



Become an Atom - Build a Molecule with Family/Friends

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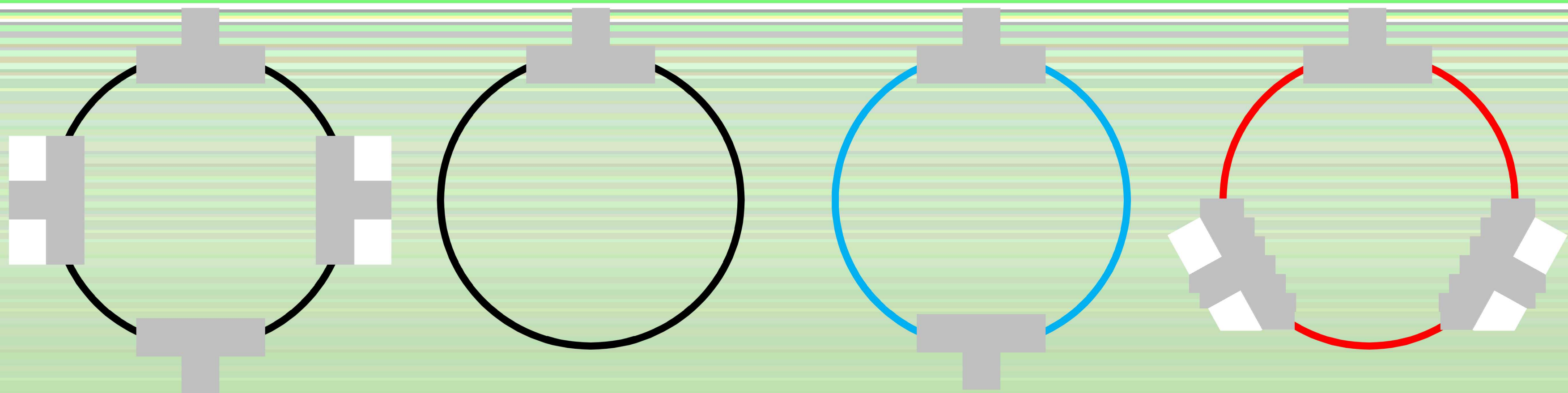
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What to do

- 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 ₂	3	4
Nitrogen	N ₂	2	2
Oxygen	O ₂	2	2
Ammonia	NH ₃	4	3
Water	H ₂ O	3	2
Methane	CH ₄	5	4
Thiophene	C ₄ H ₄ S	9	11
Cinnamaldehyde	C ₉ H ₈ O	18	23
Vitamin C (ascorbic acid)	C ₆ H ₈ O ₆	20	21

“Atom Belts”



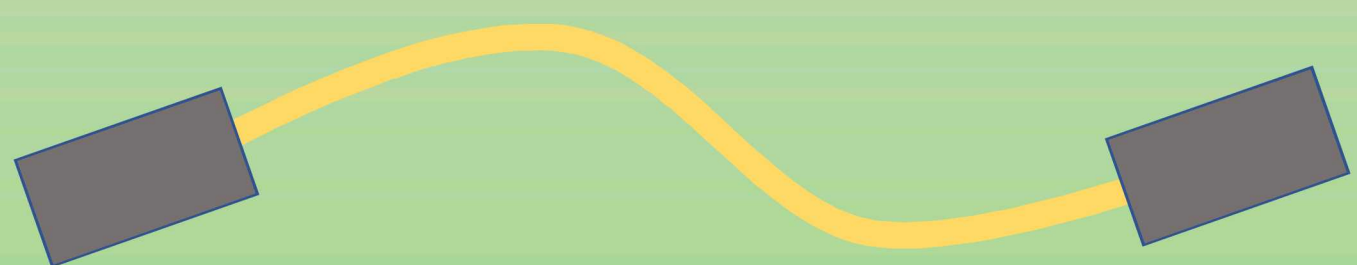
Carbon

Hydrogen

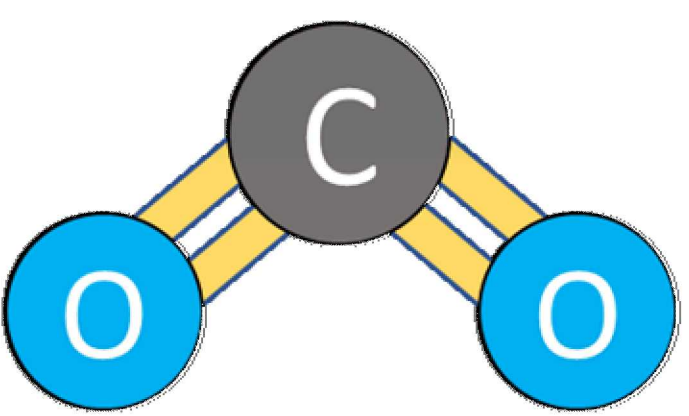
Oxygen

Nitrogen

Atomic Bond

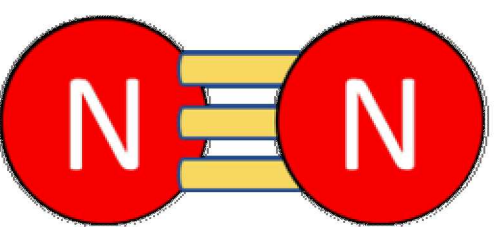


Molecules found on Mars AND Earth



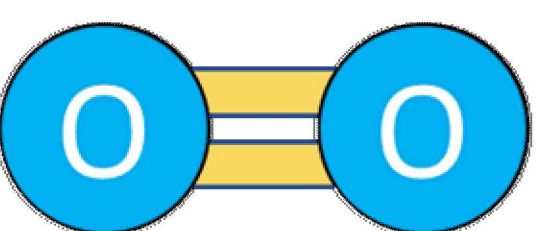
Carbon dioxide

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



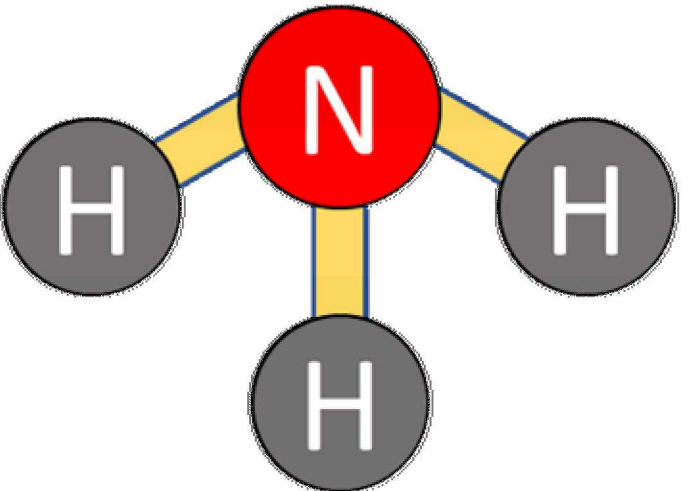
Nitrogen (the molecule)

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



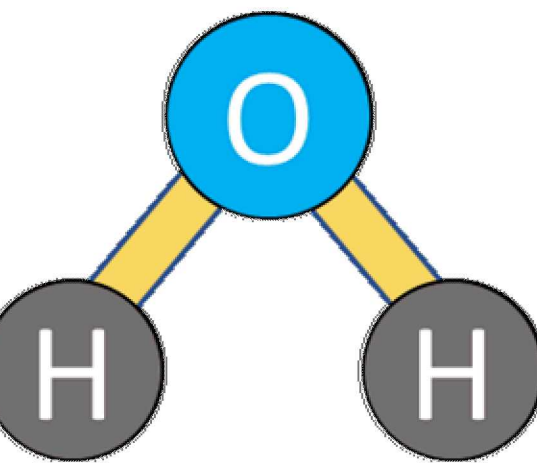
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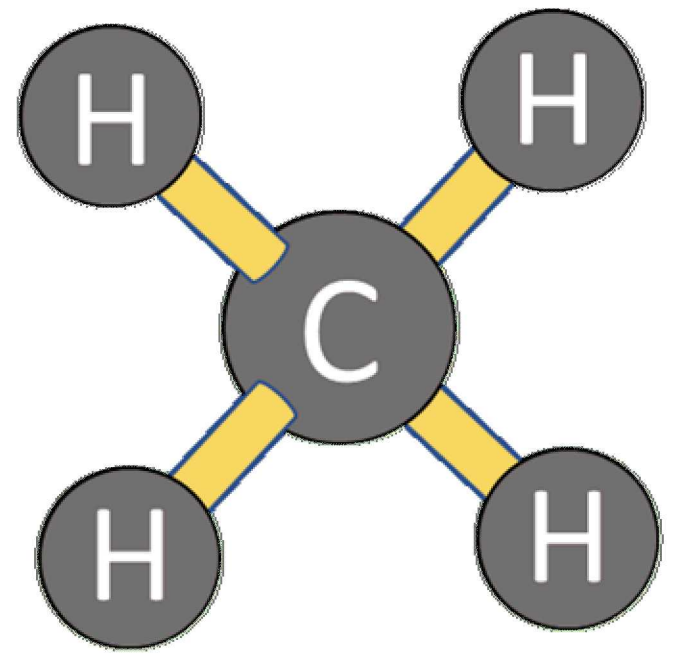
Ammonia

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



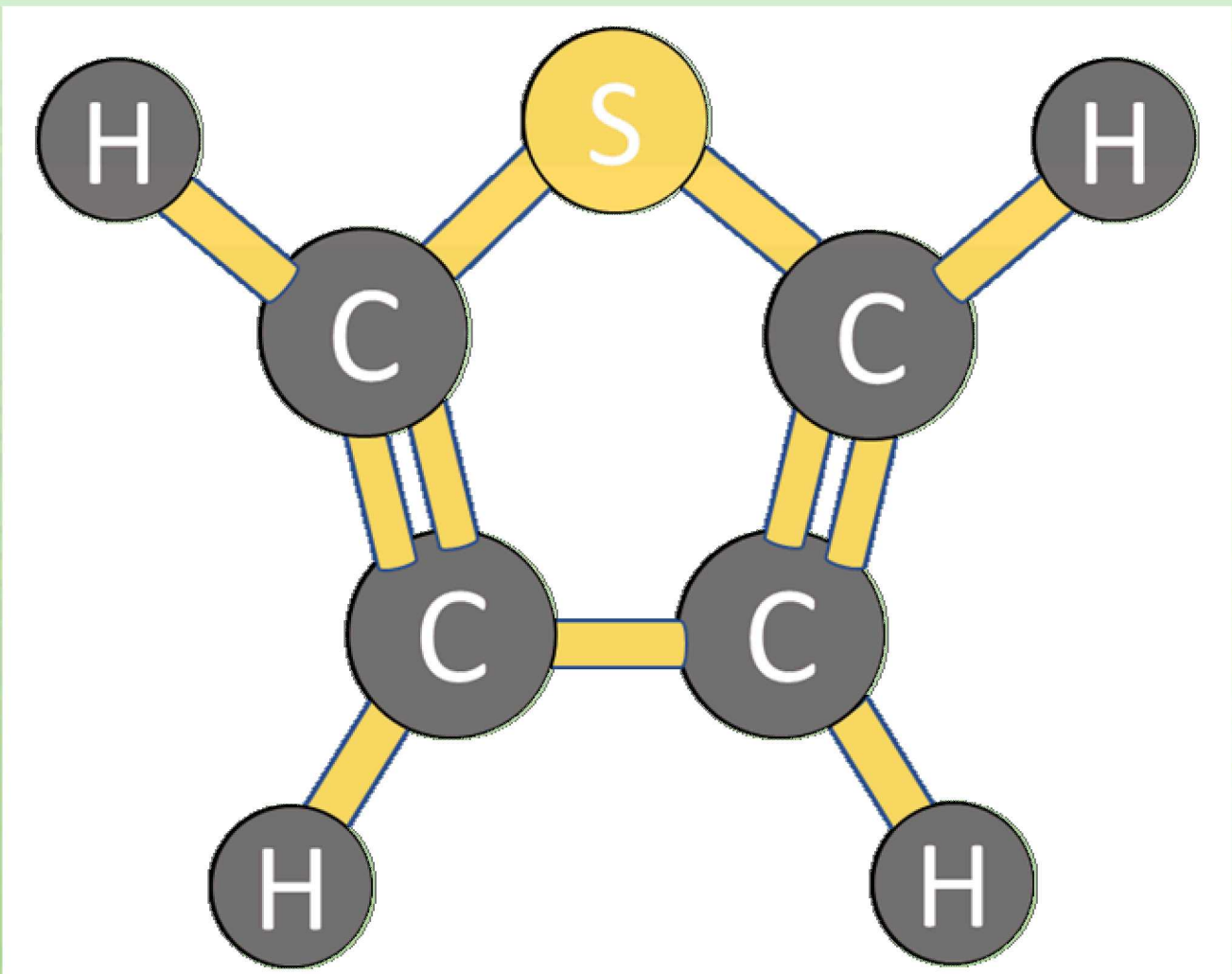
Water

- 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

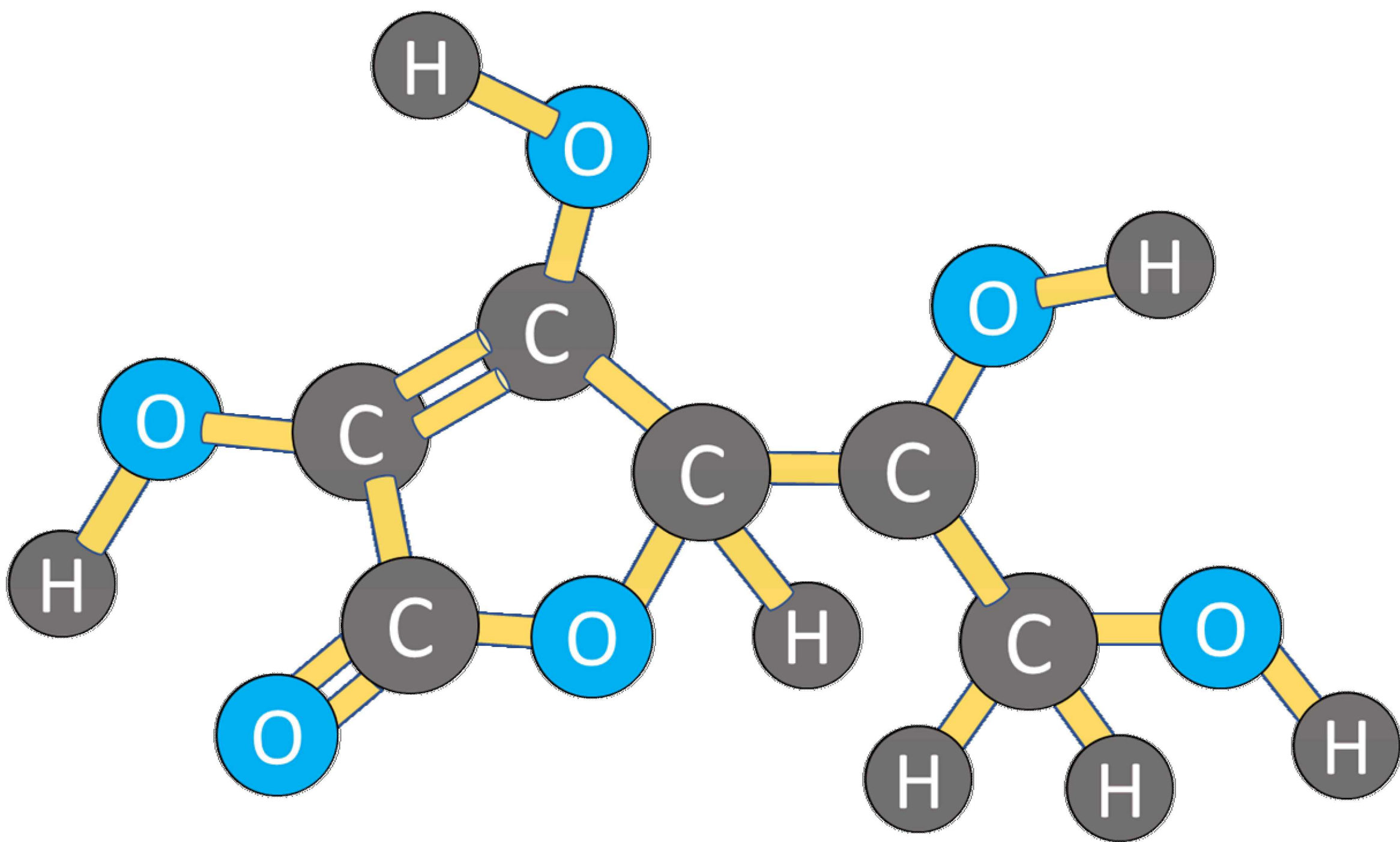
- Recently detected on Mars by the SAM system on Rover Curiosity
- Might be sign of past life on Mars

(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

