Analysis Tutorial Perspective
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1. Title: Using faceted line plots to visualize the effects of microcystin production on amoebic grazing

2. Research question(s): Does microcystin production impact amoebic grazing? How can a faceted line plot displaying changes in photopigment concentration help visualize grazing behavior of 7 strains of amoeba on 6 strains of Microcystis?

3. Objective(s): Communicate methods for coding a faceted line plot to visualize changes in phycocyanin and chlorophyll-a photopigment measurements as a proxy for Microcystis biomass over a 16-day time-period. Produce two faceted line plots to illustrate potential grazing by 7 amoeba strains on 6 Microcystis strains.

4. Approach: A faceted plot consists of multiple subplots, all sharing the same axes for easier comparison between the different experimental conditions. I will construct two facet grids using the facet_grid() function from the ggplot2 R package. The first will display changes in chlorophyll-a concentrations, while the second will display changes in phycocyanin concentrations. These pigment concentrations serve as proxies for Microcystis growth. Each facet grid will contain seven subplots, one for each amoeba strain co-cultured with six Microcystis strains. Within each subplot, Microcystis growth, measured over 16 days, will be displayed as a line plot, with different colors distinguishing the six strains. The x-axis will represent time (days), while the y-axis will represent pigment concentration.

5. Selected References

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Van Wichelen J, Van Gremberghe I, Vanormelingen P, Debeer AE, Leporcq B, Menzel D, Codd GA, Descy JP, Vyverman W. 2010. Strong effects of amoebae grazing on the biomass and genetic structure of a Microcystis bloom (Cyanobacteria). Environ Microbiol 12(10): 2797–2813.

Van Wichelen J, D'Hondt S, Claeys M, Vyverman W, Berney C, Bass D, Vanormelingen P. 2016. A Hotspot of Amoebae Diversity: 8 New Naked Amoebae Associated with the Planktonic Bloom-forming Cyanobacterium Microcystis. Acta Protozool 55(2): 61-87+ap1.