



Nanobots- the next BIG thing?

For ages: 10-14

Time: 15-40 minutes; depending on how much time you spend on the websites.

Nanogold particles are currently a hot topic of study. Scientists have been exploring ways to use nanoparticles, in particular nanogold, to treat diseases such as cancer. In addition to treating cancer, nanogold may also prove useful in treating bacterial infections and in the early detection of disease.

In this activity we will explore the function of nanogold particles in the treatment of disease. You will also learn what a nanobot really is and how they could be used to save many lives. Pay attention because you just might be the next scientist to determine how nanobots could be used in the body!



Materials

- Internet access
- Scratch paper for note taking

Activity

1. View "Nano Imaging Animation" to visualize how nanogold particles can be used to both treat and detect disease.

http://www.accessnano.org/teaching-modules/health_medicine/nanogold

Gold nanoparticles are really silica particles coated in nanogold. It is important to note that both these substances are non-toxic to the body.

After the nanogold is injected into the cancer patient's blood stream the nanoparticles will adhere to the cancerous cells. Once the particles are attached, a near-infrared laser is used to heat up and eventually kill the cancerous cells.



2. View "Design your own Nanobot" to investigate the potential uses of nanotechnology in disease prevention and intervention.

<http://www.accessnano.org/teaching-modules/health-medicine/nanogold>

A nanobot is constructed from nanoscale components. Theoretically, nanobots could then be injected into the body to deliver drugs or even perform surgery. Before we think about building our nanobot just a few things to keep in mind

- Many scientists are now realizing that the best nanotechnologist is in fact Mother Nature.
- The human body is a hostile place for things that shouldn't be there.

3. Answer the following questions to the best of your ability (AccessNano, n.d)

You are a nano-engineer responsible for making nanobots. Using your knowledge from the previous videos, complete the activity below to design your own nanobot.



A. What is the *function* of your nanobot?

B. Will it have any special *features*? If so list them.

C. What will it be made of? Include both the internal and external components of your nanobot.

D. Draw a picture of your nanobot below and label the parts explaining what each appendage/component is designed for.



4. Visit Duckboy in Nanoland to help him on his mission in addition to experiencing some of the complications that are associated with working on the nanoscale!



<http://www.sciencemuseum.org.uk/antenna/nano/nanoland/nanoworld.asp>

To test out your new knowledge...

After completing each of the interactive missions with Duckyboy it is now time to revisit the above questions 1-4. Knowing what you know now, would you answer these questions any differently?

References

<http://www.accessnano.org/teaching-modules/health-medicine/nanogold>

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