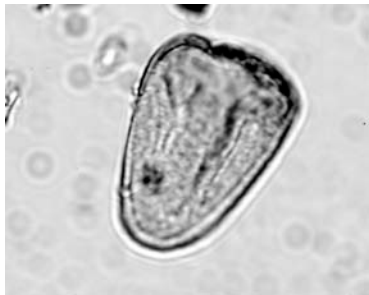


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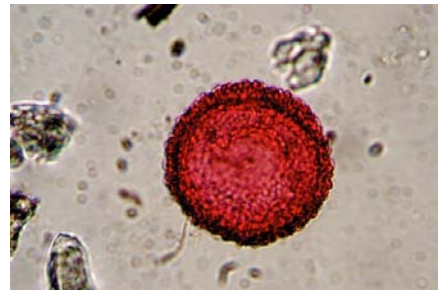
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Paleoclimate of the Hudson River Valley

This activity is based on actual pollen data collected by pollen researchers since the 1950's and most recently scientists from Lamont-Doherty Earth Observatory in and around the Hudson River. Based on the soil samples that you analyze during class, you will determine the amount and type of 'pollen' in each sample. From this information, you will determine the type of vegetation and age of the samples and will draw conclusions about the climate when the pollen was dispersed from its host plant.



Sedge pollen



Eastern Hemlock pollen

Materials:

Pie pan or paper plate

Tweezers (optional)

Soil samples with confetti representing pollen grains

Procedure:

1. Each group of students will receive a sediment sample, paper plate, and tweezers. Each sample contains 'pollen', with each color representing pollen from a different species of plant.
2. Separate the pollen from the sediment. Look carefully through the entire soil sample; some of the pollen grains are hard to find!
3. Use the pollen key below to determine what species of plants are represented in your sample. Calculate the percentage of the total pollen that comes from each species. Fill in the data table for the soil layer you are working on. Share your observations with the class.
4. Use the information given with each species description to decide what the climate was like when your layer was deposited.

Class observation data: Write down the **percentage** of each plant species found in each layer.

Plant Species	Sediment Layer							
	8	7	6	5	4	3	2	1
Oak								
Spruce								
Fir								
White pine								
Chestnut								
Hickory								
Paper Birch								
Hemlock								
Ragweed								
Common reed								
Sedge								
Dwarf birch								
Sorrel								
Creeping evergreen shrub								

Questions:

1. Based on your observations, what was the climate like during the time when your pollen was shed?

2. Your teacher will give you some background reading. Based on this information, what time period do you think your layer corresponds to?

3. Using everyone's data, graph the temperature shifts through time on the board, with 'time' on the x-axis and 'temperature' (warm, cool, cold) on the y-axis. Discuss the results.

4. What was the overall pattern of climate change during the last 16,000 years? What might have caused these changes?

5. Using the graph shown by your teacher, what is currently happening with the climate in relation to the past?

6. When looking at the cumulative data collected by your class, what trends do you notice?
