What controls microbial enzyme activity in wetlands?

Colin R. Jackson

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Everything

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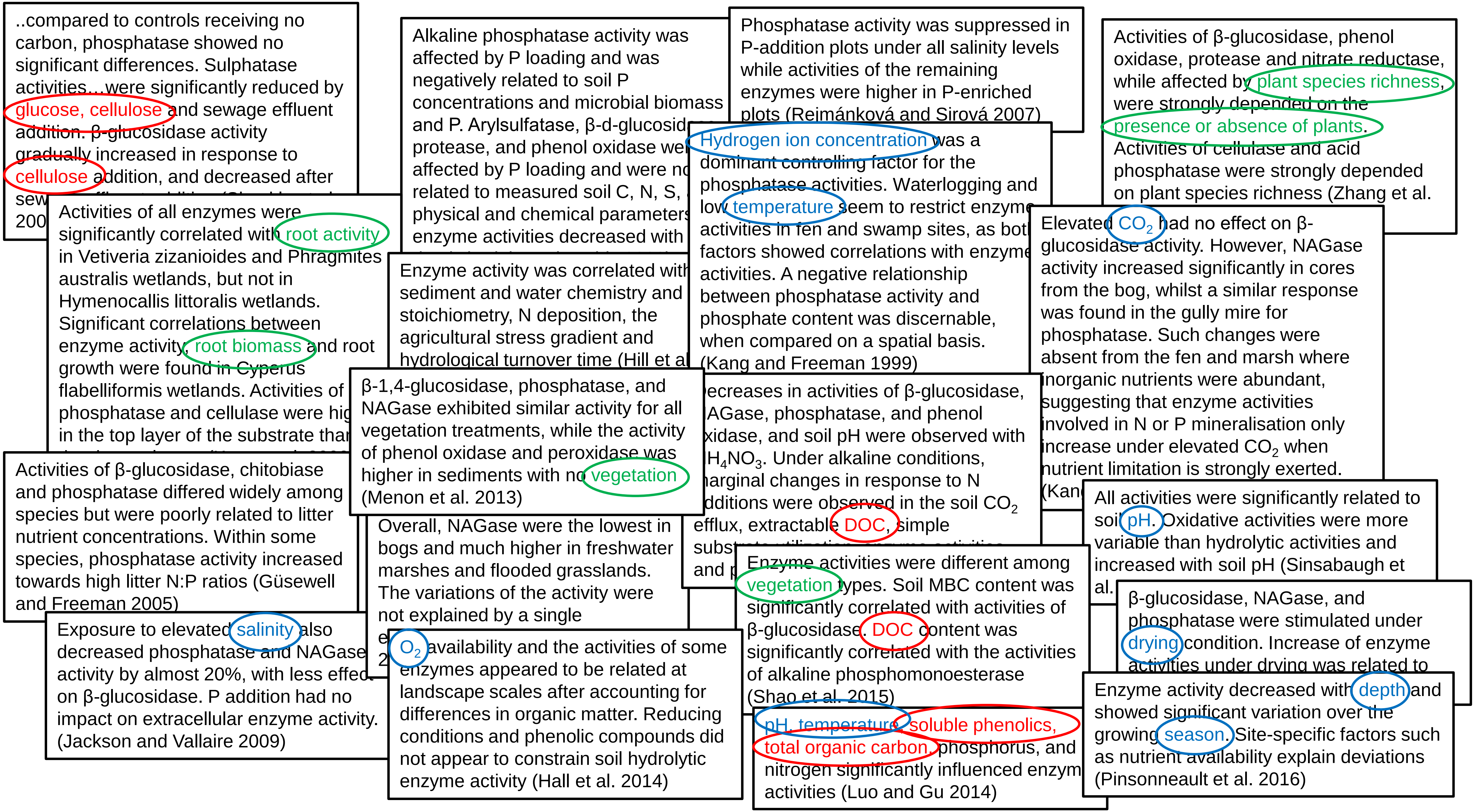
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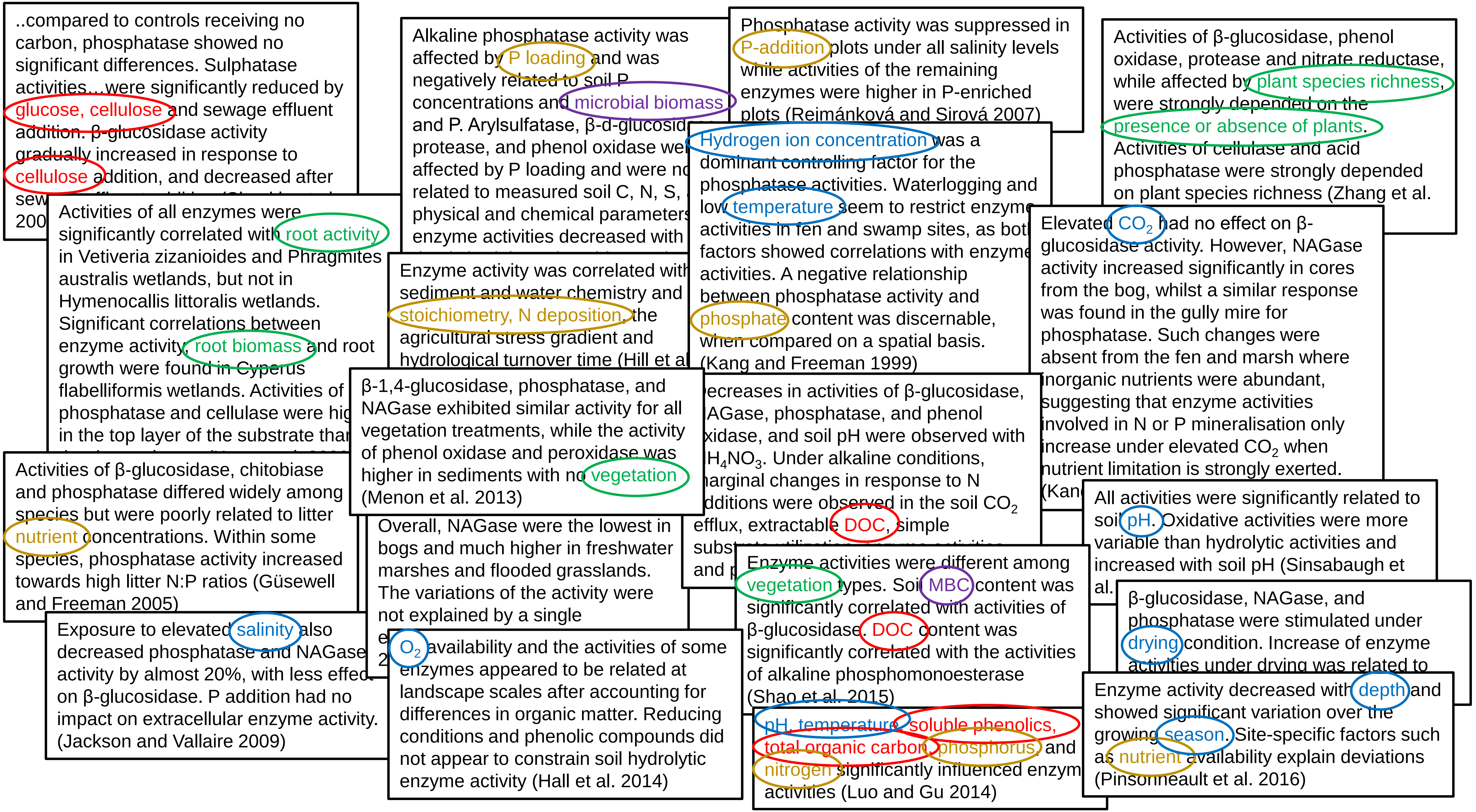
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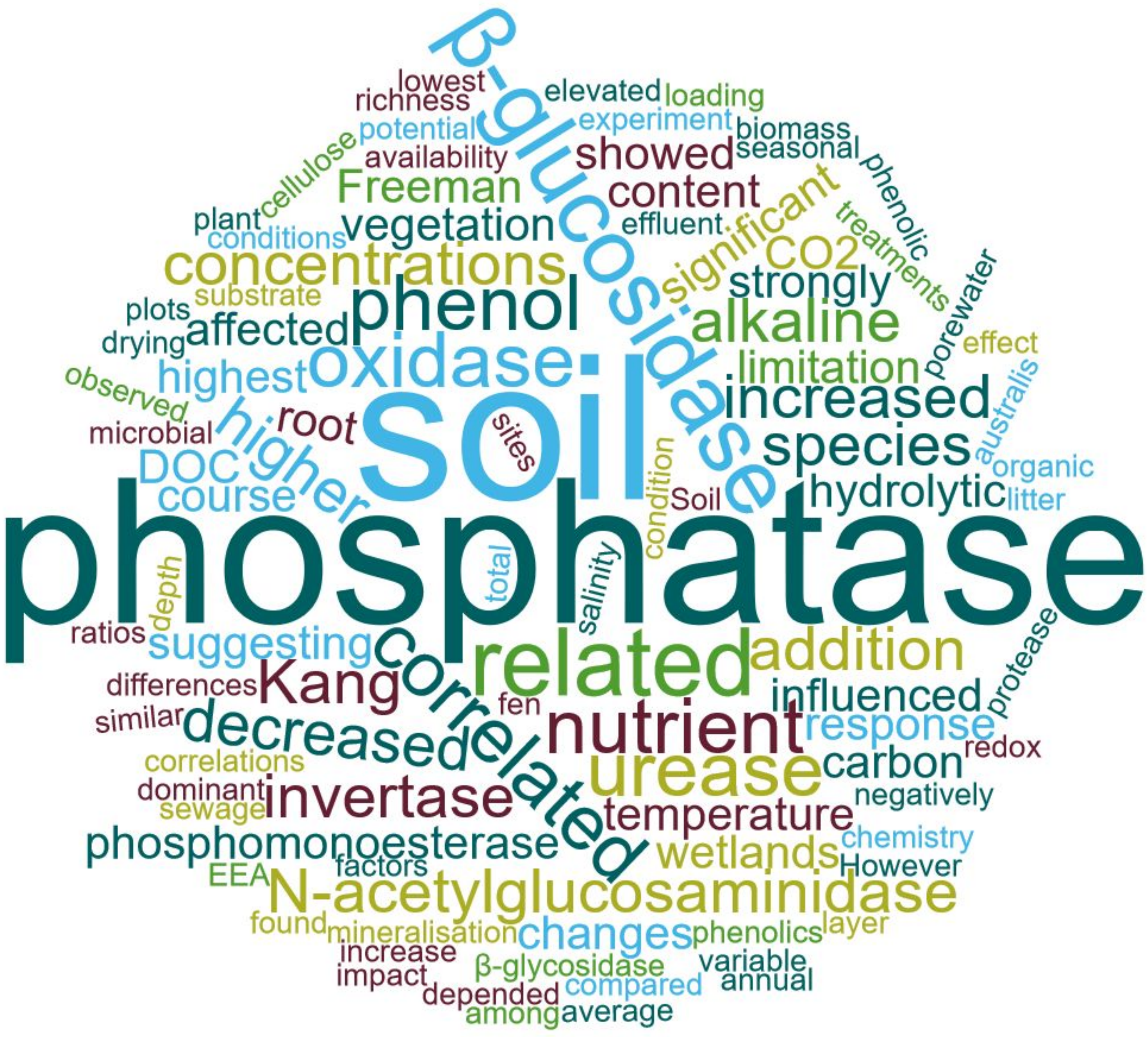
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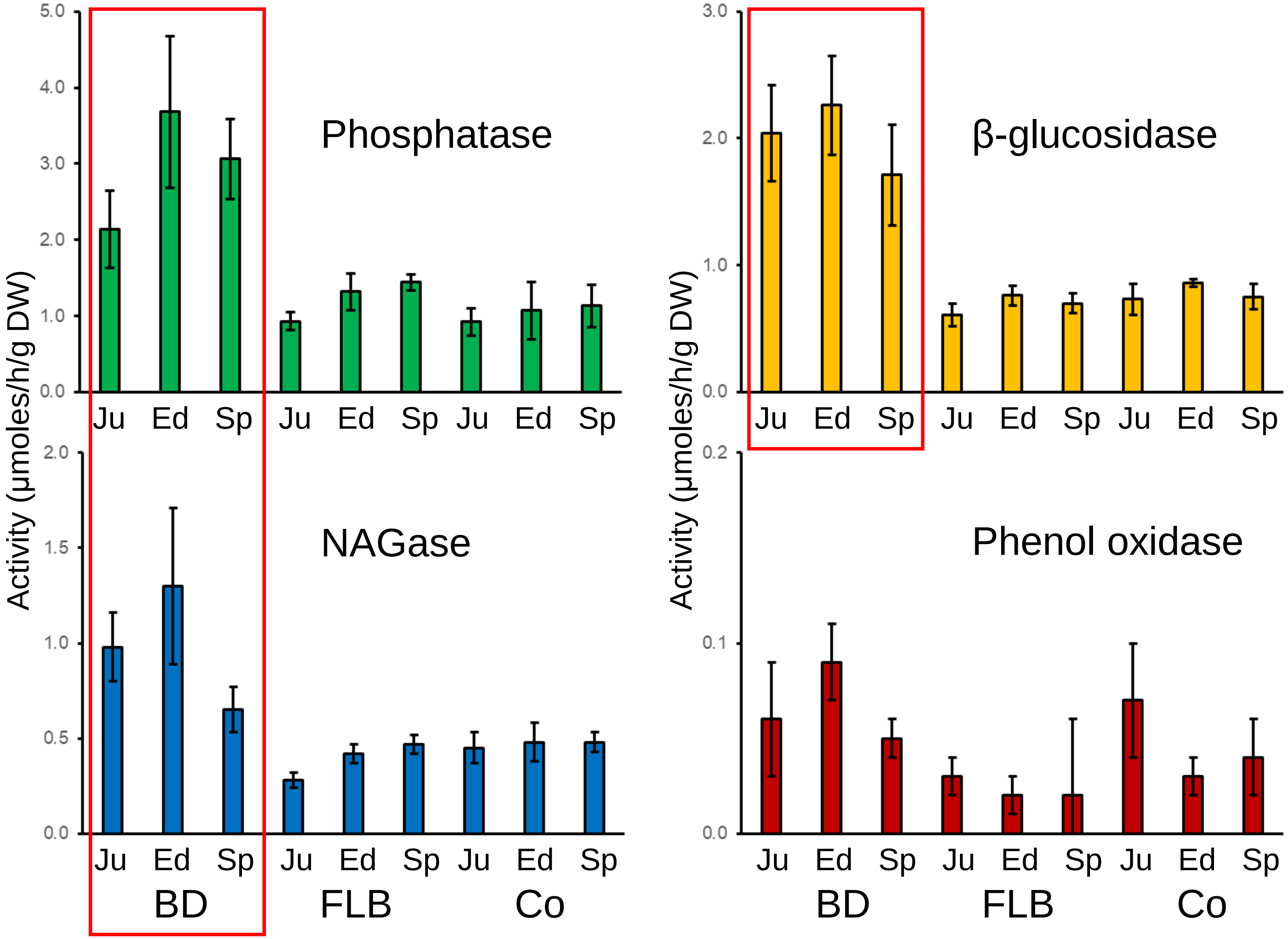
Site-specific factors

Does wetland vegetation type control microbial enzyme activity in Gulf Coast wetlands?

Rietl et al. 2016. Microbial community composition and extracellular enzyme activity associated with Juncus roemerianus and Spartina alterniflora vegetated sediments in Louisiana saltmarshes. Microbial Ecology 71:290-303.

Enzyme activity was influenced by site more than vegetation type



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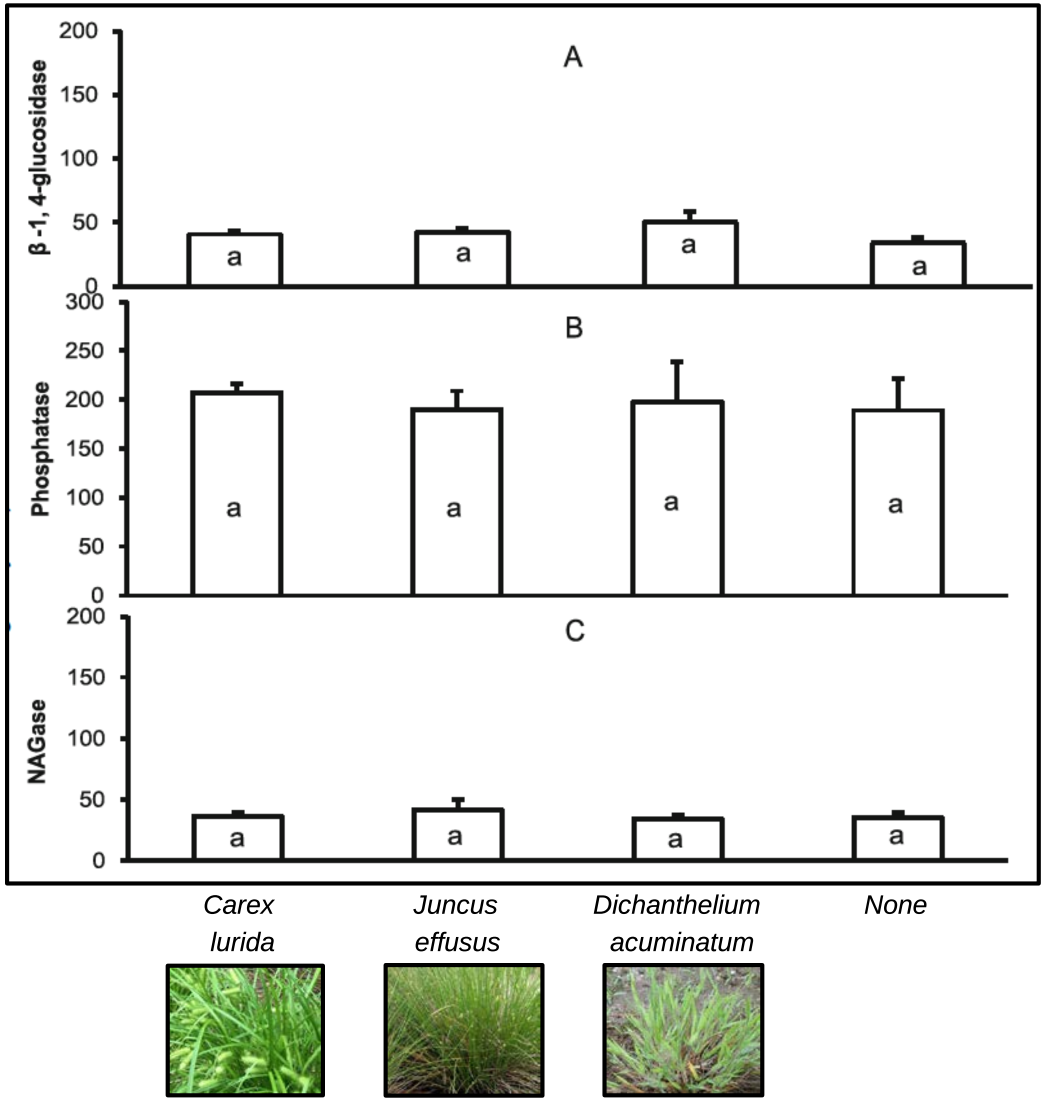
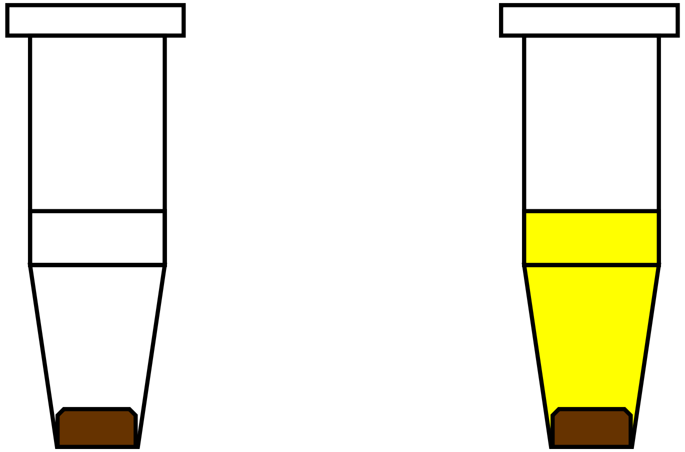


Menon et al. 2013. The influence of vegetation on microbial enzyme activity and bacterial community structure in freshwater constructed wetland sediments. Wetlands 33:365-378.

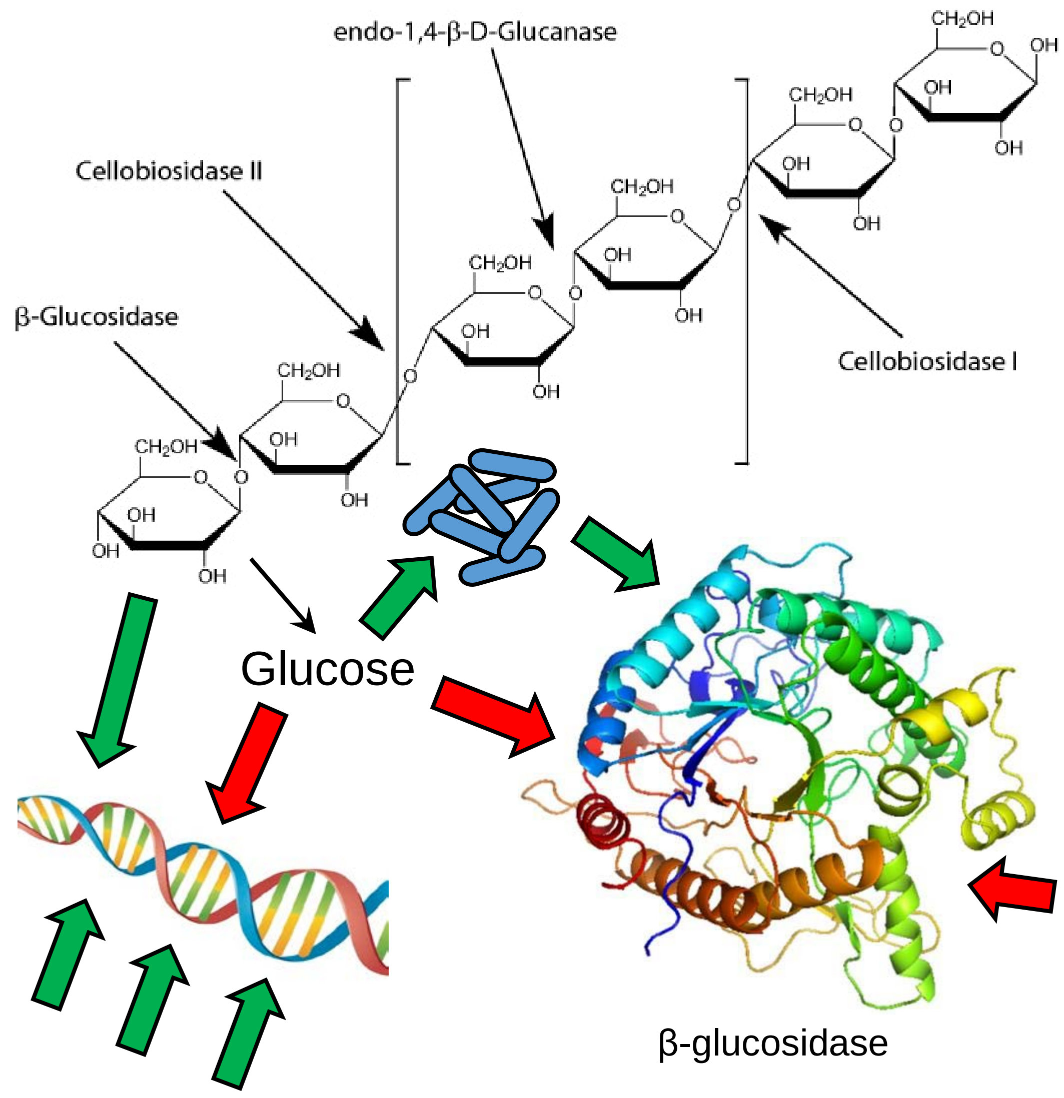
Why is it so hard to determine what controls enzyme activity in wetlands?

Carbon?
Vegetation?
Abiotic factors?
Nutrients?
Microorganisms?
Site-specific?

Analysis of enzymes in wetlands focuses at an ecological level



How does carbon affect β-glucosidase activity?



Glucose — Inhibition ↓

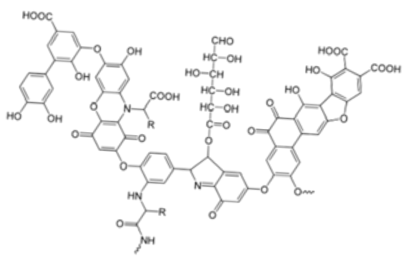
Repression ↓

Enzyme concentration ↑

Cellulose/cellobiose — Induction ↑

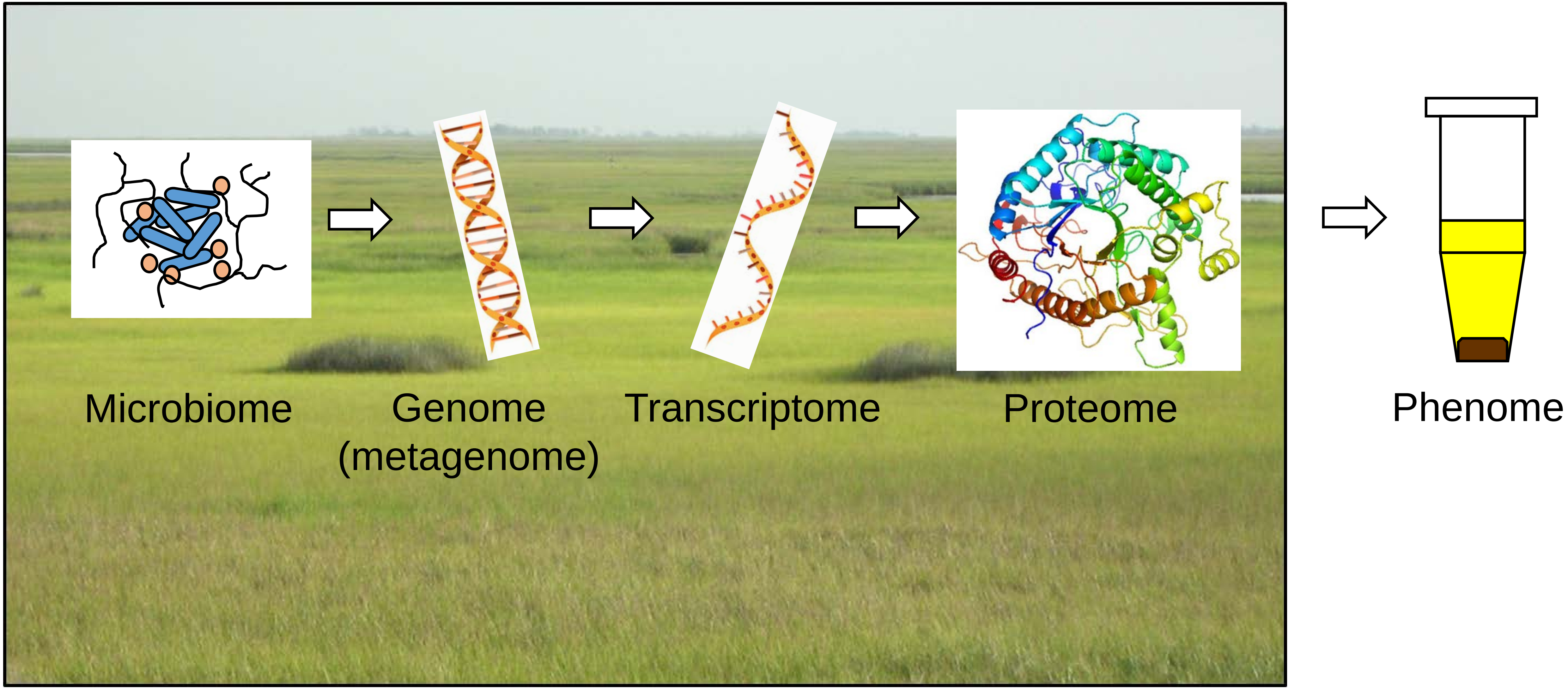
Other substrates — Induction ↑

Phenolics — Inhibition ↓

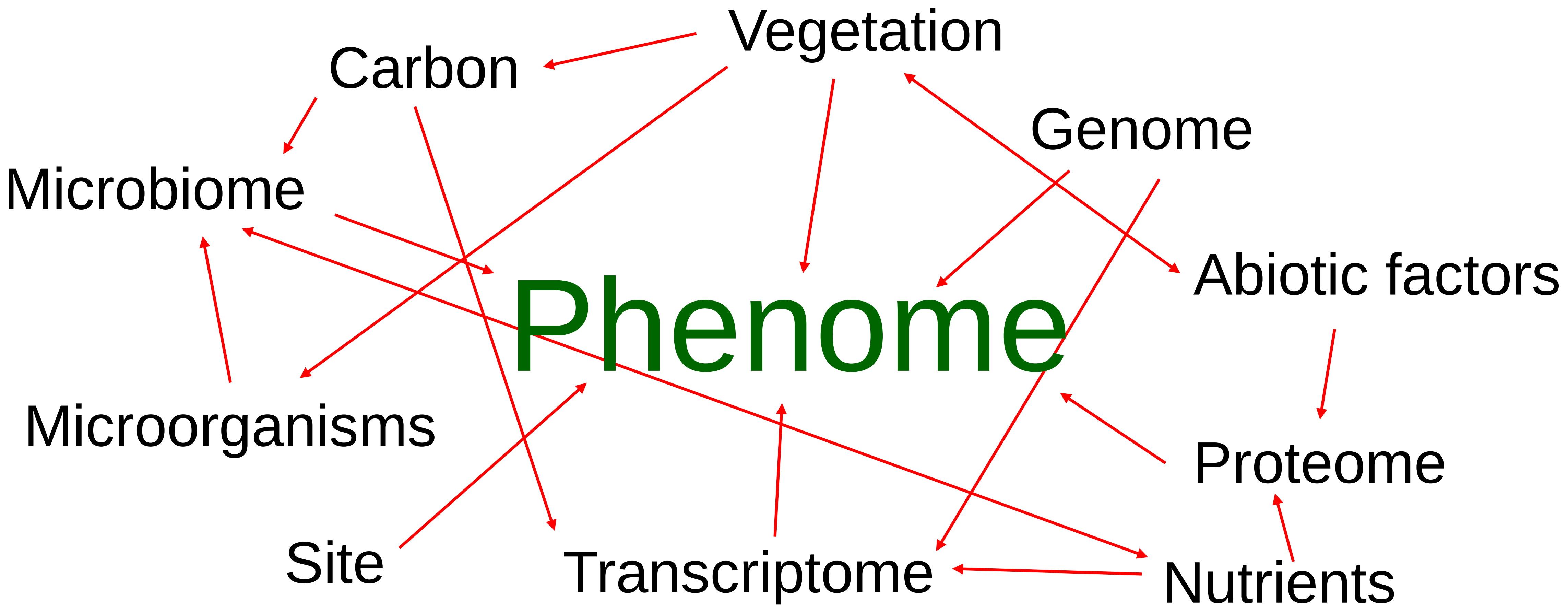


So how does carbon affect β-glucosidase activity?

Analysis of enzymes in wetlands focuses at an ecological level



The phenome is the phenotypes expressed by a cell, tissue, organ, organism, or species (ecosystem?)



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