

TONGUE



TOUCH

TASTE

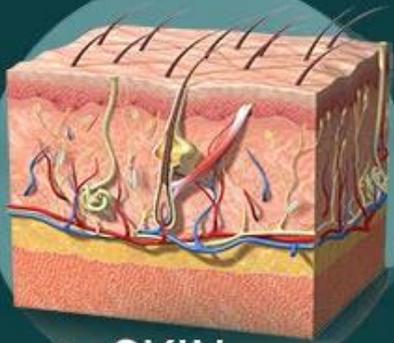
SMELL

SOUND

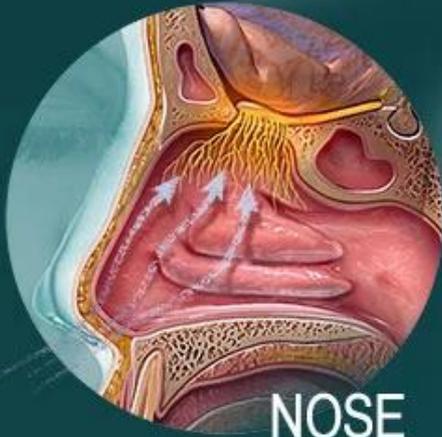
SIGHT



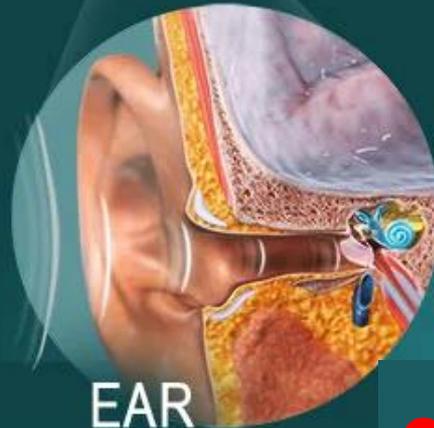
SKIN



NOSE



EAR



EYE



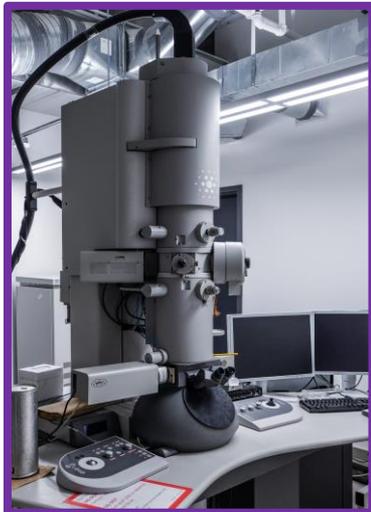
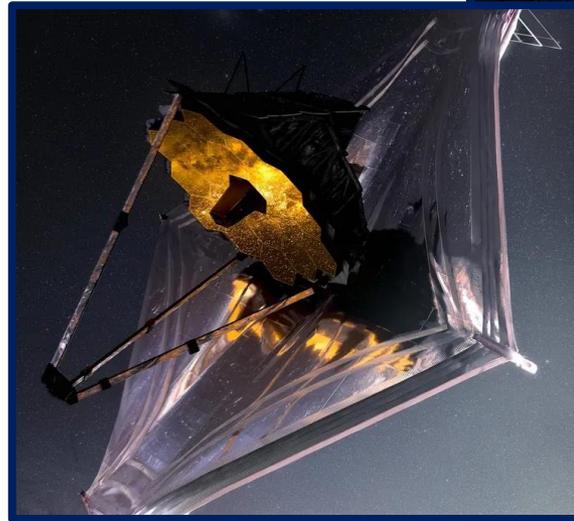
THE SENSES

collecting evidence

Instruments collecting evidence

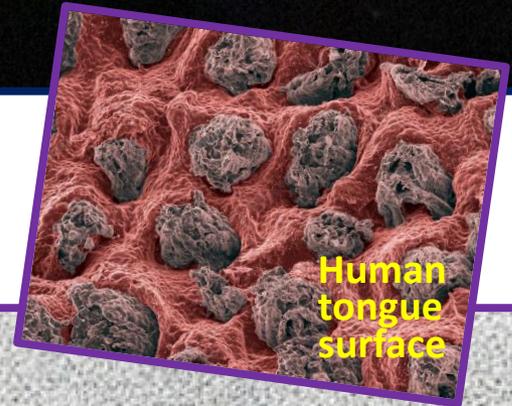
James Webb Telescope

helps observe VERY FAR AWAY objects

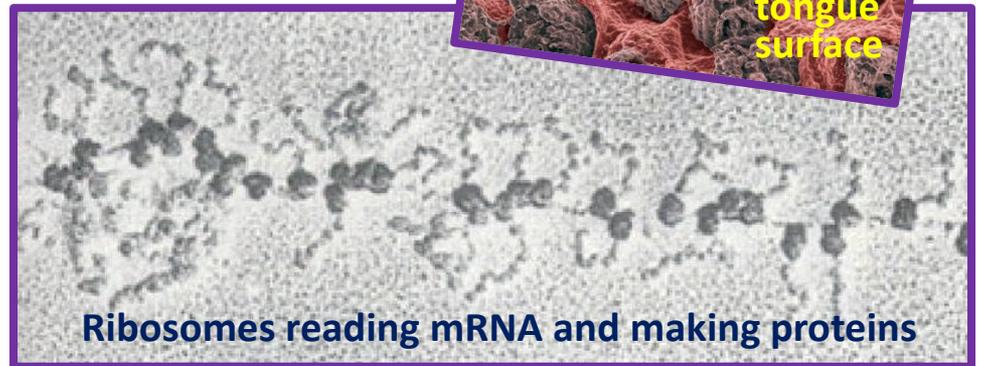


Electron Microscope

helps observe VERY SMALL objects

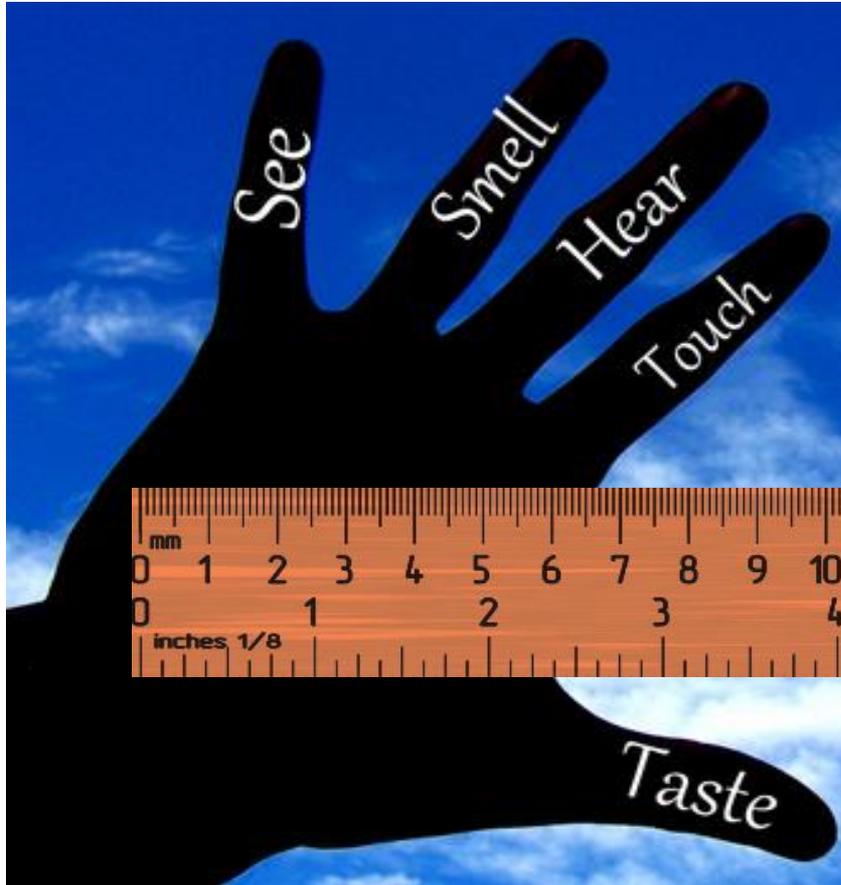


Human tongue surface



Ribosomes reading mRNA and making proteins

Evidence is based on Observation



- Observation is describing an object or event using your five senses (*what you see, hear, smell, taste, touch*) or measurement (*numbers*).
- Modern science employs *sensors* and *detectors* to make observations.
- Information gathered during an observation is called **data** (singular form *datum*).

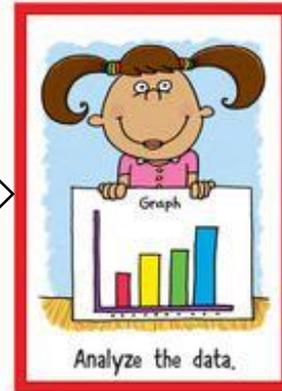
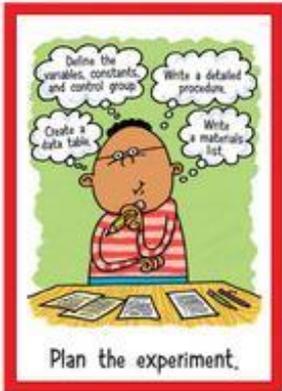
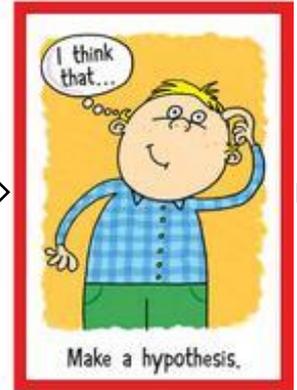
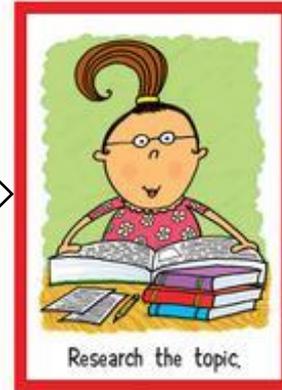
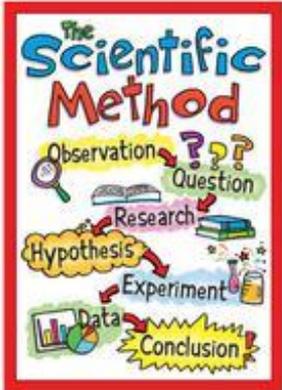
INITIAL OBSERVATION



WONDER

RESEARCH

HYPOTHESIZE



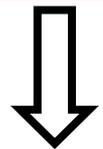
PLAN

EXPERIMENT
ADDITIONAL
OBSERVATIONS

DATA

ANALYSIS

CONCLUSION!



Describe the Elephant



*Observation
should NOT
include
opinion!*

It weighs 480 kilograms.

It has large ears and long trunk.

It has gray wrinkly skin.

~~**It is very cute!**~~

It is young.

It is about 1.5 yards tall.

Qualitative vs Quantitative Data

Qualitative (letters)

- **Descriptions** using words.
- Data which can be **observed** but **not measured**.
- What the object is *like*: texture, smell, taste, appearance, etc.

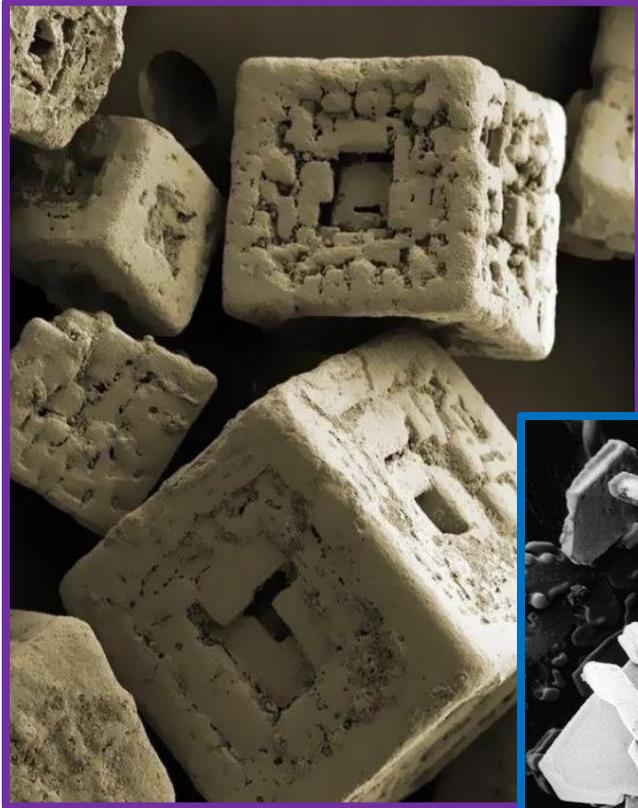
Subjective, relative

Quantitative (numbers)

- Specific **numbers**.
- Data which can be **measured**.
- Length, height, area, volume, weight, speed, time, temperature, humidity, sound levels, cost, age, etc.

Objective, specific

Describe the Crystals



**TABLE
SALT**



SUGAR



SNOW