

Viruses, Bacteria, Protists, and Fungi ▪ *Enrich*

A Really Big Fungus

Because many fungi live in the soil, we normally aren't aware of them. However, their underground networks of hyphae can become enormous.

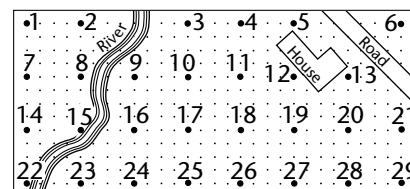
In 1982, scientists discovered a specimen of the fungus *Armillaria bulbosa* living beneath about 150,000 square meters of soil in Michigan. Of course, scientists couldn't see the entire fungus directly. Instead, they compared the DNA of fungus samples taken at different locations. DNA is the substance that determines an organism's inherited characteristics. Each individual's DNA is slightly different from that of others of its species. Scientists saw that DNA from fungus samples taken from neighboring locations were identical. Because of this, they knew they were looking at samples of one very large fungus.

Scientists have taken samples of the fungus *Armillaria bulbosa* at the numbered locations on the map below. Seven DNA types were identified from the samples. Assume that each DNA type identifies an individual fungus.

DNA Type	Location	DNA Type	Location
Type 1	1, 2, 7	Type 5	12, 19, 26, 27
Type 2	8, 14, 15, 22	Type 6	6, 13, 20
Type 3	3, 9, 10, 16, 17, 23, 24, 25	Type 7	21, 28, 29
Type 4	4, 5, 11, 18		

Answer the following questions on a separate sheet of paper. Show your work.

- Find the locations of each DNA type on the map. Draw lines on the map dividing the DNA types from one another.
- Assume that each sample location corresponds to an area of 1,600 m². How many square meters do the largest and smallest individual fungi on the map cover?
- Assume that there is 0.75 kg of fungus per square meter of fungus. What is the weight of the largest and smallest fungi on the map?
- If the hyphae in each square meter of fungus were lined up end to end, they would stretch about 90 m. What is the length in kilometers of the hyphae in the largest fungus on the map?



50 meters