# Article information:

Evolution of increased complexity and specificity at the dawn of form I Rubiscos | Science
<https://www.science.org/doi/10.1126/science.abq1416>

# Article summary:

1. Schulz et al. investigated how the small subunit of form 1 Rubisco contributes to its evolution and increased specificity for carbon dioxide.

2. Enzyme activity assays and macromolecular structures revealed that the small subunit quickly became essential, leading to broader functional changes in the large subunit, including increased activity and specificity for CO2.

3. Ancestral sequence reconstruction was used to trace the evolution of form 1 Rubiscos, which showed that they increased their specificity for CO2 over O2 even before oxygen was abundant in the atmosphere.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article “Evolution of increased complexity and specificity at the dawn of form 1 Rubiscos” by Schulz et al is a well-researched piece that provides an interesting insight into the evolution of Rubisco, a key enzyme involved in photosynthesis. The authors use ancestral sequence reconstruction to investigate how recruiting a small subunit contributed to Rubisco’s evolution and its specificity for carbon dioxide (CO2). The article is written in an accessible manner with clear explanations of technical terms, making it easy to understand even for readers without a scientific background.

The authors provide evidence from enzyme activity assays and macromolecular structures that suggest that the small subunit quickly became essential for Rubisco’s function, leading to broader functional changes within the large subunit such as increased activity and specificity for CO2. They also use ancestral sequence reconstruction to trace back the evolution of form 1 Rubiscos, showing that they increased their specificity for CO2 over O2 even before oxygen was abundant in the atmosphere.

The article is generally reliable and trustworthy; however, there are some potential biases worth noting. For example, while Schulz et al provide evidence from enzyme activity assays and macromolecular structures suggesting that the small subunit quickly became essential for Rubisco’s function, they do not explore any possible counterarguments or alternative explanations for this phenomenon. Additionally, while they discuss how form 1 Rubiscos evolved before oxygen was abundant in the atmosphere, they do not consider any other environmental factors or conditions that may have influenced this process.

In conclusion, “Evolution of increased complexity and specificity at the dawn of form 1 Rubiscos” by Schulz et al is a well-researched article providing an interesting insight into the evolution of Rubisco; however, there are some potential

# Topics for further research:

* Rubisco evolution environmental factors
* Rubisco specificity oxygen abundance
* Rubisco small subunit function
* Rubisco large subunit activity
* Rubisco ancestral sequence reconstruction
* Rubisco enzyme activity assays

# Report location:

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