



Introduction to Archaeobotany

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MPI-SHH
SUMMER SCHOOL
2021

Doorway
to Human History

Microremains can tell MEGA stories, but how?



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Palaeobotany? Archaeobotany? Paleoethnobotany?



Palaeobotany

is “the branch of botany dealing with the recovery and identification of plant remains from geological contexts”



Neuropteris ovata Hoffmann,
a fossilized seed fern

First seed
plants (383-
359 million
years ago)

First palaeobotany
work by Ernst Friedrich
von Schlotheim,
Kaspar Maria von
Sternberg, Adolphe
Theodore Brongniart

359

299

145

66

Devonian

Carboniferous

Cretaceous

19th century

Early vascular
plants (about
410 million
years ago)

The earliest
known flowering
plants (about 130
million years ago)



The Rhynie Chert Flora



Montsechia vidalii



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Palaeobotany Archaeobotany

“is a composite discipline, combining botanical knowledge with archaeological materials”



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First
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work in New
World

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1820s 1870s

Devonian

Carboniferous

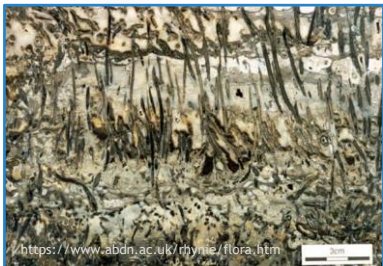
Cretaceous

19th century

Early vascular
plants (about
410 million
years ago)

The earliest
known flowering
plants (about 130
million years ago)

First
archaeobotany
work by Kunth on
desiccated
remains from
Egyptian tombs



The Rhynie Chert Flora



Montsechia vidalii



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Palaeobotany Archaeobotany Paleoethnobotany

“acknowledges the contribution that ethnographic studies have made towards our current understanding of ancient plant exploitation practices”



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a fossilized seed fern

First seed
plants (383-
359 million
years ago)

First
archaeobotany
work in New
World

a new recovery
method **flotation**
expands the field

359

299

145

66

1820s 1870s

1930s

1970s

Devonian

Carboniferous

Cretaceous

19th century

20th century

21st century

Early vascular
plants (about
410 million
years ago)

The earliest
known flowering
plants (about 130
million years ago)

First
archaeobotany
work in Old World

University of
Michigan's
Paleoethnobotany
Lab with specialists
Gilmore and Jones



The Rhynie Chert Flora



Montsechia vidalii

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What is Archaeobotany?

Defined by Fuller & Lucas (2014) as,

- “a composite discipline, combining botanical knowledge with archaeological materials”
- “focuses on the study of preserved plant evidence from archaeological sites and the reconstruction and interpretation of past human-plant relationships”
- “emphasizes the archaeological nature of the evidence, with its recognition of site formation processes and sampling issues”



Archaeobotany



www.tietoast.com



Archaeobotany



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Archaeobotanical analyses

 Macrofossils:

 Microfossils:



Grape plant,
Vitis sp.



Poppy plant,
Papaver sp.



Archaeobotanical analyses



Macrofossils:

- Fruits, nuts
- Carpology
- Charcoal



Microfossils:

- Pollen
- Phytoliths
- DNA
- Starch
- Lipids



Poppy plant,
Papaver sp.

Grape plant,
Vitis sp.



Archaeobotanical analyses



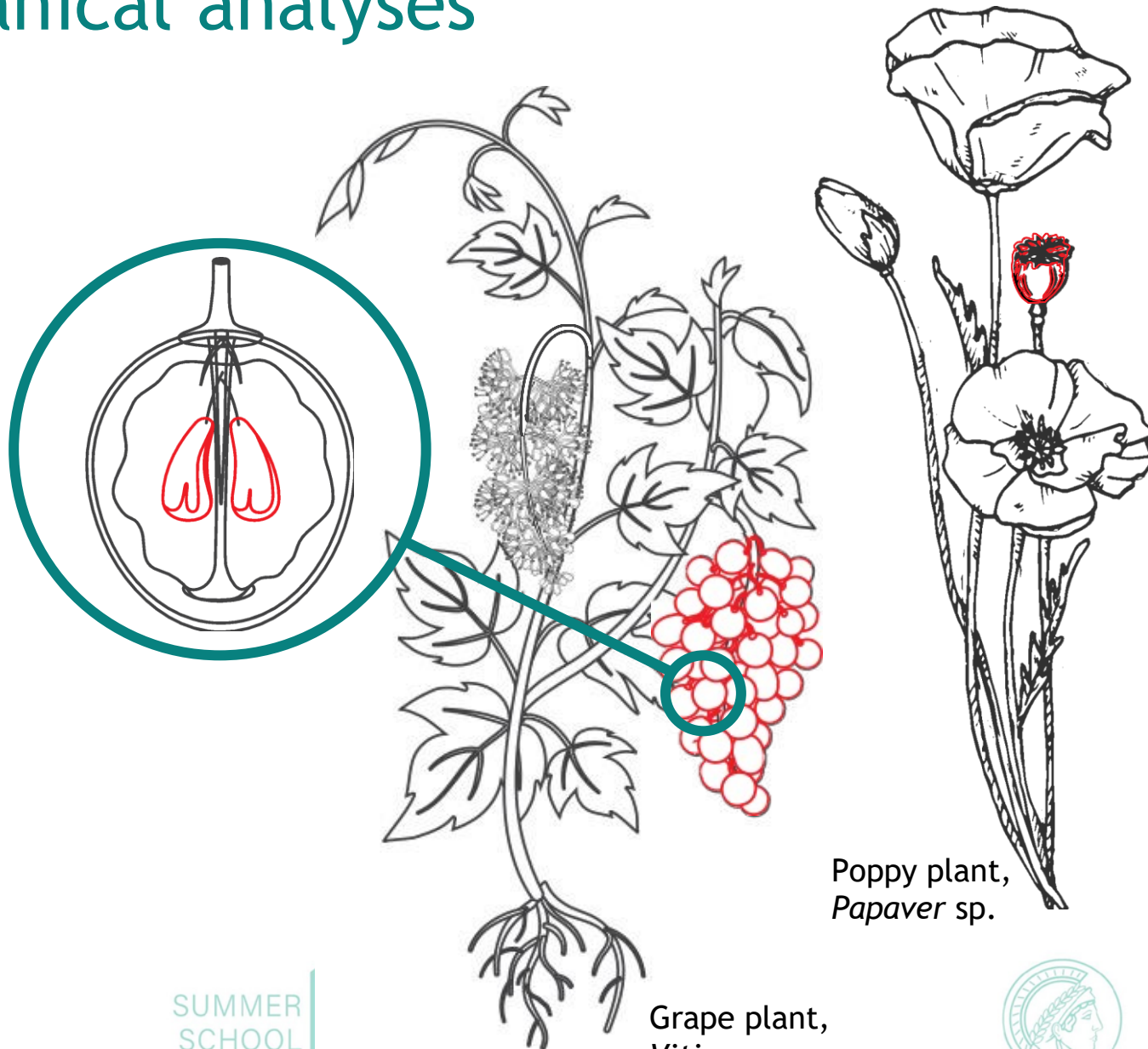
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Archaeobotanical analyses



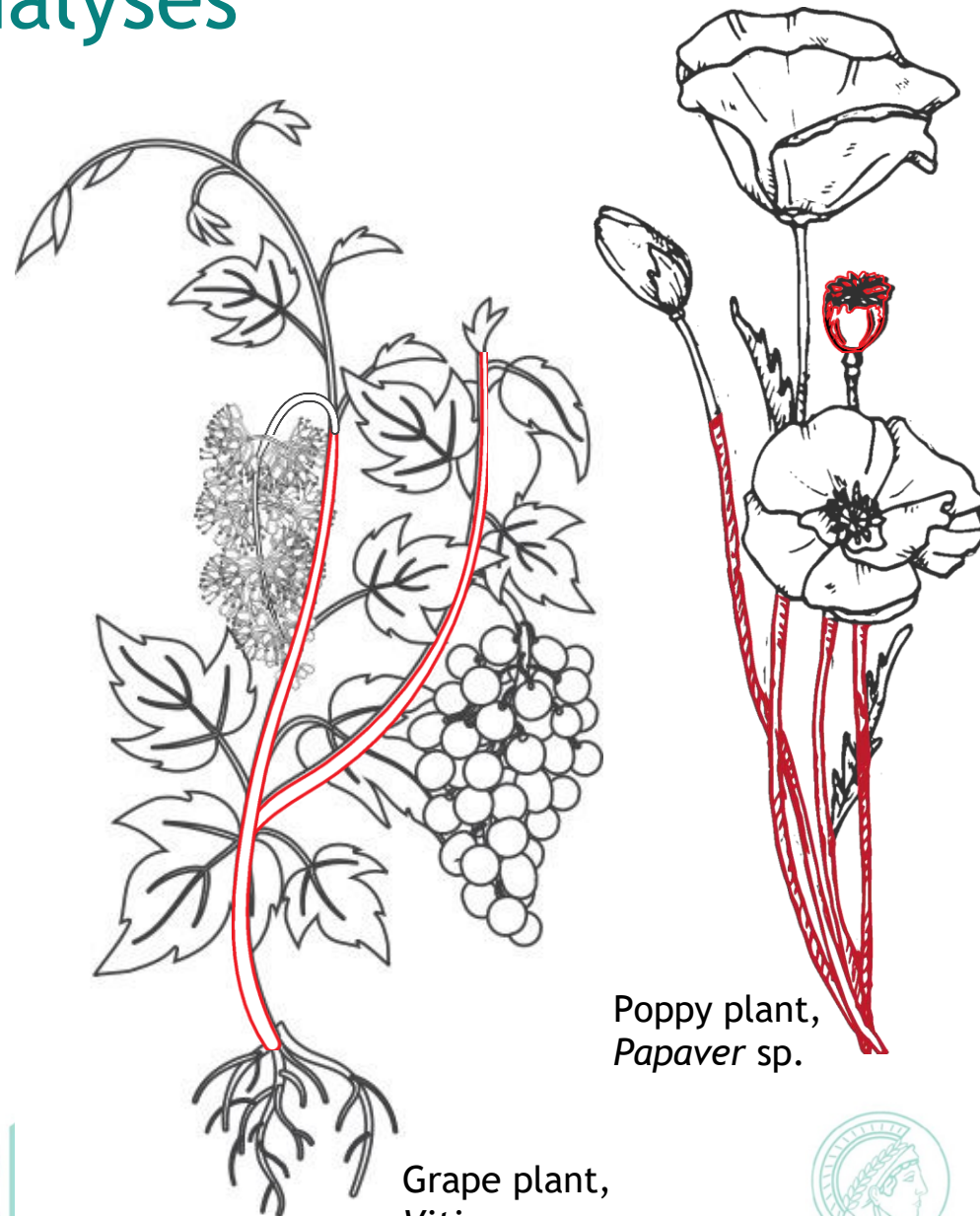
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Archaeobotanical analyses



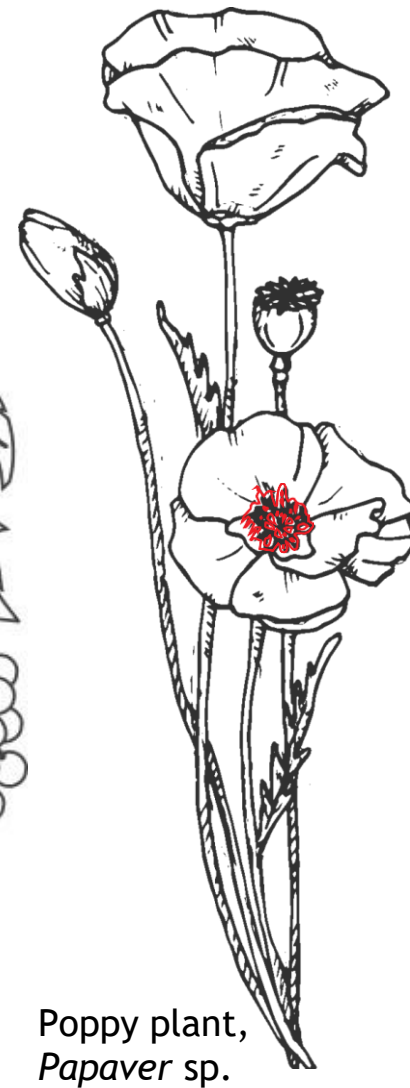
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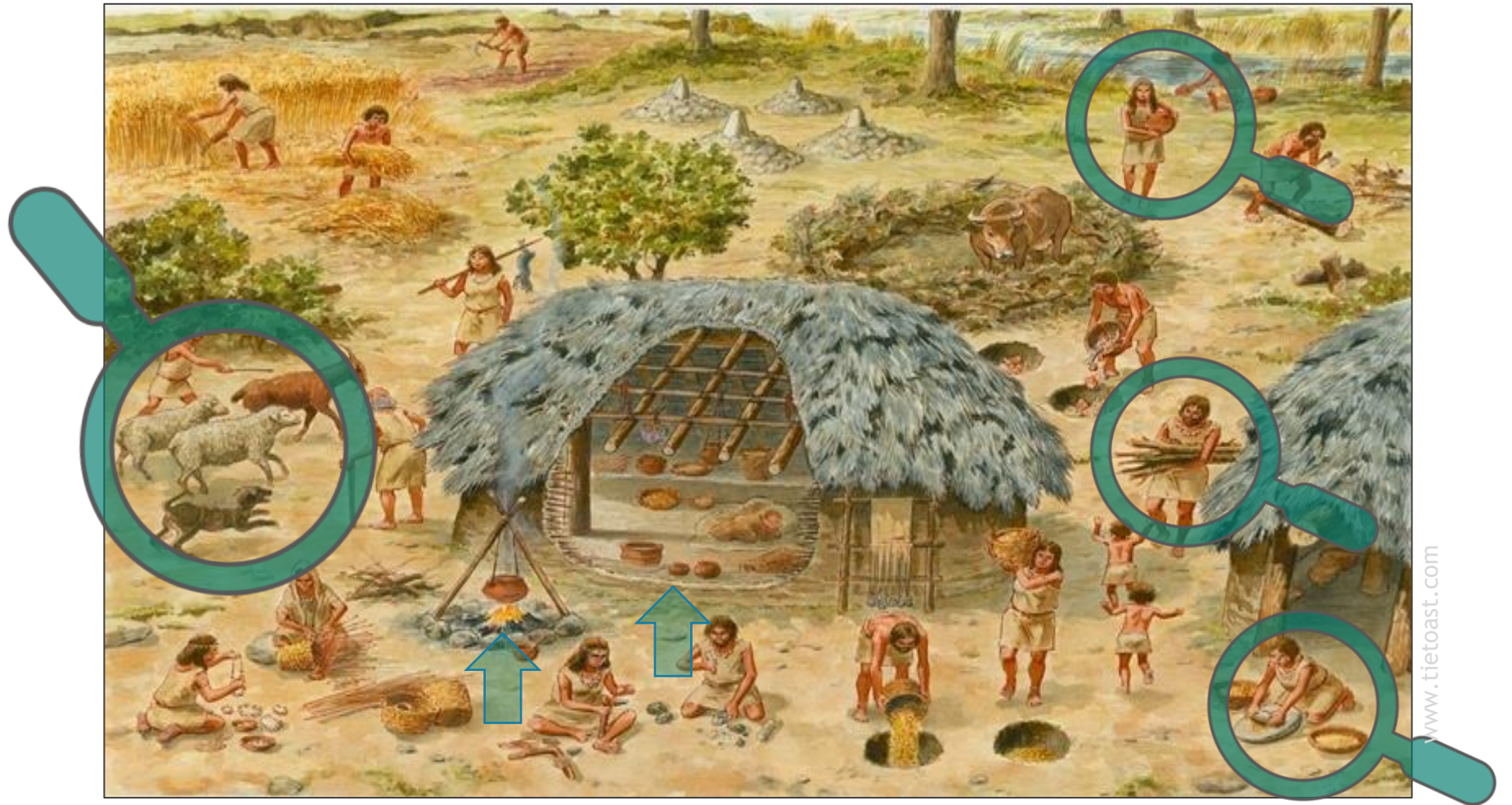


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Deposition



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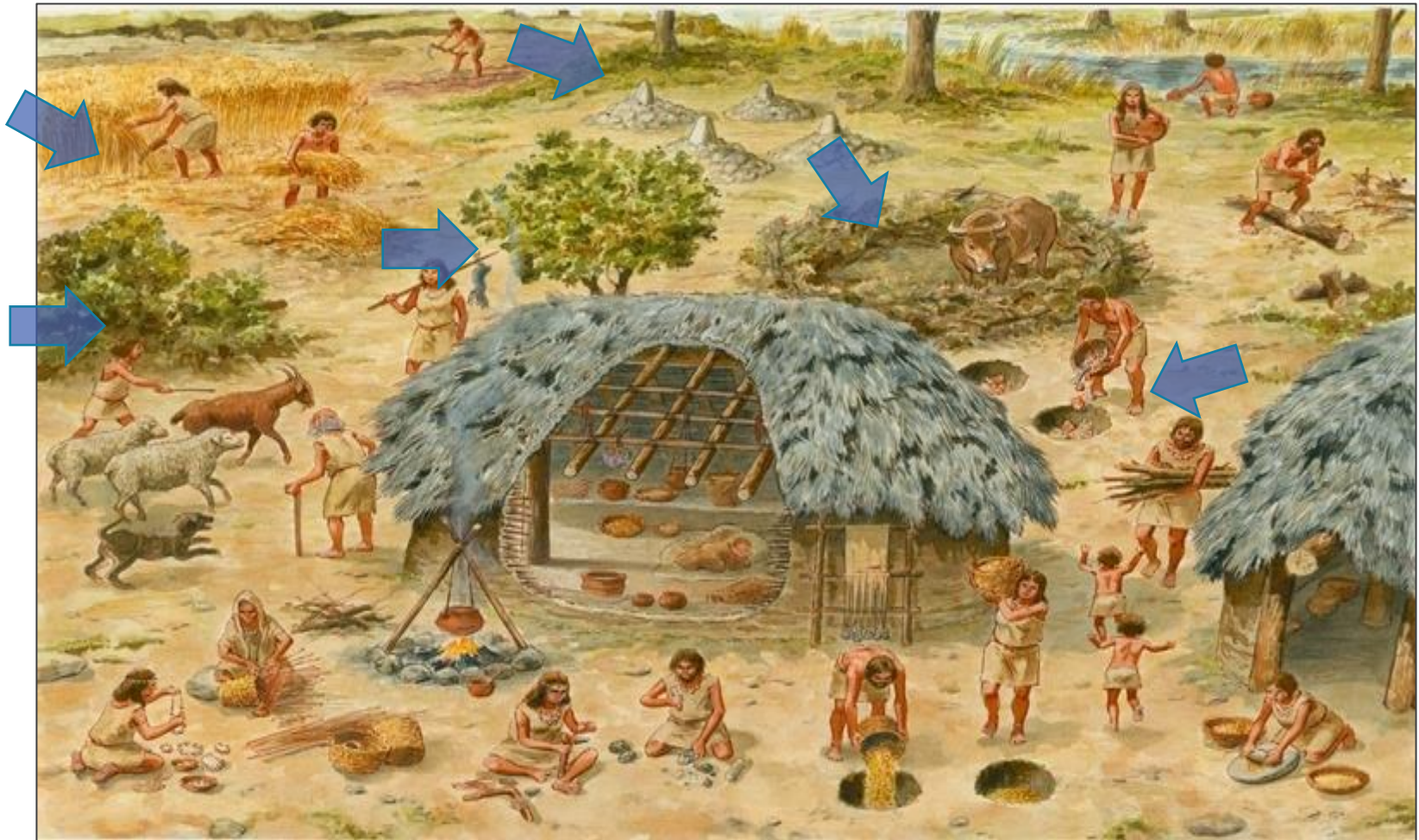
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Deposition



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Preservation

preserved after
contact with fire

**CARBONISED
/CHARRED**

preserved under dry,
anaerobic
conditions

DESSICATED

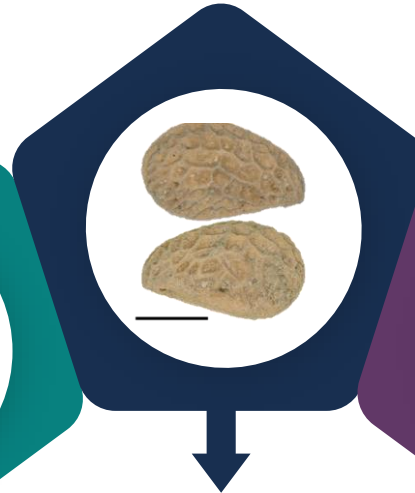
preserved in soils
with high levels of
 $\text{Ca}_3(\text{PO}_4)_2$

MINERALIZED



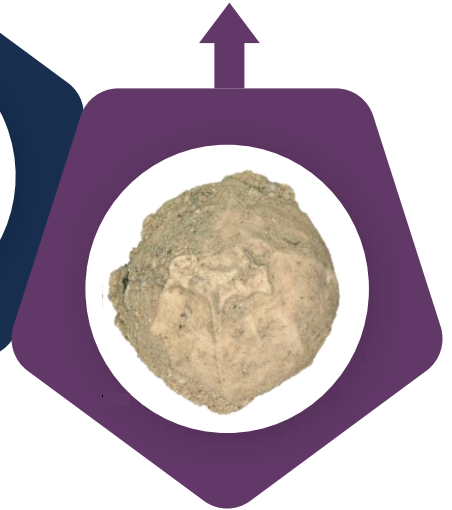
WATERLOGGED

preserved under
wet, anaerobic
conditions



FROZEN

preserved in
permafrost and in
mountaneous
regions



Case Studies

Marston, J.M. and Birney, K.J., 2021. Hellenistic agricultural economies at Ashkelon, Southern Levant. *Vegetation History and Archaeobotany*, pp.1-25.

Vignola, C., Bonetto, J., Furlan, G., Mazza, M., Nicosia, C., Ermolli, E.R. and Sadori, L., 2021. At the origins of Pompeii: the plant landscape of the Sarno River floodplain from the first millennium bc to the ad 79 eruption. *Vegetation History and Archaeobotany*, pp.1-16.



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References from the slides

- Fuller and Lucas, 2014. https://doi.org/10.1007/978-1-4419-0465-2_2273
- Pinska and Badura, 2017.
https://www.researchgate.net/publication/323808750_Pinska_K_Badura_M_2017_Warunki_przyrodnicze_i_dieta_roslinna_mieszkancow_Pucka_w_poznym_sredniowieczu_W_M_Starski_red_Puck_-_kultura_materialna_malego_miasta_w_poznym_sredniowieczu_Uniwersytet_Warszaw/figures?lo=1
- van der Veen, 2007.
<https://www.sciencedirect.com/science/article/abs/pii/S0305440306001865>



Some helpful resources to learn more...

- **Pearsall, D. (2015).** Paleoethnobotany, 3rd Edition: A Handbook of Procedures, Left Coast Press.
- **Hastorf, C.A., and Popper, V. S. (1988).** Current paleoethnobotany: Analytical methods and cultural interpretations of archaeological plant remains. University of Chicago Press.
- **Marston, J.M., Guedes, J.D.A. and Warinner, C. eds., 2015.** *Method and theory in paleoethnobotany*. University Press of Colorado.



Thank you for your attention!

