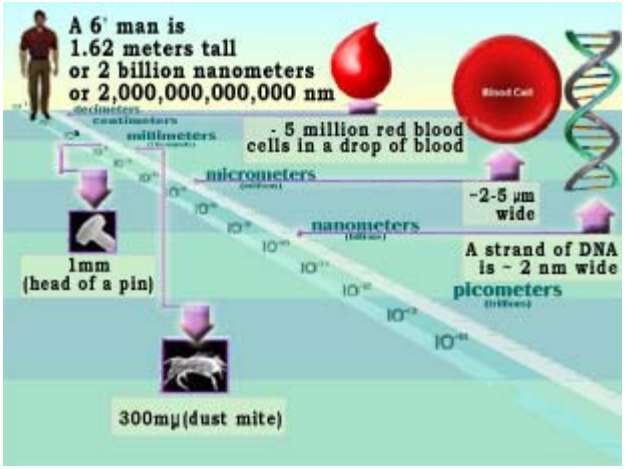
What is Nano?

We look all around us at world, but what we don't know is there a whole other world that we can not see, it is called the **Nanoworld.** The nanoworld is made up of very very very very tiny things. In nanoworld when things are on the order of 100 nanometers or smaller. One **nanometer** is 1 billionth of a meter, that is really really small!! What makes the nanoworld so special is that things on the nanoscale act different then then do in the larger world.



COOL FACTS

- Our bodies are filled with trillions and trillions of things on the nanoscale!! Your body is a nanofactory with many many things happening on the nanoscale!!
- One molecule of sugar is approximately one nanometer!! That means one sugar cube contains 2,110,000,000,000,000,000,000 molecules of sugar!!
- A human hair is 200,000 nm wide!!!!
- Our chromosomes that hold our genetic information are 100 nm!! Something on the nanoscale defines who we are!!!
- A bubble is about 100 nm thick!!!

FAQ's

Q: How do scientists understand what is occurring in the nanoworld??

A: Just like we have senses we use, such as sight, and touch, and smell to figure out what is occurring all around us. There are senses that scientists can use in the nanoworld. Sight is not one of them because everything so small. Scientists use touch much more in the nanoworld they have instruments that can feel things on the nanoscale and determine what they look like by how they feel!!!

Q: What is an example of how something acts differently on the nanoscale than a larger scale?

A: Gold is very different on the nanoscale than a larger scale. If you buy a piece of gold at a jewelry store, it looks gold. One ounce of gold has 86,600,000,000,000,000,000,000 atoms bonded together while a gold nanoparticle has approximately 65 atoms bonded together. With only 65 particles of gold the properties of the gold change, gold looks red to our eyes. On the larger scale gold is a good conductor of electricity, while gold nanoparticles are insulators.

Q: What are some things in our bodies that on the nanoscale?

A: We have many things in our bodies on the nanoscale, our DNA is only two nanometers wide, cell membranes are 10 nm thick, our body has little motors inside our cells that that on 100 nm big, and little switches in our eyes that about 10 nanometers.

Q: As scientists learn more about the nanoworld what can we expect?

A: There are hopes that many things can come out of experimenting in the nanoworld. If scientists can control molecules in the nanoworld they hope to make faster computers and help to cure diseases. There are few products that use the nanoscale right now, new computer monitors that are now being sold use carbon nanotubes in the displays. Clothing uses nanofibers, fibers on the nanoscale to keep clothes from staining. Bandages are being sold with silver nanoparticles to help wounds heal.

RELEVANCE TO OUR LIVES: With better scientific instruments and the amazing ability of scientists, the nanoworld is starting to come into focus. Scientists and engineers are quickly learning about how to manipulate things in the nanoworld to produce some amazing things. In the future our lives are going to be influenced by the products of research in the nanoworld!! Stay tuned because what is happening in the nanoworld is the next big thing in science!!

RESOURCES:

Powers of Ten: http://www.powersof10.com/

The Universe from light years to nanometer:
http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10/

Nanokids: http://nanokids.rice.edu/