

Viroids and energy intake by human Genome

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ABSTRACT: *Viroids are infectious pathogens that affect only plants. Viroids are subviral, being smaller than viruses and possess circular strands of ribonucleic acids (RNAs) with no protein coating. Hunger is a painful sensation for energy caused by depletion of dietary energy. We get this energy, either directly after we eat or from the stored food as **glycogen** or from that stored as **fat**. The key objectives of this study are:*

► *to demonstrate the fact that the nature's spectacular **Controlled Experiment of Naked Genome** is the only automatic molecular machine that synthesizes all genomic-things & itself using sunlight-energy (autotrophs) or usable chemical energy-containing nutritive substances including minerals as raw materials in the organism's compatible environment,*

► *to verify that **Genome's designed/coded directives** are implemented in the synthesis (reproduction including growth, or replication) by its **transcripts & proteins** that perform as engineers, and*

► *to prove that viroids are certainly genomic-things by fitting into the definition of genomic-things and to impart the cause of hunger together with the energy intake. Each of the micrographs or evidential videos in the Figures listed or displayed has been devised to be the target and addressive finding (Result) of this study. Viroids are certainly genomic-things. The painful sensation of hunger is for immediate intake of usable chemical energy found in food but not for stomach-fillingness of food mass.*

KEY WORDS: single-stranded viroid RNA, Ribozyme, Ligated, Genome-size monomer, self-cleaved, multimeric intermediate, Polymerase II, Hunger, Energy intake

INTRODUCTION

Viroids were first discovered by **Theodor Otto Diener** (American scientist, Virologist) in the year 1971. It was first examined in potato spindle tuber viroid caused a huge loss to potato industry. Viroids are infectious pathogens that affect only plants. They are also called plant pathogens as they commonly affect only plants [1, 2]. Viroids are **subviral**, being smaller than viruses and possess circular strands of ribonucleic acids (RNAs) with no protein coating. Viroids affect all forms of angiosperms (flowering plants). Viroids differ from viruses in structure and form. They consist of solely short strands of circular, and single-stranded RNA without protein coats [3,4]. Some of the characteristic features of viroids:

- Viroids contain only RNA.
- They are known to be smaller than viruses in size and infect only plants.
- They are among the smallest known pathogens causing infectious diseases.
- Viroids are species of nucleic acid with relatively low molecular weight and unique structure.
- They reproduce within the host cell which they affect and cause variations in them causing death.
- Viroids form the **Order Viroidale** that is divided into two families namely:
 - ▶ **Pospiviroidae**-nuclear viroids, and
 - ▶ **Avsunviroidae**-chloroplastic viroids.
- Viroids move in an intracellular manner, cell to cell (short distance) through the **plasmodesmata**, and long distance through the **phloem** to establish systemic infection.
- A viroid's **Genome** is a naked small single-stranded circle of RNA.
- This naked & single-stranded circular RNA (circRNA) molecule of viroid can vary in length from 246 to 463 nucleotides and is in the set of the smallest pathogens found so far. In the **fake sciences of Biology** viroids are said to be nonliving-things (i.e., nongenomic-things) [5].

Hunger is an uncomfortable or painful physical sensation for **energy** caused by insufficient consumption of dietary energy. We get this energy, either directly after we eat or from the stored food as **glycogen** (in our liver & muscles) or from that stored as **fat**. Since getting enough energy is crucial for our survival, our bodies send hunger messages that urge us to eat for energy intake[6, 7].

The key objectives of this study are:

► to demonstrate the nature's spectacular **Controlled Experiment of Naked Genome** about the fact that the **Genome** is the only automatic molecular machine that synthesizes **all genomic-things** & **itself** using **sunlight-energy** (autotrophs) or **usable chemical energy-containing nutritive substances including minerals** as raw materials in the **organism's compatible environment**,

► to verify that **Genome's** **designed/coded directives** are implemented in the synthesis (reproduction including growth, or replication) by its **transcripts** & **proteins** that perform as engineers, and

► to prove that viroids are certainly **genomic-things** by their fitting into the definition of genomic-things and to impart the cause of hunger together with the energy intake.



Theodor Otto Diener



Jan Ingenhousz



Antoine Lavoisier

Figure 1: List of 3 scientists known in the worldwide scale for their contribution in science.

Theodor Otto Diener: A Swiss-American plant pathologist (born 28 Feb. 1921 and now he is alive with the age of 101 years). He discovered viroids in 1971.

Jan Ingenhousz: A Dutch-British Medical Doctor (born 8 Dec. 1730 and died 7 Sep. 1799). He was the **first** discoverer of photosynthesis by green plants in 1779.

Antoine Lavoisier: A French chemist (born 26 Aug. 1743 and died 8 May 1794). He discovered the Law of Conservation of Matter in 1789 which stated that matter is neither created nor destroyed except changing its form or state.

METHODOLOGY & RESULTS

Each of the micrographs or evidential videos in the Figures listed or displayed herebelow has a targetful aim. These micrographs, and videos are also addressive findings (results) in the targetful approach of the paper and this is the reason for why it is entitled as **Methodology and Results** hereabove.

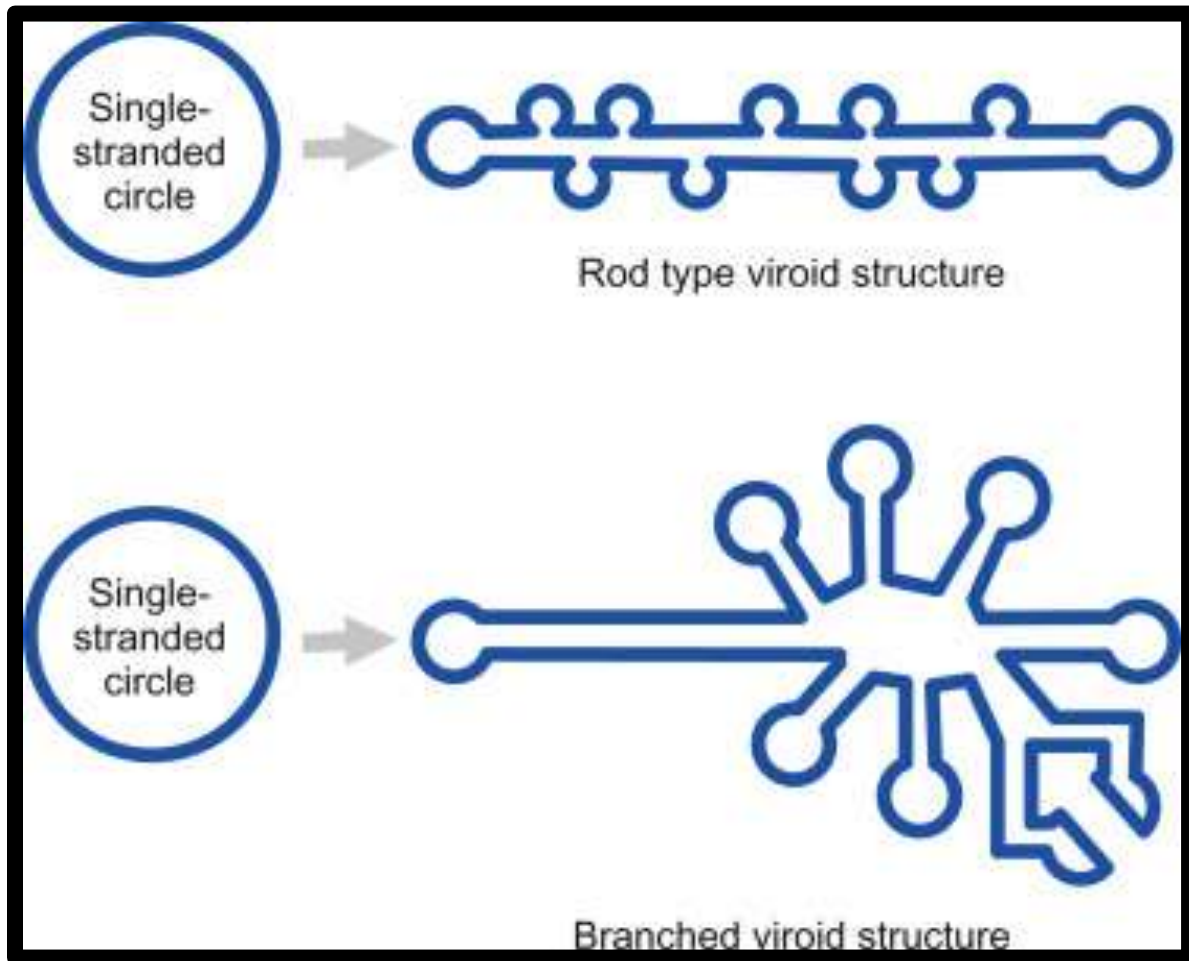


Figure 2: Morphology of rod-like RNA (Pospiviroidae)- the top one, and branched RNA (Avsunviroidae)- the bottom one. Some viroids' RNAs form just rod-like structures whereas others have complex branched structures.

Viroids have no protein coding genes, but the viroid RNA itself acts as a ribozyme, particularly in family Avsunviroidae. Viroids replicate by a rolling circle mechanism (Fig. 3). The viroids' own ribozyme activity is used for self-cleavage of the multimeric RNA generated during replication. Host enzymes provide all other functions. First, host RNA polymerase copies the circular plus

strand to form a multimeric minus strand. Site-specific cleavage of this strand by the viroid ribozyme gives monomers that are circularized by a host RNA ligase. The minus-stranded circles are the templates for a second round of rolling circle replication by RNA polymerase. The resulting multimeric plus strand undergoes ribozyme cleavage to create monomers. These are circularized to produce the progeny viroids (circular, positive single-stranded RNA).

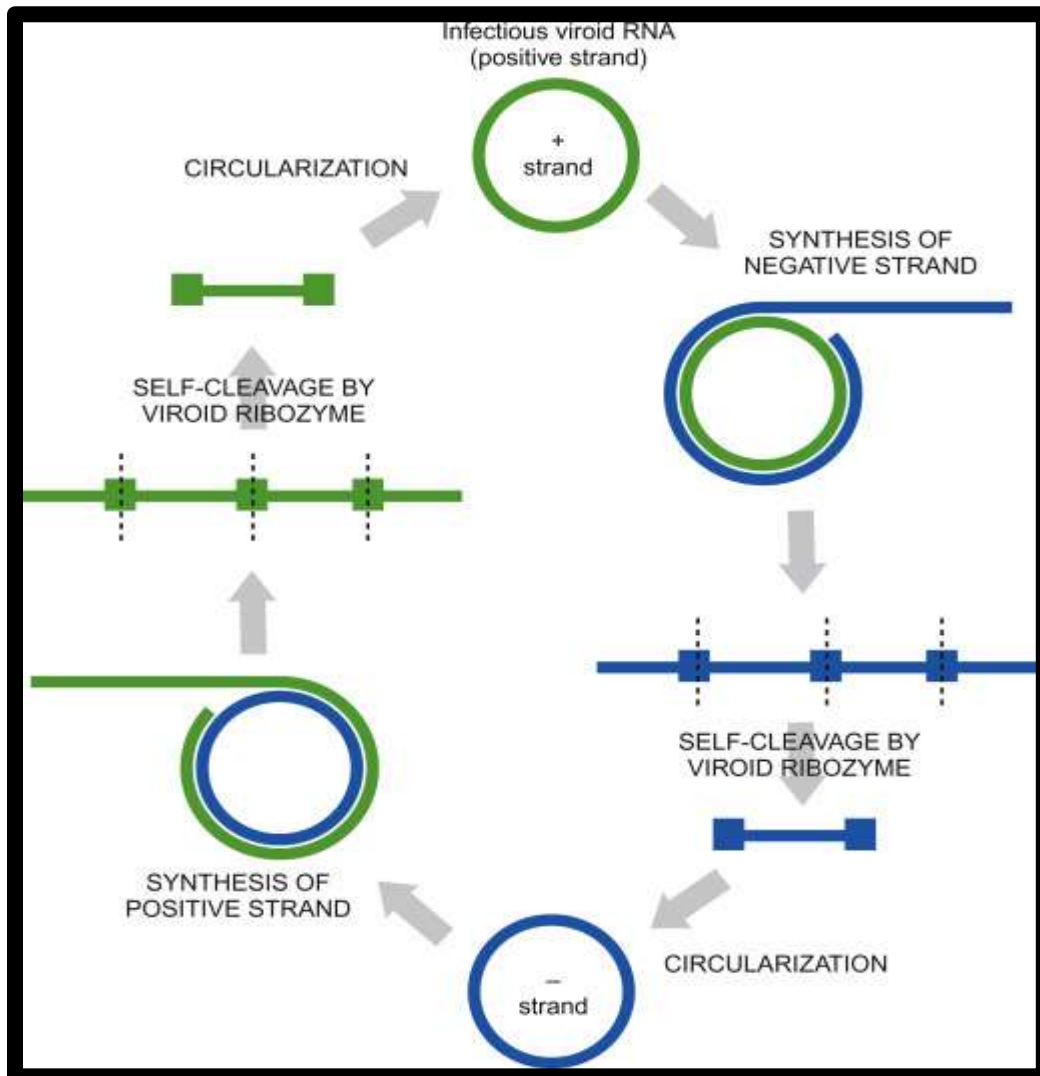


Figure 3: Replication of a viroid by Rolling Circle Mechanism.

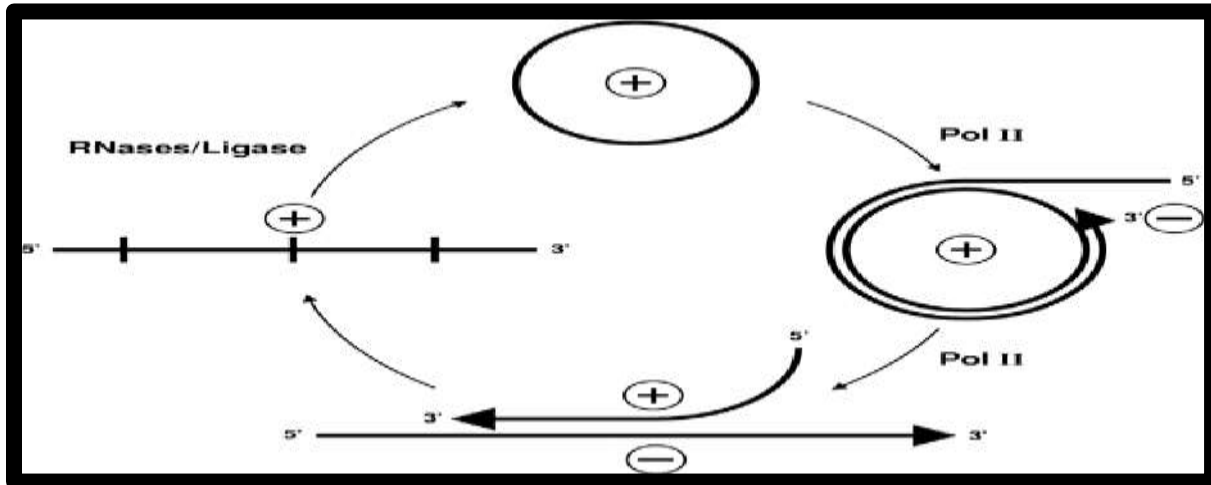


Fig. 4: Replication cycle of PSTVd in family Pospiviroidae. According to Branch and Robertson (1984) and Published in 2007; [Potato spindle tuber viroid \(PSTVd\)](#)

Pospiviroidae replicates in an asymmetric cycle. DNA-dependent RNA polymerase (pol II) transcribes mature circular RNA into multimeric, i.e., concatemeric or oligomeric (-) intermediates. Next, (-) intermediates are converted into oligomeric (+) intermediates. DNA ligase 1 cleaves the (+) intermediates into genome-length monomers and ligates them to produce the progeny viroids of mature circular positive single-stranded RNA.

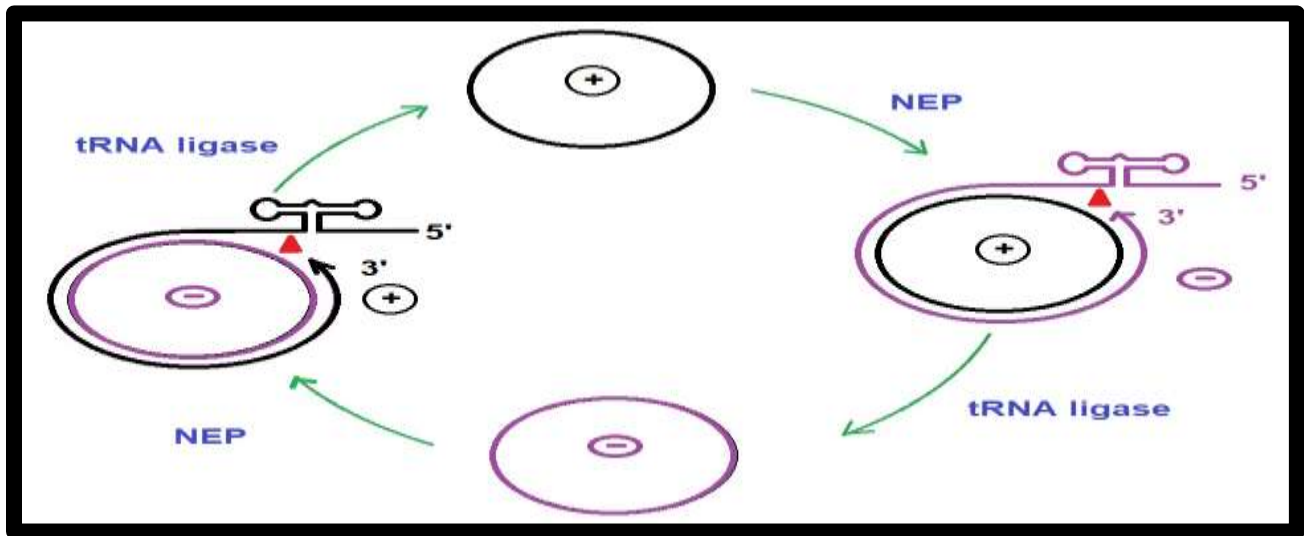


Figure 5: Replication cycle of viroids in the family of *Avsunviroidae*.

Avsunviroidae replicates in a symmetrical cycle. Circular RNA is transcribed into oligomeric intermediates by the nucleolar-encoded polymerase (NEP) and is cleaved into monomeric units by the hammerhead ribozyme followed by ligation into circles by tRNA ligase. CircRNA can fold into thermodynamically stable and metastable structures whose presence is critical for each step of the different replication cycles



Figure 6: Potatoes with spindle tuber symptoms.

Viroids have no protein coding genes, but the viroid RNA itself acts as a ribozyme.

Viroids replicate by a rolling circle mechanism (Fig. 24.36). The viroids' own ribozyme activity is used for self-cleavage of the multimeric RNA generated during replication. Host enzymes provide all other functions. First, host RNA polymerase copies the circular plus strand to form a multimeric minus strand. Site-specific cleavage of this strand by the viroid ribozyme gives monomers that are circularized by a host RNA ligase. The minus-stranded circles are the templates for a second round of rolling circle replication by RNA polymerase. The resulting multimeric plus strand undergoes ribozyme cleavage to create monomers. These are circularized to produce the progeny viroids (circular, positive single-stranded RNA).



22nd Jun, 2020

Abdelkader Mohamed Abdelkader Elsayed

Benha University & Dhofar University

This link maybe useful:

<https://answersdrive.com/what-do-viruses-viroids-and-prions-have-in-common-21299686>Cite

When it was copy-pasted the above [Link](#) on Google Search space, the video gave the following question & solution.

Question

What do viruses, viroids, and prions all have in common?

Solution

Virus:

1. It is a non-cellular, infectious entity with DNA or RNA as its genetic material and protein.
2. It is capable of reproducing only within the living cells of bacteria, plants, and animals.

Viroids: These are single-stranded RNA but do not have a protein coat.

Prions:

1. These are the proteinaceous infectious agents.
2. They are infectious due to abnormal folding and clumping.

Similarities:

1. **Viruses, viroids, and prions are all acellular structures i.e. non-living.**
2. **They cannot reproduce on their own and are dependent on the host machinery to reproduce and continue their progeny.**

Figure 7: The answer from Professor Abdelkader Mohamed Abdelkader Elsayed to the question asked above on 22 Jun. 2020.

Table 1: The approximate food energy contents of various human diet components, to be used in package labeling according to the EU regulations and UK regulations are:

Food component	<u>Energy density</u>	
	kJ/g	kcal/g
<u>Fat</u>	37	9
<u>Ethanol</u>	29	7
<u>Proteins</u>	17	4
<u>Carbohydrates</u>	17	4
<u>Organic acids</u>	13	3
<u>Polyols (sugar alcohols, sweeteners) (1)</u>	10	2.4
<u>Fiber (2)</u>	8	2

DiETING is the practice of eating food in a regulated way to decrease, maintain, or increase body weight, or to prevent and treat diseases such as diabetes obesity. As weight loss depends on reducing caloric intake, different kinds of calorie-reduced diets have been shown to be generally effective. It is known that **fat** (lipids) contain 9 kcal per gram while **carbohydrates** (sugars and starch) and **protein** contain about 4 kcal/g. Alcohol in food contains 7 kcal/g.

Age (Years)	Gender	Not Active	Moderately Active	Active
2 - 3	Male / Female	1000	1000	1000
4 - 8	Male	1200 - 1400	1400 - 1600	1600 - 2000
	Female	1200 - 1400	1400 - 1600	1400 - 1800
9 - 13	Male	1600 - 2000	1800 - 2200	2000 - 2600
	Female	1400 - 1600	1600 - 2000	1800 - 2200
14 - 18	Male	2000 - 2400	2400 - 2800	2800 - 3200
	Female	1800	2000	2400
19 - 30	Male	2400 - 2600	2600 - 2800	3000
	Female	1800 - 2000	2000 - 2200	2400
31 - 50	Male	2200 - 2400	2400 - 2600	2800 - 3000
	Female	1800	2000	2200
51 and older	Male	2000 - 2200	2200 - 2400	2400 - 2800
	Female	1800	1800	2000 - 2200

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Figure 8: Guidelines about daily energy intake for human males & females based in age-groups.

Food	Calorie density (kcal/g)	Percent sodium
<i>Burger King sandwiches</i>	2.42	0.45
<i>KFC chicken</i>	2.85	0.76
<i>McDonald's sandwiches</i>	2.39	0.51
<i>Pizza Hut pizza</i>	2.40	0.62
<i>Taco Bell tacos</i>	2.33	0.47
<i>Wendy's sandwiches</i>	2.14	0.51
<i>Wild game</i>	1.26	0.06
<i>Wild plant foods</i>	1.09	0.01

Sources: Burger King Corporation (2002), KFC Corporation (2002), McDonald's Corporation (2002), Pizza Hut, Inc. (2002), Taco Bell Corporation (2002), Wendy's International, Inc. (2002), Eaton et al (1997).

Figure 9: Differences of Calorie density (kcal/g) in different food types.

<i>Category of Food</i>	<i>Daily Intake of Calories</i>	<i>Quantity in KG</i>	<i>Percent of Total Calories</i>
Cereals and Starches	1,327.12	0.41	57.57
Pulses	54.18	0.02	2.35
Vegetables	104.29	0.24	4.52
Fruits	61.26	0.09	2.66
Meat and Poultry	137.35	0.12	5.96
Fish	27.00	0.02	1.17
Eggs	21.10	0.21	0.92
Milk and Milk Products	62.38	0.07	2.71
Oil and Butter	271.87	0.03	11.79
Sugar	203.45	0.05	8.83
Others	30.95	0.02	1.34
Tea and Coffee Drinks	1.59	0.01	0.07
Soft Drinks	2.83	0.00	0.12
Alcoholic Drinks	0.00	0.00	0.00
Total Food	2,305.38		100.00

Figure 10: Healthy daily intake of energy for humans from each different category of food in percent.

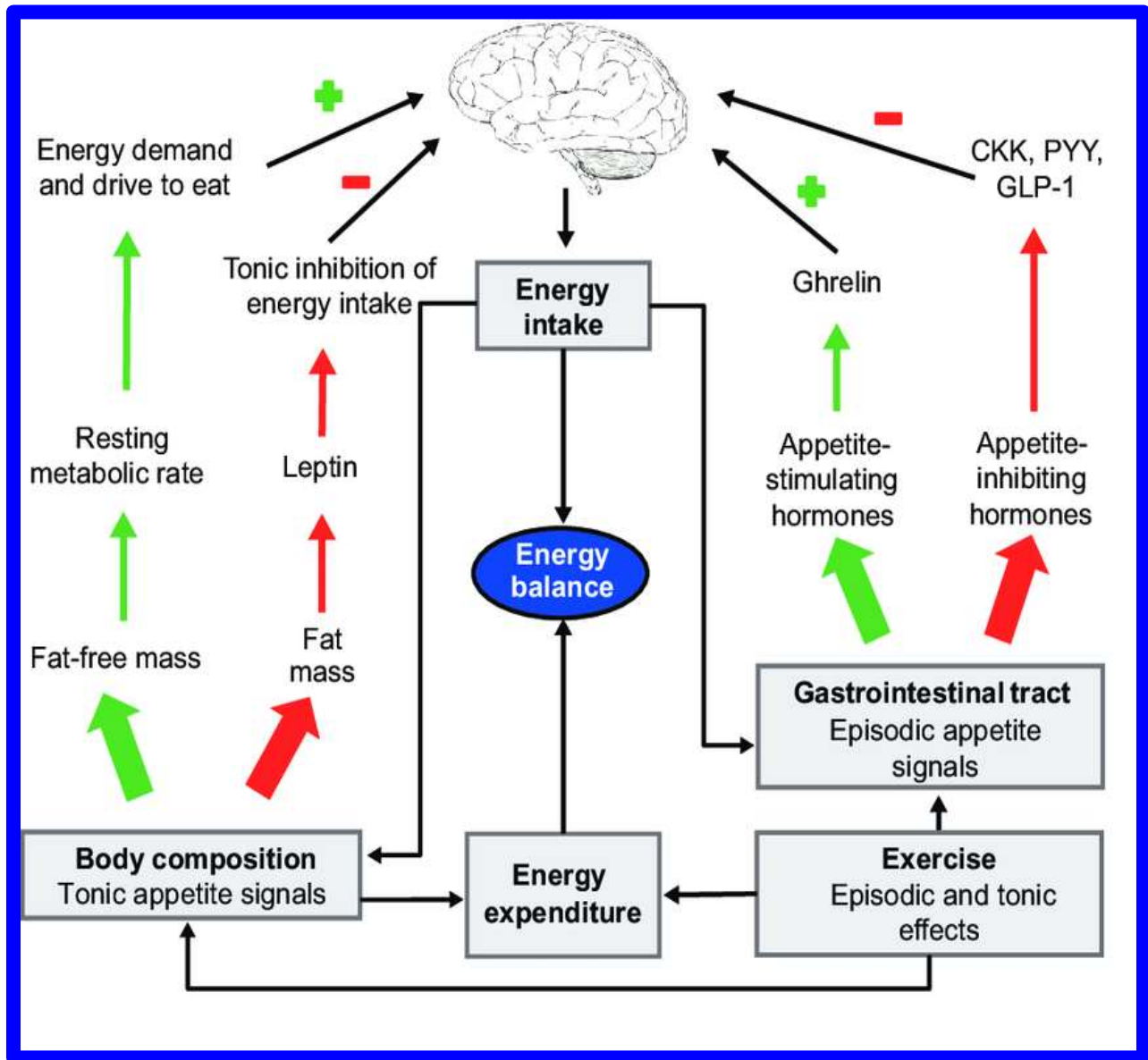


Figure 11: Mechanisms of **Energy intake**, **Energy balance**, and **Energy expenditure** stimulated or inhibited by internal signalling systems.

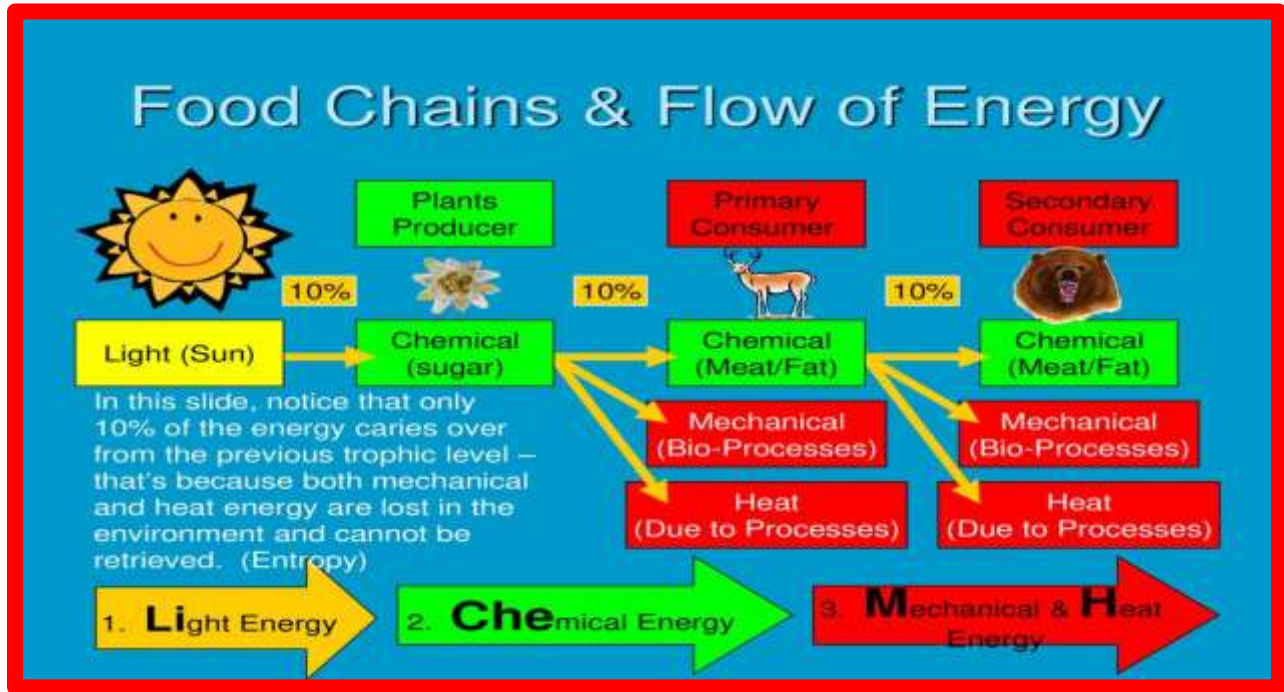


Figure 12: Food-chains and flow of genomic energy.



Figure 13: Distribution of usable chemical energy in a linear food-chain.

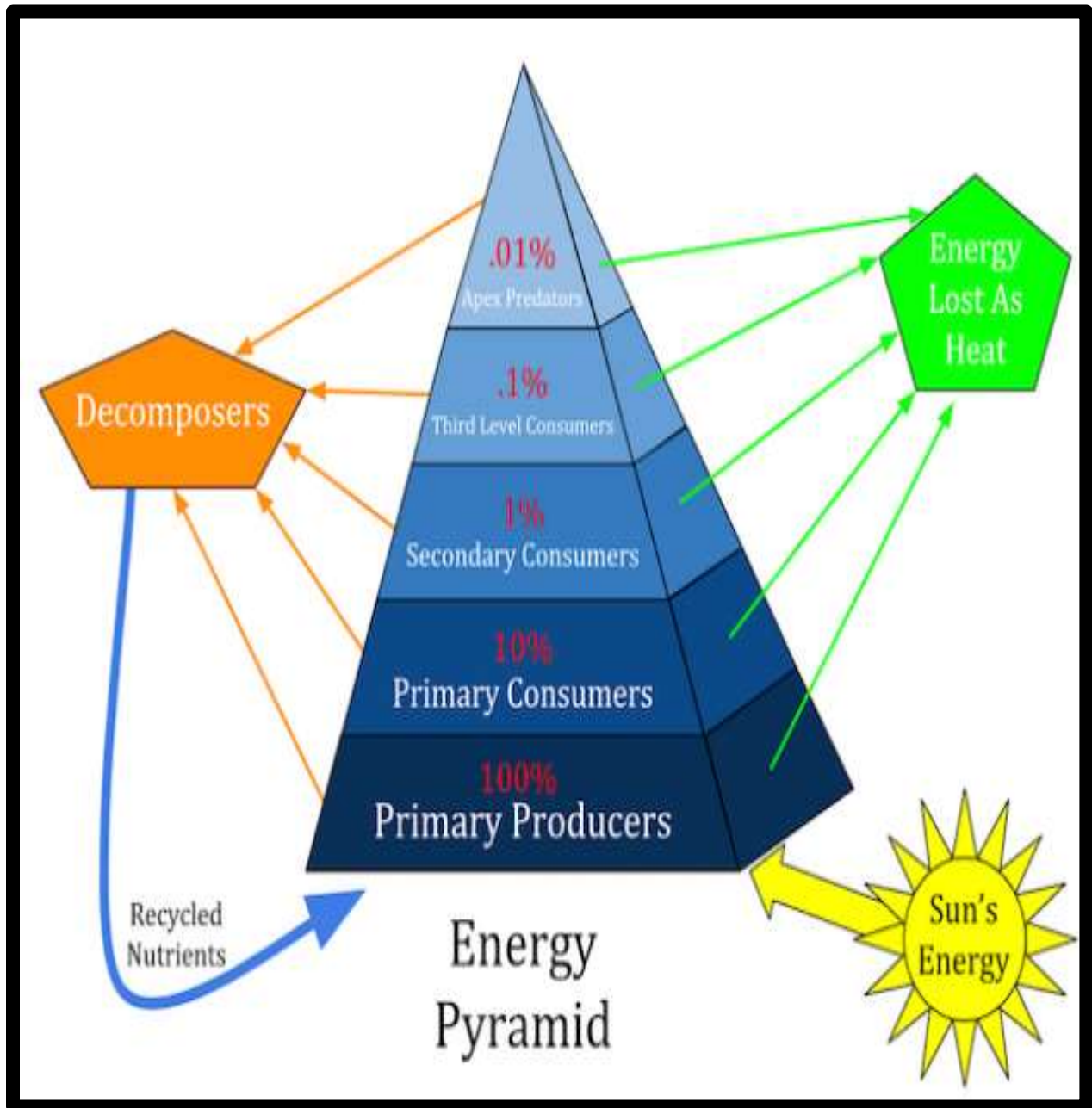


Figure 14: Energy flow in the pyramid of trophic levels, decomposers, recycled nutrients and energy lost (dissipated) as heat.

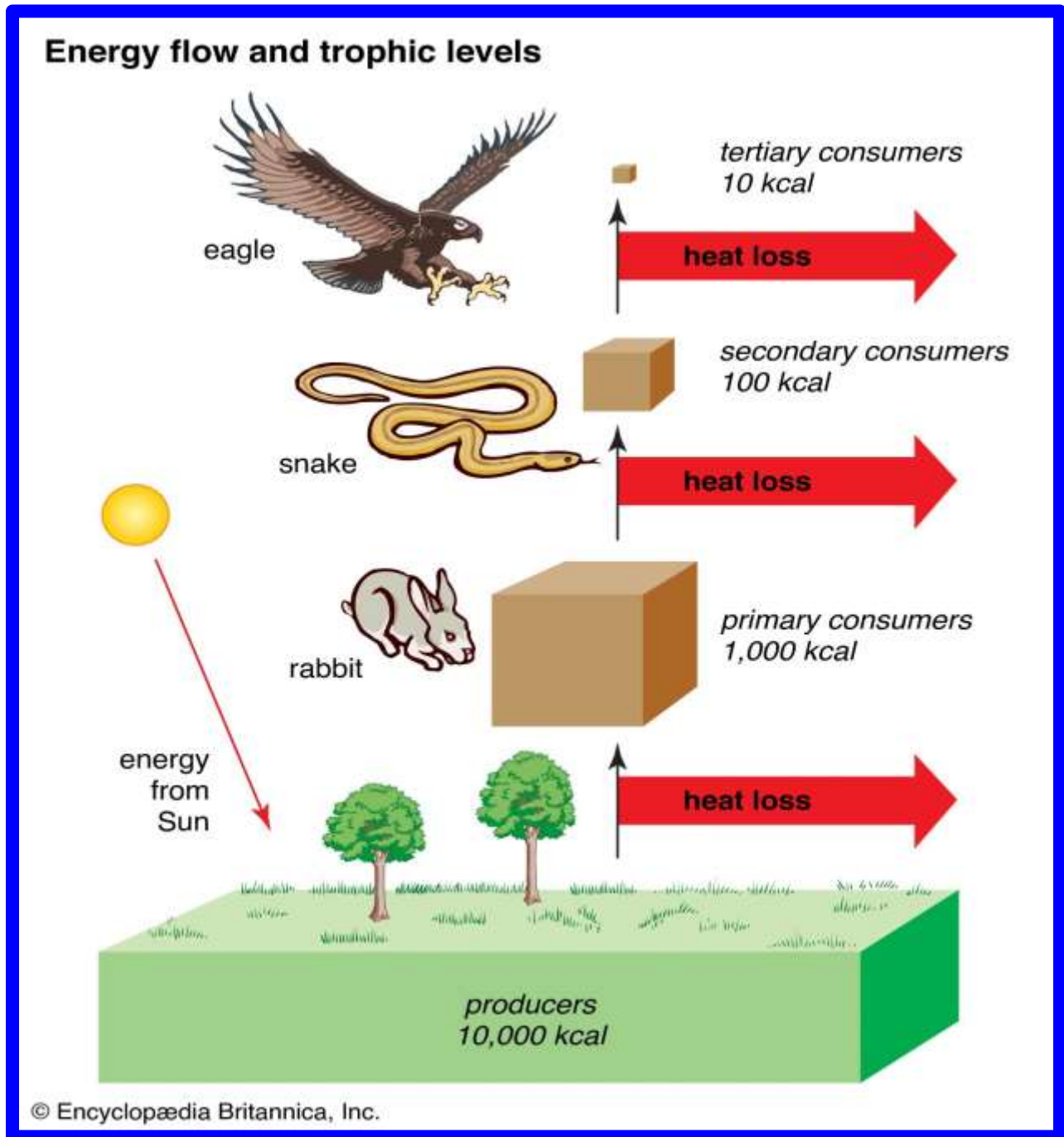


Figure 15: Energy flow and trophic levels in the linear food-chain.

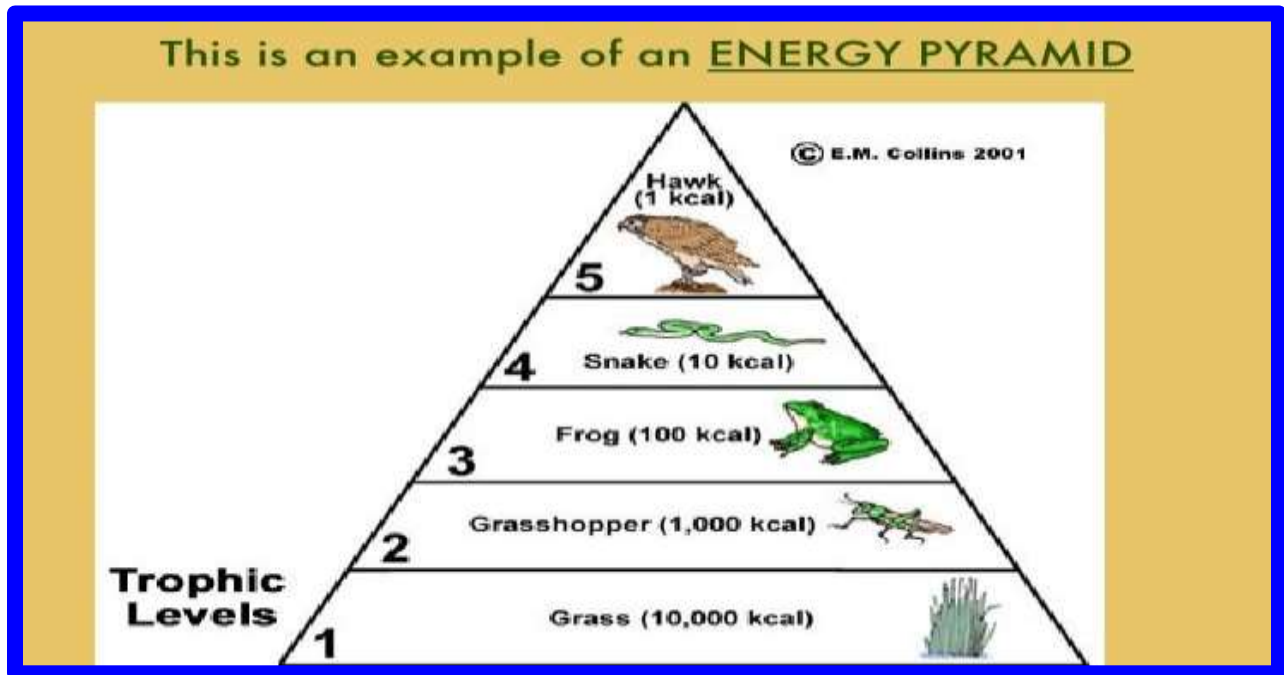


Figure 16: Energy pyramid & trophic levels.

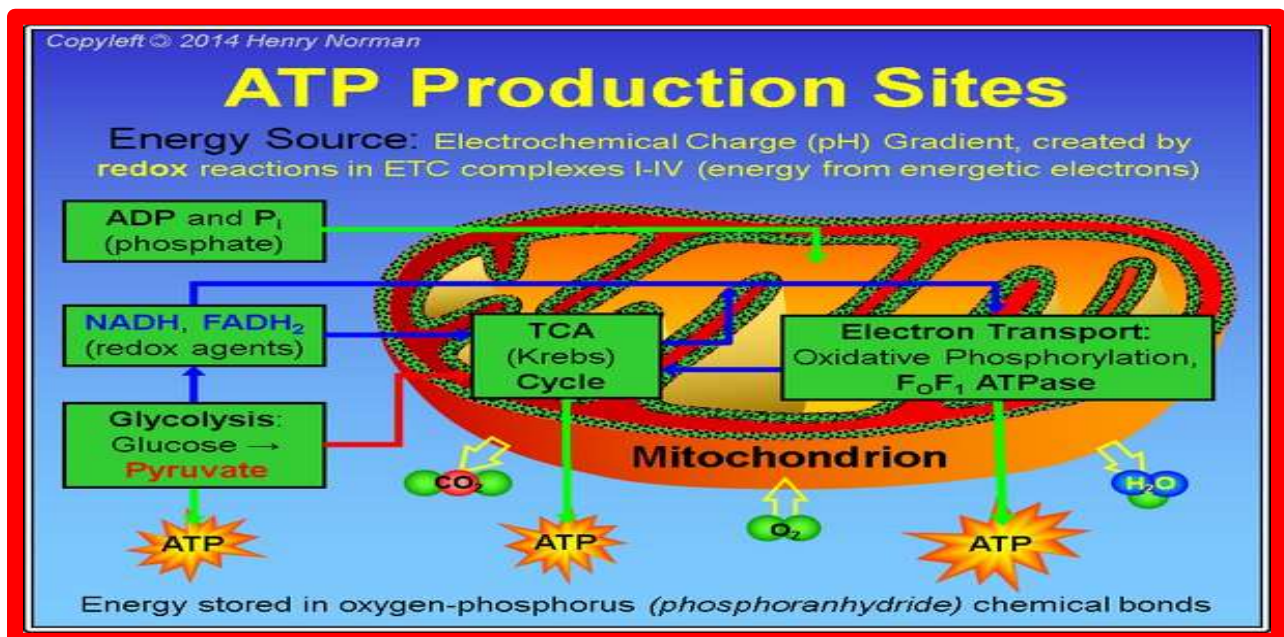


Figure 17: ATP production sites in aerobic respiration.

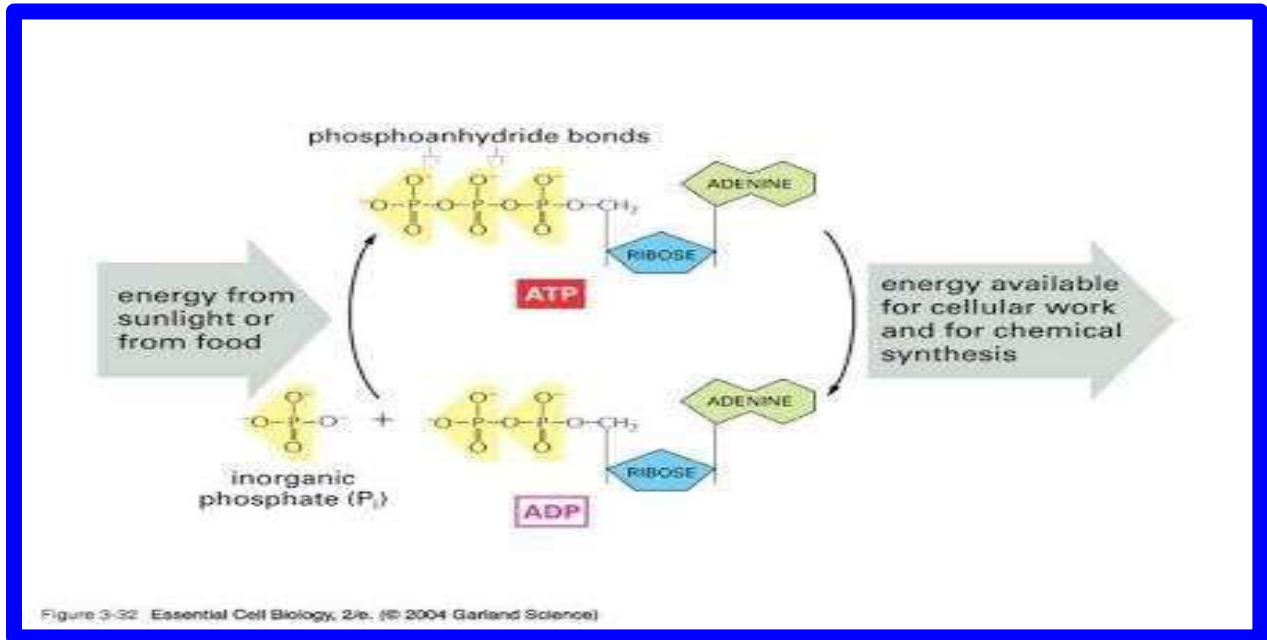


Figure 18: A section of energy flow involving ATP & ADP.

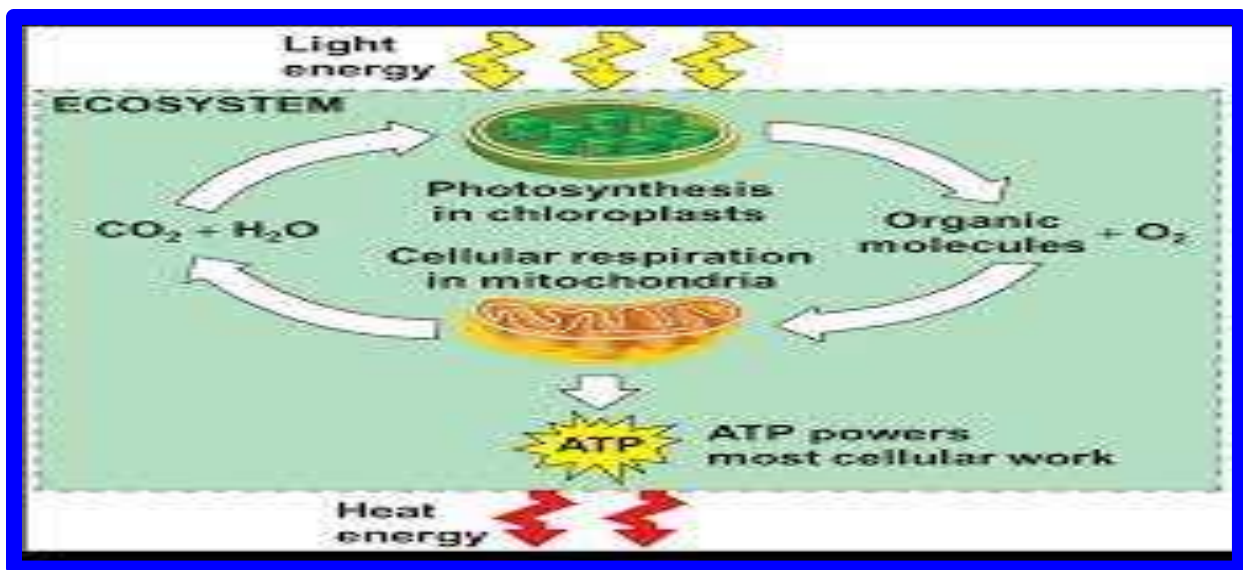


Figure 19: Conversion of sunlight-energy into usable chemical energy and its flow in the ecosystem.

Connect your computer to Internet. Steps of opening the video: Select, copy and paste the title of the video (only the blue colored & underlined) on Google search space on your computer desktop screen and then press Enter Key of your computer keyboard. Click Video. Now, click the slide with the correct Title of video you pasted because when the video is copied & pasted, several other unwanted videos will appear together. When video 1 ends playing, repeat the same steps for playing of video 2 and then that of video 3, etc.

Video 1: [Viroids Possibly the Smallest Pathogens on Earth](#)

Video 2: [Viroids I Introduction I Structure I Diseases I Mode of Action](#)

Video 3: [Biological classification virus, virion, viroid, prion , satellite virus difference virus lecture](#)

Video 4: [Subviral particles viroids and prions Cells MCAT Khan Academy – You Tube](#)

Video 5: [Viruses Molecular Hijackers](#)

Video 6: [Energy Expenditure](#)

Video 7: [Energy homeostasis - Leptin, ghrelin, and others viveksirsphysiology #vsp](#)

Video 8: [Assessment of Energy Expenditure](#)

Video 9: [Energy in Human Nutrition, Energy Balance, Assessment of Energy Requirement, Deficiency and Excess](#)

Video 10: [Energy Values of Foods \(ANT\) - YouTube](#)

Video 11: [The Role of Diet Composition on Energy Balance](#)

Figure 20: Videos of viroids and energy intake for genomic reactions in humans.

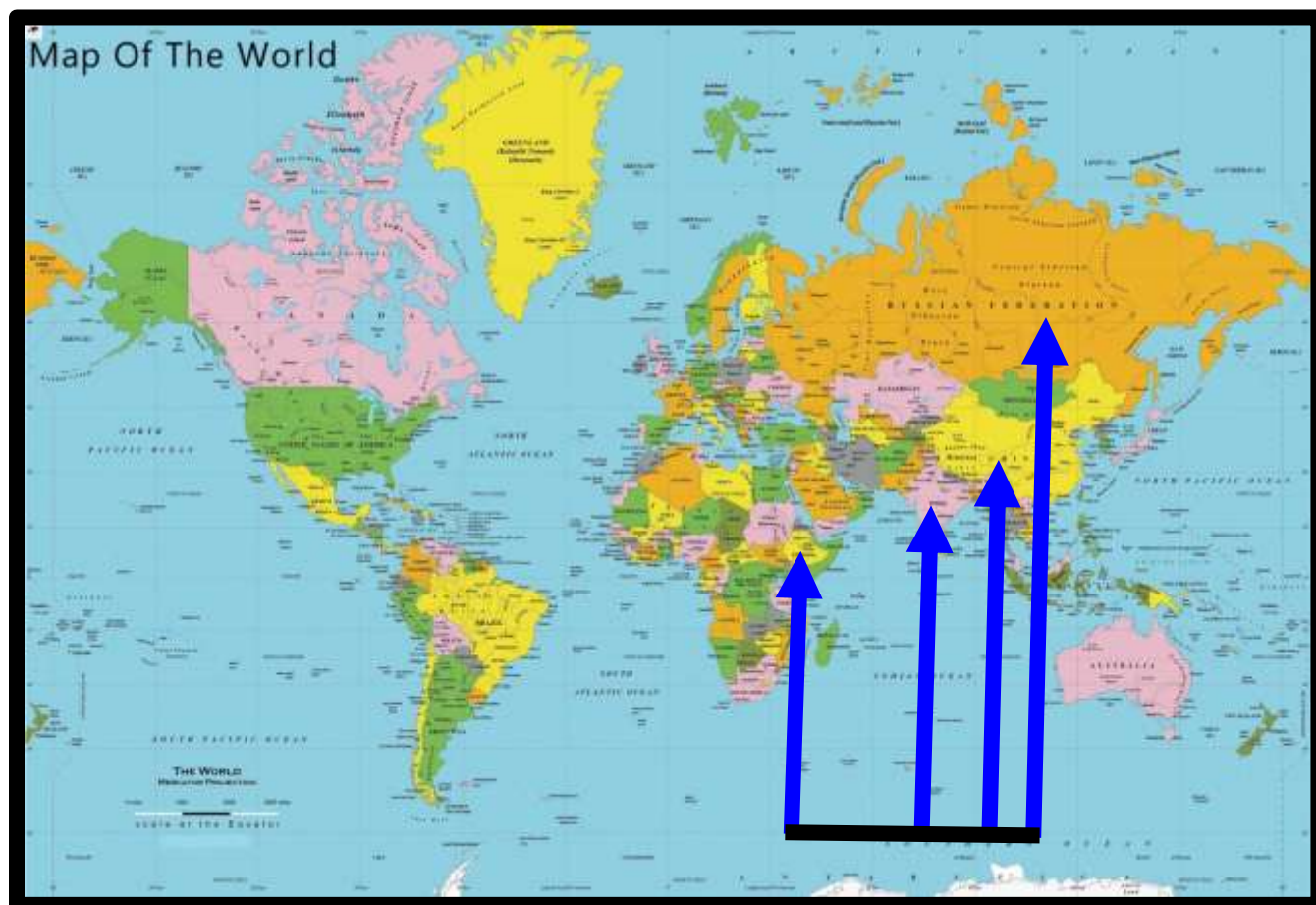


Figure 21: Map of the world with arrows showing the 4 countries (**Russia, China, India & Ethiopia**) where each of them is a superpower in the aspects mentioned in the **Conclusion Section** of this paper.

DISCUSSION

Viroids are completely naked **Genomes** of RNA type. As imparted in previous study articles published by the author of this paper, the chemical composition of genomes from these of viroids up to those of angiosperms or of humans are the same **nucleotides** where the only insignificant/negligible difference being the nitrogenous base in the nucleotide of RNA is Uracil (U) whereas it is Thymine (T) in DNA and in 5-carbon sugar the 2'-C bears H-atom in the case of DNA and that of RNA has-OH group instead of H-atom.

Viroids are actually circular single-stranded RNA molecules with ligated ends. Why they are rod-like or branched rods is because of intrastrand nucleotide base-pairing. Viroids are observed to be

obligate intracellular pathogens of plants (i.e., they infect plants only). They are known to make short distance movement of cell-to-cell via **plasmodesmata** and long distances through **phloem** in the body of plants.

Viroids replicate/reproduce their progeny inside their host-cells of plants, because their usable energy-containing nutritive substances in the food-chains or in energy pyramids of trophic levels are the internal contents of their host-cells of plants just analogous to that of lions feeding on flesh and not on grass.

The **Genome** of a viroid RNA synthesizes its daughter viroid Genomes (viroid RNA) using its usable chemical energy-containing nutritive internal contents of its host-cells of plants but it does not synthesize (or reproduce) its host plants; similarly, the lion eats flesh of its preys & its **Genome** synthesizes (or reproduces) daughter lions and not the prey animals eaten by the parent lions!!!!This is so because a viroid RNA is a genomic-thing (i.e., it is a living-thing according to the **fake sciences of Biology**) [8 -18]. On the other hand, against this correct, obvious, concrete, and spectacular scientific truth, liars (fake or false Professors) are paralyzing the scientific progress of student children of all human races of the world by stating that viroids & viruses are nonliving-things (i.e., viroids & viruses are nongenomic-things) [5].

Energy intake from foods: Hunger is an uncomfortable or painful physical sensation caused by insufficient consumption of dietary energy or energy depletion. We get this energy from the food we take, either directly after we eat or from the food stored in our bodies as **glycogen** (in liver and muscles) or that stored as **fat**. Because getting enough energy is crucial for our survival, our bodies send hunger messages that urge us to eat. This occurs because of metabolic changes throughout the body which signal that we need to eat in order to maintain the required energy level. The immediate & the primary sensation of hunger is the eager appetite demanding energy intake and not the stomach-fillingness of food mass but the need of energy found in it. The unit of energy found in foods is **Calorie**.

1 calorie = 4.184 joules; 1 kilocalorie = 1000 calories = 4184 joules = 1 kilojoule.

The only type of energy usable for genomic reactions (metabolism) is the chemical energy that is transformed (converted) from Sunlight energy only by photosynthetic green plants and contained in food-chains or in energy pyramids of trophic levels and not from Electrical or Nuclear energy [19-23].

Look! The body mass of every individual of genomic-things is 100% made up of atoms the nucleus of each of which contains **huge destructive amount of nuclear energy** but none of this nuclear energy is used for the good of genomic reactions in genomic-things even if the individual of a genomic-thing starves for energy to death!!



Nuclear energy is a form of energy released from the **nucleus** which is the **core of the atom**. The nucleus of the atom is made up of protons and neutrons. From this source, energy can be produced in two ways:

- (1). **Fission** – when nucleus of atom splits into several parts, or
- (2). **Fusion** – when nuclei of atoms fuse together.

The nuclear energy harnessed around the world today to produce electricity is through nuclear fission. Nuclear reactors generate close to one-third of the world's carbon free electricity and are crucial in meeting climate change goals. Through its **safeguards and verification** activities, the **IAEA** oversees that nuclear material and technologies are not diverted from peaceful use.

Herebefore when the existence of viroids was not fully addressed/known, it was reported by the author of this paper that the smallest genomic-thing is *Porcine circovirus* whereas the largest genomic-thing is *Sequoiadendron giganteum* in the U.S. state of California, in the Giant Forest of Sequoia National Park in Tulare County[18]. Now, it is updated that the smallest genomic-thing is the **smallest individual viroid RNA** among viroids by replacing *Porcine circovirus* because viroids are subviral in size [24].

CONCLUSION



Genomic-things that are large enough are **visible** (macroorganisms) for unaided human eyes.

▶ **Subvisible genomic-things** are **microscopic** ones in size including bacteria, protozoa, blood cells, and others that can be seen only with conventional light microscopes.

▶ **Submicroscopic (or Subcellular) genomic-things** are **viruses**.

▶ **Subviral genomic-things** are **viroids**.



Definition: A genomic-thing is a product synthesized by **its automatic self-synthesizing genome** using sunlight-energy & its inorganic nutritive substances & minerals to produce **its usable chemical energy-containing nutritive substances** to use as raw materials

(green photosynthetic plants,i.e., autotrophs), or it is a product synthesized by **its automatic self-synthesizing genome** using **its usable chemical energy-containing nutritive substances & minerals** (heterotrophs, i.e., nonautotrophs) in **its anaerobic or aerobic compatible environment** where the genome directs the whole reactions (**metabolism**) of synthesis by **its transcripts & proteins**; the complexity of genomic reactions is directly proportional to **size** of the kind of organism being synthesized. Remember that the fake terms **living-thing, nonliving-thing** and **Biology** had been replaced (dismissed) by the correct ones called **genomic-thing, nongenomic-thing** and **Genomology** respectively.



If anyone of:

- ▶ **Genome,**
- ▶ **Sunlight-energy,**
- ▶ **Usable chemical energy-containing nutritive substances & minerals,** and
- ▶ **Anaerobic or aerobic compatible environment**

is missing, there would be no **genomic-things** on this planet (Earth)!!!! Without the usable chemical energy such as ATP, genomic reactions called **metabolism** (*catabolism & anabolism*) cannot occur and that means there would be no genomic-things! Thus, a genomic-thing is the product of reactions of the four things listed above.



The total energy found in the body-mass of every trophic level of a food-chain or energy pyramid of eating & being eaten from the primary producer to the final consumer is exclusively the **sunlight-energy** converted into **usable chemical energy (genomic-energy)** where none of electrical or nuclear energy is included. For instance a: - viroid, virus, rat, snake, sheep, or a pea plant is in a food chain; also, even a person who appears that he/she cannot be eaten, is eaten by decomposers where he/she will be buried someday after death.



In the food-chain or pyramid, decomposers break down dead bodies and recycle the nutrients to primary producers while the sunlight-energy that is transferred from one trophic level to another in the form of **usable chemical energy (genomic-energy)** is irreversibly dissipated (lost) as heat into the surrounding external environment, but this loss of energy is remedied by an endless constant supply of sunlight-energy for free to photosynthetic green plants for conversion into **usable chemical energy (genomic-energy)** everyday!!!!



Hunger which is the painful sensation is caused by the depletion (or insufficient intake) of energy found in foods and not for stomach-fillingness of food mass, but demanding for the energy found in it and encouraging us to eat with an eager appetite until we feel to stop with satiety.



What synthesizes a viroid, a virus, a cell, an eucalyptus tree, a cow, a lion, a corn plant, a mango tree, a person, an avocado tree, or any genomic-thing is **its genome!!** Anything that does not have a **genome** is a nongenomic-thing and not a nonliving-thing because everything is a living-thing (**Law of Conservation of Matter, stated by Antoine Lavoisier**).



If the level of body organization (size) of the organism is a **naked Genome** being an individual organism that can automatically self-synthesize (self-replicate) using the internal contents of its host-cell as its usable chemical energy-containing nutritive substances as raw materials, then the organism is the **viroid RNA** (i.e, only **Genome**, being as many as 10^4 viroid **RNAs** or **Genomes** accumulated in the infected host-cell whereas the initial number of viroid entered the host-cell was only 1 **viroid RNA**). Thus, $10^4 - 1 = 10000 - 1 = 9999$ **viroid RNAs** are the internal contents of the host-cell that have been usable chemical energy-containing nutritive substances and are transformed or converted into viroid RNAs by the coded directives of **Genome** of this very pathogenic viroid RNA (**Antoine Lavoisier's Law of Coconservation of Matter**). This has happened at the expense of the host-cell.

Look! a naked **Genome** == viroid **RNA** only (the body of an individual viroid is only 1 **RNA** molecule which is its **Genome** at the same time).



The **energy intake** by a viroid naked RNA **Genome** for its anabolic replication starting from a single viroid RNA upto as many as 10^4 viroid naked RNA **Genomes**, accumulating in a single host-cell is spectacularly known because no voluntary or involuntary reaction of any kind (catabolism or anabolism) can occur in genomic-things without **expenditure of genomic energy** (usable chemical energy that was converted from sunlight-energy & found in the nutritive internal contents of the host-cell). In other words, the parasite (the viroid naked RNA Genome in this case) takes in energy from the usable energy-containing internal contents of the host-cell as raw materials for its anabolic & replicative increase in number of viroid naked RNA **Genomes**.



This is the nature's spectacular and accurate demonstration for the fact that the **Definition** of a genomic-thing given above is correct 100% (perfect) into which **viruses** & **viroids** can fit exactly as genomic-things!!!! In short, this is the result of nature's **Controlled Experiment** for the accurate **Definition** of genomic-things of this study given above.



Viroids grow both in **size** (grow into long multimeric intermediates by rolling circle mechanism) and in **number** of individuals where long multimeric intermediates are cleaved into many monomers of genome-length (genome-size) that are ligated into circular mature single-stranded viroid RNAs.



This study has given a spectacular proof of **Nature's Controlled Experiment** for the fact that **Genome** synthesizes its individuals in each species of all genomic-things by its coded/designed directives using its **transcripts & proteins** as engineers whereas its **usable energy-containing nutritive substances including minerals** are used as raw materials in its **aerobic or anaerobic compatible environment**. Here viroids are naked **RNAs** exactly **similar or equivalent** to **transcripts** transcribed from the human **Genome** whose size is 46 **DNA** molecules. In this Nature's Controlled Experiment, the naked viroid **RNA** is a naked **Genome**, having directives for the synthesis (reproduction) of its own kind/type species of genomic-thing & it also acts as an implementing **engineer transcript** being involved as ribozyme in self-cleavage of multimeric intermediates into monomers of genome-size as well as serving as a template for its own replication in both of its 1st & 2nd rounds in its Rolling Circle Mechanism. Other protein enzymes involved in the synthesis (replication) of viroids include polymerase II & ligase. As in the synthesis of human individuals (*Homo sapiens*), the **implementing engineers** of **Genome's** **designed/coded directives** in the synthesis (replication) of viroids are only **transcripts & proteins**. Thus, the structures & functions of viroids are the actual & spectacular evidences of **Nature's Controlled Experiment** for the fact that the **implementing engineers** of **Genome's** **designed/coded directives** in the synthesis of individuals of all genomic-things are its **transcripts & proteins**. Note that enzymes are proteins.



The **Genome** of a viroid RNA synthesizes its daughter viroid **Genomes** (viroid RNA) using its usable chemical energy-containing nutritive internal contents of its host-cells of plants but it does not synthesize (or reproduce) its host plants; similarly, the lion eats flesh of its preys & its **Genome** synthesizes (or reproduces) daughter lions and not the prey animals eaten by the parent lions!!!!This is so because a viroid RNA is a genomic-thing (i.e., it is a living-thing according to the **fake sciences of Biology**). On the other hand, against this correct, obvious, concrete, and spectacular scientific truth, liars (**fake or false Professors**) are paralyzing the scientific progress of student children of all human races of the world by stating that viroids & viruses are nonliving-things (i.e., viroids & viruses are nongenomic-things).



Herebefore when the existence of viroids was not fully addressed/known, it was reported by the author of this paper that the smallest genomic-thing is *Porcine circovirus* whereas the largest genomic-thing is *Sequoiadendron giganteum* in USA. Now, it is updated that the smallest

genomic-thing is the **smallest individual viroid RNA** among viroids by replacing *Porcine circovirus* because viroids are subviral in size.



Science is **truth**, the search of **truth**, or (**all or none**) so that we don't teach & learn the way **liars** (mimicking parrots or misleaders) want but the way science is and to be. Science yells against **liars** because science is dynamic & self-cleaning from lie & liars.



Students of **Chemistry & Physics** had been ridiculing at students of **Biology** for the last several years, saying that biology is a nondeveloping stagnant branch of Natural Science thereby discouraging/demoralizing students, or that is crackingly painful to minds of students of **Biology**. Thanks to the identification of the automatic molecular machine termed **Genome**, pioneering the emergence of **true sciences of Genomology** and the dismissal of **fake sciences of Biology**; now, Genomology is the superscience or the science of number 1 priority (to make this planet a better place for humans to live) among the three branches of Natural Science and genomologists are superscientists for the spectacular & concrete reasons demonstrated by Genomology!!!!



Based on the universal reactions of matter, reupdated confirmation with the best of truth:

- ▶ Superpower in **Medical & Agricultural Sciences** in the entire world is **India** at present,
- ▶ Superpower in **Economy** in the entire world by dethroning USA with an excess of giant difference is **China** at present,
- ▶ Superpower in **Nuclear Military Science** in the entire world is **Russia** at present, and
- ▶ Superpower in **Power of Mind in Genomological Sciences** in the entire world with no rival & claimer is **Ethiopia** forever, **being nondethronable** endlessly for countably infinite number of the future generations to come (i.e., of all human races)!!!!



Genome is the perfect **unit of both structure & function** of all genomic-things. Now, see how genomologists and students of genomology have contemptuously ridiculed and laughed at those liars who stated that **cell** is the unit of both structure & function of all living-things (**Cell Theory**)!!!!!!



The **Perfect Law of Genomological Sciences** states that **Genome** is the **Unit of both Structure** and **Function** of all genomic-things.



Viroids are clearly **single-genomed** organisms; with the same observable scientific reality, viruses and single-celled genomic-things are **single-genomed** organisms because they

contain the specified single set of DNA or RNA for each individual of their specific species whereas multicellular organisms can be equivalently called **multigenomic** organisms. Remember that the single genome-size of man (*Homo sapiens*) is **46 DNA molecules** and not 46 chromosomes as it is erroneously said in **fake sciences of Biology** by mimicking (misleading) parrots.



In order to say anything a living-thing or not, one must in the **first** place have the **definition** of a living-thing into which living-things can fit; otherwise, he or she must be an absurd liar to be laughed at. On the other hand, biologists have openly stated that it is impossible to define what a living-thing is (i.e., they don't know the **definition** of a living-thing). It is this baseless daring of liars that makes them **absurd mimicking parrots** or **fake Professors** in this context.



Genomology is a **Giant Ethiopian Science** of educational asset contributed to all human races of the world by dismissing **fake sciences of Biology** that has been paralyzing scientific progresses of student children of all human races of this planet (Earth) for centuries.



Genomology consists of:

- ▶ pure genomology,
- ▶ genomotechnology,
- ▶ medical sciences, and
- ▶ agricultural sciences

Ethics: I declare that no ethical error is committed in the production of this paper. I also declare that I don't have any conflict of interest with anybody.

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the scientific world of Genomology. My thanks definitely go to genomologists who are involved in presenting video lessons of Figure 20.

Connect your computer to Internet. Steps of opening the video: Select, copy and paste the title of the video (only the blue colored & underlined) on Google search space on your computer desktop screen and then press Enter Key of your computer keyboard. Click Video. Now, click the slide with the correct Title of video you pasted because when the video is copied & pasted, several other unwanted videos will appear together. When video 1 ends playing, repeat the same steps for playing of video 2 etc.

Video 1: [Azeb Dagnaw New Ethiopian Music 2021 {Official Video} ምርጫ ሙዚቃ በአዲስ ዳጅው](#)

Video 2: [Hailemariam Mengist and setargew Mengist Zergent velfa ሀይለማርያም መንግስት እና ሰጠርገው መንግስት ዘረኝነት ይጥፋ](#)

Video 3: [Getnet Tememe - Yaterawal Fano ጌትነት ተመመ - ያጠራዋል ፋኖ](#)

Video 4: [ከፋለ ሞላ \(ዘቢደር\)-ይለያል ዘንድር \(Kefale Molla -Yeveal Zendro\) -New Ethiopian music 2022](#)

Video 5: [Chuchu Gebeyehuጅጅ ገበዬሁFano\(ፍኖ\) -New Ethiopian Music 2022](#)

Video 6: [መብራ መንግስት - ቁመህ ጡብቀኝ \(Mebre Mengiste - kumeh tebeegn\) - New Ethiopian music 2022](#)

Video 7: [Tewodros Yilak - Hugni Selam ሁኝ ሰላም - New Ethiopian Music 2022](#)

Video 8: [Mekuanent Yazachew - Yeamhara Lij Fano የአማራ ልጅ ፋኖ - New Ethiopian Music 2021](#)

Video 9: [Mengistu Mengesha - Ene Lebo መንግስቱ መንገሻ - እነ ሌቦ New Ethiopian Music 2022](#)

Video 10: [የማይነካውን አማራን ነኩብኝ - amharic music video - ከካሜራ ጀርባ የነበሩ ትዕይንቶች](#)

Video 11: [Bereket Mesele - Kelete Ayashu - ክልተ ዓያሹ - New Eritrean Tigrigna Music 2022](#)

Video 12: [Eritrean Song Lyrics Eliza by Kiros Asfaha ኤሊዛ ብኪሮስ አስፋሃ ምስ ግጥሜ](#)

Video 13: [Fyori Brhane - New Eritrean Music 2022 - Awdeamet - አውደአመት](#)

Video 14: [Melake Abraham - Eritrean music - መልአክ አብርሃም \(BAHGNA TV\)](#)

Video 15: [Tesfaldet Mesfin - 4ይ ግምባር New Eritrean Tigrigna Music 2022](#)

Figure 22: videos of musical films displayed in honor of the uniquely automatic molecular machine termed **Genome**.

References

- [1]. Moelling K, Broecker F. Viroids and the origin of life. *Int J Mol Sci.* 2021; **22**(7): 3476.
- [2]. Ding B. The biology of viroid-host interactions. 2009; **47**: 105-31.
Available at: DOI: **10.1146/annurev-phyto-080508-081927**
- [3]. Clark DP, McGeheeMR. Viroids are naked molecules of infectious RNA. *Molecular Biology.* Ed.3. 2019.
- [4]. Strauss JH, Strauss EG. Viroids and virusoids. *Viruses and human diseases.* Ed.2. 2008.
- [5]. Figure 7 & Figure 20, videos 4 & 5 of this paper.
- [6]. Rogers PJ, Brunstrom JM. Appetite and energy balancing. *Physiology and Behavior.* 2016; **164**: 465-471. <https://doi.org/10.1016.physbeh.2016.03.038>**Getrightsandcontent**
- [7]. Amin T, Mercer JG. Hunger and satiety mechanisms and their potential exploitation in the regulation of food intake. *Curr Obes Rep.* 2016; **5**: 106-112.
- [8]. Figure 20, videos 6 to 11 of this paper.
- [9]. Feleke E. Human Genome and origin of mitochondria. *European Journal of Biology and Medical Science Research.* 2022; **10**(4): 33-56.
- [10]. Feleke E. Effects of epigenetic groups & chromosomal proteins on human Genome expression by way of its genes and universal reactions of matter. *International Journal of Biology and Medical Science Research.* 2022; **10**(3): 26-58.
- [11]. Feleke E. Genomic diseases in humans and weaponizing universal reactions of matter. *European Journal of Biology and Medical Science Research.* 2022; **10**(2): 19-32.
- [12]. Feleke E. Dismissal of the fake term called Living-thing by Genomic-thing and universal reactions of matter. *European Journal of Biology and Medical Science Research.* 2022; **10**(2): 8-44.
- [13]. Feleke E. Genomology. *European Journal of Biology and Medical Science Research.* 2021; **9**(5): 1-25.
- [14]. Feleke E. Human Genome Response or Immune Response: human genome and its discrimination of self from nonself. *International Journal of Development Research.* 2021; **11**(12): 52358-52368.
- [15]. Feleke E. Genome-sequence, zygote, differentiation of embryonic stem cells into structurally different specialized body cells in humans: there is no “junk DNA” at all in the human genome!!!! *International Journal of Development Research.* **11**(12): 52705-52718.

- [16]. Feleke E. Role of genome model in type 1 diabetes mellitus and pathogenic mutation. EJBMSR. 2021; **7**(3): 35-48.
- [17]. Feleke E. Biological viruses are certainly living-things and switching off genomic metabolism. EJBMSR. 2018; **6**(5): 19-41.
- [18]. Feleke E. Dynamic and detailed genome model of living-things. IJDR. 2018; **8**(08): 22138-22152.
- [19]. Feleke E. Immune responses against autointracellular pathogenic genomes or cancered cells. IJDR. 2018; **8**(07): 21489-21496.
- [20]. Feleke E. Active and concrete evidences about sexual reproduction and life cycle in the parasitic generation of *Strongyloides stercoralis* in human host. IJDR. 2018; **8**(07): 21385-21390.
- [21]. Feleke E. Spectacular presence of parasitic males generation of *Strongyloides stercoralis* in human host. Microbiol Res Int. 2018; **6**(2): 16-23.
- [22]. Feleke E. Genome model of living-things, definition of a living-thing, and the position of biological viruses among living-things. IJCR. 92017; **9**(07): 53764-53778.
- [23]. Feleke E. Superproof about sexual reproduction and life cycle in the parasitic generation of *Strongyloides stercoralis* in human host, Afro-Egypt Infect End Dis. 2016; **6**(1): 1-6..
- [24]. Hammann C, Steger G. Viroid-specific small RNA in plant disease. RNA Biology. 2012; **9**(6): 809-819.



(a)



(b)



(b)



(a)

Figure 23: National flags of (a) Ethiopia; and (b) Eritrea.



Figure 24: Feleke Eriso Orballo BSc, MSc, PhD.

Feleke EO is:

- ▶ the **first** integrator of **Genomology**, **Chemistry**, & **Physics** by way of the same language of **Universal Reactions of Matter**,
- ▶ the **first** interpreter of the fact that both the **undesirable genomic changes** that result in genomic diseases and the **desirable genomic changes** in normal human genome which result in normal phenotypes in the individuals synthesized are **countably infinite** in potential number of kinds,
- ▶ the **first** genomologist to prove the fact that viruses are certainly **genomic-things**,
- ▶ the **first** genomologist who verified the best of truth with spectacular & concrete evidences about the fact that viroids are **genomic-things**,
- ▶ the **first** genomologist to verify that the **Genome's designing engineers** in the synthesis of individual of all genomic-things are its **transcripts & proteins**.
- ▶ the **first** genomologist to prove that **Genome** is the **unit of both structure & function** of all genomic-things by dismissing the **fake Cell Theory** which stated that **Cell** is the unit of both structure & function of all genomic-things,
- ▶ the **first** scientist on this planet (Earth) to define what a scientist (living-thing or genomic-thing) including himself as a genomic-thing, Before him, scientists didn't know themselves but they were creating other sciences,
- ▶ the **first** scientist to interpret what the actual autointracellular pathogen is in diseases of cancer & diabetes mellitus type 1,

▶ the **first** scientist to interpret that **immune response, epigenetic modifications/changes, syndromes, and symptoms** observed are the evidential **supersensitive** responses of the human **Genome**,

▶ the **first** disqualifier & disprover of **Endosymbiotic Theory** about the origins of Mitochondrion & Chloroplast published by the authorship of **Lynn Margulis**,

▶ the father of all scientists of all sciences of this planet (Earth) with no chance for exception,

▶ the father of the **Perfect Law of Genomological Sciences**,

▶ the father of **Genome Model**,

▶ the father of **genomic-things**,

▶ the father of **genomosphere** that is in sunlight the whole 24 Hrs as the sun rises & sets in the genomosphere,

▶ the father of nonstopping automatic generations of **genomic reactions** in every species of genomic-things from viroids up to angiosperms or humans,

▶ the father of **superscience** (science of nonstopping automatic genomic reactions for countably infinite number of generations),

▶ the **universal omniscient** in dismissing fake sciences of **Biology** & in generating correct sciences of **Genomology**,

▶ the son of rain-bow colored **Ethiopia** by birth,

▶ one of the **Unique Educational Assets** of all human races of this planet that money cannot buy, and

▶ the Superpower in **Power of Mind in Genomological Sciences** in the entire world with no rival & claimer forever!!!!

★ **Genome** is the only **automatic molecular machine** that synthesizes all genomic-things & itself including you & me!!!!