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THE CENTRAL PLAN OF THE CELL

INTRODUCTION

Man is reaching the knowledge of the thread of life. As in each effort of knowledge and conscience, there may have been certain errors in the thread of life as it has been described by science. For example, the transference of amino-acids to the ribosomes is probably carried out by proteins and not by t-RNA. In our study, which partially changes our consideration of the cell, the proteins play the first role in the creation of living material. The proteins codify m-RNA in a reverse process to the explanation as we have known it till now, and in a reverse process to the transcription of DNA, the m-RNA becomes the cause of the creation of DNA.

All biochemical reactions are accompanied by emission or absorption of thermal energy, which is initially provided by food via the glucose compounds for animal organisms. The reactions also accompanied by chemical energy, which is the sum of the kinetics and dynamics of particles that oscillate in their various bonds, as if they were masses tied up with springs.

The oscillations of charged particles presuppose accelerations and radiation of electromagnetic waves; the radiation is usually found in the microwave or infrared frequencies and at usual temperatures.

Thermal radiation becomes the cause of the transfer of bio-molecules, brings and transports signals of recognition, entry to the small cysts, and contributes to the oscillation of the particles that they and all the parts of a cell are composed of and finally it influences the potential of bio-molecules and organelles and indirectly the distribution of ions.

The state of the pH, of the electric potential that is influenced by the pH, the metabolism of the cell and the saturation of membranes in hydrogen all contribute directly or indirectly to the influence of the rhythm of cellular division and they become factors of the regular or irregular proliferation of cells (e.g. cancer).

The DNA regulates protein synthesis, but the state of the DNA is influenced by the permanent radiation, thermal and intracellular. Under the influence of this radiation, the DNA is progressively undermined in its faculty for protein synthesis and the rhythm of division of cells of the aged organism is decreased.

Proteins and especially enzymes act as catalysts in the biochemical reactions and the state of the DNA for protein synthesis influences the metabolism and the rhythm of division of cells and this is a sign of the age of the organism.

In an opposite course to the age of DNA, there are genes that increase their transcription and compose more proteins, such as bimentine, in aged individuals.

Old age and cancer become the two rails for the wheels of the train. In the one, the division is fast (cancer) and in the other it is slower, and we seek to influence both of these rhythms. The Central Plan aspires to open this route, the route where man will control his fate: it will control death by cancer and will increase his life span. The wish is that there is truth in this plan and that it will lead to research.

CHAPTER 1

THE THERMOWAVE, INORGANIC AND ORGANIC MATTER

The THERMAL ENERGY of MATTER [1]

We shall consider the increase of temperature in material, when we add a quantity of heat. This is examined via thermodynamics and we accept that when we add heat of ΔQ units (Joules), we increase the heat ΔT degrees Kelvin, as:

$$\Delta Q = C\Delta T \qquad (1.1)$$

where C is the factor of the thermal capacity of material and is proportionate to the mass m and the specific thermal capacity is:

$$c = C/m \qquad \text{or} \qquad C=cm$$

It is obvious that we are giving energy ΔQ to material which had already energy Q, and even if factor C is dependent on the level of temperature for its major changes, we can masterfully say that it describes the attribute of molecules and atoms of material to accept heat proportionately to the change in temperature with reasonable approximation and for small changes.

We argue that this thermal energy is the sum of the dynamic and kinetic energy of electrified particles (such as electrons and the nucleus, or it is an oscillation of atoms in multi-atom molecules). The electron and the nucleus will be like masses tied up with springs and they will oscillate around their centre of gravity. The molecules that are formed from atoms with either covalent, or ionic bonds, or Van der Waals bonds are also a coalition of atoms that oscillate like masses tied up with spring around the centre of gravity. Thus, whether there is particle spin around the centre of gravity,

[1] "Physics" Serway, volume III

or a transfer motion, or a radial oscillation, the thermal energy will always be an oscillation of particles as if they were masses tied up with springs and this oscillation it will be added to the above movements.

If therefore we want to estimate the heat which gold has at 300 K for each of its gram-atoms, and knowing [2] that C = 25.4 J/mol.C^o , we have:

$$Q = C \Delta T = 7620 \text{ J/mol.}$$

Since each grammoatom contains N = 6.022 x 10^{23} atoms of gold, then each atom will have the (approximate) energy:

$$Q_A = Q / N = 1.26 \times 10^{-20} \text{ J} \qquad (1.2)$$

Gold has 79 protons and an equal number of electrons and 117 neutrons. The energy (1.2) therefore is distributed among the connections of the 79 electrons with the nucleus, the energy of the particles of the nucleus and the interatomic energies. Even if this thermal energy concerned only one connection of an electron with the nucleus, and using Plank's constant, we would find the thermal oscillation: $\nu = Q_A / h = 1.9 \times 10^{13}$ Hertz. This is an infrared frequency and we stipulate that the infrared frequencies and the microwave radiation (which oscillates approximately from 1GHz -100THzs) are the usual frequencies of thermowaves. It is to be noted that since we found thermal radiation for gold, even if this concerned the oscillation of one electron and the nucleus and not all of its particles, how much more likely is it that we would find thermal oscillations for all the particles and after allocating the same energy to all the oscillations. At a temperature lower than 300K, we would find radio frequencies.

THE ENERGY BOND

The energy bond of a molecule of hydrogen is 435.9 KJ/mol, i.e. E=7.2 x 10^{-19} J for each molecule and the frequency that corresponds to this energy is ν=E/h=1x10^{15} Hz.

[2] "Chemical Bond" Klouras-Perlepes

This frequency belongs to ultra-violet rays and it corresponds to an oscillation of an interatomic molecule and this energy is probably shared between both the rotation and the transfer movement of the molecule.

The thermal oscillation is placed over the interatomic oscillation and the two oscillations will now correspond to two simple harmonious oscillations of sines or co-sines which are added.

We pointed out the hydrogen bond in order to make clear that the thermal oscillation is supplemented by the energy of rotation, oscillation and transfer movement of an interatomic molecule, with a parallel increase of transfer movement when the heat is increased.

The thermo-capacity for the hydrogen molecule at constant pressure is $C_p = 28.8$ J/mol.K and for T=300K, $Q = 1.43 \times 10^{-20}$ J per molecule and if this energy exclusively reflects the oscillation of two atoms, using Plank's constant, we find $\nu = 2.16 \times 10^{13}$, and this is in the infra-red sector (thermowave). However this energy is distributed between the interatomic oscillation of molecules, the internal atomic oscillations of electrons and nuclei and the transfer movement of the molecule. Again, the frequency of interatomic oscillation is thermal and lower than was calculated above and it is to be noted that the thermal frequencies are smaller than those of luminous frequencies.

RADIATION OF ACCELERATING CHARGE

Each accelerating electric charge emits an electromagnetic wave and such a wave will also be emitted by the oscillating charges that we examined and those that spin, but also on the acceleration of transfer movement.

If the thermal oscillation is inter-radial for two particles, the force of attraction will be the reverse of the square of radii of interacting particles (Coulomb's law). In this case the charge emits an electric field E_g vertical to the axis of oscillation of the particles, and this is[3]:

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[3] "Physics" Ohanian, volume II.

$$E_{\vartheta} = \frac{1}{4\pi\varepsilon_0}\frac{ea\sin\vartheta}{c^2 r}$$

where e = the particle charge, a = acceleration, c = the speed of light and θ = the angle of the acceleration vector and the direction in which we measure the field.

At the same time as the emission of the electric field, a magnetic field B=E/c, vertical to the first, is also emitted.

We discover that the thermal oscillation which ranges from radio to infrared frequencies is caused by the radiation of the accelerating charge. The electrons and the protons, or the atoms which they compose, oscillate thermalally and radiate thermal electromagnetic waves.

In a body with thermal balance, the particles radiate and absorb the radiated photons in such a way that there is no appreciable loss of thermal energy (we usually have loss of energy from radiation).

We have examined inorganic matter (hydrogen, gold) and we consider that the organic molecules of living matter that are constituted of atoms of inorganic also have bonds like those of hydrogen, or co-valent and ionic bonds and Van Der Waals bonds, and the bonds have energy, oscillate at one frequency and probably spin. At the same time they have heat which is reflected in an oscillation that is added to the other oscillations. There is always the radiation of an accelerating charge and the molecules or the atoms of organic matter also exchange thermal photons and we argue that the absorption of thermal photons is subject to bonds such as:

1) the electromagnetic field of emitted charges under suitable circumstances is subject to succession and the particle which absorbs this wave should have the same frequency as this oscillation. The same frequency [4] is one in which certain material can be stimulated and an octave has its own same frequencies.
2) The distance between the inter-reacting particles is a factor that determines these same frequencies and the constant of the spring that unites them or the system of the springs of the bodies should have a suitable value.

PRESSURE OF RADIATION AND FORCED OSCILLATION

The electromagnetic wave that will be absorbed exercises pressure on the particle that accepts it and a protein, e.g. under the effect of such radiation, may be moved (the pressure that a group of waves exercises).

On the other hand the thermal radiation will cause a different distribution of charge of the electrified particles and collective differentiation in the distribution of a charge of DNA - RNA, proteins, lipids etc and create electric attractions and movement of these molecules. It is likely that a localised differentiation in the distribution of charge would cause a movement of electrified proteins.

That is to say we are examining the factors that can determine the endocytosis, for example, or the copy of DNA or its conversion into m-RNA, or the other operations of the cell. We are trying to autonomise the cell so that vis vitalis [5] is not necessary, so that it just exists and functions, when the prerequisites and the conditions of cell function are present, which are subject to the laws of Physics and Physical Chemistry and which express the immaterial part that is embedded in the operation of cell.

[4] "Wave Studies"' Kouyoumtzopoulou

[5] vis vitalis is the life-giving force

CHAPTER II

OXIDISATION - REDUCTION - PHOSPHORYLATION - pH

Oxidisation [6]is the phenomenon of algebraic increase in the number of oxidisation of an atom or ion and the opposite reduction. Thus in the reactions:

$$Mg + (1/2)\, O_2 \Rightarrow {}_2Mg^{2+} O^{2-}$$

$$C + O_2 \Rightarrow {}_2C^{4} O_2^{2-}$$

$$H_2 + F_2 \Rightarrow 2\ H^+F^-$$

The oxygen and the fluorine are reduced while magnesium, carbon and hydrogen are oxidised (increase of electrons).

The reactions of oxidisation-reduction, which take place very rapidly and are accompanied by the emission of heat and light, are called combustion reactions and often take place in the cell. Thus these reactions supply the cell with heat, which heat replaces the heat lost through radiation (we have already referred to the heat of inorganic matter).

Phosphorylation is a reaction of oxidisation-reduction within the cell. The proteins are phosphorylised, receiving a phosphoric root and emitting heat.

Oxidant phosphorylation [7] is the reaction of ATP formation:

$$ADP+Pi \underset{\Rightarrow}{} ATP+H_2O$$

Some energy is produced as heat.

The phenomena of oxidisation-reduction of the cell and the production of heat are basic functions and they aim at ensuring the temperature of the cell, contributing to other reactions, and at differentiating the distribution of the charge and the movement of

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[6] "Beginnings and Applications of Inorganic, Organic and Biological Chemistry" Garet - Denniston - Topping

[7] "Basic Biochemistry" Dimopoulou-Antonopoulou, "Biochemistry", Stryer

molecules and at ensuring energy in declining oscillations that are due to the phenomenon of friction.

Finally in the various organelles and regions of the cell there is a different pH that influences biochemical operation and movement.

The pH[8] in a solution is an indicator of the concentration of hydrogen ions and is defined as:

$$pH = - \log_{10}(H^+)$$

The pH can activate biochemical reactions such as of oxidant phosphorylation in which ATP molecules with high-accumulated energy are produced.

It can influence the penetrability of membranes and thus influence the metabolism of cell indirectly.

CHAPTER III

CELLULAR BREATHING [8]

GLYCOLYSIS

Glycolysis is the sequence of reactions that changes glucose into pyrostaphylic acid with simultaneous production of two molecules of ATP. It is the introduction into the cycle of citric acid in aerobic organisms and the chain of electron transport (oxidisation-redaction). The pyrostaphylic acid enters the mitochondria and is oxidised into carbon dioxide and water. All the intermediary combinations from glucose to pyrostaphylic acid are phosphorylised with phosphoric groups such as esters or anhydrides. The glucose enters in the cell through a special protein of transfer and is phosphorylised from ATP, forming s-phosphoric glucose with the catalysis of exokinase. Magnesium or manganese is required for this reaction. The s-phosphoric glucose receives equal parity with s-phosphoric fructose. A second phosphorylation is followed by ATP to 1.6- biphosphoric fructose, and is catalysed by phosphoro-fructokinase.

In the second stage of glycolysis, the 1.6-biphosphoric fructose is split into 3-phosphoric glyceraldehyde and phosphoric bihydroxyacetone and it is catalysed by aldolase.

The phosphoric bihydroxyacetone with phosphotriose as catalyst becomes 3-phosphoric glyceraldehyde (three molecules). Two molecules of ATP have been consumed so far. With a reaction that is catalysed by aphydrogonase of 3-phosphoric glyceraldehyde, it is changed into 1.3-biphosphoglyceric (BPG) with oxidisation-reduction. In this reaction, a phosphoric compound of high energy (phosphoric anhydride or carboxylic acid) is produced. It is oxidation and phosphorylation of the 1.3 BPG.

Then ATP is produced by the high potential of the phosphoric group of the 1.3 BPG. It is reduced by kinase from the phosphoglyceric acid. In all the reactions, the

[8] "Biochemistry", Stryer, "Basic Biochemistry", Dimopoulou-Antonopoulou

resulting products that are reduced by the aphydrogonase of the 3-phosphoric glyceraldehyde and the kinase of the phosphoglyceric acid are:

a) 3-phosphoric glyceraldehyde, which is oxidised to 3-phosphoglyceric acid, and a carboxylic acid.

b) NAD is reduced to NADH.

c) ATP is formed from Pi and ADP.

Then a 3-phosphoric acid is changed into pyrostaphylic and a molecule of ATP is produced. It is reduced from phosphoglyceric mutase, then from endolase and finally from pyrostaphylic kinase. That is to say, the glucose is changed into pyrostaphylic acid as follows:

glucose +2Pi + 2 ADP + 2 NAD^+ → 2 pyrostaphylic +2 ATP + 2 NADH + 2 H^+ + H_2O

Fructose and galactose, abundant in nature, produce 1-phosphoric glucose through phosphorylation that has equal parity with s-phosphoric glucose and the above mentioned cycle is followed.

The exokinase, the phosphorofructokinase and the pyrostaphylic kinase regulate the non-reversible reactions (places of control).

The phosphorofructokinase is suspended by ions of hydrogen and high concentration of ATP. When the ratio ATP/AMP is low (decreased energy charge), enzyme activity and glycolysis are stimulated.

The citric acid of the next cycle suspends the phosphorofructokinase. β-D-2.6-biphosphoric fructose is a powerful metabolite activator of phosphorofructokinase.

The suspension of the phosphorofructokinase suspends the exokinase, when it is suspended by the level of 6-phosphoric glucose.

The pyrostaphylic acid shapes the acetylosynenzyme A in the mitochondria with oxidant decarboxylation of the pyrostaphylic:

$$\text{Pyrostaphylic} + NAD^+ + CoA \rightarrow \text{acetyle - CoA} + CO_2 + NADH$$

It is reduced from pyrostaphylic aphydrogonase and the citric acid circle begins.

The kinase of the pyrostaphylic acid is suspended by ATP and alanine. The low level of glucose in the blood promotes the phosphorylation of hepatic pyrostaphylic kinase, while its activity and the consumption of glucose in the liver are reduced.

THE CYCLE OF CITRIC ACID (KREB'S CYCLE)

One should remember that the oxidant decarboxylation of the pyrostaphylic acid takes place in the matrix of the mitochondrium, and acetylosynenzyme A is produced, which connects the glycolysis with the citric acid cycle. One group of 4 atoms of oxalic acid carbon and one group of two atoms of acetyle-CoA carbon are joined as:

$$\text{Oxalic} + \text{acetyle - CoA} \rightarrow \text{citric} + \text{HS-CoA} + H^{+}$$

This reaction, which is an aldolic concentration, is followed by a hydrolysis and is reduced by the citric synthase.

The citric acid receives equal parity with the isocitric, in order to decarboxylise six atoms of carbon of one group. For this equal parity, a dehydration takes place and then hydration and one H is exchanged with one OH. It is reduced from aconitase and cis-aconitic it is an intermediary product:

$$\text{citric} \xrightarrow[\Leftrightarrow]{-H_2O} \text{cis-akonitic} \xrightarrow[\Leftrightarrow]{+H_2O} \text{isicitric}$$

In the isocitric acid, oxidant decarboxylation takes place that is reduced by the isocitric aphydrogonase and has oxaloelectric acid as an intermediary product:

$$\text{isocitric} + NAD^{+} \Leftrightarrow \text{a-cetoglutaric} + CO_2 + NADH$$

The formation speed of a-cetoglutaric acid is important for the total speed of the cycle.

A second oxidant decarboxyliosis of a-cetoglutaric follows in electyle - CoA:

$$\text{a-cetoglutaric} + NAD^{+} + \text{CoA} \rightarrow \text{electryle - CoA} + CO_2 + NADH$$

It is reduced by the a-cetoglutaric aphydrogonase. Then the following reaction takes place:

$$\text{Electryle - CoA} + \text{Pi} + \text{GDP} \Leftrightarrow \text{electric} + \text{GTP} + \text{CoA}$$

That is, the biphosphoric guanosine is phosphorylised and electricity and CoA are produced. It is reduced by the synthetase of electryle - CoA. With the reduction of biphosphonucleozite kinase it is possible for the following reaction to take place:

$$\text{GTP} + \text{ADP} \Leftrightarrow \text{GDP} + \text{ATP}$$

With an oxidisation, a hydration and a second oxidisation, the electric is changed into oxalic which propogates and the energy is trapped in $FADH_2$ and NADH :

$$\frac{FAD \rightarrow NADH_2}{\rightarrow} \text{ fumaric } \frac{H_2O}{\rightarrow} \text{ melic } \frac{NAD^+ + H^+}{\rightarrow} \text{ oxalic}$$

The electric is oxidised into fumaric with electric aphydrogonase as enzyme. The fumarase reduces the hydration of the fumaric for melic formation. The melic aphydrogonase reduces the oxidisation of melic to oxalic.

The total reaction of the citric acid cycle is:

$$\text{acetyle - CoA+3NAD}^+ + \text{FAD+GDP+Pi+2H}_2\text{O} \rightarrow {}_2$$

$$2\text{CO}_2 + 3\text{NADH+FADH}_2 + \text{GTP+2H}^+ + \text{CoA}$$

The speed of the cycle is regulated so as to correspond with the needs for ATP. ATP is a suspender of citric synthase and the citric production.

The NADH and ATP suspend isocitric aphydrogonase, while the NAD^+, Mg^{2+} and the ATP co-operate.

The cycle is generally reduced by a high level of ATP.

OXIDANT PHOSPHORYLATION

The NADH and $FADH_2$, which are formed in glycolysis, the oxidation of fatty acids and in the citric acid cycle, are rich in energy (they contain a pair of electrons with high potential). When they are linked with molecular oxygen, enough energy for the production of ATP is released.

The oxidant phosphorylation takes place in the internal membrane of the mitochondrium.

The transfer of electrons from the NADH and $FADH_2$ to the O_2 leads to the withdrawing of protons from the uterus of mitochondrium and the oxidisation and the phosphorylation are parallel reactions with a graduality of protons on both sides of the internal membrane. Special proteins transport molecules such as ADP and fatty acids, via the internal membrane and the oxidisation-reduction reaction takes place:

$$½O_2 + NADH + H^+ \rightarrow H_2O + NAD^+ \qquad (\Delta G^0 = -52.6 \text{ Kcal/mol})$$

The electrons are transported from the NADH to the oxygen via the protein compounds NADH-anagogase of the synenzyme Q, cytochromic anagogase and cytochromic oxidisation. Enzyme flavines, compounds of iron-sulphur, haeme and ions of copper transport the electrons. Ubicinone transports electrons to the cytochromic anagogase from the $FADH_2$ of the citric cycle circle when electric is oxidised. The protein cytochroma c transports electrons from the cytochromic anagogase to the cytochromic oxidisation.

The NADH electrons via the NADH-anagogase of synenzyme Q (it is called aphydrogonase of NADH), enter the FMN (flavino-nucleotide) and result is $FMNH_2$:

$$NADH + H^+ + FMN \rightarrow FMNH_2 + NAD^+$$

The electrons of the Fe-S of NADH-anagogase of synenzyme Q are transported to the synenzyme Q (known as ubicinone).

Finally there is a flow of electrons from the NADH to the molecule of oxygen:

$$NADH + ½O_2 + H^+ \rightarrow H_2O + NAD^+ \qquad (\Delta G^{0'} = -52.6 \text{ Kcal/mol})$$

This ΔG^0 is used in the composition ATP:

$$ADP + Pi + H \Leftrightarrow ATP + H_2O \qquad (\Delta G^{0'} = 7.3 \text{Kcal/mol})$$

The mitochondrium ATPase or synthase of ATP reduces this reaction in the internal mitochondrium membrane. The transport of ions of hydrogen to the cytoplasmic side serves the composition ATP.

Rotenone and amytale impede the graduality of protons. The antimycine A impedes the electric flow from b -562 to the QH and the withdrawal of hydrogen ions is impeded. Ascorbic acid bypasses this hindrance. CN^-, N_3^- and CO impede the electronic flow to the cytochromic oxidase.

The synthase of ATP reduces the formation of ATP from ADP and orthophosphoric acid.

$$ADP^{3-} + Pi^{2-} + H^+ \Leftrightarrow ATP^{4-} + H_2$$

Sublayers are the compounds Mg^{2+} of ADP and ATP.

The metatopase reduces the reaction:

$$ADP_k^{3-} + ATP_m^{4-} \rightarrow ADP_m^{4-} + ATP_k^{4-}$$

where m = mitochondrium, and k = cellular plasm. It is suspended by atractylosate and glycozide or bogreatic acid and the oxidant phosphorylation stops immediately.

It is to be noted that the total oxidation of glucose produces 36-38 ATP.

Heat is produced when thermogenine short-circuits the accumulation of protons outside from the mitochondrium and separates the phosphorylation. The transfer of electrons and the phosphorylation are interrupted by the DNP (2.4-dinitrophenole).

PHOSPHORIC PENTOSE AND GLYKONEOGENESIS

Apart from the production of ATP, electrons are maintained for biosynthetic purposes. The reductive force is provided by NADPH (the phosphoric unit distinguishes it from the NADH). The NADH is oxidised to produce ATP, while the NADPH is a donor of an electron to the reductive biosyntheses. The NADPH is produced:

6-phosphoricglucose+2NADP$^+$+$H_2O \rightarrow$ 5-phosphoric ribose + NADPH + 2 H $^+$+ CO_2

In the cellular solution sugars are produced in reactions of oxidation with 3,4,5,6 atoms of carbon. 5-phosphoric riboze is needed for the composition of RNA, DNA and co-enzymes of nucleotides.

The 6-phosphoric glucose has its water extracted and lactone is formed, this is hydrolised and we obtain 6-phosphoglyconic acid. This with oxidant decarboxyliosis gives 5-phosphoric ribulose, while in these reactions the NADP $^+$ is the receptor of electrons. Then the 5-phosphoric ribulose obtains equal parity with 5-phosphoric ribose.

Another method of NADPH production and not of 5-phosphosric ribose takes place if this is required. Then 5-phosphoric ribose is converted into 3-phosphoric glyceraldehyde and 6-phosphoric fructose with the catalysis of transcetolase and transaldodase. In this course of reactions 12 NADPH are produced for each 6-phosphoric glucose which is oxidised to carbon dioxide.

More 5-phosphoric ribose than NADPH can be composed. It can combine with the glycolytic course and the levels of NADPH and ATP, 5-phosphoric and pyrostaphylic are adapted.

The composition of glucose from non-carbohydrate compounds (such as amino-acids, lactic acid, glycerole) is glycogenesis. Pyrostaphylic acid is changed into glucose with capable reactions of glycolysis.

The glycolysis and the glycogenesis are regulated inversely while the phosphorofructokinase and phosphatase of 1.6-biphosphoric fructose are the regulators.

THE GLYCOGEN

It is a fuel which is activated with speed and is a complex of glucose. It is stored in the cellular plasm and is abundant in the muscles and the liver. It disintegrates into L-phosphoric glucose with the action of phosphorylation. It is separated from the orthophosphoric in 1-phosphoric glucose and this becomes 6-phosphoric glucose reversibly.

The composition and the disintegration of glycogen are regulated by many reactions. When the synthase of glycogen is active, then the phosporylase is inactive. The epinephrine and glycagone disintegrate the glycygone and suspend its composition.

THE FATTY ACIDS

These are ingredients of sphingolypidia and are also fuels. The lipases which are controlled by hormones and activated by hydrolysis are stored in the fatty tissue.

With the acetyle-CoA they are transported with carnitine via the internal mitochondrium membrane and are broken up in the uterus. There they are oxidised with regard to FAD, regain water and are oxidised with regard to NAD^+ and sulphurised with CoA. $FADH_2$ and NADH are created in the oxidisations while the acetyle-CoA formed in the sulphurisation enters the citric cycle. It is composed in the cellular solution.

The fatty acids are rendered insatiable by enzymes in the membrane of EΔ. NADH, oxygen, flaboprotein complex, cytochrome and protein with non-haemic iron insatiability.

CHAPTER IV

ENERGY, THE LYOSOMES AND THEIR ROLE

As it is generally accepted, the genes are transferred to the m-RNA which is the messenger molecule for the production of proteins in the ribosome. The m-RNA enters a channel of ribosome [9] and the t-RNA transports the amino-acids that will build the protein that is coded in the m-RNA. The ribosome is a complex of r-RNA and proteins.

THE SIGNALS OF PROTEIN MOVEMENT

It has become accepted that a protein or a glycoprotein or a lipoprotein moves intracellularly to various organelles (for example from the trans Golgi to the lysome or internal plasm network) and the signals of protein recognition are the guides.

There is e.g. the nuclear signal of entry of proteins into the nucleus. The entry signal, the receptacle which exists in the membrane of organelle, the endocytosis where it appears, are all processes which take place after receiving signals from special proteins which approach the organelle (the signals are emitted by certain amino-acids). These signals are the thermal electromagnetic waves that are emitted and which were described in the first chapter. These are suitably shaped in order to cause recognition by the proteins or the complexes that are suitably excited and a succession of reactions and signals will occur so that an energy such as that of endocytosis or the degradation of protein in a lysosome will occur.

In the endocytosis with a receptacle, the incoming complex will become accepted by the receptacle (e.g. a ligand) and the process of cytosis will begin with a covering of clathrine, which is a protein cover for the incoming molecule. Then the clathrine detaches and the cystide will be led e.g. to the lysosome, where its membrane will mould into the membrane of the lysosome. All these biochemical processes are led by the thermal waves and the emitted radiation of accelerating charge is suitable formed

in its succession with the other waves of neighbouring particles. Wave groups of electromagnetic waves are co-ordinated and are drawn into complexes with suitable structure and same-wave oscillation and are the signals of activities that move the molecules.

The starting codon of m-RNA that will be transferred emits the signals that guide its movement and route to the ribosomic r- RNA.

The force of friction is always present and this blunts the oscillators of bio-molecules, but the circles pyrostaphylic, citric and phosphoric cycles that give ATP are also present, thermal energy will be produced and will substitute for the damping energy.

With such processes the collaborating cells of an organism, become self-sufficient for their survival and they ensure the energy that they need for their functions.

PROTEIN DEGRADATION IN THE LYOSOMES

The degradation of bio-molecules and cell organelles takes place in the lyosomes. However it is known that the membrane proteins of the lyosome and the glycoproteins of its membrane are not disintegrated by the enzymes of this organelle. Thus the existence of proteins, glycoproteins or lipoproteins inside the lyosome which are not disintegrated is supposed. These proteins bind amino-acids of these proteins at suitable points of their amino-acids, and of disintegrated proteins that entered the lyosomes, The proteins that bind disintegrated amino-acids enter the cytoplasm via exocytosis and head for the ribosome where they are alloyed in the channel of these organelles. Therefore, it is not the t-RNA that transports amino-acids, but those proteins of the lyosome that bind amino-acids and which with the effect of m-RNA [will] shape a new protein in the ribosome.

The proteins of ribosome receive the signals of the arrival of the proteins that transport the amino-acids that were bound and the r-RNA in the ribosome, receives the arrival signals of the m-RNA.

[9] "Cellular Biology" www-jcb.bio.auth.gr 18

In the cell, it is possible that disintegrated amino-acids enter the cell plasma and are bound there in transfer proteins and then head for the ribosome. In this way, the proteins exercise a catalytic role and participate in the shaping of new proteins.

In each process, the signals of commencement and its development emanate from the accelerations of the electrified bodies of the bio-molecules and their oscillations are conditioned by friction (such as that of stickiness). They substitute for the loss of energy through the friction caused by radiation with the absorption of radiation emitted by other molecules and this energy may emanate from the creation of ATR, or its hydrolysis and utilisation in other reactions. The oxidisation-reduction reactions in the cell supply it with the required energy for the oscillations of charged particles and in the various reactions. It is known that the energy is transported to the cell by molecules of glucose or its complexes which were received through nourishment from plant or animal organisms.

The catalytic role of lyosomes is pointed out in our study regarding where these disintegrate proteins and supply with amino-acids the proteins of transport in the ribosomes and it is probable that disintegrated amino-acids that entered in the cell with the food also enter the lyosomes. The transport proteins carry disintegrated amino acids to the ribosome and protein-synthesis will take place there with the translation of m-RNA and we can we name the transport proteins t-proteins.

CHAPTER V

THE CATALYTIC ROLE OF PROTEINS

It has been argued[10] that in the early development of nature, RNA was formed first and with reverse transcription it shaped a DNA that doubled to form a molecule of DNA and thus life began.

The experimental composition of amino-acids in vitro and the manufacture of nucleosides, bases and phosphoric roots is a fact. It is extremely difficult for a molecule of DNA or RNA to be constructed, because it presupposes a beforehand existence which will be invested in this molecule. It is therefore easier for us to accept that the existence of DNA and the following RNA is directed by the proteins. Since we consider that it is the proteins which transport amino-acids for the composition of proteins in the ribosomes, it is logical that we should argue that they coded with reverse translation a m-RNA from the components of nucleosides and phosphoric compounds of plasma and that this in turn transcribed the DNA reversely. A cellular membrane that was formed under the conditions of earth's evolution and which enclosed the components and the proteins that would code the m-RNAs was necessary. From the experimental ascertainment of the composition of amino-acids, we assume the composition of proteins and in particular those of the membranes that constitute, with other molecules, the membranes and encircle many other molecules. In suitable conditions, the first procaryotic cells, which are the precursor cells of eucaryotic cells were created.

In accordance with this point of view, proteins are indeed the first bio-molecules in the course of living matter, and those that guided the biological processes that developed.

With the creation of DNA, the roles changed and this became the fundamental cell of the creation of bio-molecules and henceforth regulated cellular operations satisfactorily.

Membrane proteins are complexes with fatty acids and these are products of evolution.

It is considered likely that the accidental shaping of new protein that will be transported into a cell, "remembers" its fundamental role and it reversely translates m-RNA s molecules which reversely transcribe a new gene.

Thus the catalytic role of proteins is revealed as is the cyclic influence in the shaping of bio-molecules, only that the proteins have the fundamental role in the evolution.

The fatty acids are simpler compounds and more accessible for creation, and they shape the role of the proteins.

It was probably in a hot lake, where electric discharges (lightning) were taking place, and which was full of precursor molecules of bio-molecules, that the formation of amino-acids and then proteins took place, which would be the spark for the creation of procaryotic cells and the phenomenon of life.

The composition of the precursor molecules of bio-molecules must have brought the software of higher compounds which appear as an immaterial pre-existing state awaiting its application. The vis vitalis (the living force, the life-giving force of a cell), does not exist any longer so as to direct the cellular movements and reactions, but the software (even if the creation of living matter is no coincidence), which will cause the synthesis of bio-molecules and the formation of living matter has to exist.

The automatic placement of proteins, lipoproteins and glycoproteins in the cytoplasmic membrane obeys the endogenous attributes of these molecules and consequently it is supposed that the software of the membrane that will be built, is some plan, otherwise conditions of biosynthesis, and which in some way pre-exist and are coexisting with the material molecules.

[10] "Biochemistry" Stryer

CHAPTER VI

THE CENTRAL PLAN

In a cell its state, which is translated into thermal radiation, will cause the activation of genes and their transcription to m-RNA which will be directed to the ribosome. At the same time the continuously altering state will contribute to the binding of amino-acids to proteins of transport in the lyosome and they will head for the ribosome in order for new proteins to be synthesised. Fatty acids are synthesised in the cellular plasma. The protein synthesis and more generally the synthesis of bio-molecules takes place and the energy is provided molecules of ATP which are formed and then hydrolised. However, the combustion of fatty acids also provides energy. The oxidisation-reduction takes place and the energy is available for the reactions and movements of the cell.

Ions, such as those of magnesium or sodium are guided by distributions from the of the other molecules or chemical groups and cause difference of potential especially on both sides of membranes such as cytoplasmic ones, or reduce or cause reactions.

The pH that is determined by ions of hydrogen and the other ions, influences the function of the cell (characteristic is the attracting of protons in the mitochondria, which is aided by proteins of transport).

Each reaction is reduced by a protein enzyme and most likely by an inorganic c0-catalyst. In the description of the pyrostaphylic, citric and oxidant phosphorylyosis cycles, the enzymic action of proteins that was mentioned above in some detail is abundant and the proteins are formed with transcription and translation.

The membranes of organelles, the cellular skeleton, the endoplasmatic network, the content of organelles, are also composed of the chief molecules of proteins which require the energy which is given by the ATP molecule when it is hydrolysed and the proteins are formed.

A lot of proteins exit from the cell in order to be used by cells of other organs in the human organism, and they contribute to their metabolism, which is required for the function of a cell

The fluidity of membranes is influenced by the temperature and by the saturation of the fatty acids in hydrogen. The substances that will go through are influenced by the fluidity of the membranes and the temperature is influenced by the processes of oxidisation-reduction of the cell. The metabolism of cell and the heat that is released in the reactions influence the fluidity and the pH influences the saturation of the fatty acids of the membranes.

In the life of an organism such as man's, the division of cells is fast at an early age and with the passing of time becomes slower. At the age of 30-35, the rhythm of the death of cells balances the births (divisions). In advanced ages[11] there are thirty divisions of cells, while at the age of forty years there are 40 divisions in each cell.

The death of a cell occurs because an organelle or organelles which are early cease to function and this happens because the proteins or the lipids are not replaced sufficiently and are subject to the deterioration caused by time.

The state of the protein synthesis of a cell is blunted as time passes and the metabolism is influenced indirectly. The influence of metabolism influences the fluidity of the membranes, as also does the saturation of the membrane acids, and the cell is nourished insufficiently. Thus the formation of proteins is influenced in cycles, as is also the rhythm of replacement of aged proteins that are found in the structures of organelles. The enzymes decrease over time because of the deterioration of DNA which transcribes them and the metabolism of cell is influenced again.

The influence of protein synthesis is influenced by the age of the DNA and its response to the demands of the cell. The DNA as we know redoubles in period S of the mesophase and it bequeaths to the new cell one clone of its own DNA (the other is newly-synthesised in the copy) and this clone of DNA it also gives the age of the genome. The permanent radiation of an accelerating charge accumulates energy in the DNA and this in turn does not respond to the protein-synthesis. At the same time, the saturation of the cytoplasmic membrane influences the entry of bio-molecules into the cell. The decline of protein-synthesis and the entry of fewer proteins or other molecules influences the metabolism and the speed of division of cells. Decay and old

[1111] "Cellular Biology " www-jcb.bio.auth.gr

age approach. Certain genes reject this course of decay and certain proteins increase in old age.

The S period of mesophase is the largest and the DNA redoubles. We know that at a temperature of 70-100° C in vitro the DNA clones break up and we assume that in the cancer cell where division is also fast, that this period of mesophase decreases. Binitrophenole increases the temperature of the cell dangerously and we argue that perhaps this substance is produced more in the cancerous cell, or its metabolism is faster and thus produces more heat. With production of capable enzymes such as the ATPase that reduces DNA redoubling and perhaps inorganic catalysts, the speed of DNA fragmentation is accelerated at the same time as the production of greater heat in the cancerous cell. In this study, the CTP that suspends the energy of ATPase decreases the rhythm of DNA redoubling. The CTP acts as an antibody and we should not limit it to cancer.

When the DNA ages, the rhythm of protein-synthesis becomes smaller and the metabolism slower and there are fewer enzymes and we refer you to the ATP production cycles for a small briefing on the enzymes that are used. A fall in temperature influences the penetrability of membranes unfavourably and the metabolism is made difficult again. On the other hand, in cancer the membrane penetrability is great because of the high temperature and the protein synthesis is rapid, along with an increased rhythm of production of ATP and perhaps of other substances such as binitrophaenole.

It must be noted during the DNA redoubling in the mesophase and especially in the S period, there is no gene to direct these energies. We know that the introns do not codify proteins while the exons, where the DNA clones are not open, do. Thus we assume that in the redoubling DNA, when the clones open, they do not codify the proteins and there is no control over the process until copying takes place. The redoubling takes place because of the temperature of the cell, which in this phase is high.

We discover then that heat not only increases the rhythm of cell division but also increases the stimulation of the particles of DNA, which for that reason grow old and

produce fewer proteins (it influences the rhythm of division negatively and over a long period of time).

Therefore, at this stage of our research, we propose a reduction of ATP production rhythm in the cancerous cells influencing the production of enzymes which reduce its cycles, a confrontation of substances such as binitrophaenole which increase the cell temperature, a non-influencing of the amount of CTP, an increase in plasma membrane saturation, and microwave radiation of low force in the affected areas.

For the confrontation of old age, we should increase the rhythm of cell metabolism, influence the plasma membrane saturation and use microwave radiation set at a suitable level; these and more would be some of the factors we should pay attention to.

For old age, facing DNA decay and the accumulation of thermal energy within it is the most necessary thing.

BIBLIOGRAPHY

Basic Biochemistry — Dimopoulou-Antonopoulou

Biochemistry — Stryer

Cellular Biology — www-jcb.bio.auth.gr

Cellular Biology — Margaritis

The Chemical Bond — Klouras-Perlepes

Beginnings and Applications of Inorganic, Organic and Biological Chemistry — Garet - Denniston - Topping

Elements of Inorganic Chemistry — Manolkidis-Bezas

Natural — Serway

Natural — Ohanian

Wave Studies — Kouyoumtzopoulou

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