

# Become an Atom - Build a Molecule with Family/Friends

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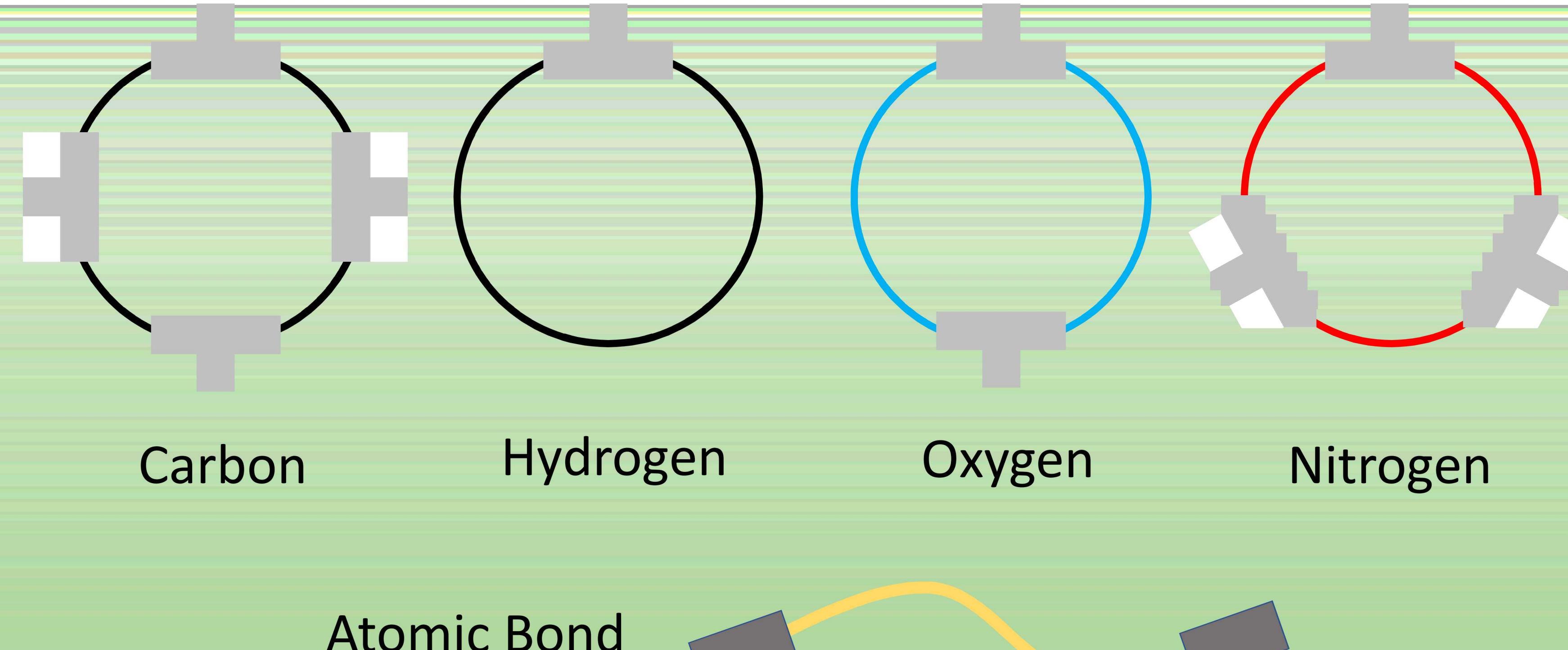
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## What to do

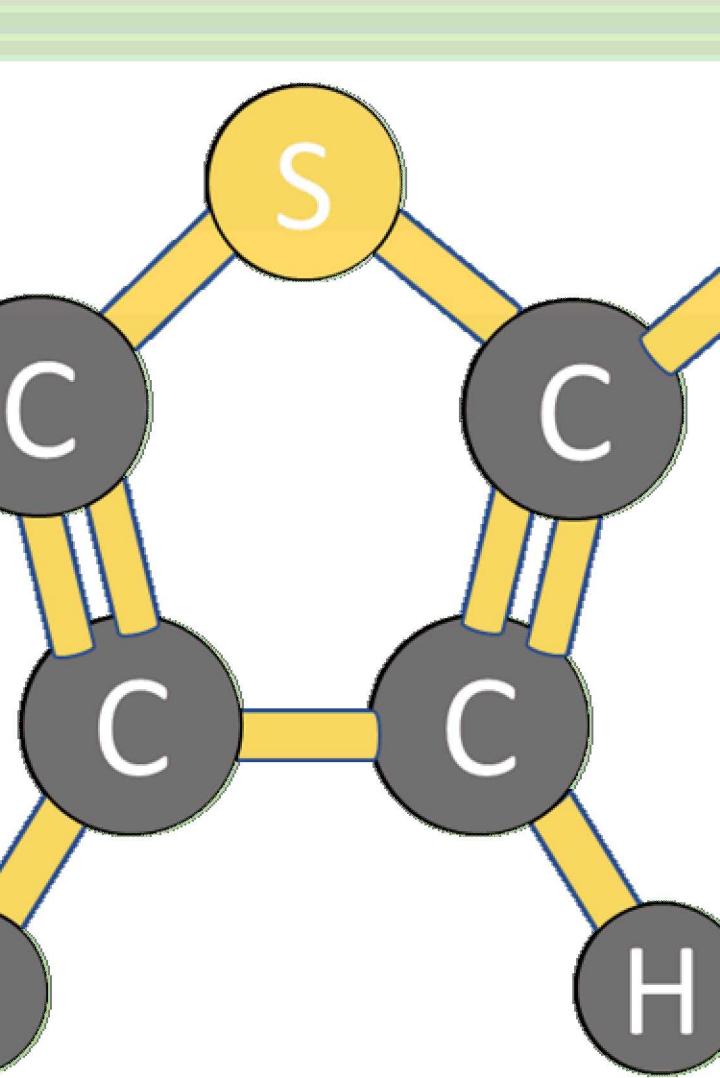
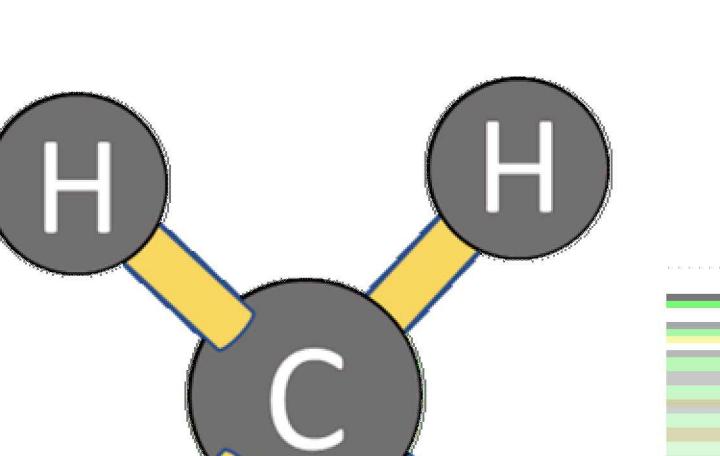
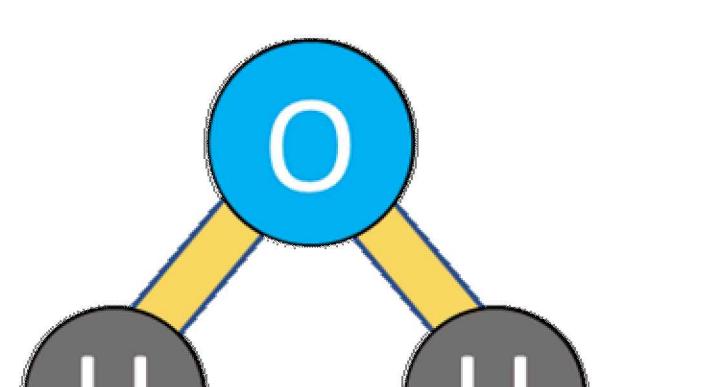
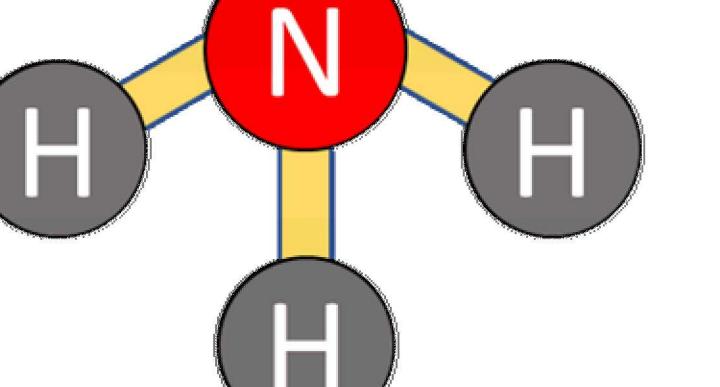
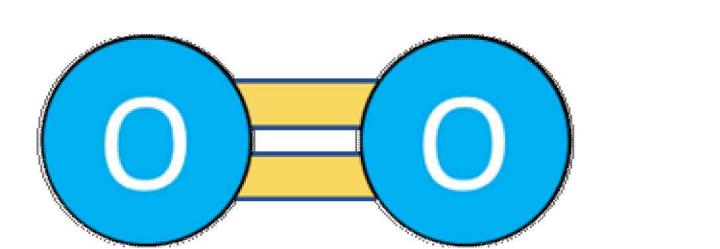
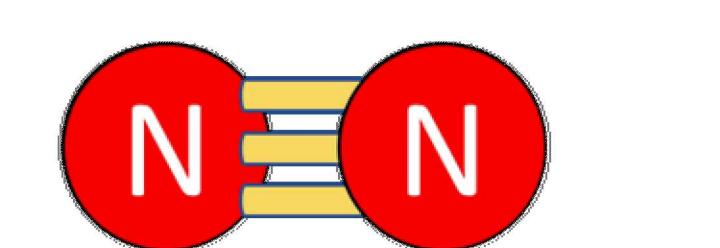
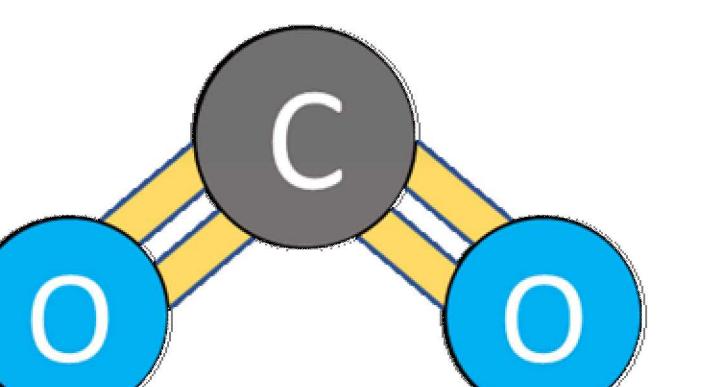
- On this poster, read about molecules found on Mars and/or on Earth
- Choose a molecule to ‘build’ with your family and/or friends
- Find and put on an “Atom Belt” representing an atom: carbon (4 bonds), oxygen (2 bonds), hydrogen (1 bond), and nitrogen (3 bonds)
- Use the yellow “atomic bonds” to connect the atoms - build a molecule!

Molecule	Molecular formula	Humans (atoms)	Bonds
Carbon Dioxide	CO <sub>2</sub>	3	4
Nitrogen	N <sub>2</sub>	2	2
Oxygen	O <sub>2</sub>	2	2
Ammonia	NH <sub>3</sub>	4	3
Water	H <sub>2</sub> O	3	2
Methane	CH <sub>4</sub>	5	4
Thiophene	C <sub>4</sub> H <sub>4</sub> S	9	11
Cinnamaldehyde	C <sub>9</sub> H <sub>8</sub> O	18	23
Vitamin C (ascorbic acid)	C <sub>6</sub> H <sub>8</sub> O <sub>6</sub>	20	21

## “Atom Belts”



## Molecules found on Mars AND Earth



### Carbon dioxide

- About 95% of Mars atmosphere
- We exhale this in our breath

### Nitrogen (the molecule)

- About 2.7% of Mars atmosphere
- About 78% of Earth atmosphere

### Oxygen (the molecule)

- About 2.7% of Mars atmosphere
- About 78% of Earth atmosphere

### Ammonia

- Might be sign of past life on Mars
- Very useful chemical on Earth

### Water

- May have supported life on Mars
- Molecule necessary for life on Earth

### Methane

- Might be sign of past life on Mars
- Fuel, on Earth

### Thiophene

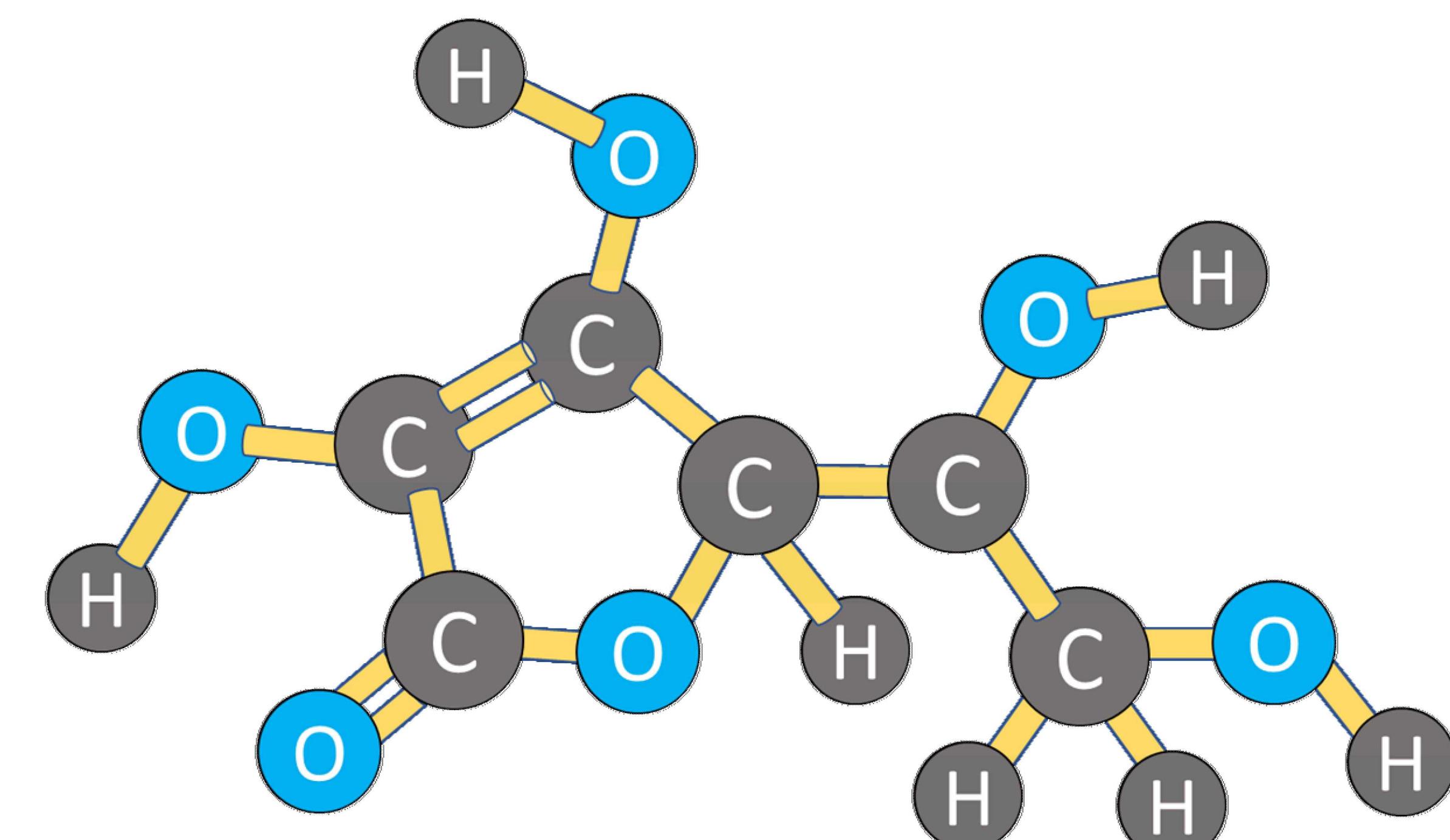
- Recently detected on Mars by the SAM system on Rover Curiosity
- Might be sign of past life on Mars

(Note: use an oxygen belt for Sulfur – they bond the same way)

## Molecules found on Earth but NOT on Mars (so far)

### Ascorbic acid (Vitamin C)

- Critical to good health of humans
- Found in nature
- Can be synthesized by chemists



### Cinnamaldehyde

- Flavor molecule used to make many kinds of cinnamon-flavored foods
- Can be synthesized by chemists

