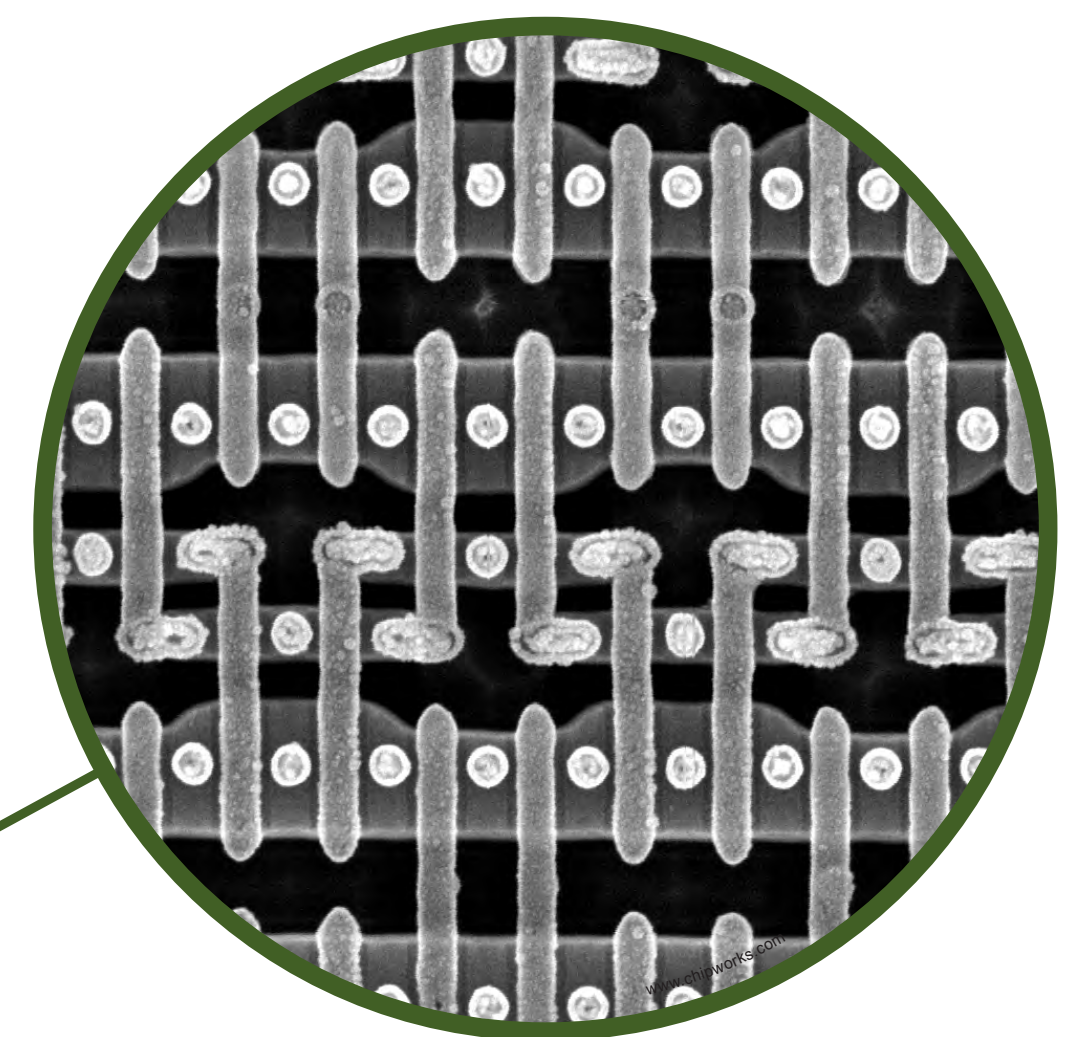
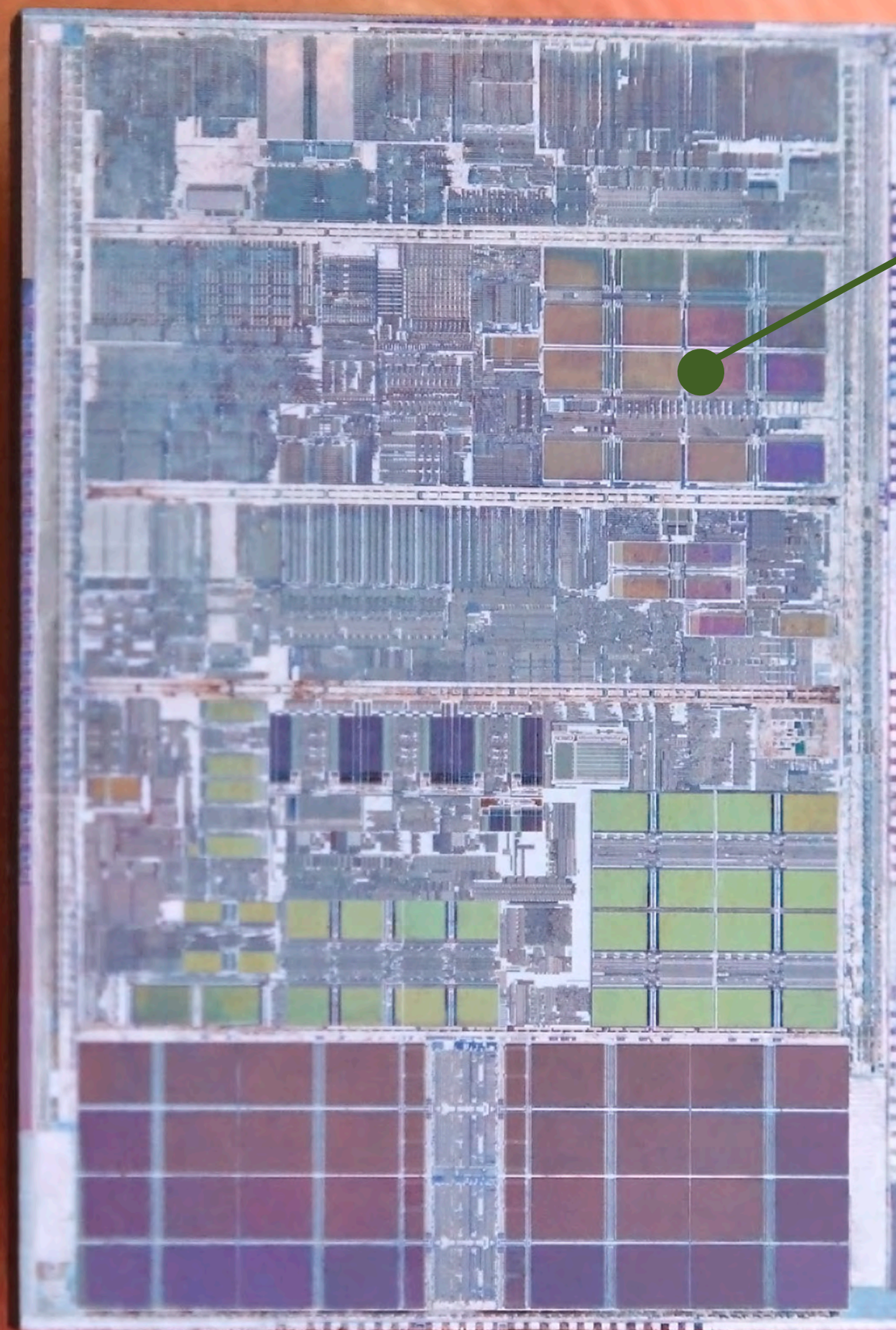


# Nano is

studying and making tiny things



**Nanotechnology  
makes computer chips  
smaller and faster**

**A nanometer is a billionth of a meter**



# I think nano is...

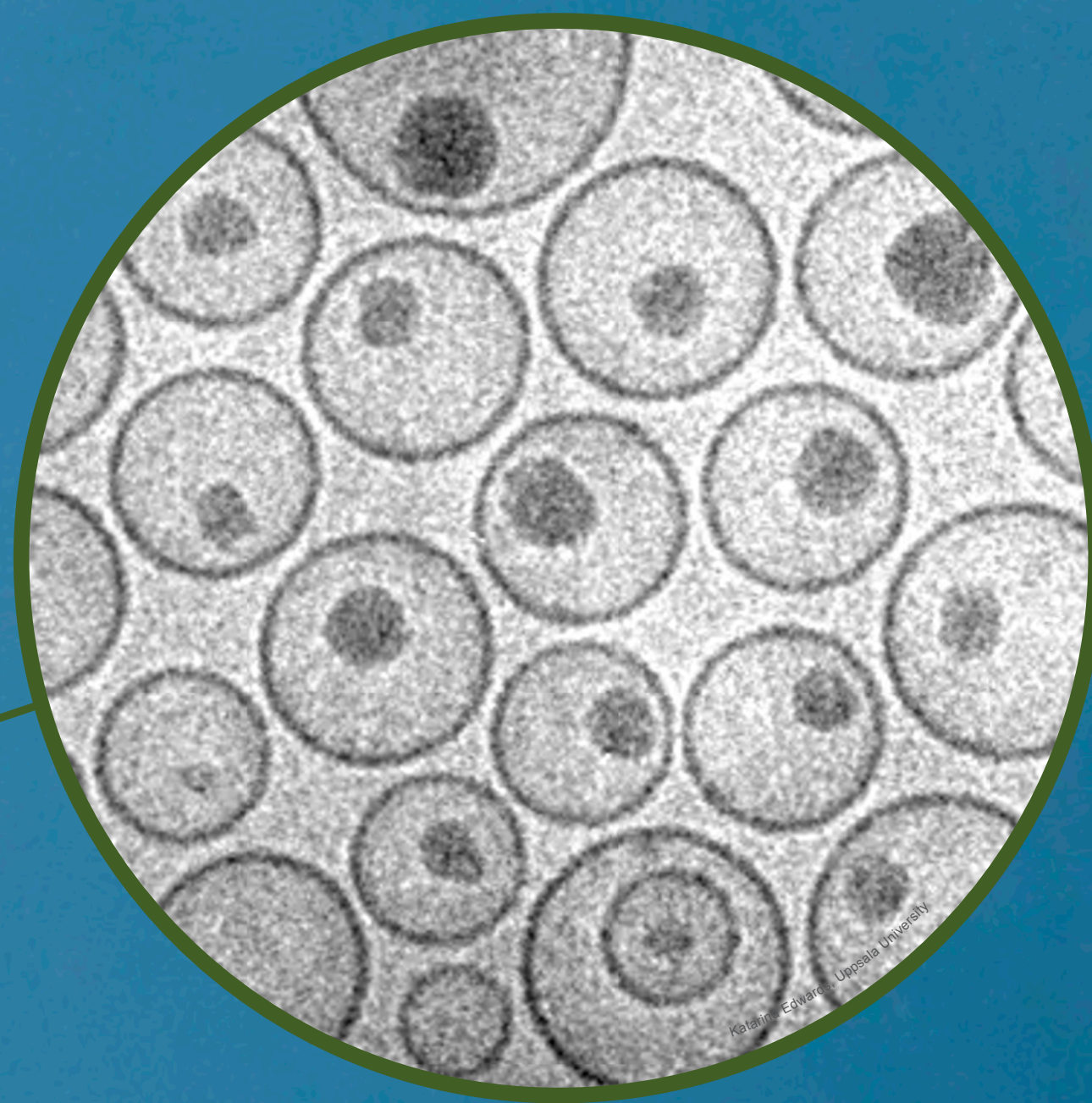
We all have a role in  
shaping our nano future

Nano is super small  
and really important!



# Nano is new technologies

Nanocapsules deliver  
medicine directly to tumors

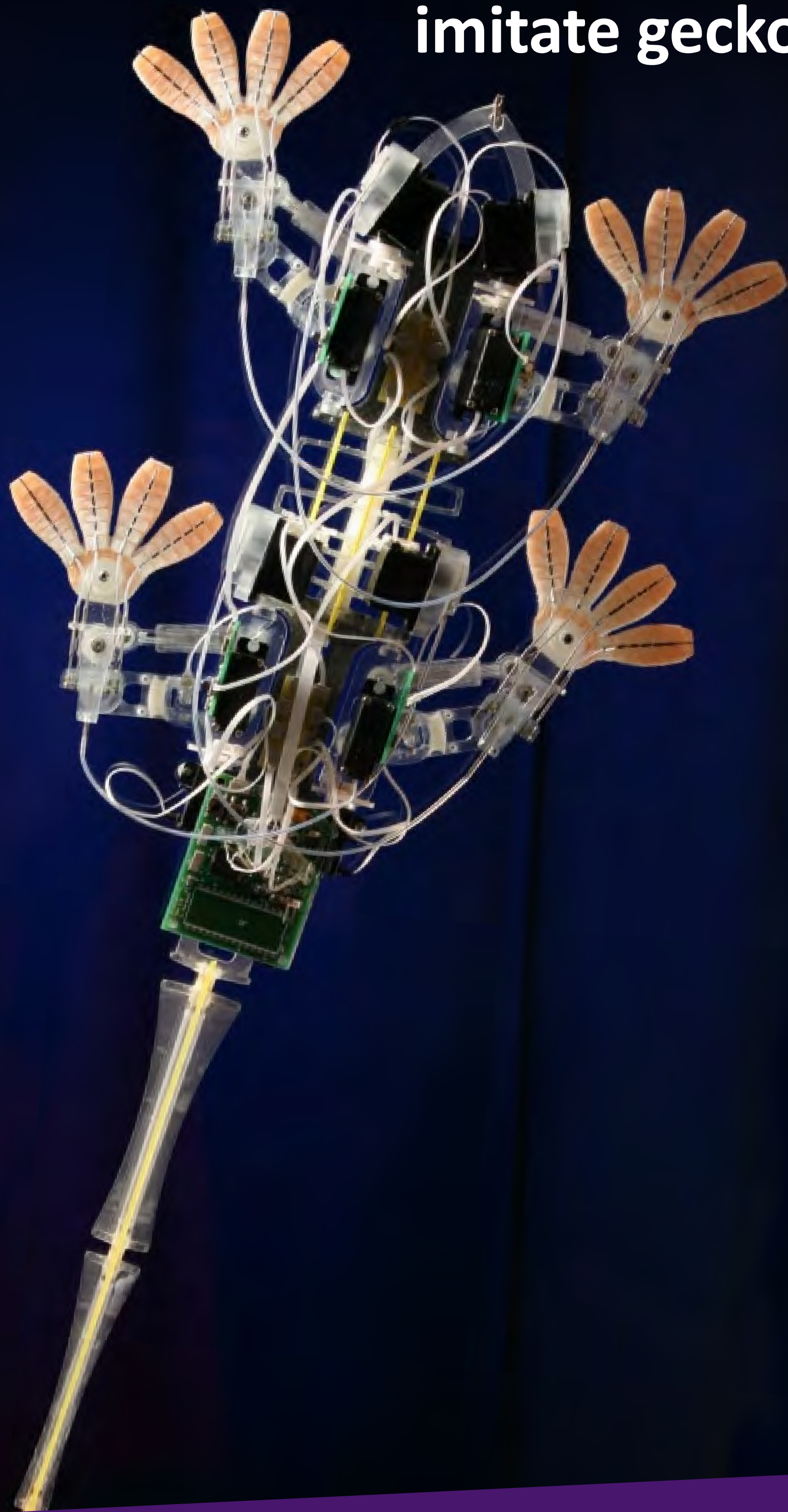


Nanotechnology may transform the way we live



# Nano is in nature and technology

Climbing robots  
imitate geckos



Tiny “hairs” on  
their feet let geckos  
walk on walls

## Nano is studying and making tiny things



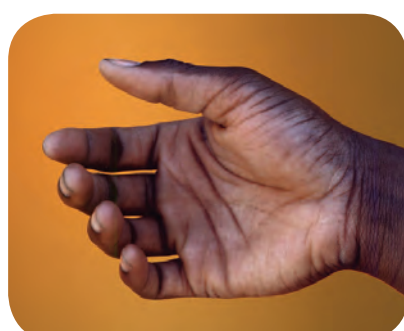
# How small is nano?

The world is full of things of all different sizes! In your everyday life, you come across things in at least three different size scales: the *macroscale*, the *microscale*, and the *nanoscale*.



## Child

A child is about 1 meter tall  
1 meter = 1,000,000,000 nm (1 billion nanometers)



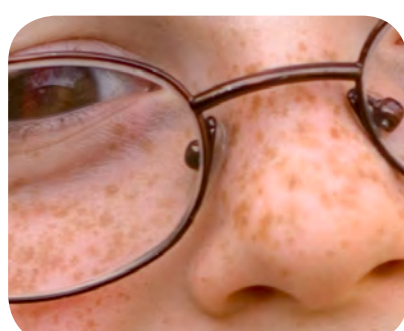
## Hand

A hand is about 1 decimeter wide  
1 decimeter = 100,000,000 nm (100 million nanometers)



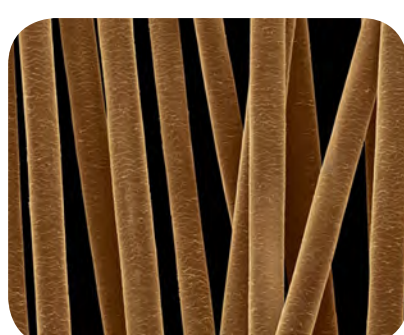
## Pinky Finger

A pinky finger is about 1 centimeter wide  
1 centimeter = 10,000,000 nm (10 million nanometers)



## Freckle

A freckle is about 1 millimeter wide  
1 millimeter = 1,000,000 nm (1 million nanometers)



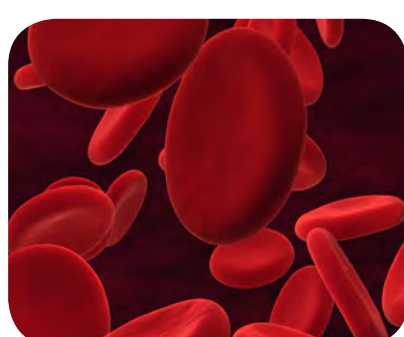
## Strand of Hair

A hair is about 0.1 (one tenth) of a millimeter wide  
0.1 millimeter = 100,000 nm (100 thousand nanometers)

## Macroscale

The macroscale includes things we can see with our eyes, from big to small. There are lots of ways to measure macroscale things, including *meters*. Meters are about the same size as a yard.

Kids around six years old are about a meter tall. A strand of hair is just a fraction of meter, 0.1 millimeters.



## Red Blood Cell

A red blood cell is about 10 micrometers wide  
10 micrometers = 10,000 nm (10 thousand nanometers)



## Bacteria

A bacteria cell is about 1 micrometer wide  
1 micrometer = 1,000 nm (1 thousand nanometers)



## Virus

A virus is about 0.1 (one tenth) of a micrometer wide  
0.1 micrometer = 100 nm (1 hundred nanometers)

## Microscale

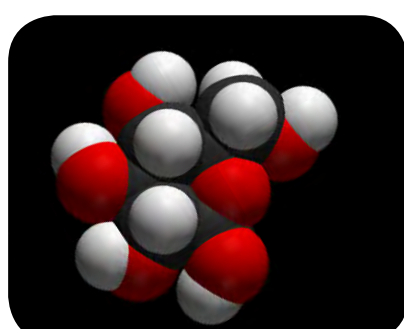
The microscale is smaller than the macroscale. To see microscale things clearly, we need tools like microscopes. We measure them using *micrometers*.

A micrometer is a millionth of a meter. Red blood cells are about 10 micrometers wide.



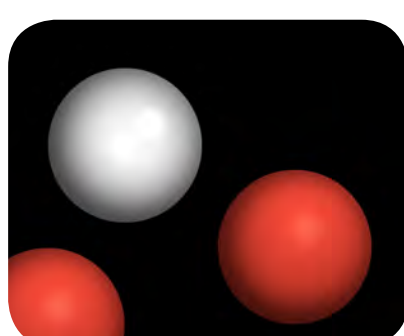
## Cell Membrane

A cell membrane is about 10 nanometers wide  
10 nanometers = 10 nm



## Sugar Molecule

A sugar molecule is about 1 nanometer wide  
1 nanometer = 1 nm



## Atom

An atom is about 0.1 (one tenth) of a nanometer wide  
0.1 nanometer = 0.1 nm

## Nanoscale

There's an even smaller scale, the nanoscale! Nanoscale things are so tiny, we can't see them with just our eyes, or even with light microscopes. We need special tools to make images of them. We measure nanoscale things using *nanometers*.

A nanometer is super small—a billionth of a meter! DNA is just two nanometers wide.