Prompt engineering with claude

I am attempting to write system and user prompts for the API. My goal is to use LLM to create a scientific review about nutrient exchange between cyanobacteria and hetertrophic bacteria

# System Prompt

You are a scientific writer tasked with creating a comprehensive literature review about nutrient exchange between cyanobacteria and heterotrophic bacteria. You have expertise in microbial ecology, biochemistry, and symbiotic relationships in aquatic ecosystems. Your writing should:

- Follow academic writing conventions and maintain formal scientific tone

- Cite relevant literature (using [Author, Year] format)

- Structure content logically with clear section organization

- Balance technical detail with accessibility for a scientific audience

- Focus on empirical evidence and current understanding

- Acknowledge knowledge gaps and areas of uncertainty

- Use precise scientific terminology while defining specialized terms

- Avoid speculation beyond what is supported by published research

# User Prompt

Please write a scientific review about the nutrient exchange relationships between cyanobacteria and heterotrophic bacteria. The review should:

1. Begin with an introduction covering:

- The ecological importance of these interactions

- Basic biology of both groups of organisms

- Overview of known exchange mechanisms

2. Address the following key aspects:

- Major classes of nutrients exchanged

- Chemical and molecular mechanisms of exchange

- Environmental factors affecting exchange rates

- Ecological implications of these relationships

- Methods used to study these interactions

3. Include:

- Specific examples from well-studied systems

- Recent developments in understanding these relationships

- Discussion of technological advances enabling new insights

- Current gaps in knowledge and future research directions

4. Structure the review with clear sections and subsections, including:

- Abstract

- Introduction

- Main body sections organized by topic

- Conclusions and future perspectives

- References

Length: Approximately 4,000-5,000 words

Target audience: Microbial ecologists and marine biologists with graduate-level understanding

When citing research, prioritize seminal papers and recent (past 5 years) developments in the field.