Graphical abstract as a form of assessment

Andre Pires da Silva

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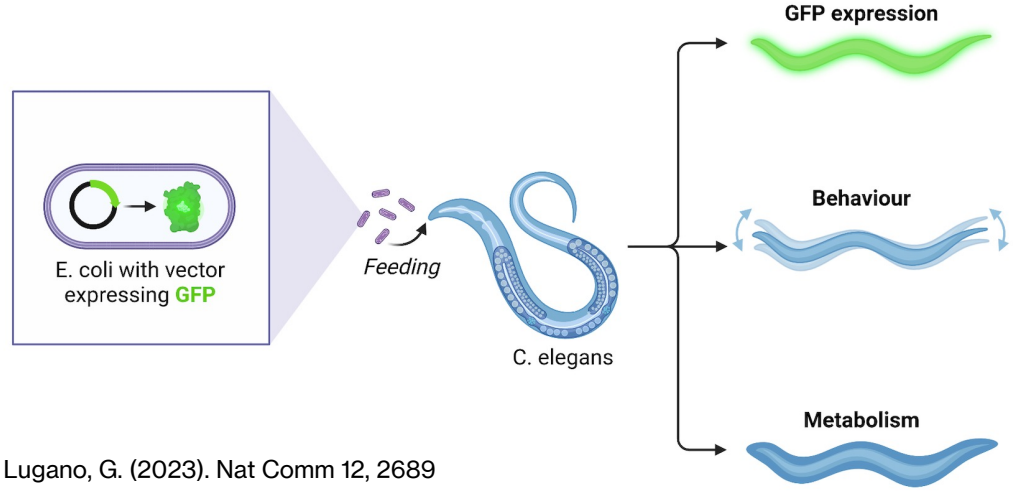
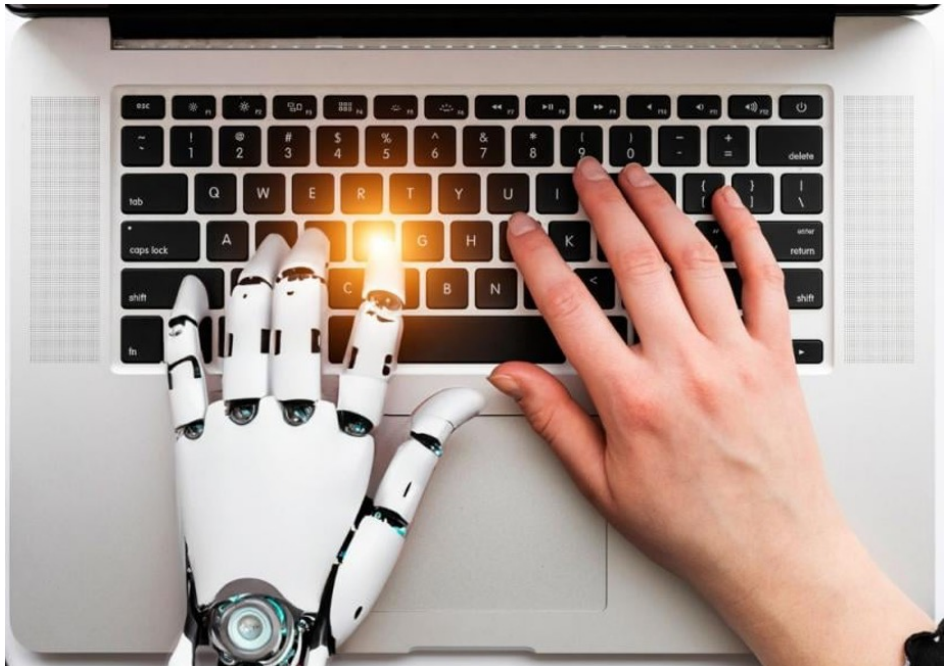
School of Life Sciences



Lugano, G. (2023). Nat Comm 12, 2689



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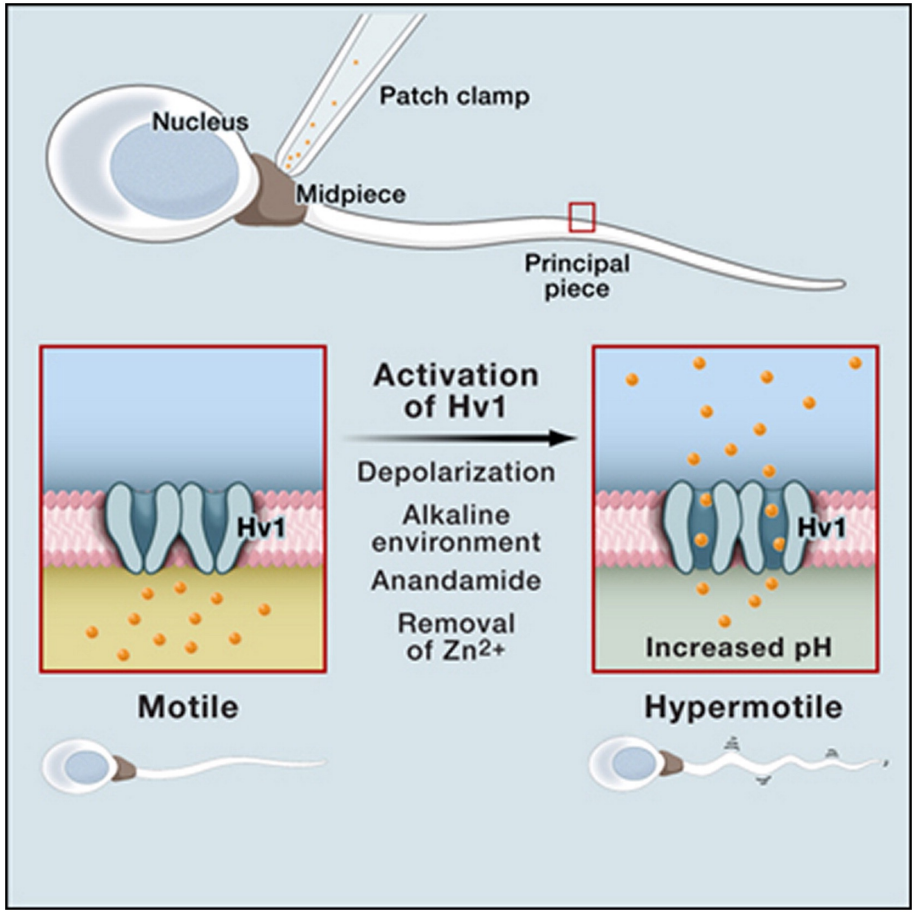
Graphical abstract



Summarises main findings in pictorial form

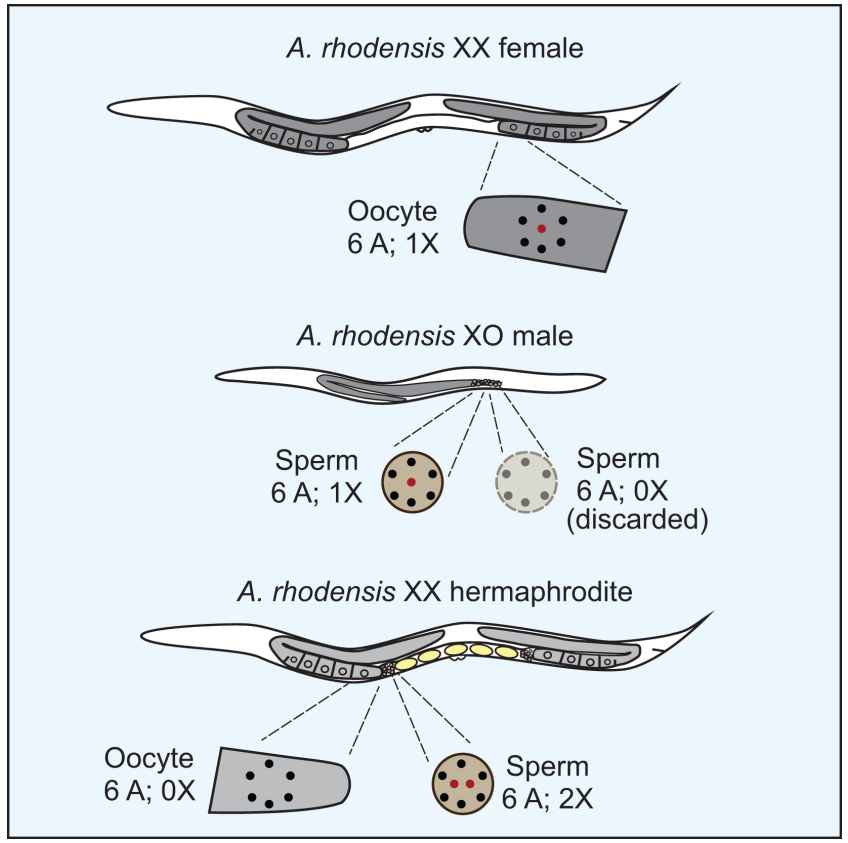
Graphical abstract by DALL-E

Sex- and Gamete-Specific Patterns of X Chromosome Segregation in a Trioecious Nematode

Sophie Tandonnet,[1] Maureen C. Farrell,[2] Georgios D. Koutsovoulos,[3,4] Mark L. Blaxter,[3] Manish Parihar,[1,5] Penny L. Sadler,[2] Diane C. Shakes,[2] and Andre Pires-daSilva[1,6,*]

Current Biology

Human



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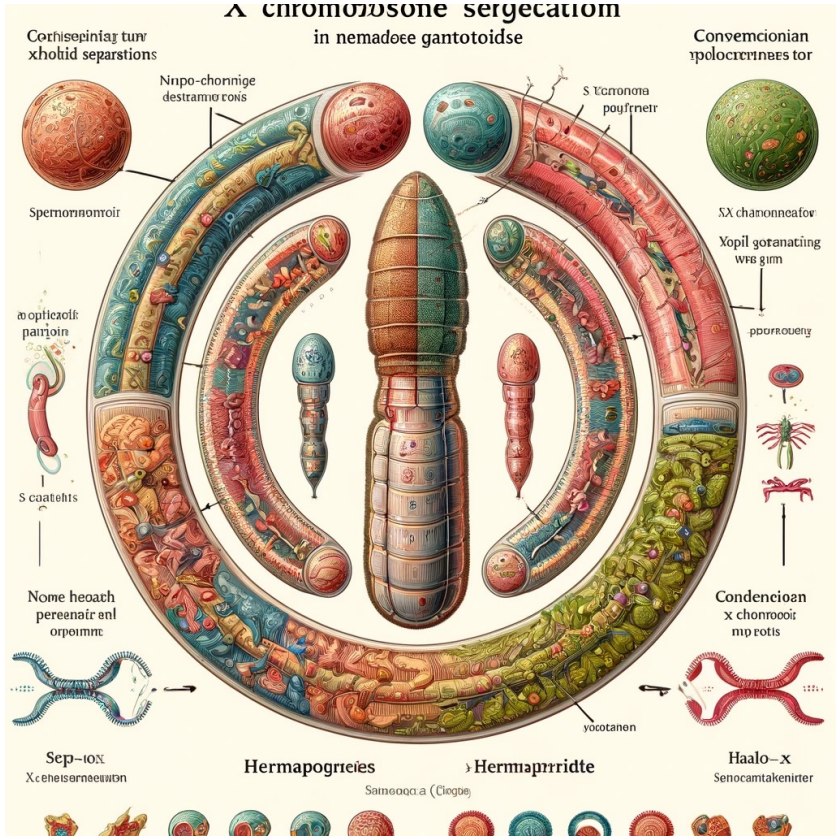
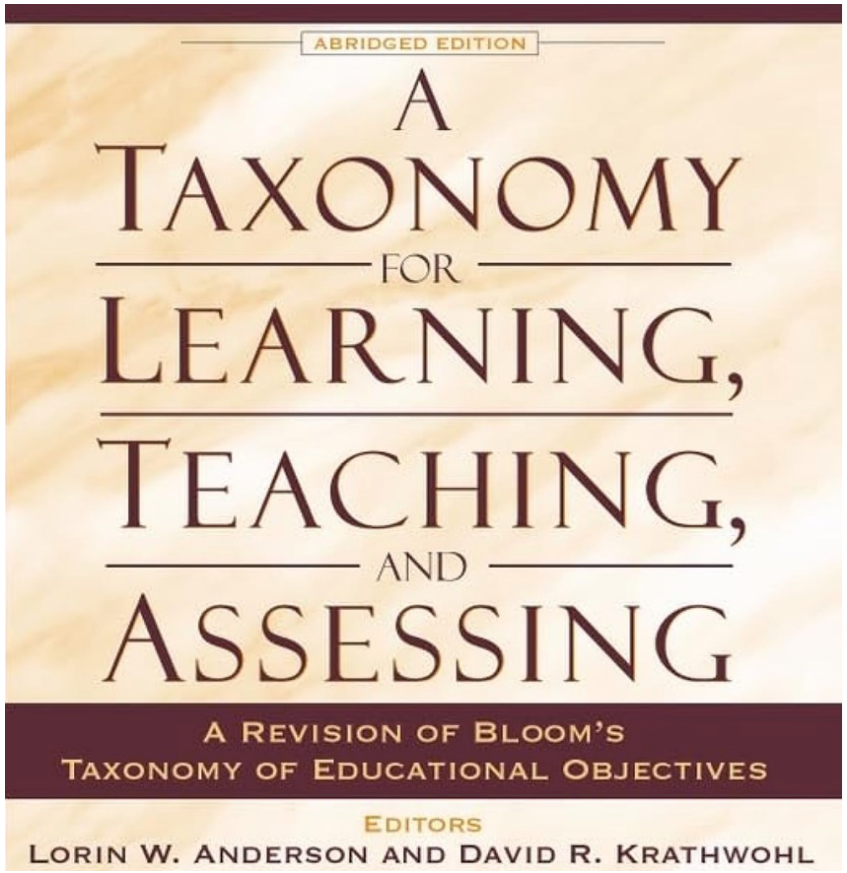
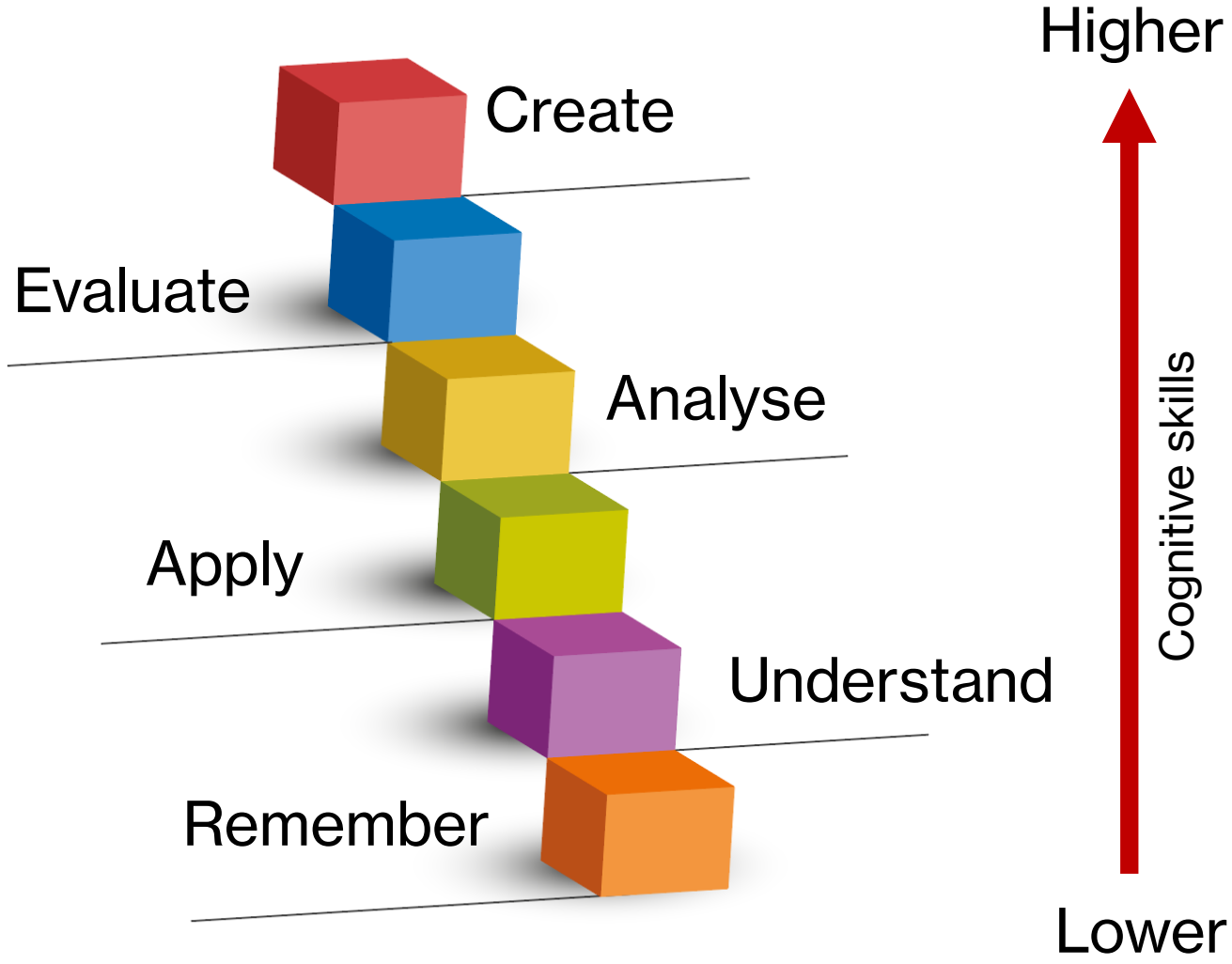


Confusing drawings

Incorrect spelling and anatomy

Bloom's taxonomy and limitations of AI





AI lacks nuanced understanding, contextual judgments, and genuine creativity

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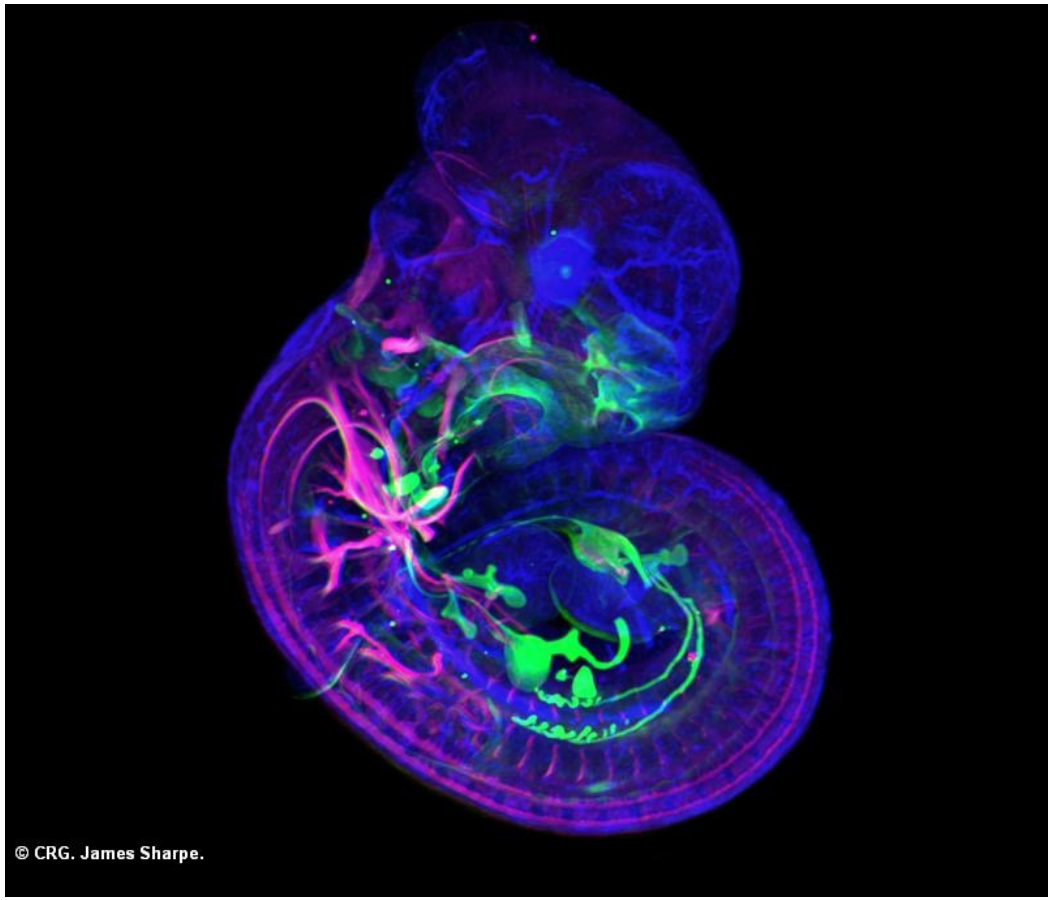
Principles of Development

Multiple choice questions

Short answer

Graphical abstract



Multiple-choice question: critical analysis

Instruction: The vulva fate of eight mosaic animals was determined. The cells in red are Ncl and thus do not have *lin-91*(+) activity. What can you conclude from the analysis of these animals? Marking incorrect answers will result in a penalty.

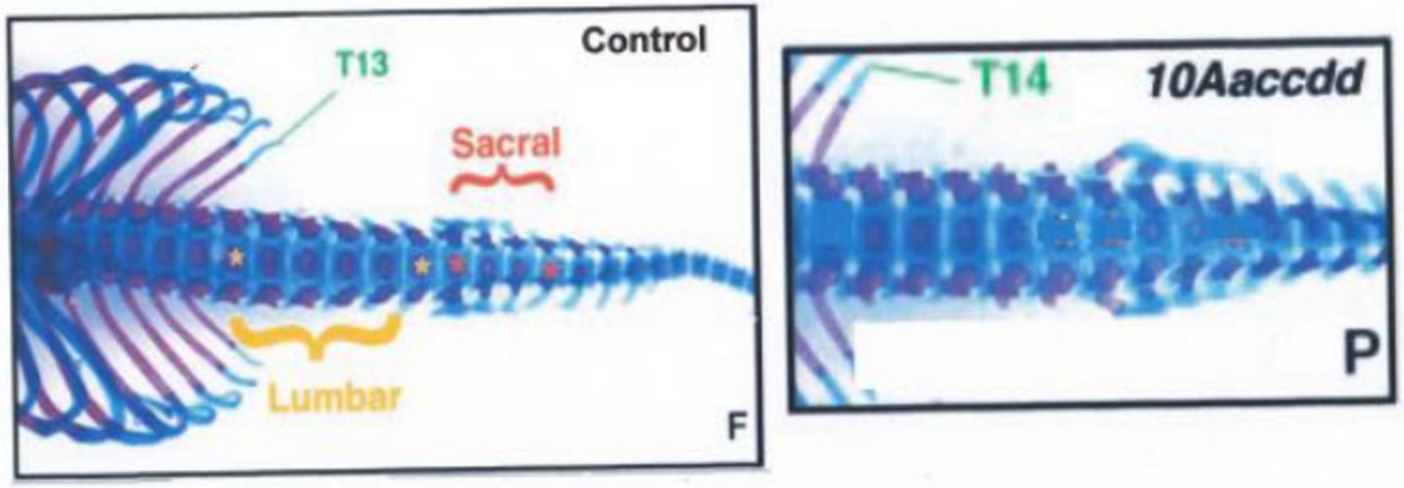
Table 2	P3.p	P4.p	P5.p	P6.p	P7.p	P8.p
Wild type	3°	3°	2°	1°	2°	3°
1	3°	3°	2°	1°	2°	3°
2	3°	3°	2°	2°	3°	3°
3	3°	2°	2°	1°	2°	3°
4	3°	3°	2°	3°	2°	3°
5	3°	3°	2°	3°	2°	3°
6	3°	3°	2°	1°	3°	3°
7	3°	2°	1°	1°	3°	3°
8	3°	3°	2°	3°	3°	3°

Short answer (< 150 words)

Based on the observed mutant phenotype, analyze and interpret it using the concepts discussed in class.

Wild type

Triple mutant



- Preferentially, use images from recent, paywalled papers (not used for AI training).
- Avoid images found with Google Images

Graphical abstract

- Instruction: Design a graphical abstract, with a legend of <100 words, that summarises the key conclusions
- Training: Show students examples and tools (e.g., bio RENDER, INKSCAPE). Optional: own drawings

Positional information and reaction-diffusion: two big ideas in developmental biology combine

Jeremy B. A. Green[1,*] and James Sharpe[2,3,*]

Development (2015) 142, 1203

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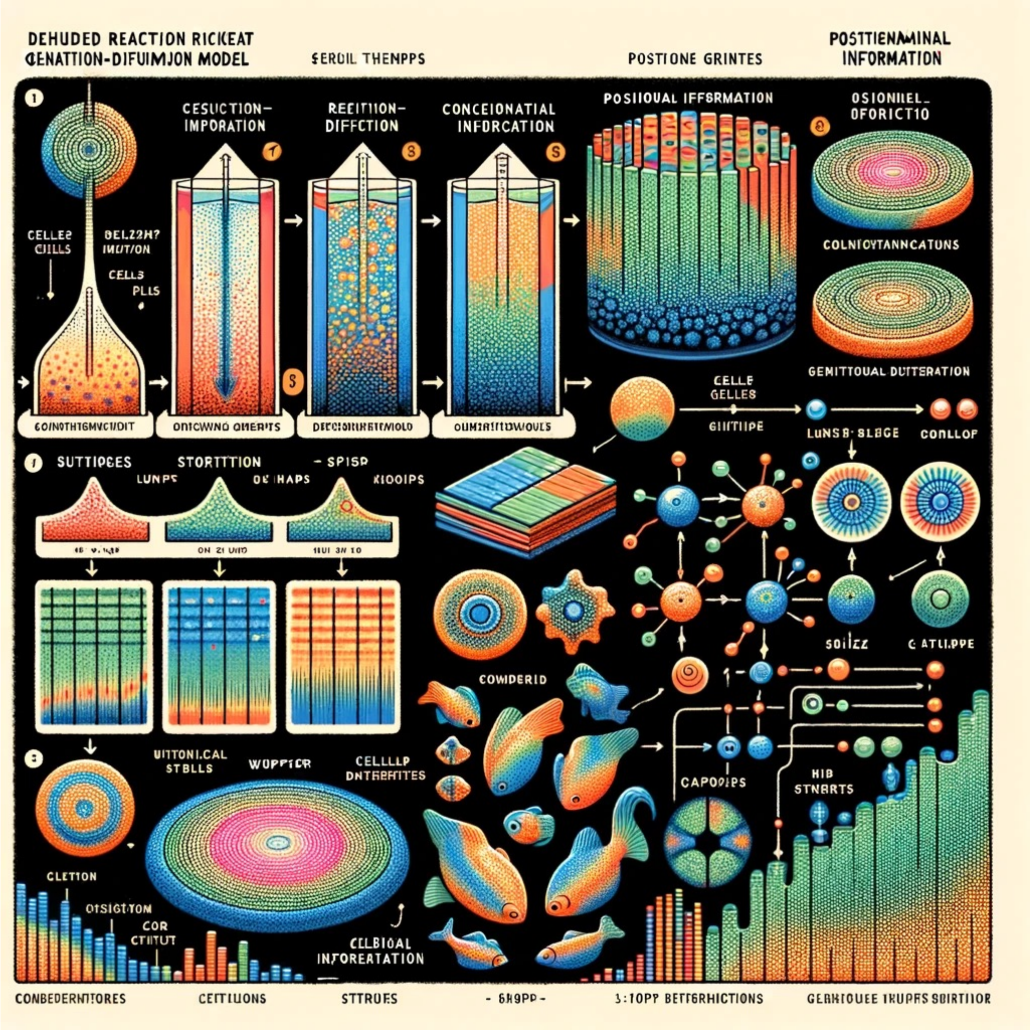
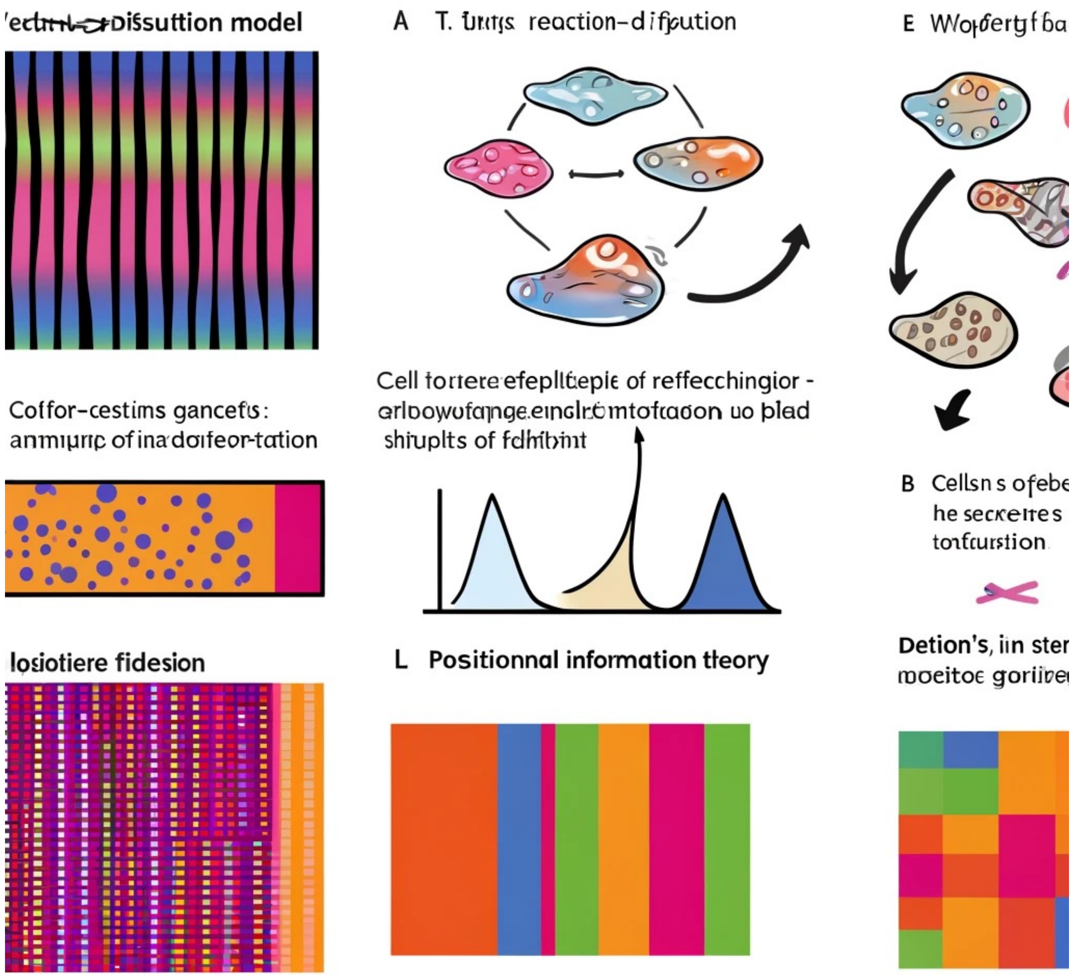
Graphical abstract made by DALL-E

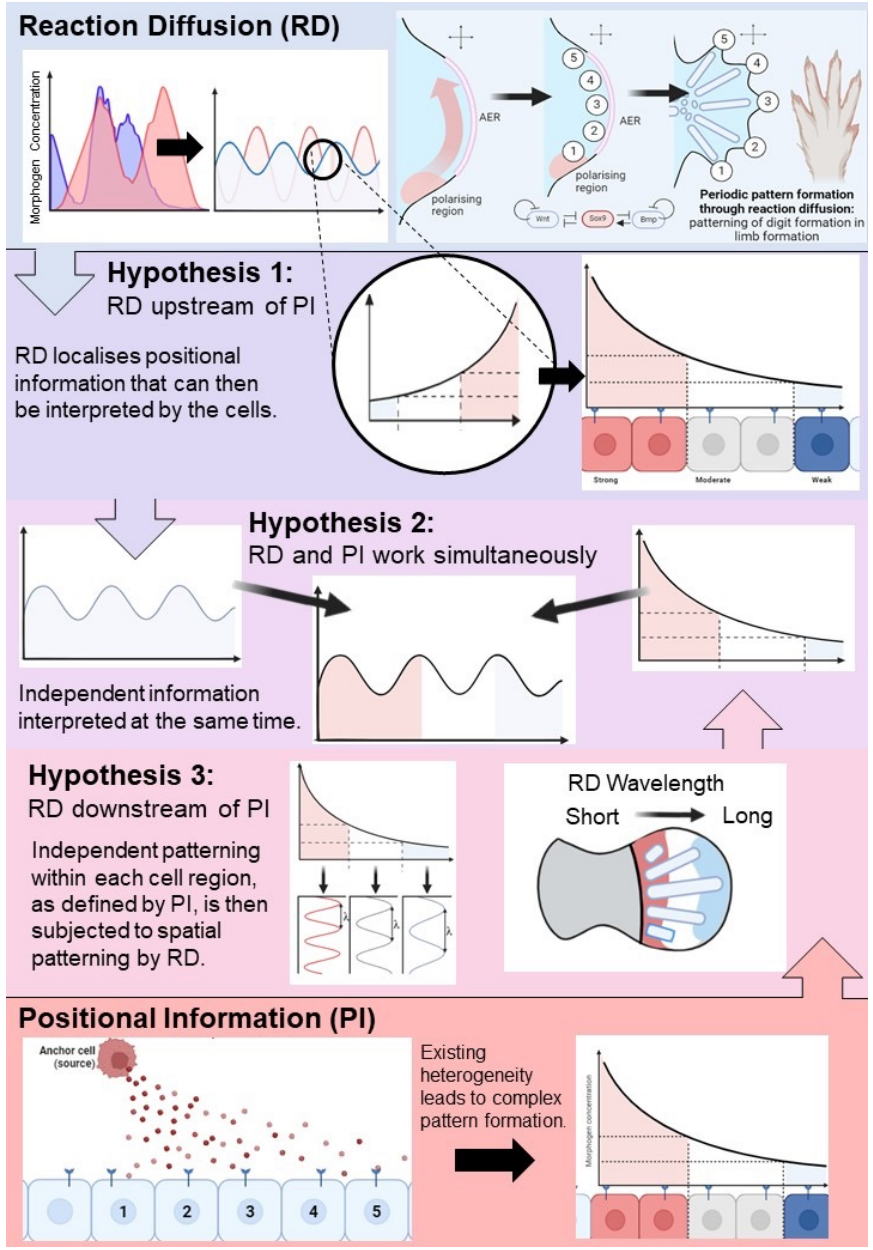
Default



Cell Press

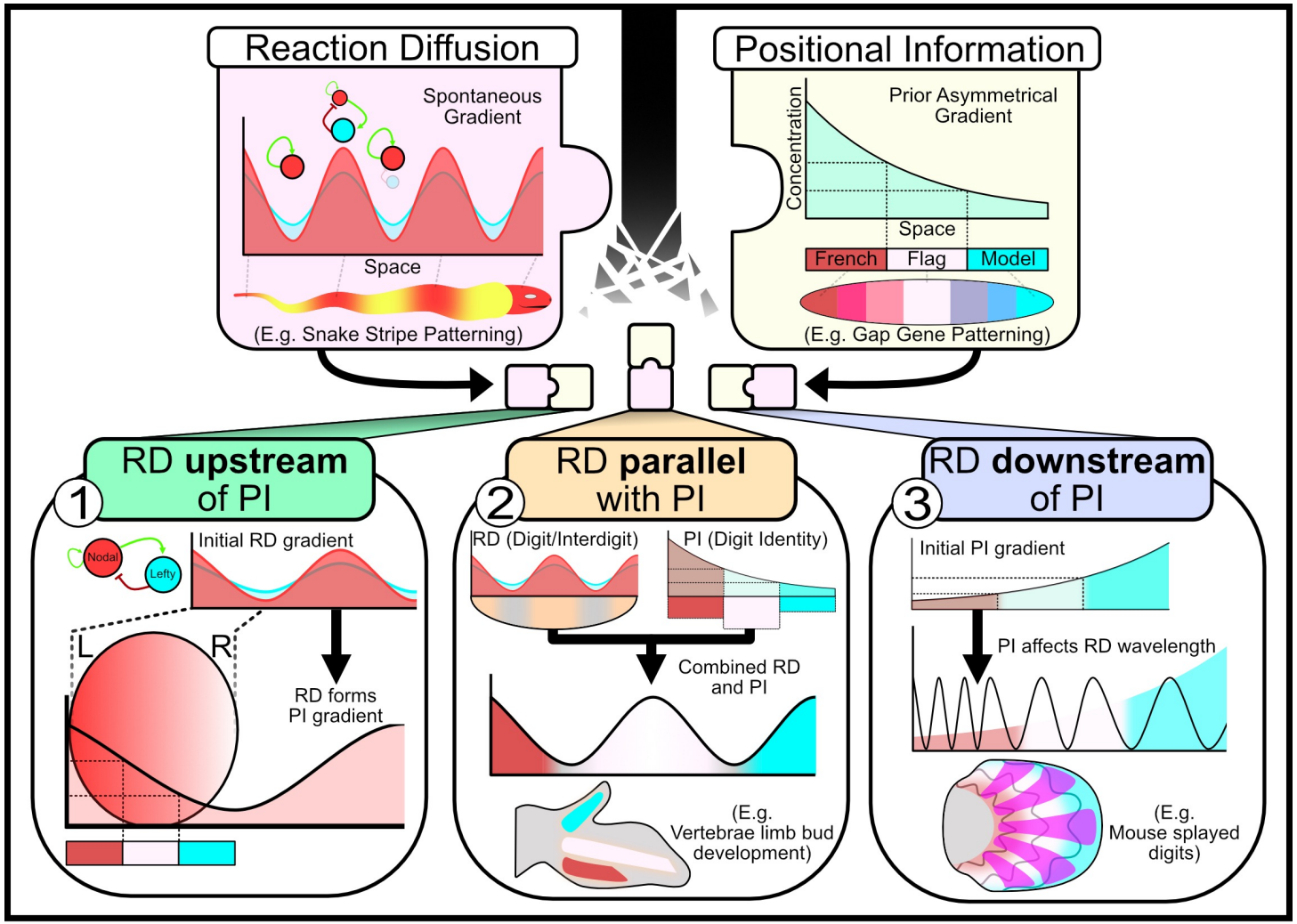


Graphical abstract (student 1)



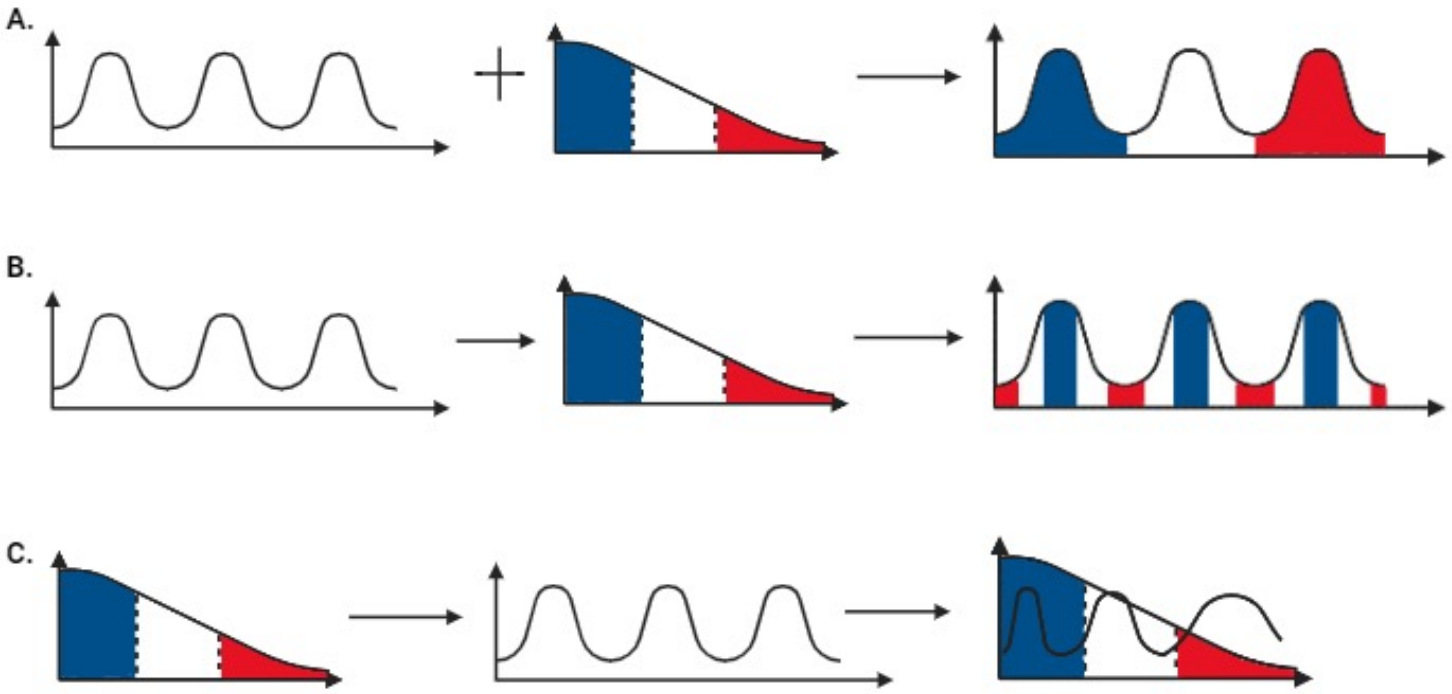
Feedback: Superb abstract. Brings together the two concepts in engaging and scientifically accurate manner.

Graphical abstract (student 2)



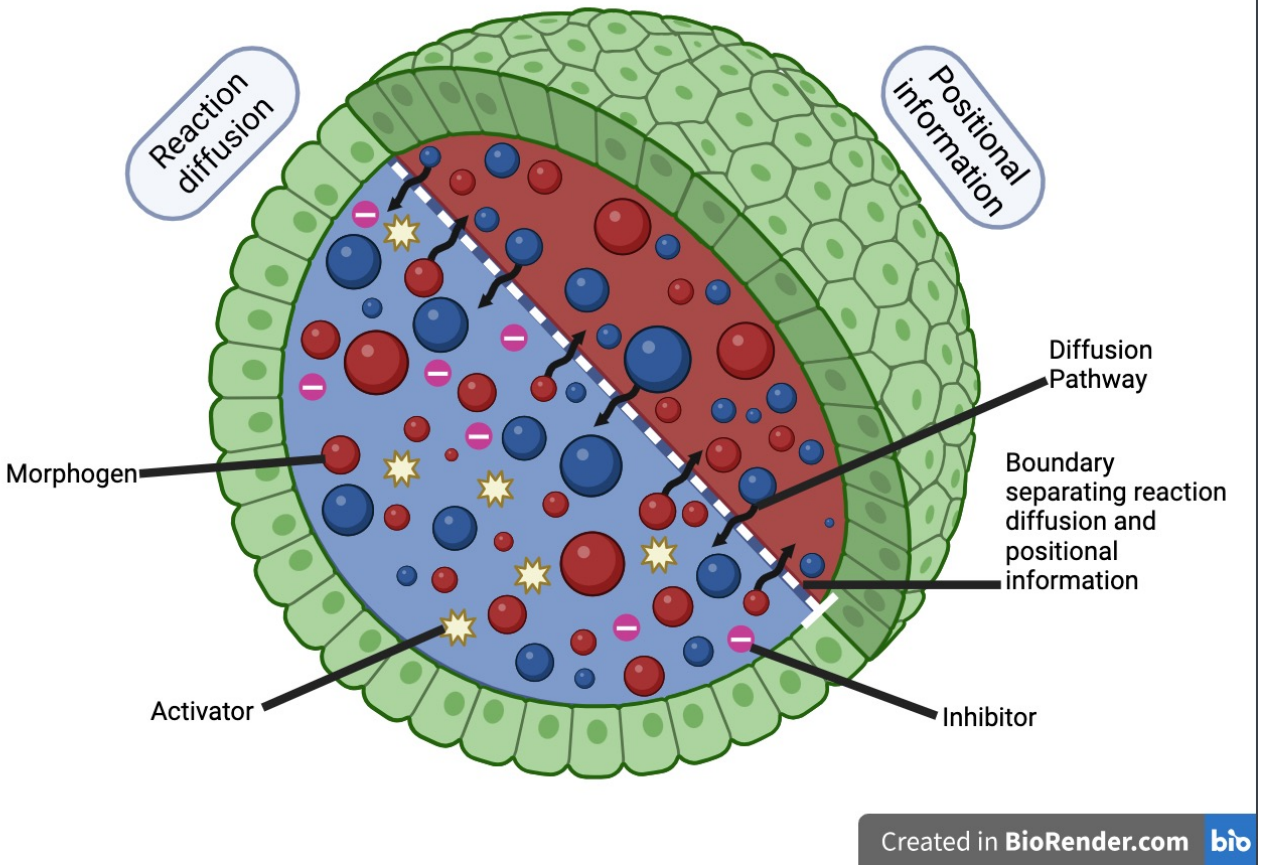
Feedback: Excellent. Clearly introduces the ideas and then combines in a concise manner. Very engaging style.

Graphical abstract (student 3)



Feedback: Needs clearer introduction of PI and RD concepts. The role of oscillations is unclear. Good to not use too many words, but the lack of any guiding words (except in legend of course) is limiting.

Graphical abstract (student 4)



No legend. Not clear how the image relates to the debate between the two mechanisms. It appears to imply a boundary in physical space, which is not the case. Concepts not explained. How parts interact also vague.

Diagram is visually good, but the science is very much lost

Reflections

Instructor's perspective:

Easy to mark

Easy to make new questions

Student's perspective:

Learn transferable skills

Critical skills

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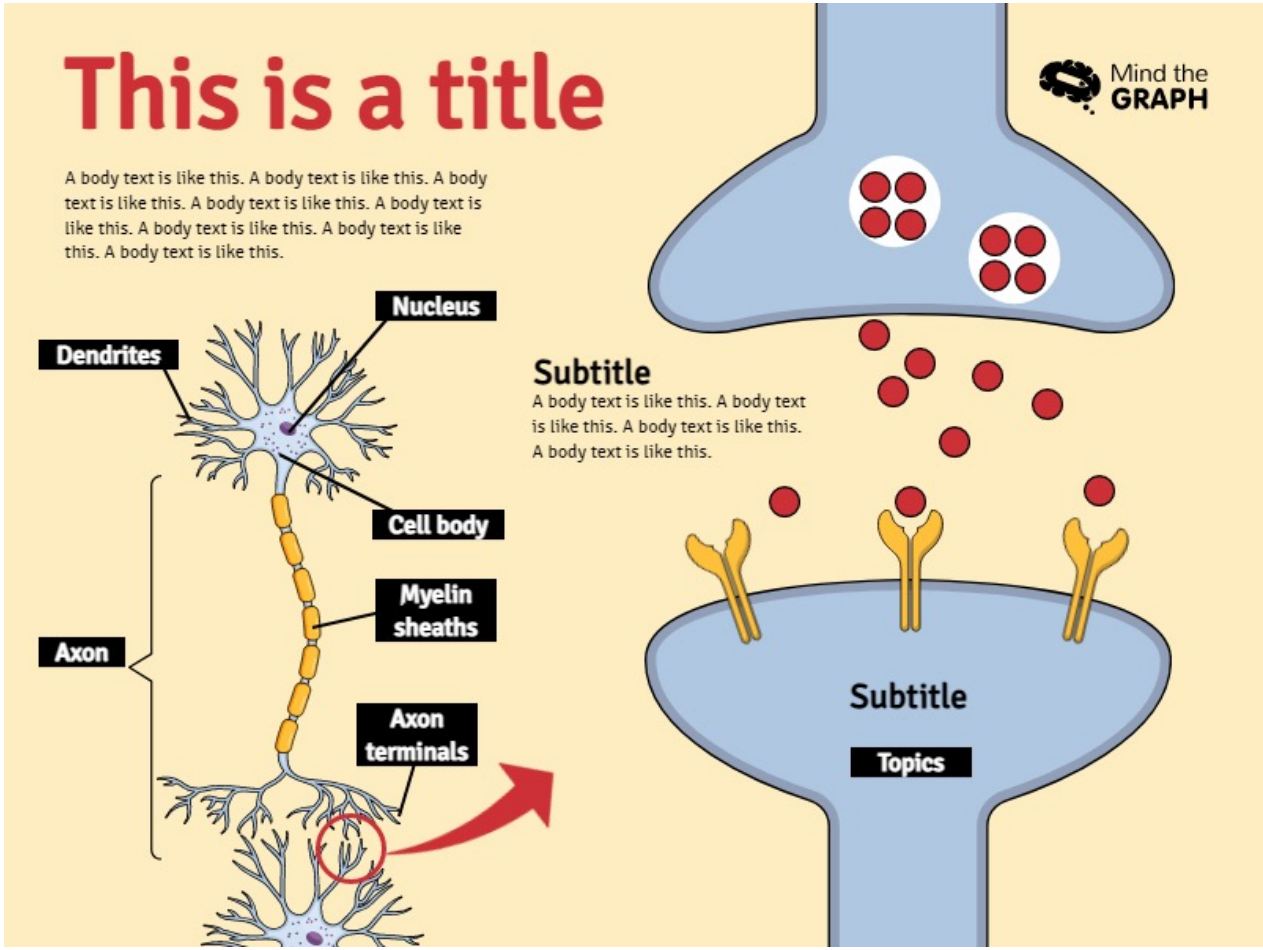

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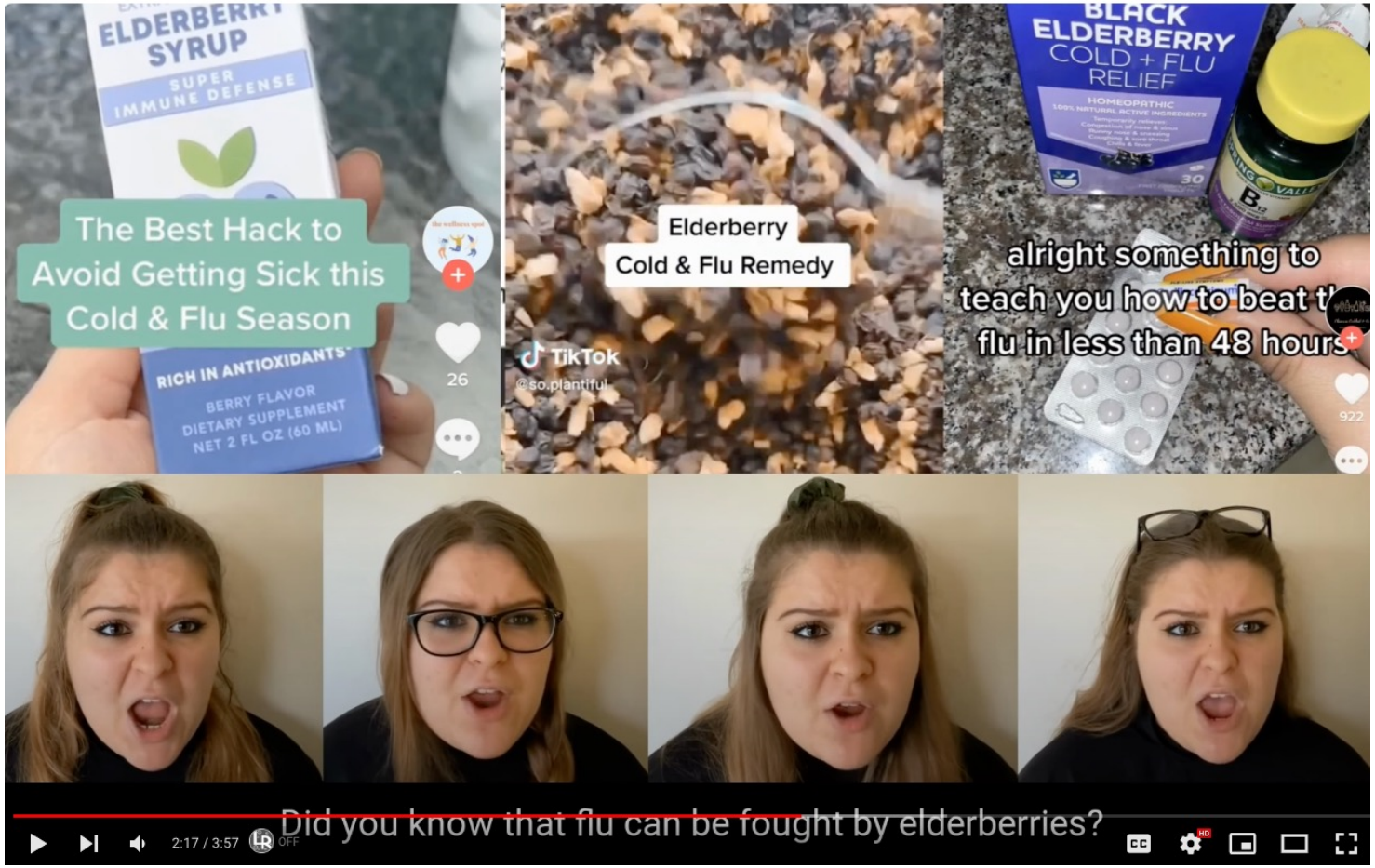
Future plans: short videos



https://shorturl.at/eikU0