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Can the Boltzmann and Bohr Magneton Constants Be Expressed as Nucleotide Bases via Quantum Superposition?

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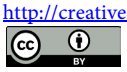

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Abstract

This paper attempts to express the Boltzmann and the Bohr magneton constants with nucleotide bases (A T, G, C and U) as regards to Quantum Perspective Model. At first, if you take the exact value of Boltzmann and the Bohr magneton constants after the comma, you can convert this decimal base numbers to binary number base system. Secondly, after converting process of this numbers, you should sequence this numbers as decimal number base system again. Thirdly, sum this decimal base numbers respectively. Fourthly, total adding processes correspond to genetic codes [Adenine (A), Thymine (T) Guanine (G), Cytosine (C) and Uracil (U)]. Fifthly, the result explanations of Boltzmann and the Bohr magneton constants can be defined like this: [as the Boltzmann constant equals to Guanine (G): 78 and the Bohr magneton approximately equals to "66" Thymine (T)]. Sixthly, the dual explanation of Einstein's mass energy equivalence can be stemmed from *Quantum Superposition*, since the Einstein's mass energy equivalence can be sequenced as both "GAUCUAUCAAUC" and "GAUCUAUCTAUC" too. Seventhly, approximately the total atomic weight of nucleotide bases (A T, G, C and U) can be also expressed as the value of "Kelvin" temperature. Eighthly, let alone this result, the calculated total atomic weight of proton, neutron and electron also can be expressed as nucleotide bases (A T, G, C and U) "CTAGATATTTAGATAT". Lastly, the NCBI (The National Center for Biotechnology Information) search results of this sequences are very interesting model organism consequence just like as "*Drosophila albomicans*" (*Fruit Fly*) which is also very similar genetic genes to human genes. As a result, the expression of Boltzmann and the Bohr magneton constants with genetic codes reach meaningful consequences to shed lights on novel research method between Quantum Physics and Biochemistry.

Subject Areas

Biochemistry, Quantum Physics

Keywords

Biochemistry, Quantum Superposition, Quantum Physics, Nucleotide Bases, Fruit Fly (Drosophia Albomicans), Binary Number Base Systems, Quantum Perspective Model, The Boltzmann Constant, The Bohr Magneton Constant, Einstein's Mass Energy Equivalence

1. Introduction

The relationship between the nucleotide bases (also named as genetic codes) and some irrational numbers and some universal constant numbers were researched with Quantum Perspective Model by Kevser Köklü and Tahir Ölmez. Before this article, with respect to Quantum Perspective Model, Kevser Köklü researched the relationship between the velocity of light numbers and genetic codes [1]. Secondly, the relation with Pi numbers [2] and nucleotide bases was also explained by Kevser Köklü too. Thirdly, not only the link between the Planck's constant numbers [3] and genetic codes but also the link between some irrational numbers and genetic codes were researched by Tahir Ölmez [4]. Fourthly, the calculated expression of the atomic weight of proton, neutron and electron with nucleotide bases was also researched by Tahir Ölmez. Fifthly, the atomic weight of Avogardo's number can be also expressed as "Uracil (U)" nucleotide base [5].

Some other constant numbers are the Boltzmann and the Bohr magneton constants. At first, Boltzmann constant defines the relation between absolute temperature and the kinetic energy [6]. The other one is the Bohr Magneton [7] that expresses the electron magnetic moment caused by its orbital or spin [8]. However, the scope of this research article is searching the relations between the Boltzmann constant, the Bohr magneton constant and chemical formulas of nucleotide bases.

2. Methods

According to Quantum Perspective Model, the representation of nucleotide bases (A T, G, C and U) was explained by chemical formulas. Regarding these chemical formulas, it was calculated based on the atomic masses of the elements. However, this article aims to investigate not only the relationship between the Boltzmann constant and nucleotide bases, but also the relationships between the Bohr magneton constant calculated as nucleotide bases. In sum, the aim of this research article is searching the relations between the atomic weight of basic atomic particles, number base systems and chemical formulas of nucleotide bases.

The chemical structures of nucleotide bases consist of Carbon (C), Nitrogen

(N), Oxygen (O) and Hydrogen (H) [9]. For the representation of nucleotide bases (A, T, C, G and U) in chemical atoms (see Table 1).

2.1. The Calculation of the Boltzmann Constant Value as Nucleotide Bases

The value of the Boltzmann constant is 1.380649×10^{-23} J·K^{-1}

1.380649×10^{-23} J·K^{-1}

$0.1380649 \times 10^{-24}$ J·K^{-1} [6].

At first, Please take the value of the Boltzmann constant after comma (0, 13 80 64 9). Secondly,convert this decimal numbers to binary number base (see Table 2). Thirdly, after writing this binary numbers one by one, convert this binary numbers to decimal numbers again partially.For instance [13:11 01; 80:101 0000; 64:1000000; 9:100 1]. Fourthly, sum the partial numbers respectively..For instance [(13 = 3 + 1 = **4**); (80 = 5 + 0 = **5**); (64 = **64**) and (9 = 4 + 1 = **5**)]. Fifthly, add the total partial decimal numbers (4 + 5 + 64 + 5 = **78**). Finally, see Table 2 for the equivalents of this number "78" Guanine (G).

2.2. The Calculation of the Bohr Magneton Constant Value as Nucleotide Bases

$9.2740100783 \times 10^{-24}$ J·T^{-1}

$0.92740100783 \times 10^{-25}$ J·T^{-1} [7] [8].

At first, Please take the Bohr magneton constant value after comma (0, 92 74 01 00 78 3). Secondly,convert this decimal numbers to binary number base (see Table 3). Thirdly, after writing this binary numbers one by one, convert this

Table 1. Representation of nucleotide bases (A, T, C, G and U) in chemical atoms.

ATOMS /NUCLEOTIDE BASES	*C* = 6	*H* = 1	*O* = 8	*N* = 7	*SUM*
ADENINE: $C_5H_5N_5$	5	5	-	5	70
THYMINE: $C_5H_6N_2O_2$	5	6	2	2	66
CYTOSINE: $C_4H_5N_3O_1$	4	5	1	3	58
GUANINE: $C_5H_5N_5O_1$	5	5	1	5	78
URACIL: $C_5H_4N_2O_2$	5	4	2	2	64

Table 2. Representation of decimal numbers in binary base for the value of the Boltzmann constant after comma.

DECIMAL NUMBERS	**1**	**3**	**4**	**5**	**9**	**13**	**64**	**80**
BINARY NUMBERS	1	11	100	101	100,1	11,01	1000000	101,0000

Table 3. Representation of decimal numbers in binary base for the value of the Bohr magneton constant after comma.

DECIMAL NUMBERS	**0**	**1**	**2**	**3**	**4**	**10**	**14**	**74**	**78**	**92**
BINARY NUMBERS	0	1	10	11	100	1010	1110	100,1010	100,1110	10,11100

binary numbers to decimal numbers again partially. For instance [(92:10,11100); (74:100,1010); (01:1); (00:0); (78:100,1110) and (3:3)]. Fourthly, sum the partial numbers respectively..For instance [(92 = 2 + 28 = 30); (74 = 4 + 10 = 14); (01 = 1); (00 = 0);(78 = 4 + 14 = 18); and (3 = 3)].Fifthly, add the total partial decimal numbers (30 + 14 + 1 + 0 + 18 + 3 = 66). Finally, see Table 1 for the equivalents of this number "66" Thymine (T).

2.3. The Calculation of Einstein's Mass Energy Equivalence Value as Nucleotide Bases (Table 4)

$E = m * c^2$ [10].

In sum, as regards to Quantum Perspective Model, after the expression of The Boltzmann constant and the Bohr magneton constant numbers as nucleotide bases, some important consequences were reached by this article. This result will be put forth in next pages.

3. Results

At first, the calculation of the Boltzmann constant value as nucleotide base can be expressed with *Guanine* (*G*) nucleotide base. Secondly, the calculation of the Bohr magneton constant value as nucleotide base can be expressed with *Thymine* (*T*) nucleotide base. Thirdly, the energy equivalence for the atomic weight of proton value as nucleotide bases can be expressed with "GAUC" [Guanine (G), *Adenine* (*A*), Uracil (U) and Cytosine (C)] nucleotide bases. Fourthly, the energy equivalence for the atomic weight of electron value as nucleotide bases can be expressed with "UAUC" [Uracil (U) Adenine (A), Uracil (U) and Cytosine (C)] nucleotide bases. Fifthly, not only the energy equivalence for the atomic weight of neutron value as nucleotide bases is "AAUC" but also "TAUC" too. Sixthly, the calculated total energy equivalence of elementary atomic particles is either "GAUC UAUC AAUC" or "GAUC UAUC TAUC". Lastly, the pair of calculated

Table 4. The calculation of Einstein's mass energy equivalence value as nucleotide bases.

SOME CONSTANT NUMBERS	GENETIC CODES
The square of the speed of light (c^2) [1]	AUC
(m)The atomic weight of proton [5]	Guanine (G)
(m)The atomic weight of electron [5]	Uracil (U)
(m)The atomic weight of neutron [5]	Adenine (A) or Thymine (T)
(E) The energy equivalence for the atomic weight of proton value as nucleotide bases	GAUC
(E) The energy equivalence for the atomic weight of electron value as nucleotide bases	UAUC
(E) The energy equivalence for the atomic weight of neutron value as nucleotide bases	AAUC or TAUC
(E) The calculated total energy equivalence of elementary atomic particles (proton, neutron and electron) Equivalence value of Einstein's mass energy formula in nucleotide bases respectively.	GAUC UAUC AAUC or GAUC UAUC TAUC
(E) The pair of calculated total energy equivalence of elementary atomic particles	CTAGATAT TTAG or CTAGATAT ATAT

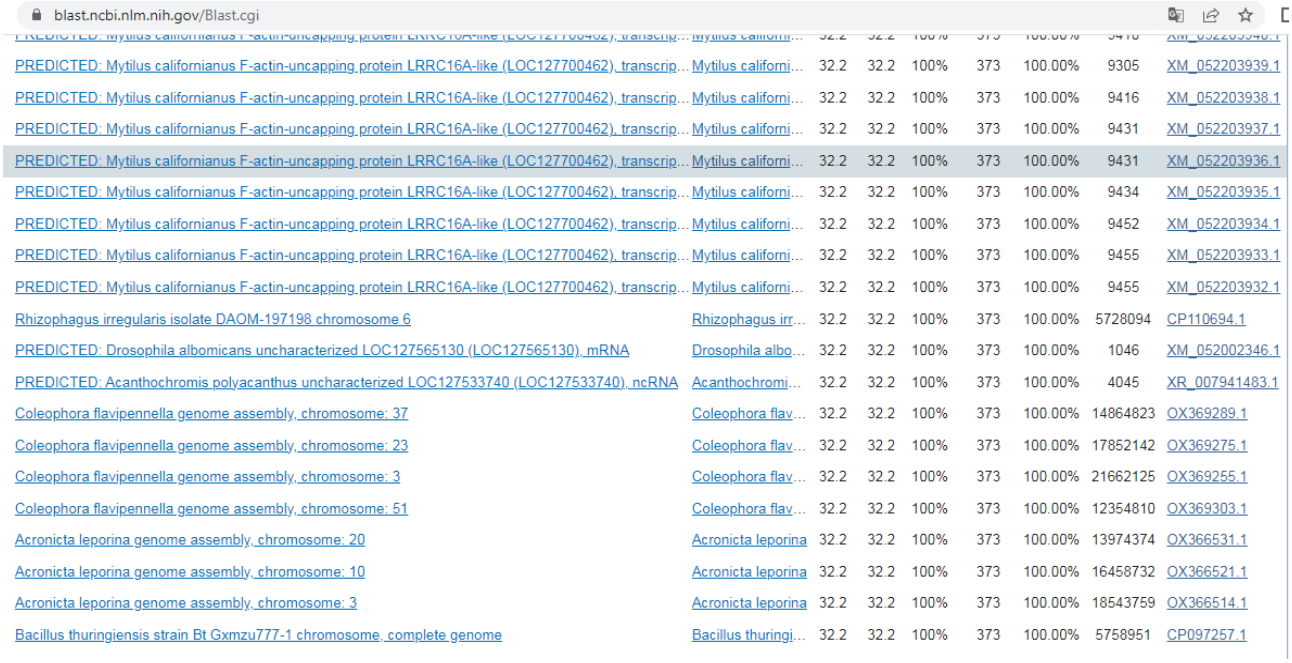
total energy equivalence of elementary atomic particles is "CTAGATATTTAG" or "CTAGATATATAT". Can this sequence be a novel expression of some constant numbers?

As a result, these dual consequences can be stemmed from "Quantum Physics" named as "Quantum *superposition*" In sum, after searching these sequences at NCBI (The National Center for Biotechnology Information) database, the consequences are many living organisms. These are bacteria, insects, snakes, moths, fishes, cattle and in particularly *fruit flies* "*Drosophia albomicans*" [11] (see **Figures 1-3**). Could this relationship be a sign of the relations between the Universal Genetic Code Table, some Universal constant numbers and the chemical Periodic Table?

4. Discussion

According to Quantum Perspective Model, prior to this article, the relationship between Planck's constant numbers [3] and genetic codes were studied by T. Ölmez. The consequence of this article can be expression of Planck's constant numbers as both Adenine (A) and Thymine (T) nucleotide bases. This twin result may be explained by *Quantum Superposition*. But also the link between some irrational numbers and genetic codes were researched by Tahir Ölmez, too (see **Table 5**).

As for this article, according to Einstein's mass energy equivalence, at first, Please take The square of the speed of light (c^2), then sequence (multiply) the atomic weight of proton, neutron and electron respectively. Secondly, the result of this process is written by **Table 4**. For example, the calculated the energy equivalence for the atomic weight of proton value as nucleotide bases is "GAUC".



PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9305	XM_052203939.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9416	XM_052203938.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9431	XM_052203937.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9431	XM_052203936.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9434	XM_052203935.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9452	XM_052203934.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9455	XM_052203933.1
PREDICTED: Mytilus californianus F-actin-uncapping protein LRRC16A-like (LOC127700462), transcrip...	Mytilus californi...	32.2	32.2	100%	373	100.00%	9455	XM_052203932.1
Rhizophagus irregularis isolate DAOM-197198 chromosome 6	Rhizophagus irr...	32.2	32.2	100%	373	100.00%	5728094	CP110694.1
PREDICTED: Drosophila albomicans uncharacterized LOC127565130 (LOC127565130), mRNA	Drosophila albo...	32.2	32.2	100%	373	100.00%	1046	XM_052002346.1
PREDICTED: Acanthochromis polyacanthus uncharacterized LOC127533740 (LOC127533740), ncRNA	Acanthochromi...	32.2	32.2	100%	373	100.00%	4045	XR_007941483.1
Coleophora flavipennella genome assembly, chromosome: 37	Coleophora flav...	32.2	32.2	100%	373	100.00%	14864823	OX369289.1
Coleophora flavipennella genome assembly, chromosome: 23	Coleophora flav...	32.2	32.2	100%	373	100.00%	17852142	OX369275.1
Coleophora flavipennella genome assembly, chromosome: 3	Coleophora flav...	32.2	32.2	100%	373	100.00%	21662125	OX369255.1
Coleophora flavipennella genome assembly, chromosome: 51	Coleophora flav...	32.2	32.2	100%	373	100.00%	12354810	OX369303.1
Acronicta leporina genome assembly, chromosome: 20	Acronicta leporina	32.2	32.2	100%	373	100.00%	13974374	OX366531.1
Acronicta leporina genome assembly, chromosome: 10	Acronicta leporina	32.2	32.2	100%	373	100.00%	16458732	OX366521.1
Acronicta leporina genome assembly, chromosome: 3	Acronicta leporina	32.2	32.2	100%	373	100.00%	18543759	OX366514.1
Bacillus thuringiensis strain Bt Gxmzu777-1 chromosome, complete genome	Bacillus thuringi...	32.2	32.2	100%	373	100.00%	5758951	CP097257.1

Figure 1. The NCBI Blast Result "CTAGATATTTAGATAT" of Nucleotide Bases [20].

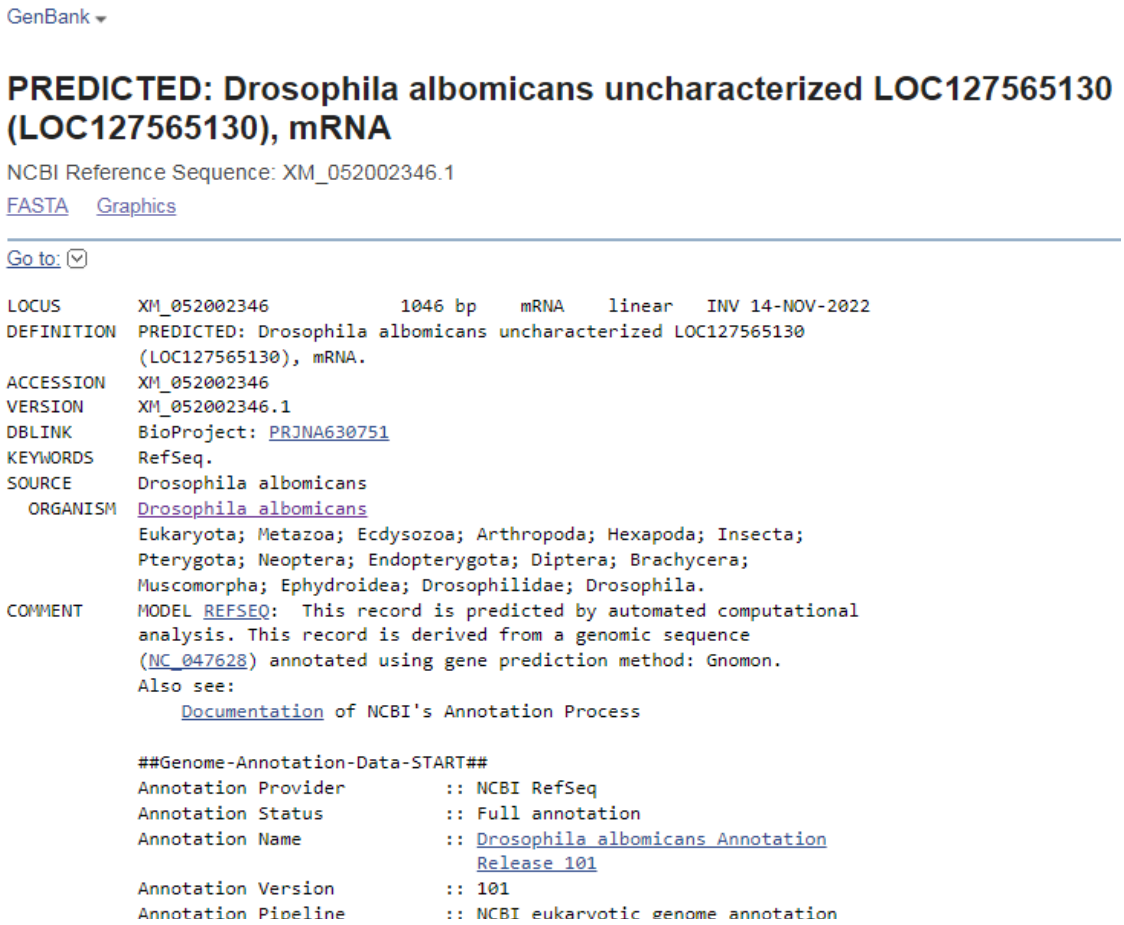
blast.ncbi.nlm.nih.gov/Blast.cgi

Reports | Lineage | Organism | Taxonomy

100 sequences selected

Organism	Blast Name	Score	Number of Hits	Description
cellular organisms			100	
. Firmicutes	firmicutes		4	
. . Clostridium	firmicutes		2	
. . . Clostridium pasteurianum	firmicutes	32.2	1	Clostridium pasteurianum hits
. . . Clostridium perfringens	firmicutes	32.2	1	Clostridium perfringens hits
. . Bacillus thuringiensis	firmicutes	32.2	1	Bacillus thuringiensis hits
. . Coprobacillaceae bacterium	firmicutes	32.2	1	Coprobacillaceae bacterium hits
. Frankliniella occidentalis	thrips	32.2	2	Frankliniella occidentalis hits
. Mytilus californianus	bivalves	32.2	19	Mytilus californianus hits
. Rhizophagus irregularis	glomeromycetes	32.2	1	Rhizophagus irregularis hits
. Drosophila albomicans	flies	32.2	1	Drosophila albomicans hits
. Acanthochromis polyacanthus	bony fishes	32.2	1	Acanthochromis polyacanthus hits
. Coleophora flavipennella	moths	32.2	4	Coleophora flavipennella hits
. Acronicta leporina	moths	32.2	3	Acronicta leporina hits
. Brenthis daphne	butterflies	32.2	2	Brenthis daphne hits
. Vipera ursinii	snakes	32.2	1	Vipera ursinii hits

Figure 2. The NCBI Distance Tree of result for "Drosophila albomicans" [20].



GenBank

PREDICTED: Drosophila albomicans uncharacterized LOC127565130 (LOC127565130), mRNA

NCBI Reference Sequence: XM_052002346.1

FASTA Graphics

Go to:

```
LOCUS       XM_052002346            1046 bp    mRNA    linear   INV 14-NOV-2022
DEFINITION  PREDICTED: Drosophila albomicans uncharacterized LOC127565130
            (LOC127565130), mRNA.
ACCESSION   XM_052002346
VERSION     XM_052002346.1
DBLINK      BioProject: PRJNA630751
KEYWORDS    RefSeq.
SOURCE      Drosophila albomicans
  ORGANISM  Drosophila albomicans
            Eukaryota; Metazoa; Ecdysozoa; Arthropoda; Hexapoda; Insecta;
            Pterygota; Neoptera; Endopterygota; Diptera; Brachycera;
            Muscomorpha; Ephydroidea; Drosophilidae; Drosophila.
COMMENT     MODEL REFSEQ:  This record is predicted by automated computational
            analysis. This record is derived from a genomic sequence
            (NC_047628) annotated using gene prediction method: Gnomon.
            Also see:
                Documentation of NCBI's Annotation Process

            ##Genome-Annotation-Data-START##
            Annotation Provider         :: NCBI RefSeq
            Annotation Status           :: Full annotation
            Annotation Name             :: Drosophila albomicans Annotation
                                           Release 101
            Annotation Version          :: 101
            Annotation Pipeline         :: NCBI eukaryotic genome annotation
```

Figure 3. The NCBI Gene Search Result for "Drosophila albomicans" [20].

Table 5. The summary of some irrational numbers and genetic sequences.

Irrational Numbers	Genetic Sequence
$\sqrt{2}$ [12]	GGATGTUTATTGAGTGAUAA
$\sqrt{3}$ [13]	GGATGAUTAUGGGTTTAGAAA
$\sqrt{5}$ [14]	ATTTATTUAATAUATAAUUUUATTGA
$\sqrt{7}$ [15]	GATTCUUUACTAGAGTTACTAGTTTGATT
$\sqrt{10}$ [4]	ATAAGTCATAAGTGTATTAGTTTAAAACTG
Pi Numbers (as a 22/7) [2]	CTA [Cytosine (C), Thymine (T),Adenine (A)]
Pi Numbers (as an extended form) [16]	TUGATTATAUTGGTTGGTTGTTAAUGGTAU
Euler's Identity [17]	AAAGGCUUGCCCAACAAGCCAAACCCAGGC
Euler's Numbers [18]	ACGCCGACACTAACUATU
Golden Ratio Numbers (only "618") [19]	CAAT Box "GGCCAATCT"; TATA Box "TATAAAA"

Thirdly, the calculated the energy equivalence for the atomic weight of electron value as nucleotide bases are "UAUC". Fourthly, the calculated the energy equivalence for the atomic weight of neutron value as nucleotide bases "AAUC or TAUC". Fifthly, the calculated total energy equivalence of elementary atomic particle is "GAUC UAUC AAUC" or "GAUC UAUC TAUC". At the calculation of Einstein's mass energy equivalence, nucleotide bases were sequenced side by side. Because in mathematics, it can be expressed that exponents are added in the multiplication operation of exponential numbers. So, in calculations nucleotide bases were written just like as in "GAUC UAUC AAUC" or "GAUC UAUC TAUC".

At the calculated representation of decimal numbers in binary base for the value of the Bohr magneton constant after comma, "0000" and "00" regarded as "zero". Please, see Table 3.

This two digit of disregarded value "00" can be stemmed from "Adenine (A) and Thymine (*T*) pairs with two (2) hydrogen bonds" [20]. Besides, binary encoding systems consist of binary information from all data in a computer system that includes only two possible value: 0 and 1. If current passes through the transistor (switch on), this represents one (1). If current doesn't pass (switch off) that means zero (0). That's why; it can be the reason of zero's disregard [1].

5. Conclusion

This paper tries to shed lights on the relationships between some constant numbers just like as both the Boltzmann constant and the Bohr magneton constant and nucleotide bases [Adenine (A), Thymine (T) Guanine (G), Cytosine (C) and Uracil (U)]. According to Quantum Perspective Model, the chemical formulas of nucleotide bases [Adenine (A), Thymine (T) Guanine (G), Cytosine (C) and

Table 6. The summary of some constant numbers and nucleotide bases.

SOME CONSTANT NUMBERS	NUCLEOTIDE BASES
The square of the speed of light (c^2) [4]	AUC or CCATAUUTU/CCACAUUTU
Planck's constant numbers [6]	Adenine (A) or Thymine (T)
Avogardo's Number [5]	Uracil (U)
The atomic weight of proton [5]	Guanine (G)
The atomic weight of electron [5]	Uracil (U)
The atomic weight of neutron [5]	Adenine (A) or Thymine (T)
The Boltzmann constant	Guanine (G)
The Bohr magneton constant	Thymine (T)

Uracil (U)] consist of Carbon(C), Nitrogen (N), Oxygen (O) and Hydrogen (H).

At first, the calculation of the Boltzmann constant value "78" is defined as *Guanine* (*G*) nucleotide base. Secondly, the calculation of the Bohr magneton constant value "66" can be defined with *Thymine* (*T*) nucleotide base. Even, thirdly, after searching the pair of calculated total energy equivalence of elementary atomic sequences "CTAGATAT TTAG or CTAGATATATAT "at NCBI (The National Center for Biotechnology Information) database, the striking consequence can be especially *fruit flies "Drosophia albomicans"* (see **Table 4** and **Figures 1-3**). Not only the relations between some irrational numbers and bony fishes, but also the relations between some constant numbers and fruit flies were explained by NCBI database as regards to Quantum Perspective Model [15]. They have similar human genes and are a special type of insect model organisms used in molecular and genetic research to understand human genes [21]. Fourthly, the dual explanation of Einstein's mass-energy equivalence can be deduced from Quantum Superposition, since Einstein's mass-energy equivalence can be listed as both "GAUCUAUCAAUC" and "GAUCUAUCTAUC". Fifthly, the pair of calculated total energy equivalence of elementary atomic particles is "CTAGATATTTAG or CTAGATATATAT". Sixthly, Even the sum of the atomic weights of DNA "272" consisting of the nucleotide bases Cytosine (C), Adenine (A), Thymine (T) and Guanine (G) is very close to the numerical value of the "Kelvin" temperature "273", which is almost "absolute zero". At the calculation of sum of the atomic weights of DNA, the lack of one "1" can be stemmed from minus value of Kelvin "273" [22]. Seventhly, some constant numbers can be defined as nucleotide bases just like as in **Table 6**. Lastly, Let alone the previous results, not only the Boltzmann constant numbers are related to nucleotide bases but also the Bohr magneton constant numbers are related to nucleotide bases, too (see **Table 6**). As a result, not only some constant numbers are related to genetic codes but also the golden ratio numbers [19] and Fibonacci sequence [23] are related to genetic codes, too. In sum, using some physical and chemical constants [8], can the relationships between both Biochemistry and Quantum Physics be explained by genetic codes?

Conflicts of Interest

The author declares no conflicts of interest.

References

[1] Köklü, K. (2019) Is Relativity Theory Also Valid in Biogenetics and Mathematics? *NeuroQuantology*, **17**, 53-58. https://doi.org/10.14704/nq.2019.17.3.1999

[2] Köklü, K. (2019) A Quantum Perspective Model to Genetic Codes through Various Sciences. *Neuroquantology*, **17**, 15-18. https://doi.org/10.14704/nq.2019.17.3.1974

[3] Ölmez, T. (2022) Is There Any Meaning of Planck's Constant Numbers as Regards to Quantum Superposition via the Chemical Atomic Masses of Nucleotide Bases? *Open Access Library Journal*, **9**, e9482. https://doi.org/10.4236/oalib.1109482

[4] Ölmez, T. (2022) Can the Irrationality in Mathematics Be Explained by Genetic Codes Expressed in the Square Root of the Number Ten? In: *Novel Research Aspects in Mathematical and Computer Science*, Vol. 4, BP International Press, 17-25. https://doi.org/10.9734/bpi/nramcs/v4/2120B

[5] Ölmez, T. (2022) Is There Any Explanation for the Chemical Atomic Weights of Protons, Neutrons and Electrons through the Genetic Codes Attributed to Quantum Superposition? *Open Access Library Journal*, **9**, e9650. https://doi.org/10.4236/oalib.1109650

[6] Boltzmann Constant. https://en.wikipedia.org/wiki/Boltzmann_constant

[7] Magneton. https://en.wikipedia.org/wiki/Magneton

[8] Bohr Magneton. https://www.knowledgedoor.com/2/units_and_constants_handbook/bohr-magneton.html

[9] Wieser, E.M., Holden, N., Coplen, B.T., *et al.* (2013) Atomic Weights of the Elements 2011. *Pure and Application Chemistry*, **85**, 1047-1078. https://doi.org/10.1351/PAC-REP-13-03-02

[10] Mass-Energy Equivalence. https://en.wikipedia.org/wiki/Mass%E2%80%93energy_equivalence#:~:text=In%20December%201907%2C%20Einstein%20expressed,quantity%20of%20energy%20%CE%BCc2

[11] Basic Local Alignment Search Tool. https://blast.ncbi.nlm.nih.gov/Blast.cgi

[12] Ölmez, T. (2021) According to the Binary Number Base System, Are the Square Roots of Two Numbers also Significant in Biochemistry? *Open Access Library Journal*, **8**, e7122. https://doi.org/10.4236/oalib.1107122

[13] Ölmez, T. (2021) What Is the Meaning of the Square Root of the Number Three in Biochemistry? *Open Access Library Journal*, **8**, e7123. https://doi.org/10.4236/oalib.1107123

[14] Ölmez, T. (2021) Can Irrational Numbers (Such as Square Root of the Number Five) Be Reached by Analysis of Genetic Sequences? *Open Access Library Journal*, **8**, e7104. https://doi.org/10.4236/oalib.1107104

[15] Ölmez, T. (2022) Are Irrational Numbers (Like the Square Root of the Number Seven) Applicable to Genetic Sequences? *Open Access Library Journal*, **9**, e8513. https://doi.org/10.4236/oalib.1108513

[16] Ölmez T. (2021) According to Quantum Perspective Model, Are the Numbers of Pi Also Meaningful in Biochemistry? *International Journal of Natural Sciences: Current and Future Research Trends* (*IJNSCFRT*), **11**, 1-10.

[17] Ölmez, T. (2021) According to Quantum Perspective Model, Is Euler's Identity Also Meaningful in Biochemistry? *International Journal of Natural Sciences*: *Current and Future Research Trends*, **9**, 23-28. https://ijnscfrtjournal.isrra.org/index.php/Natural_Sciences_Journal/article/view/1037/15

[18] Ölmez, T. (2020) With Respect to Quantum Perspective Model, Can Euler Numbers Be Related to Biochemistry? *Global Journal of Science Frontier Research*, **20**, 7-14. https://doi.org/10.34257/GJSFRFVOL20IS9PG7

[19] Ölmez, T. (2020) Is There an Aesthetics in Golden Ratio as Regards to the Common Cis-Regulatory Elements versus to Atomic Numbers of Elements with Respect to Quantum Perspective Model? *Neurology and Neuroscience Reports*, **3**, 1-4. https://doi.org/10.15761/NNR.1000119

[20] Lodish, H., Berk, A., Zipursky, S.L., *et al.* (2018) Molecular Cell Biology. 6th Edition, Geçkil, H., Özmen, M., Yeşilada, Ö., Translated, Palme Publishing, New York, 294-302.

[21] Fruit Fly Lab. https://www.nasa.gov/ames/fruit-fly-lab

[22] Kelvin. https://en.wikipedia.org/wiki/Kelvin

[23] Ölmez, T. (2021) Is There a Similarity between Fibonacci Sequence and Euler's Number with Respect to Quantum Perspective Model? *Global Journal of Science Frontier Research*, **20**, 33. https://doi.org/10.34257/GJSFRFVOL20IS9PG35