# Writing exercise 03: Definite, Specific, Concrete Language; Put Statements in Positive Form

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### Excerpts from Strunk & White: Elementary Principles of Composition [4th ed., pgs. 19-21]

### **16. Use definite, specific, concrete language.**

### Prefer the specific to the general, the definite to the vague, the concrete to the abstract.

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| A period of unfavorable weather set in.  | It rained every day for a week. |
| He showed satisfaction as he took possession of his well-earned reward. | He grinned as he pocketed the coin. |

**15. Put statements in positive form.**

Make definite assertions. Avoid tame, colorless, hesitating, non-committal language. Use the word *not* as a means of denial or in antithesis, never as a means of evasion.

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| He was not very often on time. | He usually came late. |
| He did not think that studying Latin was much use. | He thought the study of Latin useless. |

### Example from a published paper1:

Arg114 is the only CTD residue that makes contacts to both intercalated c-di-GMP dimers. Arg114 hydrogen bonds to the guanines contacted by Asp128, as well as the O6 atoms of the adjacent guanines of the other c-di-GMP dimer (Figures 5A and 5B).

Strikingly, the *bldD* null mutant formed small colonies lacking aerial hyphae, but—when examined by SEM—even young colonies of the *bldD* mutant were found to contain spore chains embedded in an excess of extracellular matrix

* The first sentence is extremely specific – and therefore effective – we know what the authors mean, down to the molecule/atom level!
* In the second example, “formed small colonies” and “found to contain spore chains” is a positive statement – much stronger than “didn’t form large colonies” or “didn’t fail to sporulate”.

### Exercise 3A.

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

1. Is the language definite, specific, and concrete, or is it general, vague, and abstract?
2. Are the sentences in positive form?
3. If needed, how can it be improved? (Make specific suggestions)

**Sample 3.1** 2

ESKAPE pathogens, a class of bacteria, are multidrug-resistant and present a significant hazard to human health. *Enterococcus faecalis, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa*, and *Enterobacter* species comprise the acronym ESKAPE. The aforementioned bacteria have been linked to the most severe potential for antibiotic resistance to affect clinical and economic systems [[1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10876617/),[2](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10876617/)]. ESKAPE pathogens are included on the list of antibiotic-resistant “priority pathogens” published by the World Health Organization [[3](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10876617/)]. High mortality rates and severe infections are directly attributable to the fact that the majority of these microorganisms are capable of surviving in the hospital environment via biofilm formation or the capacity to withstand stress conditions (e.g., the presence of disinfectants).

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| Definite, specific, concrete language?Yes  No  | Positive form?Yes  No  |
| If needed, how can it be improved? |

**Sample 3.2.** 3

In *E. coli*, OxyR consists of an N-terminal helix-turn-helix DNA-binding domain and a C-terminal regulatory domain [[9](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub)]. Intracellular H2O2 activates the OxyR protein through oxidation of two conserved cysteine (Cys) residues (Cys199, Cys208) to form an intramolecular disulfide bond. Conformation of oxidized OxyR differs from that of reduced OxyR. Only oxidized OxyR activates transcription of target genes [[6](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub),[10](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub)]. A series of *in vivo* and *in vitro* studies have shown that OxyR in *E. coli* functions as a global regulator that controls expression of at least 38 genes [[2](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub),[11](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub)]. OxyR activates expression of antioxidant genes such as *ahpCF* (alkyl hydroperoxide reductase) and *katG* (catalase) and iron metabolism-related genes such as *dps* (DNA-binding protein from starved cells) and *fur* (ferric uptake regulator) [[[12]](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub), [[13]](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub), [[14]](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub)]. OxyR is capable of repressing its own expression and that of other genes, including *uxuA* (mannonate hydrolase) and *fhuF* (ferric iron reductase) [[8](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub),[15](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub),[16](https://www.sciencedirect.com/science/article/pii/S0891584920312892?via%3Dihub)].

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| Definite, specific, concrete language?Yes  No  | Positive form?Yes  No  |
| If needed, how can it be improved? |

**Sample 3.3.** 4

In *E. coli*, CyuR, also known as YbaO or DecR, was reported to be an important regulator for the generation of hydrogen sulfide from Cys in anaerobic conditions[8](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR8),[9](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR9). Its physical interaction with the *cyuPA* operon consisting of *cyuA*, previously referred as *yhaN* or *yhaM*, and *cyuP* (b3110, also referred as *dlsT* or *yhaO*) was reported by two independent studies that utilized systematic evolution of ligands by exponential enrichment[8](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR8) (SELEX) and chromatin immunoprecipitation exonuclease (ChIP-exo) sequencing[10](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR10), respectively. *E. coli* has at least six enzymes (CyuA, CysM, CysK, MetC, DcyD, TnaA) that have Cys desulfhydrase activity to generate H2S from the decomposition of Cys to pyruvate and ammonium[9](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR9),[11](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR11). Among them, CyuA is suggested to be a major enzyme for H2S production in anaerobic conditions in *E. coli*[8](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR8),[9](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR9),[12](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR12). On the other hand, *cyuP* was shown to encode an importer for Cys or serine[9](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR9),[12](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR12). In *Yersinia ruckeri* the homologs of *cyuP and cyuA* are encoded in one operon - *cdsAB* - and involved in Cys uptake; additionally, the operon was shown to be critical for full virulence of *Y. ruckeri* in fish[13](https://pmc.ncbi.nlm.nih.gov/articles/PMC11408624/#CR13). However, despite the importance of CyuR, much of its detailed regulatory information (e.g., its binding motif) and effects of Cys are not well characterized and thus remain unknown.

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| Definite, specific, concrete language?Yes  No  | Positive form?Yes  No  |
| If needed, how can it be improved? |

### Group discussion

1. How can you know how much detail/specificity a reader needs?
2. How can we make sure our own writing is not general, vague, and abstract?

### Exercise 3B.

Analyse your own writing.

1. Read anything you have written recently (part of your thesis introduction or any other piece of your writing (e.g., an e-mail you have recently written, some class notes…)
2. Evaluate whether the language is definite, specific, and concrete? Can it be improved?
3. Make edits as needed.
4. Repeat steps 2-3 as needed.

### References

1. Tschowri N, Schumacher MA, Schlimpert S, et al. Tetrameric c-di-GMP mediates effective transcription factor dimerization to control *Streptomyces* development. Cell. 2014;158(5):1136-1147.
2. Kalaba MH, El-Sherbiny GM, Darwesh OM, Moghannem SA. A statistical approach to enhance the productivity of *Streptomyces baarensis* MH-133 for bioactive compounds. Synth Syst Biotechnol. 2024;9(2):196-208
3. Niu W, Zhang Y, Liu J, et al. OxyR controls magnetosome formation by regulating magnetosome island (MAI) genes, iron metabolism, and redox state. Free Radic Biol Med. 2020;161:272-282. doi:10.1016/j.freeradbiomed.2020.10.015
4. Rodionova IA, Lim HG, Gao Y, Rodionov DA, Hutchison Y, Szubin R, Dalldorf C, Monk J, Palsson BO. CyuR is a dual regulator for L-cysteine dependent antimicrobial resistance in Escherichia coli. Commun Biol. 2024 Sep 17;7(1):1160. doi: 10.1038/s42003-024-06831-0. PMID: 39289465; PMCID: PMC11408624.