**Cave Bear isotope chart**

**Notes:**

How to interpret the notation🡪the subscript tells you the source of the isotope. For δ18OCO3 the source of the oxygen (O) isotope is CO3, which is carbonate. Sometimes they write it as δ18Ocarb

To be clear: δ18OCO3 is the same as δ18Ocarb, and CO3 = Carbonate

Chart to fill in for Results (section 3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Isotope | Source | Source animal? | Result | Interpretation |
| δ18OCO3 | Carbonate in bone | Modern grizzly | (s3.2) Larger than average values for δ18OH20  Covaried positively with env. Water (δ18OH20) | Carbonate in bone values can also be used as a measure of water resources, hibernation does not obscure the water resources used by the animal (s3.2) |
| δ18OH20 | Apatite in bone | Modern grizzly | (s3.2) Covaried positively with δ18OCO3 | Isotopic signature of different water resources reflected in apatite δ18O (s3.2) |
| δ 13Ccoll | Collagen in bone | Ancient bears | *Ursus spelaeus eremus* sig diff from *Ursus ingressus* and *Ursus arctos* (s3.3) | (s3.3) See fig 3 for distinct δ 13Ccoll and δ 15Ncoll clusters |
| δ 15Ncoll | Collagen in bone | Ancient bears | *Ursus arctos* values higher than *Ursus spelaeus eremus* and *Ursus ingressus*  Cave bears not diff from each other (s3.3) | (s3.3) See fig 3 for distinct δ 13Ccoll and δ 15Ncoll clusters |
| δ 13CCO3 | Carbonate Bone mineral | Ancient bears | (s3.4) Not sig different for all 3 bears | (s3.4) Difference between values for δ 13CCO3 and δ18OPO4 close to that of modern mammal bones (so no diagenetic alteration) |
| δ 13CCO3(VSMOW) | Carbonate Bone mineral | Ancient bears | (s3.4) Not sig different for all 3 bears |  |
| δ18OCO3(vsmow) | Carbonate in bone mineral |  | (s3.4) Sig diff between cave bears | (s3.4) No correlation between changes in the difference in values for13CCO3(VSMOW) and δ18OPO4 compared to δ18OCO3 (so no diagenetic alteration); so, can use for13CCO3(VSMOW) instead of δ18OPO4 |
| δ18OPO4 |  |  | (s3.4) Sig not testable, same pattern as δ18OCO3 (which is the same as δ18Ocarb), pattern was that Ursus spelaeus eremus was higher than Ursus ingressus | (s3.4) No correlation between changes in the difference in values for13CCO3(VSMOW) and δ18OPO4 compared to δ18OCO3 (so no diagenetic alteration) |

**Table to organize observations in the discussion (you fill the rest in as you read)**

|  |  |  |
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| **Isotope** | **Result (cite figures!!)** | **Interpretation (cite section!!)** |
| δ 15N | \*Cave bear values not higher than cave lion (fig 4) | \* Cave bears don’t eat large amounts of animal protein like cave lions did, probably herbivores (s4) |
|  | \*Brown bear values higher than cave bears, not as high as cave lions (fig 4) | \* Brown bears more omnivorous than cave bears; modern brown bears are flexible in their diet also, so this flexibility evolved a while ago (s4) |
| δ 13C |  |  |
| δ 18O |  |  |