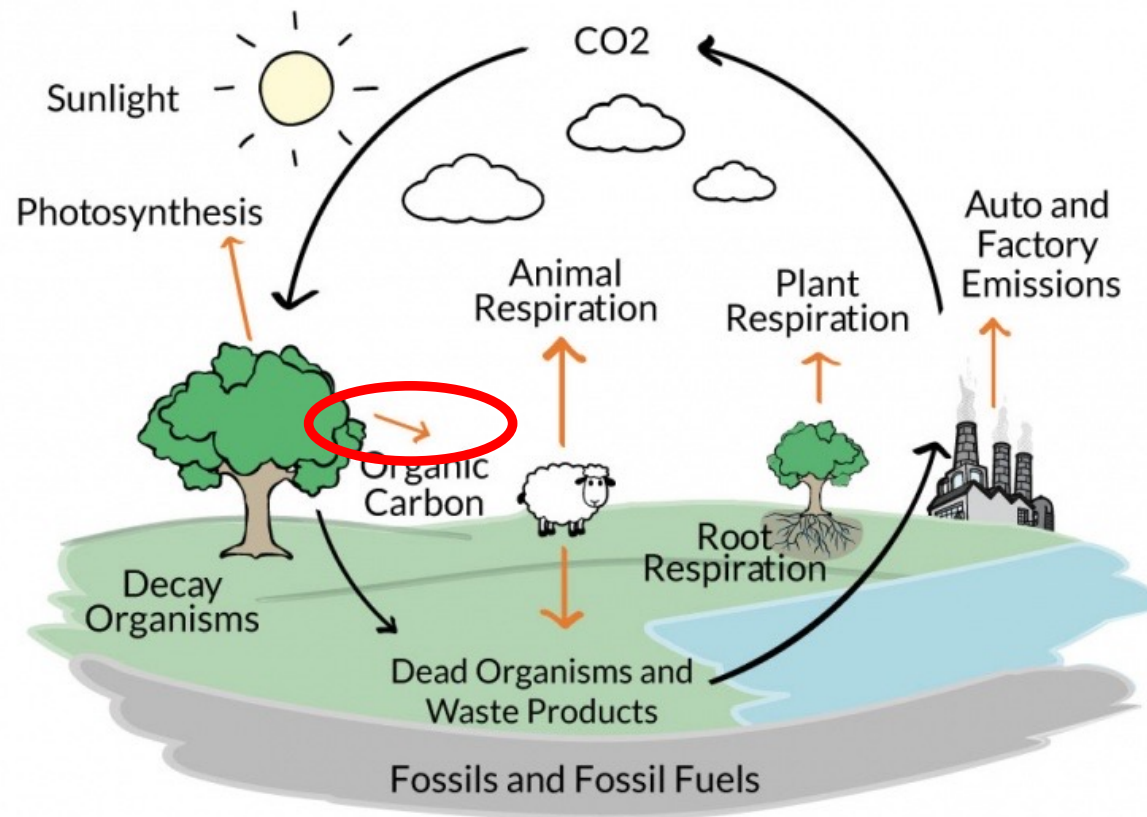




Carbon in Animals

The Carbon Cycle



Plants → Animals

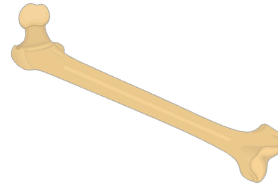
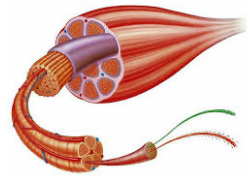
Plants → Animals



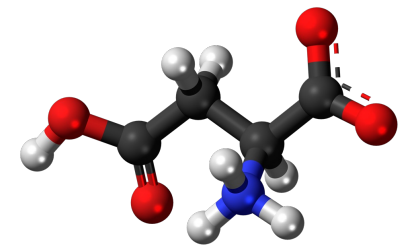
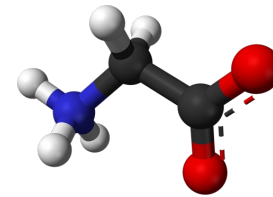
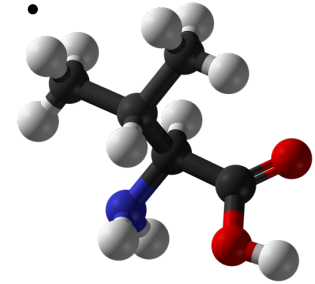
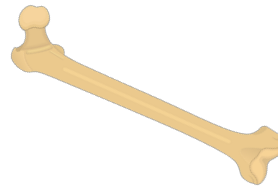
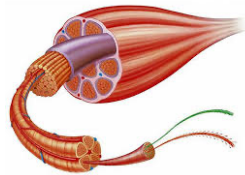
What's an animal made of?



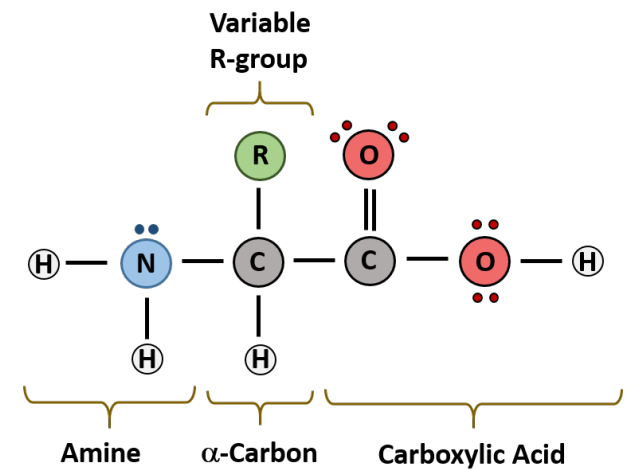
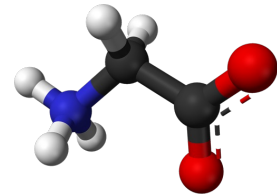
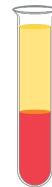
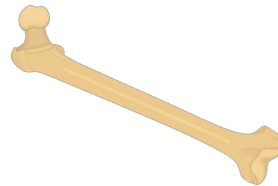
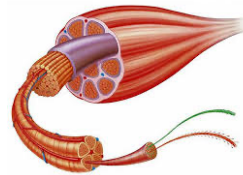
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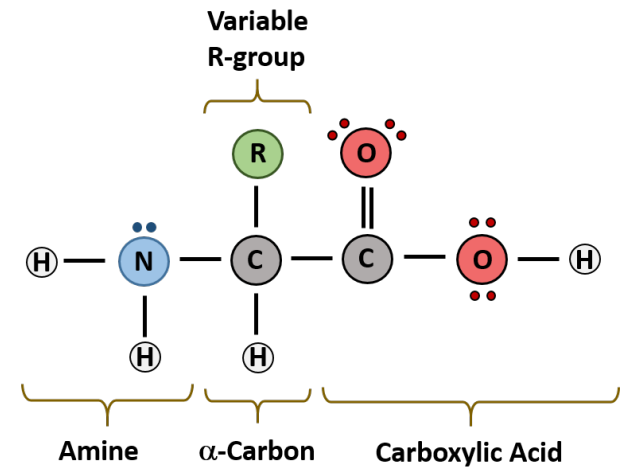
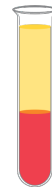
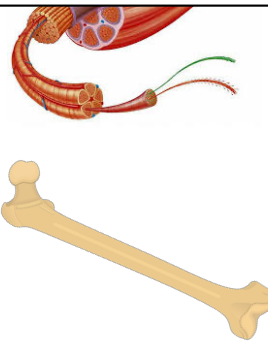
What's an animal made of?



What's an animal made of?



LOTS OF CARBON!



Where do animals get their carbon?

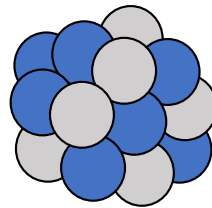
Where do animals get their carbon?



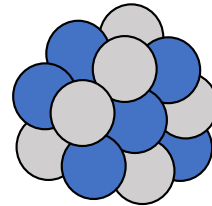
Where do animals get their carbon?



Why are stable isotopes good for studying diet?



^{13}C



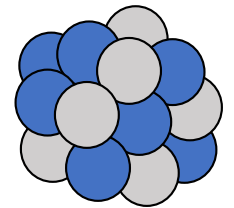
^{12}C

Carbon in animals: The basics

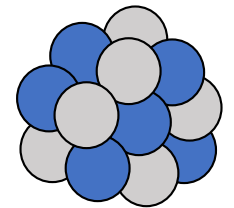
There is a small difference between the $\delta^{13}\text{C}$ value of an animal's diet and the $\delta^{13}\text{C}$ value(s) of its tissue(s)

Carbon in animals: The basics

There is a small difference between the $\delta^{13}\text{C}$ value of an animal's diet and the $\delta^{13}\text{C}$ value(s) of its tissue(s)



^{13}C



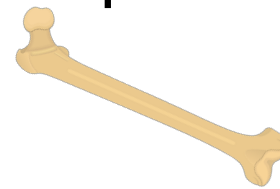
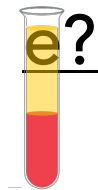
Δ (^{12}C 0 - 2‰)

Why are stable isotopes good for studying diet?

There is a small difference between the $\delta^{13}\text{C}$ value of an animal's diet and the $\delta^{13}\text{C}$ value(s) of its tissue(s)

Different animal tissues record diet over different lengths of time

- Which tissue grows the fastest: blood plasma, hair,
or b



Why are stable isotopes good for studying diet?

Different animal tissues record diet over different lengths of time

- Which tissue grows the fastest: bone, blood plasma, or hair?

Shorter-term diet

Longer-term diet

FASTEST



SLOWEST

Why are stable isotopes good for studying diet?

Different animal tissues record diet over different lengths of time

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Why are stable isotopes good for studying diet?

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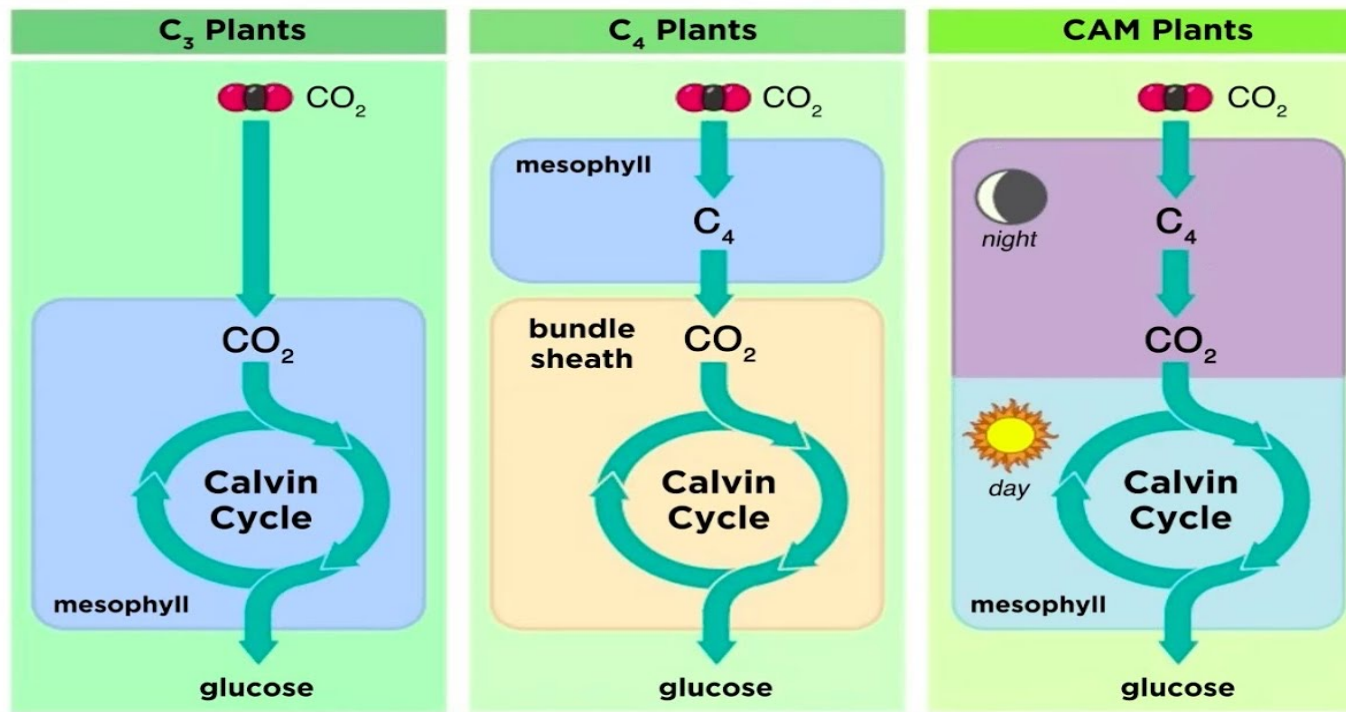
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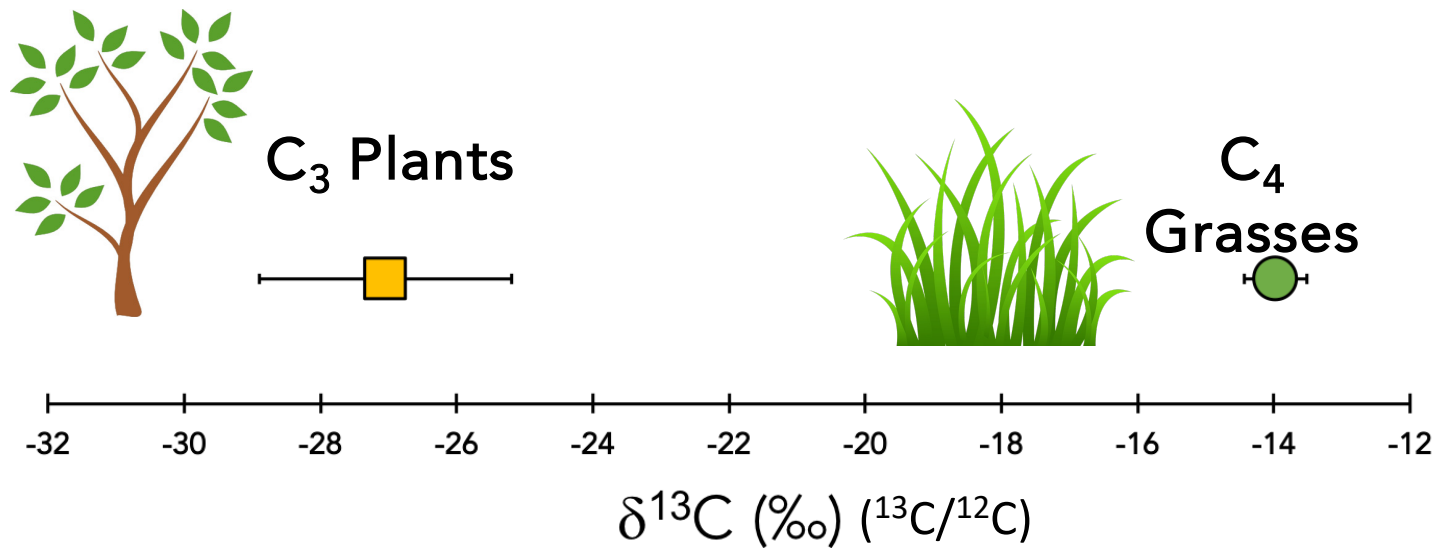
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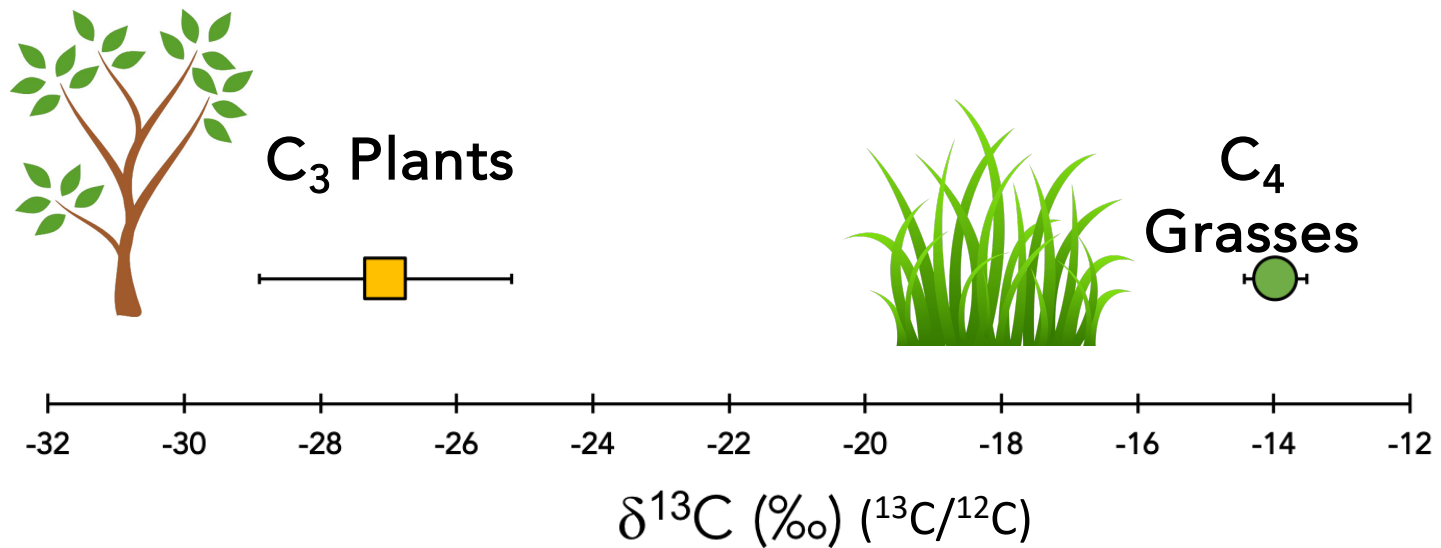
You are what you eat... sort of.



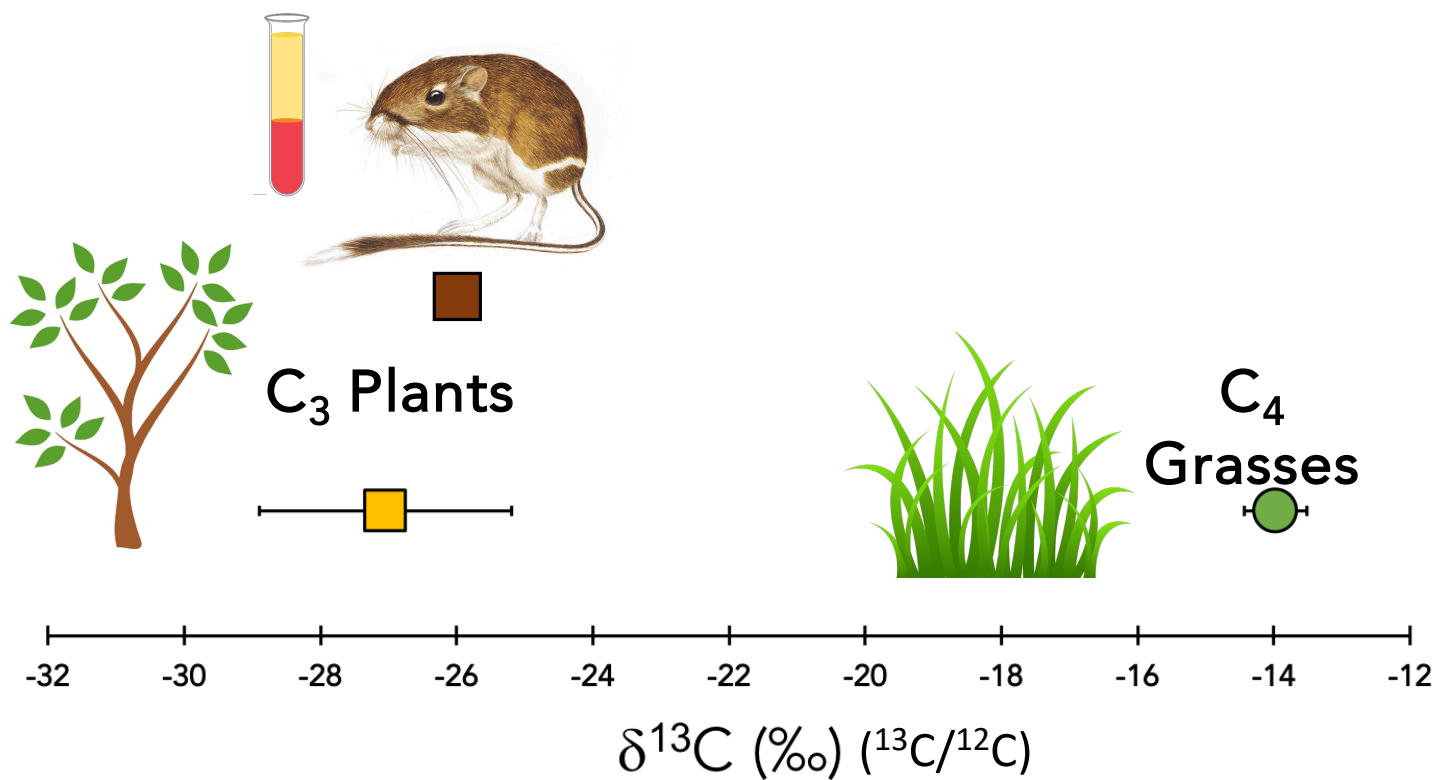
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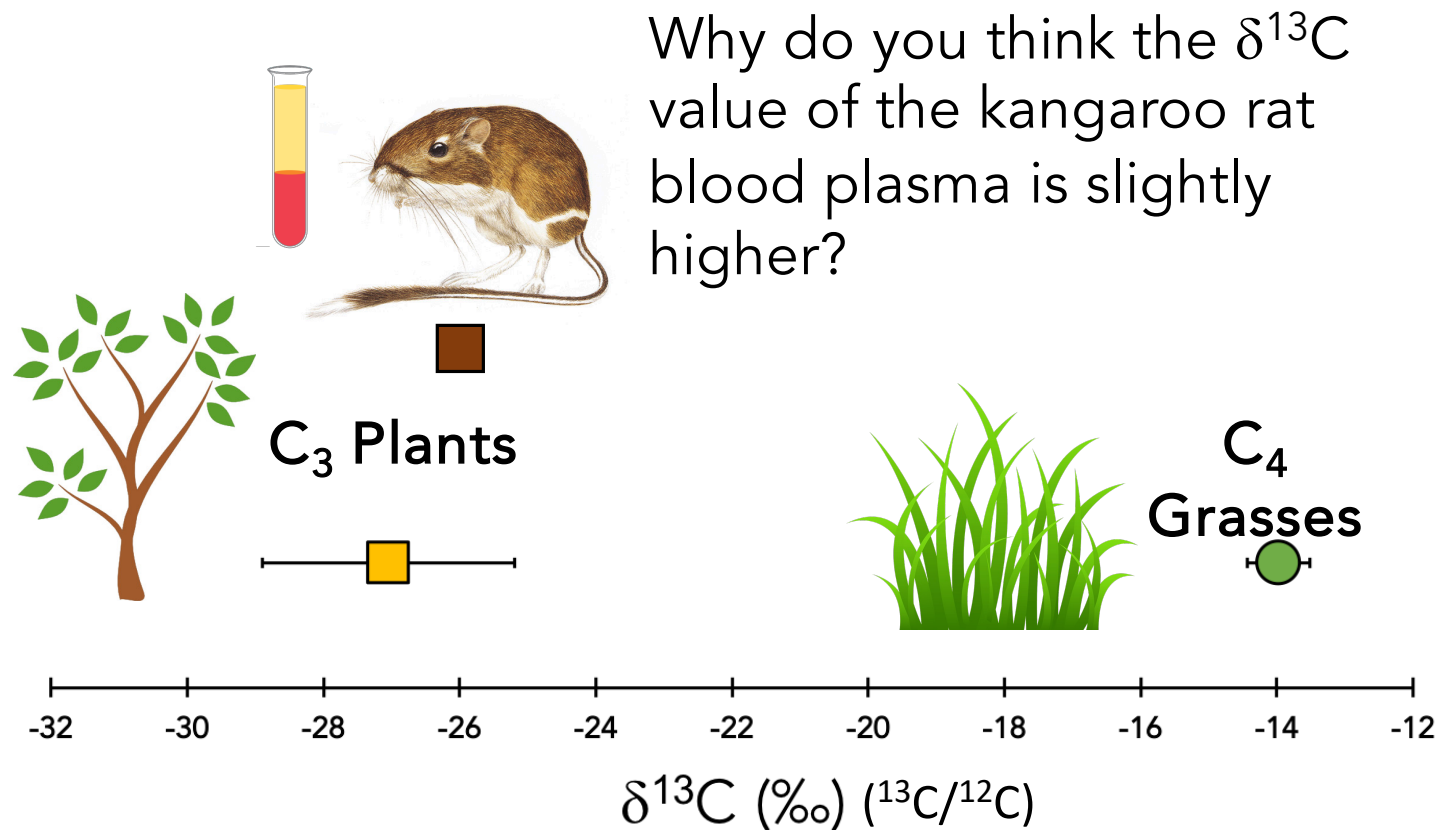
You are what you eat... sort of.



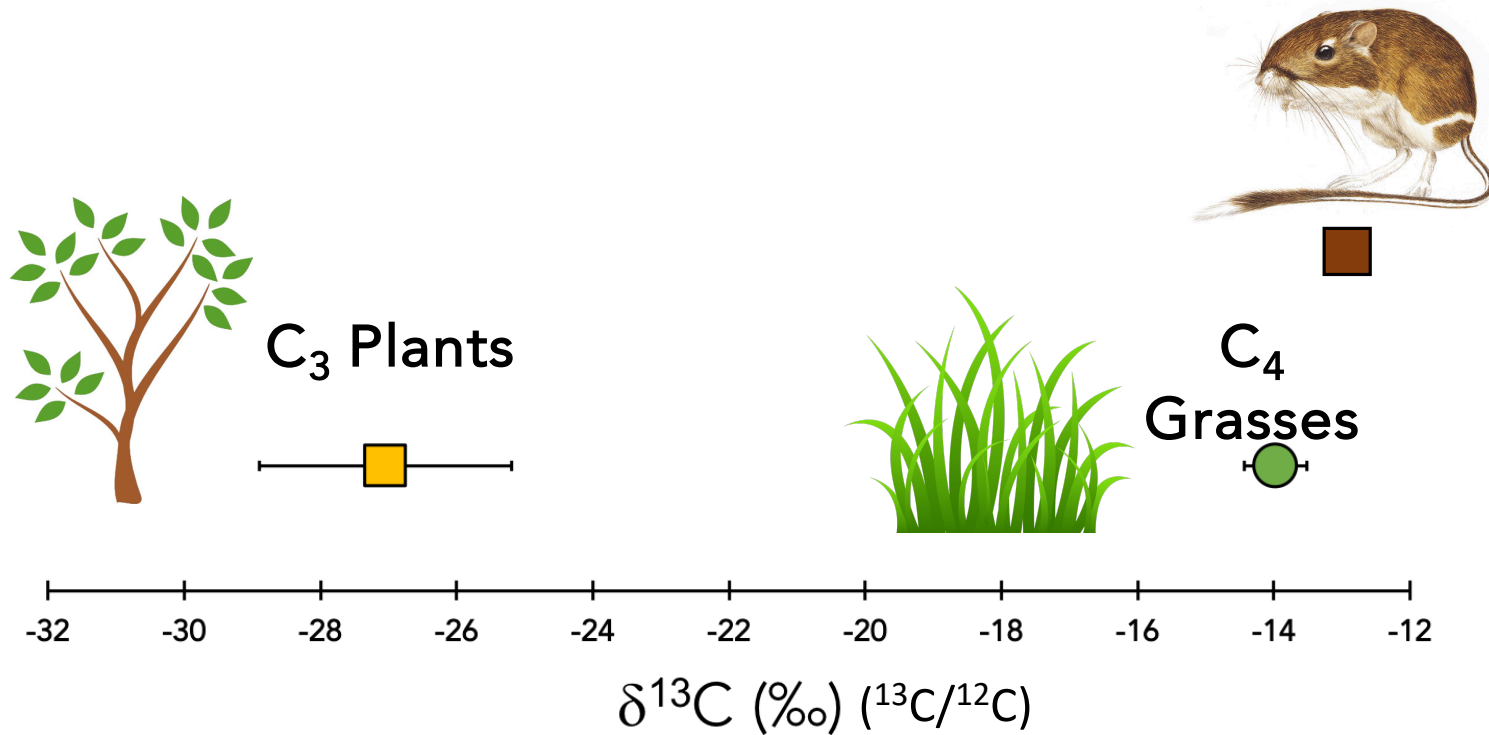
You are what you eat... sort of.



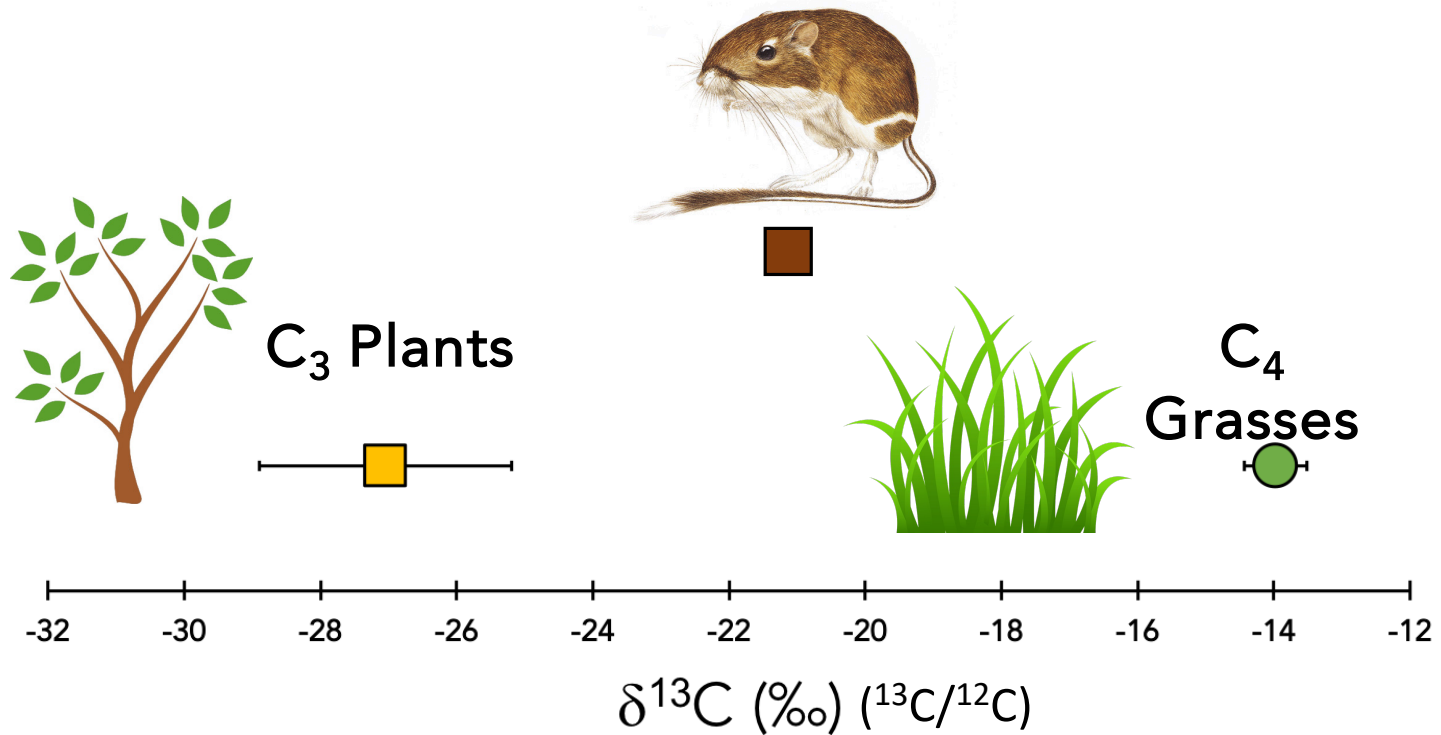
You are what you eat... sort of.



Animals eat different things!
What is this one eating?



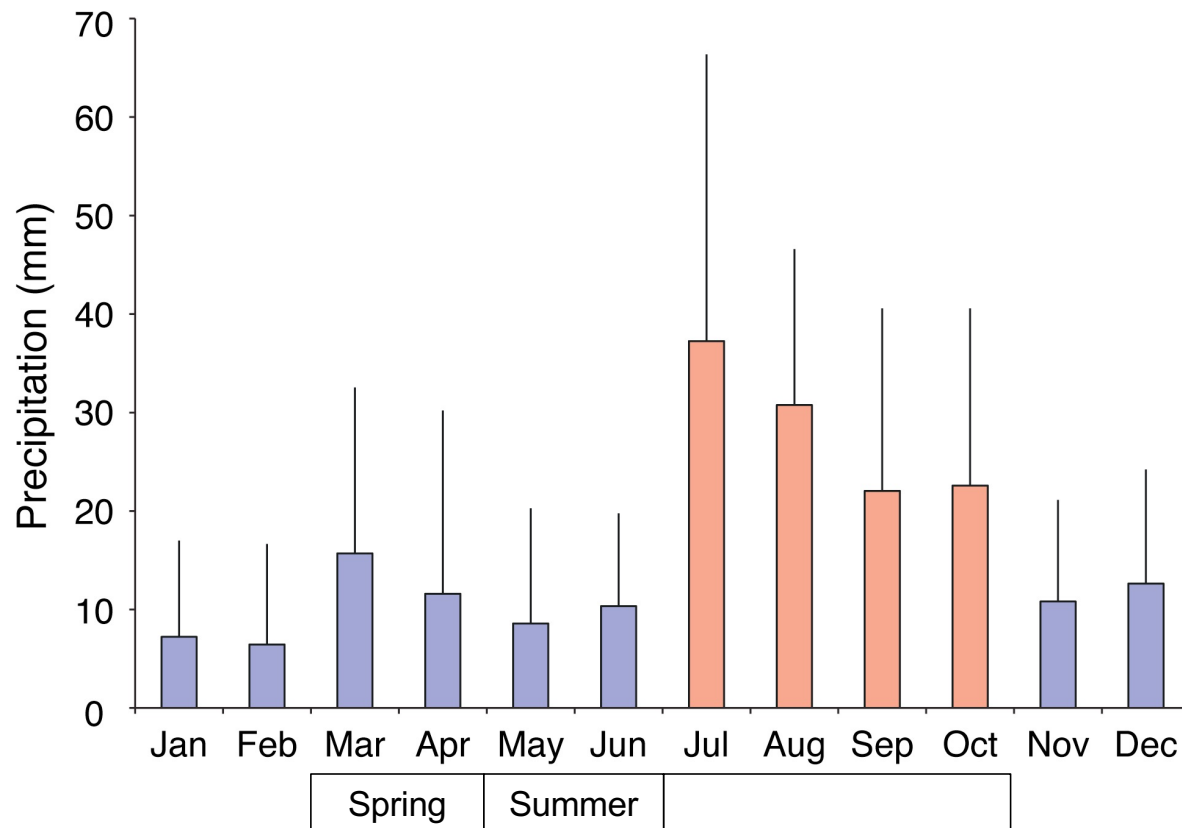
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Case Study: Small Mammal Diet at the Sevilleta National Wildlife Refuge



New Mexico Seasons

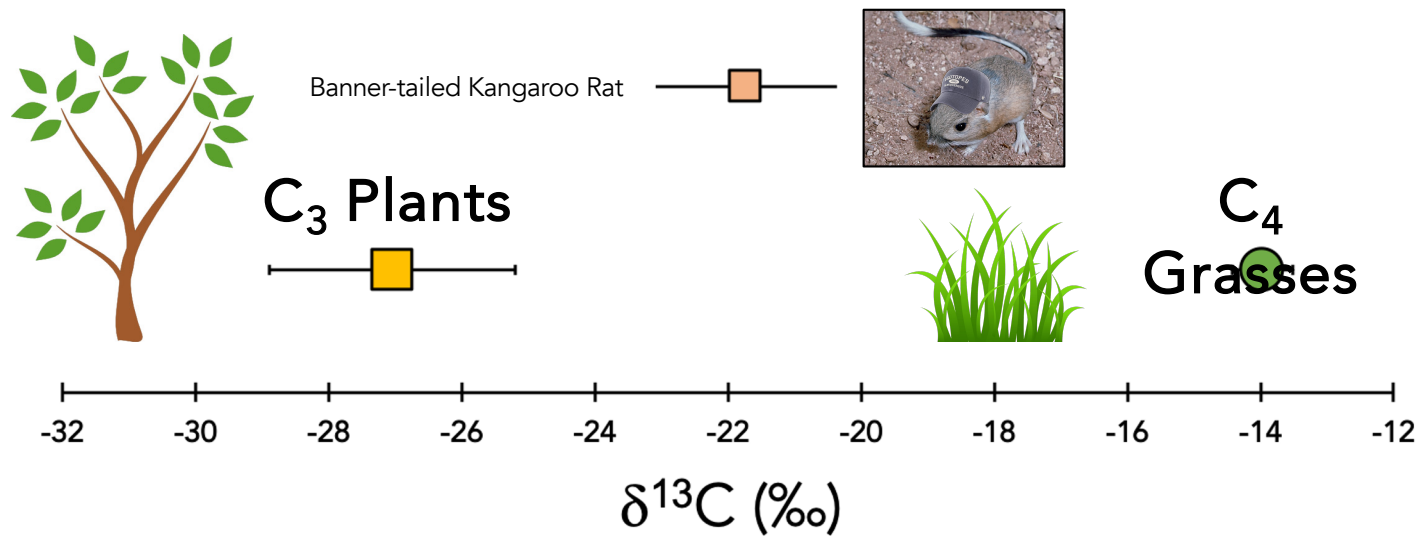


The Small Mammals

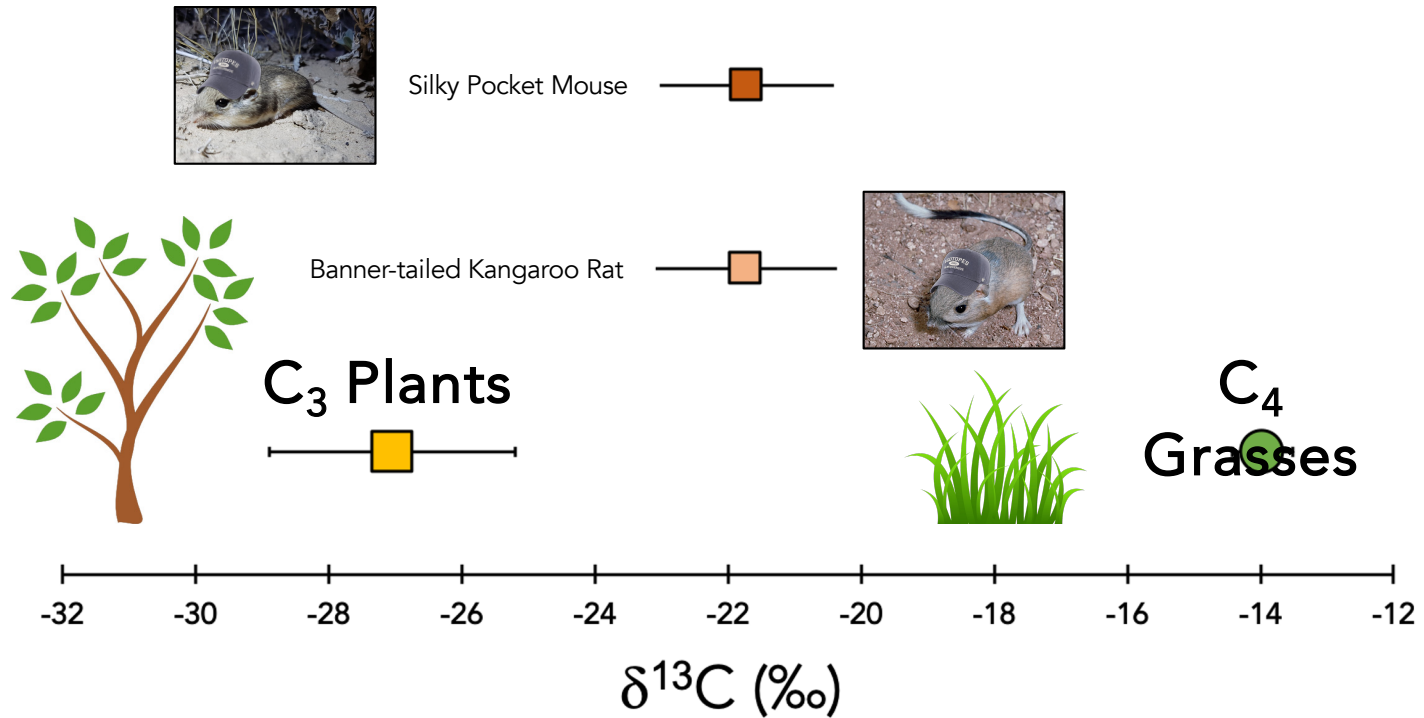


Small Mammal Diet

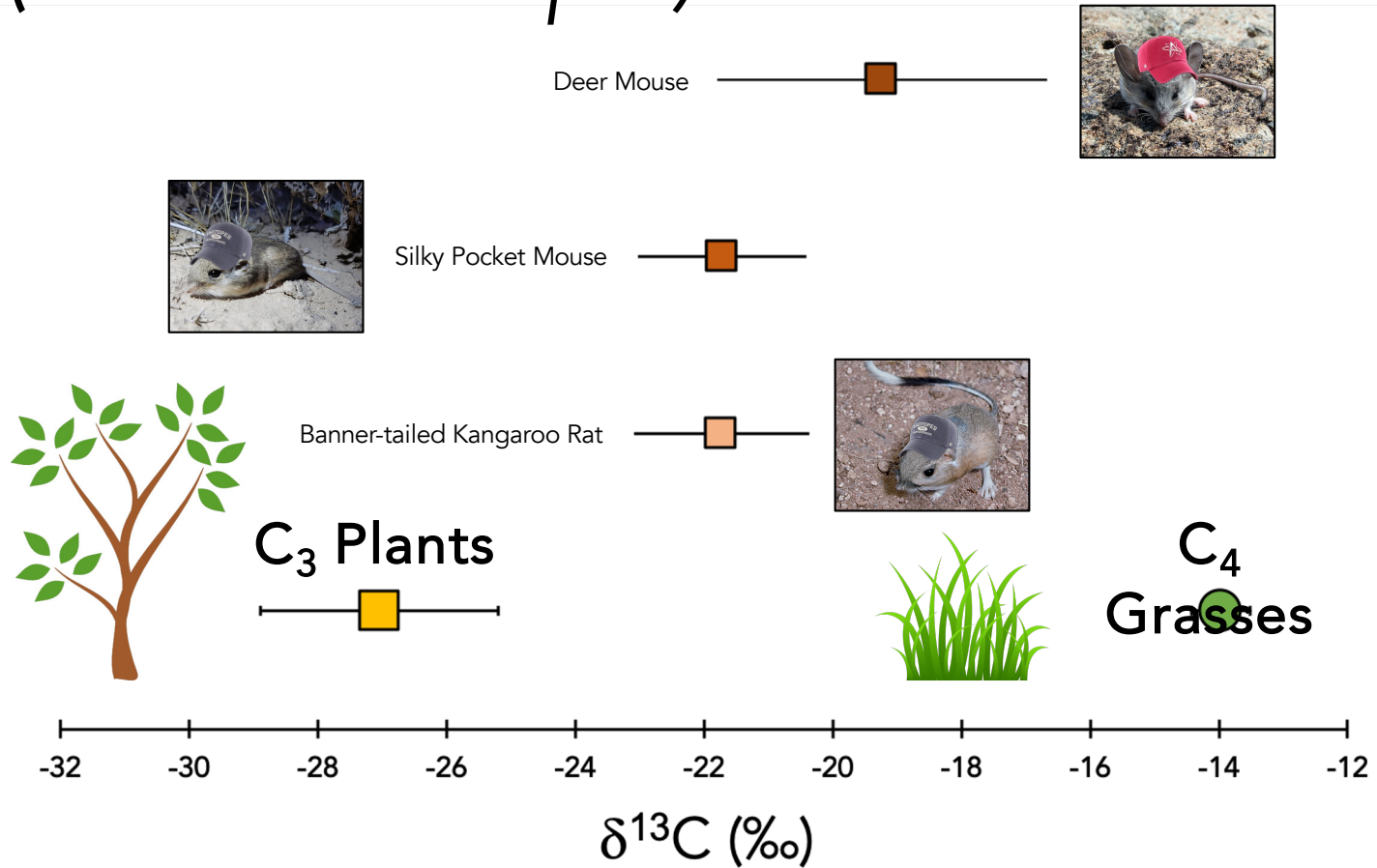
Spring (March and April)



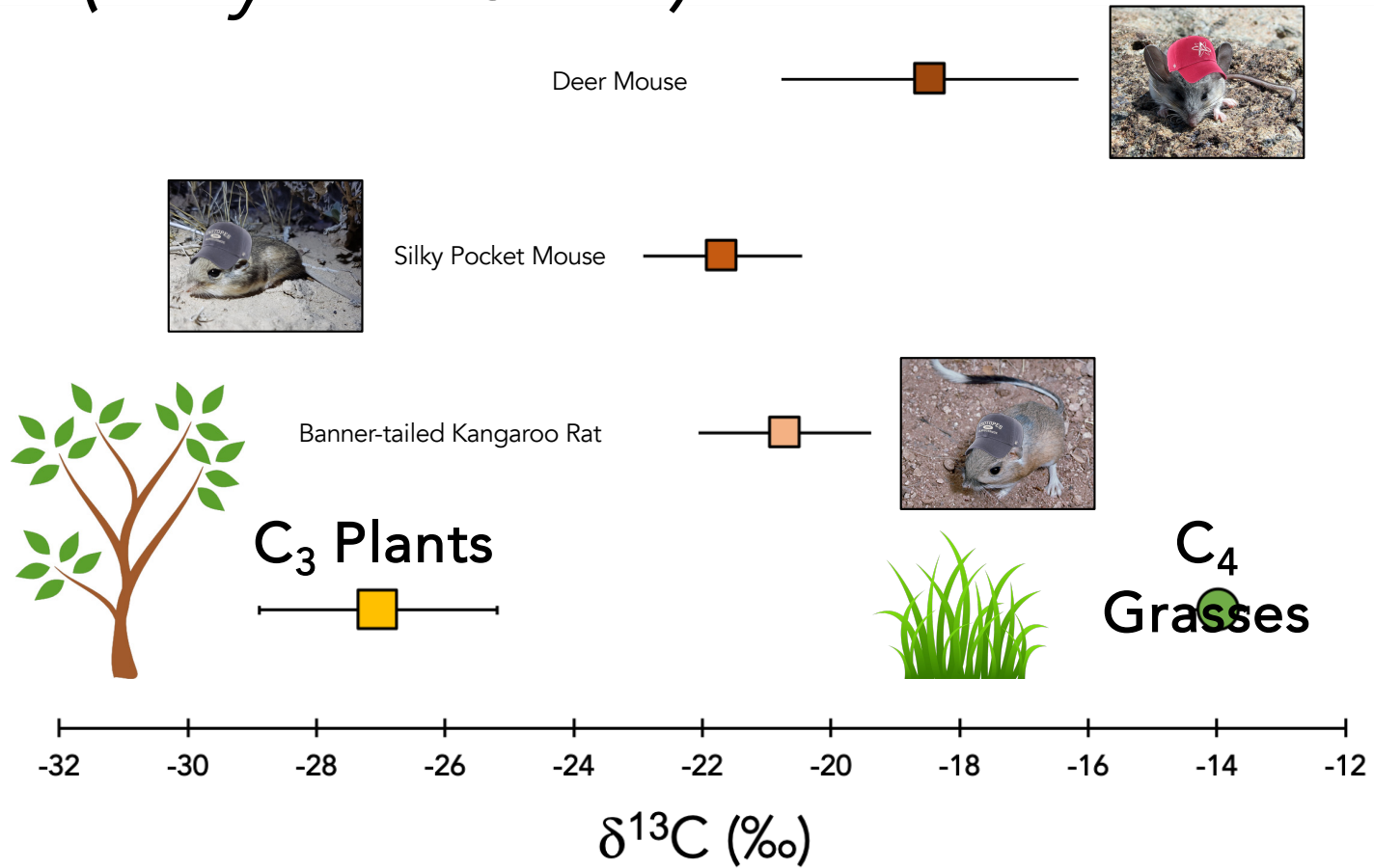
Small Mammal Diet *Spring (March and April)*



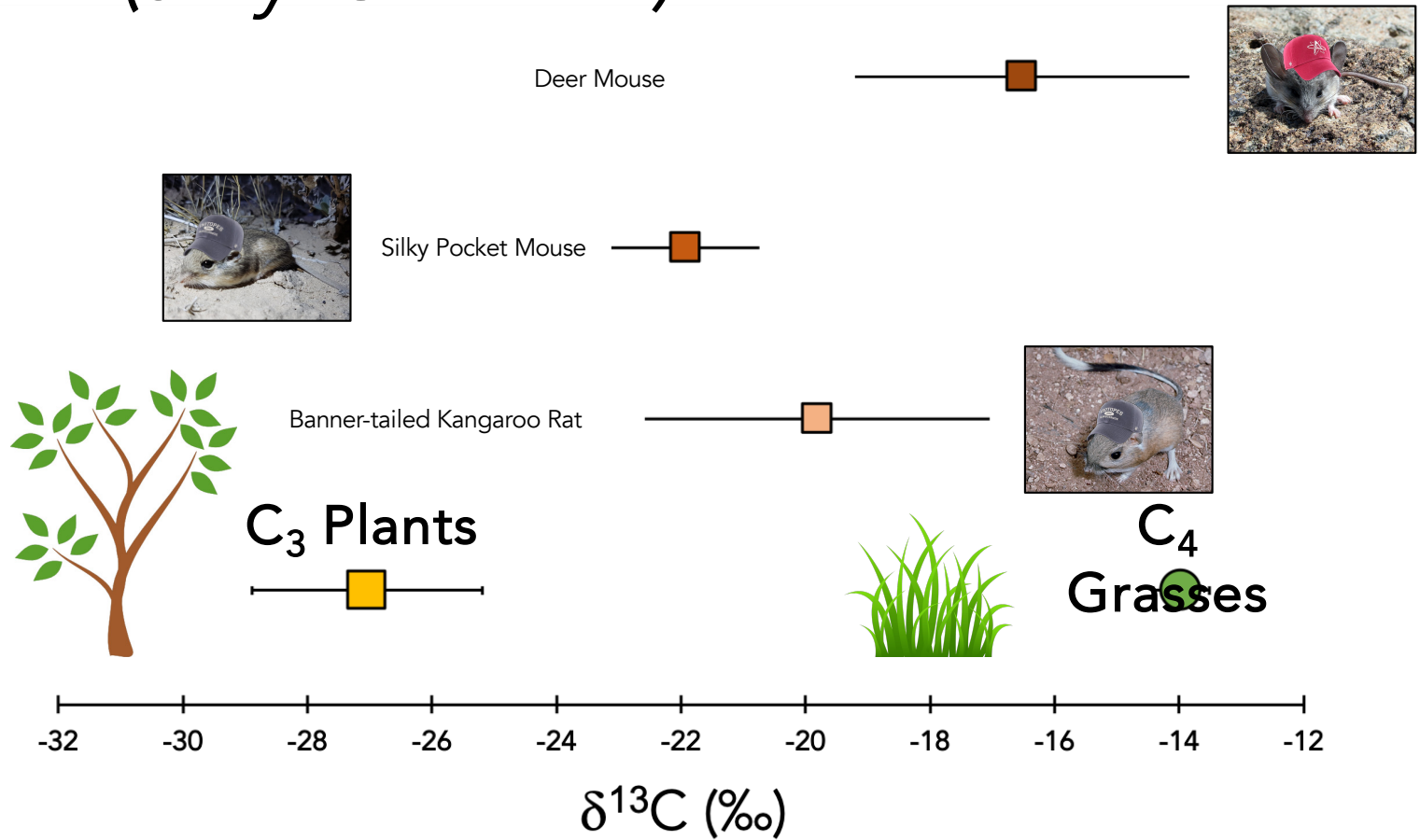
Small Mammal Diet *Spring (March and April)*



Small Mammal Diet *Summer (May and June)*

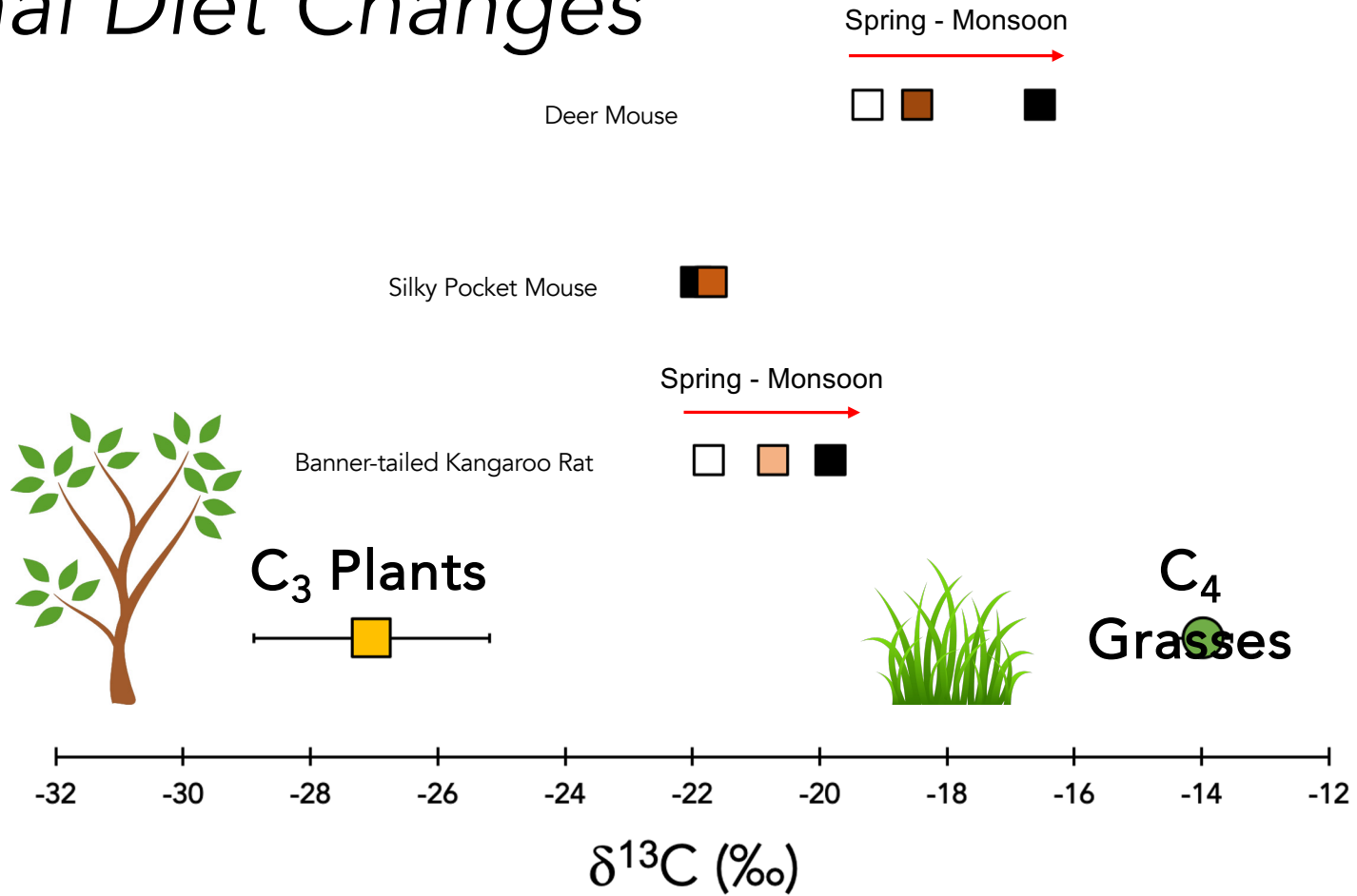


Small Mammal Diet *Monsoon (July-October)*



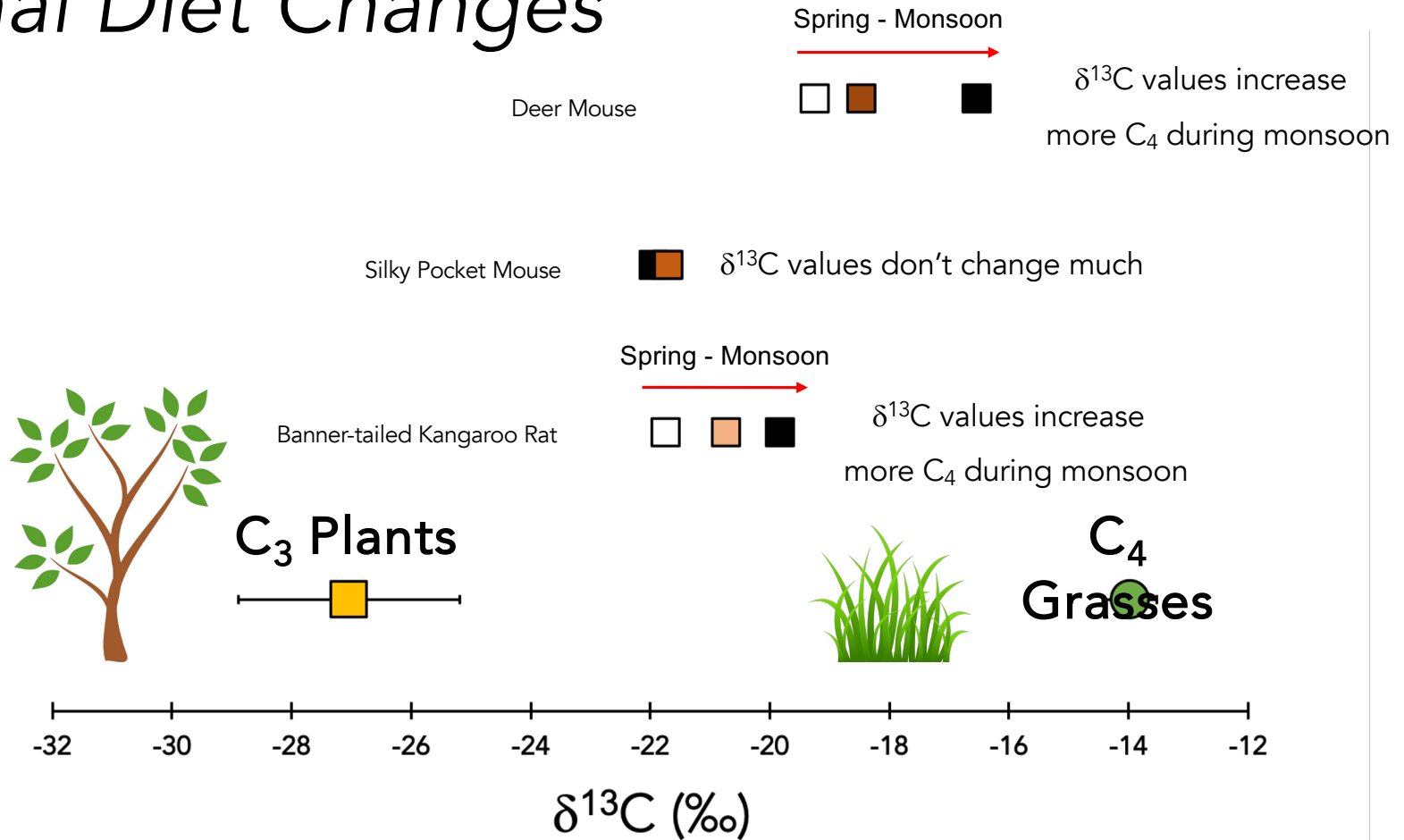
Small Mammal Diet

Seasonal Diet Changes



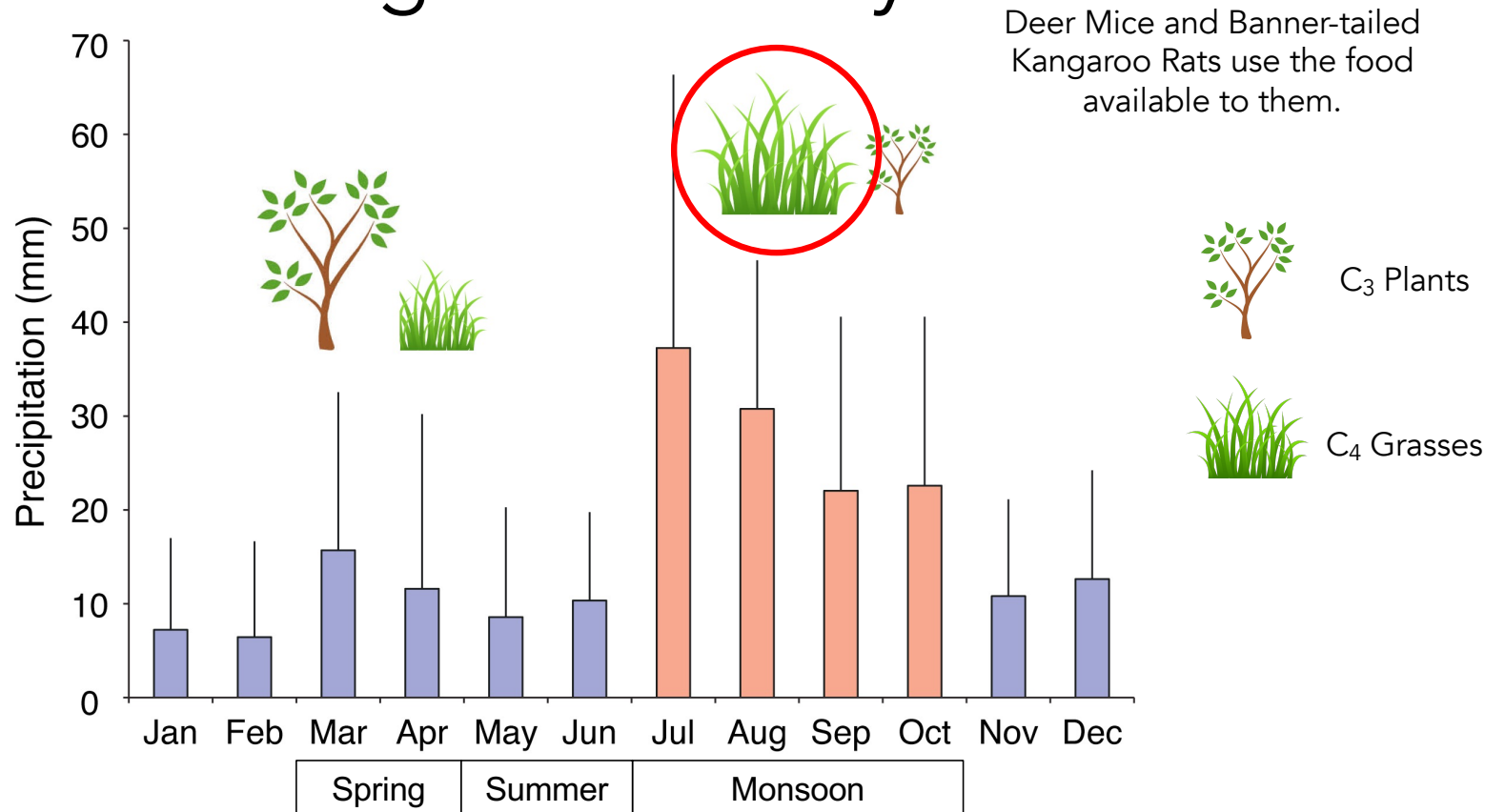
Small Mammal Diet

Seasonal Diet Changes



Why do you think small mammal diets
change seasonally?

Why do you think small mammal diets change seasonally?



Summary

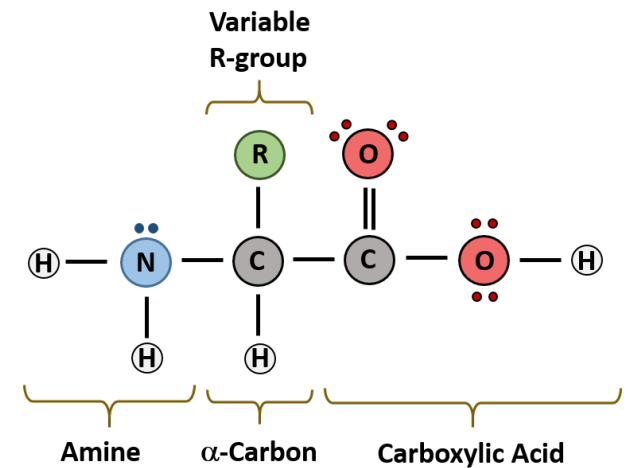
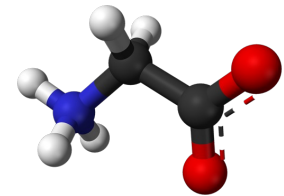
Animals are mostly made of protein



Summary

Animals are mostly made of protein

Protein contains a lot of carbon

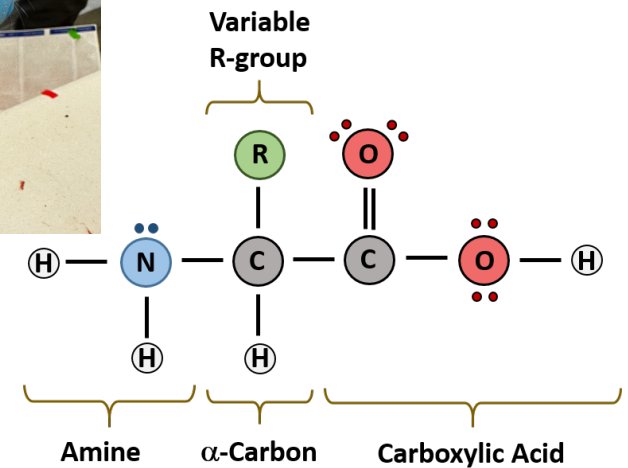
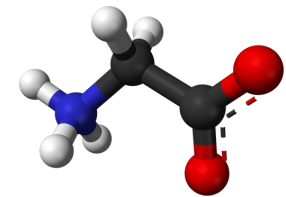


Summary

Animals are mostly made of protein

Protein contains a lot of carbon

Animals get this carbon from their



Summary

Animals are mostly made of protein

Protein contains a lot of carbon

Animals get this carbon from their diet

We can use $\delta^{13}\text{C}$ values to infer diet

