
SYNTHETIC FREE RADICAL AND PREMATURE DEGENERATION

Description

HOW THE SUDDEN GENERATION AND MULTIPLICATION OF SYNTHETIC FREE RADICALS CORRUPT THE NATURE'S 'CODE-BOOK', LEADING TO MASSIVE SPREAD OF PREMATURE DEGENERATION OF EVERY LIFE FORM AND ORGANIC MATTER ON PLANET EARTH

The cellular machinery that copies DNA sometimes makes mistakes. These mistakes, called mutation, alter the sequence of a gene. Nowadays, these mistakes occur always, and is identified as genetic pollution. If genetic pollution causes problems, we can't "clean" that pollution. Genetic pollution endures. This explains the explosion of diseases and their genetic connection. Speedy appearance of identical diseases — degeneration diseases — across species, on a global level, is the hallmark of industrial civilization.

DNA structure in evolution is marred by erratic, and often, toxic FREE RADICALS formation thereby, due to massive mutations, altering evolution as devolution. The widespread genetic contamination of the biosphere, especially of most life forms, through massive pollution and the use of GMOs will be the dark legacy of our modern civilization. Thus, continuous explosions of mutagenic chemicals – synthetic free radicals — have been occurring since Industrial Revolution. Discussed in this chapter is about the free radicals that cause massive biological pre-mature degeneration, by the widespread tampering of Nature's genetic code, in modern age.

to develop our bodies and brains in a healthy upward trajectory, or we can follow the Western example of recent decades and intentionally poison our population with genetically altered food, pharmaceuticals, vaccinations, and fast food that should be classified as a dangerous, addictive drug.” - Vladimir Putin



Is it possible for us to live till 120 years of age? According to Bible, Adam, although historically not proved, lived up to 930 years. This skepticism towards the long life span of Genesis is understandable. However, today many molecular biologists believe that human body has the normal potential to live up to 120.

Every typical species in its natural pristine environment lives seven times past its age of maturity. Humans normally mature in their late teens to early twenties. Our average potential life span in robust wellness is actually in the range of 120-140 years. This is never actualized due to the effects of many faulty practices like heating food and not learning to skillfully handle psychological stress through self-mastery and due to premature degeneration. Humans have been on Earth for millions of years. Prior to mastering fire perhaps less than 10,000 years ago, humans thrived on a diet of nothing but fresh, live, uncooked food as furnished by Nature in their whole unadulterated state. A few tribal groups that are untouched by modern civilization live like this even today.

Almost 99.99 percent out of a total of about eighty million species on Earth (about 700,000 of which are animals) thrive on raw food. Only modern humans apply heat to what they eat. Humans on average as a race, die at or below half their potential life span because of chronic illness that is largely diet and lifestyle related. Domesticated pets also are fed processed, packaged food that likewise is denatured by heat. As a consequence, they suffer human-like chronic ailments including cancer, arthritis and other degenerative diseases.

In the pre-modern and pre-science days man lived much longer– even up to 120 and 150 years. 400 years ago the oldest person in the world was, according to many data, Thomas Parr who died at the age of 152 and was said to be healthy right up until his death.

In India during the 1920s, British researcher, Sir Robert McCarrison, conducted one of the most eye-opening experiments relative to the correlation between diet and health. Dr. McCarrison spent many years in the Himalayan Mountains including the picturesque Hunza Valley. This magical fairytale-like place is found in the borders of China, India and Pakistan at nearly 8000 ft. altitude. The natives of this valley, the Hunzakuts, captured Dr. McCarrison's attention because of their excellent health and extremely long lifespan. Dr. Jay F. Hoffman was sent to Hunza under the auspices of the National Geriatrics Society. As the author of the book *Hunza – Secrets of the World's Healthiest and Oldest Living People*, published in 1960., Dr. Jay F. Hoffman writes:

“In these Himalayan mountains is Hunza; a country slightly more than 100 miles long and perhaps just as wide, containing approximately thirty thousand inhabitants. Here the people lived to be 100, 110, 120, and occasionally as much as 140 years of age. Here lies the real fountain of youth – probably the only one in the world... Hunza land is truly a utopia if ever there was one. Just think of this! Here is a land where people do not have our common diseases, such as heart ailments, cancer, arthritis, high blood pressure, diabetes, tuberculosis, hay fever, asthma, liver trouble, gall bladder trouble, constipation or many other ailments that plague the rest of the world. Moreover, there are no hospitals, no mental asylums, no drug stores, no saloons, no tobacco stores, no police, no jails, no crimes, no murders, and no beggars.”

“Any Westerner who stepped foot on the tiny land of this friendly nation couldn’t stop raving about their good nature, outstanding hospitality, not to mention their physical strength and stamina. “My own experience provides an example of a race unsurpassed in perfection of physique and in freedom from disease in general.” Dr. McCarrison wrote about the Hunzaks, in the following manner, “Amongst these people the span of life is extraordinarily long... During the period of my association with these people I never saw a case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis, of cancer.”

Not only are the Hunza people immune to serious diseases they are also spared the discomfort of commonplace conditions such as the cold or the flu. Dr. McCarrison, who specialized in nutritional diseases, was determined to learn their secret. The opportunity arose in 1927 when he was appointed the Director of Nutrition Research in India. He also received a well-equipped laboratory and qualified assistants.

The doctor designed a series of experiments to determine the role of diet in Hunzakuts’ health. In the first experiment 1189 albino rats were fed the Hunza diet right from birth. This consisted of whole meal flatbread with a pat of fresh butter, sprouted legumes, fresh raw carrots and cabbage, unboiled whole milk, and once a week a tiny portion of meat and bones. Plenty of water was provided for drinking and bathing. The only thing the rats did not receive was fruit, which the Hunza people ate a great deal of.

No diseases, no death: The rats were fed this diet for 27 months, which would be the equivalent of approximately 45 human years. The rats were killed, and thoroughly examined at all stages leading up to 27 months. Remarkably, no trace of any disease could be found in their bodies! This astonishing consequence could best be explained through Dr. McCarrison’s words as he described his findings during a lecture at the *College of Surgeons* in 1931:

“During the past two and a quarter years, there has been no case of illness in this ‘universe’ of albino rats, no death from natural causes in the adult stock, and, but for a few accidental deaths, no infantile mortality. Both clinically and at post-mortem examination this stock has been shown to be remarkably free from disease. It may be that some of them have cryptic disease of one kind or another, but, if so, I have failed to find either clinical or macroscopical evidence of it.”

These results were truly staggering. But sadly, they did not have any real impact on the physicians present, whom, much like the doctors of today, have a greater understanding of disease than the lack thereof. There wasn't a sudden surge of articles and books propagating the Hunza diet and the avoidance of white rice, white flour, sugar and for the most part, meat. Hunza meals don't consist of pre-cooked, over-processed, and nutritionally devoid industrial chemicals filled food – like the average diet of modern man. Instead, they enjoy locally grown organic fruit, vegetables, unprocessed fresh milk products, and green or whole grains.

Coming of modern age and the abrupt shortening of human life span

Tremendous advances have been made and will continue to be made in medical science and technology to conquer many dreaded diseases. The Western world has widespread access to health services, and for most Americans, nutrition is not a vital concern. And yet, the average life span in the developed nations, particularly in the US is less than 80 years. It would seem that modern man, quite literally, is not living up to his potential.

This abrupt shortening of human life span creates another hurdle for skeptics. How can this dramatic change in human life span be scientifically rational?

There is a big difference between life expectancy and healthy life expectancy. The 20th century did see significant advances in medical technology. But the emphasis was on perfecting emergency “stop-gap” procedures rather than on preventive measures with potential to prolong life. Decrepitude is being reached at an earlier age. Many of us can remember people in their 80s living useful lives, but today an independent octogenarian is rare. The fact that sometimes their children are joining them in nursing homes speaks volumes. We may have added years to life, but not life to years, undoubtedly.

Actually, younger generations seem to be failing and dying at earlier ages than their grandparents. One reason is the growing “total load” of environmental poisons and toxins present in food, water, air, consumer products, etc. Centenarians arrive at age 100 in better condition than many of their grandchildren. The older people are at death, the less likely they are to have received high-cost, high-tech care. The oldest old are sometimes among “our healthiest patients.” Rather than having survived disease, centenarians are more likely to have avoided chronic and acute disease, associated with ageing in order to live to 100.

Centenarians do not suffer long, gradual declines in health. About 95% are physically healthy and cognitively independent into their 90s. They are far more likely

to have almost a lifetime of excellent health followed by a quick decline before death. Thus, “attaining old age is not a process of declining health, but of avoiding disease.” The present thinking is that the older you get, the sicker you get. During earlier times, the occurrence actually was: the older you got, the healthier you had been. Centenarians seem to either markedly delay or, often, escape life-threatening diseases such as cancer, diabetes, Alzheimer’s disease, heart disease, and stroke. Many say that the only times they saw a doctor was when they gave birth, or when they first began to experience serious illness in their late 90s or early 100s.

Are people living longer with a better quality of life, or are they just living longer today? Merely living longer is not the merit. Longevity and good health don’t always go hand-in-hand in modern society. By all accounts, many old people, with multiple heart attacks, diabetes, high blood pressure, etc., should have died long ago, but after each operation/clinical intervention, they continue to live – although their quality of life is really very low. On an average, this is the same way that most people in modern society are living longer as time goes on.

Now, suddenly we are in the midst of a more critical dilemma which is not merely the abrupt shortening of human life span but simply the warning of an imminent and total extinction of mankind, as a species, mainly due to the development of what is suddenly identified as massive degeneration having entered a chronic stage and becoming widespread, catastrophically affecting man, society and the planet. Having this genetic disease now entered human gene pool and become more wide-spread, mankind, like a plant cut off from water, is doomed to extinction imminently, according to many available data. Reading between the lines of most of the recently published data on different degenerative diseases affecting modern man, almost 99% – young and old – are under the firm grip of degeneration – in one form or another – in the world today.

DEVASTATION OF the HEALTH OF ALL LIFE FORMS

Speedy appearance of identical diseases across species, on a global level, is the hallmark of industrial civilization

You may have worked hard on your health: you’ve read everything, invested an unthinkable amount of time, energy and money through the years to optimize your well-being – ranging from primary nourishment to esoteric psycho-spiritual work. You’ve been a purist, sacrificing anything you deemed might compromise your health. You’ve jogged, biked, swum, done yoga; you’ve gone vegetarian, vegan, macrobiotic, and Paleolithic. You’ve hunted down Human Growth Hormone elk antler, ginseng and goodness know what else.

Now, suddenly, incomprehensibly, you learn of something which threatens – in a few devastating moments – to undo all of your heroic labors – your years of self-care and dearly-bought wisdom. You discover you’re at risk from a source beyond your own sphere of control which possessed the potential to unravel your lifetime of dearly bought protocols and practices, and to render you radically unwell – perhaps to put a

premature end to your journey.

Yes, it is suddenly happening to you like it is happening to everybody else on planet Earth: a sweeping genetic catastrophe seems to contaminate every living species, including humans.

DNA structure in evolution is marred by erratic, and often, toxic free radicals formation, altering evolution as devolution: The engine of life is linkage. Everything is linked. Genes have a memory of where they came from. The atoms that make up human species are identical to the atoms in the rocks, the trees, the air, even the stars, and yet they come together to create a conscious being through the natural creation of certain specific genetic codes which is being randomly and massively broken by the sudden explosion and flooding of toxic free radicals all over modern world largely since Industrial Revolution.

From our current understanding, the functional basic unit of all life within universe is comprised of individual cells. The nucleus of each cell contains all the information necessary to create an exact replica of each form of life. The “Intelligence” of all living things is found to be hidden in their respective DNAs. This chemically encoded information is stored in vast yet tiny archives known as DNA (deoxyribonucleic acid). DNA is composed of chromosomes and genes that carry the blueprint or codes for every specific life form.

All forms of life on the Earth have, as it was already stated above, the same chemical substance – deoxyribonucleic acid (DNA) – in the form of genes which accounts for the ability of all living matter to replicate itself exactly and to transmit genetic information from parent to offspring. Likewise, all living organisms, regardless of their uniqueness, are composed of the same basic units, or cells, and the same chemical substances. The latter, when analyzed, exhibit noteworthy similarities, even in such disparate organisms as bacteria and man. Furthermore, since all cells interact in much the same way, the basic functioning of all organisms is also similar.

As scientists began to decode human DNA molecule, they found something quite unexpected – an exquisite ‘language’ composed of some 3 billion genetic letters. “One of the most extraordinary discoveries of the twentieth century,” says Dr. Stephen Meyer, Director of the Center for Science and Culture at the Discovery Institute in Seattle, Wash., “was that DNA actually stores information – the detailed instructions for assembling proteins – in the form of a four-character digital code” (quoted by Lee Strobel, *The Case for a Creator*, 2004, p. 224).

It is hard to fathom, but the amount of information in human DNA is roughly equivalent to 12 sets of “The Encyclopaedia Britannica – an incredible 384 volumes” worth of detailed information that would fill 48 feet of library shelves!

Yet in their actual size – which is only two millionths of a millimeter thick – a teaspoon of DNA, according to molecular biologist Michael Denton, could contain all the information needed to build the proteins for all the species of organisms that have ever lived on Earth, and “there would still be enough room left for all the

information in every book ever written” (*Evolution: A Theory in Crisis* , 1996, p. 334).

In addition, this type of high-level information has been found to originate only from an intelligent source. As Lee Strobel explains: “The data at the core of life is not disorganized, it’s not simply orderly like salt crystals, but it’s complex and specific information that can accomplish a bewildering task – the building of biological machines that far outstrip human technological capabilities” (p. 244). For instance, the precision of this genetic language is such that the average mistake that is not caught turns out to be one error per 10 billion letters. If a mistake occurs in one of the most significant parts of the code, which is in the genes, it can cause a disease such as sickle-cell anemia. Yet even the best and most intelligent typist in the world couldn’t come close to making only one mistake per 10 billion letters – far from it.

So to believe that the genetic code gradually evolved in Darwinian style would break all the known rules of how matter, energy and the laws of Nature work. In fact, it has not been found in Nature any example of one information system inside the cell gradually evolving into another functional information program.

Michael Behe, a biochemist and professor at Pennsylvania’s Lehigh University, explains that genetic information is primarily an instruction manual and gives some examples. He writes: “Consider a step-by-step list of [genetic] instructions. A mutation is a change in one of the lines of instructions. So instead of saying, “Take a 1/4-inch nut,” a mutation might say, “Take a 3/8-inch nut.” Or instead of “Place the round peg in the round hole,” we might get “Place the round peg in the square hole” . . . What a mutation cannot do is change all the instructions in one step – say, [providing instructions] to build a fax machine instead of a radio” (*Darwin’s Black Box*, 1996, p. 41).

We therefore have in the genetic code an immensely complex instruction manual that has been majestically designed by a more intelligent source than human beings. Even one of the discoverers of the genetic code, the agnostic and recently deceased Francis Crick, after decades of work on deciphering it, admitted that “an honest man, armed with all the knowledge available to us now, could only state that in some sense, the origin of life appears at the moment to be almost a miracle, so many are the conditions which would have had to have been satisfied to get it going” (*Life Itself*, 1981, p. 88, emphasis added).

Evolution fails to provide answers. It is good to remember that, in spite of all the efforts of all the scientific laboratories around the world working over many decades, they have not been able to produce so much as a single human hair. How much more difficult is it to produce an entire body consisting of some 100 trillion cells!

All these facts point to the wonderful hands of NATURE in EVOLUTION – that the kind of high-level information found in the Gene/DNA can originate only from a super intelligent source. Evolution has had its run for almost 150 years in the schools and universities and in the press. But now, with the discovery of what the DNA code is all about, the complexity of the cell, and the fact that information is something vastly different from matter and energy, evolution can no longer dodge the ultimate

outcome.

All of this has enormous implications for our society and culture. Professor Johnson makes this clear when he states: "Every history of the twentieth century lists three thinkers as preeminent in influence: Darwin, Marx and Freud. All three were regarded as 'scientific'... Yet Marx and Freud have fallen, and even their dwindling bands of followers no longer claim that their insights were based on any methodology remotely comparable to that of experimental science. I am convinced that Darwin is next on the block. His fall will be by far the mightiest of the three" (Johnson, p. 113).

The classic depiction of DNA is the double helix, or two incredibly long intertwining molecules or polymer strands, composed of literally millions of bits of informational units (nucleotides). DNA is an amazingly stable archive that duplicates and transmits its blueprint in a transcription process from cell to cell, thereby procreating each life form on a cellular level. This process is identical for all life on Earth, as well as (we presume) all life throughout universe.

DNA is composed of chromosomes and genes that, in addition to being an individual human blueprint, carry ancestral and cultural imprints and codes for every conceivable human trait from our evolutionary past. Although human embryo developing in the womb may not literally pass through stages of its evolutionary ancestry, human DNA has reproduced itself with incredible accuracy throughout human evolution.

DNA itself is a kind of "text" that functions through a coding system called "genetic code". This vast archive of information is passed along through a replicating process that involves the copying and encoding of genetic information from DNA to RNA (Ribonucleic acid). There seems to be a capacity to make choices operating inside each cell in our body, down to the level of individual proteins and enzymes which is strikingly similar to codes used by human beings. Some enzymes edit the RNA transcript of the DNA text and add new letters to it; any error made during this editing can be fatal to the entire organism; so these enzymes are consistently making the right choices; if they don't, something often goes wrong leading to cancer and other diseases. The original DNA that is housed within the nucleus of our cells programs instructions for the production of enzymes and proteins. These DNA instructions are not directly converted into proteins, but are copied into RNA. This ensures that the information contained in the DNA does not become tainted, thus preserving the archive. The messenger RNA carries the information to the sites of protein synthesis (ribosome), thereby creating a replica of the original DNA. In this manner the genetic code is passed from cell to cell, mother to child.

DNA is the literal future memory pack. It contains vast amounts of information pertaining to who we are and, more importantly, who we may become. It may very well be that the blueprint for our future memory as a species is also encoded within this seemingly dormant DNA material. Our future memory premise, simply stated, suggests that contained within the DNA material that rests in a dormant state, waiting to be activated, is the evolutionary instructions for humanity's future

development. Information garnered not only from our genetic past, but our environment's collective past. Earth's cumulative organic database is available on a cellular level to us and indeed to all species within the bio-system. The implication is that the universally consistent DNA coding system is capable of passing information throughout its bio-system. Not merely within the organism, or even the species, but the entire bio-sphere – planetary intelligence that has been pre-programmed into the system.

It has been found that DNA has essentially maintained its structure for 3.5 billion years.

Explosion of diseases and their genetic connection: An enormous competition has taken place since the last some 200 years among doctors and others to be the first to find a new (and, back then, extremely rare) disease. Europe and North America went from “witch-hunt” to disease-hunt. Scientists (often priests, back then), doctors, and even ordinary people gradually understood that the strange individuals simply were sick, not evil, and not dangerous, not witches.

In the world today, about 75% of people are tortured and finally killed by a common or rare genetic disease. But the public does not know that. And today, an enormous amount of gene damage is undiagnosed. More gene damage is undiagnosed today than ever before.

Today about 25% of the population in Europe and the US do have mental problems, and about 75% of the population is killed by genetic diseases. According to Science, 8 January 1971, “at least 1,500 diseases are considered to be of genetic origin.” Today, 40 years later, we believe that the total number of genetic diseases is some 15,000, and that there totally are some 150,000 types of gene damage at work in human population. In reality, therefore, we do have some 150,000 genetic diseases, not 1,500, some hundred times more. Medical science has totally lost control.

Because DNA is the repository of genetic information in each living cell, its integrity and stability are essential to life. However DNA integrity is always under attack from environmental agents and pollutants. DNA is not inert; rather, it is a chemical entity subject to assault from environment, and any resulting damage, if not repaired, will lead to mutation and possibly disease. Perhaps the best-known example of the link between environmental-induced DNA damage and disease is that of skin cancer, which can be caused by excessive exposure to UV radiation in the form of sunlight (and, to a lesser degree, tanning beds). Beyond environmental agents, DNA is also subject to oxidative damage by free radicals formed as the byproducts of metabolism. In fact, it has been estimated that an individual cell can suffer up to one million DNA changes per day.

In addition to genetic insults caused by environment, the very process of DNA replication during cell division is prone to error. The rate at which DNA polymerase adds incorrect nucleotides during DNA replication is a major factor in determining the spontaneous mutation rate in an organism. While a “proof-reading” enzyme normally recognizes and corrects many of these errors, some mutations survive this process.

The cellular machinery that copies DNA sometimes makes mistakes. These mistakes alter the sequence of a gene. This is called mutation. There are many kinds of mutations. A point mutation is a mutation in which one “letter” of a genetic code is changed to another. Length of DNA can also be deleted or inserted in a gene; these are also mutations. Finally, genes or parts of genes can become inverted or duplicated. Typical rates of mutations are between 10⁻¹⁰ and 10⁻¹² mutations per base pair of DNA per generation.

Mass genetic pollution of the planet through GMOs: The widespread genetic contamination of the planet through the use of GMOs will be the great, dark legacy of our modern civilization. Genetically engineered seeds are spreading their altered genetic code all across the world. The DNA of GMO crops is now detectable in soils, foods and water systems. What’s the upshot of all this? It’s a big unknown, of course, and that’s the frightening part: No one before has ever “played God” with the planet, right out in the open, and then observed what happens after a few years (or decades). Thanks to companies like Monsanto, we are the experiment, and no one knows if it might ultimately lead to something like a widespread crop failure or even the alternation of natural web-of-life interactions across multiple ecosystems.

And if genetic pollution causes problems, how do you “clean” that pollution? You can’t! Genetic pollution endures. Once crops become infected with GE seeds, it’s all but impossible to eliminate the DNA contamination.

Explosion of mutagenic chemicals since Industrial Revolution: DNA damage can have two main results: the cell mutates or the cell dies. This means that the genes either change their properties or else they cease to exist. The bulk of mutations that occur in the DNA are either harmful or have no effect (are neutral). The elements that can harm the DNA and cause mutations are known as mutagens. Free radicals are the most common form of mutagen. Other mutagens are compounds of N-nitroso, asbestos, coal tar and aldehydes. Most mutagens are also carcinogenic (meaning that they can cause cancer) and they have come into existence, on a massive global level, ever since the Industrial Revolution.

Mutagens attack the DNA on a regular basis. The majority of mutagen such as oxygen free radicals or certain aldehydes is regular bi-products of the body's metabolism and cannot be avoided. Other mutagens like free radicals from pollutions, cigarette smoke or acetaldehyde (a byproduct of alcohol) are easier to avoid. Yet another category of mutagens comes from pollution in environment. Different kinds of radiation can also produce mutations. For example, X-rays which are high energy forms of radiation can cause mutations throughout the body.

The DNA damage theory of aging and the free radical theory are closely linked since DNA is one of the main victims of free radicals. Our DNA is the blue-print of individual life obtained from our parents. It means we are born with a unique code and a predetermined tendency to certain types of physical and mental functioning that regulate the rate at which we age.

But this type of genetic clock can be greatly influenced with regard to its rate of timing. For example, DNA is easily oxidized and this damage can be accumulated from diet, lifestyle, toxins, pollution, radiation and other outside influences.

Thus, we each have the ability to accelerate DNA damage or slow it down.

Probably the earliest modern scientific theory of aging was proposed by Rubner in 1908 when he presented evidence linking metabolic rate and aging. Among some more theories that followed yet another theory that has had a significant influence on aging research is the "Somatic Mutation Theory," proposed by Dr. Leo Szilard in 1959. Prior to devoting his intellectual energy to the aging process, Dr. Szilard had been a key player in the development of the atomic bomb. After completing this work, he devoted the rest of his life to the cause of peace and the study of aging. Szilard's theory implied that genetic mutations of DNA accumulate with time, ultimately resulting in "miscopying" and functional failure. Although this theory made a great deal of common sense, it has been exhaustively investigated by many researchers, who have found little confirmatory evidence. Conversely, a number of studies have been published which indicate that somatic mutation is not involved in the aging process.

The year 1953 is marked by the discovery of DNA's structure. Modern genetics began in 1965 when the whole genetic code was known. In the 1960s B. Ames discovered that chemicals and radiations that caused cancer were very good at damaging DNA. In the 1970s the scientists, in general, did not accept that cancer is a genetic disease. But in 1979 DNA from tumors was used to prove that damaged genes alone could cause cancer. Evolution became "genetic" in the 1970s.

Free Radical Theory of Aging: By far, one of the most popular theories of aging is the "Free Radical Theory of Aging." The free radical theory of aging posits oxidative damage to DNA. This theory was first proposed by Dr. Denham Harman, and postulates that aging results from an accumulation of changes caused by reactions in the body initiated by highly reactive molecules known as "free radicals." The changes induced by free radicals are believed to be a major cause of aging, disease development or death. A major premise in this theory is that free radicals and their

precursors may be produced endogenously (within the body) through normal metabolic processes, or exogenously (outside the body) from sources such as cigarette smoking, pollution etc.

The body's defense mechanisms against these free radicals are referred to as antioxidants. When the amount of antioxidants in the body is insufficient to do battle with the free radicals, these very reactive molecules easily react with vital molecules in the body, such as DNA, causing mutations (alterations) in the sequence of genetic material. The accumulation of changes is then thought to lead to the development of aging and degenerative diseases.

There are a number of reasons why the free radical theory has remained popular and withstood the test of time. First, it provides many plausible explanations for the process of aging. Second, there are a growing number of studies that implicate free radical reactions in the development of many chronic, age-related diseases. Third, the free radical theory of aging can easily be tested indirectly, using dietary experiments with antioxidant supplements. Fourth, the free radical theory is the only one that encompasses all the concepts in almost all the other theories of aging.

Free radicals are the most common form of mutagen. Chemical mutagens were not demonstrated to cause mutation until the 1940s. A mutagen is a substance or agent that induces heritable change in cells or organisms. Mutagens are chemicals that cause mutations by damaging DNA in animal cells. Mutagens cause changes (mutations) in the genetic material of cells of all life forms. Mutations can be caused by copying errors in the genetic material during cell division. Mutagens can cause changes (mutations) in the genetic material (DNA) of cells from people or test animals, which may result in disease or abnormalities in future generations.

How do free radicals harm the body?

Free radicals are produced by the body to aid in the metabolic processes, such as digestion and the conversion of food into energy. They are actually quite helpful in many of the body's natural functions. However, when too many are produced, they can turn against you and become a dangerous enemy.

Each free radical is capable of destroying an enzyme, protein molecule or a complete cell. They can multiply by process of a chain reaction. These free radicals damage DNA, lipids, and proteins, causing cellular decay. These reactive substances can damage cell structures so badly that immunity is impaired and DNA codes are altered.

Damaged DNA provides the wrong genetic code leading to unregulated protein synthesis and/or cell growth which results in cancer. What free radicals do is combine and react chemically with other molecules that they were not meant to combine with. This process is called oxidation, much like what happens to that rusted nail or the cut apple. Similarly, if our cells are left unprotected, a similar process can occur inside the body, with imminent and progressive damage.

FREE RADICALS as synthetic Nano particles: THE GENETIC CODE WRECKER OF NATURE

The character of mighty oaks and dense forests are holographically contained in their tiny seeds. The general character of every species in Nature, including man, is contained in its genes handed down to generations after generations, since hundreds of thousands of years, without much change to its basic characteristics. However this natural evolution got radically changed and even reversed in modern history with the beginning of Industrial Revolution that unleashed into environment the most destructive force in the form of synthetic molecules called “free radicals” in a massive dose that literally started to wreck the code of Nature at an alarming rate.

Today we face many threats to our existence, particularly, in the case of health, on a global level, a contingency that did not exist just 200 years before, for ages. Our modern technology has created many forms of pollution with their ever-increasing presence in both our personal and public environment – in the material and spiritual environment of man, society and the planet.

Free radicals and the biological degeneration: the degeneration in the micro world

Almost 99% of diseases in modern society were nearly non-existent among mankind for millions of years prior to modern age. Modern man may claim to have mastered high technologies that is capable of counting and measuring materials that are as tiny as 1/1,000, 000, 000, 000, 000, 000th of a centimeter or can study phenomena so short-lived that they occur in 1/1,000, 000, 000, 000, 000, 000th of a second with less than 0.000000001% chance of error or can claim to have discovered planets and stars that lie millions of light years away. However, he has miserably failed to find out trillions of tiny species that caused almost 90% of diseases that modern man suffers today, namely the degenerative diseases. And, interestingly, it has now been proved that it is mainly his new found technologies and methodologies that lie behind the generation of these trillions of tiny species that cause the diseases in the first place. The diseases may be generally characterized as degenerative diseases and the basic cause of this has been discovered as the work of this new found species called FREE RADICALS. Free radical is now found to be responsible for almost every illness that afflicts mankind today. And interestingly, almost 99% of these free radicals in the whole history of mankind have been generated only during the modern history period. As humans today, we are expected to live and die by the free radical 'sword'.

Let us first take the case of biological degeneracy. It is a false notion that the widely recognized diseases of ageing are the inevitable consequences of living longer. Ageing is not in itself the cause of diabetes, obesity, heart disease, cancer or Alzheimer's. Nor does ageing necessarily lead to impairment of emotional health, physical capacity, libido, cognition, memory and not to the least intelligence. The diseases and disabilities associated with advancing age all have specific causes. One's age is simply a measurement of time lived, and time is not in itself a cause of any disease.

Each culture has its own viewpoint towards ageing. In many traditional cultures, age is synonymous with wisdom and experience; elders are revered and cared for. In ancient Africa, there was a saying: 'When an old man dies, a library goes up in flames'.

Centenarians actually are emotionally stable, flexible, adaptive, and seldom depressed. They are natural stress-shedders. Everyone experiences stress, but it is how stress is viewed, how one copes with stress, how quickly one gets over emotional setbacks that is one of the most important factors in successful ageing. Centenarians enjoy their lives and wish to live longer "so they don't miss out on anything."

However, in the post-modern society, particularly the U.S., there is a negative, rejecting attitude towards ageing: growing old is literally treated like plague. Ageing is equivalent to an illness to be prevented or treated with drugs and surgery. Every physical expression of growing old is viewed as a symptom. Sadly, the viewpoint of a culture becomes the viewpoint of its individual members. Older people are treated as if aging were a disease, so they respond by being diseased. People facing old age do not look to the future as a challenge and adventure, but as a condemnation, a

death sentence.

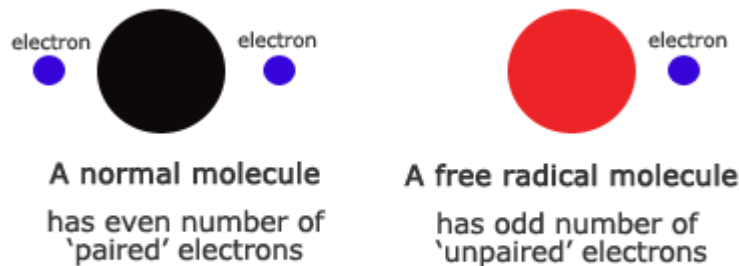
Many of the myths of ageing (such as old age being synonymous with frailty, decrepitude, and senility; that degenerative disease is inevitable etc.) are reflected in apocalyptic and derogatory terminology (rising tides, demographic time bombs, gray hordes, and senior moments), negative stereotypes, and suboptimal care. The bias of ageism is the belief that the older a person gets, the more senile, sick, dependent, and dispensable he or she becomes. Ageism pervades our culture, our minds, and our bodies. It potentially affects everyone, in every age group. And this attitude is a distinct and well documented risk factor for illness. In a Boston study, researchers reported that subconsciously feeding healthy elderly people positive images of ageing with words like “wise,” “accomplished,” and “astute,” instead of negatives like “senile,” “dependent,” or “diseased,” created the effect of increasing their walking pace significantly.

Degenerative disease, for the most part, is a product of modern society. Indeed, 90% of the diseases in the world today are generated by the man-made systems since the beginning of modern era. They have had their greatest increases around the beginning of the 20th century and after.

Now let us see how free radicals create the so-called disease condition in human body. The reasons for this are very clear: we live in a “free-radicalized” environment and follow a “free radicalized” life styles. As modern human beings, we are being poisoned with fast food and other synthetic free radicals induced products. They, in turn, generate free radicals in human body; a radical departure from Nature, from wholesome living to split, fragmented and isolated living.

The idea that free radicals may cause ageing was first proposed in the fifties by Dr. Denham Harman. For quite a while it was considered a curious hypothesis. Eventually, scientists accumulated a large body of evidence in favor of this idea, turning it into one of the best-supported theories of ageing.

In 1956, Dr. Denham Harman of the University of Nebraska came out with this ground breaking theory which established that the cause of almost 90% of diseases affecting mankind in the world today is because of the work of a micro-organism called free radical. Almost 99% of these free Radicals, like 90% of the diseases today are generated by the man-made systems since the beginning of industrial civilization. Dr. Harmon's Free Radical Theory of Aging however was shunned and ignored first by experts and scientists. Sometimes even the best ideas are slow to be accepted. Because of the fact that his theory being the undeniable fact, posed the greatest challenge to treating 99% of modern diseases indicated by modern medical practice



meaningless. **What are Free Radicals?**

However, to say that it was a hard sell for Denham Harman would be an understatement. He might have had more success had he been making vacuum cleaners. The scientists whom Dr. Harmon approached were singularly unimpressed. In fact, all but two flatly rejected his idea. Undaunted, Dr. Harmon pursued his theory. In subsequent years, he demonstrated how the effects of free radicals are reversed by nutrients known as antioxidants, how antioxidants extend the life spans of laboratory animals, and how antioxidants offer protection against heart disease, cancer, senile brain disease, and all other degenerative conditions associated with ageing. Dr. Harmon proved that age-related immune deficiency is caused by free radicals and can be reversed by antioxidants.

Free radical is a highly reactive chemical species that normally exists for a relatively short time. Some free radicals are formed in the body during processes of oxidation and may be useful, e.g., in killing infectious organisms. The problem with free radicals is that they typically cause a chain. Free radicals are also capable of doing extensive damage to tissues unless kept in check by antioxidants.

This is believed to happen through a process called cross-linkage, a chemical reaction that locks up the outer atomic shells of collagen. The cause of cross-linkage is thought to be the tendency of free radicals to bind indiscriminately with many vital molecules in the body, including DNA. Cross-linkage is only one example of the damage free radicals can inflict. They can supposedly split up molecules, garble information in cells, clog cell membranes, promote cancerous mutations, and impair the function of the mitochondria (the energy factories inside each cell). Free radicals will attack almost any molecule; the extent of the damage they do is so wide that the free radical theory of ageing has grown in popularity with each passing decade.

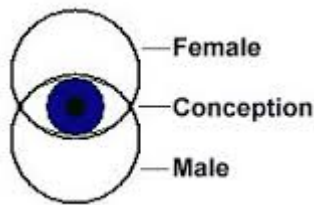
In a very real sense, the free radical process in our bodies is much the same as the process that causes fuel to burn and oil to go rancid or an apple to turn brown if you slice it open and expose it to air or the rusting of iron, the tarnishing of silver or the hardening and cracking of plastic etc. It is as though our bodies rust from inside out. When the process gets really out of control, it can cause tumors, hardening of the arteries, and muscular degeneration – not to mention wrinkled skin – to name just a few.

Numerous scientists were later inspired by the revolutionary development of the free radical mechanism and recent studies have shown free radicals to be implicated in the cause of many diseases including heart disease, various forms of cancer, cataracts, and premature ageing. Scientists now know that free radicals play a major role in the ageing process as well as in the onset of obesity, cancer, heart diseases, stroke, arthritis, and possibly allergies and a host of other ailments. In recent years, free radical stress has also been implicated in a wide variety of degenerative processes, including arteriosclerosis, arthritis, cataracts, Parkinson's disease and Alzheimer's dementia and factors leading to the aging process itself. Some experts say an estimated 80 to 90% of all diseases, particularly, degenerative diseases involve free radical activity. The link between free radicals and the "ageing diseases" is the most important discovery since doctors learned earlier that some illnesses are caused by germs.

As an analogy for the damage being done by free radicals, let us see our body as if it were a building. Buildings are made of materials such as wood, concrete, plaster, drywall, etc. The materials which make up the form of the building are held together by nails, bolts, screws, and rivets. All buildings are designed according to a plan or blueprint. They need to be carefully assembled. Their form and their function are intertwined. If the form of a building is damaged in any way, its function or performance is, of course, altered and damaged. Just as the building materials for a house must be carefully and intelligently put together in the right way, in the right order, and with the proper building tools, so it is with living structures. Our body is no exception.

Electrons in our body cells are the binding materials holding molecules together. They are the rivets, bolts, nails, and screws of the body. Cells are composed of smaller particles called molecules, which are composed of even smaller particles called atoms. Many may remember from science class that each atom has a pair of

electrons, which orbit its nucleus, much like the planets orbit the sun in our solar system. When, for some reason, one of the electrons becomes detached, the remaining atom or molecule is thrown out of balance, becoming what is known as a free radical. Electrons are usually intended to be in pairs as they whiz around the outside of atoms and give stability to the form of the atom or molecule. When for any reason these paired electrons become separated, the molecule is damaged. These damaged molecules are called “free radicals” and are highly reactive, attacking cellular structures to greedily grab electrons in order to become paired again.



Any substance in Nature, including our body, consists of the smallest building blocks we call molecules such as oxygen and DNA. Molecules are formed by atoms. Each atom has a nucleus surrounded by one or more pairs of electrons. Here the key word is “pair”. A stable molecule must have electrons that are in pairs. Free radicals, being unpaired, unstable and reactive, will snatch electrons from stable molecules and make them unstable and damaged. Unfortunately the snatchers too remain damaged even after gaining an electron thus causing a chain reaction to produce numerous free radicals.

Free radicals are molecules that have become dangerous because they lack a single electron, in other words, they are in a non-wholistic (split-up) state. A single free radical can destroy an enzyme, a protein molecule, a strand of DNA, or an entire cell. Even worse, it can unleash, in a fraction of a second, a torrential chain reaction that produces a million or more additional killer free radicals. The bottom line is that we can think of free radicals as ravenous molecular sharks – sharks so hungry that in little more than a millionth of a second, they can be making a frenzied attack on a healthy neighboring cellular molecule. These free radical molecules bounce around the cell and steal their missing electron from other stable molecules. If enough free radicals exist within a cell, the cumulative damage could cause the normal cellular machinery to slow down or stop. The inevitable consequence is cellular decay, ageing and death.

One can also find a very clear analogy between free radicals in our bodies and criminals in a community. Free radicals as chemicals with an unpaired electron are extremely and randomly reactive. Most chemicals in the body react with each other relatively slowly and within rules known as metabolic pathways. These rules are enforced by enzymes, which are special proteins guiding and facilitating chemical reactions. Not so with free radicals: these bandits react quickly and indiscriminately with whatever cellular structures are at hand, inflicting damage as a result.

Usually there are ample free electrons in the vicinity to satisfy the demands of the free radicals, but when the level of free radicals increases beyond a certain point, the cellular protective electron-donating mechanisms, which usually keep these

molecules in check, is exceeded. When that happens, great numbers of these free radicals or, as an analogy, terrorists' bullets, are unleashed, all greedily looking for electrons wherever they can be found. So, for example, when heavy metals are in body tissues, there is free radical destructive activity going on constantly, leading to rapid aging.

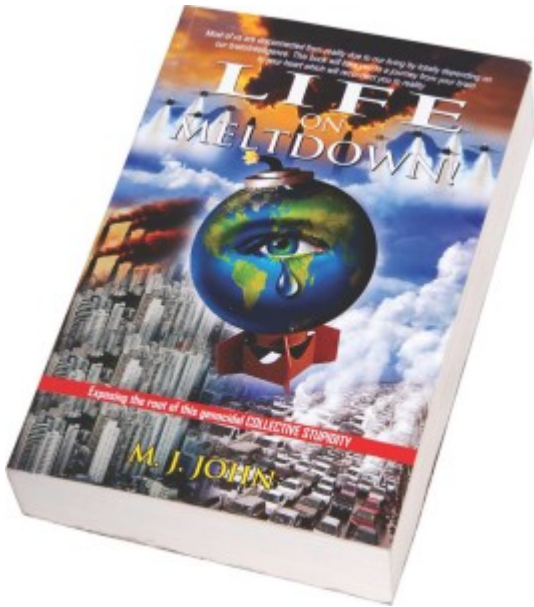
There are approximately 100 trillion individual living units, our cells, which make up human body, each assigned to a different organ or body system, each grouping with a function to perform, like a small bio-factory creating the manifestation of life itself.

This oxidative damage, caused by free radical pathology, is thought to be a basic mechanism underlying many diverse pathological conditions – obesity, diabetes, atherosclerosis, cancer, premature aging, rheumatic diseases, allergic inflammation, cardiac and cerebral ischemia, respiratory distress syndrome, various liver disorders, irradiation and thermal injury, and toxicity induced by most of the modern materials and environment, like chemicals, certain metals, solvents, pesticides, drugs junk foods etc.

Free radicals are indeed scary. Because they are subatomic particles (and invisible), the kinds of damage they do is at the molecular scale of atomic structure and DNA: essentially both the 'intelligence' of a cell (the adapted set of 'successfully integrated' information accumulated over millennia) as well as the cells reproductive apparatus and chromosomal genetic code. In a random and unbiased way, free radicals ream through genetic material and essentially destroy the integrity of the information contained therein – causing havoc both for us in this life (diseases like cancer), and for the remainder of the lives created from the vestiges of what is left of our genetic material.

What overall effects do free radicals have on the body? The implications are many and are dependent upon the site of free-radical damage. When they attack molecules in the cell wall, the resulting change may interfere in the cell's ability to absorb vital nutrients, to ward off infection, or to interact with other cells. Therefore, the cell may become "malnourished." It could become infected by bacteria or virus. It could be, destroyed by the body's immune system. If the site of the damage is the cell's DNA, genetic damage may occur and result in uncontrolled growth and multiplication of an abnormal cell, thus initiating cancer. Cancer has long been associated with many chemicals and irritants from cigarette smoke to ultraviolet light. Many people believe that the link between these substances and cancer is their ability to generate free radicals in the body.

For the rest of the article, please read chapter 4 of the book Life On Meltdown



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