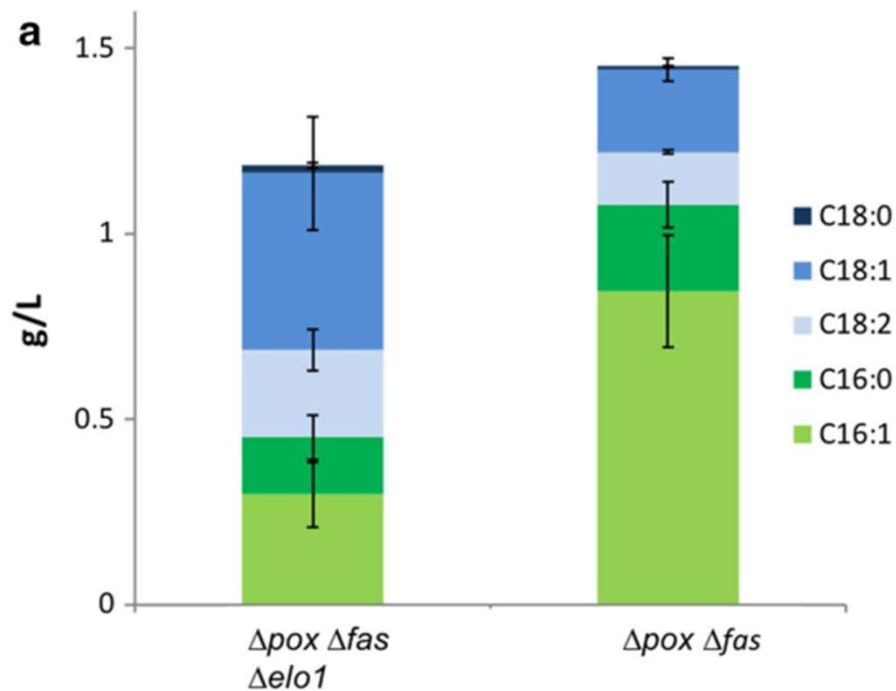


- Number your slides
- Include the name of the speaker on their slides
- Include an outline. Use the assertion-evidence approach!
- Consider adding a progression bar
- Numbers must be in English style
✓ 1,253,934.289 or 1 253 934.289 ✗ 1.253.934,289
✓ 0.72 ✗ 0,72
- Correct notation of scientific units: (✓ 85 K ✗ 85K, ✓ 103 Hz ✗ 103 HZ)
- Define any non-standard abbreviations or acronyms on slides





Cite the sources of visuals that are not yours



Write 'Adapted from' if you have modified the visual

Use Numerical (1) or Author/date citations

All citations need to be listed on the 'References' slide at the end of the presentation

Fig. 3. Lipid profiles of the strains $\Delta pox \Delta fas$ and $\Delta pox \Delta fas \Delta elo1$ grown in rich medium completed with mC16:0 at 72h. From Riguoin et al. (2018)

Elements to include on the title slide

**Date of presentation
+
Context**

06/09/2022
Conference of
Applied
Mathematics,
London



**School (+
company) logos**

Title of your research/project

**Image
(optional)**

First name + surname of author(s) in English format

Affiliation of author(s): Year of study, Department, School

First name + surname of tutor(s) + Affiliation if different from above

John Doe, 4th year, Department of Applied Mathematics, INSA – Toulouse, France
Tutor: Jane Doe

Your last slide should not be...



Your last two slides should be...





References

In numerical order (if you used numerical citations on your slides)

- [1] R. E. Ziemer and W. H. Tranter, *Principles of Communications*, 7th ed. Hoboken, NJ: Wiley, 2015. [Online]. Available: <https://ebookcentral.proquest.com/lib/vu/reader.cation?docID=5106516&ppg=1>
- [2] J. D. Bellamy *et al.*, *Computer Telephony Integration*. New York: Wiley, 2010.
- [3] C. Jacks, *High Rupturing Capacity (HRC) Fuses*. New York: Penguin Random House, 2013, pp. 175–225.
- [4] N. B. Vargafik, J. A. Wiebelt, and J. F. Malloy, "Radiative transfer," in *Convective Heat*. Melbourne: Engineering Education Australia, 2011, ch. 9, pp. 379–398.
- [5] H. C. Hottel and R. Siegel, "Film condensation," in *Handbook of Heat Transfer*, 2nd ed. W. C. McAdams, Ed. New York: McGraw-Hill, 2011, ch. 9, pp. 78–99.
- [6] W. M. Rohsenow, "Heat transmission," in *Thermal Radiation Properties*, vol. 3, M. W. Catton and J. P. Hartnett, Eds. New York: Macmillan, 2012, ch. 9, pp. 37–62.
- [7] H. Schmidt-Walter and R. Kories, *Electrical Engineering. A Pocket Reference*. Boston: Artech House, 2007. Accessed: Oct. 16, 2016. [Online]. Available: <http://ebruary.com>

Barnet, S., Bellanca, P., & Stubbs, M. (2013). *A short guide to college writing*. Pearson Education.

Caron, T. (2008). Teaching writing as a con-artist: When is a writing problem not? *College Teaching*, 56(3), 137-139. <https://doi.org/10.3200/CTCH.56.3.137-139>

Cismas, S. C. (2010). Educating academic writing skills in engineering. In P. Dondon & O. Martin (Eds.), *Latest trends on engineering education* (pp. 225-247). WSEAS Press.

Drew, S., & Bingham, R. (2010). *The guide to learning and study skills: For higher education and at work*. Gower.

Löfström, E. (2011). "Does plagiarism mean anything? LOL." Students' conceptions of writing and citing. *Journal of Academic Ethics*, 9(4), 257-275. <https://doi.org/10.1007/s10805-011-9145-0>

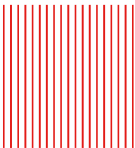
Oshima, A., & Hogue, A. (2007). *Introduction to academic writing*. Pearson/Longman.

Rose, J. (2007). *The mature student's guide to writing*. Palgrave Macmillan.

Soles, D., & Soles, D. (2005). *The academic essay: How to plan, draft, revise, and write essays*. Studymates.

Turner, K., Krenus, B., Ireland, L., & Pinton, L. (2011). *Essential academic skills*. Oxford University Press.

In alphabetical order (if you used author/date citations on your slides)





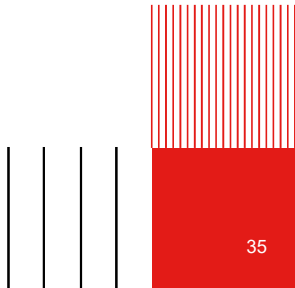
Contacts

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Joseph Shea shea@insa-toulouse.fr

Centre des Sciences Humaines
Institut National des Sciences Appliquées de Toulouse
France





References

- (1) <https://www.assertion-evidence.com/templates.html>
- (2) <https://mitcommlab.mit.edu/meche/commkit/technical-presentation/>
- (3) <https://mitcommlab.mit.edu/nse/commkit/figure-design>
- (4) <https://mitcommlab.mit.edu/be/commkit/slideshow/>
- (5) Designing PowerPoint Slides for a Scientific Presentation, CLIMB program (2020). <https://www.northwestern.edu/climb/resources/oral-communication-skills/designing-PowerPoint-slides.html>
- (6) Wallwork, A. 2010. English for Presentations at International Conferences. Springer Publishers
- (7) Wong, B. 2011. Negative Space. Nature Methods. Vol. 8. No. 10. p783.
- (8) Wong, B. 2011. Negative Space. Nature Methods. Vol. 8. No. 1. p1. <https://www.nature.com/articles/nmeth0111-5.pdf>

