

## How Do Scientists Teach Children about the NanoWorld They Cannot See?

The Nanobiotechnology Center (NBTC), in collaboration with the Sciencenter of Ithaca, is creating a large-scale traveling exhibition about nanobiotechnology. The purpose of the exhibition is to introduce children and their families to the biological wonders of the nanoworld. The exhibition serves to inspire and educate visitors through interactions with the exhibits and each other.

The target audience for this interactive learning environment is children ages 5 to 8. Taking complex concepts of nanotechnology and translating them into concepts understandable by young children is one of the challenges faced by the exhibition development team. Through interviews with children in this age range, the team found that the smallest objects children can discern are ants and sand. The largest number they can comprehend is 100 at the first grade level and 1,000 at the second and third grade levels. When given a magnifying glass, about half of the children of 5 years of age understand what it is, and many children ages 5 to 8 do not know how to use it.

Undaunted by these findings, the development team created several themes that tie the exhibition together: amazing things happen that are too small to see with just your eyes; scientists and kids can use tools to observe these small things; small things are made up of even smaller pieces; there are many small things inside my body; and nano is really, really small. The exhibition development team hopes to lay the groundwork and create a context for future learning about nanobiotechnology.

Exhibits will include huge magnifying glasses, fluorescence cell sorters (with balls representing cells), a magnification station with microscopes and objects of all types, and a scope on a rope that magnifies objects up to 200 times. The latter exhibit will enable museum visitors to see the individual fibers on their clothing and hairs on their skin.

The exhibition is scheduled to open in fall 2003 at the Sciencenter of Ithaca. It will then travel across the country to nine other museums, reaching approximately a million museum visitors.

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