DNA is a Blue Print of Life: A Yoga-Based Review

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Abstract
This paper presents a yogic analysis of how DNA is the blueprint of life. It begins by exploring the concept of DNA as the foundation of life from a yogic perspective. It then looks at how DNA is the root of the physical body and how it is the source of all that is living. It then examines how DNA works as a template for the functioning of the body, and how the yoga practice of meditation can be used to access and understand the information contained in DNA. Finally, it discusses how yogic teachings can be used to help us better understand and appreciate the power and importance of DNA in our lives. Overall, this paper highlights how a yogic perspective can help us gain insight into the true nature of DNA as the blueprint of life.

Keywords: DNA; Yoga ; Telomerase; Meditation; Replication

Introduction

DNA is called the blueprint of life because it contains the instructions needed for an organism to grow, develop, survive and reproduce. DNA does this by controlling protein synthesis. Proteins do most of the work in cells, and are the basic unit of structure and function in the cells of organisms. DNA is called the blueprint of life because it is the instruction manual to create, grow, function and reproduce life on Earth similar to a blueprint of a house**[1, 2]**. In 1869, FriederichMiescher discovered a substance called "nuclein", managing to isolate the first known pure sample of the material. Later his student Richard Altmann would coin the term "nucleic acid". Much later in 1953, James Watson and Francis Crick worked together to discover the structure of Deoxyribonucleic acid or DNA, establishing an understanding of its function and changing the science of biology forever.

"DNA was the first three-dimensional Xerox machine." — Kenneth EwartBoulding

DNA is frequently referred to as "the blueprints for life." Every organism that we know of depends upon proteins to live and DNA is the macromolecule that stores the information needed to create all the proteins needed for life. The proteins that DNA enables the encoding of come together to forms cells, tissues, and organs. Whatever it is that organizes those proteins together could be thought of as the blueprint for those structures. The Structure of DNA

DNA is a double-stranded molecule, made up of two single chained molecules wrapping around one another. This is called a double helix structure, each strand of the helix consists of four different bases and the strands are connected to one another via a backbone consisting of sugar

molecules. The four bases are adenine, cytosine, guanine, and thymine, usually abbreviated as just A, C, G, and T. The bases fit together into base pairs, with A matching with T and G matching with C. Any order of these bases on a strand of DNA is referred to as a sequence, and each sequence is paired with the complementary sequence on the other strand. Therefore, a DNA sequence with CTAATCG would be matched with a sequence reading GATTAGC. The base pairs of DNA are linked together and a molecule of DNA is tightly coiled around itself to protect the bases from interacting with other chemicals in the environment. However, considering DNA is supposed to be the blueprint for life, this fact makes reading the blueprint hard. The DNA strand has to be "unzipped" for a sequence of DNA to be read. This is done via a molecule called RNA Polymerase which splits the DNA apart at a single spot. The RNA polymerase then "reads" the exposed bases and creates a long single strand of RNA. RNA uses the base uracil, U, instead of T, so A pairs with U in RNA.

"Genes are like the story, and DNA is the language that the story is written in." — Sam Kean

The RNA now has the data for life, the blueprint necessary to create proteins. When proteins are synthesized in this fashion the RNA that was constructed is referred to as messenger RNA or mRNA.

Building the Structures from the Blueprints

The next portion of the construction of proteins is generally the same in all organisms, although it may vary just slightly organism to organism. Messenger RNA connects to ribosomes in the cell, which are structures that work like a protein factory. The sequence that the mRNA holds is transferred to the part of the ribosome where it is combined with amino acids. The creation of amino acids differs from the creation of strands of RNA. RNA is just a one-to-one translation of bases, whereas when creating proteins three bases of RNA are examined at a time and the corresponding three-base-sequences are specific amino acids that link up with each other to create proteins.

In essence, the DNA sequences are transferred to the mRNA chain which gives the information needed to the ribosome which builds proteins. Every part of your body is handled through this system of protein construction, which is why DNA is so often called the blueprint for life (see Figure 1).Given that RNA has the ability to carry genetic information through chemical bases as well, why is it DNA and not RNA that acts as the blueprint for life? Researchers have found that RNA can form a double helix as well. Does this mean that RNA could carry out the role of DNA? Not quite, because as it turns out adapting to a double helix form makes the RNA rigid and unable to accommodate nucleotide binding. DNA actually undergoes a subtle change in structure when it comes into contact with other chemicals, like when it is bound by a protein or receives damage of some sort**[3, 4]**. After the chemical intrusion is dealt with, DNA then changes back into its recognizable double helix structure. DNA's ability to transform like this, combined with its double-helix structure, is likely what is responsible for its ability to keep a genome stable. However, while researchers found that DNA was able to move in response to chemical intrusions, and thereby keep a genetic code intact, RNA strands simply came apart at the place they were altered by chemicals**[5, 6]**. So why is DNA able to morph in response to threats while

RNA can't? It's believed that RNA's double helix structure is one that is very compressed and that DNA's relatively loose and uncompressed structure, by comparison, gives it greater flexibility and functionality.

A Better Metaphor Than Blueprints?

The metaphor of blueprints has long served to describe DNA, yet some people argue that the analogy is misleading and perpetuates a view of DNA that undersells its complexity. You can't have parts of a real blueprint doing different things under different conditions, but this is exactly what DNA does**[7, 8]**. There are very few scenarios where traits are directly expressed by genes, but a single gene can play a role in the expression of many different traits and systems. The genes found in the DNA can interact with each other to produce a variety of different effects. This means it is more complicated than simply saying: "This DNA sequence codes for this thing."

"DNA neither cares nor knows. DNA just is. And we dance to its music." — Richard Dawkins

A better metaphor might be computer programs. DNA could be thought of as part of a large computer program, working together to carry out specific tasks. Some chunks of code are always running, while others run at only certain times or under certain conditions**[9, 10]**. The DNA is analogous to bits of code giving instructions to the larger system's hardware.

Metaphors and analogies shape the way we think, so there's an argument to be made for having as accurate of a metaphor as we can. However we choose to refer to it, what cannot be denied is that without DNA's miraculous structure the life we see all around us wouldn't exist.

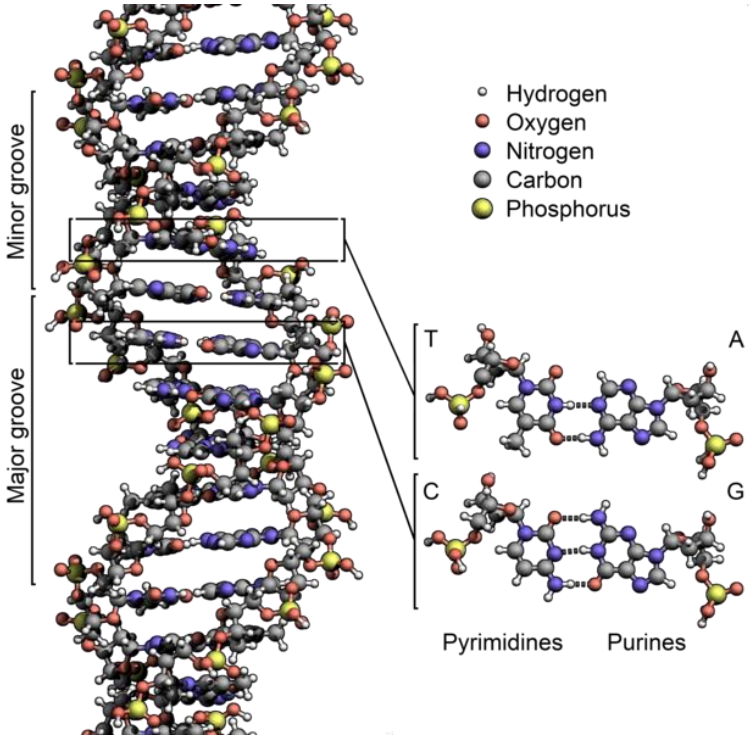

Figure 1. Structure of DNA and its constituents

DNA Replications Controlled by Hormones

DNA replication is a fundamental biological process by which genetic material is copied and passed on from one generation to the next. The process is tightly regulated, with numerous hormones playing a critical role in controlling the rate and efficiency of DNA replication in living organisms. In this essay, the role of hormones in the regulation of DNA replication will be discussed, with particular focus on how these hormones interact with the various components of the DNA replication process**(**see **Figure 1)**. The replication of DNA is a complex process that requires the coordination of a variety of proteins and enzymes. During DNA replication, the double-stranded DNA molecule is unwound, and the two strands of the molecule are separated. Each strand then serves as a template for the synthesis of a new complementary strand of DNA. The process of DNA replication is highly regulated, and hormones play a significant role in controlling the speed and efficiency of the process. The hormones that regulate DNA replication come from several different classes**[11, 12]**. The most commonly studied hormones are glucocorticoids, which are produced by the adrenal cortex. Glucocorticoids act on the enzyme topoisomerase II, which is an essential component of DNA replication. They can either stimulate or inhibit the activity of this enzyme, depending on the concentration of the hormone. Glucocorticoids also regulate the activity of DNA polymerase, which is the enzyme responsible for synthesizing the new strands of DNA. Other hormones involved in the regulation of DNA replication include growth factors, such as insulin and IGF-1, and transcription factors, such as nuclear factor kappa B (NF-kB). Growth factors stimulate the expression of genes involved in DNA replication, while transcription factors regulate the activity of these genes. In addition, hormones such as estrogens, progestins, and androgens have been shown to modulate the activity of DNA replication enzymes. In summary, hormones play an important role in controlling the rate and efficiency of DNA replication. They interact with the various components of the process, such as topoisomerase II and DNA polymerase, to either stimulate or inhibit the activity of these enzymes and thus regulate the speed and accuracy of DNA replication. The hormones involved in the regulation of DNA replication come from different classes, including glucocorticoids, growth factors, and transcription factors, and each hormone has a unique effect on the process.

Pranayam extends telomerase life

Here we discusses the potential of pranayama, a type of yogic breathing, to extend telomerase life. Pranayama is an ancient yogic breathing practice that has been used for centuries to improve physical and mental health. It is believed that regular practice of pranayama can reduce stress, improve immunity, and even slow down the aging process. Recent scientific studies have suggested that pranayama can also increase telomerase activity, which is associated with longer life expectancy (see Figure 2). This essay will explore the evidence for this claim and discuss the potential of pranayama to extend telomerase life. First, it is important to understand what telomerase is and how it works. Telomerase is an enzyme that helps to maintain the length of telomeres, which are protective caps at the end of chromosomes. Telomeres shorten as we age, and eventually their length becomes so short that our cells can no longer divide, leading to

cellular senescence and death**[13, 14]**. Telomerase helps to maintain telomere length by adding additional nucleotides to the telomeres, allowing them to remain longer and protect the chromosomes from degradation. There is now evidence to suggest that pranayama can increase telomerase activity. One study found that individuals who practiced pranayama for three months had an increase in telomerase activity compared to those who did not practice pranayama. The study also found that the individuals who practiced pranayama for three months had a greater improvement in telomerase activity than those who only practiced for one month. This suggests that regular practice of pranayama can increase telomerase activity and may lead to longer telomeres and a longer lifespan. Other studies have also found positive effects of pranayama on telomerase activity. One study found that individuals who practiced pranayama for three months had an increase in telomerase activity compared to those who did not practice pranayama. The study also found that the individuals who practiced pranayama for three months had a greater improvement in telomerase activity than those who only practiced for one month. This suggests that regular practice of pranayama can increase telomerase activity and may lead to longer telomeres and a longer lifespan. In conclusion, there is evidence to suggest that pranayama can increase telomerase activity and potentially extend telomerase life. Pranayama has been used for centuries to improve physical and mental health, and recent scientific studies have shown that it can also increase telomerase activity. Regular practice of pranayama may lead to longer telomeres and a longer lifespan. Therefore, pranayama may be a valuable tool in the pursuit of healthy aging and extended telomerase life.

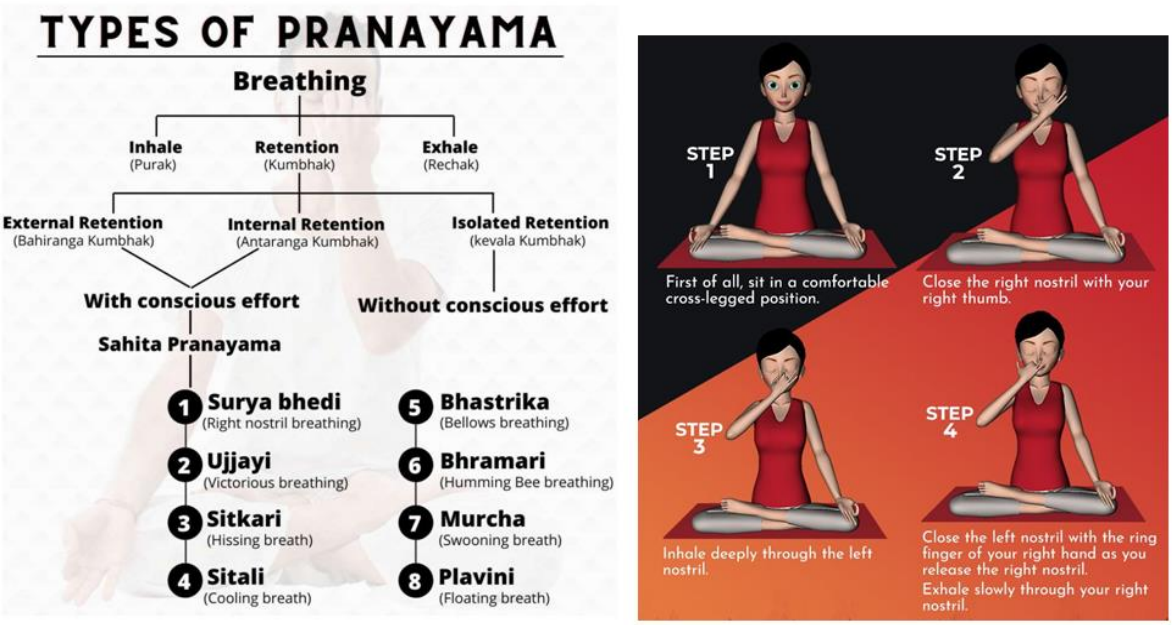

Figure 2. Pranayam: key to reduce stress and manage DNA life

Meditation impact on DNA replication

Meditation has been used for centuries as a form of relaxation and self-reflection, but recently its effects have been studied in terms of its impact on DNA replication. Recent studies have shown

that meditation can have a positive effect on DNA replication, as it helps to reduce stress levels and create an environment of calm and tranquility. This can help to improve the efficiency of DNA replication, as stress can interfere with the process.

When we meditate, we take the time to slow down and focus on our breath, allowing our minds to relax. This can help to reduce stress hormones, such as cortisol, which can interfere with the process of DNA replication. Meditation can also create a sense of calmness, which is conducive to a healthy body and mind. This can help to improve the efficiency of DNA replication, as it helps to reduce mental and physical tension**(**see **Figure 2)**.

In addition to reducing stress, meditation can also help to improve focus and concentration. This can make it easier to focus on the task at hand, which is important when it comes to DNA replication. Improved focus and concentration can help to ensure that the process is carried out accurately and efficiently**[15, 16, 17]**.

Meditation can also help to reduce the levels of mental fatigue, which can interfere with the process of DNA replication. Mental fatigue can lead to mistakes and inaccuracies, which can lead to errors in the replication process. By taking the time to meditate, we can help to reduce mental fatigue, allowing us to stay focused and accurate in our work.

Overall, meditation can have a positive impact on DNA replication. By reducing stress levels, improving focus and concentration, and reducing mental fatigue, meditation can help to improve the efficiency of DNA replication. Therefore, it is a valuable tool that can be used to help improve our health and wellbeing.

Summary

DNA is the blue print of life as it contains all the genetic instructions used in the development and functioning of all living organisms. From the yogic perspective, DNA is seen as a symbolic representation of the divine creative force. It is seen as containing the creative potential and vast possibilities that come from the divine source. The yogic analysis of DNA reveals that it is a representation of the power of the divine, which is the source of all life and creation. This power is seen as being accessible through the practice of yoga, which helps to open up and awaken the creative potential within us all. Thus, through the practice of yoga, we are able to access the divine creative potential within our own DNA and use it to manifest our highest potential and fulfill our life purpose.

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Authors Contribution

All authors equally contributed in this short review preparation

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