INTRODUCTION TO HUMAN PHYSIOLOGY – CHEMISTRY BASICS REMINDERS

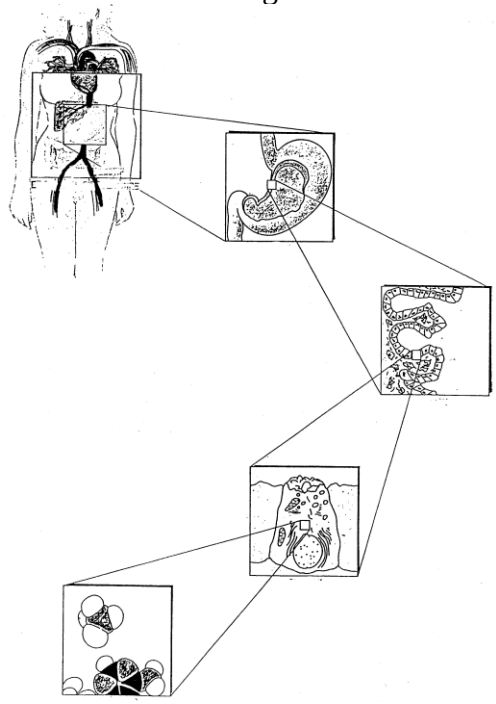
EXERCISE 1

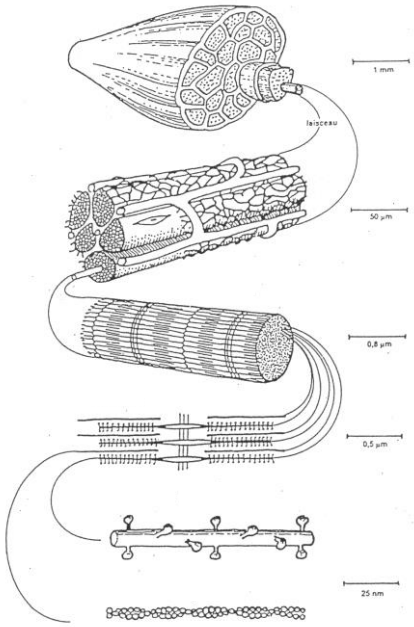
1- Give a definition of human physiology
2- Reorder the main systems of the human organism from the most involved to the less involved when performing a physical exercise :

Cardiovascular system / Nervous system/ Skeletal system / Genital system / Muscular system / Endocrine system / Lympathic and immune system / Integumentary system / Digestive system / Respiratory system / Urinary system

EXERCISE 2

Give the levels of organization of the 2 figures below:





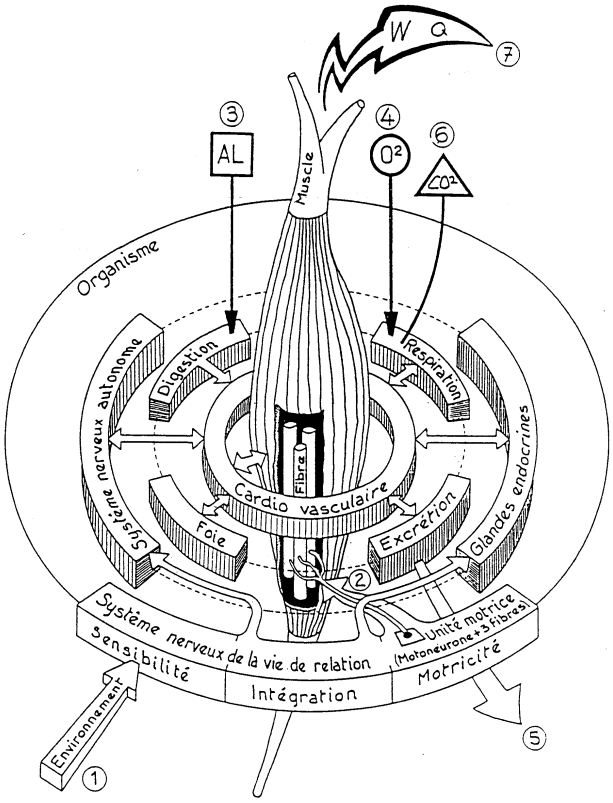
EXERCISE 3

When exercising, some common physiological adaptations/modulations could commonly occur and influence the performance. List some of these events and name the tissues/organs/system that are involved *(there is no "right" answer since many adaptations can occur during exercise, just try to be logical by thinking to the most common ones).*

EXERCISE 4

Give a title to the figure below. Thereafter, please discuss the three following points:

- meaning of this circular representation
- role of each main function (roughly)
- meaning of arrows from 1 to 7



EXERCISE 5

1- Give the list of the main atoms that are present in the human body
2- By using the periodic table (see below), draw the atomic orbital of the Carbon and Sodium atoms
3- Describe the two types of chemical bonds that are the most common between atoms (*ionic and covalent bonds*). Give an example for each of them (orbital drawing, developed formula and simple formula for the chosen molecule). **Take Na & Cl atoms for the example of ionic bond, and H & O atoms for the example of covalent bond.**

IA 1	IIA 2	IIIB 3	IVB 4	VB 5	VIB 6	VIIB 7	VIIIB 8	VIIIB 9	VIIIB 10	IB 11	IIB 12	IIIA 13	IVA 14	VA 15	VIA 16	VIIA 17	VIIIA 18
1 **H** Hydrogène 1,00794																	2 **He** Hélium 4,00
3 **Li** Lithium 6,94	4 **Be** Béryllium 9,01											5 **B** Bore 10,81	6 **C** Carbone 12,01	7 **N** Azote 14,01	8 **O** Oxygène 16,00	9 **F** Fluor 19,00	10 **Ne** Néon 20,18
11 **Na** Sodium 22,99	12 **Mg** Magnésium 24,31											13 **Al** Aluminium 26,98	14 **Si** Silicium 28,09	15 **P** Phosphore 30,97	16 **S** Soufre 32,06	17 **Cl** Chlore 34,45	18 **Ar** Argon 39,95
19 **K** Potassium 39,10	20 **Ca** Calcium 40,08	21 **Sc** Scandium 44,96	22 **Ti** Titanium 47,88	23 **V** Vanadium 50,94	24 **Cr** Chrome 52,00	25 **Mn** Manganèse 54,94	26 **Fe** Fer 55,85	27 **Co** Cobalt 58,93	28 **Ni** Nickel 58,71	29 **Cu** Cuivre 63,54	30 **Zn** Zinc 65,37	31 **Ga** Gallium 69,72	32 **Ge** Germanium 72,59	33 **As** Arsenic 74,92	34 **Se** Sélénium 78,96	35 **Br** Brome 79,91	36 **Kr** Krypton 83,80
37 **Rb** Rubidium 85,47	38 **Sr** Strontium 87,62	39 **Y** Yttrium 88,91	40 **Zr** Zirconium 91,22	41 **Nb** Niobium 92,91	42 **Mo** Molybdène 95,94	43 **Tc** Technétium 98,91	44 **Ru** Ruthénium 101,07	45 **Rh** Rhodium 102,91	46 **Pd** Palladium 106,4	47 **Ag** Argent 107,87	48 **Cd** Cadmium 112,40	49 **In** Indium 114,82	50 **Sn** Étain 118,69	51 **Sb** Antimoine 121,75	52 **Te** Tellure 127,60	53 **I** Iode 126,90	54 **Xe** Xénon 131,30
55 **Cs** Césium 132,91	56 **Ba** Barium 137,33	71 **Lu** Lutécium 174,97	72 **Hf** Hafnium 178,49	73 **Ta** Tantale 180,95	74 **W** Tungstène 183,85	75 **Re** Rhénium 186,2	76 **Os** Osmium 190,2	77 **Ir** Iridium 192,2	78 **Pt** Platine 195,09	79 **Au** Or 196,97	80 **Hg** Mercure 200,59	81 **Tl** Thallium 204,37	82 **Pb** Plomb 207,19	83 **Bi** Bismuth 208,98	84 **Po** Polonium 210	85 **At** Astate 210	86 **Rn** Radon 222
87 **Fr** Francium 223	88 **Ra** Radium 226,03	103 **Lr** Lawrencium 262,1	104 **Rf** Rutherfordium	105 **Db** Dubnium	106 **Sg** Seaborgium	107 **Bh** Bohrium	108 **Hs** Hassium	109 **Mt** Meitnerium	110 **Uun**	111 **Uuu**	112 **Uub**	113 **Uut**					

1 **H** Hydrogène 1,00794 — Numéro atomique, Symbole, Nom de l'élément, Masse atomique

*Lanthanides	57 **La*** Lanthane 138,91	58 **Ce** Cérium 140,12	59 **Pr** Praséodyme 140,91	60 **Nd** Néodyme 144,24	61 **Pm** Prométhium 146,92	62 **Sm** Samarium 150,35	63 **Eu** Europium 151,96	64 **Gd** Gadolinium 157,25	65 **Tb** Terbium 158,92	66 **Dy** Dysprosium 162,50	67 **Ho** Holmium 164,93	68 **Er** Erbium 167,26	69 **Tm** Thulium 168,93	70 **Yb** Ytterbium 173,04
**Actinides	89 **Ac**** Actinium 227,03	90 **Th** Thorium 232,04	91 **Pa** Protactinium 231,04	92 **U** Uranium 238,03	93 **Np** Neptunium 237,05	94 **Pu** Plutonium 239,05	95 **Am** Américium 241,06	96 **Cm** Curium 247,07	97 **Bk** Berkélium 249,08	98 **Cf** Californium 251,08	99 **Es** Einsteinium 254,09	100 **Fm** Fermium 257,10	101 **Md** Mendélévium 258,10	102 **No** Nobélium 255