

How Mass Moves in the Human Body

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Abstract: *The need of a fundamental principle is truly obvious. It might be the most important and central frontier to deal with in medicine. The situation for the science of medicine looks like not seeing the wood for the trees. Today two principles dispute, i.e., the principle of homeostasis and the principle of relations. The principle of homeostasis argues for stability and the principle of relations argues for change. The concept of “homeostasis” is replaced by the concept “system of flow”. The hypothesis is that the system of flow dominates causing inflammation, while chronic inflammation causes disease. If damaged flows continue not being repaired, disease will be chronic. Instead of finding the reason for disease in lack of homeostasis, we will find damaged flows in and between cells and organs as the reason for disease.*

Keywords: Homeostasis, ATP synthase, principle of relations, disease and inflammation, damaged flow and disease, transformation and transformers, catalysts, induced fit, enzymes

In this paper we focus how masses move in the human body and how it is transformed.

In the science of medicine the number of scientists is estimated to be over 200.000 and the total amount of published medical articles yearly is approximately 126,000, i.e., 345 every day and 14 every hour!

Today basic sciences have turned into over 633 different sciences and it has been an exponential development over the last century. Almost any field of study has a name, ending with “-ology” from the Greek word logos, such as cardiology for the study of the heart, sociology for the study of society, carpology for the study of fruit and entomology as the study of insects to mention four out of the 633.

Now the need of a fundamental principle is truly obvious. It might be the most important and central frontier to deal with in medicine. The situation for the science of medicine looks like not seeing the wood for the trees.

Today two principles dispute, i.e., the principle of homeostasis¹ and the principle of relations².

The principle of homeostasis argues for stability and the principle of relations argues for change.

Where in reality can we find any system or subsystem, whether within the nature, the entire Universe or the human body, which will remain stable over time?

Nowhere of course.

Then it is not decent and applicable to use some principle which is based on stability, stable and similar, i.e., homeostasis. We need to find a principle which is based on change, since change dominates in reality, whether it is in nature, in the Universe or into the human body.

At this stage we need to stipulate postulates, where number 3 and 4.1 -4.6 are the most important:

1. All consists of the world today, the world of the past and the world of tomorrow.
 - 1.1 Everything that ever existed, exists or will exist is a part of All.
 - 1.2. All is dynamic – All is “alive”.

- 1.3. All = X.
2. One world exists today.
 - 2.1. The world is a part of All.
 - 2.2. Anything that does not exist today is not part of this world.
 - 2.3. The world is dynamic – the world is “alive”.
3. Any world is differentiated into component parts each one of which stands in relation to another.
 - 3.1. It all hangs together.
 - 3.2. Nothing lives in isolation.
 - 3.3. It all hangs together through a relation - **R**.
 - 3.3.1 Since it all hangs together; nothing is in isolation.
 - 3.3.2 The relation is superior to the parts, **a, b, c ...**
 - 3.4. If the relation is superior, there will be no cause and effect between the parts.
 - 3.5. The relation makes the parts' existence possible.
 - 3.5.1 Without relation the part will die and disappear.
 - 3.6. The concept of relation explains a system.
 - 3.7. All systems are arranged in a logical hierarchy. If a superior system collapses, then all subordinate systems will collapse.
 - 3.8. All systems of relation, at a certain time, constitute the world.
 - 3.8.1 Everything that happens, happens only one time. Nothing that happens will happen again. The unique disappears and will never come again.
 - 3.8.2 Everything which is will be something new.
4. Everything that exists is physically concrete.
 - 4.1. Meaningful concepts are concretely interrelated.
 - 4.2. Abstract concepts must be able to be derived from concrete concepts.
 - 4.3. The sentence expresses the thought in a way which is perceptible for the senses.
 - 4.4. There are no meaningful concepts without concrete meanings.
 - 4.5. The contents of thoughts are concrete.
 - 4.6. That which is concrete either exists or does not at a certain point of time.
 - 4.7. The combination of article 3 and articles 4.1 – 4.6 is the world alive.
5. Thoughts about concrete facts are meaningful propositions at a certain point of time.

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The Principle of Relations claims to represent all aspects of reality, including the human body, based on I-III:

a) *Requirements for a complete theory:*

Every concept has to represent reality directly and concretely.

b) *Postulate:*

Nothing exists in isolation; everything exists in relations.

c) *Basic concepts:*

- Mass, denoted by m.
- Relation, denoted by R.

The theory that will guide us is The Principle of Relations, based on the postulates, where the concept relation relates to reality by showing that there are relations between all parts in the human body, i.e. aRb, where:

- 1) a, b, c ... are any system, subsystem, unit, part in any field of the human body, e.g. organs, cells, organelles, nuclei, atoms and molecules.
- 2) The relation R is a flow (wave) of packages, p_{1-n}, protons, e.g. neutrons, electrons, photons, proteins, fats, polysaccharides between a, b, c ... in any part of the human body.



Figure of the basic model of relations.

If the relation is superior, there will be no cause and effect between the parts. Based on the postulate - Nothing exists in isolation; everything exists in relations - in combination with 1 and 2 above, the principle is

X = aRb

Between all systems and between all parts of any system, S, there is a continuous flow of packages p_{1-n}, i.e. **R = p_{1-n}**. The formula will be this

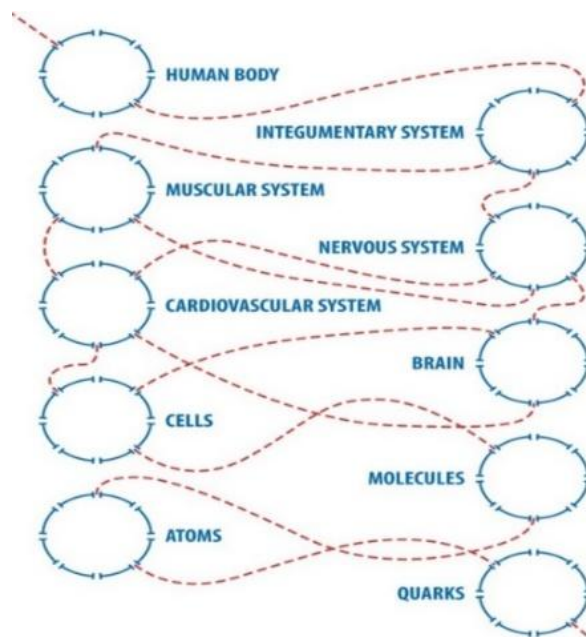
S = ap_{1-n}b

R contains p_{1-n} and the function of R is as below:

$R = \sum p_{1-n} = p_1 + p_2 + p_3 \dots p_n$

This content will over time change any structure a, b, c in the human body, from the lowest element in the cells to relations between subsystems. Within the body there are a complex R_{1-n}.

This is the model of the Human Body, based on the alternative postulate, *nothing exists in isolation; and everything exists in relations:*



The system of the human body consists of flows of packages between different subsystems, i.e. integumentary system, S_i, skeletal system, S_s, muscular system, S_m, nervous system, S_n, endocrine system, S_e, cardiovascular system, S_c, lymphatic system, S_l, respiratory system, S_r, digestive system, S_d, urinary system, S_u and reproductive system, S_{re}.

If S_H stands for the system of the human body, then S_H = (aRb)^{-∞} consists of S_i, S_s, S_m, S_c, S_l, S_r, S_d, S_u, S_{re}, S_n and S_e, where each S₁₋₁₁ has its own system of R₁₋₁₀.
 S_H = (aRb)^{-∞} = S_iR₁S_mR₂S_c R₃S_lR₄S_rR₅S_dR₆S_uR₇S_{re}R₈S_nR₉S_e R₁₀S_s

Based on the postulates and the Principle X = aRb, we can look into the System of the Human Body.

With the language of the principle of relation we can summarize the system, S, for the human body, H, as S_H = (aRb)^{-∞}

Since there are 100.000.000.000 cells, i.e. 100 trillion cells, where each cell is a living unit, between all cells and organs there are billions and billions of relations, R.

As we all know the human body is a complex system of relations between subsystems, down to the smallest elements in and between cells.

When any R is broken or damaged, there will be disorders and diseases, e.g. cancer, AV-block III, Alzheimer’s and cardiac infarction.

Nature is based on simplicity and continuous flows between a and b, i.e., aRb.

Homeostasis as concept and content has to be questioned
 Homeostasis, from Greek home “similar” and stasis “stable”, has a huge impact towards the science of medicine. Homeostasis is fundamental understanding biological system, including the human body. Its function is to maintain a state of equilibrium within the entire body and its

organs. It is a self-regulating process. When an imbalance occurs, it damages any system and disease can occur.

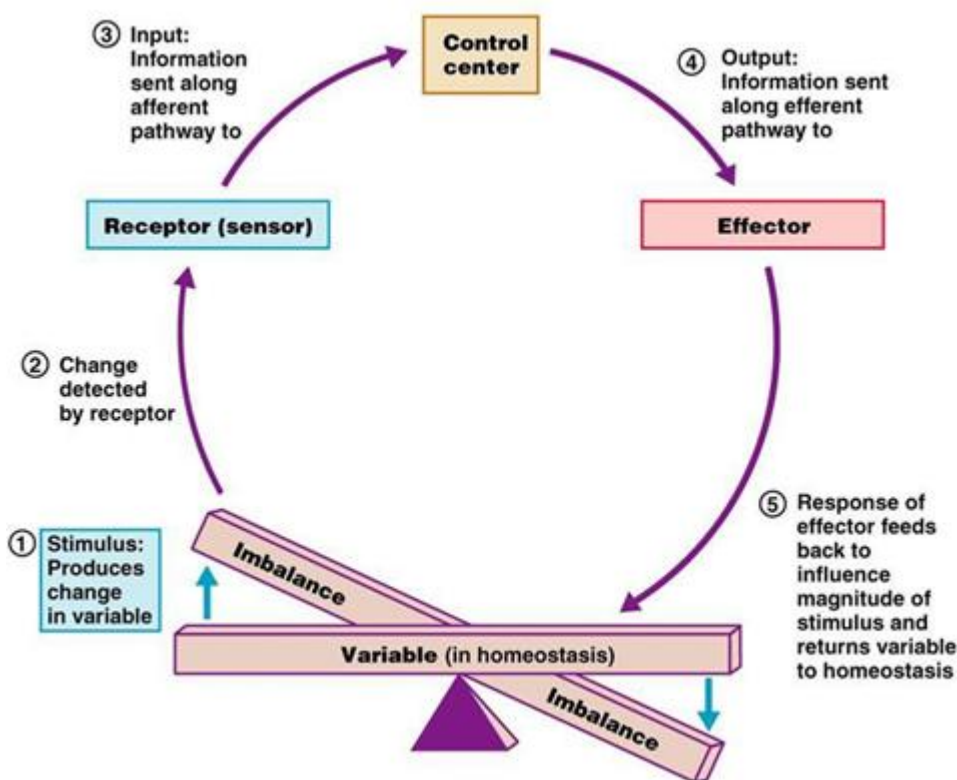
Claude Bernard formulated the phrase *milieu intérieur*, in English internal environment. He wrote: "The stability of the internal environment (the *milieu intérieur*) is the condition for the free and independent life".³ When Walter Cannon later on introduced the concept homeostasis, this was the underlying principle.

In his book *The Wisdom of the Body*⁴, Walter Cannon describes the attributes of homeostasis like this:

1) "Constancy in an open system that requires mechanisms that act to maintain this system, just like our bodies. Cannon based this proposition on insights of steady states such as glucose concentrations, body temperature and acid-base balance.

- 2) Steady-state conditions require that any tendency toward change automatically meets with factors that resist change. An increase in blood sugar results in thirst as the body attempts to dilute the concentration of sugar in the extracellular fluid.
- 3) The regulating system that determines the homeostatic state consists of many cooperating mechanisms acting simultaneously or successively. Blood sugar is regulated by insulin, glucagons, and other hormones that control its release from the liver or its uptake by the tissues.
- 4) Homeostasis does not occur by chance, but is the result of organized self-government."

The concept homeostasis has often been illustrated as in the model below:



Homeostasis is built on receptor, effector and control centre, but there is also needed such as glucose, oxygen, amino acid, fats, endocrine hormones, water, natrium, calcium and enzymes as catalysator making the chemical reaction possible. Then carbon dioxide and ammonia are produced and have leave the cell maintaining homeostasis. All these variables need to be controlled to maintain homeostasis. Then, we are told, the internal environment will be regulated.

How, then, is the control made?

In short, homeostasis means that any biological organism will remain in a steady state; it will be standing still at the same place. Sometimes the concept dynamic equilibrium is used.

Some common-sense reaction might be that there exists no system, whether in nature or in the human body that over time will be in a steady state maintaining its structure or

even its existence. And why do not homeostasis deal with cancer? It is obvious that the concept and the theory of homeostasis cannot be used understanding the human body or any other system in the entire universe.

Once we use the concept homeostasis as a fundamental property of biological systems, we are imprisoned in a dead-end. The concept is an obstacle and barrier to fully understand how disease occurs and then also how to find cure.

Nature, including the human body, is based on simplicity. What happens goes directly without any detours. Then the principle of homeostasis is too complicated to handle within the human body. Each system, such as cells, organs and organelles, has their own function in the entire human body and either they function or not. If they do not function it is not caused by the homeostasis, but damaged flows, which are direct and efficient.

Based on the postulate “Every concept has to represent reality directly and concretely”, the concepts of homeostasis mechanisms cannot be valid. So, we have to look at the concrete level, i.e., aRb and the system of relations, i.e., R_{1-n} .

Even if we now abandon the concept homeostasis, we can use, but based on the logic of aRb, some of its content, such as the variables concentration of CO_2 , nutrients, metabolic end products, pH, and Na^+ .

Now, then, the ordering of the variables will follow the line of a flow. A flow which seamless moves through any organ and cell.

The so-called regulated variables are blood pressure, blood volume, Na^+ concentration; Ca^{2+} , Mg^{2+} , PO_4^{3-} concentrations; Glucose; Osmolarity; pO_2 , pCO_2 , and pH; Temperature. Then, when based on homeostasis, these regulated variables can deviate, more or less. When the deviation is extreme it is called *stress response*, but if it is minor, it is called *defence response*.

Under extreme deviations of the variables, the homeostatic mechanisms cannot handle it.

This conclusion is dramatic.

When the principle of homeostasis is used, these variables are regulated by the homeostasis of the cell. But, if we use the principle of relations, it is the status of these variables that make the cell function normally. If the flow of these variables is damaged, the cells functionality will be affected and injured.

In the article “Stress, Inflammation, and Defence of Homeostasis” Raj Chovatiya and Ruslan Medzhitov defend the concept Homeostasis as a fundamental property of biological systems. However, when they define homeostasis of tissues in terms of regulated variables, they open up for alternative explanations of biological systems.

Dealing with causes of diseases, we must now focus the status of flows within the entire human body.

So, we have two opposite views of the human body, its organs and its cells: the principle of homeostasis and the principle of relations.

In some texts we can find the conclusion that even if there is a close connection between inflammatory and stress responses, that relation is somehow *ambiguous*, which gives an indication that the principle of homeostasis has difficulties explaining disease and inflammation.

Now, the hypothesis is that the system of flow dominates causing inflammation, while chronic inflammation causes disease.

S_H means the human body system, while HBS means the Human Body Status and is measured by several tests, such as blood pressure, fever, creatinine, glucose, Na^+ , Ca^{2+} , O_2 , CRP, EKG and EEG. HBS can also be caused by organs malfunction and detection by CT, X-ray and scan (MRI).

Now, the concept Homeostasis will be replaced by the concept Human Body Status, HBS, for two reasons:

- 1) The idea and principle of Homeostasis is not valid.
- 2) HBS is based on objective facts.

By restructuring the content of the article “Stress, Inflammation, and Defence of Homeostasis”,⁵ we will find a new perspective.

Why?

Now we will use new glasses looking at the reality of the human body. The glasses are called The Principle of Relations, based on the formula $X = aRb$, where X is inflammation and disease as well as HBS, i.e., the human body status.

The human body is complex, but not complicated. Once we find the basic principle and its theory that underlies the functionality of the human body, we will make it simple understanding the human body.

At this stage the concept of “homeostasis” is replaced by the concept “system of flow”.

If we now also replace some part of the concept homeostasis with the concept functioning, as functioning organs and organisms, we can identify when an organism and its organs do not function by measure different blood tests, x-ray, ultrasonography, urine tests, DNA-tests and other observations.

Then we start understanding the human body from objective facts, such as high blood pressure, pain and fever. Blood tests tell the status of Haemoglobin, Glucose, Cholesterol, Creatinine, Sodium, C-reactive protein (CRP) and many others.

By using Occam’s razor, it seems that the concept homeostasis is not needed. It is simply one concept to much for understanding the human body.

Once we abandon the concept homeostasis, we need to find a new principle and theory explaining the system of the human body and then we have the principle of relations.

The hypothesis is that the system of flow dominates causing inflammation, while chronic inflammation causes disease.

If damaged flows continue not being repaired, disease will be chronic.

First, however, we have to challenge some established concepts, primarily homeostasis, equilibrium and its constant K_{eq} .

Since contemporary science tells that homeostasis and disease have an inversely relationship, then a disease is related to some imbalance in the human body.

Homeostasis means a body in stability and balance or equilibrium. Sometimes with adding dynamics, i.e., dynamic homeostasis and dynamic equilibrium. The net movement must be 0, i.e., what amount goes in must also go out.

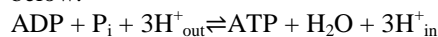
Critical is the direction of the movement.

The reversible reaction, i.e., \rightleftharpoons , means equilibrium, i.e., balance and no net change between the components, as explained by the constant K_{eq} .

K_{eq} is the equilibrium constant expressing the ratio of products and reactants at equilibrium.

The meaning is that if a system is not at equilibrium, the system itself will direct moves towards equilibrium. *However, I want to challenge this notion.*

Equations dealing with ATP synthase in contemporary science view ATP synthase as a catalysed reaction, shown as below:



ADP consists of $C_{10}H_{15}N_5O_{10}P_2$ and ATP consists of $C_{10}H_{16}N_5O_{13}P_3$.

As we have seen from the Principle of Relations, the concepts flow of packages and Transformers, an alternative explanation is possible, i.e., there exists nothing such as homeostasis and equilibrium.

The body is in a continuous move, where each microsecond and at every moment, the systems of the body move, sometimes faster and sometimes slower.

Instead of finding the reason for disease in lack of homeostasis, we will find damaged flows in and between cells and organs as the reason for disease.

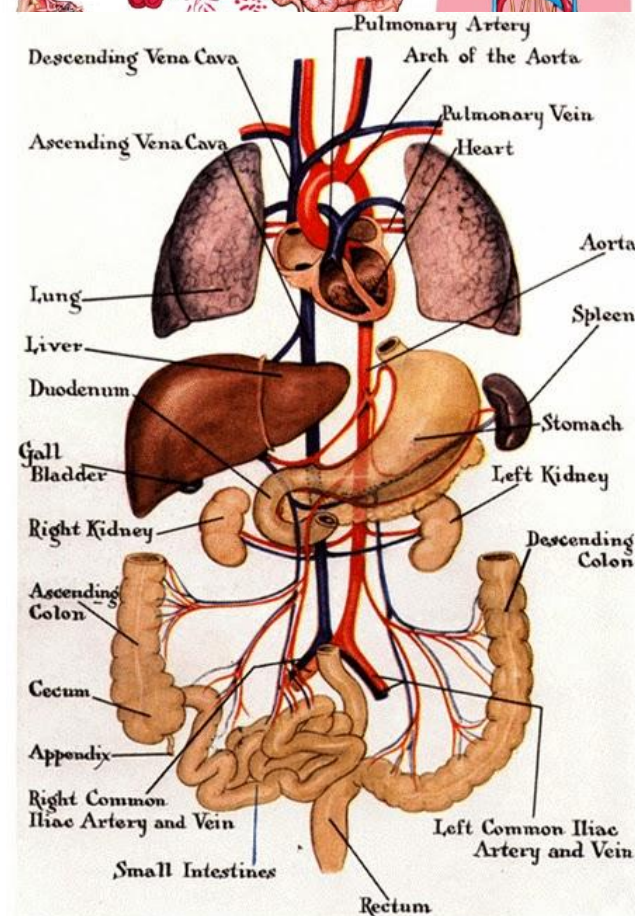
How, then, concretely, affect a flow block the occurrence of inflammation leading to a disease?

The principle of relations and its consequences

We can identify, at least, four levels; each level has a basic structure in common, in the human body:

- 1) The human body as a whole.
- 2) Organs, such as heart, kidney and lungs.
- 3) Cells and its organelles.
- 4) The structure of DNA.

The organs of the human body can be shown as these two simple overviews, but gives us possibility to use our fantasy when it comes to understand how and which relations exist:



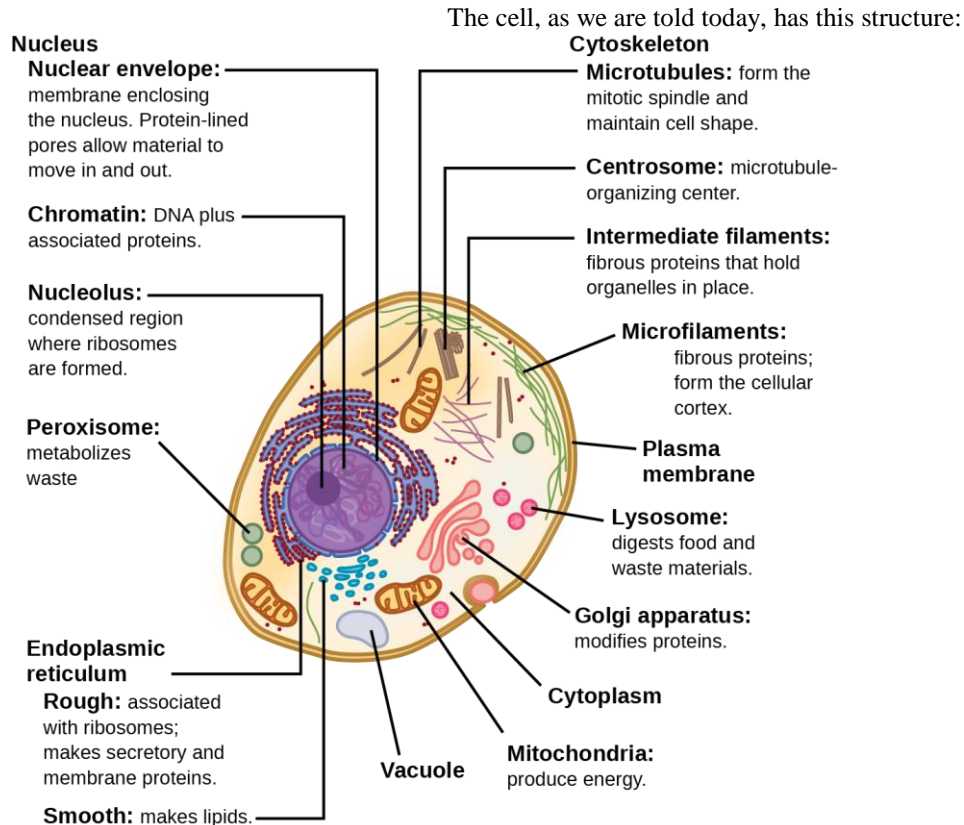
How can a cell manage all subsystems, the organelles, within its boarder, the ATP synthase, the Sodium-Potassium Pump, the mitochondria and the DNA?

Since the structure of a cell by its organelles has a similarity with the organs in the body, we can find the common model for both, by using the formula $S_H = (aRb)^{-\infty}$, for the cell C, then the formula will be $S_C = (aRb)^{-\infty}$

Now, based on the Principle of Relations, we have to identify all relations on all levels of the cell. This is crucial for understanding the cell. The most complicated part is how different levels are connected within the cell.

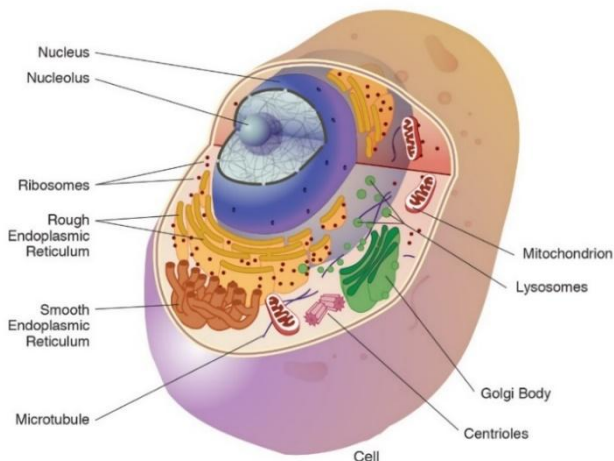
The human body has 30.000.000.000.000 cells. It is not possible with functionality of a cell if it is too complicated -

the cell must be based on simplicity, i.e. the cell might be complex, but not complicated.



The next image tells more overview how the cell looks like:

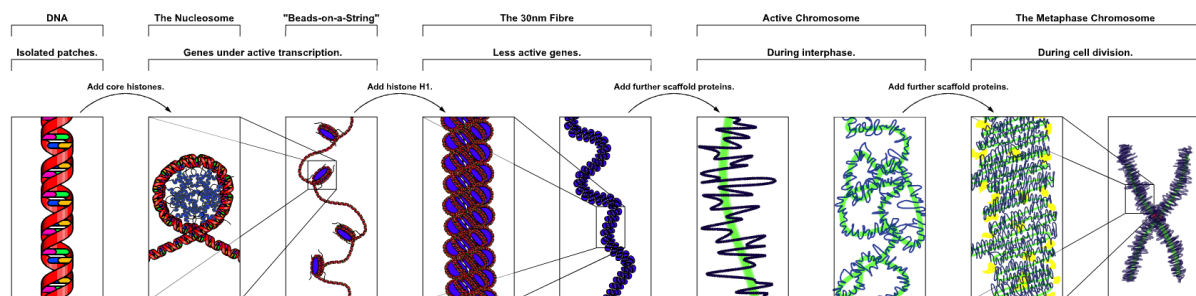
high agility. Contemporary science tells that cell works by letting enzymes carry out chemical reactions. Enzymes break down glucose as well as creating new enzymes and making the cell reproducing. We will call this for the hypothesis no 2, as below. Is it possible for these enzymes to be as efficiency as is needed in the cells flows?



Flows in the cell

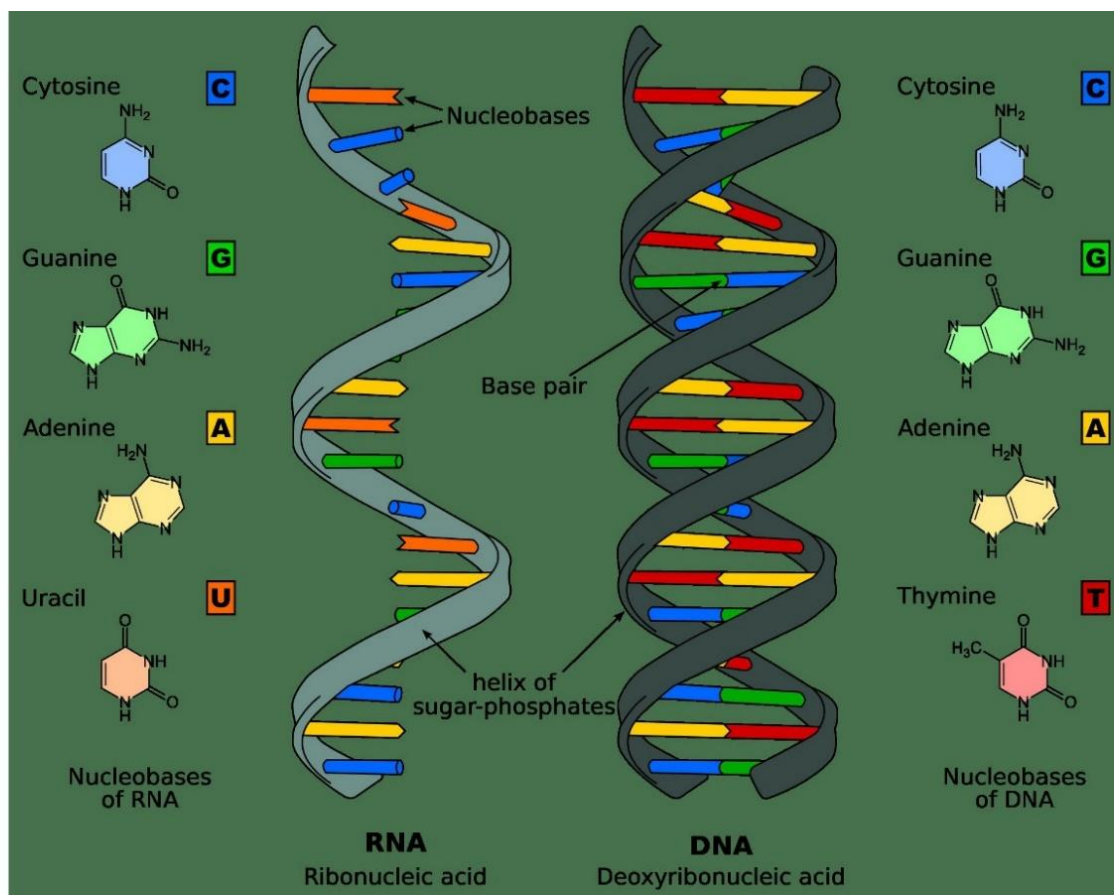
Based on aRb, i.e., the principle of relations, we must find all flows in the cell and how they are connected with each other, starting from molecules passing the membrane until new cells are produced as well as waste. Besides the flows, there are structures, such as Chromatin structures, which hold packages of DNA. How these structures of DNA and chromatin are affected by flows within the cell, is one key point.

Within the cell, the speed of flows must be high, without any obstacles or blocks, since it all has to run workable and with

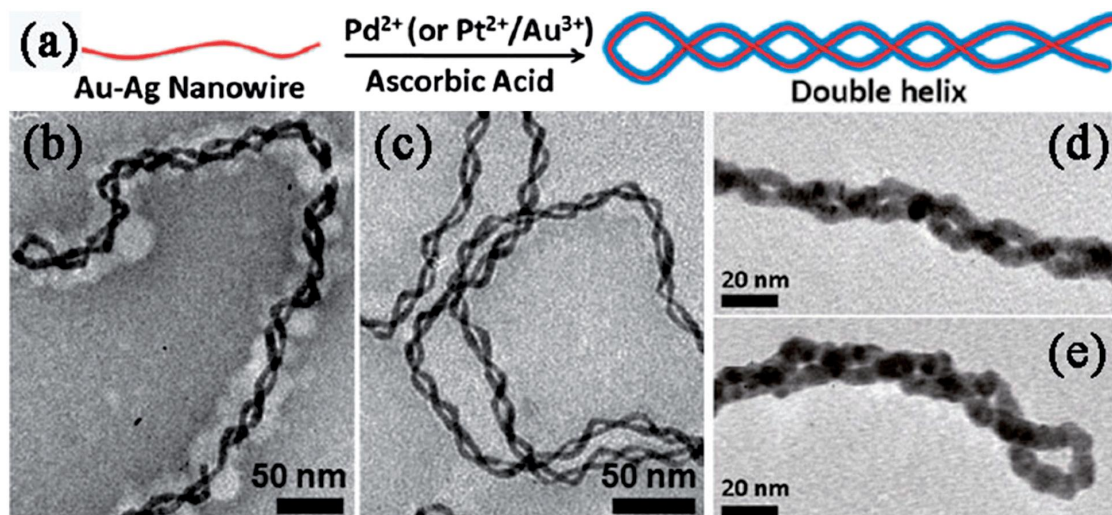


Does mutation occur as an effect of random or is it determined? When we use aRb, mutation might be determined and not random.

The molecule of DNA, i.e., $S_{DNA} = (aRb)$, which shows the relations between T, G, A and C:



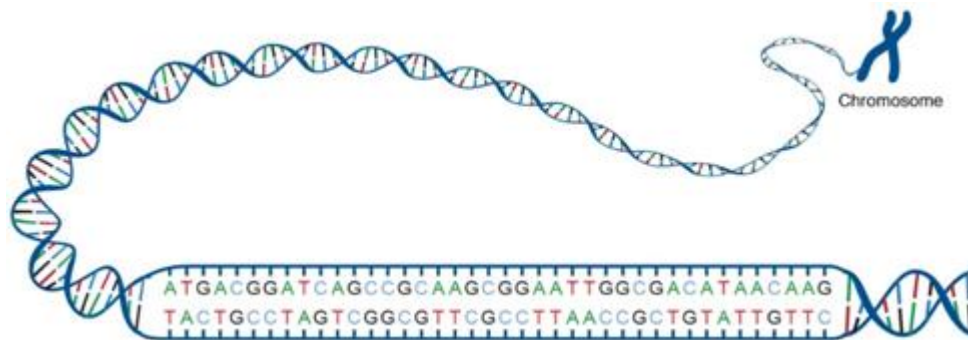
This next picture made in an electron microscope gives us the impression of a flow:



What is genetic information?

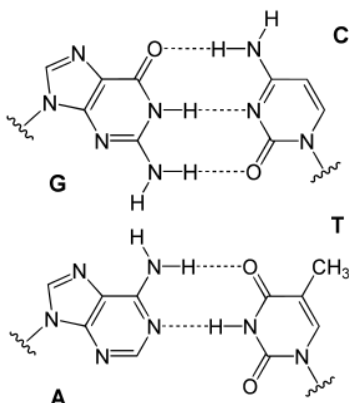
It is the structure of the chemical components A, T, G and C. Even if sequences of A, T, G and C can be considered as a four-letter alphabet, it is concrete, solid and coactive chemical components, which allow flows to move in specific order, guided by the structure. Then new cells occur guided by the structure.

The molecule of DNA, consisting of the acronym ACGT, i.e. adenine, cytosine, guanine and thymine, is often shown as this model:



The DNA molecule consists of two strands, wound around each other. It is adenine and thymine that make a pair and guanine and cytosine that make a pair. Then it is pairs of AT and CG making up DNA.

Then, contemporary science uses hydrogen bonds to make the molecules A, T, G and C to hang together, as this model shows:



Looking at this model with the eyes of aRb, questions occur:

- 1) What is the alternative to hydrogen bonds?
- 2) What in the wall of the molecule can arrange the structure of the molecule?
- 3) How does new molecule occur?
- 4) How does new cells occur?

The Transformer

A Transformer is *the mechanism which directs and leads packages*, e.g. protons, electrons and nutrient molecules, within the cells in the human body, as is to be shown in this section.

Throughout reality the same principle applies to the mechanisms of a Transformer's functions, e.g. the Earth, the Sun, the Moon, the human body, galaxies, organs and cells in the Human Body.

Any system has covers. It can be just one cover, but mostly there are many covers within the same system. One cover protects the next layer. There can be many layers in a system, e.g. the human body is entered via hands and mouth - stomach - small intestine - large intestine - kidney - liver - cell; it has its gate and its transformer - mitochondria - chromosome - DNA - gene - ATGC.

ATP synthase is one transformer which functions in membranes, i.e., the thylakoid membrane and the inner mitochondrial membrane.

Since ATP synthase is an enzyme protein, we can expect that all enzymes are transformers.

In the cover, e.g., cell membrane or the crust of the Earth, there are Transformers. Flows are *directed* via the Transformer into the systems and different subsystems, and so on for all systems and subsystems.

The equation $ADP + P_i + 3H^+_{out} \rightleftharpoons ATP + H_2O + 3H^+_{in}$ will now change, since it is an unusable and not valid equation.

Instead, we must find out the components in all chains of flows. Like a train with wagons, as our first imagination, proteins, carbohydrates and fats can show up like this; the commonest components and the most used are these:

... C - H - O - H - N - O - H - C - O - O - H ...

Depending on the position and seating, the formula will show up in different shapes. The most common contents are the following:

- 1) The atoms C - H - O will be present in the flows of fats, e.g. for Cerotic acid $CH_3(CH_2)_{24}COOH$, and for the flows of Carbohydrates, e.g. Sugar $C_{12}H_{22}O_{11}$.
- 2) The atoms C - H - O - N will also be present in the flows of proteins, e.g. Insulin $C_{257}H_{383}N_{65}O_{77}S_6$, where S stands for Sulphur.

Based on aRb there are no bonds between atoms, there are flows of packages that push and pull the particles together.

Then the formula will be

$$S_1 = (a_1R_1b_1) R_2 (a_2R_3b_2) \dots$$

S_1 is a complex of relations between all parts and elements in the system, i.e. a, b, and c are complicated subsystems, that send and/or receive flows of packages, i.e. p_{1-n} .

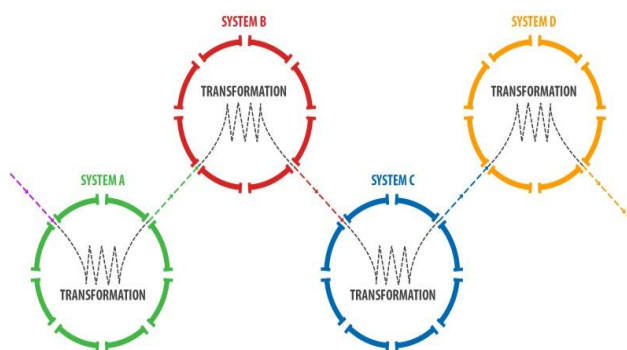
Then

$$R = \sum p_{1-n} = p_1 + p_2 + p_3 \dots p_n$$

The big challenge is now to identify all the p in all relations and to identify, certainly and concretely, the logic of

$$S_1 = (a_1R_1b_1) R_2 (a_2R_3b_2) \dots$$

The equation for this may be illustrated as such:



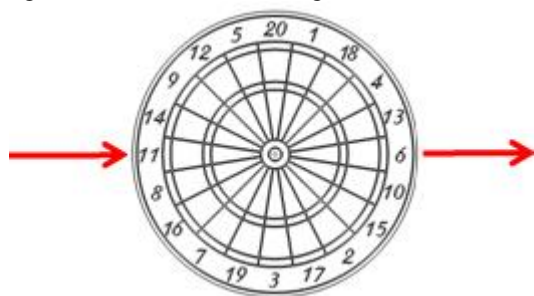
The size and volume for any system regulate the flows in and out of any system. When packages leave any system, new packages can come in, i.e., they are needed.

How, then, does the Transformer function?

Examining the entire idea of the ATP synthase being a molecular machine must be redone. Taking the Transformer in mind, the conception about ATP synthase may be the most misunderstood part in the human body. When using the concept and phenomenon of a Transformer the conclusion is different. In the following I will explore this path and establish the groundwork for seeing the ATP synthase in relation to the Transformer.

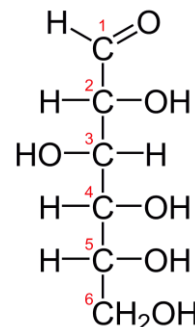
The cover of any system has a gate where the Transformer is located. When particles get close to the cell, only those particles that fit perfectly can come in. The transformer can be seen as a paddle wheel, where each paddle can only accept and take one specific particle at a time. The paddle wheel, i.e., Transformer, takes in one package, particle, after another, e.g., O, H, N, P and C, and out comes a new molecule, e.g., ATP: $C_{10}H_{16}N_5O_{13}P_3$.

The shape of a paddle wheel will differ depending on where it is located. Some examples as below might stimulate our imagination (the size will be measured in nanometres, approximately 50-200 nm), where each number can accept only one specific particle from a molecule, e.g. H, N, P, C and O, at the left side, and then a new molecule will occur, e.g., $C_{10}H_{16}N_5O_{13}P_3$, at the right side:



Let's use our imagination again.

The molecule of a D-glucose chain as below can be seen as a flow of packages, which is directed by the Transformer:



Enzyme as concept and content has to be questioned

Contemporary science argues that enzymes are biocatalysts accelerating chemical reactions and converting the so-called substrates to molecules. In metabolic pathways enzymes are needed in each step, in order to reach rates fast enough for sustaining life.

Enzymes consist of chains of amino acids. They are told to be held together by peptide bonds, but even this has to be questioned.

Metabolism is a number of transformations of food made by transformers.

As it seems metabolism in cells is complex consisting of thousands of genes and proteins. A biochemical network is involved by these molecules in reactions. How can we understand it all?

Starting with some basic models we can, step by step, build up and construct an understanding.

Are enzymes transformers?

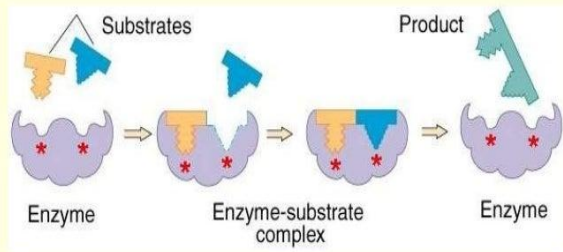
Difference between enzymes and transformers

In 1894 Emil Fischer proposed his lock-and-key model dealing with how enzymes function. In 1958 the Induced Fit model of enzyme activity was proposed by Daniel Koshland. The model tried to explain how the enzyme molds itself to be as the geometry of the molecule, once a contact with the substrate came about.

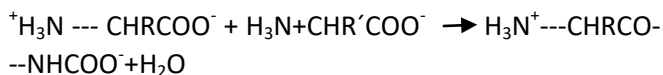
The model below gives some understanding.

The "Induced Fit" model of enzyme activity

- The substrate induces the enzyme to change shape to create a tighter fit



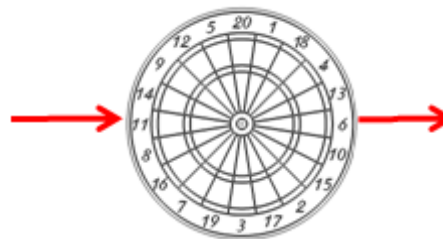
The equation below was written by Daniel E. Koshland in his paper *APPLICATION OF A THEORY OF ENZYME TO PROTEIN SYNTHESIS*:



This reaction, according to Koshland, requires energy, which will come from ATP, i.e. adenosine triphosphate. This reaction needs also catalysis, since it is too slow. In the process of making protein synthesis, peptide bonds have to be used. It is all done in laboratories with the help of a chemical template, which will control all reactions and fabricate the product.

The understanding of how protein synthesis is generated has not got a complete answer, as Daniel E. Koshland told us in his paper.

In short, the transformer again:



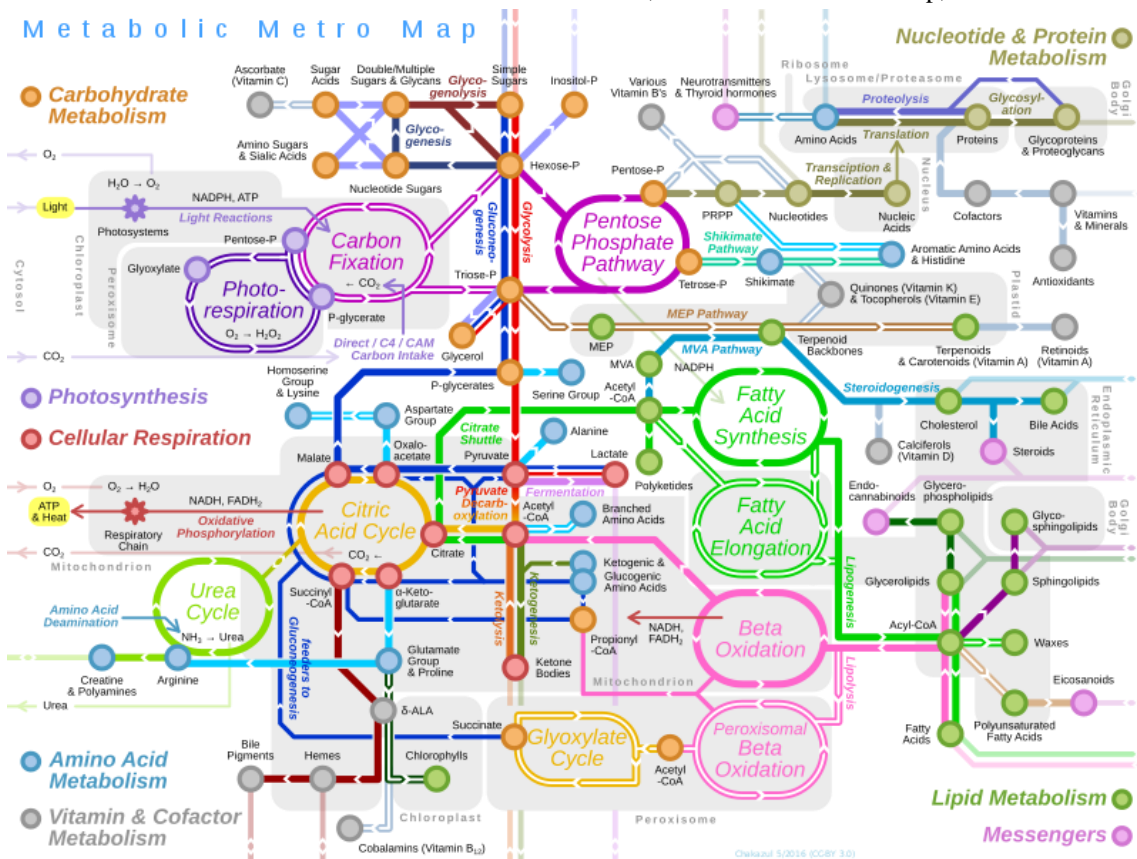
The transformer is a complete model, dealing with all flows in the body, by not using homeostasis, ATP synthase, chemical bonding or catalysts.

So far, what is the difference between the two models, the Induced Fit model and the Transformer model? In the model below we start up the comparison:

	Model	
	Induced Fit	Transformer
Property		
Catalyst	Yes	No
ATP	Yes	No
Bonding	Yes	No
Homeostasis	Yes	No
Position fit*	Yes	Yes
* An individual position in the protein is occupied by one and only one amino acid		

Some steps deeper and further

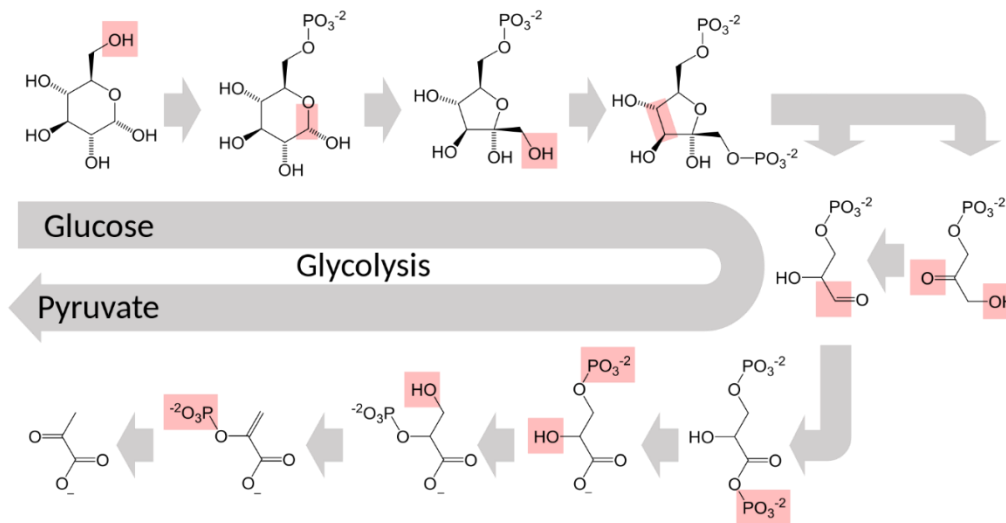
First, the overall metabolic map, as below.



Orange nodes are carbohydrate metabolism, violet nodes are photosynthesis, red nodes are cellular respiration, pink nodes are cell signalling, blue nodes are amino acid metabolism, grey nodes are vitamin, brown nodes are nucleotide and protein metabolism, green nodes are lipid metabolism.

(When looking at this overview of metabolism at Wikipedia one might click any text to find articles).

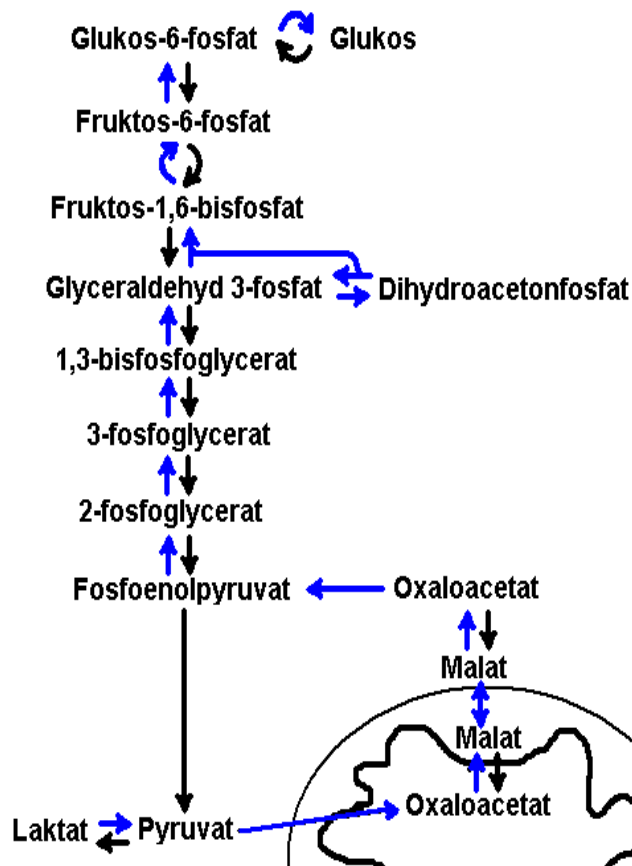
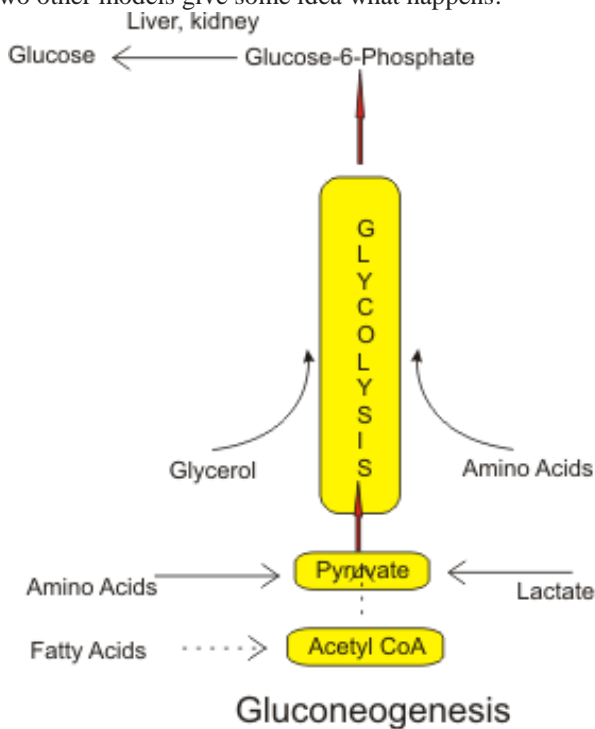
Are enzymes transformers and what is a transformer?



The metabolic pathway of glycolysis uses different enzymes, transformers (?), to perform the transformation of glycolysis to the molecular pyruvate. Different enzymes, in all eleven, perform chemical modification.

The formula of the molecular pyruvate is $C_3H_4O_3$ and via transformation from the molecular glucose with the formula $C_6H_{12}O_6$ and enzymes, i.e. transformers, red in the figure, the molecular occur and is created. ATP has to be dealt with, since it might be an illusion.

Two other models give some idea what happens:



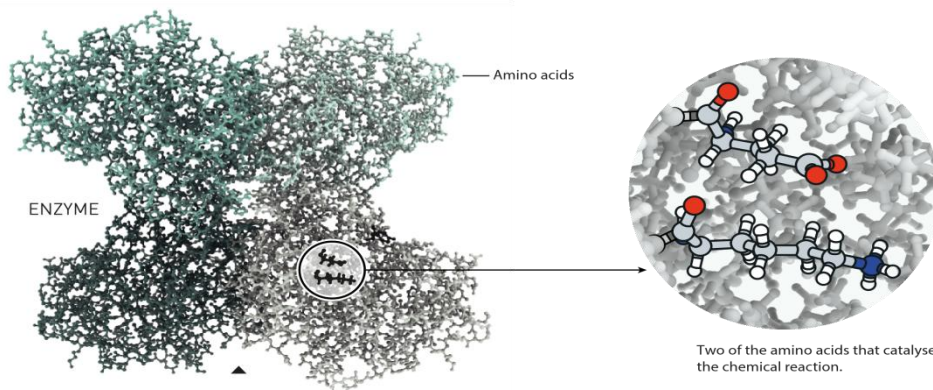
The Nobel Prize in Chemistry 2021 take one step toward reducing the role of enzymes to be a catalyst, by introducing organic catalysts. The press release tells this:

“Organic catalysts have a stable framework of carbon atoms, to which more active chemical groups can attach. These often contain common elements such as oxygen, nitrogen, sulphur or phosphorus. This means that these catalysts are both environmentally friendly and cheap to produce. The

rapid expansion in the use of organic catalysts is primarily due to their ability to drive asymmetric catalysis. When molecules are being built, situations often occur where two different molecules can form, which – just like our hands –

are each other’s mirror image. Chemists will often only want one of these, particularly when producing pharmaceuticals.”

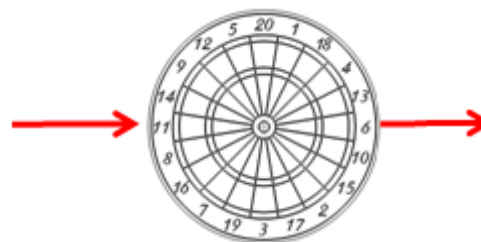
The pictures below show this:



Next step is to find out how a transformer will reduce both enzymes and organic catalysts to zero, since they are not needed in the flows of the human body.

A Transformer is the mechanism that directs and leads packages, e.g. protons, electrons, photons and nutrient molecules, within the cells in the human body, how new molecules occur and waste production. Complex molecules of glycogen, proteins and triglycerides, via transformation to simple molecules of glucose, amino acids, glycerol and fatty acids, back to complex molecules as well as waste.

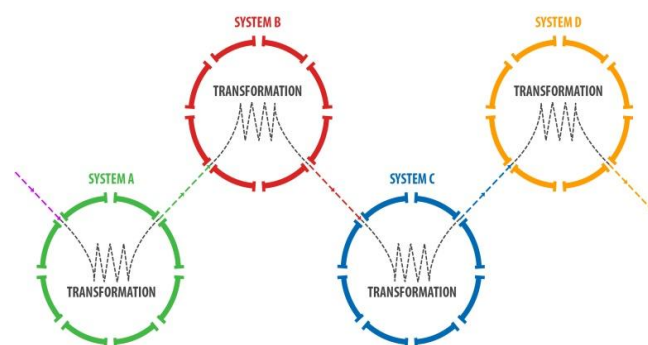
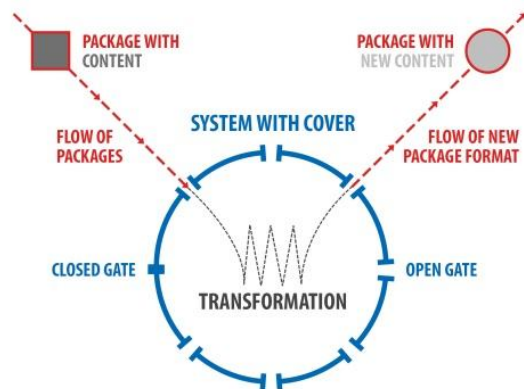
The shape of a paddle wheel will differ depending on where it is located. Some examples as below might stimulate our imagination (the size will be measured in nanometres, approximately 50-200 nm), where each number can accept only one specific particle from a molecule, e.g., H, N, P, C and O, at the left side, and then a new molecule will occur, e.g., $C_{10}H_{16}N_5O_{13}P_3$, at the right side:



The number of transformers is counted in billions x billions x billions ...; they all have the same basic structure but adapted to fit in. (This goes for all system in the entire world, e.g., the Universe, the Earth and the Nature)

For each system there are gates, i.e., the transformation mechanism by the transformer, where the content of the packages is transformed for the next level of reality.

Chains of transformers, where one after another will transform flows of packages and changing the structure for every part of the chain. Symbolically it can be shown like this:

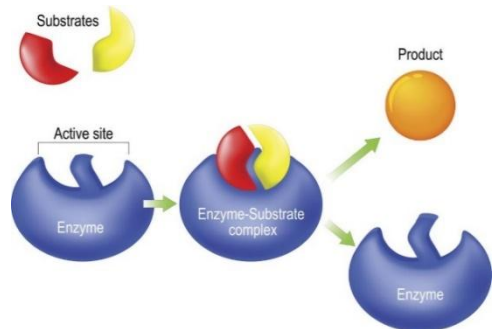


Organs and cells change and diseases occur when R with its packages arrives or not, via the “doors”, i.e., the gates, of the cover.

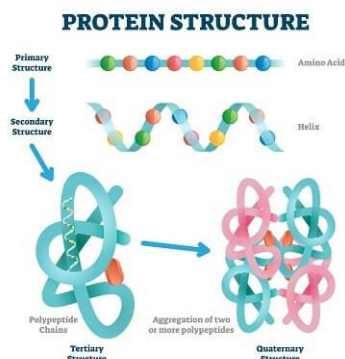
This model is, like most models made by men, oversimplified. The real structure and function of transformations via transformers must be reviewed over and over again.

The transformer can be seen as a paddle wheel, where each paddle can only accept and take one specific particle at a time. The paddle wheel, i.e. Transformer, takes in one package, particle, after another, e.g. O, H, N, P and C, and out comes a new molecule, e.g., ATP: $C_{10}H_{16}N_5O_{13}P_3$.

In contemporary science enzymes are viewed to act as biocatalysts. But they look like transformers, since they convert substrates into new molecules, called products. The well-known image below shows this.

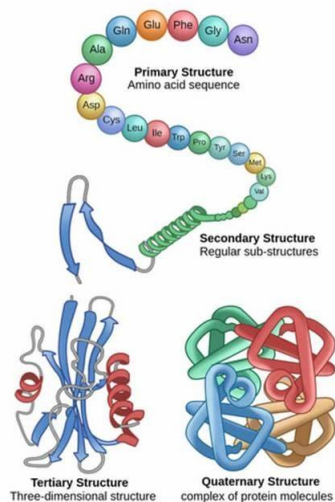


There are some similarities between these two images. The next image below in one attempt to understand how the transformer act.

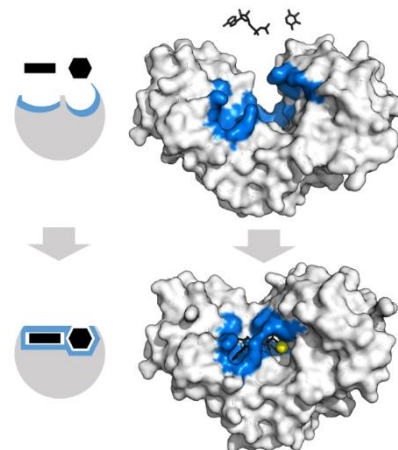


The first possible answer dealing with the physical appearance might be that a transformer is like floating fluid with properties to handle the transformation of incoming complex molecules to simple molecules and back to complex molecules.

The tricky part is now to understand in detail how this function. The next image gives an idea how simple molecules are transformed in the so-called secondary structure, via the tertiary structure create a complex molecule.



In another image it can look like this:

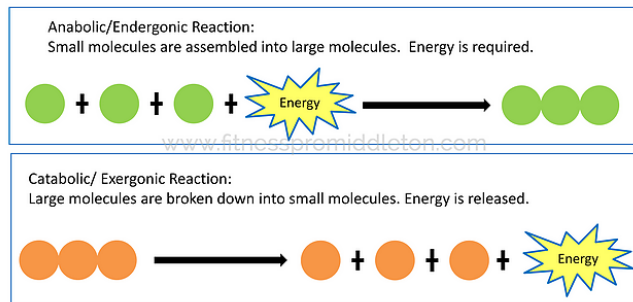


The human body has approximately 30 trillion cells, i.e., 30.000.000.000.000. Then the cell must have some simple functionality or the human body will be a disaster.

Now, we have to understand how the transformer function based on the new definition of the concept energy.

So far, energy is involved in the metabolic processes of catabolism and anabolism, often shown in images as below:

Metabolic Pathways: Anabolic and Catabolic



In both pathways energy plays an important and crucial role.

But, if we now, based on the alternative definition of energy as flows of packages, what will happen and how will the transformer look like?

First, today we have this model explaining the pathways of metabolism:

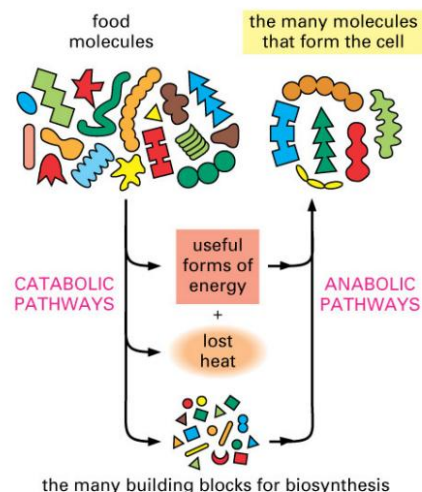
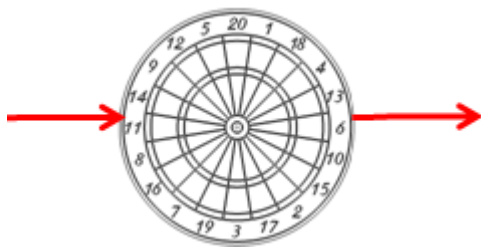


Figure 3-3 Essential Cell Biology, 2/e. © 2004 Garland Science

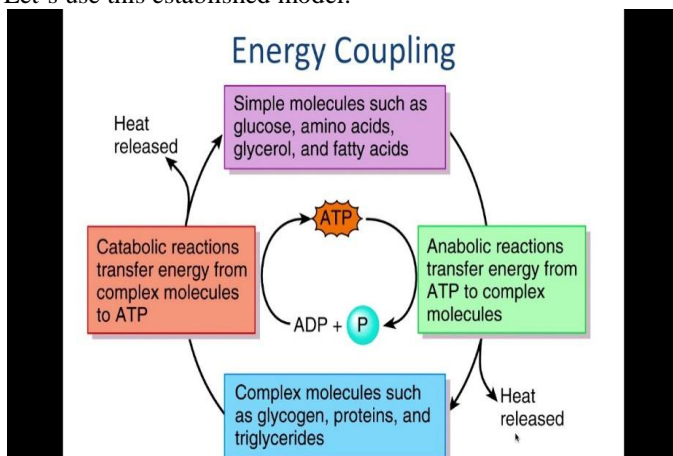
As shown above, the transformer, in a simplified model looks like this:



A transformer replaces ATP synthase and Sodium-Potassium Pump and the concept energy.

Now we must show how molecules transforms via the transformer and its *mechanism directing and leading the packages*, e.g., protons, electrons and nutrient molecules, within the cells in the human body and how new molecules occur.

Let's use this established model:

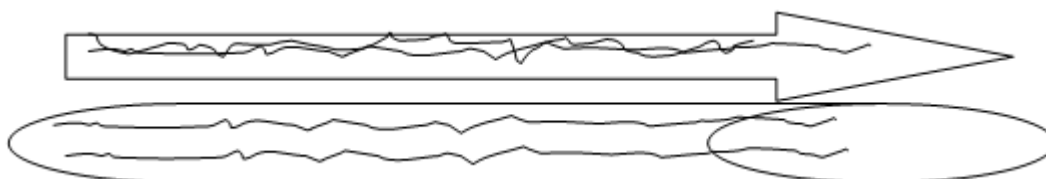


Now, let's cut of ATP, ADP, P and energy, then we get this pathway:

Complex molecules of glycogen, proteins and triglycerides, via transformation to simple molecules of glucose, amino acids, glycerol and fatty acids, back to complex molecules as well as waste.

Of course we are back to the transformer and its functionality. (Please remember the huge importance of the transformer, in all parts of reality, such as gravitation and black holes.)

What is a transformer?



Let us start with an analogy from the man-made roads and cars. When cars are driven on any road, they will behave

Now the concept of homeostasis is replaced by the concept system of flow. Then we have to show an alternative model, which transforms mass to new molecules.

Start with the different parts needed, such as:

- 1) The shape and its walls
- 2) Masses in terms of particles and packages
- 3) How 1 and 2 coincide and consociate

This solution is also based on the postulate: If the relation is superior, there will be no cause and effect between the parts. Why, then, are some chemical components coactive and synergetic and why is this not the case with other components?

Which properties make this happen?

Hypothesis dealing with transformation of masses:

- 1) The pathway has properties which direct and guide packages forward
- 2) The packages have properties which direct and guide the packages forward, i.e., catalyst function with help from enzymes.
- 3) There is interaction between the pathway and the packages, i.e., they are weaved together.

Then, how can we identify the properties and the interaction to find out which hypothesis that is valid?

Which properties have a pathway in order to direct flows of packages?

How is a pathway constructed in order to direct flows of packages to its destinations?

How can a pathway create new cells?

How will it look like when an image is made out of flows, where all flows are connected to each other, e.g., how the structure of DNA is related to flows in the cell and how is the mitochondria related to flows from outside, but most important is how the entire system of flows look like throughout the cell.

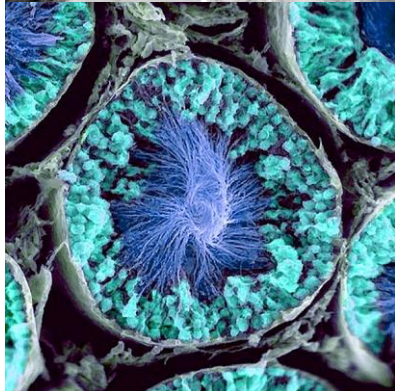
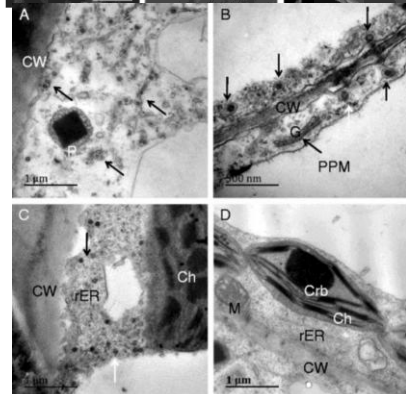
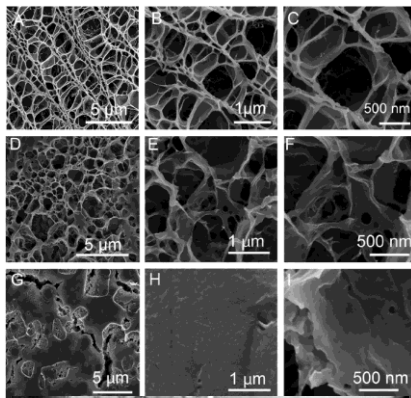
Since it is hypothesis 2 which is the answer of contemporary science, we focus hypothesis 1 and 3.

Two possible illustrations to start with:

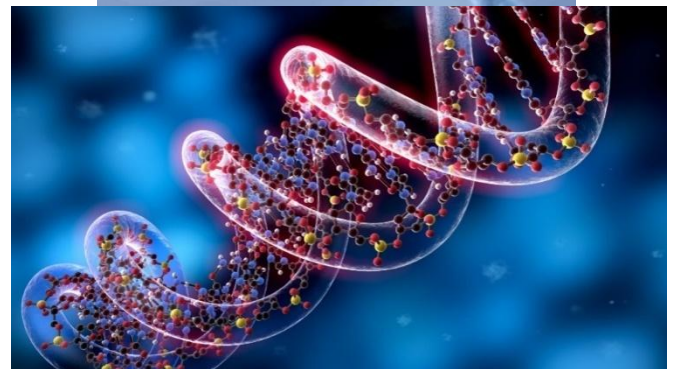
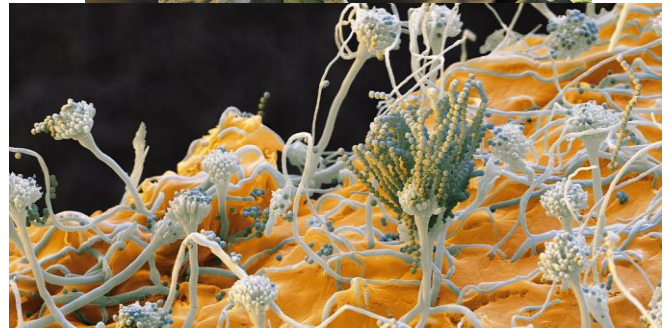
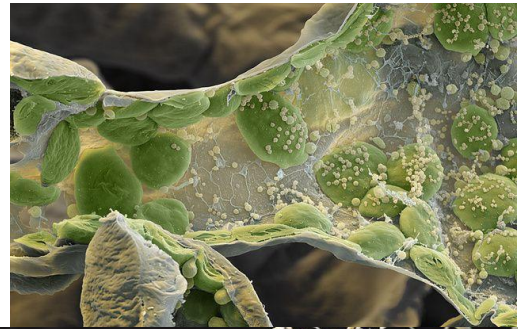
according to road signs. It is not the cars themselves which decide where to go, it is the traffic signs.



Then imagine that it is the same in the pathways of a cell, e.g., trucks to the left and cars to the right, then separating different masses from each other.



Pathways in the cell via electron microscope and inspiring electron microscope pictures



To be continued ...

Notes

- 1) *The Wisdom of the Body*. New York: W.W. Norton and Company. 1932.
- 2) The theory was first published by Cambridge Scholars Publishing: *The Principle of Relations*. 2018. The theory has been developed in the book *The Theoretical Foundation of Physical Reality*, author HOUSE, 2020. Then the book *Reality and the Paradigm of Relations* was published 2021 by Nova Science Publisher in New York.

- 3) Bernard, C. (1974) *Lectures on the phenomena common to animals and plants*. Trans Hoff HE, Guillelmin R, Springfield (IL): Charles C Thomas ISBN 978-0-398-02857-2.
- 4) *The Wisdom of the Body*. New York: W.W. Norton and Company. 1932. Pages 177-201.
- 5) Raj Chovatiya and Ruslan Medzhitov, “Stress, Inflammation, and Defence of Homeostasis”, 2014, <http://dx.doi.org/10.1016/j.molcel.2014.03.030>, in Cell Press. Pages 281-287.