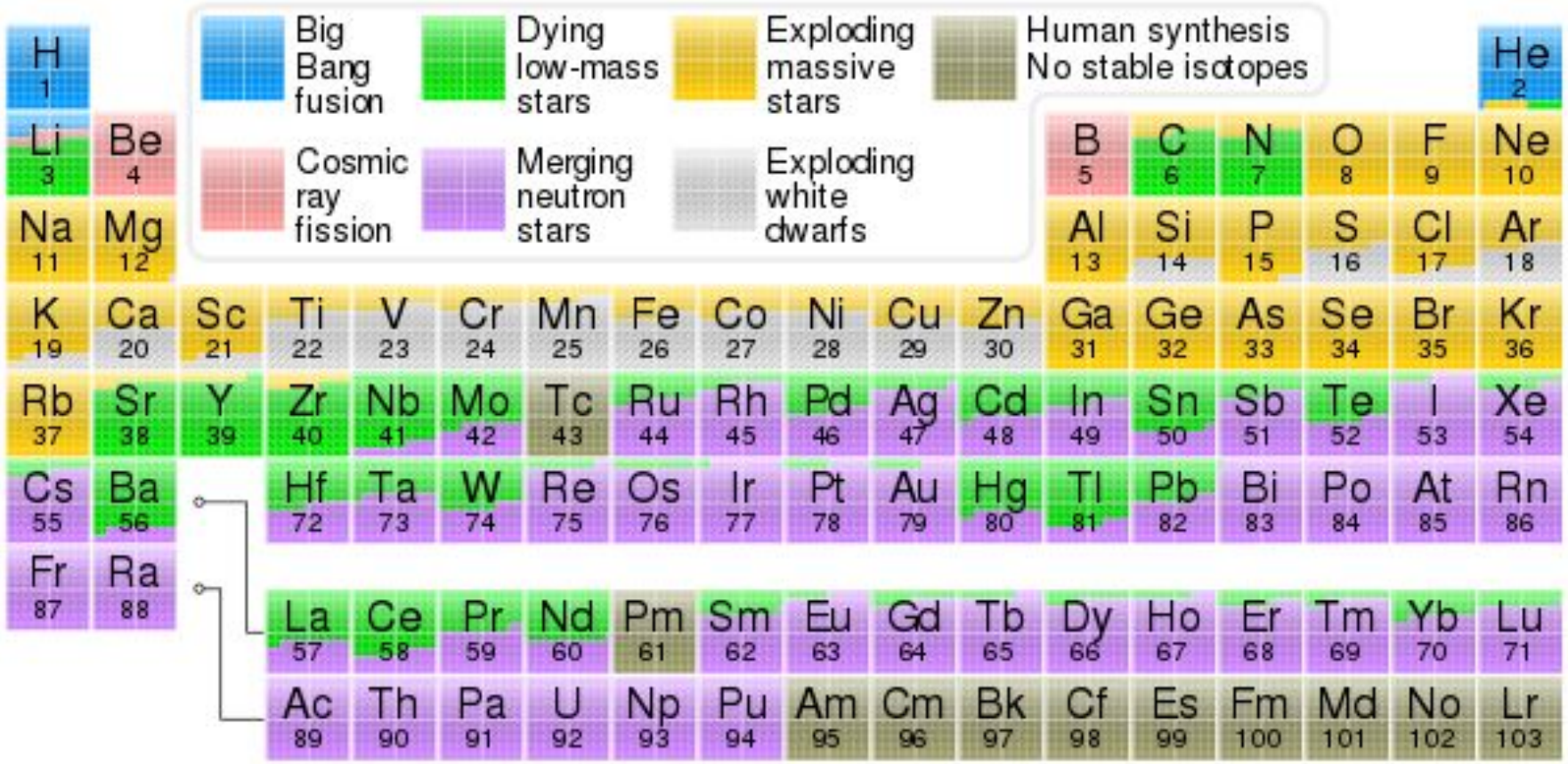
Bioelements

You will:

describe the role of micro- and macroelements in the life of organisms

- **Element** - is a substance that cannot be divided into other substances by chemical reactions



Elements in the human body		
Major elements		
Element	**Symbol**	**Approximate %**
Oxygen	O	65.0
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.3
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Sodium	Na	0.2
Chlorine	Cl	0.2
Magnesium	Mg	0.1
Trace elements		
Chromium	Cr	Together less than 0.1 %
Cobalt	Co	
Copper	Cu	
Fluorine	F	
Iodine	I	
Iron	Fe	
Manganese	Mn	
Zinc	Zn	
Molybdenum	Mo	
Silicon	Si	
Tin	Sn	
Vanadium	V	
Selenium	Se	

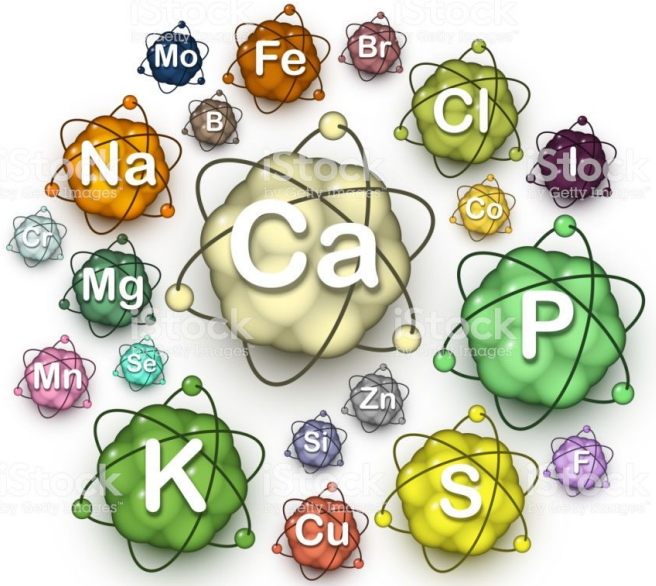
- Elements that we need in high amounts are called **macroelements**.
- Elements that we need in low amounts are called **microelements** or **trace elements.**

Element	% by mole
Hydrogen	63.0
Oxygen	26.0
Carbon	9.0
Nitrogen	1.25
Calcium	0.25
Phosphorus	0.19
Potassium	0.06
Sulfur	0.06
Sodium	0.04
Chlorine	0.025
Magnesium	0.013
Iron	0.00004
Iodine	0.000002

99% of atoms in a human body come from these 4 elements

Macroelements

- Oxygen (O) is a compound of water and most organic molecules.
- Carbon (C) is a backbone of organic molecules.
- Hydrogen (H) is a compound of water and organic molecules.
- Nitrogen (N) is a compound of proteins and nucleic acids.
- Potassium (K) is important in nerve function.
- Phosphorus (P) is a component of bones and teeth.



Microelements

- Iron (Fe) is part of important proteins such as hemoglobin involved in oxygen transport
- Iodine (I) is necessary for the production of thyroid hormone.
- Fluoride (F) is part of the tooth enamel and bone.
- Cobalt (Co) is a part of a vitamin.