



About Microfossils

The microfossils illustrated in this game (see www.thejr.org) were brought up from the seafloor of the Bahamas Basin in 1968, during the *Glomar Challenger*'s maiden voyage for deep sea drilling and scientific research. (The *Glomar Challenger* was used for deep sea drilling before the *JOIDES Resolution* was launched.)

Microfossils are the fossilized remains of very tiny animals and plants that are too small to be observed with the naked eye. When they die, these tiny animals and plants sink to the ocean floor where their shells accumulate over time and eventually become fossils.

When microfossils come up in core samples they can be used to learn about Earth's history. For example, some microfossil species lived under different climate and environmental conditions and if we identify them we can tell if the ocean water was warm or cold at the time when they were alive. The same can be learned from the coiling of the shell (to the right or to the left) of some microfossils.

Even more, the oxygen stored in the microfossil shells can tell us about the temperature of the water when they were alive or whether Earth's climate was in a cool glacial period or a warm interglacial period. Scientists study these fossils along with other types of evidence to make inferences about the past, and to determine the age of the sediment in the core.

The identification of microfossils is not easy. In fact, a micropaleontologist typically specializes in just one microfossil group! The key to identifying microfossils lies in describing visual features unique to each specimen or species. Now it's your turn; all but one of these fossils are radiolarians from the Late Jurassic to Early Cretaceous periods – from about 150 to 127 million years ago. Radiolarians are delicate single-celled zooplankton that absorb silica from ocean water to form their shells. They can be shaped like cones, discs, or spheres; and some look like rings with "arms" or spokes. Can you identify the radiolarians in the game?

One of these microfossils, however, is not a radiolarian. It's a foraminiferan – 'foram' for short. It comes from the Late Cretaceous period – from about 75-65 million years ago. Like radiolarians, forams are protists (single-celled), but they're larger and their shells are made of calcium carbonate like clams and corals. Forams add chambers as they grow. Some look like fish eggs and some resemble snails. Can you identify the foraminiferan in the game?

To learn more, try these websites by the University of California's Museum of Paleontology:

- Getting Into the Fossil Record <http://www.ucmp.berkeley.edu/education/explorations/tours/fossil/>
- Introduction to the Radiolarians <http://www.ucmp.berkeley.edu/protista/radiolaria/rads.html>
- Introduction to the Foraminiferans <http://www.ucmp.berkeley.edu/foram/foramintro.html>

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