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DNA Orchestra

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Abstract

As someone who plays and enjoys Indian classical music and is also a molecular biologist, this combination permits an astounding understanding of the nuances of music to the very breath of life, the genetic blueprint, which is now emerging as also the 'Symphony of Life'. DNA which is deoxyribonucleic acid, is the hereditary material present in humans and almost all the organisms. The information is stored in the DNA in the form of a code which is made up of four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T). The order, or sequence, of these bases determines the information available for building and maintaining an organism. Human DNA consists of around 3 billion bases, and 99 percent of bases are the same in all people. Captured within this similarity, however, is also present the unique genetic sequence for every individual.

1. INTRODUCTION:

As someone who plays and enjoys Indian classical music and is also a molecular biologist, this combination permits an astounding understanding of the nuances of music to the very breath of life, the genetic blueprint, which is now emerging as also the 'Symphony of Life'. DNA which is deoxyribonucleic acid, is the hereditary material present in humans and almost all the organisms. The information is stored in the DNA in the form of a code which is made up of four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T). The order, or sequence, of these bases determines the information available for building and maintaining an organism. Human DNA consists of around 3 billion bases, and 99 percent of bases are the same in all people. Captured within this similarity, however, is also present the unique genetic sequence for every individual.

Studies on genetic music or the musical properties of DNA is much in vogue in recent times. Research has strengthened the fact that the body itself is intrinsically musical, which is associated with the DNA that make up our genes. Genes are passed on from one generation to another, the evolutionary process thereby passes the *music* along too (Dossey 1993).

Music is the rhythm and harmony that flows from the universe to the individual, from the cosmos to the finite. According to the Vedanta, there is neither creation nor annihilation but constant transformation and manifestation amidst cosmic delusion. The music in our genes could reflect the music of the universe. A nuclear safety team in Sweden has very recently launched 'Radioactive Orchestra' they have made music from the sound of radiation which is present in everything around us.

During music therapy, why does the body respond so decisively to music? The body which is made up of atoms, enables the sound energy of music to get absorbed into every atom and the body then converts it into consciousness. The reason music can help in healing is because of the resonance found in it. Apart from bodies being just a mere collection of chemicals, they are now accepted to also contain uplifting, inspiring musical harmonies! This is because it is well established now that music influences DNA. In Hindustani music, we are well versed with 'Bhatkhande notation', now we have 'DNA notation' as well !!

It has experimentally been established by geneticist (Ohno et al. 1986) that DNA and music might be connected. Musical notes were assigned to the four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T) which make up the DNA and transcribed the scores to a melodic composition. The scores can then be performed by professional musicians on instruments. DNA of a variety of living organisms has been put into "notation" as songs. The complication of this music has been correlated with evolution of organisms. Music can be made starting with DNA but the reverse is also possible which is to start with great pieces of music, assign nucleotides to the notes and end up with a particular type of DNA (Ohno et al. 1986). It has also been established that there is a genetic contribution to musical aptitude

that is likely to be regulated by several predisposing genes or variants (Pulli et al. 1988). Another recent study (Gunaratne et al. 2011) indicates that a network of micro RNA (miRNA) changes the pattern of gene expression in the auditory forebrain of songbirds.

The correlation of DNA with music has a future in medicine and is regarded as a highly intellectual affair. It is a time when drug discovery and diagnostics are moving towards a new sensual science. Personalized music based on DNA will soon be available. We can envisage to correlate DNA to the swars of our own Hindustani system of music, further establish correlation with the specific phrases in ragas, sound or "Nada" which is produced, is an energetic system of Bio-Wave. Human genome chips, called microarray, are commercially available and this pre-existing gene expression data can be used for ascribing 'DNA Notation' and vice versa as described above. One can choose the notes such that normal gene expression patterns sound pleasantly in tune, while abnormal data yield discordant sounds. The introduction of genetic music to medicine can be affirmed by the recent establishment that music has been transcribed from body's receptor site for insulin.

Berendt (1987) writes in his book '*Nada Brahma: The World is Sound*" at the base of the concept of the person--- stands a concept of sound: 'through the tone'. If nothing sounds through the bottom of the being, a human being is human biologically, at best, but is not a *per-son*, because he does not live the sound which is the world.

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