

# **BIOCHEMICAL BASIC CONCEPTS OF LIVING MATTER:**

## **THE 6 LAWS OF BIOCHEMISTRY**

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### \*0) PREFACE AND SUMMARY:

-) The Periodical System contains 92 stable elements/ isotopes with which there can be constructed a collection of to estimation about 10 – 20 billion molecules which in principle exists on earth and which has there led to living matter. That total collection of 10 – 20 billion molecules offers a place to merely one biochemical system which is used by all different forms of living matter on earth.

Gerhard Michal and co have displayed the core part of that biochemical system as the biochemical scheme's Biochemical Pathways (BP). These can be found on the internet.

The Author has deduced the universally accepted biochemical basic concepts of living matter based upon:

- a) a **top down** (from top to bottom) **analysis** of Biochemical Pathways (BP) in connection to
- b) the earlier constructed **bottom up** (from bottom to top) **deduction** based upon the Periodical System and all of the 10 - 20 billion forms of molecules involved: [www.uitewijkwinkel.eu](http://www.uitewijkwinkel.eu)

The analysis and deductions both take place inside the 92 elements of the Periodical System; So they are mutually overlapping and crossing each other. For this crossing the author formulates the biochemical basic concepts of living matter explained in "6 Laws of biochemistry".

-) All forms of living matter in the universe, loose from the question if they will ever be observed, they are biochemically functioning in the exact same way as seen in the different life forms on earth. So the biochemistry of living matter on Earth is a standard for all forms of life in the universe.

-) Because the Periodical System for living matter allows merely one biochemical system as Biochemical Pathways living matter comes to be in a totally autonomous process in a period of to estimation 0,1 billion years.

-) Basically living matter exists on all planets in the universe as long as they contain the below outlined characteristics:

- the planet has to rotate in an orbit around a star,
- the planet has to be situated in the life zone of the star in which water is mostly present as a liquid which takes changes of temperature into account. The planet may not be too far away from the star; then all of the water becomes ice. And also not too close to the star because the temperature in the atmosphere is then getting too high. For each star this liquid water zone or life zone can be determined,
- the planet needs to have an acceptable relation between the surface of land and water, each with a minimum of about 20%,
- the atmosphere of the planet needs to be filled with mostly inert N<sub>2</sub> about between 70 – 90 %,
- the gravity of the planet needs to be about the same as that of the Earth,
- for biochemical reasons the pressure in the atmosphere needs to be about between 0,5 and 3 bar,.
- in the atmosphere lightning discharges need to be possible,
- a magnetic field needs to protect the planet and the life existing there against the charged particles in the star wind,
- the stirring up of this magnetic field demands a rotating iron/ nickel/ manganese core of the planet coupled to the rotation of the planet itself,
- the planet has to spin around its own axis once in about 12 – 36 hours,
- There has to be volcanism and tectonics present on the planet for the recycling of material of the planet itself,
- there has to be turning around a guiding satellite with enough mass around the planet to improve volcanism and tectonics through tide working.

-) The above preconditions limit the number of planets suitable for life thoroughly. With the needed carefulness the estimated number of planets with favourable circumstances for life is to be expected at 1 in the 100 billion stars or 1 – 2 per star systems. So at the huge number of about 100 billion star systems, each with about 100 – 200 billion stars, there can be expected several billion of planets with living matter; all with a biochemistry conform living matter on earth.

### **\*1) INTRODUCTION:**

This introduction is a very summarily excerpt of the main work of the author, which can be found at: [www.uiteerwijkwinkel.eu](http://www.uiteerwijkwinkel.eu)

The universe is fascinating in all of its facets. There is a universal interest for everything that is happening there. The universe brings up all kinds of questions which have not been answered. All forms of life are constructed from matter. The author observes 3 forms of matter:

#### **-1) Normal matter:**

In side documents the author has deduced the cycle of the universe (Taeut cycle) and made clear that at the H<sub>2</sub> supernova's (see Cycle of the universe/ Taeut cycle) during the core fusion process which comes to be in the process all of the normal matter formed from the H<sub>2</sub> takes place through the width of the universe via the transitional state of 4 electron pairs in the then outer electron shell after which first the more inner situated electron orbits are filled up further before during the core fusion process there is begun with the construction and the filling of a then outer electron shell. Through the transitional step of 4 electron pairs the electron orbits of all the atoms > H are filled up conform the on earth known Periodical System of elements which starts with the H atom.

Over the whole universe there is the same system of 17 fundamental physical and chemical forces and their combinations on earth. The author has also systematically deduced that force system.

Based upon the elements of the Periodical System to its rough estimation about 0,5 – 1 billion different molecules can be composed each in an average of about 20 different physical conditions can come to be which results in a total, almost endless, gathering of about 10 – 20 billion molecules in all thinkable physical conditions.

This gathering of molecules can be realised on earth and has resulted in living matter there. On all planets in the universe with liquid water this same gathering of 10 – 20 billion molecules can be formed and the evolving of living matter is possible.

#### **-2) Black hole matter:**

All of the black holes which are spinning fast consist out of normal atoms of the Periodical System of which the electron shells have collapsed from the inside through the forming of van der Waals combinations between the electron pairs present inside the electron shells. This collapsing from the inside of normal atoms can only take place at elements with two or more electron pairs; so first from the element beryllium (Be), the first element with two electron pairs.

Black hole matter exclusively exists as uncharged atoms of which the electron shells have collapsed to near the atom core. The atom core gets totally stuck inside the electron shells in the process resulting that the atom core cannot tremble anymore. The atom in a black hole condition cannot emit any form of heat anymore nor absorb it. So the black hole atom and black holes are at a standard of the absolute zero point!

At black hole atoms the electron shells stay the same as at normal atoms/ elements. The electron shells are filled with loose electrons because these electrons are spinning around the atom core at about the light speed resulting that all of the electron pairs collapse into individual orbit electrons. These electrons cannot shift electron shell anymore and so just as well not emit light/ photons nor absorb it. In physical aspect black hole atoms cannot take in any of the 4 phase conditions of gas, liquid, solid substance or of super critical.

Between two black hole atoms mutually there can also not be formed any electron pairs. Chemically they cannot react into molecules. Black hole atoms are totally inert physically as well as chemically: the so called Annemie condition.

All black hole atoms are categorised conform the Periodical System of black hole elements which first begins at beryllium (Be). For black hole atoms the author has deduced a uniform system of 11 fundamental forces. Living matter is impossible to realise based on black hole atoms.

#### **-3) Anti matter:**

In the universe there exists no anti matter so also no anti matter life. If anti matter is to arise somewhere it is directly through annihilation with normal matter totally up into gamma photons and heat radiation.

The author has also deduced the force system of anti H and anti H<sub>2</sub> which results in a system with 16 fundamental forces.

**Conclusion 1: Living matter is only possible based on normal atoms or elements of the Periodical System and the system of 17 fundamental forces belonging to it.**

## **\*2) PRESENTATION OF THE QUESTION:**

This document goes deeper into the following questions:

- Is earth the only planet in the universe which has life?
- Can there be deduced any commonly accepted fundamentals for living matter?
- Are all of the life forms in the universe compulsory based on the same biochemical principles as known on earth or are there still other biochemical possibilities there?

## **\*3) CHARACTERISTICS LIVING MATTER ON EARTH:**

### **3.1 LIVING MATTER ONLY IN THE CASE OF DISSOLVED MOLECULES:**

**-) On earth living matter standardly manifests itself through a whole scale of biochemical activities between:**

- a) mono molecules amongst each other which in a couple of cases end up in the forming of polymeres,
- b) the decomposition through hydrolysis of certain polymeres in the mono molecules from which they are constructed and
- c) the further disintegration of mono molecules to simple inorganic combinations at which heat is released as the driving force behind the biochemical process and the life activities.

**-) Chemical and biochemical reactions are only possible when molecules can collide with each other:**

To be able to react minimally one of both molecules has to be able to move. That demand of agility is fully applicable for the whole universe. Nimbleness of mono molecules happens in merely two situations:

- a) atoms/ molecules as free gas or
- b) atoms/ molecules dissolved in a real liquid; in all cases there is a matter of a condensed gas.

**Explanation:**

- 1) In solid substances molecules cannot move in relation to each other and so it can also not react.
- 2) The author considers liquids as physical polymeres of mono molecules in a gas form which are mutually combined at condensation through flexible van der Waals combinations (+W2b -f).
- 3) In liquids only the mono molecules dissolved in this are agile.

**sub a) system of free gasses:**

Chemical reactions with gasses are mostly taking place explosively because the heat is slim and the reaction heat which is released cannot be taken away fast enough.

Polymerising of gasses never results in a gas though in syrupy liquids or in solid substances.

Enzymes are too big as molecule to exist as gas or damp. So as a gas there are no biochemical reactions with enzymes possible; chemical reactions on solid or liquid catalysts are.

**Conclusion 2: Around a system of gasses there isn't a single biochemical complex of living matter which can be formed or constructed.**

**sub b) system of dissolved molecules:**

Chemical reactions with dissolved molecules are mostly happening a bit more calmly because the reaction heat can directly be given off to the reaction medium which is always a liquid. The temperature can stay better controlled. Dissolved in such a liquid there can exist several types of dissolved molecules (gasses, ions etc.) next to each other. Besides that in a liquid there can also be present soles and even polymeres as non dissolved structures.

Dissolved in a liquid there are all kinds of changes possible on the molecules like:

- chemical reactions with catalysts,
- biochemical reactions with the help of enzymes as well as
- physical changes.

**Conclusion 3: The biochemistry of living matter can exclusively be realised with molecules which are dissolved in a reaction medium like in a liquid or a gas condensed to a liquid.**

### **3.2 BIOCHEMISTRY OF LIVING MATTER IS ABOUT 3 PHYSICAL TYPES OF MONO MOLECULES:**

In the main document the author concludes that with the system of 17 fundamental forces only 3 different *physical* forms of really *dissolved* molecules can be determined as combinations of physical characteristics:

- 1) dissolved (+Db), in the form of a gas (+Gk) and uncharged (-Lk): -> all dissolved gasses,
- 2) dissolved (+Db), not in the form of a gas (-Gk) and charged (+Lk): -> all dissolved charged particles or ions,
- 3) dissolved (+Db), not in the form of a gas (-Gk) and uncharged (-Lk) : -> all dissolved so called *nopression* molecules \*) \*) Nopression molecules: mono saccharides, undissociated fats- and amino acids and such.

\*\*\*) The combination of dissolving (+Db), in the form of gas (+Gk) and charging (+Lk) at the same time is not possible and so it also does not happen.

**There only rest 3 physical forms of dissolved molecules!**

-) Biochemical reactions in living matter form chains of chemical reaction steps which follow each other up all the time. All of those reaction steps in those chains and cycles are mutually separated from each other all the time by minimally one though mostly two physical changes in between on the molecules. At biochemical reactions there never take place two chemical reaction steps directly after each other. Biochemical reactions are the most complex chemical reactions. All (bio)chemical reactions are seriously limited in physical aspect by the fact that the molecules to be formed can maximally take on the above mentioned 3 physical forms.

-) Analysis of Biochemical Pathways and all biochemical reactions in living matter on earth shows that the mono molecules involved by the biochemistry of living matter always contains only one of these 3 physical combinations of characteristics. The other way around biochemical reactions can exclusively take place when the molecules which are reacting and their formed reaction products can always be turned around in one of the earlier mentioned three *physical* combinations.

**Conclusion 4: When during chemical or biochemical reactions the turning around of the formed molecules into one of those 3 physical combinations cannot take place the total chemical reaction or chain of biochemical reaction steps is blocked.**

### **3.3 IN WHICH LIQUIDS CAN THOSE 3 PHYSICAL TYPES OF MOLECULES BE DISSOLVED NEXT TO EACH OTHER?:**

All Newtonian liquids come to be through condensation of a gas or a mixture of gasses. In all pure liquids atoms/ molecules can be dissolved with the following combinations of physical characteristics:

- 1) in the form of gas (+Gk) and uncharged (-Lk): -> all gasses,
- 2) not in the form of gas (-Gk) and uncharged (-Lk) : -> all so called *nopression* molecules \*).

\*) Nopression molecules are amongst others: mono saccharides undissociated fats- and amino acids and such.

**Charged particles can as opposed to that not be dissolved as ions in all liquids!**

-) **Charged particles can only dissolve in liquid water:**

Of all liquids exclusively liquid water can spontaneously dissociate itself for a small part in  $H_3O^+$  ionen and  $OH^-$  ionen. Because of this exclusively the liquid water has the possibility for the dissolving of charged particles/ ions. At this the ions are surrounded by a casing of water molecules (hydration). So charged particles (ions) can exclusively be dissolved in liquid water. The earlier mentioned 3 physical types of molecules can only be dissolved next to each other in water.

**Conclusion 5: For purely physical reasons the biochemistry of living matter over the total universe can only take place with mono molecules which are dissolved in liquid water as reaction medium.**

In chemical aspect the O-H combination of water has the lowest energy content of all covalent charge combinations. Further water has the lowest energy level in physical aspect compared to to all thinkable liquids. Because of this there is no single other molecule as well as no single other liquid that can drop below the chemical and/or physical level of the reaction medium water.

**Conclusion 6: Also in chemical and physical *energetic* aspect water is the only appropriate reaction medium for the completion for a lot of chemical and biochemical reactions of living matter.**

**\*4) WITH WHICH ELEMENTS CAN THOSE 3 PHYSICAL TYPES OF DISSOLVED MOLECULES BE MADE?:**

Now consider the physical characteristics of the 92 elements of the Periodical System:

- ) With metals and amphoteric metals and their molecules there can only be formed gasses far above the boiling point of water.
- ) Metals in the form of damp like Hg turn out to be able to be impossible to dissolve as molecule and as ion,
- ) With the elements silicium (Si) and phosphor (P) there can just as well not be formed combinations/ molecules in the form of gas.
- ) With the noble gasses there cannot be formed molecules nor ions.

**Conclusion 7: For the biochemistry of living matter at first there only rest the the metalloides C, H, O, N and S and the halogens.**

**4.1 ESSENTIAL DIFFERENCE BETWEEN METALLOIDS AND HALOGENS:**

Normally halogens can only get into one combination with the metalloids because of the construction of the electron shells. This singular chemical combination with the the halogen consists out of a jointly shared electron pair which can standardly be marked as covalent radical combination (+R1cb) and not as a covalent charge combination (+L2cb). The only exclusion is H<sub>2</sub>.

**4.1.1 DISTINCTION BETWEEN THE CHEMICAL COVALENT RADICAL COMBINATION (+R1cb) AND THE CHEMICAL COVALENT CHARGE COMBINATION (+L2cb):**

Between two atoms there can be established two totally different forms of chemical combinations which both consist out of minimally one commonly shared electron pair:

**1) the chemical covalent radical combination (+R1cb):**

This are all the chemical reactions at which atoms or molecules are involved with one unpaired electron or these come to be. The basal characteristic is that chemical radical reactions are being varied without intervening physical changes on the atom or molecule. For that reason the radical reactions are happening quite arbitrarily and unstructured. Inside Biochemical Pathways and BP and such there is no matter of certain radical reactions anywhere.

**2) the chemical covalent charge combination (+L2cb):**

As opposed to that the making or breaking of the chemical charge combination (+L2cb) is standardly going through the shifting of a whole electron pair and never through the splitting up of the combination into two real radicals (atom or molecule with one unpaired electron). At all (bio)chemical reaction steps there is a matter of the shifting of one total electron pair.

These reactions are never being concluded in one step but always in a couple of steps through the necessary intervening of enzymes which function as catalysts. This standardly leads to singular chemical reaction steps varied with 1 – 2 intervening physical steps. Because of the intervening physical steps this type of chemical reaction is happening completely predictable as a string of physical and chemical changes. At radical reactions this does not happen.

**Conclusion 8: Both real chemical covalent combinations are looking very much the same though are totally different when it comes to physical and chemical characteristics.**

**4.1.2 CHEMICAL COMBINATIONS BETWEEN HALOGENS AND METALLOIDS:**

Because of the singular radical combination between halogens and metalloids certain radical combinations are almost impossible to break through the shifting of electron pairs and through intervening of enzymes. This chemical combination is way too inflexible for biochemical reactions though it can react through chemical reactions with strong(er) acids or bases. The covalent combination between metalloids and halogens in practise works out as a real covalent radical combination (+R1cb) and not as a covalent charge combination (+L2cb).

**Conclusion 9: combinations between metalloids and combinations between metalloids and monovalent negatively charged halogens are standardly acting as covalent radical combinations (+R1cb) and because of that they are totally inappropriate for the biochemistry of living matter.**

#### **4.2 COVALENT CHARGE COMBINATION (+L2cb) ONLY WITH METALLOIDS C, H, O, N, S:**

Only the metalloids C, H, O, N, S can mutually get into one, two to a maximum of four combinations. At organic molecules constructed out of C, H, O, N and S it time and time again turns out that minimally one of the combinations exists out of or transform into a covalent charge combination (+L2cb).

**Conclusion 10: The for biochemistry essential covalent charge combinations (+L2cb) are only found in combinations between the elements C, H, O, N and S.**

Reactions on covalent charge combinations (+L2cb) are standardly happening through the shifting of a whole electron pair through which be it a chemical combination between the metalloids C, H, O, N and S is formed be it that such a combination is broken. Certain chemical or biochemical reactions are standardly coupled to physical changes on the molecule in between. Because of this they are happening exactly predictable and can be controlled inside the biochemistry of living matter.

**Conclusion 11: On molecules of the metalloids C, H, O, N and S there can time and time again be formed covalent charge combinations (+L2cb) which are time and time again varied with physical changes.**

**Conclusion 12: The central biochemistry of living matter can exclusively be completed around mono molecules constructed out of the atoms C, H, O, N and S which are mutually combined with covalent charge combinations (+L2cb).**

**Conclusion 13: Chemical covalent charge combinations cannot be formed in combination with elements of the: metals, amphoteric metals, noble gasses and halogens!**

#### **\*5) OVER THE WHOLE UNIVERSE THERE ARE EXACTLY THE SAME BASIC PRINCIPLES FOR THE BIOCHEMISTRY OF LIVING MATTER:**

Summarised: because of in first instance physical reasons (!) the biochemistry of all living matter anywhere in the universe is ordered around the elements C, H, O, N and S with liquid water as the only suited reaction medium and as cooling liquid.

##### **-) All of the molecules involved in the biochemistry are constructed around C:**

Of the 5 metalloid elements C, H, O, N and S the C atom is the only element which can get into 4 combinations with other metalloid atoms in uncharged condition. Because of this exclusively the C-C combination is the universal spine of all organic molecules.

##### **-) The same types of mono molecules:**

With the elements C, H, O, N and S there can be constructed through the total cosmos:

-) merely one basic type of mono saccharides: H-C-OH,

-) merely one basic type of mono fatty acid: C-COOH,

-) merely one basic type of mono amino acid: C-NH<sub>2</sub> and C-COOH

Over the universe this results in the same sub-combinations of mono molecules as known on earth.

Because of the physical demand of those mono molecules being able to dissolve in water it is over the whole universe about the same exact group of relatively small and because of this the mono molecules are able to dissolve in water like it is found at the life forms on Earth.

##### **-) The same types of polymeres:**

All earlier mentioned types of mono saccharides, fatty acids and amino acids can polymerise to all kinds of forms of polymeres: poly sugars, poly fatty acids and protein. Through hydrolysis those organic polymeres can also be split biochemically in their mono molecules and can so be utilised for the further breakdown for the benefit of the energy supply of vegetable or animal organisms.

**-) The same system of enzymes and co-enzymes:**

That demand of being able to dissolve in water also counts for the 3 – 4 thousand known enzymes and co-enzymes that are constructed out of mostly C, H, O, N and S and which also need to meet the physical demand of being able to dissolve in water. For this reason that group of enzymes and co-enzymes is also the same over the total universe as on Earth.

**-) Over the width of the universe there are the same citrus acid cycle, fatty acid cycle and amino acid synthesis:**

The construction and deconstruction of glucose, fatty acids and amino acids have been regulated inside Biochemical Pathways through the citrus acid cycle (glucose), the fatty acid cycle (fatty acids) which can unwind bilaterally, to the left or right, as well as the cycle for the amino acid synthesis. It is unthinkable that there exist alternative cycles for the citrus acid and fatty acid cycle which can also unwind bilaterally as well as that there is an alternative for the amino acid synthesis.

If the total collection of 10 – 20 billion molecules would have left the possibility for alternative cycles open than such cycles would also have come to expression in living matter on Earth.

**-) Same photosynthesis:**

Over the width of the universe the photosynthesis is completing through chlorofyl and ADP/ATP and this process ends up in the forming of left spinning glucose.

**-) Biochemistry living matter based on Biochemical Pathways (BP):**

Looking at the biochemistry of living matter on earth the Periodical System and the 10 – 20 billion molecules to be deduced from this only allow one biochemical system as BP.

**Final conclusion 14: The biochemistry of living matter is based authoritatively on the scheme's of Biochemical Pathways everywhere in the universe, which have been developed by Gerhard Michal Sc.**

**\*6) THE LAWS OF BIOCHEMISTRY FOR LIVING MATTER OR IN SHORT THE LAWS OF BIOCHEMISTRY:**

**The author has made a thorough top down analysis of Biochemical Pathways and that analysis coupled to the complex bottom up deduction based upon all 10 – 20 billion molecules which based upon the Periodical System can be constructed including isomeres, stereo isomeres and polymeres.**

For the complete *top down analysis* as well as the *bottom up deduction* the author points to the document on [www.uitwijkwinkel.eu](http://www.uitwijkwinkel.eu) , Biochemical basic principles of living matter.

Both approaches are overlapping and cross each other mutually. This crossroad named by the author in the form of the 6 Laws of biochemistry of living matter or in short the 6 Laws of Biochemistry.

**6.1 1<sup>st</sup> LAW OF BIOCHEMISTRY: DEMANDS TO LIFE IN CELLS, MORTALITY AND COMPENSATION OF THE MORTALITY:**

***Law I a): Biochemical processes can only happen in the liquid water kept together inside the structure of a cell which is standardly surrounded by a semi-permeable cell wall of amongst others lipiden.***

***Law I b): All living cells/ matter have by definition an ending life span because of pollution and damaging; without exclusion all forms of living matter are mortal.***

***Law I c): To compensate for this mortality all living cells and organisms have the ability of generic and/ or non generic reproduction.***

**Explanation Law I):**

1) Exclusively in water gasses can dissolve ions and non gas forms and non charged nonpolar molecules (mono saccharides, un-dissociated fatty- and amino acids) at the same time.

Only in water the biochemistry of living matter can take place and complete itself. The reaction medium, liquid water, can only be kept together and protected against evaporation if this is surrounded by a semi-permeable cell wall.

2) Because of the chemical pollution, damaging by cosmic radiation and mechanical damaging all living cells have an ending lifespan. The phenomenon life can only be held up if certain living cells have a system of asexual and/ or sexual reproduction.

### **6.2 2<sup>nd</sup> LAW OF BIOCHEMISTRY: DEMAND OF THE FLOATING IRREVERSIBLE FORCE:**

*Law II a): The driving force of living matter flows from the biochemistry and comes to be by the turning around of the chemical combination energy of chemical covalent charge combinations (+L2cb) into heat.*

*Law II b): The driving force is unilateral and irreversible in time and so it pushes living matter forward in time unilateral and irreversible.*

*Law II c): The driving force cannot directly be derived from any other form of energy whatsoever:*

- **physical: light, electricity, radiation, kinetic energy or potential energy,**
- **physical or chemical charge combinations (+Lb),**
- **chemical covalent radical combinations (+R1cb).**

#### **Explanation Law II):**

1) Covalent charge combinations are in fact only observed between the elements C, H, O, N, S.

2) At each chemical step inside Biochemical Pathways chemical combination energy is irreversibly turned around into released heat. This results in an irreversible drive mechanism with which the molecule can bridge the physical steps inside the BP on its way to the next chemical reaction step. Each chemical step is of origin 'one way traffic' and irreversible. Like this the molecule is taken through the biochemical reaction chains and pushed forward energetically. All steps inside Biochemical Pathways are in fact programmed very precise resulting that one can talk about a biochip.

3) In time all biochemical reactions are irreversible for energetic reasons.

4) Living matter can go back in the (universe clock) time just as little as dead matter nor go forward in it. Law II b) the law of biochemistry is fundamentally in conflict with the concept of the time dilatation in the Theory of Relativity.

### **6.3 3<sup>rd</sup> LAW OF BIOCHEMISTRY: DEMANDS MONO MOLECULES HAVE TO MEET:**

*Law III a): All chemical combinations on the molecules which are involved in the biochemistry need to consist out of covalent charge combinations (+L2cb). Half radical and proton reactions are also allowed and possible.*

*Covalent radical combinations (+R1cb) are not acceptable.*

#### **Explantion Law III a):**

1) Between two atoms there can be observed two totally different chemical combinations both consisting out of minimally one commonly shared electron pair:

##### **1) the chemical covalent radical combination (+R1cb)**

Inside BP or BP and such there is never a matter of radical reactions at which the chemical reaction steps are not being varied by physical changes. For that reason radical reactions are happening arbitrarily and unstructured. All radical reactions at which *atoms/ molecules* come to be with an unpaired electron are unacceptable inside the biochemistry of living matter with as only exclusion the releasing of a loose singular electron (= a half radical reaction).

##### **2) the chemical covalent charge combination (+L2cb)**

The making or breaking of the chemical charge combination (+L2cb) is always happening through the shifting of one total electron pair, also inside BP, and never through the splitting of the combination into two real radicals (atoms/ molecules with one unpaired electron). Inside BP there is a matter of the shifting of a whole electron pair at all (bio)chemical reaction steps and never of atoms/ molecules with unpaired electrons which behave as radical.

This type of chemical reactions with the shifting of an electron pair is never happening in one step though always in a couple of steps and via the usage of enzymes/ catalysts. Because of the usage of enzymes each chemical reaction step at biochemical reactions is each surrounded between minimally one though mostly two physical changes on the molecule. Biochemical reactions are standardly existing out of a varying of physical changes and chemical reaction steps. Thanks to these physical intermediate steps/ changes are biochemically reactions and as a whole totally predictable, regulable and can be dealt with as a string of physical and chemical changes.

### **3) The half radical and proton reactions:**

Inside Biochemical Pathways there are two special, reaction steps which are happening a lot at which the electron and the proton are involved.

#### **3a) Half radical reactions are all reactions at which *one electron* attaches itself or couples itself loose from an atom or molecule.**

This are all (bio)chemical reaction steps at which, temporarily or not, one electron (e<sup>-</sup>) is released or comes free or at which one free electron (e<sup>-</sup>) is made use of and is connected to an atom/ molecule. Such an electron can be coming from a physically connected amphoteric metal. This comes to be at chlorophyll, haemoglobin and autotroph organisms. Certain half radical reactions are paired with physical changes and so they are no pure radical reactions.

#### **3b) Proton reactions are all reactions with the attaching or the coupling loose of *one proton*;**

This are all (bio)chemical reactions at which one proton (H<sup>+</sup>) is released or at which one proton is used and connected to an atom/ molecule. Certain proton reactions are also paired with physical changes and also cannot be labelled as radical reactions. Because this reaction takes place in water the proton always arises as H<sub>3</sub>O<sup>+</sup> ion.

***Law III b): Biochemical cycles and chains on mono molecular level are only taking place in physical aspect with mono molecules which can take on minimally 3 physical conditions in dissolved condition:***

**1) the form of a gas and non charged, 2) not in the form of a gas and charged and 3) not in the form of a gas and non charged.**

#### **Explanation Law III a) and III b):**

1) The 3 physical conditions needed for the completion of biochemical reactions are only possible with the mono molecules constructed out of the elements C, H, O, N and S. Molecules in other combinations of elements can either not exist in a form of gas (with metals, amphoteric metals, Si and P and the even heavier elements) or not in a charged condition (the noble gasses).

***Law III c): Biochemical cycles and chains of reactions can physically as well as chemically only be completed with mono molecules which are constructed out of covalent charge combinations (+L2cb) between the atoms C, H, O, N and S.***

#### **Explanation Law III c):**

1) For physical reasons of the needing to be able to exist in 3 different physical types (Law III b) all possible biochemical systems are in the universe structured with force around molecules of the elements C, H, O, N and S. In Biochemical Pathways there indeed only exist molecules constructed out of the elements C, H, O, N and S. P cannot form a gas and so it is loose from it. P plays a limited though essential role in the energy securing ATP and in the DNA.

Si is biochemically excluded because Si cannot form any molecules in the form of a gas with the metalloids C, H, O, N and S!

2) Possibly present essential metals, like in the chlorophyll and the haemoglobin (Fe), are always physically connected inside Biochemical Pathways and never happen inside a chemically connected form.

3) The mono molecules inside BP consist out of covalent charge combinations between C, H, O, N and S (exceptionally with P), react in water which is dissolved and chemically controlled and between the chemical reaction steps they take on the right physical dissolved condition every time of be it: 1) non charged and gas, 2) charged and not in the form of a gas particle/ ion or 3) not in the form of a gas and non charged molecule.

#### **6.4 4<sup>th</sup> LAW OF BIOCHEMISTRY: DEMANDS THE REACTION MEDIUM HAS TO MEET:**

With biochemical reactions the usage of enzymes is not obliged. These molecules are too big to exist as gas/damp. For this reason biochemical reactions cannot take place as a gas though exclusively in the form of loose molecules which are dissolved in a reaction medium which has to be a liquid. To find biochemical reactions between loose, relatively small, dissolved molecules. Biochemical cycles and chains of reactions can only be completed in a liquid conform Law III which meets the following physical demands:

*Law IV a): In the reaction medium the following needs to be able to dissolve next to each other: 1) non charged molecules in the form of a gas, 2) charged molecules not in the form of a gas, 3) non charged molecules not in the form of a gas.*

##### **Explanation Law IV a):**

1) Of all possible liquids water is the only liquid of which the molecules can dissociate themselves in the ions  $\text{H}_3\text{O}^+$  and  $\text{OH}^-$ . Only water is split up for a small part in charged particles/ ions. Because of this water is the *only* liquid in which charged atoms/ molecules can be dissolved.

2) Water is the only possible liquid which meets Law IV a.

*Law IV b): The chemical and physical combinations of the reaction medium need to have the lowest energy level of all possible chemical and physical combinations.*

##### **Explanation Law IV b):**

1) Not a single molecule may end up in a lower position as the physical and chemical combinations of the reaction medium  $\text{H}_2\text{O}$  itself looking at it physical and chemical energetically. The covalent O-H charge combination of the reaction medium water indeed has the lowest energy level compared to all possible covalent combinations.

2) Also in physical aspect water has the lowest energy level compared to all physical combinations at other liquids.

3) In energetic aspect water is the only liquid that meets Law IV b.

*Law IV c): Water is physically, chemically as well as energetically the only liquid that is suitable as reaction medium for the biochemistry of living matter over the total universe.*

##### **Explanation Law IV c):**

1) Of all liquids water has the lowest energy level looking at it physically as well as chemically and because of this it is the only liquid which is energetically suitable as reaction medium for biochemical reactions.

2) Biochemical reactions are only possible in water as reaction medium.

3) The reaction medium also serves as efficient cooling liquid for containing and buffering of reaction heat.

#### **6.5 5<sup>th</sup> LAW OF BIOCHEMISTRY: DEMANDS TO THE REUSE OF C, H, O, N, S AND P:**

On a planet chemical reactions and the biochemistry of living matter sooner or later brings all molecules to their chemically lowest energy level:  $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{NO}_2$ ,  $\text{NO}_3$ ,  $\text{SO}_2$  etc. Then all chemical and biochemical reactions and with this the activity of all living matter. As a means to also keep a system with living matter functioning energetically on the long term there has to take place an energetic “upgrade” of the chemical combinations in any way possible. This is specially true for an upgrade of the molecules with the lowest chemical energy content: the  $\text{CO}_2$  and  $\text{H}_2\text{O}$  and the turning around of this in a C-H combination full of energy in the form of a mono sugar (glucose).

This “upgrading” of chemical combinations from C-O to C-H can only happen through the physical forms of energy coming from the outside of the planet in the form of suitable light photons coming from the star the planet is orbiting.

The physical radiation energy of that light first needs to be absorbed in any way possible and be sustained to then be turned around into chemical forms of energy of exclusively the C-H combination and the correspondingly clearing of free oxygen O<sub>2</sub>.

**Law V a):** *From the elements C, H, O, N, S and P it minimally needs to be possible to form one mono molecule which can absorb light energy (photons) resulting that one electron full of energy can be made free.*

**Explanation Law V a):**

1) This is certainly the case with chlorophyll molecule which is constructed out of the elements C, H, O, N.

**Law V b):** *Out of the elements C, H, O, N, S and P there has to be the possibility to form minimally one mono molecule which can hold the energy of that freed electron and transform it to a chemical combination full of energy being a polyphosphate.*

**Explanation Law V b):**

1) This is certainly the case with the ADP and ATP molecule which is constructed out of the elements C, H, O, N and P. Both molecules chlorophyll and ATP are together the foundation of the photosynthesis at which CO<sub>2</sub> and H<sub>2</sub>O are transformed to exclusively left spinning glucose.

2) Up until now there have not been found any fundamentally different processes on earth which in mutual cooperation give a similar result as the photo synthesis. Consists based upon C, H, N, O, S and P has this opportunity then this form of photosynthesis can most probably be found somewhere in living matter on earth.

**Law V c):** *Out of the elements C, H, O, N, S and P there has to be the possibility to form one sort of polymere molecule with which:*

- a) *the blueprint of the biochemical functioning of the cell itself can be established and*
- b) *this information can be carried over to following generations in a generic/ non generic way.*

**Explanation Law V c):**

1) This will certainly happen through RNA/DNA.

2) It is really very unlikely that based upon C, H, N, O, S and P alternative structures can be created with the same structure in the form of a double helix and with the same characteristics and same functioning as the RNA/ DNA.

3) If this opportunity does exist, then it can be found in living matter on earth.

## **1.6 6<sup>th</sup> LAW OF BIOCHEMISTRY: REQUIREMENT THAT ALL LIVING MATTER IS BASED ON BIOCHEMICAL PATHWAYS (BP):**

**Law VI a):** *The Periodical System of elements allows only one biochemical basic form of living matter which is displayed in Biochemical Pathways. BP results with liquid water in the only possible bio-processor for living matter.*

**Law VI b):** *The biochemistry of all living matter in the universe is compulsory based on Biochemical Pathways and with that in exactly the same biochemical fundamentals as on earth.*

**Law VI c):** *Inside the Periodical System and the existing system of 17 physical and chemical forces and combinations living matter develops itself totally autonomous and spontaneous around Biochemical Pathways.*

**Explanation Law VI a), VI b) and VI c):**

1) All matter in the universe is ordered during the H<sub>2</sub> supernova's conform the eventual 92 stabile elements of the Periodical System with in total 17 fundamental forces. [www.uitwijkwinkel.eu](http://www.uitwijkwinkel.eu)

2) Only with C, H, O, N and S molecules which can take on those 3 necessary physical conditions. So for purely physical reasons all other elements of the Periodical System are ruled out in in Biochemical Pathways.

Several amphoteric metals are filling in an important supporting role inside BP as donor/ acceptor of electrons at half radical reactions (Fe, Ca, Co, Se and some other metals) and as construction material (Ca, Mg).

3) Biochemical Pathways can develop itself precisely inside a very select part of the elements of the Periodical System (C, H, O, N, S and P with some extra metal elements) in cooperation with the system of 10 different physical and chemical forces belonging to it which clutches at the outside of these elements. Those 10 forces are being summed up in the explanation of Law VI d.

4) The biochemistry of living matter like displayed in the biochemical scheme's of Biochemical Pathways lets itself be declared totally rationally physically as well as chemically. The scheme's of BP have nothing unexplainable, mystical or supernatural. Looking at it biochemically living matter is a purely and totally rational explainable, coincidence.

5) Inside the totally rational curtailment of the Periodical System to the 6 "life elements" with their forces and combinations and liquid water there is only place for one biochemical system as Biochemical Pathways.

6) Because of the fact that the Periodical System only allows one biochemical system as Biochemical Pathways this complex system BP evolves itself totally autonomous and spontaneously around the central of two biochemical cycles that is two real biochemical basic chips of living matter which are: a) the lemon acid cycle, b) the fatty acid cycle filled up with c) the synthesis/ break down of amino acids with the photosynthesis and added to this the formed glucose as supercharger.

7) The lemon acid (mono sugars) and the fatty acid cycle (mono carbon acids) form two central biochemical processors with the unique ability that these cycles can be completed biochemically in both directions to the right as well as to the left. Because of that both cycles can be used at the breaking down of mono molecules as well as at the construction of mono molecules and because of that they function as bilaterally completing biochemically chips or processors. See scheme's Biochemical Pathways 1993 of Gerhard Michal, editor, Boehringer Mannheim.

8) For this reason all forms of life on earth and in the universe are biochemically speaking revolving forced around Biochemical Pathways (BP) centrally around the lemon acid cycle and the fatty acid cycle or around big parts of the BP and the photosynthesis as energy source.

9) To the universal basic chip of living matter Biochemical Pathways there can be coupled a great diversity in possible one-sided bio-chips and biochemical reaction chains which comes to expression in the different biochemical varieties of living matter on earth. All forms of life on earth together contain the total of all aërobie and anaërobie biochemical reaction chains and cycles present on earth and defined as BP and suchlike.

***Law VI d): Each system of fundamental forces with one physical, chemical or any other force are more or less blocking the 10 forces and their combinations mentioned below:***

- 1) *the completion of BP and with this the biochemistry of living matter and*
- 2) *the spontaneous coming to be of living matter.*

**Explanation Law VI d):**

1) Biochemical Pathways is exclusively possible based upon the existing Periodical System with its 17 fundamental forces of which 10 forces are involved in the biochemistry of living matter:

- 1 the elementary charge force of the proton (+Lek p+),
- 2 the elementary charge force of the electron (+Lek e-1),
- 3 the dissolve force (+Dk),
- 4 the absorption force (+Ak),
- 5 the van der Waals force (+Wk),
- 6 the charge force (+Lk),
- 7 the covalent charge force (+L2ck),
- 8 the gas force (+Gk),
- 9 the light force (+Q1k) and the
- 10 infrared force (+Qirk).

The other 7 forces of the 17 fundamental forces are not playing a direct part in the biochemistry. To each of the mentioned forces there belong similar combinations.

2) In case the elements C, H, O, N, S and P had generated one more or one less force than the 10 forces/ combinations involved in the biochemistry, there would have been all kinds of chemical reactions, singular biochemical reactions and physical processes possible though the completion of biochemical chains in the *complex Biochemical Pathways* would not have been possible.

- At one physical force more the tight physical control between two chemical reaction steps gets disturbed. BP goes off the rails in physical aspect after each chemical reaction step.
- At one chemical force more BP derails in chemical aspect. With the Periodical System there are then a multiple of molecules more possible than the current 10 – 20 billion ones. With this there are then two or more biochemical systems possible compared to Biochemical Pathways. Then living matter isn't possible either.
- At one physical force less the physical completion after each chemical reaction step is prevented. The completion of Biochemical Pathways is blocked in physical aspect.
- At one chemical force less this necessary collection of 10 – 20 billion molecules cannot be formed anymore and so Biochemical Pathways isn't possible anymore.

In all four cases the biochemical completion of the phenomenon of living matter gets disorganised and with this the phenomenon living matter becomes impossible.

3) The presence of any additional mystical (= supernatural) force, as far as this force is qualitatively demonstrable and can be measured quantitatively, also totally disrupts the completion of Biochemical Pathways and so it cannot be united with the biochemistry of the phenomenon of living matter.

#### **\*7) CONSECUTIVE PHYSICAL AND CHEMICAL STEPS IN REACTIONS: MIN/MAX 1 PRINCIPLE:**

The analysis of BP proves that time and time there is a matter of either singular physical changes or of singular chemical reaction steps which consist out of the completion on the atom/ molecule of always one step at a time. On each random atom/ molecule there is exactly at the same time never a matter of:

- two or more physical changes,
- two or more chemical reactions or
- a chemical reaction step and physical change at exactly the same time.

All physical changes and all chemical and biochemical reactions are being completed step by step.

Each singular step can be deduced to:

**-a) the forming of one combination out of two similar physical or chemical forces at which those forces disappear and merge into one physical or chemical combination;**

or:

**-b) the breaking of one physical or of one chemical combination in two similar forces out of which the combination had been constructed. This results in the making free again and also making measurable of these chemical or physical forces.**

At each physical or chemical reaction step on the molecule there takes place one change, in both earlier mentioned cases, in one of the physical, chemical or in physical chemical characteristics in terms of forces and combinations of the molecule concerning. This fundamental of always maximally one physical or chemical change is very basal and does not only count for Biochemical Pathways though is commonly accepted in the physics, chemistry, core physics and even in the elementary particle physics.

The author broadens this step by step fundamental to a commonly accepted notion for this reason: *the physical and chemically minimally and maximally 1 fundamental (min/max 1).*

***Conclusion 15: The min/ max 1 fundamental counts universally at all types of physical changes, all types of chemical reactions, all types of nuclear fission and core fusion reactions and this possibly also goes for the physical and chemical changes at elementary particles on the level of quarks and strings.***

***Conclusion 16: Min/ max 1 takes care of the absolute classification in matter itself as well as at all physical and chemical changes which take place at matter. Min/max 1 results in the absolute absence of each form of chaos!***

**Conclusion 17:** *The completion of Biochemical Pathways can absolutely not be united with the working of each form of physical or chemical chaos. The biochemistry of living matter cannot be united with the notion chaos.*

**Conclusion 18:** *The fact that YOU are living is the direct proof of the lacking of chaos.*

### **7.1 MIN/MAX 1 PRINCIPLE FORMS FOUNDATION BASIC STRUCTURE BP; ROLE OF ENZYMES:**

Conform min/max 1 then each step in Biochemical Pathways consists out of minimally and maximally one physical step or out of minimally or maximally one chemical step and out of exactly one step at a time.

**-) At biochemical reactions the same pattern is completed at which there is required a fundamentally specific enzyme for each chemical reaction step inside BP:**

At each chemical reaction step inside Biochemical Pathways the usage of an enzyme, dissolved in water specifically for that step, is required and this enzyme plays an essential part. Some enzymes can be used on more than one place inside Biochemical Pathways but never only two chemical reaction steps follow each other up with the usage of the same enzyme.

**-) Working of enzymes:**

By physical combination of the also dissolved enzyme this formed molecule becomes too big to stay in the condition dissolved in water resulting that the combination of molecule with enzyme temporarily gets into a non dissolved condition. The factual chemical reaction step on the molecule always takes place inside BP when the molecule is physically actually in the non dissolved condition!!

At the same time the enzyme is guarding all other reactive places on the molecule. Despite of that one combination all other combinations on the molecule stops it from making a reaction. These other combinations on the molecule can be considered fixated in that condition.

**Inside Biochemical Pathways the biochemical changed molecule time and time undergoes the same min/max 1 step by step reaction pattern of:**

- coupling through an absorption combination (+Ab) of the dissolved mono molecule to an enzyme also dissolved in water. The formed molecule is too big to be dissolved resulting that it gets into a physical dissolved condition,
- the creating of a charged place on the molecule (+Lk) and guard it from all other chemical combinations,
- the factual chemical reaction on the molecule takes place through the making or breaking of the only chemical covalent charge combination (+L2cb) and through the shifting of one electron pair followed by a re-ordering of the electron pairs inside the chemically changed molecule,
- the disconnection of the molecule of the enzyme (-Ab) and the dissolving again of the molecule and enzyme changed in one place,
- coupling of the molecule to the following specific enzyme for the undergoing of the following chemical reaction step etc.

In principle Biochemical reactions are being completed as a string of certain quintes which are overlapping each other physically of which each chemically reaction step is regulated through an own mostly specific enzyme/ co-enzyme. In outlines eventually there time and time comes to be a stereotype of two physical steps, one chemical step, two physical steps, the following chemical reaction step etc.

**-) Inside BP never two chemical steps directly after each other:**

At biochemical reactions two chemical reaction steps take place directly after each other. That is the basic pattern of all radical reactions.

Inside BP all chemical reaction steps with covalent charge combinations (+L2cb) are always separated by minimally 1 – 2 in between physical changes on the molecule. Each little step inside BP is completed conform min/max 1 little steps of maximally one physical or of one chemical change at exactly the same time.

**-) Physical changes essential:**

The current biochemistry is specially focussed on the chemical changes of the molecule and might not have enough attention for the physical changes on the molecule as well as for the forcing role of which physical

changes play during the completion of biochemical reactions in for example the lemon acid and that in the fatty acid cycle which is at least as important. The physical changes prepare the molecule for precisely the right physical condition for letting the following chemical reaction step take place through only two physical steps in between. Those physical changes play an important part at chemical reactions in liquids as reaction medium and at the working of medicals for example.

**-) Always the same and right order:**

Because of the min/max 1 principle all physical and chemical steps in BP and BP and such can be analysed separately. Because of the usage of reaction specific enzymes and co-enzymes the consecutive reaction steps are always completed in the right order. During the completion of Biochemical Pathways the molecule can be followed precisely step by step.

Looking at it in sequence the mono molecular biochemical chains and cycles which combined form the bio processor BP. This can be observed well at going through the lemon acid- and fatty acid cycle. Min/max 1 results in a tight conductivity through which both cycles in practise function as real central biochemical chips inside the BP processor.

**Biochemical Pathways is only possible inside the tight side requirements of min/ max 1 and at exclusion of each form of chaos.**

**\*8) DISCUSSION:**

**a) The structure of matter and the forces on that matter:**

All normal and black hole atoms in the universe are constructed out of +1 charged protons and -1 charged electrons. The anti H atom and anti H<sub>2</sub> molecule are constructed out of -1 charged anti protons and +1 charged anti electrons. Then according to the author there are no individual present neutrons inside the atom core.

The several normal stable atoms to be constructed with protons and electrons are categorised conform the 92 element/isotopes of the Periodical System and they generate a total of 17 fundamental forces especially at the metalloids C, O, N, S, P in connection with the H atom as a very small and specially molecular filling material.

**-) No living matter at two systems like Biochemical Pathways:**

In case the 10 – 20 billion molecules would have offered space to 2 or more biochemical systems compared to Biochemical Pathways those systems are time and time again going through each other at mono molecular level. Both systems would hinder each other mutually all the time with as a result that an unambiguous biochemistry of living matter isn't possible. Under those circumstances living matter can not come to be.

**-) Biochemistry of living matter can only function at one biochemical system like BP:**

Development of the biochemistry of living matter is only possible under the strict side requirement that the Periodical System and its 17 fundamental forces only allow one biochip as Biochemical Pathways. Only in that case the biochemistry of living matter can develop itself spontaneously in the course of millions of years and on all billions of planets with earlier mentioned boundary conditions.

The driving force for that development of living matter at first lays in the lightning discharges in the atmosphere at which all kinds of organic molecules are being formed through radical reactions. In later instance the anaërobe and aërobe photosynthesis gets going during which glucose is formed which brings in the energy and with this is the driving force behind the further development of living matter.

Then the part platitudes of BP come into development until eventually the total platitude of BP and the DNA/RNA is realised somewhere on one of the concentration points on land.

So the total developing process on the mono molecular level is parallel with the development on polymere level and the forming of among others poly sugars, fatty acids, proteins and DNA/RNA to eventually cells with characteristics of living matter.

That development is happening totally autonomous, automatically and biochemically undisturbed from dead inorganic matter with the photosynthesis and the forming of a left spinning continuous driving force. This process eventually results in living matter which controls itself through DNA/RNA and can reproduce itself through asexual and/or sexual reproduction. This total developing process to estimation takes place in tens of millions of years

**-) On earth and the total universe there is only one biochip as BP:**

The structure of Biochemical Pathways is unique and arose by pure coincidence. That structure lets itself be declared totally rationally from on the one hand the analysis of BP itself and on the other hand the deduction from the Periodical System based on all 10 –20 billion possible molecules and all 17 fundamental forces present on these elements and their combinations.

On all appropriate planets on other places in the universe with liquid water this biochemical building process results in exactly the same final system of Biochemical Pathways and of BP and suchlike like known on earth. The biochemistry of life forms on earth is unique though also directly the universe standard for the biochemistry of life forms which can be found there.

**-) Ultimate proof of the uniqueness of BP is only possible with all molecules in a digital form:**

The author has pointed out the uniqueness of Biochemical Pathways clearly enough but not yet digitally, three-dimensionally, mathematically and with this proven it in a scientifically undeniable manner. This is possible when first all 10 – 20 billion possible molecules have been decoded digitally. This will still take quite some time minimally still 10 – 20 years.

**-) Stringent limitations for speed at traveling in the universe:**

The vulnerability of the hydrogen bridges in the DNA/RNA enforces stringent limitations of speed at the travelling of living matter in the universe from earth or towards the earth. Cause the strength of the hydrogen bridges in the DNA/ RNA is a quantity dependant on speed in the universe.

The universe knows only one absolute zero point where the Big Bang and the Little Bang described by the author took place. When the speed or movement in the universe increases in relation to this absolute centre then the strength of these H bridges increases accordingly in the DNA resulting that both strings of the DNA/ RNA are being separated harder and harder and eventually totally do not separate anymore.

If as opposed to this the speed or movement in the universe decreases then the strength of these H bridges decreases accordingly. Both double spirals are either happening too easily or are hard or impossible to recombine to DNA/ RNA at the cell division. At even further decreasing of the speed the DNA even collapses spontaneously.

**Both situations of a too great in- or decreasing of speed in the universe in relation to the Little Bang point and indirectly in relation to the Earth lead to the death of the cell or the organism.**

All forms of living matter cannot move faster/slower in the universe in relation to the Earth than with a nett speed of to estimation at most 300 – 400 km/sec. The same goes for a planet where there would be life. For space crafts with living beings the nett allowed moving speed in relation to the Earth is about 1 ‰ of the light speed!

This results in endless travelling in the universe. The bridging of one light year takes about a thousand years for living matter. This limitation is not only true for plants, animals and humankind though also for all other living organisms in the universe.

Because of this physical speed limitation primarily imposed from the DNA it is almost impossible that humankind can reach other star systems nor that earth can be reached with space crafts from other habitual planets in the Galaxy.

**-) Life on Mars?:**

Inside our solar system living matter might have evolved on Mars in the period that there was still water enough present there for a long time in a row. If there is living matter on Mars or fossile rests of it are found, the biochemistry of it shall be similar to the biochemistry of living matter on earth and so be based on Biochemical Pathways. Because of the minimal atmosphere, the lacking of free O<sub>2</sub>, the more intense cosmic radiation and the way lower temperature the current planet Mars is held inappropriate for the habitation by large groups of people.

## **\*9) CONCLUSIONS:**

### **a) Limited number of atoms suitable in the biochemistry of living matter:**

1) The biochemistry of living matter is exclusively possible over the width of the universe inside the elements C, H, O, N, S and P filled up with some metals like Ca and Mg as well as a number of amphoteric metals which exclusively occur as spore elements. It is about among others Zn, Co, Fe, Se etc.

2) Only the elements C, H, O, N, S are generating the for the biochemistry of living matter necessary system of 10 forces of the total 17 fundamental forces.

3) With those 92 elements there can be composed a basically endless total collection of about 10 – 20 billion molecules which are present on Earth and this has lead to the forming of living matter.

### **b) Biochemical Pathways:**

4) Starting from all 10 – 20 billion possible molecules results in the bottom up deduction in Biochemical Pathways (BP) as the only possible biochemical system for living matter.

5) The photosynthesis is the only working mechanism which takes care of the supply of the needed energy in the form of glucose. Glucose forms the only driving force behind the forming of living matter out of dead inorganic matter.

6) The biochemistry of living matter in the universe rests at the monomeric level on merely one biochemical system like displayed in the biochemical scheme's of Biochemical Pathways (BP) which have been composed by Gerhard Michal and co.

Central in BP are the lemon acid cycle, the fatty acid cycle and the amino acid syntheses which can be considered as the biochips of living matter.

7) The systematic of Biochemical Pathways lets itself be deduced totally rationally out of the Periodical System with the system of 17 fundamental forces belonging to it. The biochemistry of living matter like displayed in Biochemical Pathways seems a pure coincidence which can be declared totally rationally.

8) With be it one force more be it one force less the separate reaction steps in the central cycles cannot be completed precisely structured after each other conform the fixed stereotype of Biochemical Pathways. The elements of the Periodical System and specially the elements C, H, O, N and S would then have resulted in physical and chemical reactions but BP can then not develop.

9) The presence of any other measurable additional mystical (= unexplainable) physical or chemical forces would block the development of Biochemical Pathways and with this the phenomenon "living" matter.

10) The life activities in the form of biochemical reactions in the reaction medium liquid water are being controlled from polymere level from among it the DNA/RNA. This system is also suitable for the reproduction.

11) All forms of active living matter in the universe rest on exactly the same biochemical principles like found on earth. The biochemistry and the structure of living matter on earth is unique as well as the universe standard for all forms of living matter existing there.

Looking at it biochemically all living matter in the universe is based on Biochemical Pathways.

### **c) All living matter is constructed in the form of cells:**

12) For the completion of the biochemistry the necessary reaction medium water can only be kept together and protected against evaporation or flowing away when this is surrounded by a semi-permeable wall. For that reason all forms of life are structured in the form of cells and surrounded with a semi-permeable cell wall.

**d) 6 Laws of biochemistry for living matter or 6 Laws of biochemistry:**

13) Combination of the top down analysis of BP coupled to the bottom up deduction results in the 6 Laws of the biochemistry of living matter or the 6 Laws of biochemistry which count for the total universe.

**e) Boundary conditions development of living matter:**

14) Living matter develops spontaneously and automatically over the total universe on many billions of planets which meet the requirements which have been summed up in the final part of the summary.

**f) Speed limitation at moving of living matter in the universe:**

15) The fragility of the hydrogen bridges in the DNA reduces the maximal net movement speed of living matter in the universe in relation to the Earth or from another planet with life to a maximum of about 1 ‰ of the light speed.

16) The bridging of a distance of one light year takes each living organism an amount of time in the order of a thousand years! As a result of this colonisation by humankind of the universe can be absolutely excluded.

17) Humankind will have to do with the Earth alone.

A.P.B. Uiterwijk Winkel Sc.  
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