

1. Sample: <https://viewer.gigamacro.com/view/YXiJXebBYIsKcheo>. Name this rock using the Dunham classification, including the dominant type of allochem.

2. Sample: <https://viewer.gigamacro.com/view/YXiJXebBYIsKcheo>. The upper bed is normally graded, and contains shell fragments of arthropods (described as ostracods, but the size suggests that they are leperditicopid arthropods, which are now known to not be true ostracods). Calcite arthropod shells of ostracods and trilobites often appear black. The brownish color of the matrix suggests some dolomitization, where the primary calcite has been altered to dolomite in a very shallow environment on or near a tidal flat.

The upper bed can be named as grading from one lithology to another. What Dunham name would you give to the bottom part of the bed, and what name would you give to the top part?

3. Sample: <https://viewer.gigamacro.com/view/OurmL43z9kSymzm1>. What Dunham name would you give to the rock below the contact? The rock above the contact contains some skeletal grains, but what other type of allochem is also present? What type of organism are the tiny white skeletal grains? What Dunham name would you give to the rock above the contact?

4. Sample: <https://viewer.gigamacro.com/view/DoEkyOjEgFOTOH26>. What Dunham name would you give to the sample? Use the middle part, as the base and top of the sample are a bit different.

5. Sample: <https://viewer.gigamacro.com/view/IIDl84JfGIMGJplo>. This type of rock, with densely-packed and often broken shell pieces, is often called a *coquina*. What name would it have in the Dunham classification?

6. Sample: <https://viewer.gigamacro.com/view/grKRBNm7lOHmJxVd>. Give this rock a name with the Dunham classification, including the main type of allochem.

7. Sample: <https://viewer.gigamacro.com/view/WMfp6dni2gF6bhAB>. Give this sample a name with the Dunham classification.

8. Sample: <https://www.virtualmicroscope.org/content/carboniferous-limestone-corals>. As the name suggests, skeletal grains from corals are the most common allochem.

Go to the view at

https://www.virtualmicroscope.org/rock_sample?asset=10agt14/index.html?x=40.79&y=29.21&zoom=0.36&s=0. What organism does this skeletal grain come from?

Go to the view at

https://www.virtualmicroscope.org/rock_sample?asset=10agt14/index.html?x=59.41&y=10.96&zoom=0.28&s=0. What organism does this skeletal grain come from?

Give the rock a name with the Dunham classification.

9. Sample:

<https://www.virtualmicroscope.org/sites/default/files/html5Assets/leeds16/index.html?iframe=true&width=1160&height=460>.

Give this rock a name with the Dunham classification.

10. Sample:

<https://www.virtualmicroscope.org/sites/default/files/html5Assets/p17001/index.html?iframe=true&width=1160&height=460>.

What is the most abundant allochem in this sample? What other allochem types are present? Is the material between allochems micrite or sparry cement?

11. Sample: <https://www.virtualmicroscope.org/content/limestone-alwalton-marble>. There are many oyster shells fragments in this sample, distinguished by their characteristic fibrous microstructure. Give this sample a name with the Dunham classification.

Examine the area in Rotation 2. There is an oyster shell, but what type of organism made the other large skeletal grain? Note the syntaxial cement, where the calcite cement grew in optical continuity (with the same crystal orientation) as the skeletal grain.

12. Sample: <https://www.virtualmicroscope.org/content/x-s288-21051101>. This sample contains prominent clasts composed of micrite with planktonic foraminifera. Do you think these are more likely to be intraclasts or extraclasts? Why?

13. Sample:

<https://www.virtualmicroscope.org/sites/default/files/html5Assets/crinoidal/index.html?iframe=true&width=1160&height=460>

Give this rock a name with the Dunham classification.

14. Sample:

<https://www.virtualmicroscope.org/sites/default/files/html5Assets/wct1/index.html?iframe=true&width=1160&height=460>

What is the primary organism that produced skeletal grains in this sample? List two other types of allochems that are present. Is the rock a lime mudstone, wackestone, packstone, or grainstone?

15. Sample: <https://www.virtualmicroscope.org/content/leeds-11-fossiliferous-limestone>

This sample contains beautiful bryozoans and a few rudist bivalves

(https://www.virtualmicroscope.org/rock_sample?asset=leeds11/index.html?x=31.37&y=7.94&zoom=0.11&s=0). Give this rock a name with the Dunham classification.

Chalk is a carbonate rock made primarily from the plates of microscopic plankton called coccolithophores. Most chalks are light in color (white or gray), as in this sample:

<https://viewer.gigamacro.com/view/SxmzvknWtdjRQetG>. You can examine it under an electron

microscope in this image: <https://viewer.gigamacro.com/view/axV8F49IOsvV3k3j>. Note that coccolith plates are actually quite rare, but you can find some (they look like partial pineapple rings). Most grains are micrite (which appear as calcite crystals at this magnification).