#  Writing exercise S01: Evaluating Scientific Writing

## Dr. Morgan Feeney, AY 2024-25

### Exercise 1A.

Read each sample of scientific writing and ask yourself 3 questions:

1. Is it well-written?
2. Why (or why not?)
3. How can it be improved?

**Sample 1.1** 1

The RAG endonuclease initiates *Igh* V(D)J assembly in B cell progenitors by joining D segments to JH segments, before joining upstream VH segments to DJH intermediates[1](https://www.nature.com/articles/s41586-019-1547-y). In mouse progenitor B cells, the CTCF-binding element (CBE)-anchored chromatin loop domain[2](https://www.nature.com/articles/s41586-019-1547-y) at the 3′ end of *Igh* contains an internal subdomain that spans the 5′ CBE anchor (IGCR1)[3](https://www.nature.com/articles/s41586-019-1547-y), the DH segments, and a RAG-bound recombination centre (RC)[4](https://www.nature.com/articles/s41586-019-1547-y). The RC comprises the JH-proximal D segment (DQ52), four JH segments, and the intronic enhancer (iEμ)[5](https://www.nature.com/articles/s41586-019-1547-y).

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| Is it well-written? Yes  No  | Why/Why not?  |
| How can it be improved? |

**Sample 1.2.** 2

The nucleotide second messenger c-di-GMP nearly ubiquitously promotes bacterial biofilm formation, with enzymes that synthesize and degrade c-di-GMP being controlled by diverse N-terminal sensor domains. Here, we describe a novel class of widely occurring c-di-GMP phosphodiesterases (PDE) that feature a periplasmic "CSS domain" with two highly conserved cysteines that is flanked by two transmembrane regions (TM1 and TM2) and followed by a cytoplasmic EAL domain with PDE activity. Using PdeC, one of the five CSS domain PDEs of *Escherichia coli* K-12*,* we show that DsbA/DsbB-promoted disulfide bond formation in the CSS domain reduces PDE activity.

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| Is it well-written? Yes No   | Why/Why not?  |
| How can it be improved? |

**Sample 1.3.**3

Transition metals serve as an important class of micronutrients that are indispensable for bacterial physiology but are cytotoxic when they are in excess. Bacteria have developed exquisite homeostatic systems to control the uptake, storage, and efflux of each of biological metals and maintain a thermodynamically balanced metal quota. However, whether the pathways that control the homeostasis of different biological metals cross talk and render cross resistance or sensitivity in the host-pathogen interface remains largely unknown.

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| Is it well-written? Yes No   | Why/Why not?  |
| How can it be improved? |

### Discussion Questions

1. What are some of the characteristics or features of good writing? Of bad writing?
2. How can we evaluate our own writing to determine if it is good/bad? How can we improve our writing?

### Exercise 1B.

As you read papers for your literature search/introduction, **pay attention to the quality of the writing**.

Select one paragraph that you think is **particularly well-written,** and one paragraph that you think is **particularly poorly-written**, and submit these to Dr. Feeney via e-mail before our meeting next week.

### References

1. Zhang, Y., Zhang, X., Ba, Z., Liang, Z., Dring, E. W., Hu, H., Lou, J., Kyritsis, N., Zurita, J., Shamim, M. S., Presser Aiden, A., Lieberman Aiden, E., & Alt, F. W. (2019). The fundamental role of chromatin loop extrusion in physiological V(D)J recombination. *Nature*, *573*(7775), 600–604. <https://doi.org/10.1038/s41586-019-1547-y>
2. Herbst, S., Lorkowski, M., Sarenko, O., Nguyen, T. K. L., Jaenicke, T., & Hengge, R. (2018). Transmembrane redox control and proteolysis of PdeC, a novel type of c-di-GMP phosphodiesterase. *The EMBO journal*, *37*(8), e97825. <https://doi.org/10.15252/embj.201797825>
3. Xu, Z., Wang, P., Wang, H., Yu, Z. H., Au-Yeung, H. Y., Hirayama, T., Sun, H., & Yan, A. (2019). Zinc excess increases cellular demand for iron and decreases tolerance to copper in *Escherichia coli*. *The Journal of biological chemistry*, *294*(45), 16978–16991. <https://doi.org/10.1074/jbc.RA119.010023>