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Biosynthesis of DNA for disease detection

Nur Aifiah Binti Ibrahim
Department of Statistics Malaysia Johor, Tingkat 14, Menara Tabung Haji, Jalan Ayer Molek, 80 000 Johor Bahru, Johor, Malaysia.
Corresponding author: nuraifiahibrahim90@gmail.com

ABSTRACT

An aquatic plant breathes through pores in the atmosphere, creating a bacterial loop cycle. Harmful toxins and pathogens invade the foreign substrate and recessive genes. The purpose of this study is gene editing and gene expression containing information to produce proteins and fight back pathogens. The Methodology of this study is the biosphere of RNA involved in the transcription and translation of DNA to detect several diseases. It is a narrative review of DNA biosynthesis in identifying the mutations for genes, chromosomes, or proteins. Genetic alterations in cancer development have urged many researchers to continue their expedition to find prevention strategies and treatments that are curable for the disease. Thus, gene therapies include gene augmentation, gene slicing, gene suicide, and gene editing by treating certain diseases. The momentum of replacing a damaged gene with a healthy gene using gene therapy in treating a wide range of diseases is quite impressive. An inborn child will have a healthy gene by inheriting it from the parent to the infant for further development. Circular RNAs are meant for protein synthesis. The nutrients are the building blocks of amino acids. The regrowth of new tissues is used to rejuvenate organ transplants. It is highly apprehensive for microbial cells to produce on their own. Not all bacteria are good, but the ones that fight off pathogens in the circular loops of plasmids. The DNA of bacterial cells is composed of chromosomal traits of inheritance in providing nutritious meals and becoming an antibody.

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INTRODUCTION

The copied DNA sequence is in the RNA transcription. It is regulated by elements and bonded by the splicing factors and other attachments. The expression and configuring of splicing agents are well-preserved within the cells and tissues. Further information on the circular RNAs is associated with diseases, cellular locations, and non-coding RNAs (Yu & Kuo, 2019). Two pathways monitor cell mutation and division, including MAPK/ERK and PI3K/AKT (Yu & Kuo, 2019).

In cancer progression, the epithelial-mesenchymal transition initiates it by allowing the circular RNAs to accumulate (Yu & Kuo, 2019). Besides that, circular RNAs also regulate unique functions in different cellular structures (Yu & Kuo, 2019). It also regulates the activation of insulin via beta cells in pancreatic islets (Yu & Kuo, 2019). Most profoundly, as protein shifters that carry different cellular functions. They are the fundamental and significant microbes' nutritional basis that regulates and supports bodily functions, especially in growth and maintenance.

Thus, molecular structure and biochemical reactions in circular RNAs remained limited. It is a rough guide and explanation to help us understand its pathophysiology more clearly. The rejuvenation helps circular RNAs breathe again despite the interaction of different modes in circular RNAs bonding. It turned out that this paper review may provide some solutions and answers to the mystery of genetic material.

Based on a mathematical approach, the circular RNAs had a canonical site for maturing and translating (Zhou et al., 2020). Since RNAs are eukaryotes (organic cells consisting of a membrane and nucleus where the cytoplasm resides). The interaction between introns and exons is unbearable in regulation and gene expression (Fatima, 2023). With alternative splicing, a single gene consists of multiple ribonucleoproteins (Fatima, 2023). Introns find a way to engage with cryptic splice sites to make the sequencing more meaningful (Fatima, 2023).

There are limitations to the formation of a circular RNA. The non-linearity structure of RNA and polypeptides (reacts as a binding site in transcribing and producing more proteins for disease prevention and mitigation). The form of protein is the molecular one responsible for tissue repairing body tissues and organs. However, the drawbacks are a lack of activation target and a low localized position of the gene coding sequence. Another possible way to incorporate sufficient information in targeting different sites in the body is to have a direct exchange coding sequence between two genes. The continuation of the amazement of a circular-shaped DNA's structural and molecular properties can be elaborated further in the following sections. The genetic variant provides them with information on altering a DNA nucleotide sequence regarding pathogenicity. Thus, genetic test kits provide them with the initiative to take control and manage the different types of diseases.

Heat and any bacterial infection may cause the DNA coding due to a gene virulence in tubulating the pathogen's ability to replicate itself of a resistant host infection. It sounded like it was going astray. There are several issues in making DNA a disease detection, which is a societal problem. For instance, gene discrimination builds up their rights to live in equal treatment by coping with justice. It is a research study in which the biological mechanisms and pathways create a different environment for pathogens and infected hosts inside the human body. The research novelty of this research is reframing and explaining the thorough biochemical and biosynthesis of DNA disease detection. Thus, the research objective is to fix the missing pieces in developing a new biotechnology for disease detection.

METHOD

Unlike other splicing genetic materials, introns provide less information on amino acids. Mammals and plants have the most introns compared to exons (Fatima, 2023). Introns are lost travelers assisted by exons. In the end, they are combined and form a new kind of RNA synthesis called spliceosome. Gene expression is a turnover for a cell to form a biomechanism between RNA and proteins. It is more to digestion and nutrient absorption as the food enters the body. The joint of two chromatoids at the epicenter of the centromere forms two sister chromosomes and two daughter cells after cell division (Gottlieb et al., 2018). Based on the physical attribute, gene variations were made by duplication, deleting, and exon shuffling (Fatima, 2023). Similar to the recombination of genes for the reencoding and reordering of the DNA sequences (Gottlieb et al., 2018).

The splicing process is described more generally by the protein synthesis. Splicing is to combine a reattachment of a human gene in the form of insulin into a bacterium (Merriam-Webster, n.d.). One of the purposes of splicing the gene is to obtain a synthesized protein. By using recombinant DNA technology, gene sequencing has made a quick breakthrough in combining or joining with another source of DNA sequencing to form a new sort of protein (Helmensteine, 2020; Homologous Recombination, 2024).

The concept of gene editing is to modify the genes of living organisms to improve their health status by finding the right cure for the treatment of diseases (Miller, 2020). For instance, the identification of cancers puts the patient at health risk. However, not all gene editing is permissible since several diseases use the same medical procedure, such as embryonic cells passed down from the carrier with modified attributes (Miller, 2020; Britannica, n.d.). It is unethical since it involves safety and morality as a human who cannot go against His creation.

Due to a high volume of surface area and efficient energy, the membrane of the outer layer of a cell gives a circular shape in place. The organelles and microorganisms can stay still and hold themselves inside the cell. Thus, the magnetic field or force had positioned the locus or the center point as the particles are in a circular motion. To study the mysteries and curiosity in examining the reasons behind circular-shaped DNA and RNA, a narrative review may uncover and explain more elaboratively the natural mechanism of unity in a cyclical environment. The reimplementation and reinterpretation of DNA sequencing consisted of various gene theories and preimplantation for detecting several diseases. It is a preventative health in which there are strategized ways of detecting more biological pathways in controlling and managing the disease. There are also alternative ways in which DNA alterations employ technologies in earlier detection of a disease progression. For instance, a germline by an inborn infant from the parent assists them in finding the right kind of formula for reconstruction of the defaulted hereditary disorder.

RESULTS

Circular RNAs are non-coding RNAs because they are for cap-dependent translation (Wang et al., 2022). It is a ribosome, an insightful structure embedded in the 5' cap to stop the translation process from occurring. It is a short trip for such an intercellular structure to travel. Within that notice, the binding site is used for the protein synthesis process. By combating carcinoma and non-carcinoma, they are in for winning. Further, adjustments will be made after the whole process has occurred.

Table 1. The differences between circular and non-circular RNA.

	Circular RNA	**Non-circular RNA**
Stability	More stable	Less stable
Resistance	Enable to withstand the exonuclease digestion.	Lack of ability to withstand such localized situations.
Formation	An enclosed loop of continuous strands.	There is no enclosed environment in a continuous process of looping.
Selectiveness for Disease Detection	Due to the chain of events for several interruptions in the biological pathways, it is easily detectable and noticeable.	Gene modulation is a temporary effect that cannot be easily detected under the radar.

The mRNAs are in a chain of amino acids turned into a new set of proteins and localized in a new polypeptide chain. The ribosomes are recyclable for future use in creating new protein synthesis. In addition, the carboxyl group of proteins combined with molecules to form water in the dehydration of the body system. It is a multiple amino acid content that is automatically combined with a water molecule in dehydration. Thus, the process is the opposite of what it is for.

The deep learning model of a DeepCirCode, to predict back-splicing for circular RNAs formations in humans (Wang & Wang, 2019). Thus, the input nodes for machine learning algorithms, support vector machines, and random forests are nucleotide sequences (Wang & Wang, 2019). As mentioned before, they point out that introns are behind the formulation of circular RNA (Wang & Wang, 2019). The deep learning model does not have the complexity to explain it further. For the positioning, weighted features give a standardized outlook for each node to connect the dots and network, forming a balanced relationship in describing and interpreting the results.

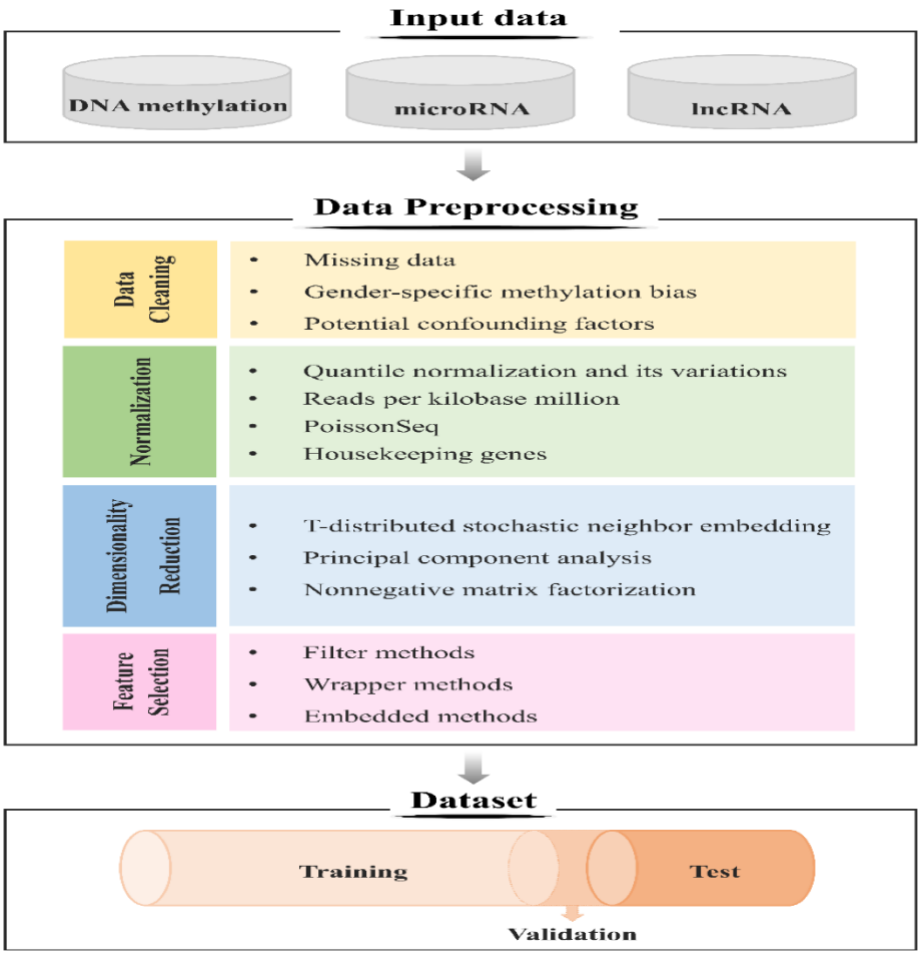

Figure 1. The different stages of the data preprocessing stage before the output of predicted outcomes. (Nguyen, T. M., Kim, N., Kim, D. H., Le, H. L., Piran, M. J., Um, S. J., & Kim, J. H., 2021).

Telomerase has a role in rejuvenating the cells in the body. Yeast telomerase is a genuine organism, including capping, replication, recombination, and transcription (Aguilera et al., 2022). Capping is the process of making some alterations to the polymerase RNA strand. In replication, on the other hand, the genetic factors are rewritten in the cells. Recombination, by the name, is to

reproduce new alleles and bring up their new characterization. Then, transcription brings about the copies made by RNA on the DNA.

The process is to alter and modify some new characters to bring their genome factors into place. Telomeres, aging, and wellness are incorporated with several activities and regulations to prevent stressful events and cancer (Aguilera et al., 2022). In other words, the localization of C-circles to Nuclear Pore Complexes (NPCs) tends to send in and off the macromolecules in and out of the nucleus and cytoplasm (hold the organelles up together within the cell membrane to prevent them from damage). The presence of C-circles in yeast formation by the type II recombination involves intrachromosomes (inside the chromosome), and the chromosome is an invisible component found in the nucleus.

Telomerase length influences cancer immortality (Jones et al., 2023). The C-circle is a circular DNA progressively transformed into an elongated TERT-immortalisation (Jones et al., 2023). Another type of circular bonding occurs for the T-circles (Jones et al., 2023). After undergoing electrophoresis, these circulars are often intact with each other to signify the amplification of the process itself (Jones et al., 2023). Then, the cultured cells were left out in the open to observe some changes in the part of the immortalization (Jones et al., 2023).

As mentioned before, the retention of C-circles after the digestion of a linear DNA returns its circular shape along with hyper-elongated telomeres (Jones et al., 2023). There are heterogeneous subpopulations of cellulase as well for the strong bonding between telomerase activity and C-circles (Jones et al., 2023). The telomeres went through a telomerase or Alternative Lengthening of Telomeres (ALT) pathway for elongation (Robinson & Schiemann, 2023). The extrachromosomal C-circle is intact within the DNAs when approaching the ALT pathway (Robinson & Schiemann, 2023). The C-Circle Assay is a quantitative variable that describes the activity of ALT in mammals to measure the lack of easiness and the number of anxiety attacks after undergoing such a process (Robinson & Schiemann, 2023). For quick and slight detection, Polymerase Chain Reaction (PCR) provides them with an accurate reading on the amplification of C-circles to fasten the reading process of tumor detection. There were sudden drawbacks between molecular markers and ALT (Robinson & Schiemann, 2023). For the combinatorial approach in measuring Telomere Maintenance Mechanisms (TMMs) (Robinson & Schiemann, 2023). There is a strong positive relationship between the absorbance of light and DNA concentration as the heat will denature the gene codings into two strands and merge them into a nucleotide (genetic information produced in proteins). The principle behind CT measures the average telomere length in a DNA sample to have a strong negative relationship with DNA concentration (Robinson & Schiemann, 2023).

The recombination of DNA consisting of four molecules, adenine, thymine, cytosine, and guanine, will undergo a crossover to have the remaining recombined chromosomes through a replication process joined by a nucleotide. Closing is an identical process that requires a gene or a DNA sequence. Then, a porous membrane pokes holes over the surface to allow them to be probed into single strands placed layer by layer. These are called open reading frames in which a fragment of DNA is in a code breaker for a specific protein or phenotype (characteristics of a gene). Two groups of nucleotides that make up DNA are cytosine and guanine, which characterize DNA for protein synthesis.

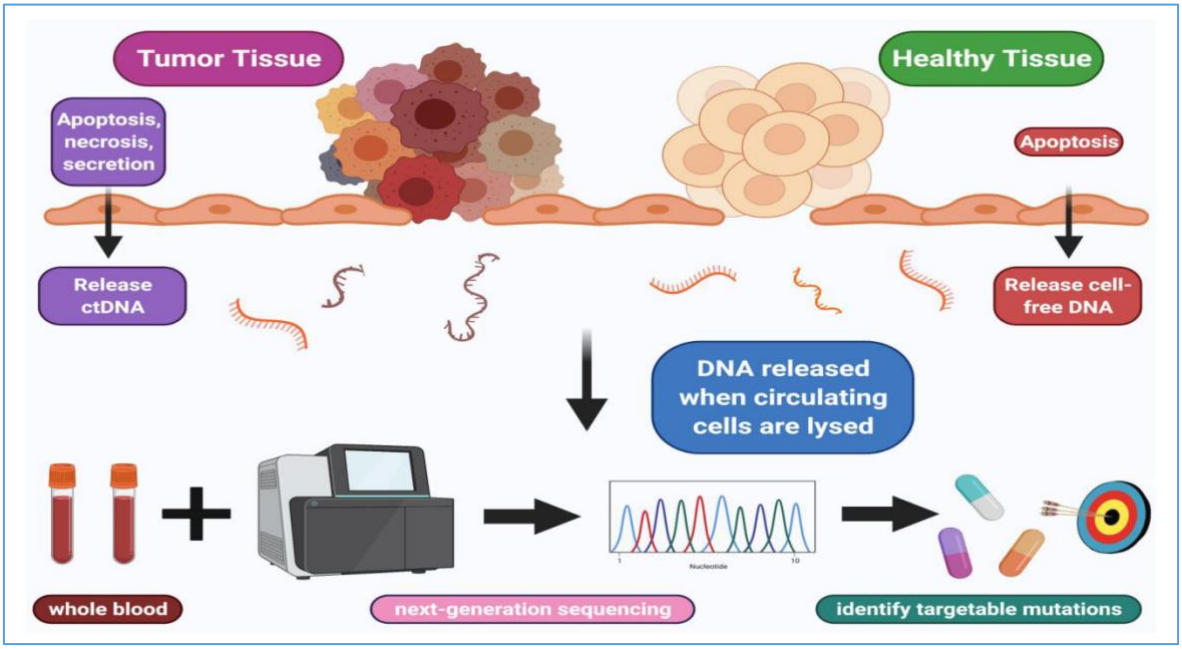

Figure 2. The early detection of a cancerous disease using a blood test in identifying the mutated cells and infection hosts of malignant cell bodies. (Adashek, J. J., Janku, F., & Kurzrock, R., 2021)

Microbes are uprising in several global pandemics (Bottery & Brockhurst, 2023). They are coated with plasmids to draw a linkage with another type of pandemic (Bottery & Brockhurst, 2023). In terms of adaptability, they are having trouble with their surrounding. Cell division also determines the survivability of a microbe when incorporated with a different surrounding. Although plasmids are much smaller, they intend to hook themselves up with a bacterial host to adapt to the environmental surroundings. The abnormal changes in their bodies are due to epistasis, in which the genetic inheritance is modified and altered by the mutation of exchanging different characteristics of disease developments dependent on other mutations.

The interesting facts about plasmids concern horizontal transfer between cells and antibiotic resistance (Dewan & Uecker, 2023). Horizontal transfer is the shifting of movement of genetic information across a pool of genomes. The ineffectiveness of an antibiotic is due to neutralization deactivating and placing a placebo effect on the patients. At first, the simplest form of a plasmid will place itself onto a host and multiply in a great quantity to allow themselves to copy on one another in producing another. A stochastic model of biological effects can be used to model biological populations of the plasmids. Since they are obligate pathogens, they have gone through the dynamics of antibiotic resistance. The combination of two replicons is reproducing by itself with the power of nature for the cointegration process. Then, cell division occurs in forming new cells for growth and rejuvenation of body tissues by the natural cycle of life in improving their health condition.

Nowadays, it is a breakthrough for the plasmids to have a genetic engineering preview. Imagine a small piece of DNA from a fragment of plasmids trace and signifies the cloning. Then, a recombinant plasmid with an attempt to replicate that allows itself to swim across the looping cycle. However, it is not for extrusion of looping to be able to engage itself with organisms in maintaining and repairing the tissues. In determining the copy numbers of plasmids, the parallelized assays of

supercoiled plasmids in forming bacteria and macrophages. Biosynthesis consists of by-products that form chemical compounds in the living system. The cultural cells of plasmids introduce DNA for the bacterial cells to incorporate genes in sending enough information. Therefore, stable and prolonged cellular protection against DNA degradation (Lee & Pellegrini, 2022). By DNA response and engaging with accidental DNA recombination, the damages can devastate the early detection of disease (Lee & Pellegrini, 2022). For protection, DNA polymerase by DNA replication by rechecking DNA sequences to avoid any synthetic errors in the future. Nucleotide bases also have interchangeable exchange, the mispairing of the strand.

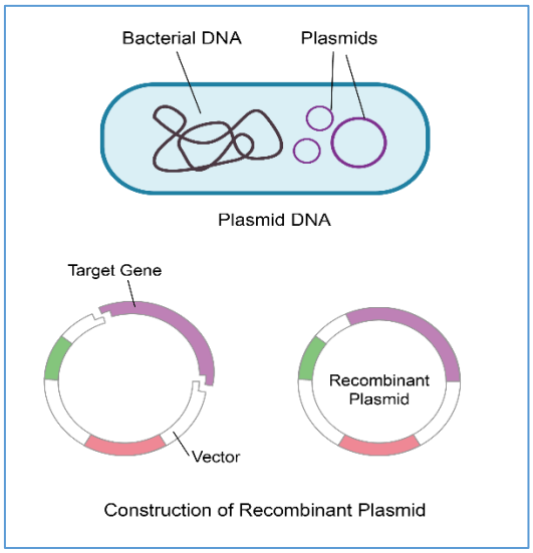

Figure 3. The structural figure of a plasmid, a self-replicated DNA formed by manipulating the genes.

DISCUSSION

A more detailed process to understand the biological reasons for the incident is still under research for future reference. It shows that circular RNAs have multipurpose and biomarkers for disease progression. It would last longest in a year to avoid the exonuclease degradation to support the stability of its metabolism and from cutting the ends of DNA. Even the ends of it carry information for the recovery phase and avoid getting evaporated due to heat and increased temperature.

The circular RNAs with catalytic enzymes fasten the formation of amino acids in a chain of proteins in a molecule. In other words, after undergoing hydrolysis, the enzymatic effect of a protein molecule is to chain into a new polypeptide bonding by synthesis. Also, RNA is used to tap the 3 and 5 ends. In the absence of thymine, one of the components of a bacterial cell, plasmids lose their credibility in producing more proteins that are a part of their body cells' functionalities.

Then, the nucleic acid is in an enclosure for a methylation process. In addition, the information on gene sequencing can be obtained by inserting cytosine in the chain. For instance, the immune system of DNA sequencing and the removal of unwanted gene coding to be more activated and stimulated with the disease attack. Thus, embryonic development is protected by the gene barrier. Then, a more specialized unit of enzymes, gyrases, and topoisomerases will be created to ensure the stability of the supercoiling of RNA (Roberts, 2024).

The next destination would be the ribose cleavage site, where a changeable gene placement occurred. It also acts as a barrier against external pathogens and infectious viruses. The process is

only about the nucleotides, such as adenine, thymine, cytosine, and guanine. Uracil is another one. It does not degrade for gene expressions. Incredibly, in a shape where the virus mutants are nowhere to be found due to the removal of defective RNAs.

Genetic disorders have a measurement meter for detecting mutations in a person's medical history and accumulations to a prognosis. However, the information in the disease profiling is still unidentified across the board. New medical breakthroughs and gene scans nowadays only require an instant result with less cost. The PCR is an acquired testing kit for genetic variants in identifying a new and profound disease. Hypothetically, one gene is for one enzyme, but one enzyme has different peptides to build. Amino acid is an element block of protein that neutralizes pathogens, such as bacterial infections. The chromosomal rearrangement detection using genetic testing has the jack of all trades to pursue its continental blood test and swab test. Karyotyping may detect the translocations of a new chromosome in a cancerous cell underneath the microscope.

Cell divisions are found and enclosed in body growth and healthy tissues to rejuvenate by themselves and enriched with multivitamins and minerals. Gene expressions are explorable and recognizable for diseases (Gaynor, 2016). For instance, the internal and external factors of development within the disease itself may caused by toxicants, and the inner self has gone through depressing and saddened emotions to unveil (Gaynor, 2016). Diabetes and cancer are two types of diseases due to hormonal imbalances referred to in the genes (Gaynor, 2016).

Meiosis is the division of a single cell into four daughter cells undergoing different phases of interphase, prophase, metaphase, anaphase, telophase, and cytokinesis (Chromatid, n.d.; Your Genome, n.d.). During the process, the imprinted chromosomes similarly appear under a microscope. The two sister chromatids carry the same genetic information. The pair also underwent a crossover to determine the possible exchanges that could occur in genetic variation. Cytokinesis is another two tissues combined to form another body structure (Chromatid, n.d.; Your Genome, n.d.).

Thus, DNA polymerase does play a part in ensuring the continuation of prolonged genetic information through generations from time to time. The dislocation of poles and the deletion effect of the separation between two chromosomes have caused them to have magnetic attraction by one cell only. There is a hereditary risk in having genetic testing taken for further analyses on the development of cancer at an early stage. There is still miscommunication among healthcare professionals during a hard time.

There is a cancer adjustment of risk to be made by referring to a new assessment of genetic material to do the job (Dusic et al., 2022). The first task is to identify those at risk, deliver the testing kit to the targeted individuals, and finally, follow-up until the study is complete (Dusic et al., 2022). However, there are limitations in addressing the issues with the availability of genetic testing kits in delivery for follow-up care (Dusic et al., 2022). It was like a multi-level of boundaries in keeping up with the progress. A population-based setting to a primary care setting shows it as the center of attention. In a more simplified explanation, the genetic risk assessment is eligible for follow-up care.

With outstanding performance and the individual components of making it happen, there are multiple levels of barriers to the current genetic testing cancer risk assessment (Dusic et al., 2022). In addition, it was on a case-by-case basis (Dusic et al., 2022). Then, at a system level, the implementation of genetic testing has not been fully integrated into the Electronic Health Record

(EHR) as it is still at the beginning stage and has not yet been in the health industry. The cost of coverage is still understated, and the reasons behind the additional costs are not fully explained.

Thus, there has been a significant increase in genetic testing of cancer kits in the urban setting of the community (Dusic et al., 2022). The genetic risk of uptaking increased eightfold from the pre-implementation to the post-implementation at varying success (Dusic et al., 2022). Obesity is due to environmental factors, lifestyle, and genetics (Duarte et al., 2024). More thorough examinations using nutritional genomics and nutrigenetic tests stand out (Duarte et al., 2024). Another discovery found that monogenic obesity encountered by Mendelian involves genetic variations, which are typically rare (Duarte et al., 2024). However, polygenic obesity is difficult to detect as it is non-deterministic (Duarte et al., 2024). The small contribution of genetic testing over the years tested the patience of clinicians throughout the world.

The high intake of processed food happens from generation to generation. Thus, the previous history of obesity is detectable and a basis for referral on the development stages of the disease. Environmental and behavioral changes alleviate obesity (Duarte et al., 2024). The emerging of diet planning is genotype, phenotype, diet, metabolic markers, and intestinal microbiome (Duarte et al., 2024). The exposome level is equivalent to precision nutrition (Duarte et al., 2024). The diet on genes, proteins, and metabolites in acquiring the nutrition genomics in synthesizing proteins, making changes to metabolism activities on the development of obesity (Duarte et al., 2024). Genetic testing is for symptomatic individuals to detect changes in dietary patterns and behavioral changes in mitigating the risk of developing a disease (Duarte et al., 2024).

America's staple food, including milled white grains, consisted of glycaemic response (Gaynor, 2016). Sugary and sweetened beverages convert healthy carbohydrates into fats by developing health conditions, including cancer, cardiovascular events, inflammation, obesity, and aging bodily systems and functional organs (Gaynor, 2016). Phytochemicals are plants made up of sterols that regulate the amount of cholesterol inside the body. Food plants are edible and full of flavonoids, protective agents for cardiovascular events, diabetes, and cancer.

Sterols and soluble vitamins provide the essentials of nutrient intake for cellular metabolism and energy uptake. The removal of cholesterol from the body after digesting a plant-based diet causes the body to have lower cholesterol levels. It is advisable to have non-supplements of plant-based nutrient intake to avoid insoluble and undigestible fat and water content. Not just a plant-based diet consists of sterols, wheat, and brans as substitutes to avoid having stomach problems.

Due to its long persistence, DNA may also reoccur after cell death when identifying any gene modulations for predicting a disease. For instance, regulating insulin can control and manage blood glucose for diabetes prevention. There are other ways to prevent harmful substances from entering the nucleus of protection, which acts as a barrier to the DNA, such as wearing more protective sunscreen or moisturizing to keep the skin clean and hydrated from continuous exposure to the Sun. The opposite reaction to a chemical reaction, biophotons may alter the DNA in the mitochondria of the cells, forming a healthy and promoting their well-being.

LIMITATIONS OF STUDY

This research paper is based on previous and current knowledge of the biological characteristics of DNA. Therefore, it is an up-to-date finding with no proper theory to support it. Thus, this paper is based on facts and information from up-to-date references. It is not an opinion or expressive thought, to begin with, but more to scientific findings and research to come. In the future, this paper may contribute some basic understanding and illustrate an overview of the topic. The journal's content is not only limited to theories and concepts but also data availability. The research design itself stated a narrative overview of the topic and beyond that is more limited to scientific boundaries.

CONCLUSION

Multiple imprinted coding sequences for plasmids remain inside the bacterial cells. The combination of the human gene and plasmids to make a single DNA requires a restriction on enzymes and DNA ligase (Restriction enzymes, n.d.). The overhanging of the ends of chromosomes ended up with telomere circles for further protection. Ligase is an enzyme in gaseous exchange between oxygen and carbon that forms carbon dioxide. Thus, the overall process is a standardized polymerase chain reaction looping cycle. It is one of the well-known methods of handling an individual's genetic properties in the healthcare sector. The sensitivity of gene testing is approaching changes in temperature at a varying state. At a molecular level, the level of exposure and constant repetitive cycles of the genomic characteristic for early disease detection is impressive. For instance, cancer growth cells and predisposing factors of obesity are managed and controlled by reaching optimum results for dietary changes and medical prescriptions. Besides being a lifeless cell, DNA is the fundamental basis for growth, rejuvenation, and development. It can be reversed, but some of them cannot. Therefore, DNA is a major contribution to various fields. In terms of medicine, red blood cells provide biological evidence for a recombinant of DNA to avoid utter contaminants from the outside world that are no longer foreign to them.

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