

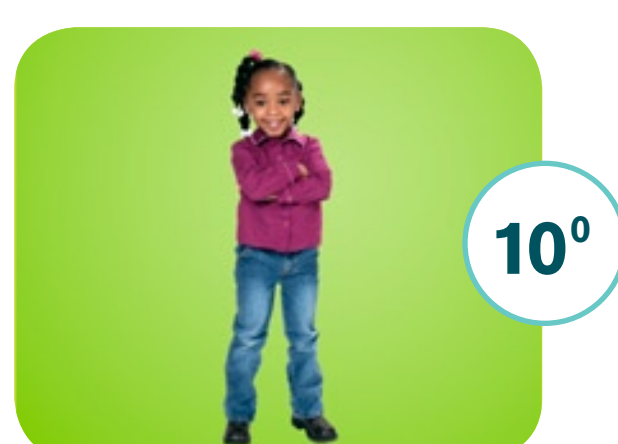
How small is nano?

Measuring different things

Macrosizes

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)



Macrosizes
meters, decimeters, centimeters, millimeters

Microsize

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)



Microsize
micrometers

Nanosize

Cell Membrane

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



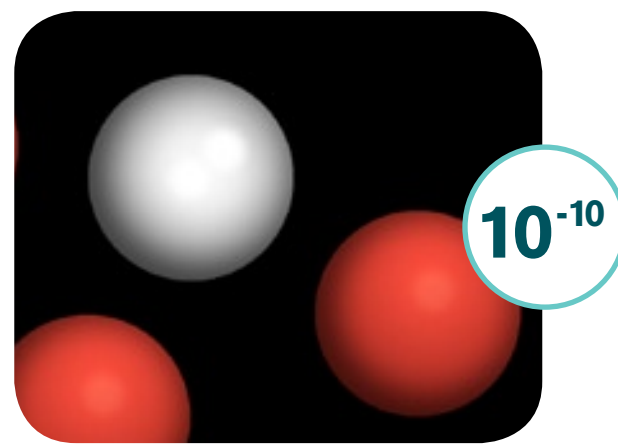
Sugar Molecule

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



Nanosize
nanometers



Emily Maletz
graphic design



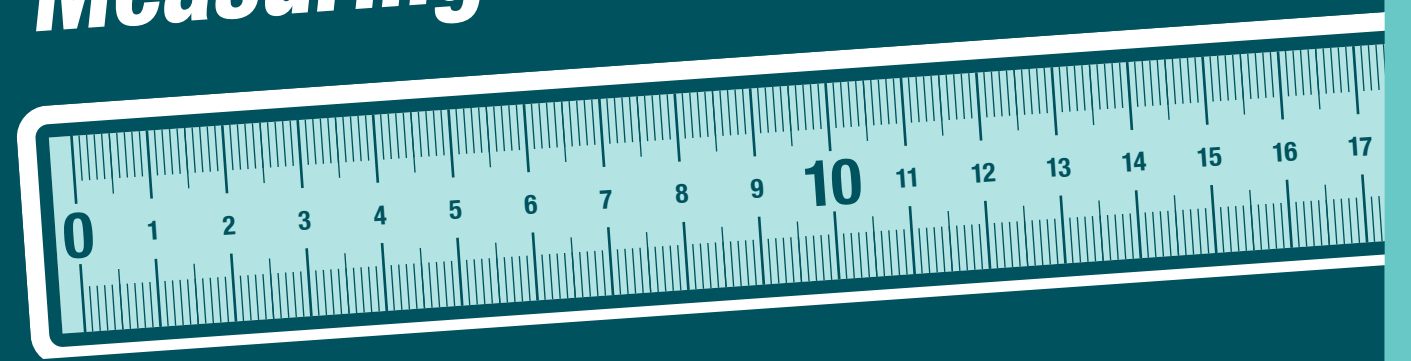
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A companion book available for purchase at www.k5u.com

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HOW SMALL IS NANO?

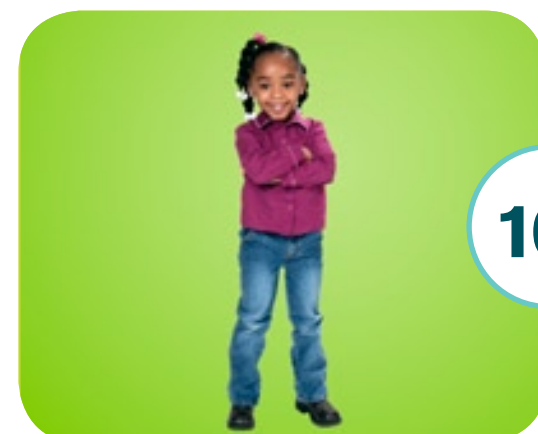
Measuring Different Things



Macrosize

Child

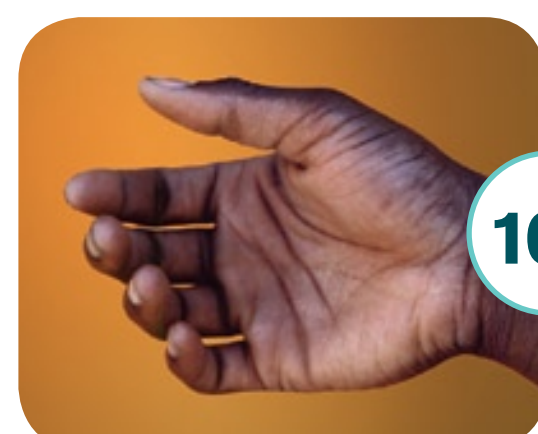
A child is about 1 meter tall
1 meter = 1,000,000,000 nm (1 billion nanometers)



10^0

Hand

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



10^{-1}

Pinky Finger

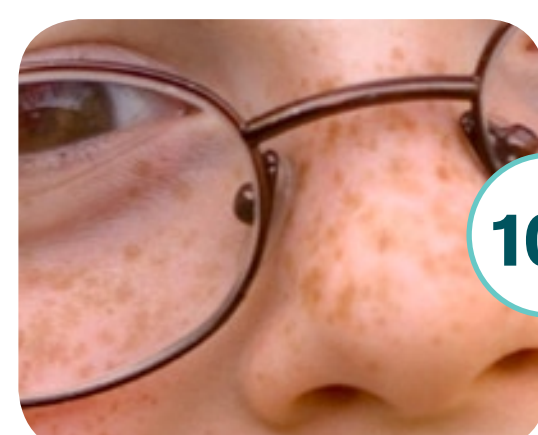
A pinky finger is about 1 centimeter wide
1 centimeter = 10,000,000 nm (10 million nanometers)



10^{-2}

Freckle

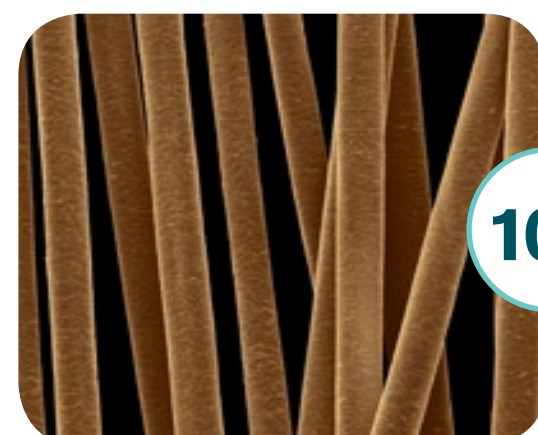
A freckle is about 1 millimeter wide
1 millimeter = 1,000,000 nm (1 million nanometers)



10^{-3}

Strand of Hair

A hair is about 0.1 (one tenth) of a millimeter wide
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10^{-4}

Macrosize
meters, decimeters, centimeters, millimeters

Microsize

Red Blood Cell

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



10^{-5}

Bacteria

A bacteria is about 1 micrometer wide
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10^{-6}

Virus

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



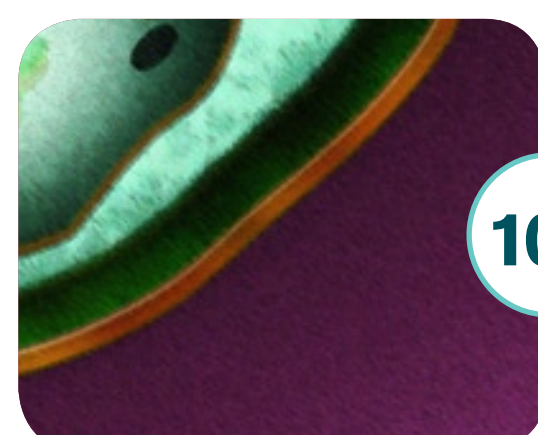
10^{-7}

Microsize
micrometers

Nanosize

Cell Membrane

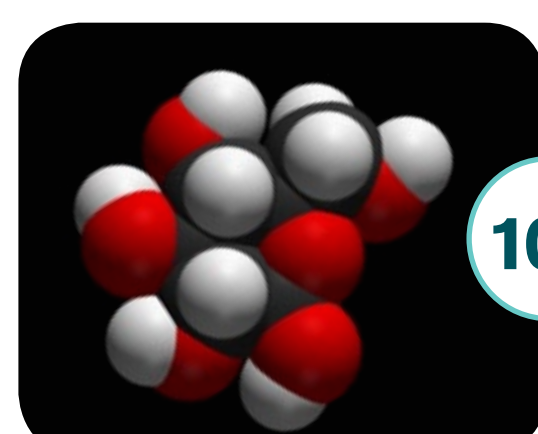
A cell membrane is about 10 nanometers wide
10 nanometers = 10 nm



10^{-8}

Sugar Molecule

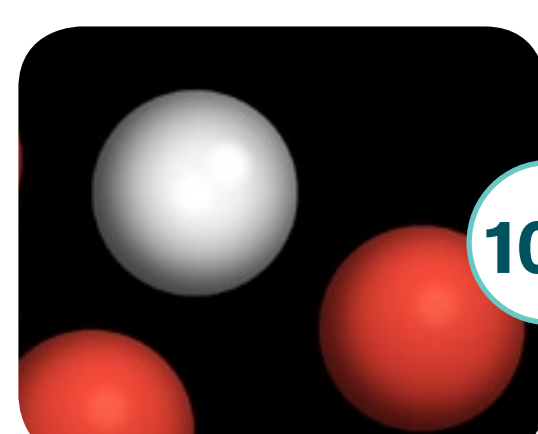
A sugar molecule is about 1 nanometer wide
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10^{-9}

Atom

An atom is about 0.1 (one tenth) of a nanometer wide
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10^{-10}

Nanosize
nanometers



Emily Maletz
graphic design



NISE
network

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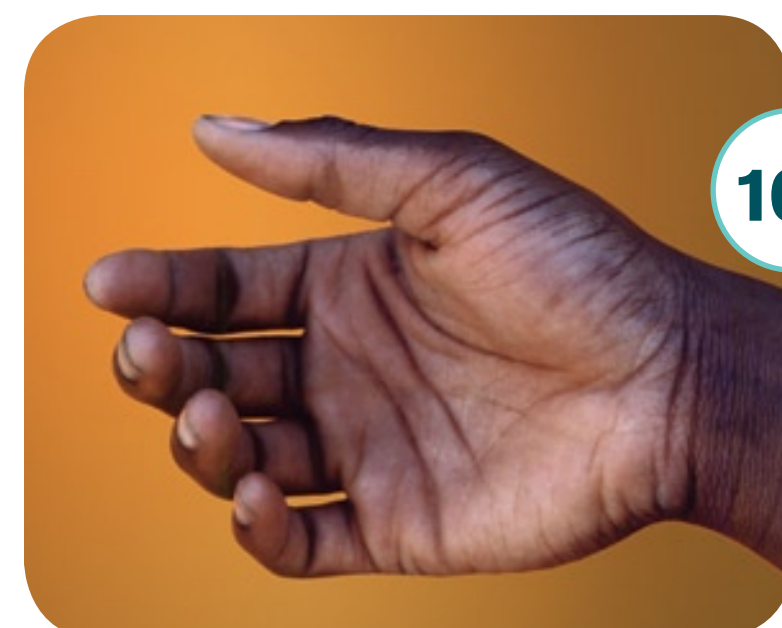
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Pinky Finger



10^{-2}

A pinky finger is about 1 centimeter wide
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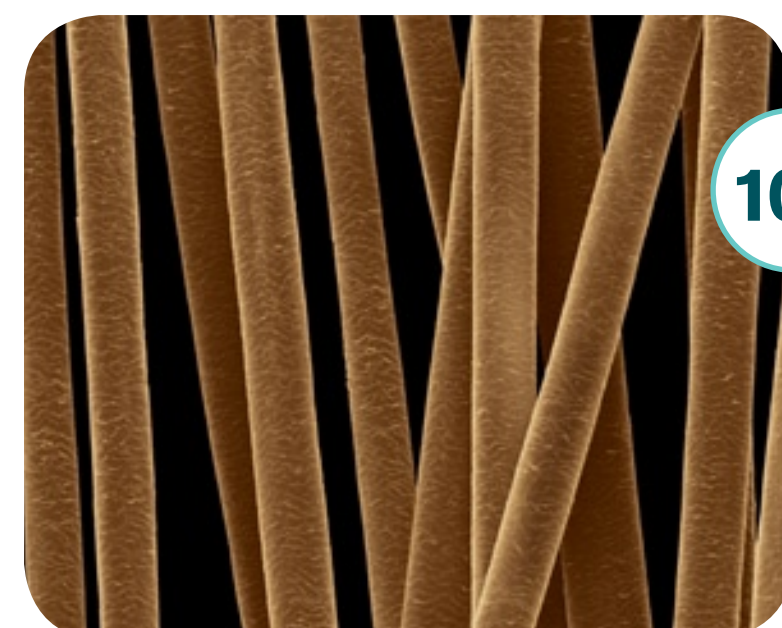
Freckle



10^{-3}

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Strand of Hair



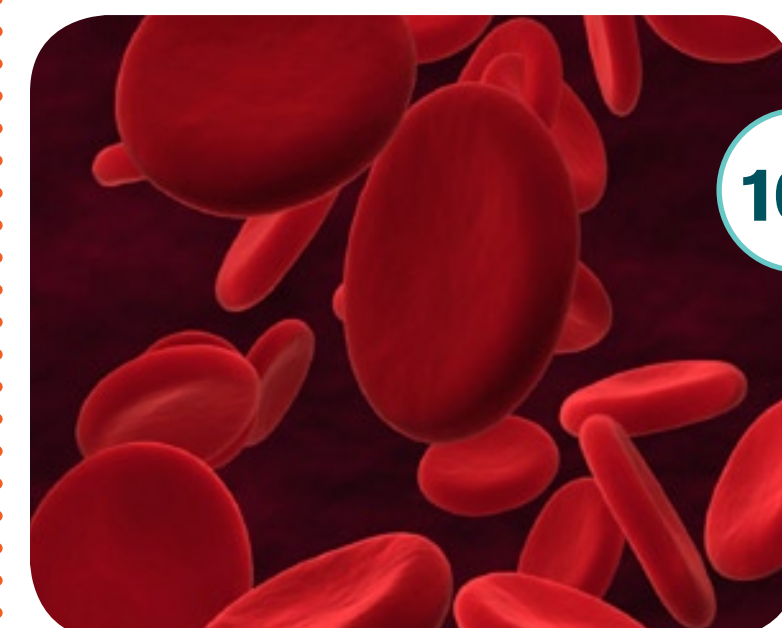
10^{-4}

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Microsize

micrometers

Red Blood Cell



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A red blood cell is about 10 micrometers wide
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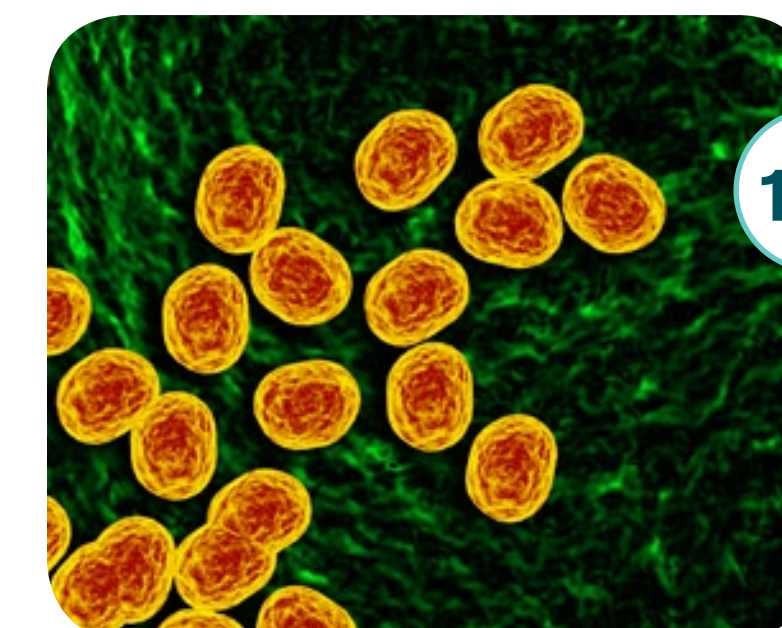
Bacteria



10^{-6}

A bacteria is about 1 micrometer wide
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Virus



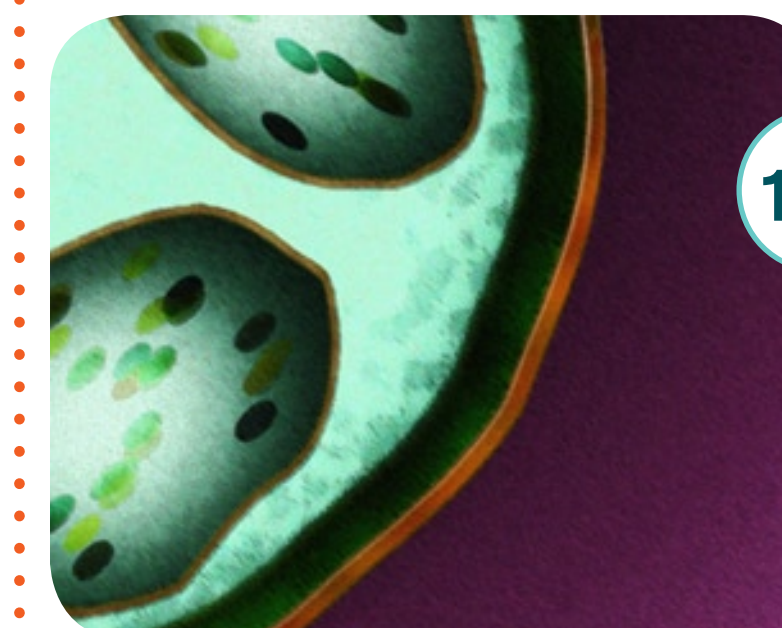
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Nanosize

nanometers

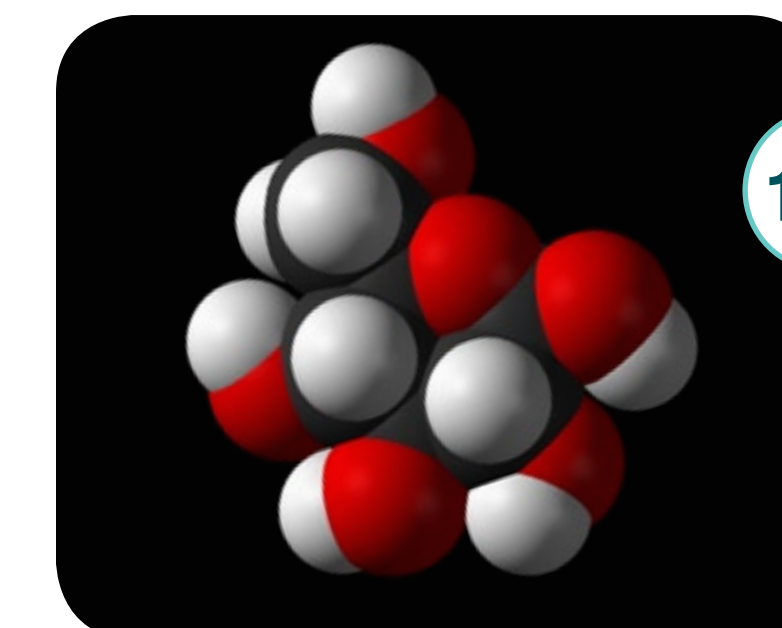
Cell Membrane



10^{-8}

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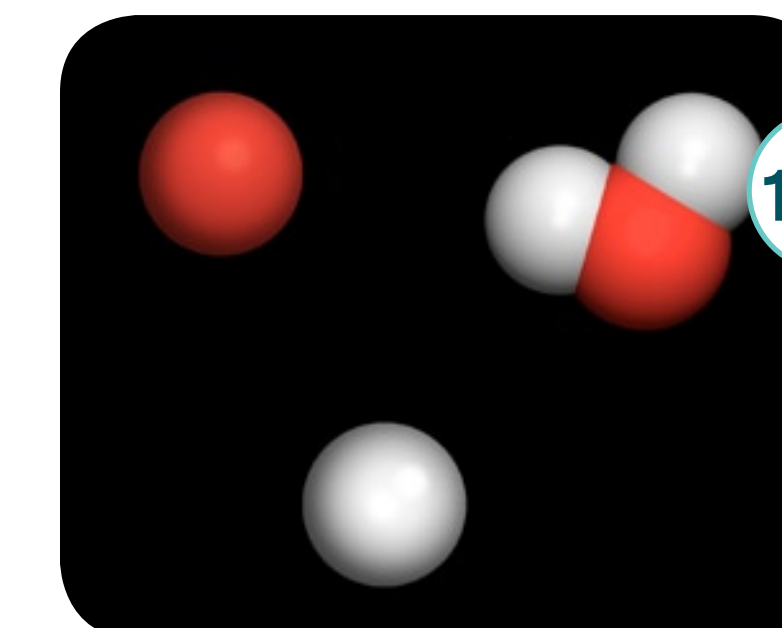
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NISE
network
NATIONAL INSTITUTE OF
SCIENCE EDUCATION

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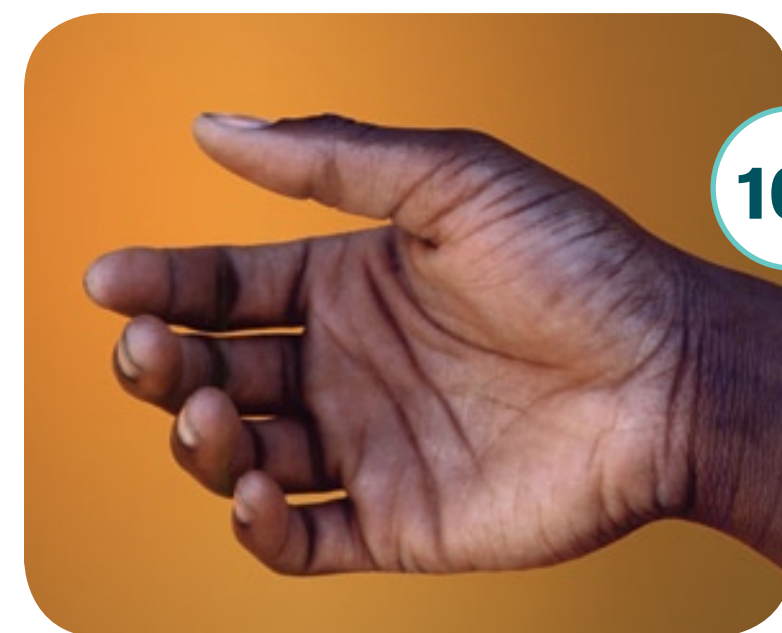
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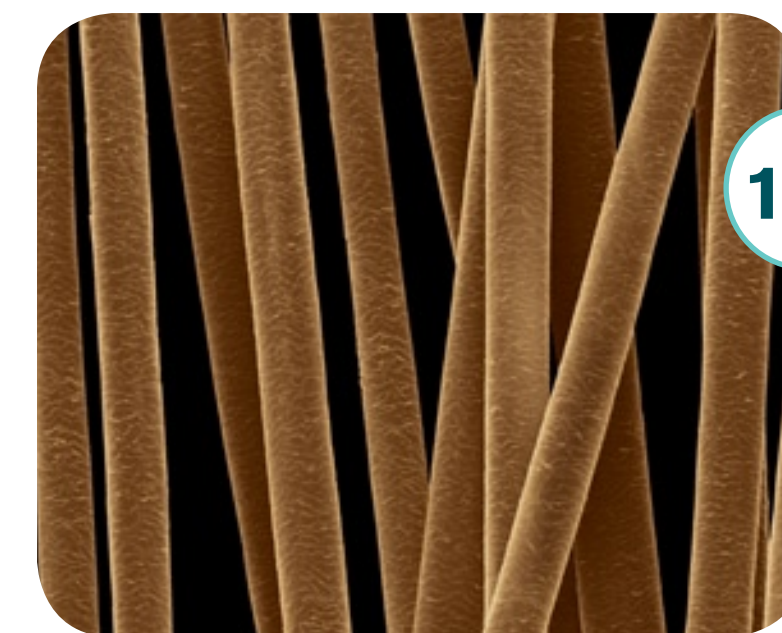
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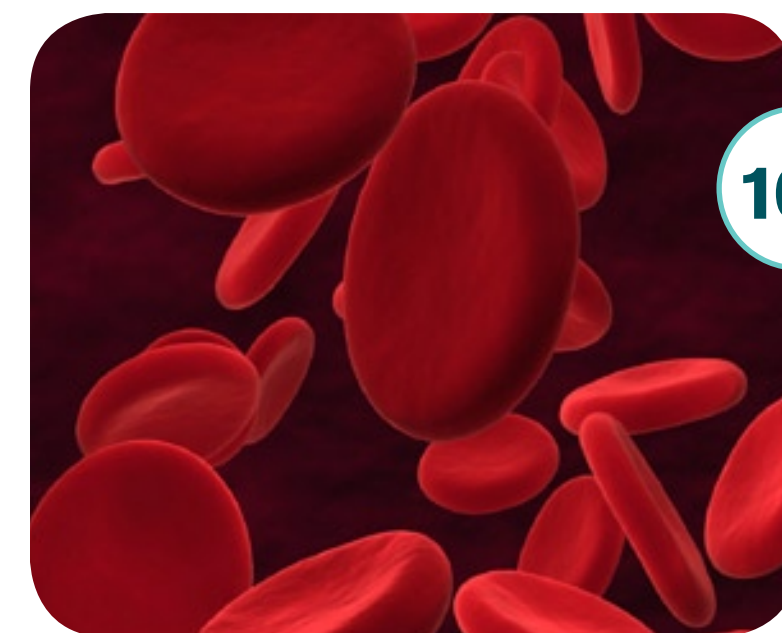
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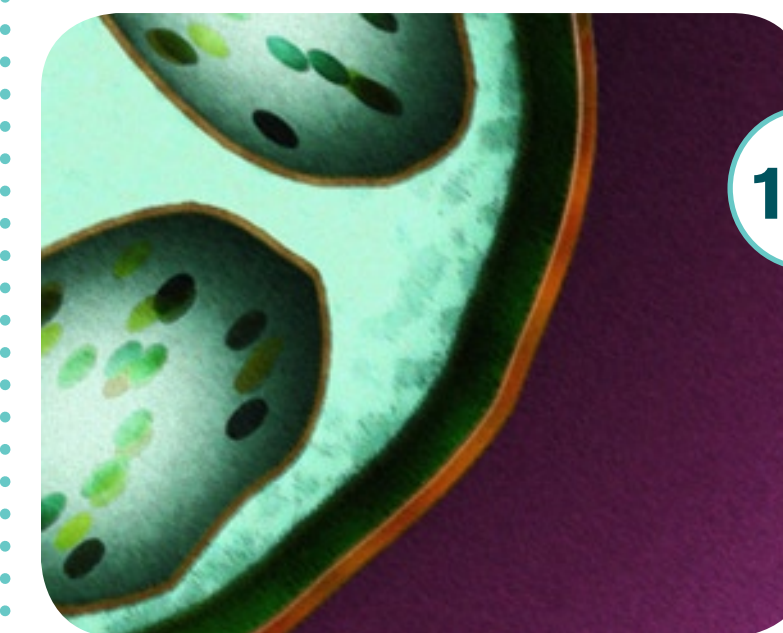
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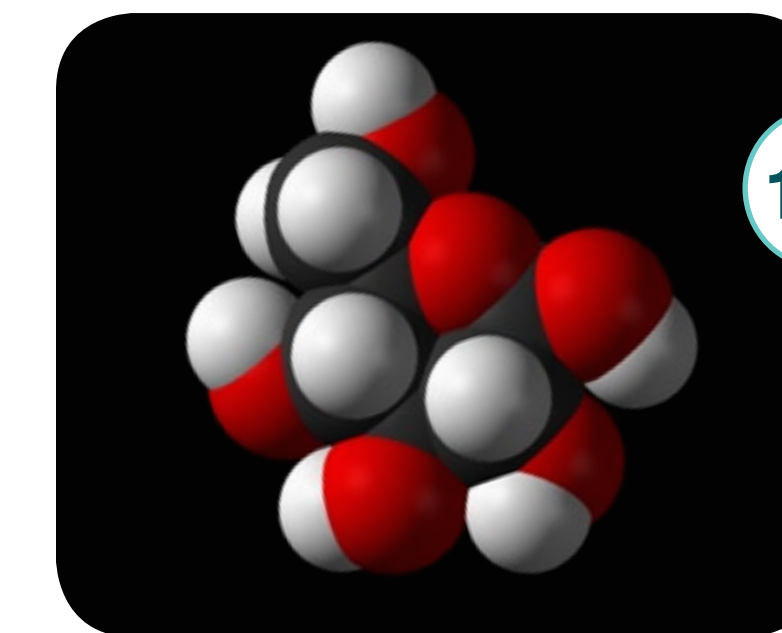
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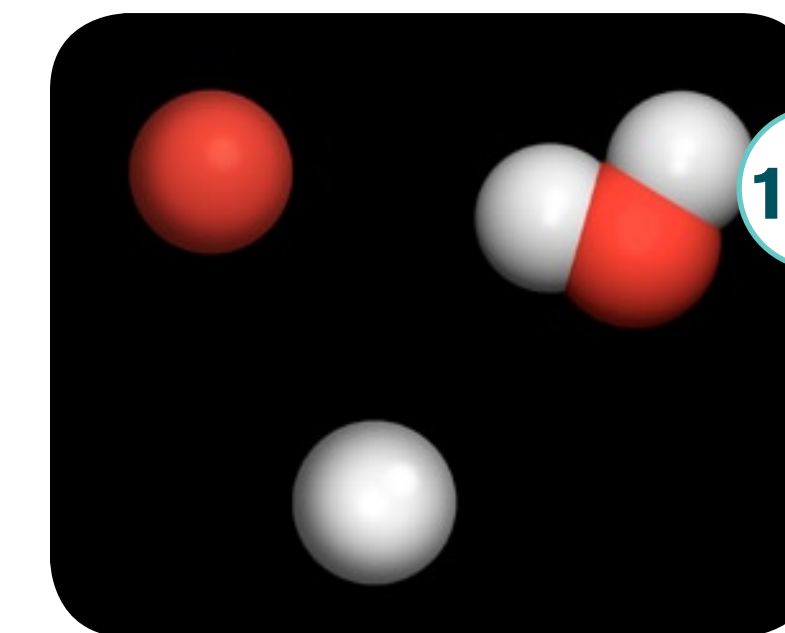
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