THE PERIODIC TABLE FOR BIOLOGISTS

	I	II	III	IV	V	VI	VII	VIII
1	1.01 **1** **H** hydrogen							4.00 **2** **He**
2	6.94 **3** **Li**	9.01 **4** **Be**			non-metals			20.18 **10** **Ne**
3	22.99 **11** **Na** sodium	24.31 **12** **Mg** magnesium						39.95 **18** **Ar**
4	39.10 **19** **K** potassium	40.08 **20** **Ca** calcium	transition-metals					
5	85.47 **37** **Rb**	87.62 **38** **Sr**						
6	132.91 **55** **Cs**	137.33 **56** **Ba**						
7	223.02 **73** **Fr**	226.03 **74** **Ra**						

44.96 **21** **Sc**	47.90 **22** **Ti**	50.94 **23** **V**	52.00 **24** **Cr**	54.94 **25** **Mn** manganese	55.85 **26** **Fe** iron	58.93 **27** **Co** cobalt	58.71 **28** **Ni** nickel	63.55 **29** **Cu** copper	65.38 **30** **Zn** zinc
88.91 **39** **Y**	91.22 **40** **Zr**	92.91 **41** **Nb**	95.94 **42** **Mo**	98.91 **43** **Tc**	101.07 **44** **Ru**	102.91 **45** **Rh**	106.42 **46** **Pd**	107.87 **47** **Ag**	112.41 **48** **Cd**
178.49 **72** **Hf**	180.95 **73** **Ta**	183.85 **74** **W**	186.21 **75** **Re**	190.23 **76** **Os**	192.22 **77** **Ir**	195.09 **78** **Pt**	196.97 **79** **Au**	200.59 **80** **Hg**		

10.81 **5** **B**	12.01 **6** **C** carbon	14.01 **7** **N** nitrogen	16.00 **8** **O** oxygen	19.00 **9** **F**	
26.92 **13** **Al**	28.09 **14** **Si**	30.97 **15** **P** phosphorous	32.06 **16** **S** sulphur	35.45 **17** **Cl** chlorine	
69.74 **31** **Ga**	72.59 **32** **Ge**	74.92 **33** **As**	78.96 **34** **Se**	79.91 **35** **Br**	83.80 **36** **Kr**
114.82 **49** **In**	118.69 **50** **Sn**	121.75 **51** **Sb**	127.60 **52** **Te**	126.90 **53** **I** iodine	131.30 **54** **Xe**
204.37 **81** **Tl**	207.19 **82** **Pb**	208.98 **83** **Bi**	210.00 **84** **Po**	209.99 **85** **At**	222.02 **86** **Rn**

The most commonly occuring elements in living organisms are:

C 6 carbon · **H** 1 hydrogen · **O** 8 oxygen · **N** 7 nitrogen

Other common elements are shaded in green.

relative atomic mass · atomic number

1.01 1 H hydrogen

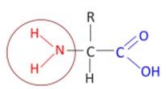
element name

Lanthanide and actinide elements (and 104 - 109) have been left off.

Some elements are used universally in nature—though their uses can be diverse.

N 7 nitrogen

- **Amino group** of amino acids (the monomers of proteins)



- Also used in chlorophyll.

S 16 sulphur

- Source of energy for chemosynthetic bacteria in hydrothermal vents
- Found in the R-Group of cysteine, an amino acid, and can form disulfide bridges in protein folding.

Na 11 sodium · **K** 19 potassium

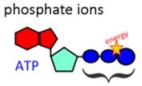
- Generate resting and action potentials in neurons.
- Used in maintaining osmosis. Sodium is the main cation (positive ion) in blood plasma, potassium in cytoplasm.
- Sodium-potassium pump is an example of active transport

Fe 26 iron

- Has a high affinity for oxygen
- Used in hemoglobin and myoglobin to carry oxygen in blood and muscles
- Used in ferredoxin in photosynthesis
- electron carrier in some bacteria

P 15 phosphorous

- Phospholipids make up the plasma membrane.
- Sugar-phosphate backbone of DNA structure.
- Bonds between phosphate ions store energy in ATP.



phosphate ions

Ca 20 calcium

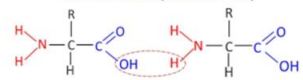
- Extracellular component of bone matrix
- Forms exoskeletons
- Stimulates synaptic transmission between neurons
- Used in muscle contraction

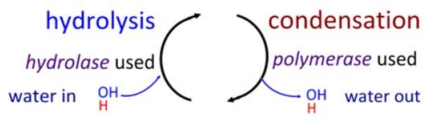
Condensation reactions create bonds between organic molecules, making polymers.

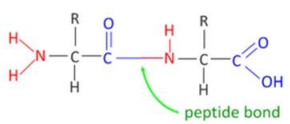
Hydrolysis reactions break bonds.

example:

amino acids (monomers)





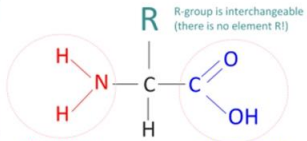


dipeptide (polymer)

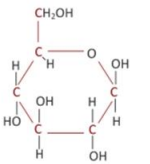
Organic Compounds

contain carbon and are found in living organisms.

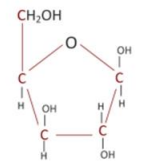
Some examples include:



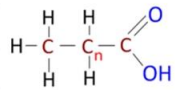
amino acids



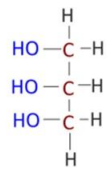
glucose



ribose



fatty acid



glycerol

Some exceptions are:

CO CO_2 oxides of carbon

CO_3^{2-} carbonates

HCO_3^- hydrogen carbonates

$CaCO_3$

Na_2HCO_3

Na_2CO_3

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