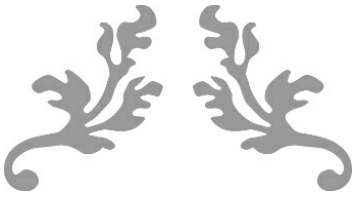
WHY WE GET SICK?

What Doctors, Multinationals and Pharma will never tell you!

SHUBHAM GUPTA



WHY WE GET SICK?

What Pharma, Multinationals and Doctors will never tell you!

SHUBHAM GUPTA

Table of Contents

Preface

Welcome! I am super excited to see you here. I will be taking you on a journey to discover true health. On the road, you will find lot of rough roads, shaking your earlier held beliefs. We will also encounter familiar terrain which will help you ascertain some of your doubts and help you relax during the journey. This journey will give you lot of questions to ask and discover the truth, instead of leading you blindly.

Why we get ill? This question has always been on my mind since I reached high school, but I could never understand the reasons. When I queried my parents, they didn't know. When I read books, I came to know that bacteria's and viruses are the culprit. I was also told that some people have weaker immune systems and are more prone to diseases. I also came to know that some people have genetic problems and they get the faulty genes from their parents. Then I got some more theories as I grew older. I came to know that some diseases like common cold is so common that it can be caught by germs spread by anyone. I couldn't understand why in a family of 4 people, only few people generally my sister or I used to get the cold. My mother despite being in our close vicinity all day, never used to get the germs coming from our noses.

As an adult, I became more confused. Why do we need so many theories? Why cannot we have one uncomplicated way to describe why millions of people around the world fall ill daily. Why we have separate sciences like epigenetics and quantum physics. Does meditation, homeopathy and chiropractic helpful in brining holistic health? If yes, then why do we have so many different drugs and medicines been prescribed by doctors? Why is our generation popping more pills then all previous generations? Why we are the fattest generation? Is the food the real cause of many of our problems or is there something else altogether? What is the secrets of people who never get sick? If you can relate to any of the above questions then this journey will definitely help you.

In past 5 years, I have researched extensively to discover the truth myself. I also applied things that I learnt on myself and my family with phenomenal results. Let me be your driver for this epic journey and I will take you through the things you need to see, know and discover and change your life

forever. We will learn how to decide what happens in our body and life and not to be the slave of our destiny.

Open your mind! This book is designed to bring curiosity back in your life. As a kid, we were always asked to follow without using your mind. Our parents, teachers forced knowledge, beliefs down our throats with no room for questioning. We are the same now as adults. Whatever we have been taught has become our reality. But we must always question prevalent dogmas. Once there was a wise Monk. People from all over the world came to seek his counsel and advise. One day an important person came to him for achieving meditation. He also proudly told the monk that he was an influential person and knows a lot of things already. He need his little guidance to achieve “enlightenment”. The master smiled and said that they should discuss the matter over a cup of tea. When the tea was served the master poured his visitor a cup. He poured and he poured and the tea rose to the rim and began to spill over the table and finally onto the robes of the wealthy man. Finally, the visitor shouted, “Enough. You are spilling the tea all over. Can’t you see the cup is full?” The monk stopped pouring and smiled at his guest. “You are like this tea cup, so full that nothing more can be added. Come back to me when the cup is empty. Come back to me with an empty mind.”

Be open to learning and unlearning. I am not promising any tools or best practices through this book, all I am saying is you will develop an open mind to embrace life and its possibilities. You will get lot of options to treat yourself and become master of your own health.

In the first chapter of the book, I will take you back to your childhood. I am sure you don’t remember how you were as a small child. This chapter will show you how perfect you were you.

Second chapter will take you to your biology classes where I will help you revise your knowledge about human body. Don’t worry, it will not be boring! You will get to reconsider the miracle that your body is. Your body is made up of trillions of cells who work in harmony. You will once again explore that magical world called human body.

In the third chapter, once we have understood how our body works, I will take you deeper into science and question some of the long-held dogmas and some of the negatives of the conventional medicine.

Fourth chapter we will explore the energy concept of holistic healing our body. Our body is our temple and we should constantly hear what it is telling us. We cannot occasionally give it a preference when it is crying for your attention. We will touch the concept of Quantum healing.

Fifth and the concluding chapter will introduce about the concept of mind-body healing. Before we reach our destination, we will together learn about how to keep our health in our hands.

Chapter 1: Genius is Born

"Every child is a genius at birth, ONLY to be converted into an idiot in school."

- Alexis Carrel (Nobel Laureate)

Do you know who is a great scientist? Every small child is a great scientist. If you ever got a chance to closely observe a small kid, see how he/she closely observe things. He wants to pick everything which he can reach his hand to. He will watch it closely, even will try to put it in his mouth. He wants to know everything. Once ready to speak, a kid will question the parent about everything. Observe how curious he is. Curiosity to know is science. Their curiosity is not even bound by fear. They don't know what fear is. Once my sister, while she was 4, while playing outside our home, picked a dead lizard and brought smilingly to our mother. My mother was so scared to see that and she still remembers that incident claiming, "Thank god she didn't put that into her mouth." There is not an ounce of fear in whatever they do. They will even go to the edge of the things we consider dangerous.

It's often said that every child is a great teacher. Have you noticed that if she needs anything, she will be persistent? She will never hold her feelings back. They will never say oh, I shouldn't buy this now and save this for my next birthday. They live only in the present moment. They probably don't know what future is. Frankly no one knows what will happen in future, not even clairvoyants! Child truly enjoys every moment. Few months back I was at a party and there were lot of families. Suddenly the DJ started playing songs. I noticed most of the adults hesitated to start dancing, though they wanted. But there were few kids in the party who started immediately jumping listening to the first beat of the song. That is what a kid is. Full of energy and life. They don't care what others will think. They probably don't even know that others can think. They are little bubbles of enthusiasm. You were like this once!

When they want to sleep, they will sleep like a baby! As we grow up, we keep finding it difficult to sleep. We keep thinking about future or past and find it difficult to sleep. A small child is never in the past or the future. Take away his favourite toy he will immediately protest and may even start crying. The moment you return the toy she will not only stop crying but also in few minutes start smiling again. What happens with us? If we are upset with anything, we will not only crib about that for hours, from developing

criticism, resentment and even keep remembering the same events later in future as well. Whatever a child wants, they will go to all extent to get it. They will not be ready to compromise with anything, not even a substitute. What do you do as an adult? You start compromising to things which we *believe* we cannot get. You sometime give up without even trying.

How many times a child laughs a day? 300. How many times do you laugh now? And I am not asking you to count those fake laughs you give to our bosses or clients. I am asking the smiles where you are happy just to see a thing or a person.
Every child can and does think. Anyone who can think becomes a scientist – one who tries to get answers to insurmountable questions in life. Sadly, our present schools do not let you think as that is not the essence of education which demands one to learn and work only in the known sphere of our experience. They will never know what their strengths or weaknesses are. They don't know what that means as well. They are the centre of the family. They have so many people to take care of. They don't have any limitations at least not in their head. Small kids will take a chance even if they don't know something. They are not afraid of being wrong! They don't know what is right or wrong. Being fearless brings out the creative side of us. Playing too safe has never taken anyone to anywhere. As adults, we become too conscious to make mistakes. We are too worried with the *fear* of rejection and criticism.

They also practice empathy which when we grow up slowly converts to sympathy and then we sort of lose the whole idea. Don't believe me? Have you ever seen two children together or even nearby and one of them starts to cry? What happens then? The second child immediately starts crying as well. What has changed? Nothing has changed for the second child but the moment he sees the first child cry, out of empathy, she starts crying as well. Please note that the child doesn't feel bad because he knows the first kid, but even if he has never seen the kid. Sometime only a distant crying voice makes the kids cry. You must have seen kids even start crying if some adult in the family is crying.

What happens to us when we go to school? Please note that I am not supporting the Nobel laureate Alexis Carrel but we must see if our schools are actually adding to the genius we already were or they are suppressing

those. So, this is what happens at school:

1. We are taught alphabets. We are taught numbers
2. We slowly learn to write sentences. Imagine how many years we took to able to write a correct first sentence. We start adding, subtracting numbers
3. We slowly start learning poems. Slowly we start to mug up things. We are asked by our parents to repeat those poems in front of relatives. If we recite it correctly we are given claps. We start to feel that we must be good at memorizing.
4. As we grow older we are given facts after facts. We are told what truth is. We are told what is wrong. We are also rated based on how much are we able to recall in that 1-2 hour exams. Not only are we rated individually but also among the entire class. So, we know who the smart kids are and who are not so smart. So already from being genius, schools have incorporated many new feelings. Feeling of not good enough, feeling of jealousy, feeling of competitiveness instead of cooperation, feeling of having poor memory, retention capability and the list go on and on.
5. As we reach our teenage years, we are given extra pressure of performance since these years are the most crucial and will decide if we will get a good college or university later. We are literally mugging up facts, chemical reactions, and dates of World wars. Note that in this rat race, we stopped using our thinking and inquisitive capability. We are told what the truth is and just learn that up and vomit it in the exams.

6. Einstein once said:

> *"Everyone is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid."*

This is what is happening in our present education. We are constantly trying to create everybody as same. We want all to be engineer or doctor. We hardly try to see what interests the child the most and where his true abilities lie. Parents are sometime even worse in this regard. If you would judge Sachin Tendulkar by his exam marks, probably Sachin would have been called a fool. Educational institutes are designed in a manner where mistakes have

been made the biggest stigmas. We have all been slowly pushed into a feeding machine to run industries. Most useful subjects, who will land you up with a job, are at the top: Computers, Science, and Commerce. You might be benignly asked to step away from things you liked say painting and dancing, on the grounds that you will never get a job doing that.

Padma Bhushan 2010 recipient, Dr. B.M. Hegde made an avid observation, he said:

“Schools also teach the Western science as the ‘be all’ and ‘end all’ of all there is to be known. Today’s education does not aim at creating healthy minds but are lost in producing wealthy careers only. If a child asks the teacher in school as to what was there before the Big Bang, her pet answer would be: “space and matter came only after the Big Bang, there being nothing before the Big Bang; she might even laugh at the child by asking what is on the north of the North Pole? By the time that child comes to college or medical school it will have numbed its brain that the child is not able to think rationally at all.”

What do children know that adults seem to have forgotten? Children are more confident, more courageous and live life far more intensely than adults. Sometimes it feels that we spend our entire lives trying to return to who we were as children. Here’s what we can learn from our younger selves to bring more clarity and joy into adulthood. Children have the beautiful ability to find joy all around them. Just watch the humour a child can find in a shopping mall or at the movie hall. They see fun and silliness everywhere. Drawing, playing with mud or a street dog, building a sandcastle with demanding attention to detail. For some reason, as we get older, we stop seeing creative activities as worth our time. Remember how busy we are! How many adults, aside from artists, draw on a regular basis? How many play with sand or colour paints just for the fun of it?

Pablo Picasso once said: Every child is a born artist. The problem is how to remain an artist once we grow up.

When did we stop noticing the tiny miracles that surround us daily? How much more beautiful would life be if we could see these miracles again?

Chapter 2: Your Chemistry and Biology

"A human body is a conversation going on, both within the cells and between the cells, and they're telling each other to grow and to die; when you're sick, something's gone wrong with that conversation" - W. Daniel Hillis

How many of you believe that we have got this body to do something meaningful in this planet? Around the world and through the evolution there has never been another you, and there will never be another you. The miracle of your existence is now in your hands. Can you fathom your chances of getting born? Self-help author Mel Robbins said during a 2011 Ted Talk, said that the likelihood of you being born as you, have been calculated as one in 400 trillion. Odds of you getting born to the parents, in the place, with a particular genetic make-up is almost zero.

You are here for a purpose. You have something that only you can give to the world. Take time to consider what that is. Let me quote some statistics

Odds of being killed by a lightning strike are approximately 1 in 200,000

Odds of getting a royal flush on your first five cards: 1 in 650,000.

Odds of you being born in this time, place and circumstance: about 1 in 400 trillion

Statistically, the probability of any one of us being born exactly as we are in this precise time and place is so unlikely that your very existence verges on the miraculous and should be a continuing source of dazzlement for you. Billions of sperms raced to bring you on this planet. Only one sperm which had the qualities of your liking was fertilized. How miraculous is that?

Dr. Ali Binazir wrote. "Now go forth and feel and act like the miracle that you are."

Take a minute to imagine how many abled and more qualified people then you, will not wake up tomorrow. Why do you think you have been spared to live? Does that question ever bother you? It should.

Are you fascinated by the incredible machines around you? On a typical day, you might ride in an automobile, talk on a smartphone, access the Internet on a computer, and watch a movie on a high-definition television. While these

machines are awesome examples of today's technology, they're not nearly as impressive as another complex machine. What are we talking about? Your human body, of course!

None of those other impressive machines would have any value if it were not for the human body and mind’s ability to use them or even invent them in the first place. When you think about all the things your body does — much of it without any need for conscious input from you — it's clear that the human body is unmatched in its complexity and usefulness.

When you look closer at the human body, you realize it's made up of a wide variety of different and important organs. All those parts share one thing in common: they're all made up of cells.

Cells are the tiny building blocks of life. Most of them are so small that they can only be seen through a microscope. Human body is made up of more than 100 trillion interdependent cells living peacefully together, well for most of the time. As per the common belief, the human body is not built with organs put together like a car. We are derived from one single nucleated cell generously donated to us by our ancestors, the germs, who ruled this world for the first two billion years. That single cell, the zygote, which is a fusion of ovum and spermatozoa, simply divides to make the colony of 100 trillion interdependent cells that make up the human body. We may be 60kgs today but when you were made in your mother’s womb you were a single cell which is a spec of protein which weighs 10^{-11}gm.

That spec of protein knows everything about this universe because there is no two zygote or humans which are alike. Imagine if you want to go to a large party and want to wear a unique dress. How do you crack this puzzle? The best way to do is to already know what others are wearing. Then we will know what not to wear. Same goes with our zygote. Our zygote holds the information of the entire universe from the start. It knows how many faces have already been taken and takes a unique face and fingerprint every time. A tiger’s zygote will multiply itself to a tiger while an elephant’s zygote to an elephant. Nature never makes a mistake! Never has nature gave a lioness- a deer as a young one. It has never happened that you put a lemon seed in the ground and you get an orange tree.

There are 100 billion specialized cells in our brain called neurons. Each of these cells has 2000 to 10000 branches called Dendron. To learn anything

from walking to reading, many of these neurons join via these dendrites. Imagine the number of permutation combination which can be made in your brain to make a neuro pathway. The number might be bigger than the number of stars in the galaxy. Imagine the possibility which is contained in just your single organ - brain. Just take a moment and realize the awesomeness of this magical phenomenon. We all were once a single cell which was not even the size of a grain. That single cell knows how to reproduce and make cells which can make your heart, lung, brain, muscles, bones everything from the ground zero. Just wonder on this amazing miracle. This single cell can survive and multiply slowly into the colony of trillions. Output is finally a human body. Fun Facts: if you take all your blood vessels and lay them in one straight line, they will cover approximately 100,000 km. DNA inside each cell is 2m long and if you align all DNA in one straight line, together you can reach sun and back to earth 300 times!

How is that for complexity?

Apart from trillions of human cells, there are trillions of microbes that are living inside of your body. These microbes include bacteria, virus and protozoans. In fact, some estimates suggest that there are 1000 trillion microbes in the average human body. Take a moment to imagine this. For everyone one human cell, there are 10 microbes. When you consider that there are over 7 billion people on Earth, it becomes clear that their numbers are simply staggering.

Yet, even though these germ cells make up a large part of us (indeed, some 90 percent of the cells in our bodies are non-human cells), we are only just beginning to understand the roles that they play. In fact, we can be called germs instead!

Germ cells are living together with the human cells, helping us service and perform our day to day activity. They are mainly responsible for our immune system functioning at its best! We all know that human body is made up of cells. Nobody tell us in our biology text books that 10 times of that is the number of microorganisms (including bacteria, virus etc.) living peacefully in the healthy body. It’s on our body, our mouth, our nose, our gut and almost everywhere. These non-human cells are not only living peacefully with us but they also support our body to stay healthy. For Example, E. coli (Specie of bacteria) resides in the intestine and releases the compounds which help in the digestion of food.

Bacterium in the gut helps in synthesizing the vitamins like biotin, vitamin K and folic acid. There is enough proof around biological research which proves that human cells and germ cells can live peacefully together. Even if you don't believe research, you can look at your own life. Out of 365 days in a year, on an average you will not be eating any medicines 90% of the time. "Biologists are becoming increasingly aware that animals have coevolved and continue to coexist, with diverse assemblages of microorganisms that are required for normal health and development," according to an article in *Science* called "We Get By with a Little help from our Friends." (Ruby, et al, 2004)

The problem starts from the way we look at the human body. Although human body is an amazing machine, it is not a machine made up of separate parts like a car is made up of. When we start looking and treating human body as we treat or service our cars, we are demeaning the magic we are. Just now, look closely at your fingers. Can you distinguish where the thumb ends and where the middle finger starts in your hand? Where does our palm end and our forehand start? Body is made up of seamless and interdependent organs and cells. Just because you can name every part of the body like we have name for the parts of a car, doesn't mean we can look or treat them independently.

Modern western science is purely based on reductionism. "Many scientists do not seek to find the relationships between parts. Instead, they dissect things into smaller and smaller units. This way of perceiving the world has been called 'Newtonianism' or 'reductionism'. All things exist in relationship to other things. Many scientists attempt to disconnect from these relationships and prefer to observe the world from a mechanistic viewpoint instead," writes Jon Burras in his classic paper, *The Myths of Science.* Modern science views our body as organs and has given name to each of them. We call one as heart other as white blood cells etc. If there is a problem in any part of the body, we try to treat that part only. Science is all about trying to know what already exists. Jaak Panksepp in famous his TED talk says, "Science doesn't answer why questions. Science answers how questions." Do you really know why you get headache? Do you know why one of the members in the family gets a cancer, even though all of them are eating the same food, drinking the same water, living close to each other? Modern science is limited to answer the questions of 'how' and 'what'.

Now the biggest question which always intrigued me was why some people fall ill and others don’t. Sometimes even in the same family, one person will catch a flu while others are roaming free. Why is that a young man with perfect BMI, suddenly dies of a heart attack?

One of my college friend never used to wear warm cloths even in chilly weather and I never saw him sneezing. Why some people fall ill more often than others? The obvious answers that we used to find from our family and text books was “Your immune system is weak!” and there is a separate multi-million-dollar business to build/boost your immunity. Well let’s not disturb the businessmen as of now. Is it really that the immune system or the body’s defence mechanism of one person worse or better than the other? Theory given to you is that germs sometimes invade you successfully and make you sick. Almost every mother has said it: "Wear a jacket or you'll catch a cold!" Is she right? So far, researchers who are studying this question think that normal exposure to moderate cold doesn't increase your susceptibility to infection! Many products on store shelves claim to boost or support immunity. But the concept of boosting immunity makes little sense scientifically. Attempting to boost the cells of your immune system is especially complicated because there are so many kinds of cells in the immune system that respond to so many different microbes in so many ways. Which cells should you boost, and to what number? So far, scientists do not know the answer.

Your immune system is made up of a network of cells, tissues, and organs that work together to protect the body against infection and maintain overall health. The human body is an optimal environment for pathogens, such as bacteria, viruses, fungi, and parasites to thrive. The immune system works to limit these microbes’ access to the body and prevent them from growing and causing illness. Scientists have given concept of beneficial bacteria and bad bacteria. When the bad bacteria take over beneficial bacteria we fall ill. They feel that for people to be healthy a balance needs to be maintained between good and bad. There are also studies which prove that Stress, healthy lifestyle and Positive emotions boosts our immune systems. When we are under stress or under negative emotions, your immunity goes down which makes your body more prone to illness. Dr. B.M. Hegde terms illness beautifully. He says illness and wellness are very well-crafted words. I-llness is because of the strong feeling of ‘I’, we-llness comes when you have the feeling of ‘We’.

When you replace ‘I’ with ‘WE’, you move from illness to wellness! This is the way of our cells. Just the way our cells live together and take care of each other, we as a human being are expected to do the same with other organisms on the planet.

This has been proved by the recent studies at John Hopkins. Fecal Microbial Transplantation is used to cure recurring illness. Taking too many antibiotics kills off too many “good” bacteria in the digestive tract. Faecal transplantation (or bacteriotherapy) is the transfer of stool from a healthy donor into the gastrointestinal tract for treating recurrent C. difficile colitis. Similar claims have been made about Cow Urine Therapy provided in Ayurveda, natural alternative care for most of the diseases including Skin diseases, Cancer, Heart diseases, obesity, leprosy etc. Although west has proved that the effects of the cow urine are negligible on the laboratory setup, in many cultures it is still used as a cure. Anyways, I am not here to debate who is wrong or who is right but to understand why do we get ill in the first place? Why we see our previous generations healthier even fitter then ours. We may have longer age expectancy then previous generations but we are definitely not the healthiest. Is it just the lifestyle which has changed or is there something very basic which we tend to ignore since it cannot be seen inside a microscope?

How do we explain Autoimmune diseases? Why women are more prone to this? Autoimmune diseases occur when our own immune system destroys its own healthy tissues. In such cases, white blood cells in the body cannot distinguish between pathogens and the body’s normal cells, setting off a reaction that destroys healthy tissues. While there are over 80 distinct types of autoimmune disorders, common ones include rheumatoid arthritis, psoriasis, and Crohn’s disease.

In school, you may have learned the basic component of a cell: the nucleus which is a cell repairing agent and houses the DNA-our genetic material, the energy producing mitochondria, membrane which separates the cell from its environment and allows materials to enter and leave the cell and the cytoplasm in between. Although this sounds simple to define, cell is a whole lot complex world. These smart cells can function exactly like human beings. Bruce Lipton in his book *Biology of Belief* has even gone ahead and termed cells as “miniature-humans”

If we just look from your sensory organs, we are individuals. This body

belong to you and it differentiates you from everyone else but if we break yourselves down to the size of individual cells, we are a bustling colony of cells. Each of these cells can perform all the tasks you and I do on our daily basis for survival. They also eat, excrete, run away from danger, move toward hospitable environment, reproduce and finally die. They have their own brains to perceive the environment. They too exhibit awareness to their environment. You are like a mini earth for these 100 trillion cells. Each cell has taken up a specialized task to support your human body. Some cells have changed their shape and size to support our respiratory function while others have taken special roles to form our brain, reproduction organs, stomach etc. They all have taken up specialized roles to form a superior awareness called human body. Our bodies try to keep ourselves very very fresh. 50 billion of these cells die daily and are replaced by newer cells. Human skin cells called keratinocytes, are shed almost every hour. It is also estimated that every 6 months you get an almost new body as most of your cells are getting replaced. To explain this ever-changing human body, there is a very interesting story of Buddha.

Once Buddha was sitting under a tree with his disciples. Suddenly a man approached Buddha looking furious. He was a businessman and his two sons were followers of buddha. This man felt that his sons are wasting his time and energy instead of focussing on their business. The Business man was very upset. So, with this seething anger he came close to Buddha and spat on his face. Buddha smiled gently. The disciples around him became furious seeing this but they kept quiet since Buddha would not tolerate any violence from their side. When business man saw that his action has not generated any reaction he simply walked away. The Businessman couldn’t sleep that night. Every time he tried closing his eyes, Buddha’s calm smiling face would come before his eyes. The enchanted smile of buddha made his mind restless. Next day he went to Buddha and fell at his feet and asked for forgiveness. Buddha said, “I cannot forgive you!” Everyone present including Buddha’s disciples were surprised by these words. The businessman further added that he has wronged Buddha by spitting on his face. Buddha replied calmly, “The person on whom you spit is not here right now. If I ever meet that person whom you spat on, I will convey him to excuse you. To this person who is here, you have done no wrong.” Not only did Buddha showed real compassion but also touched the aspect that we are an ever-changing body. We are getting a new body every day with millions of cells getting replaced by newer ones.

Every cell can survive on its own as demonstrated by scientists when they remove individual cells from the body and grow them in a laboratory petri dish. It should not be surprising that cells are so smart. They were our first forefathers and inhabitants on earth. Single-celled organisms were the first life forms on this planet. For almost 3 billion years of the Earth's history, only free-living single celled organisms – bacteria, protozoans and algae – populated the earth.

These tiny organisms have been responsible for the ozone layer formation. Approximately 2.5 billion years ago, there was literally no oxygen in the atmosphere. In this almost inhabitable planet, the bacteria's called cyanobacteria obtained their energy through photosynthesis. Cyanobacteria are the only photosynthetic prokaryotes able to produce oxygen by converting carbon dioxide. These small organisms over the next billions of years, little by little, converted most of the C02 to oxygen. Not only this bacterium is responsible for human existence but also morphed themselves as chloroplast in trees so that they can increase their chances of survival. Around 600 million years ago, ozone layer came into existence from the oxygen formed by these bacteria. Before ozone layer, earth was not able to sustain complex multi-cellular organisms like you or even your favourite dog. Nothing that you and I have today would have been possible without the efforts and contribution of these tiny organisms. Chloroplast are still contributing through plants and giving us much needed oxygen for our survival. Do we really say thank you to the plants let alone those small creatures?

"They also illuminate a mysterious phase of geologic history, when there was hardly any oxygen in the air and photosynthesis — the process that would eventually oxygenate the atmosphere — had just evolved," said Andrew Czaja, a geologist at the University of Cincinnati.

Sadly, your history books, don't teach students to feel gratitude for the plants and the life which had existed for billions of years. We treat this magical phenomenon as an ordinary thing or a lucky chance and that we are the fittest to rule or eliminate anyone. This philosophy is an extension of Greek mythology, which we will see later in detail.

Darwin didn't deny the presence of God but simply implied that chance not Divine intervention was responsible for the life on Earth. In 1859, Charles Darwin revealed the theory of evolution, Survival of the fittest. It was

discovered that life is a constant struggle for survival. Little did they realize that all life on this planet were living in harmony except may be human race.

Tom Chi, Co-Founder of Google X, highlights a beautiful analogy. Imagine if you were born 2.5 billion years ago as cyanobacteria. You see other members of the community dying in a couple of weeks. Suppose the thought comes to your mind as to 'what is the purpose of life'. Nothing is really changing. I will leave the planet exactly as I came. You could have never imagined in your wildest dreams that your very existence was planning for the life of multicellular organisms billions of years later. If you were those bacteria, the scope of this understanding would have never come. It was true for those organisms; it might be true for us today. I too had this question as to why I am born on this planet. What is my purpose here? If I simply compare my life with that of billions of years back, I can see that our lives too might be needed for others. We all are expected to work for others and not for ourselves. It was possible for these small microorganisms to change the planet, it is possible for us too.

Around 600 million years ago, these single cells decided to live in colonies as multi-cellular organisms, to obtain smarter adaptations and survival. Initial organisms were ranging from 10s to 100s of cells. But the evolutionary advantage of living in a community soon led to organizations comprised of millions, billions and even trillions of these social single cells. Although each single celled human is of microscopic dimensions, their social communities appear as a single entity to the naked eyes – a mouse, a dog, a human, are highly organized colonies of millions and trillions of these cells. The progressive aspect of evolution is a simple push to increase survival. The more awareness an organism has of its environment, the better its chance of survival. When cells band together they increase their chances of survival. When cells band together they increase their awareness exponentially. Everyone has heard the phrase "two can live as cheaply as one." In one sense, it's more practical. If you invite a friend or spouse to live in an apartment who pays in his own way, your per capita expenses will go down. The amount of energy that a single cell has to spend in doing all the survival functions can be conserved by living in communities. That's what looks to be the extension of animals living in groups taking care of old, children and chance of surviving together increases. So, in a way an amoeba and you are the same thing, only the complexity has increased.

To sustain at such high confusion, cells created structured environments. These sophisticated communities subdivided the workload with more precision and effectiveness than the ever-changing organizational charts that are a fact of life in big corporations. It seemed more logical to assign specialized tasks to individual cells exactly like we have in big organizations. What now looks to our naked eyes as lungs, kidneys, heart etc. are but specialized departments who have taken specific tasks to keep our body to survive. A process of cytological specialization enables the cells to form the specific tissues. Over time, this pattern of differentiation, i.e. the distribution of the workload among the members of the community, became embedded in the genes of every cell in the community, significantly increasing the organism's ability to survive. You will never see a heart cell producing a liver cell or a cell in the skin to produce a brain cell. The genes responsible for the reproduction and coding of the proteins knows what should be done.

Even our bones are made from specialized cells with the help of minerals. There are specialized cells which form the tissues and organs of our nervous systems. The nervous system's function is to perceive the environment and coordinate the behaviour of all the other cells in the vast cellular community.

Our current organizations are exactly replicating what those single celled microorganisms figured out millions of years back. Look at any production line of a car company, you will find that the assembly line is divided exactly on the same criteria. Instead of asking one person two do all the job of assembling a car, one person is assigned to fit the engine, other to fit the interiors, other the tyres etc. It not only increases efficiency but also makes the person master in their areas. This philosophy helped Ford in early 1900s, produce a new automobile every ninety minutes rather than weeks. All the workers in the assembly line work in coordination and support each other to make the end product. Quality of end product depends upon each and every worker on the assembly line.

Unfortunately, we forgot about the cooperation necessary for evolution when Charles Darwin emphasized a radically different theory about the emergence of life. Charles in his book, *The Origin of Species* defined evolutionary process as a struggle for survival. For Darwin, struggle and violence are a part of animal nature. The theory that human evolved from lowest forms of life would have been really against the widely held belief at that time. It was nicer to call ourselves the "*fittest*". We were the fittest to rule all.

Frank Ryan in his book, *Darwin's Blind spot*, identifies some of the basic drawbacks in the Darwin theory. Darwin based his revolutionary theory of evolution on competition between individuals, leading to the accumulation of moderate changes, dictated by natural selection. However, he overlooked the creative importance of living interactions, whether symbioses between varied species or as cooperation within species, particularly among humans. This central realization of the book leads to something like a new way of looking at evolution. Frank says, "Natural selection is still a factor, but not necessarily the major factor anymore. This is implied in the discovery not too many years ago that the mitochondria that inhabit the cells in our body are almost certainly the remnants of a once free-living bacterium that, long ago in the primeval soup or near an undersea volcanic caldron, entered a cell and stayed. We are then the product of symbiosis, which may have begun as one cell invading the other, and over the eons turned into a domestic living arrangement with the invading cell providing power to the larger cell as that cell protects and feeds the symbiont that is now earning its keep."

Bacteria represent life's true pioneers. They conquered the inhospitable wilderness of the primeval earth with no other mechanisms than the genomic capacity for change coupled with nature's selectivity.

In his book, *Missing Microbes: How the Overuse of Antibiotics Is Fuelling Our Modern Plagues*, Dr. Martin J. Blaser, Director of Human Microbiome Program at New York University, shows shocking research while revealing the damage that overuse of antibiotics is doing to our health: contributing to the rise of obesity, asthma, diabetes, and certain forms of cancer. Dr. Martin Blaser takes us centuries back where for hundreds of thousands of years a bacterial and human cell has existed in a peaceful cooperation that is responsible for the health and equilibrium of our body. Now, this invisible symbiosis is being irrevocably damaged by some of our most revered medical advances—antibiotics—threatening the extinction of our irreplaceable microbes with terrible health consequences.

Yet today we are taught to wage a war against microorganisms ranging from antiseptic soaps to antibiotics. We ignore the concept that many bacteria are essential for our health. Antibiotics are indiscriminate killers; they kill bacteria that are required for survival as efficiently as they kill harmful bacteria.

The brilliant thing about evolution is that not only microorganisms evolved,

they also documented the entire process. The evolution has been documented in physical copies called genes. Like we have Bill of Material and Production Instructions for any production activity similarly cells need instructions for production. Genes are the physical memory of an organism's learned experiences. Genomics aims at the collective characterization and quantification of genes, which direct the production of proteins with the assistance of enzymes and messenger molecules.

There is a common misconception that our genes are only passed on by our parents. We can refer to this as vertical gene transfer. Genetic engineers have proved that Horizontal gene transfer (HGT) is real. HGT is the movement of genetic material between unicellular and/or multicellular organisms other than by the ("vertical") transmission of DNA from parent to offspring. Horizontal sharing of genetic information helps other organisms or individual cells to learn from the experiences of others. (Ochman, H., Lawrence, J. G., & Groisman, E. A., 2000; Dunning Hotopp, J. C. ,2011)

Based on the above we can infer that genetically modifying a crop can have a drastic effect on the entire world because everything interacts with every other thing in the way that Darwinian Theory can never imagine. There are already lot of research by genetic engineers which said of dire consequences as the engineered genes in one organisms/plant can alter other organisms in the environment (Watrud, et al, 2004; Biello 2010). Many scientists have realized that Earth and its entire species is one interactive, living organism. If you tamper with any aspect of life, may be altering organisms through genetic engineering, or genetically modifying our food, depletion of forest covers or depletion of ozone layer, can threaten the survival of all.

Darwin's theory of evolution has led to the birth of exploitation and material possession. What does survival of the fittest means? Who can be call fit? Does that mean: muscles or money? The fit in the modern world meant the rich. The Rich were considered the fittest to survive and there was no importance placed on the means of gathering money. Whether it was ethical or not. Cooperation which prevalent among all other organisms have been lost! We are running to gather more. We are jealous of our friends, neighbours because they are more successful. We feel small if a person with high stature or money comes. The Darwinian focus on the fitness of the individual de-emphasizes the significance of communal cooperation in evolution.

Darwin's theory gave rise to competition. Our schools, our educational setups are made as an extension to Darwin's theory. You are asked to compete to be among the top. Instead of learning cooperation like nature shows us, we at a very early age learn to compete. Not only that identifies who is the best but also their chances to survive in the world are drastically increased. Our body is a perfect example of cooperation. Our companies are the perfect example of cooperation.

In fact, Epigenetics the hottest fields in science today literally means beyond genes. The researchers are showing that organisms adapt to their environment and can pass on these adaptions to the future generations. It has taken subtle chemical modifications to DNA and DNA- associated proteins that enable organisms to adapt to their environment and pass on those adaptations to their off-springs without changing the structure of the DNA molecule. The genes we inherit from our mothers and fathers don't decide our fate.

Systems Biology, another latest scientific field, is based on the understanding that the whole is greater than the sum of the parts. Instead of just focussing on a part of the body for treatment or understanding, the study focuses on complex interactions within biological systems, using a holistic approach. A system is an entity with interrelated and interdependent parts; it is defined by its boundaries and it is more than the sum of its parts (subsystem). Changing one part of the system affects other parts and the entire system, with predictable patterns of behaviour. Growth and adaptation of a system depend upon how well the system is adjusted with its environment, and systems often exist to accomplish a common purpose (a work function) that also aids in the maintenance of the system or the operations may result in system failure. So, in Systems biology, if you want to study a heart disease, you don't just focus on the function and structure of heart but look holistically how it interacts with other systems of the body including brain, immune system etc.

Deep dive into the world of a Single Nucleated Cell

Cell is the basic unit of life. All organisms are made up of one or many cells. All cells have cell membrane, which act as a barrier that separates a cell from its surrounding. Every cell has small organs called organelles, which are adapted for carrying out one of more vital functions (analogous to the organs of the human body such as the heart, lung, and kidney). Organelles are the

factories that carry out all the processes needed for the cell to survive and function. The organelles make proteins, reproduce, process chemicals and generate energy.

The cell membrane: It is the single most important component of a cell. All cells, whether prokaryotic or eukaryotic, have a membrane that envelops the cell, regulates what moves in and out (selectively permeable), and maintains the electric potential of the cell. This oily cell membrane keeps and protects the delicate components of life: genetic material, organelles etc. Cell membrane is a fluid oily structure and not a solid. It is in constant state of flux, helping cell to take in food (oxygen, amino acids, and ions), remove wastes, let specific hormones or ions in and out, communicate with other cells and gather information about the environment. What happens when you destroy the membrane of a cell? Well, it dies instantaneously. You must have got the importance of the cell membrane plays in your body. Let's take a close look at the cell membrane. So, what gives the cell membrane the ability to do all the magical things? Cell membrane is a complex world in itself.

At the very core, it is made up of phospholipid bilayer. Bilayer means there are two layers of phospholipids, arranged in two parallel layers (Refer Fig 2). Phospholipid (fatty acids, phosphate group and glycerol) is kind a like a person. It has a head made of phosphate group and two legs made of fatty acids. Glycerol molecule holds the legs and head together. The phosphate (polar – electrically charged) head is hydrophilic – water loving. Lipids (non-polar) are basically fats hence hydrophobic. All lipids have one thing in common - they do not mix with water. You can see this quite well if you try to combine oil and water. No matter how much you shake them together, they remain separated. Since water is present both inside and outside of the cell, the fatty legs are hidden from both sides by the water loving heads. Scattered in the lipid bilayer are cholesterol molecules, which help to keep the membrane fluid consistent.

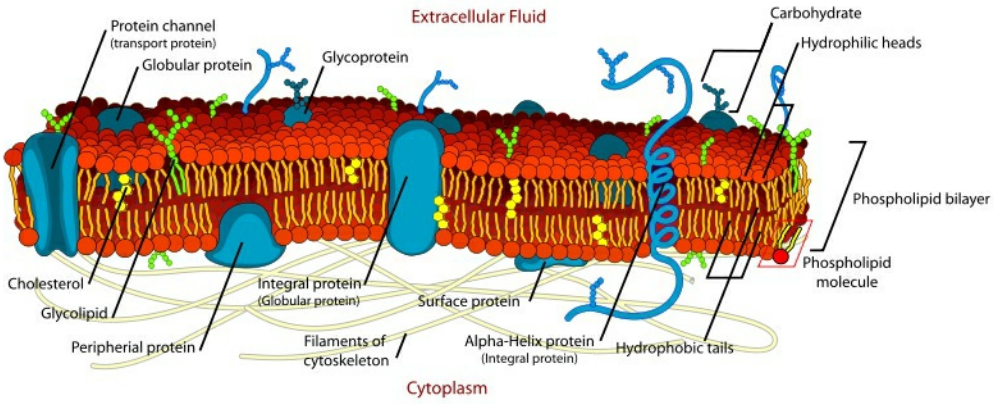


Figure 1 Cell Membrane

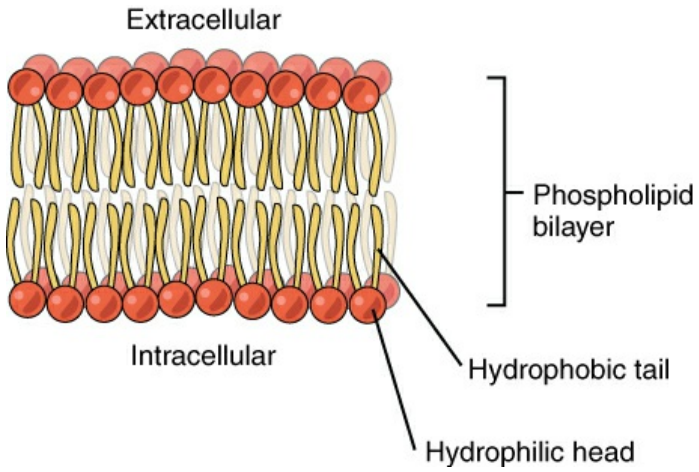


Figure 2 By OpenStax [CC BY 4.0 (http://creativecommons.org/licenses/by/4.0)], via Wikimedia Commons

The cell would die if the membrane didn't allow nutrients to go inside the cell. The polar electrically charged heads of the bilayer are closely packed to only allow very small non-polar molecules can pass through our cells without any energy expenditure. They just slips through the gaps in the heads into the fatty tail area and then back through the heads into our intracellular space. Nonpolar molecules like oxygen, carbon dioxide and certain vitamins can easily diffuse through these bilayers. Polar and charged ions/molecules like Na^+, glucose, water, amino acids cannot easily pass through because of the lipid layer sandwiched inside. Remember this fat layer hates water and charged particles!

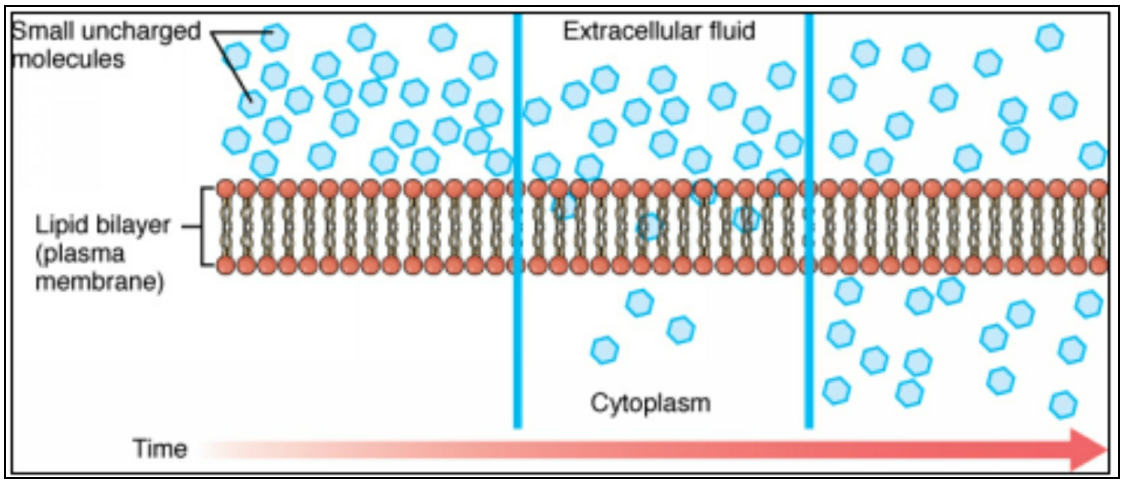


Figure 3 Simple Diffusion - By OpenStax [CC BY 4.0 (http://creativecommons.org/licenses/by/4.0)], via Wikimedia Commons

How about charged ions like sodium and potassium? How do they get inside our cells? Well if you see carefully figure 1, you will notice some blue coloured structures embedded through the bilayer. These structures are like entrance gates in the highly secured building. Each of these gates allow only designated person carrying a valid ID. These gates are made up of proteins. You will notice that the lipid bilayer is not smooth because there are a variety of proteins attached to the surface and embedded in the membrane. You will find **millions** of embedded integral protein channels when you look at the cell membrane. Each type of protein has a specific purpose. Examples of membrane proteins include ion channels, receptor proteins, proteins receptors which help communicate with other cells among many others. The role of these protein channels is to regulate right molecules in and out of the cell. I think you might have got a little idea how complex your cell membrane is! These cell membranes are present of each of your trillion cells. Refer to figure 4 and let's dive into our cell.

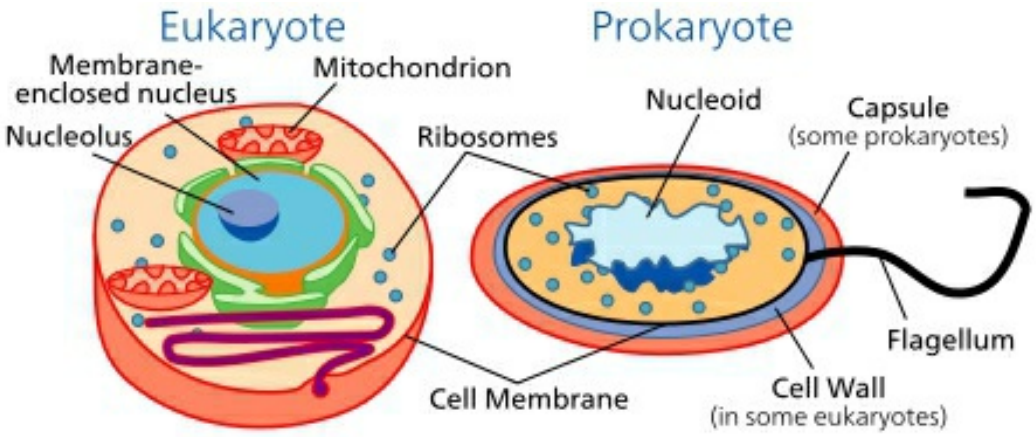


Figure 4 By Science Primer (National Center for Biotechnology Information). Vectorized by Mortadelo2005. (SVG version of Image: Celltypes.png.) [Public domain], via Wikimedia Commons

Cytoplasm: Inside the membrane, the cytoplasm takes up most of the cell's volume. Cytoplasm is made up of a jelly-like fluid (called the cytosol) and other structures that surround the nucleus. Cytosol is made mostly (70%) of water and contains most of the important nutrients like proteins, amino acids, sodium/potassium ions etc.

Cell nucleus: A cell's organ which takes care of reproduction. A membrane bound cell's main organelle, the nucleus is the most conspicuous structure found in a eukaryotic cell. This organelle has two major functions: it stores the cell's hereditary material, or DNA, and it coordinates the cell's activities, which include growth, intermediary metabolism, protein synthesis, and reproduction (cell division). Nucleus is the reproductory organelle of the cell. Not only it repairs cells wear and tear but also helps in cell division.

Mitochondria: A cell's organelle which takes care of the respiration. It is analogous to the lung in our body. Whenever a cell respires, energy is generated in the form of Adenosine triphosphate (ATP) molecules. Adenosine triphosphate (ATP) is considered by biologists to be the energy currency of life. Like everything else, cells need energy for performing various activities which are vital for life and living beings. It is the high-energy molecule that stores the energy we need to do just about everything we do along with various chemical activities needed for life. Cells present in the nervous system and muscle cells have more mitochondria as they need more energy compared to other cells. Animals store the energy obtained from the breakdown of food as ATP. Mitochondria can be treated as our cells own rechargeable power batteries. It is estimated that more than 2×10^{26}

molecules or 160kg of ATP is formed in the human body daily!

Ribosomes: Are cell's organelles that process the cell's genetic instructions to create proteins. Ribosomes are like construction guys who connect one amino acid at a time to build a protein. Ribosomes are found in cytoplasm (in eukaryotic cells it is made in nucleus and released into the cytoplasm) and are experts who can create a particular protein based on the instruction released by the DNA. In a mammalian cell, there can be as many as 10 million ribosomes!!

Lysosomes: Are membrane bound cell's organelle which can be analogous to garbage collectors. Lysosomes contain enzymes that help digest waste, foreign particles, dead-organelles. Lysosomes contribute to a dismantling and re-cycling facility.

Endoplasmic reticulum: It is the main manufacturing plant in the cell. Endoplasmic Reticulum (ER) works like an assembly line in a factory. It makes and package proteins and lipids (fats). These lipids and proteins (membrane proteins) are used to form the cell membrane or the membrane of other organelles. Some proteins can also be transported outside the cell. ER in the cells take different roles depending upon the place the cell is found. For example, in cells found in heart, ER stores calcium ions needed for heart contractions.

Golgi apparatus: Is a cell's organelle which can be analogous to a packaging and warehousing unit in a factory. Proteins and lipids manufactured by ER can be used for internal or external purpose. It is the role of Golgi apparatus to package the proteins or lipids in a safe package called vesicles. These vesicles can now be either be transported to organelles within the cytoplasm or secreted outside the cell. Certain cells which make hormones or steroids are also transported to other parts of the body with the same mechanism. Packaging keeps the protein and lipids safe and easy for transportation. Example, pancreas cells which secrete hormone like insulin is transported into the blood stream with the help of these tiny bubbles called vesicles. Disruptions of this delivery system contribute to diabetes, neurological diseases and immunological disorders [1]

Genetic Material: One of the criteria which we associate with biological life is the ability of an organism to reproduce. Charles Darwin (1809–1882) stated that all species of organisms arise and develop through the natural

selection of small, inherited variations that increase the individual's ability to compete, survive, and reproduce. Darwin’s theory led to a race among researchers to find out the material which is responsible for natural selection and variance. In this process of reproduction, the parents must pass this capability or material which has the instructions of further reproduction and survival. Scientist called this material as genetic material. At a time when it was thought that proteins, not DNA, were the hereditary material, Erwin Schrödinger (1887–1961, Nobel laureate) argued the genetic material had to have a non-repetitive molecular structure. This was the first clear suggestion that genes contained some kind of "code". In 1950s, Francis Crick and James Watson's celebrated structure of DNA – the twisted ladder of the double helix. Since 1953, biology has evolved into a global industry, with our ever-increasing command over DNA at its core.

So, what is DNA or Deoxyribonucleic acid? Figure 6 shows the chemical structure (cropped) of a DNA molecule:

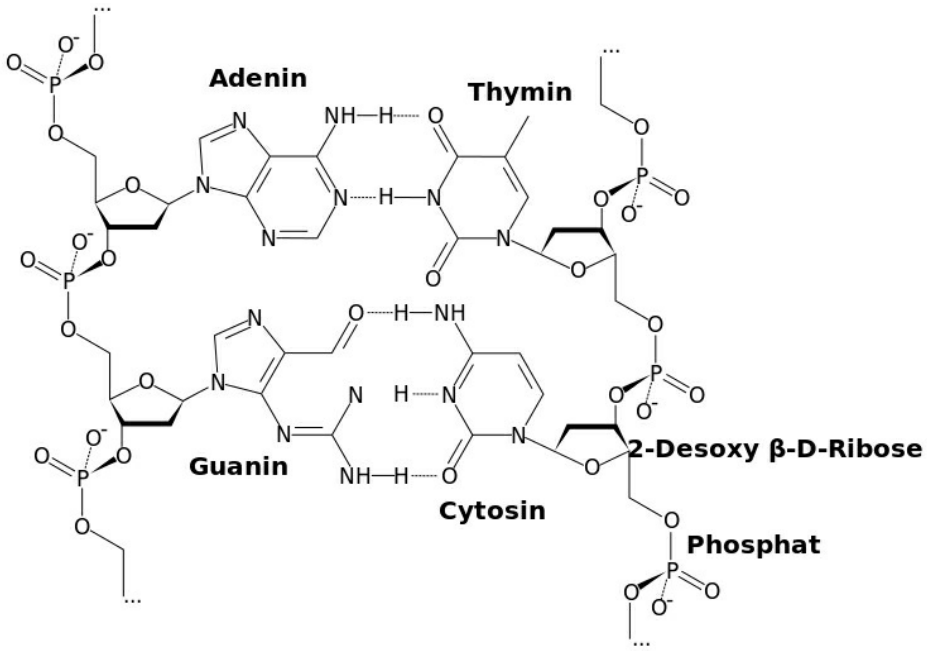


Figure 5 Credit https://commons.wikimedia.org/wiki/User:Medium69 William Crochot

DNA is a molecule that carries the genetic instructions used in the growth, development, functioning and reproduction of all known living organisms. In the nucleus of each cell, the DNA molecule is packaged into thread-like structures called chromosomes. Each chromosome is made up of DNA tightly coiled many times around proteins called histones that support its structure.

Human cells have 23 pairs of chromosomes (22 pairs of autosomes and one pair of sex chromosomes), giving a total of 46 per cell. When a cell divides, these chromosomes replicate and divide and in most cases passed into the exact copy in the two or more daughter cells. Different people can have slightly different versions of the same genes. This is called genetic variation.

With this we have gone through the basic structure of cell. Let's get down to understand one of the most important job of your cell: protein synthesis.

Protein Synthesis

Proteins are the workhorses of the cell. Proteins have various kinds of jobs. Some make your muscles contract and relax. Others help you think, see, walk, digest the food you eat to name a few. Cellular process in our body will not be possible without proteins. Proteins in the Plasma membrane help in navigating molecules, into and out of the cell. Proteins in the lysosome help in digest microbes or damaged organelles (tiny organs of a cell)

Protein outside the cells is Collagen, which is the most abundant protein in mammals. It is mostly found in skin, tendons and ligaments. We can see that Protein is indeed the key ingredient of our survival. Researchers suggest that proteins make up about 75% of the dry weight of our bodies. Some of these proteins (polar molecule) are in the blood and other fluids of the body, and some are in solid form as the framework of tissue, bone and hair.

Proteins are basically made from amino acids. There are 21 diverse types of amino acids. The key elements of an amino acid are carbon (C), hydrogen (H), oxygen (O), and nitrogen (N), although other elements are found in the side chains of certain amino acids. The 20 odd amino acids are combined in diverse ways to make up to *100,000* different proteins required in the human body. I am not sure about you but I am so awestruck when I imagine so much is happening inside a place which we cannot even see with my naked eyes. There is a whole universe working continuously to keep you alive. The protein synthesis is being done every minute.

DNA sequences must be converted into messages that can be used to produce proteins, which are the complex molecules that do most of the work in our bodies. DNA carries the "blueprint" of the cell; it carries all of the information required for the cell to grow, to take in nutrients, and to propagate. RNA can be considered as the personal secretory of DNA. It

copies the instructions from the DNA and take it to the place where the production is required. The genetic instructions are written in a simple language which contains only 4 bases- A, C, G, T which stand for Adenosine Cytosine Guanine Thymine respectively (Shown in Figure 6). The order of these letters in a gene determines which protein gets made.

These bases combine in triplet to form a particular amino acid, example: ACT or GTA. Amino acids can be either hydrophobic or hydrophilic. It's called amino because of the NH2 group attached and carboxyl acid. The order of the amino acids in a protein determines what that protein is made and does.

So, what exactly it takes to make a protein. A hell lot of work!

But if I break it down for you, imagine recreating your mother's favourite recipe. Suppose I call my mother and ask her to tell me how she cooks Ghujiya, Indian sweet eaten mostly during Holi. She tells me the required ingredients I need to make the dish followed by the step by step process. I will write the recipe on a notepad so that I don't forget it while on my way home. Once I reach my home, I will follow the recipe as per the scribblings I have done and voila!

In the similar way for making a particular kind of protein, cell needs to know the recipe for production. These instructions are stored in the DNA (mother's memory) found in the nucleus of the cell. When you want to make a Ghujiya, you will write the recipe on a notepad, similarly in the cell the DNA directs or provides the master recipe for creating proteins, using transcription of information to mRNA (notepad) and then translation (cooking) to actually create proteins. So, during protein production, instructions for making a protein are copied from DNA or genes to a molecule called mRNA (messenger-Ribonucleic Acid).

mRNA is used as the template to produce protein. The messenger RNA moves out of the nucleus into the cytoplasm. Protein factories in the cytoplasm called Ribosome binds to these mRNA. Ribosome reads the template/codes in the mRNA to produce a chain made up of amino acids. There are different types of amino acids. tRNA (Transfer RNA) molecule carry the amino acids to the Ribosomes. The amino acids are then added in the sequence (recipe). Once the last amino acid molecule is added the chain folds into a complex 3D shape to form the protein. Like the final garnish on

top of the dish can modify the look of the dish, in the comparable way, proteins in our cells are modified after they are created. This changes the final appearance of the protein. Golgi apparatus modifies the appearance of the proteins and make them functional. If the protein has to be released from the cells, they are packed in a vesicle and sent out of the cells. Different amino acids are held together by a protein bond called peptides.

How DNA codes your genetic traits for example your eye colour or hair colour?

It depends upon a pigment called melanin. Melanin is made in special cells called melanocytes. There are melanocytes in your skin and eyes, as well as in hair roots. These cells are the reason skin, eye and hair have a particular colour.

Melanin is a complex polymer derived from the amino acid. How much melanin gets made in your eye determines your eye colour. In order to have that pigment, your DNA must code for the protein which then help make that pigment. Sometimes a pigment gene doesn't make enough protein so little or no melanin gets made. And sometimes the protein that does get made doesn't work well. Grey or blue eyes can happen for both reasons.

To start thinking about how melanin is made, let's imagine melanocytes as a factory. There are lots of different steps to make one end product. Making a car, for example, is a lengthy process where each piece is put together in an assembly line. Similar process works in production of melanin. Except that instead of workers, a melanocyte has proteins. These proteins act like workers in an assembly line and carry out the steps for making pigment in your body. They start out with the amino acid - tyrosine. One set of proteins changes the tyrosine bit by bit. The result is melanin.

But making melanin doesn't just happen anywhere in the cell. The entire process happens in special compartments called melanosomes. There are certain types of proteins that move components in or out of melanosomes. Kind of like delivery trucks that bring parts to factories. When melanin is finally made, skin, hair, and eyes darken. [2]

Are genes our fate?

In our earlier discussion, we have seen that DNA or the genes have the necessary information needed for an organism to survive, develop and reproduce. DNA has the instructions which are converted into a functional product, usually a protein. How does this fact become into a dogma that gene are our destiny, that our life is controlled by genes? Why is that most religion still preach that we are the creators of our life and it is our own hand to get whatever we want in life. Why is it that religion is somehow giving us faith irrespective of our shortcomings but science is giving power to your genes which in turn will *dictate* what happens (mostly diseases) in your life?

Confusion also occurs when media repeatedly distort the meaning of the two words: correlation and causation. It's one thing to be linked to a disease; it's quite another to cause a disease, which implies a directing, controlling action. Specific genes are correlated to organism's behaviour and characteristics. But genes are not activated until something triggers them. So, what triggers it? It is the environment (food, climate, relationships etc.) which serves as a trigger to engage this blueprint.

If genes were everything, every pair of twins (same genome) would have the same conditions and diseases, which is not the case. If a person has diabetes his twin has only a 50% chance of getting the disease. Stanford study also suggested that the 75% of the variations in the immune systems of identical twins were due to environmental factors.

Bruce Lipton highlights the importance of environment and cell's life in his book, *Biology of Belief*. He says, "when the cells were given healthy environment, they multiplied but when the environment was less than optimal, cells lost their momentum. When the environment was changed to optimal, cells thrived again. There is a serious contradiction to the Darwinian concept which gives overemphasis that gene control our biology. The research in last few decades has focussed on genetics and has convinced everyone that our genes dictate our life. If our parents pass us good genes we will lead a better life as supposed to those who didn't get good genes. This has made people become victim of their own destiny rather than the master of their life. If Genes are everything, scientists are still not able to understand how 20,000 different types of genes can pack a human being. Chimpanzees are believed to be the closest to human being with our DNA, sharing approximately 99 percent of our DNA, with gorillas trailing at 98 percent.

With the Age of genetics, people with the history of fatal family diseases, live

under constant threat that on some dooms day, their genes are also going to turn on them. Most of the confusion occurs when we misuse the world causation for correlation. If I show you a TV remote and tell you that it controls your television, it makes sense because you need remote to navigate through the TV. But does it really control the TV? If it actually did, we should always find the TV running or changing channels randomly when we reach our home. But does it ever happen? Hence, a remote is correlated to the functioning of the TV; but the person who operate the remote actually control the TV. Specific genes are correlated to person's characteristic traits but to trigger those genes we need some external stimulus. Gene cannot turn on and off them. Despite, Epigenetics (science beyond our genes) proving that genes don't work on their own, the conventional biologists have turned a blind eye.

H. Frederik Nijhout, Professor of Biology has explained this beautifully. He in his work and papers has presented evidence that the notion that gene control biology has been so frequently repeated for such a long period of time that scientists have forgotten it is a hypothesis, not a truth.

This all began with the discovery of the double helix in 1953. Many newspapers back in the day reported "We have discovered the secret of life!". The twisted-ladder structure of deoxyribonucleic acid, by James Watson and Francis Crick marked a milestone in the history of science and gave rise to modern molecular biology, which is largely concerned with understanding how genes control the chemical processes within cells. The central dogma was born when Charles Darwin highlighted that it's the "hereditary factors" which passed from the parents decide and control our characteristics. Till some time, scientists believed that DNA only dictated our physical characteristics but then they started believing that DNA control our behaviour emotions and diseases as well. So, if you are born with a defective happiness gene, you can prepare for an unhappy life.

Well the 1953 discovery led to a race among researchers around the world to uncover Secrets of life. During the 1970s and 1980s came powerful scientific techniques, specifically recombinant DNA research, genetic engineering, rapid gene sequencing among many others. This above belief led scientist to aim to decipher all the different genes present in the body. Enter the massive Human Genome Project in 1990. This was a 15-year project started in collaboration among many countries. The expectation of the Geneticists was that there must be over 120,000 genes in the human body to explain all the

different phenomenon of the magical ability and superiority we had. Sadly, they found that the entire human genome consists of fewer than 25,000 genes. Further researches have suggested that the number might be around 20,000. Genetics hypothesized that they can, with relative ease, fix all our biological issues if they can find a gene corresponding to everything that happens to our body. “There are not enough genes to account for the complexity of human life or of human disease. Results of parallel gene projects have revealed that humans and mouse have roughly the same number of genes!” says Lipton. If fact the fruit fly we see, have 17,000 genes in their genome! Many critics say that this project was scrapped in 2003, due to failure.

Another shocking outcome of the project was that only 2% of the total DNA contributes to the encoding of the protein building blocks. That means that most of the DNA doesn’t contribute to the cell’s protein population. Geneticists named these junk DNA as dark matter. In 2003, they launched another project ‘ENCODE’ to study why do we carry so much Useless DNA.

While the above do hint that genes are not the sole determiner of our fate, the new science called epigenetics has made a revolutionary feat. Epigenetics literally means “arising from non-genetic influences”. Studies in epigenetics have shown that genes are not our destiny! Environment plays a key role in modifying those genes without changing their basic blueprint. This environment influence can range from nutrition, stress and social-relationships.

The gene theory had affected people in a big way. We all remember the case of Hollywood actress Angelina Jolie when she had massive surgeries as her doctor told she carried genes which can cause certain types of cancer. Angelina Jolie in her New York Times article wrote, "My doctors estimated that I had an 87 percent risk of breast cancer and a 50 percent risk of ovarian cancer, although the risk is different in the case of each woman." Jolie wrote, "Once I knew that this was my reality, I decided to be proactive and to minimize the risk as much I could. I made a decision to have a preventive double mastectomy." Later Jolie had surgery to remove her ovaries and fallopian tubes for the same reason.

Researchers called the genes, the brain of the cell. We know that if we remove the brain of a human, the body will die instantly. When the scientist removed the nucleus (housing our genes) from the cell body, they found that

cells are able to survive for days before they die-off due to lack of repair. Since proteins cannot be made, the cell dies due to wear and tear. They also couldn't replicate into child cells. Because, the proteins and the mRNAs present in the cytoplasm will be enough to keep the cell alive for quite a time. Whereas, if you destroy the membrane of the cell, they die immediately. Membrane is a fat layer with gates and channels. So, what according to you is now the brain of the cell?

Many researches have proven that healthy environment and diet can override genetic mutations in mice. In fact, only 5% of cancer or cardiovascular patients can attribute their disease directly to heredity. (Willett 2002; Silverman 2004). The presence of tumours in substantial number of patients are from their environment rather than defective genes. Eminent scientist and physician Dean Ornish revealed that just by changing diet and lifestyle for 3 months, prostate cancer patients switched activity of over 500 genes. Many of these changes halted biological processes critical for the formation of their tumours. (Ornish, et al, 2008). And the good part is, the traits acquired because of environmental influences can be passed on. All the above clarifies that doctors cannot predict which disease you will get just by looking at your sequencing of your genome.

In our body, cells are shaped according to the place they are located. In heart, they have a different shape and in the blood vessels a different.

Based on the distinct functions that the cells take on, give rise to glands, tissues and organs and finally systems. Systems are like the departments in an organization. We have departments like operations, Marketing, sales, finance etc. which are specialist in an area and coordinate with other departments to make sure that organization works well. Below I have presented a brief description of the systems in our body. We all are familiar with those, but quick reading of those will really help you see not only how smart our cells are but also how well they coordinate with other cells. We are one of the perfect organizations on this planet.

Endocrine System:

Your endocrine system is made up of glands. Glands are any structure that makes and secretes hormones. A hormone is a specific molecule that acts as a chemical messenger in the endocrine system. Hormones are mostly made up

of amino acids/proteins and cholesterol. Most common hormones you must have heard include Insulin, Adrenaline, Cortisol, Testosterone etc. We can refer to hormones as a postal letter which is carried by our postman (blood) to different departments. Although the hormones circulate throughout the body, each type of hormone is targeted toward certain organs and tissues. The glands are controlled directly by stimulation from the nervous system as well as by chemical receptors in the blood and hormones produced by other glands. Hormones work slowly and affect body processes from head to toe. These include

- Growth and development
- Metabolism - digestion, elimination, breathing, blood circulation and maintaining body temperature
- Sexual and Reproduction function
- Sleep and Mood
- Heart Rate among many others

Hormones are the first thing people hear when they hit their puberty. We all know that this is the time when we start blaming hormones for everything from say pimples, sexual urges or mood swings.

Your nervous system uses express ways made of neurons to deliver information to specific cells and organs at lightning fast speed but has a short-term effect. Whereas our endocrine system prefers slower and wider stream of data. It sends hormones through a slower moving channel i.e. our blood stream, hence they move slowly but have a more long-term effect.

Although the hormones circulate throughout the body, each type of hormone is targeted toward certain organs and tissues. As hormones travel through the body, they pass through cells or along the membranes of cells until they encounter a receptor for that particular hormone. Remember the cell membrane diagram and the receptor proteins sticking out of the membrane! Hormones can only affect target cells that have the appropriate receptors. This property of hormones is known as specificity. Hormone specificity explains how each hormone can have targeted effects in widespread parts of the body.

If we go into the chemistry of hormones, how do hormones bind to the receptor cells? Most hormones are either made from Amino acids (Hydrophilic – loves water) or they are derived from lipids (hydrophobic –

water haters) like cholesterol. Solubility is important because your cell membrane is made up of lipids, with water loving proteins extending out of the membrane. For amino acid based hormones, they are water soluble hence they cannot directly go inside the cell. For such hormones, there are receptor proteins on the extracellular side of the membrane. Lipid loving hormones can simply glide through the cell membrane and have the receptor proteins inside the target cell. This activates the target cell either by increasing a particular activity by either increasing or decreasing some of its functions.

Many hormones produced by the endocrine system can also trigger the release of another hormone in another gland. These hormones provide a pathway of control for hormone production as well as a way for glands to be controlled by distant regions of the body.

Some of the key glands are:

1. Hypothalamus, Pituitary, Pineal glands in our brain
2. Thyroid gland in our neck
3. Thymus in between our lungs
4. Adrenals on top of our kidney
5. Pancreas behind our stomach
6. Ovaries (if you're a woman) or testes (if you're a man) in pelvic region .

Hypothalamus: This super master organ is a link between your endocrine system and your nervous system (via pituitary gland). Its main job is to tell your pituitary gland to start or stop making certain hormones. Hypothalamus is like the CEO of the company called Endocrine Gland Pvt. Ltd.

Pituitary: This is the master gland of your endocrine system. It uses information it gets from your brain and tell other glands in your body what to do. It makes many different and important hormones, including growth hormone; prolactin, which helps breastfeeding moms make milk; and luteinizing hormone, which manages estrogen in women and testosterone in men. Pituitary is like the COO of the Endocrine Gland Pvt. Ltd.

Rest of all other glands are like respective operations managers for different areas in the company. The actual workers are the cells who finally carry out

the work required to maintain body's homeostasis also referred as the comfort zone.

Pineal: This gland makes a chemical called melatonin. It helps your body get ready to go to sleep.

Thyroid: This gland makes thyroid hormone, which controls your metabolism. (Breathing, heart rate, body weight, cholesterol levels, body temperature among many others) The thyroid gland is located in the front of our neck. It stores and produces hormones that affect the function of virtually every organ in our bodies. Though a small gland, it wields an enormous power over your body. Thyroid gland secretes a lot of hormones which help maintain body's comfort zone. It does this by delivering messages to other glands by secreting hormones. The most important hormones it produces are thyroxine (T4), calcitonin and triiodothyroxine (T3). When you need more energy, thyroid sends out hormones which increase cells metabolism or chemical reactions. Thyroid is responsible for our cells to grow, reproduce and use energy. These hormones and many others help maintain your chemical homeostasis of substances like calcium, sodium, phosphorus and even water by maintaining their concentration. The gland work tirelessly so that your body can provide a consistent internal environment for your cells. Your cells and proteins inside of them needs this stable environment to function properly. Your thyroid helps you to regulate like body temperature, skin's moisture and your blood's level of oxygen, calcium and cholesterol.

Like a factories operations manager reports to a senior manager, thyroid is controlled and monitored by the pituitary gland. Pituitary gland monitors the hormones level in the blood stream are too low or too high. In either case it sends out instruction in form of hormones to the thyroid. Sometimes management slips too. It is the job of these hormones to instruct every cell when to consume oxygen and nutrients. This maintains the body's metabolism. The common diseases are hypothyroidism (high metabolism, hunger, weight loss, anxiety, insomnia) and hyperthyroidism (sluggishness, weight gain, depression)

***Thymus**:* This gland makes white blood cells called T-lymphocytes that fight infection and are crucial for child's immune system development.

***Adrenals**:* Best known for making the "fight or flight" hormone like cortisol, adrenaline etc.

***Pancreas**:* The pancreas is part of both your digestive and endocrine systems. It makes digestive enzymes that break down food. It also makes the hormones insulin and glucagon. These hormones help ensure you have the right amount of sugar in your bloodstream and your cells.

***Testes**:* In men, the testes secrete testosterone—a hormone that is vital to the normal development of male characteristics including sperm production, libido, muscle strength, increase in height, and bone density. It helps them grow facial and body hair at puberty. The hypothalamus sends a signal to the pituitary gland to release gonadotrophic substances. Luteinizing hormone (LH) stimulates testosterone production. If too much testosterone is produced, the hypothalamus alerts the pituitary gland to make less LH, which tells the testes to decrease testosterone levels.

***Ovaries**:* In women, these organs make estrogen and progesterone. These hormones help develop breasts at puberty, regulate the menstrual cycle, and support pregnancy.

You might be thinking why our body needs so many glands and so many different hormones. Remember that our body is intelligent and it fights hard to maintain that. For body to work ideally it needs a stable environment. Any changes in its comfort zone disrupt the complete system. If your body loses this comfort zone too dramatically can lead to lot of problems. Comfort zone can include normal sugar levels, water levels, food levels, sleep levels, body temperature among many others. Hormone levels that are too high or too low indicate a problem with the endocrine system. Hormonal diseases also occur if your body does not respond to hormones in the appropriate ways. Stress, infection, and changes in the blood's fluid and electrolyte balance can also influence hormone levels, according to the National Institute of Health. Lot of endocrine related diseases like hypothyroidism, hypoglycaemia, diabetics,

thyroid cancer tend to be the result of either hyper or hypo secretion of certain hormones.

Let's see some real-life examples and how our endocrine reacts to it. If you have a generous serving of sugar laden food, say double scoop of ice-cream in a cola. Your blood glucose level goes up the roof. Pancreas comes to our aid. Pancreas regulates our blood sugar by secreting hormones like insulin and glucagon. Once you have a meal with lot of glucose, the beta cells in pancreases release a hormone called insulin which lowers our blood glucose by either raising the rate at which the cells stores sugar either as fat or glycogen, for later use.

What happens when you have not eaten any glucose for many hours and your blood sugar level starts to drop. If your blood glucose goes down a certain number, the same pancreas releases a hormone glucagon which raises your blood glucose level by releasing the earlier stored glucose in the cells and restoring the balance.

Many hormones produced by the endocrine system can also trigger the release of another hormone in another gland. These hormones provide a pathway of control for hormone production as well as a way for glands to be controlled by distant regions of the body. These are referred to as cascades. Cascades are generally one kind of hormone directing other cells to produce another kind of hormone. Generally, these orders come from Hypothalamus.

Hypothalamic-Pituitary-Adrenal (HPA) Axis – It is the complex interaction between these 3 glands which helps in lot of your daily processes like digestion, sexuality, immune response and stress management (flight or fight response). Getting your nervous system to work together with your endocrine system at times of crisis requires a mediator. It is when hypothalamus comes to the rescue.

What happens when you are under a life and death situation say, you are inside a building which is on fire. As soon as your senses perceive danger, hypothalamus releases the hormone CRH (Corticotropin-releasing hormone). This CRH makes a trip to anterior pituitary gland. It binds to the receptors of the target cells and triggers the release of ACTH (Adrenocorticotropic hormone). ACTH then travels through the blood stream to adrenal glands. This ACTH then binds to the cells in the adrenal cortex. It releases multiple

hormones including cortisol, adrenaline. Cortisol & adrenaline then triggers multiple responses including ramping up your blood pressure, releasing energy by pumping glucose into your blood, shutting down non-emergency services like digestion, immune system and egg and sperm development. Some of you might be thinking why immune, right? Well our body is smart. When it is given an option to choose between being alive or catching a cold, it knows the priority. It knows it can handle flu later as well. These hormones keep racing throughout your body. When our hypothalamus gets a signal that the stressful situation is gone, it stops releasing CRH which in turns stop the ACTH secretion. This further alerts other glands to stop secreting their hormones. Since this communication between glands is hormonal and not electrical like nervous system, it takes some time before your body return to normal. I am sure you must have noticed that it takes some time for your heart beat and breathing to come back to normal; since those hormones linger in the blood stream before being broken down by enzymes.

Hypothalamic-Pituitary-Thyroid (HPT) Axis: We don't need the HPA cascade frequently in our day. Another cascade which is essential for day to day survival is the HPT axis. This is what sets the thyroid glands into motion. Suppose you are outside on a chilly day near a lake with your friends. Suddenly you all decide to jump in the icy freezing water. As soon as you jump into the water and your blood temperature drops, your HPT axis kicks in. To prevent hypothermia and other consequences of a chilled core, your brain monitors temperature very closely. Your endocrine system kicks in as soon as it detects there is a change in the blood temperature. Your cooler than normal blood travels to the temperature sensitive neurons in the hypothalamus.

Once these cells detect the temperature has fallen below the standard levels it secrets a hormone Thyrotropin-releasing hormone (TRH) into the blood stream. TRH travels to the cells in the anterior pituitary gland. Pituitary gland releases thyroid stimulating hormone (TSH) into the blood stream that then travels to the thyroid cells and attaches itself to the receptors in the cell. Thyroid releases its own special hormones to every cell in your body. Thyroid hormones are made of lipid hence makes it way to inside the cell where it can regulate the cell's metabolism. In this case, since you are feeling

cold, your body stokes some heat by burning glucose. Breaking it down so that its component parts can be used as ATP. This process has a heat producing effect also called calorigenic. Calorigenic is made from two words, calor meaning warmth; genein, to produce.

Once you are out of the pool and have warm tea or cloths, your pituitary and hypothalamus stops secreting their tropic hormones which in turns stops the excess secretion of thyroid. This acts as a signal to thyroid gland to stop now, body is coming back to its comfort zone.

Along with the above, your body has in her armoury other tricks as well. You must have also noticed that when cold, your body starts shivering. Shivering is one such tactic, in which your muscles contract and expand in speedy bursts. In addition to vibrating limbs, your jaw muscles might begin to shiver, making your teeth chatter. This twitching exercise produces heat, which helps to raise body temperature. Despite your effort to stop the shiver, the body doesn't stops contracting.

This explanation was necessary to give you the idea what your body is doing fir its survival. This happens without your intervention or supervision. Science doesn't answer WHY questions, they answer HOW questions. If you search for endocrine system you will see that many articles blaming glands for problems like obesity, diabetes etc. After reading about our hormonal system, we now know that glands are triggered by our environment or by our own perception. They can also be triggered by the chemicals we eat in our foods. Blaming endocrine system for our problems in like blaming the police for the crime that is happening. Anyways, this is pretty much the basic idea about our Endocrine systems. If you want to understand in detail you can go ahead and explore.

Nervous System

All the organisms, except few really simple ones like sponges and placozoans, have nervous systems, ours is probably the mostly complicated and evolved one.

The nervous system consists of the brain, spinal cord, sensory organs, and all the nerves that connect these organs with the rest of the body. Together, these organs are responsible for the control of the body and communication among

its parts. The brain is like a computer that controls the body's functions, and the nervous system is like a network that relays messages back and forth to parts of the body. Cells have taken a special shape and behaviour to form our nervous system. We call these cells as neurons. Neurons are the most calorie consuming cells in the body. Our brain consumes 25% of the total body energy.

Basic function of the nervous system is to coordinate all the functions of the body and respond and adapt to changes that might occur both inside and outside our physical bodies. At the cellular level, the nervous system is defined by the presence of a special type of cell, called the neuron, also known as a "nerve cell". Neurons have special structures that allow them to send signals rapidly and precisely to other cells. They send these signals in the form of electrochemical waves traveling along thin fibres called axons, which release chemicals called neurotransmitters to be released at junctions called synapses (refer to figure 6).

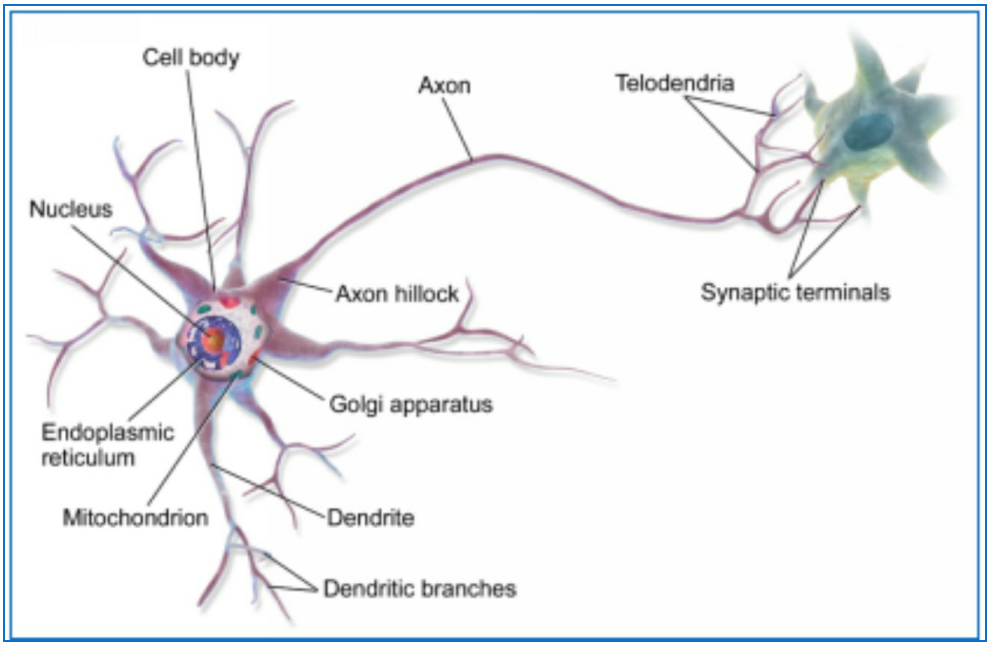


Figure 6 Nerve Cell - By BruceBlaus - Own work, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=28761830

The nervous system in vertebrates, consists of two main parts

1. Central Nervous system (CNS) which consists of brain and spinal cord. The spinal cord is the link between the brain and the nerves. It’s your mail Control Centre from where orders are released to

the rest of the body.

2. Peripheral nervous system (PNS) as the name suggest is essentially a web of nerves outside the brain and the spinal cord. PNS mainly consists of nerves that branch of from the CNS to every part of the body. Peripheral nerve system is subdivided into somatic and autonomic nervous system. Since the PNS is setup to do the work of communication it works in both direction. Sensory division (also called afferent) of PNS is what picks up stimuli and brings the information to the brain. Motor or efferent division sends directions from your brain to muscles and glands. Nerves that transmit signals from the brain are called motor nerves, while those nerves that transmit information from the body to the CNS are called sensory nerves.

If you are already feeling that our nervous system is very complicated, we have just touched the tip of the iceberg. The nervous system detects environmental changes that can impact the body, then works in tandem with the endocrine system to respond to such events.

What happens when you accidently touch a hot object? As soon as you touch it, the sensory neurons present on our skin get activated. The signal then races up to the PNS into your spinal cord. Some of these neurons send immediate message to your muscles in the hand to immediately move the hand away from the hot object. Sometimes this movement happens so quickly that you don't even have time to interpret what and how this happened. Your inter-neurons will transfer this information to your brain and you will come to know that you have touched a hot plate. You can now start crying or shouting at your mom for placing the hot plate in the wrong place. Luckily, this neurological relay race takes a lot less time than it just took to read about it! One more example is from my own experience. Once in my childhood days, I was playing cricket with my friends. During the time my team was batting, I volunteered to stand as an umpire. As soon as the bowler bowled, my friend hit the ball hard and right toward my face. I miraculously fell backwards on the ground and avoided the collision with the ball. The reaction time was so less that I couldn't believe I avoided collision. It is now I can infer how this reaction took place at a lightning speed. When the sensory nerves in my eyes saw the ball coming towards my face, it immediately alerted my CNS and it sent the message to my legs to bend backwards and let my body fall. This

was not done consciously. This automatic reaction of the nervous system is handled by autonomic nervous system. This is all based on the connections between the neurons.

How do neurons communicate at such a lightning speed? Each neuron in your body is like a battery with its own positive and negative charges separated. When these charges come together, the electricity is generated. Same happens with our household batteries which we use in our toys or clocks. The positive and negative charges are separated and a battery does not do anything unless they can mingle. The Voltage is the measure of the potential energy generated by these separated charges. Voltage is measured in volts (1.5V for the normal pencil cells used in our households) but our cells voltage must be measured in millivolt since the potential is low. In a cell, we refer to this difference of potential as *membrane potential* because it's the cell membrane which separates the positive and negative ions. The higher the difference between the negative and positive charges, the more the potential of the cell. When a neuron is at rest state, it is more negatively charged inside the cell then the extracellular space around it. The difference is called the neurons' resting potential. The resting membrane potential of a neuron is about -70 mV (mV=millivolt) - this means that the inside of the neuron negative charged compared to outside. Why is that? At rest, there are relatively more positively charged sodium ions floating outside the cell membrane of the neuron and lesser positive charged potassium ions inside that neuron's cytoplasm. This builds an overall negative potential inside the cell compared to outside. Refer to the Figure 7.

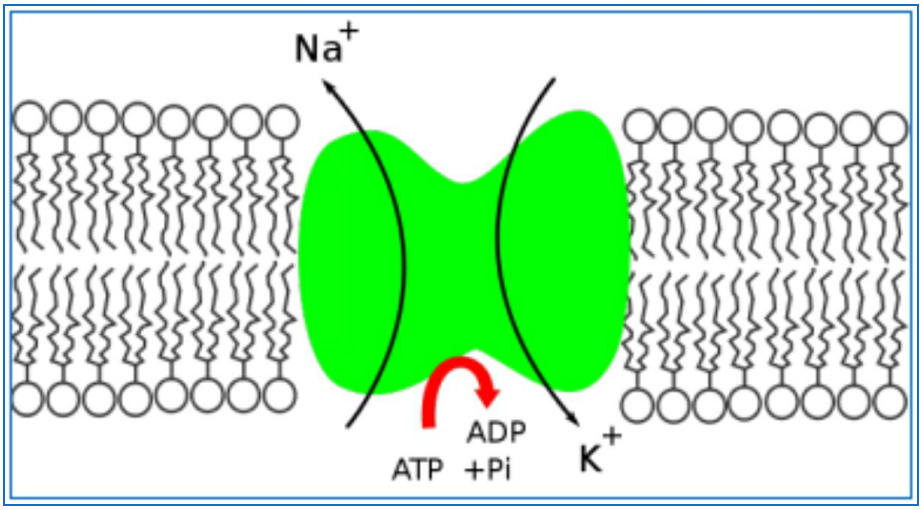


Figure 7 Sodium Potassium Membrane Protein: By The original uploader was Phi-Gastrein at French

Wikipedia (Transferred from fr.wikipedia to Commons.) [GFDL (http://www.gnu.org/copyleft/fdl.html) or CC-BY-SA-3.0 (http://creativecommons.org/licenses/by-sa/3.0/)], via Wikimedia Commons

The sodium potassium pump is a membrane protein that uses energy in the form of adenosine triphosphate (ATP) to perform active transport of sodium ions out of the cell in exchange for potassium ions into the cell. These channels are kind of gates that open only under certain conditions. There are thousands of these channels stuffed into the cell membrane. Bruce Lipton describes these channels as, “This channel opens and closes so frequently that it resembles a revolving door in a department store on the day of a big sale.” Every time this gate opens it pushes 3 positive charges Na atoms out of the cytoplasm and admits two positively charged potassium atoms into the cytoplasm from outside the cell. Sodium potassium pump uses lot of energy in the form of ATP which is generated by mitochondria. This activity creates a potential energy much like the household batteries. These batteries are constantly recharging hence much better than store-bought batteries. The thousands of proteins present in each cell membrane open hundreds of times per second. This creates a potential difference. Since the lipid membrane doesn’t allow the negative and positive charges to cross across, the potential is called membrane potential. These self-charging batteries are used by our nervous system to communicate at lightning speed.

Sodium Potassium pump is not the only channel which allow ions to pass through the cells membrane. There are other ion channels which also open like gates to allow ion exchange via cell membrane. These channels open and closes based on several reasons. Some of the channels are voltage gated channels which opens and closes in response to change in membrane potential. All neurons communicate by the changes in the membrane potential.

When there is any external stimulus, say you accidently touch a hot pan, this triggers the mechanical sodium channels to open introducing positive Sodium ions inside the cell which increases the positive charges inside the neuron. This leads to potential to become little positive. The stimulus should be strong enough to cross a specific threshold (-55mV) to initiate the actual action by the neurons. If the stimulus is weak enough to not cross this threshold, the neurons go back to its resting state.

Once the threshold value is reached, then the real action kicks in. The

threshold potential leads to the opening of voltage gated Sodium channels which leads to a stream of Na ion inside the cell. This causes a chain reaction causing the next sodium channels to open all the way down to the axon. This influx is so much that the membrane potential turns to be positive 40mV. This change in the potential is caused by the changes in current. This change kicks in a chain of reactions which sends that electrical signal down to the axon. Since there are lot of Sodium channels, few of them in an area open-up.

This lead to the flow of current across the neurons to their axons to other neurons. As soon as this is done, the body should return to its comfort zone. To rebalance the potential, this time the potassium ion channels open allowing the potassium ion to flow out of the membrane. Now once the potential drops to -75mV, the sodium potassium pump comes in to restore the balance and maintains the resting membrane potential (-70mV).

Digestive System

Digestion is a process in which complex food material is broken down to simpler usable substances. The digestion of the food takes place in the alimentary canal which is like a long tube extending from your mouth to the anus. Word alimentary has a Latin origin ‘alimentum’ which means nourishment. Different components of this alimentary canal include your mouth, food pipe, stomach, small intestine, large intestine, anus, liver and pancreas. Liver and Pancreas although not part of digestive system help in the digestion process.

The food is taken in through the mouth where it is chewed and mixed with the saliva, secreted by our salivary glands located in mouth. You must have noticed that just by looking at anything tasty, triggers salivary glands in our mouth to secrete large amount of saliva. If you haven’t, observe closely the next time and you will notice this phenomenon. Anyways, the saliva is mixed with our chewed food and is the first station where food is broken down. Saliva moistens the mouth to help a person chew and swallow food. Saliva also contains enzymes that begin the breakdown of food.

Hence the first step of your digestion is happening right in your mouth. That is why we are asked to masticate our food at least 20 times before swallowing. This process helps to break down the food and puts less pressure on the next co-worker in the assembly line. Chewed food then enters the food

pipe and is then slowly pushed into your stomach where it is further broken down. The stomach secretes digestive juices, hydrochloric acid and enzymes that digest food. Digestion of food in stomach takes anywhere between 2 to 5 hours, depending upon the complexity of the food.

For simpler foods like fruits, it might be done quickly. Once the role of stomach is done, digested food is pushed into small intestine. The small intestine is the location in the body where most of the nutrients from ingested food are absorbed. Small intestine receives the enzymes from liver and pancreas. This coil like structure when stretched, measures up to 20 feet. Small intestine is called small because of its smaller diameter compared to the large intestine. Digested food passes through the inner surface of the intestine which have finger like projections called villi. Villi have an extensive network of blood vessels. The digested food gets absorbed into the blood vessels which then distribute the nutrition to the rest of the body. The undigested food moves forward towards the large intestine. By the time food and digestive juices reach your large intestine, most digestion and nutrient absorption has already taken place. The large intestine absorbs excess water and salts and passes the undigested food for excretion to the anus.

Respiratory System

To remain alive, our body needs oxygen. We breathe in oxygen and breathe out carbon dioxide. This process is called respiration. Our early ancestors, bacteria used oxygen to stay alive. This process worked through diffusion where oxygen was absorbed through the cell membrane. As the organisms evolved, they needed a better way to survive as the oxygen needs was multiplied trillion times. Respiration happens automatically.

Every day you take 17,000 to 30,000 breathes. Respiratory system consists of your Nose, Throat, windpipe and lungs. The breathed air goes to the nostril where it’s filtered, warmed and moistened. Tiny hairs protect the passage and other parts of the respiratory parts. Their main job is to catch hold of any dust or foreign particles making their way along with the breathed air. The air goes through the windpipe to our lungs. The wind pipe also has the lining of tiny hair which provides a second level for catching any foreign particles from entering our lungs. The oxygen molecule then leaves the lung cells and diffuses into the blood vessels or capillaries surrounding it. At the same time,

carbon dioxide transfers from the blood stream into the lungs from breathing out of the body.

So, what happens when we run a 500-meter race? The body needs more oxygen to feed the muscles as they work harder. The body responds by breathing more quickly and deeply. We all can survive without food, water for days but only 1 or 2 minutes without oxygen. Try to hold your breathing for some seconds; you will feel that body is shouting for you to start breathing. Every time you take a deep breathe in, you are inhaling approximately 100,000,000,000,000,000,000 oxygen molecules into your lungs. Oxygen is such an important requirement of the body and is ultimately the fuel that allows our cells to produce energy from the food we eat. It is the lack of oxygen which is the biggest challenge for mountain climbers.

Our respiratory system works with all other systems along with our circulatory system which we will look next.

Circulatory system

When you put your hand to your chest, you can feel your heart beating. But do you still remember what is going on in there? What keeps your heart ticking as it should, automatically, till the day you die?

Every day your heart beats around 100,000 times! By the time you reach the age of 60, your heart has beaten approximately 22,000,000,000 times. Although your heart is no bigger than the size of your fist, it has a mighty job of keeping your blood flowing through 60,000 miles of your blood vessels that feed your organs and tissues. These are some big numbers we are talking about. Food, water and oxygen are the key essential ingredients for our cells to survive. It is the role of heart to transmit these substances through various channels called blood vessels. Blood vessels also have taken roles like arteries – which carry blood away from the heart. Blood leaves your heart through your arteries, travels into progressively smaller arterioles, enters thin-walled capillaries (where oxygen and nutrients are delivered to your tissues and cells), flows into progressively larger venules and finally returns to your heart via your veins. To keep the blood to reach throughout our body, we need a pump for the push activity. Heart plays the role of this pump.

A team funded by the BHF at the University of Oxford has demonstrated

through research on mice that the heart starts beating as early as 16 days after our conception in the mother's womb. This pump keeps working day and night without stop till the day you die. It cannot rest like conscious part of your brain when you sleep. What a marvellous piece of engineering is this organ! There is no rest for these cells. Heart is also made of special cells called cardiac muscle cell. To do this kind of activity, cells have taken the specific shape and role. The blood after absorbing the oxygen from the lungs enters the heart which is then pumped to the rest of the body. Once the blood become deoxygenated, it is carried back to the heart by the veins. The heart then pumps the deoxygenated blood to the capillaries which carries that to the lungs for oxygenation. The lungs exchange the oxygen molecule with the carbon dioxide molecule and send the oxygenated blood back to the heart for another circulatory cycle.

Immune System

Immune System is our body's own private security force. Our Immune system is a collection of organs, tissues, cells and molecules that protect against pathogens. Immune system is comprised of three layers.

First level of defence: Skin, mucous membrane (present in respiratory & digestive tract)
Second level of defence: Fever, swelling and inflammatory response.
Third layer of defence: White Blood cells, Antibodies and Memory cells

While body do fight with pathogens like bacteria and viruses to protect the internal eco-system, it is still mind boggling why some people are not attacked by these viruses while others remain symptom free. We all remember that we are taught to wage a war against germs. In TV commercials, pathogens are shown as demons or ghosts who are waiting to intrude our body and they do so mostly through our hands. This premise that the entire world outside you is eager to attack you doesn't make sense. More so when your own body carriers 1000 trillion such microorganisms.

White blood cells (WBCs), also called leukocytes or leucocytes, are the cells of the immune system that are involved in protecting the body against both infectious disease and foreign invaders. All white blood cells are produced and derived from multipotent cells in the bone marrow known as

hematopoietic stem cells.

Urinary System

Till now we have talked a lot about how our body digests, uses oxygen and other substances. But an essential part of the body is also to get rid of all the toxic wastes that are being generated during the life sustaining process. The urinary system works with the lungs, skin and intestines to maintain the balance of chemicals and water in the body. The most important part of our urinary system consists of your kidneys. Kidneys are mainly responsible for the cleaning of the toxic left over of your blood formed by the toxic nitrogenous waste made by the metabolism and pushing it outside the body. Our body is self-correcting and self-maintaining. Kidneys maintain the water and salt levels in blood, blood pH and blood pressure. Kidneys have an extensive network of blood vessels and capillaries, so much so that at any moment, 20% of our total blood volume is present in our kidneys. You will probably not realize the importance of a healthy kidney unless you talk to someone who is on dialysis. Dialysis patient must sit with a machine for 3 times a week for at least 4 hours each time. The kidneys remove urea — waste product formed by the breakdown of proteins. The body doesn't have a large storage depot for protein, as it does for carbohydrate and fat. The protein we eat from food has to be handled as we eat it. Like rookies sitting on the bench waiting for their chance to play, the amino acids in the pool are ready and waiting to be utilized. Either the amino acids are used within a limited time to build a body protein, or they are transformed.

If amino acids in the pool aren't needed to become a protein, the body is equipped to reconfigure them either back to glucose to be used as energy or into fat. To transform an amino acid, the liver strips off the nitrogen, which may then be incorporated into DNA, RNA, or a nonessential amino acid. Excess nitrogen may also be incorporated into urea, or ammonia, both of which are excreted in the urine. In order to eliminate these, water is needed, so a high protein intake can result in excess fluid loss. The waste liquid that's filtered out by the kidneys is stored in the bladder until the body expels it. The kidneys also secrete a hormone called erythropoietin that induces the bone marrow to produce more red blood cells.

The liver is another important detoxifying organ of the body, especially for

nitrogenous wastes. The liver is the body's second-largest organ (skin is the largest organ). The liver carries out more than 500 roles in the human body and one of its main tasks is to remove the toxins from the body. The cells of the liver play host to biochemical processes that create ammonia from amino acids. Since ammonia is extremely toxic for our body, it is quickly converted to urea before being transported in the blood towards the kidney. Liver also stores, excess carbohydrates, vitamins like A, D, E, K and B12, Iron and copper which are released when needed. Liver also produces 70% of our body's cholesterol which is critical for repairing damaged cells and creating new ones.

"Evolution or God or whoever you choose to believe in wouldn't leave you with such a big organ if it wasn't doing something important," says Robert S. Brown Jr., MD, MPH, a gastroenterology and hepatology professor at Weill Cornell Medicine's Centre for Liver Disease and Transplantation in New York City. You cannot live with your liver. Those important tasks are plentiful, numbering in the hundreds depending on how you count, he says, including helping in digestion and blood clotting, eliminating bacteria and viruses, building protein, and storing sugar and fat. "People forget that everything you breathe, drink, and eat gets processed by the liver," says Sujit Janardhan, MD, PhD, a member of the American Liver Foundation's Medical Advisory Committee and an assistant hepatology professor at Rush University Medical Centre in Chicago. "It's a big manufacturing plant in your body." Take away all those functions and you'd have a tough time surviving. "Because it's involved in so many different pathways and has so many distinct functions in the body, the complications of liver disease can be rather vast," he says.

What happens when you drink Alcohol?

After a drink is swallowed, the alcohol is rapidly absorbed into the blood (20% through the stomach and 80% through the small intestine), with effects felt within few minutes after drinking. It usually peaks in the blood after 30-90 minutes and is carried through all the organs of the body. (Lohr, R. H, et al, 2005). From there it is carried to the liver, where it is exposed to enzymes and metabolized.

The liver can only break down a certain amount of alcohol per hour, which

for an average person is around one standard drink. About 90% of alcohol consumed is metabolised by the liver. The remaining 10% is excreted through urine, breath and sweat. Alcohol metabolism results in the generation of acetaldehyde, a highly reactive and toxic by-product that may contribute to liver tissue damage.

Because it takes time for your body to break down alcohol, drinking more than one unit of alcohol an hour will build up your blood alcohol concentration (BAC) and it may be many hours before you are safe to drive. BAC is influenced by number of factors including presence of food in the stomach. Ethanol is the intoxicating part of alcohol and its molecules are so small that they can pass into the gaps between brain cells. Here they can interfere with the neurotransmitters (the brain's central post office) that govern all the brain's activities. If you drink faster than one standard drinks an hour, alcohol will start to flood the brain. Depending on how much and how fast you're drinking, it can affect the brain stem (even cause it to shut down) and this can interfere with vital body functions. A young person, or somebody unused to drink, may experience this after just a few standard drinks taken in one go. Fortunately, alcohol gives warning signs at each level of penetration into the brain so, if you spot the signs, moderate your drinking, or stop altogether.

Recap:

Two-thirds of a cell is water, which means that two-thirds of your whole body is water. The rest is a mixture of molecules, mainly proteins, fats, Nucleic acids (DNA/RNA) and carbohydrates. Your cells turn the raw materials in the food you eat into the molecules your body needs, using thousands of different chemical reactions. Though all 4 molecular types are necessary, proteins are the single most important component. Our cell can be called as the protein factories. Can you imagine that it takes more than 100,000 diverse types of proteins to run the body?

After the discovery of DNA structure (made from nitrogen containing chemicals called bases – A, T, C and G), Watson and Crick led to the fact that the sequence of the A, T, C and G bases in DNA are the architects of the protein creation. This led to the biology’s central dogma that DNA rules our

lives and all our traits.

We are often told that there is always my truth and your truth and the actual truth. Historically, the western beliefs have led us to think that we are the intelligent creatures and we can look down our noses at lesser creatures as non-intelligent life forms, including plants and animals. Many Biologists argue with the same. If we consider the mirror we see ourselves as individual entities. However, if you look deeper and go down to the size of an individual cell, you can see your body a colony of trillions of human and germ cells. “A human body is a conversation going on, both within the cells and between the cells, and they're telling each other to grow and to die; when you're sick, something's gone wrong with that conversation,” said W. Daniel Hills

Before I end this chapter, I will leave you with below questions:

1. What is inside us that keeps us alive. When we die, who or what has left this body?

2. How does zygote knows all the evolutionary details? How can it be packed in such a small world?

3. Why a dead person cannot see or hear anything despite having the organs? When we are alive, who is that sees the world?

4. How do the molecules of chemical substances associate in order to form the complex organs of the cell?

5. How do the genes contained in the nucleus contain in the zygote determine the characteristics of the individual deriving from that cell?

6. Why has never been another person with the same face, fingerprint and characteristics exactly like you? How does you cell know which face or fingerprint has been taken?

Chapter 3: Diseases and Science

There are two ways to be fooled. One is to believe what isn't true; other is to refuse to believe what is true – Soren Kierkegaard

Science and Industrialisation has taken us far. Everywhere from the villages to the cities, machines have decreased the intensity of human effort. Today, it's not necessary to walk. Elevators and escalators have replaced stairs. Simultaneously with the habitat, mode of the life has been transformed. Indeed, it is evident that modern trains, aeroplanes, automobiles, telephone, and wireless have modified our life in a drastic way. Each individual does a great many more things than formerly.

Each individual is always in direct or indirect communication with other human beings though the intimacy no longer exists. Science changed our eating habits. With the advent of technology of preserving food from spoiling, packaged and canned food made a large part of our diet. Coarse flour, milk, butter was replaced by refined flours, large quantities of sugar in form of pies, cakes and carbonated drinks. Science has demonstrated its usefulness in such an evident manner that it obtained the first place in the school curriculum. Youth understood the role of science in the modern world. Science also helped us with hygiene and suppression of the great infectious diseases which periodically ravaged the world. Infantile mortality decreased with average duration of life augmented.

The word 'Science' comes from a Latin word meaning to know. It is a curiosity to know anything. Curiosity is a necessity of our nature. Curiosity has impelled us discover the universe. That is why children are called the best scientists. Look at the curiosity they have for even the smallest thing! If we see a beautiful flower, we might want to know more about it. We might use our five senses to know more about it. Spiritual science might see the flower holistically while a Physiological and physiochemical sciences would want to pluck the flower from the plant, dissect it, break it down into pieces and study it under a microscope. Who knows the flower better? Both might claim that they understand the nature of this thing. One might talk about flower consciousness other might tell you the chemical present in the flower which give it a unique colour and fragrance. Do we really understand a flower to its entirety? Same goes with the human being. One science calls us matter while the latest ones call us pure energy and matter as an illusion.

But are we really better-off with the present advances? Although intellectual victories have bought us wealth and comfort, moral values have naturally given ground. People abandoned the countryside and flocked in to the cities and factories. We have lesser and lesser time. We are always busy. We are away from our families confined in large cities and high-rises. Science has given us innumerable distractions, Intellectual education of never thinking, incite to earn and gather money by any and every means possible. Our nervous system is delicate. People are not able to endure the confinement of large cities and offices, worries of workplace. They breakdown easily. We are getting more diseases than ever before. Small children are committing suicide at an alarming rate. We live in a constant threat of new epidemics like cancer, obesity, heart attacks among many others. Insanity, nervous breakdown and intellectual weakness seem to have become more frequent. Wireless, medicine and adulterated foodstuffs have been solely accepted because innovations were convenient. No account whatever has been taken of their probable effect on human beings. Perhaps the triumphs of hygiene, medicine, and the modern education are not so advantageous as we are led to believe. “Mental deterioration is more dangerous for civilization than the infectious diseases to which hygienists and physicians have so far exclusively devoted their attention,” said Noble Laureate, Alexis Carrel.

The only possible remedy of this evil is to have much more profound knowledge of ourselves. There are lot of sciences to decipher man, but none complete enough to understand it in its entirety. Anatomy, chemistry, physiology, psychology, pedagogy, sociology, spirituality does not exhaust their subject. In the last chapter, we learnt about our human physiochemical body and its immense complexity. We also understand that this body is of no use without the awareness/consciousness.

Now that we have some idea as to how our body works, let’s get down to busting some of the myths that are circulating for some time now. The dynamic human body runs on oxygen, food, and the electromagnetic energy from the Sun. Did you just stop at the last few words in the last sentence? Well let’s get our facts straight. Do you know that life on this planet would be extinct if sun stops rising? Some experts say you will have only few months to live if from tomorrow the sun stops burning. All the life on this planet is solar powered. Even if you eat meat, those animals survive on plants and other organisms which in turn survive on plants. Also, if we remember

the cyanobacteria which used the same sunlight billions of years ago to make sure we survive. Isn’t it funny with so much miracle happening inside and outside our body, we hardly take a break to notice those?

“Future science of medicine should be holistic, and not reductionist, as the human body works like a closed system in systems biology. It is a self-correcting system and does not need intervention for every minor deviation from the normal. Such interventions in modern medicine result in misery for the hapless patient. We must learn to intervene only in the unlikely event of the body’s immune system failing to correct the problem in a reasonable time span to lessen our burden on humanity. Recently, and I keep on repeating it, when interventional cardiologists were away in conferences, mortality in their intensive care units (ICUs) fell significantly, showing thereby that, given enough leeway, many deviations might self-correct” - Professor Dr BM Hegde, a Padma Bhushan awardee, 2010

Metabolism Myth

Lot of scientific words are being tossed every now and then to us. Metabolism is one such word which probably most of us use but hardly understand the meaning of. We talk about metabolism like it's something we can manipulate by gulping a pill, downing some green tea, or running faster. You've seen the articles headlined "Boost your metabolism" or "Try this high-metabolism diet to lose weight."

But this obscures many truths about this essential, yet still somewhat mysterious, biological process. Metabolism is the sum of all chemical reactions within each cell of a living organism. We can then talk about metabolism of cholesterol or tea when it enters our body. “If we wanted to “increase metabolism”, we’d make it our business to kick-start our body’s chemical efficiency with exercise, drugs, the latest supplement, or the magic combination of foods. These approaches have certainly proven useful, but they are no longer adequate in describing metabolic reality”, says Marc David, Founder of Institute for the Psychology of Eating

It's true that two people with the same size and body composition can have very different metabolisms. One can consume huge meal after huge meal and gain no weight, while the other must carefully count calories to not gain weight.

But *why* this is happening remains a "black box" for the researchers. "We don't understand the mechanism that controls a person's metabolism," says Will Wong, a researcher and professor at the Johns Hopkins Center for Metabolism and Obesity Research. Researchers have found some predictors of how fast a person's metabolism will be.

That's because metabolism doesn't occur in the body alone and is such a complex process. Millions of chemical reactions are happening in our body every minute in the cells (which ranges to trillions) that it's almost impossible to pinpoint to one cause for any disease/condition for that matter.
It operates equally and simultaneously in body and mind. Astounding research in the mind-body sciences has convincingly highlighted the connection between what we think and feel, and the chemistry of the body. "Science has revealed the profound effects of the chemistries of stress, relaxation, pleasure, depression, and the effects that even prayer, pets, and other people have on our metabolic lives. Simply put, mind influences chemistry," says Marc. Just to give more evidence to support the above claim, almost in all the conditions/diseases, one of the prime suspects is Stress.

In fact, everything that happens in this body from the day we were born in our mother's womb until death is metabolism. In chapter 2, I have already demonstrated how a perceived danger or stressful situation can affect the chemistry of your individual cells. Our cells can take on fight and flight mode to survive. Our cells have taken this body to increase their chances of survival. They will give you whatever chances necessary for survival. When I say *perceived* danger, I mean danger which has a context/belief attached to it. When you see a big spider in your bathroom, I don't want to tell you what reactions you give. Now you even know what happens inside your body. But assume you were an arachnologist, you might be thrilled to notice a big spider. You might even end up taking a long shower.

Metabolism is the sum of all the chemical reactions in the body for survival, plus the total of all the chemical reactions triggered by your thoughts, feelings, beliefs, and experiences.
This definition of metabolism more biochemically accurate and complete, you might also realize it as intuitively correct. So, the way we keep using the word, Metabolism, in our day to day conversation and in TV commercials, is completely out of line and deceiving. Even the disciplines of Ayurveda and

Chinese Medicine, for thousands of years have acknowledged the inseparable nature of mind and body. Chances are you've had many moments in which your metabolism was transformed by something other than food, drugs, or exercise. Can you recall a time when you were sitting at home feeling low energy and sorry for yourself, a time when if someone asked you "How's your metabolism?" you would have answered that it was lethargic and torpid? Then quite suddenly the phone rings and it's a love interest calling, or it's someone reaching out to you with good news about a new job or money. Your mood instantly skyrockets. You feel alive and optimistic. And in that moment, if we asked again, "How's your metabolism?" you'd say it is awesome.

So, what changed? You had an enormous energy rush yet you didn't drink any caffeine or take any drugs. It was a shift in your mental world that lit up the physiochemical reactions in your body. And that's how quickly metabolism can change. Your metabolism can depend hugely upon your emotional state of mind. Remember that our cells thrive when given a hospitable environment. Here hospitable also means positive thoughts, compassion towards other people, animals, willingness to work etc. If you practise all these along with good nutrition your metabolism will remain in appropriate shape.

Chemical Medicine Myth

The art of medicine consists in amusing the patient while nature cures the disease. –Voltaire

What happens when you take those colourful tiny pill or capsule? Dr. B.M. Hegde in his article Man, the known explains this. Your body hold the information of billions of years of evolution. When you eat a chemical, which is unknown to this intelligence (artificially created in labs), body doesn't recognize the reductionist chemical molecule. It is not considered self. The body tries to reject the chemical molecules by sending them to the liver for detoxification and excretion from the system, the so called *first pass effect* in pharmacology. The liver destroys many drugs, sometimes to such an extent that only a small amount of active drug emerges from the liver to the rest of the circulatory system. This first pass through the liver thus greatly reduces the bioavailability of the drug. The concentration of a drug is greatly reduced before it reaches the systemic circulation. Alternative routes of administration

like intravenous, intramuscular, and inhalational aerosol avoid the first-pass effect because they allow drugs to be absorbed directly into the systemic circulation. That is the exact reason why doctors give you injections when they feel the problem is critical or need immediate attention.

It is not, therefore, surprising that the present day therapeutic drugs are one of the leading causes of liver damage. When my doctor used to give me strong chemical drugs, I was often asked to get my Liver Function Test (LFT) done. I could never understand why they are asking for LFT tests to be done so frequently.

The liver is a tough, resilient organ. We can flood it with toxins and expose it to nasty germs, and it still goes about its jobs of keeping us alive. But even the liver has its limits. If it suffers too much damage over too many years, some of the cells will turn into scar tissue. This is called cirrhosis. If enough scar tissue forms, the liver will begin to shut down and severe complications will set in. Cirrhosis can be fatal. Fatty liver can be another condition which can cause some problems to people. Fatty liver condition is when too much fat is stored in liver cells. Even our modern reductionist drugs are causing good amount of damage to our liver.

Most people associate cirrhosis with heavy drinking, but that's not the complete story. While alcohol is the leading cause of cirrhosis, even non-drinkers can develop the condition. Any scarring of the liver not caused by drinking is referred to by the broad term non-alcoholic cirrhosis.

Disease Mongering

You may think there is enough disease in the world already, and we would not see new diseases in near future. Our physiological research community is working tirelessly and will be able to find plausible cure to all existing diseases. But there is a powerful industry in our society that is working in the background silently to invent new diseases and to convince us we are suffering from them. This effort is known as “disease mongering,” a term introduced by medical journalist, Lynn Payer in her book *Disease-Mongers: How Doctors, Drug Companies, and Insurers Are Making You Feel Sick.*

This is a perfect world of disease mongering. Everywhere you will see surveys which shows 1 in every 5 or 1 in every 3 are diabetic or having risk

of heart attacks, are you one of them? Once a frighten lot is labelled diabetic he will be forever a diabetic. TV and online commercials are bombarding us daily to take cancer insurance as we never know when we can get this life-threatening disease. Healthy people have started flocking hospitals for proactive body check-ups for hundreds of parameters just to know in case they will contract any diseases in future.

By the way, annual health check-ups are now among the biggest businesses today. Healthy people are now being sold chemicals to stay active and fit. Most people in Western countries take medication to treat or prevent illness or enhance well-being. It can also be argued that disease mongering is the opportunistic exploitation of both a widespread anxiety about frailty and a faith in scientific advance and innovation. A lot of money can be made from healthy people who believe they are sick. Pharmaceutical companies sponsor diseases and promote them to prescribers and consumers. Ray Moynihan, Iona Heath, and David Henry give examples of “disease mongering” and suggest how to prevent the growth of this practice. (Ray Moynihan et al, 2002) This is all meant to frighten people. There's a lot of money to be made from telling healthy people they might not be healthy.

We have trusted our health to our doctors. Doctors. Where do the doctors get their information from? Well, we would explore that in detail in next chapter. Till then remember that health is not the business of your doctor. It is your own business.

We now have so many days reserved for Mental Health Day, World Heart day, and World cancer day, World Kidney Day, World Diabetes Day, and World Oral Health Day, Father’s Day, Mother’s Day, and brother’s day. Do we understand why suddenly we are celebrating so many days? You are given offers to get your heart check-up done at the discounted price. On World Diabetes Day, you are asked to get a free diabetes check-up. Do you think that businesses are doing it with a true concern for you? We are told to get our full body tests once every year. Are these companies really concerned about your health?

Each of these days is a business venture. Who is sponsoring those marathon runs? The hospitals, the cooking oil companies, the pharma companies. On these heart day marathons, all the people who have accumulated there have some sort of business around your heart. If you are running everyday nothing

happens to you. Quite of few of us who have not practised running before and start running on that day will become breathless. Then either you convince yourself or someone next to you can convince you that breathless might be an early sign of a heart disease.
Do you think they are so good that they want people to stay healthy? If they would make people healthy, they will be surely running out of business soon. Doesn't make sense for the business, right? Remember that a patient can survive without a doctor but a doctor/hospital can never survive without a patient.

Many labs are offering free blood sugar check-ups. Why? They know if out of 100 people coming willingly for check-up, we might catch at least 10 potential *candidates, they can be labelled as Diabetic for the* ***rest of their lives***. We all know the blood sugar rises when we are frightened or stressed! Texas sharpshooter fallacy is an informal fallacy which is committed when differences in data are ignored, but similarities are stressed. A Swedish study in 1992 tried to determine whether power transmission lines caused poor health effects. The researchers surveyed everyone living within 300 meters of high-voltage power lines over a 25-year period and looked for statistically significant increases in rates of over 800 ailments. The study found that the incidence of childhood leukaemia was four times higher among those who lived closest to the power lines, and it spurred calls to action by the Swedish government. The problem with the conclusion, however, was that the number of potential ailments, i.e. over 800, was so large that it created a high probability that at least 40 (assuming $\alpha = 0.05$) ailment would exhibit the appearance of a statistically significant difference by chance alone; i.e. the multiple comparisons problem. Subsequent studies failed to show any links between power lines and childhood leukaemia, neither in causation nor even in correlation.

Every Drug that should be sold in any country must be approved by special bodies like FDA in US, CDSCO in India and EMA in Europe. Approval depends upon companies demonstrating through clinical trials that their new drug is reasonably safe and effective for a symptom or a disease. But what do they compare them with? They don't have to compare their drugs with the existing drugs that treat the same condition. They should merely compare their products with a sugar pill. Drug should be merely better than nothing. People feel that if something new has come in the market it must be better

than what's already being used. Like Mobile launches. Mobile companies don't launch a product which might be inferior than the older version widely used. Medicine on the other hands cannot be compared for their features or compositions. There are special bodies that are intrusted with this job. If the regulatory bodies are not able to monitor if the new drug launched is better than the existing ones, we can be fooled. We have no way to know if this is better, worse or almost the same compared to the existing ones.

This is a very low standard says Dr. Marcia Angell, who is an American physician, author, and the first woman to serve as editor-in-chief of the New England Journal of Medicine. She is arguably one of the most respected medical authorities. Some years ago, Angell authored a book called, *The Truth About Drug Companies: How They Deceive Us and What To Do About It*. Her book attacked the pharma industry essentially saying that it produces little innovation and that its primary mission is to exploit consumers. She even posed serious accusations on the research journals which were colluding with pharma companies on the publishing. "It is simply no longer possible to believe much of the clinical research that is published, or to rely on the judgment of trusted physicians or authoritative medical guidelines. I take no pleasure in this conclusion, which I reached slowly and reluctantly over my two decades as an editor of The New England Journal of Medicine," says Marcia. She further adds, "No one knows the total amount provided by drug companies to physicians, but I estimate from the annual reports of the top 9 U.S.-based drug companies that it comes to tens of billions of dollars a year in North America alone. By such means, the pharmaceutical industry has gained enormous control over how doctors evaluate and use its own products. Its extensive ties to physicians, particularly senior faculty at prestigious medical schools, affect the results of research, the way medicine is practiced, and even the definition of what constitutes a disease."

These are the words of the lady who has seen this world up and close. Have you heard about Ghost articles? There are articles or research where a drug company or its associate does the research or writing and then in consultation with some doctors, publishes the paper in their names. Doctors probably get a good remuneration just for putting his name and obvious prestige which follows-up for publishing their paper in prestigious medical journals. I am not sure what to say now. This is just one of the instance of a whistle-blower. There are thousands of cases in the past and present, but pharma is cruising

along bragging of helping society and humanity.
There was a lot of Ebola hype created by the world along with WHO. Why is everybody so quiet now? Has it been fixed or was it just a hoax?

Cholesterol Myth

Cholesterol is among the most talked about terms in the world in the recent few decades. Somewhere along the way, cholesterol became a household word in the urban class. Everyone talks about it but do we really understand from where this belief has come? Let us bust few myths that are surrounding these words. Dr. Joseph Mercola, an alternative medicine proponent, in his website highlights how cholesterol has been demonized during the last two decades. It's been responsible for solely degrading entire category of foods including saturated fats and eggs. It is also being blamed for just about every case of heart disease in last 30 years. He reminisces, "Yet when I first opened my medical practise in the mid-80s, cholesterol, and the fear that yours was too high was rarely talked about. Somewhere along the way however, cholesterol became a household word – something that you must keep as low as possible, or suffer the consequences." Everyone is willing to wage a war against cholesterol and saturated fats. The main perpetrators are the packaged food companies who are in a race to use 0% fat and 0% cholesterol as their main selling point.

Do you know what is an egg made up of? What is inside an egg which if kept in a particular temperature and humidity, gives birth to a multicellular organism after few weeks? Do you ever wonder, what is inside this egg? An Egg contains fat (mainly saturated-ones), protein, huge list of minerals and water. Almost 70% of an egg is water. Your body is 70% water. Even the earth is 70% water. Coincidence! or something else? Anyways, we can understand that to develop a chicken, we need fat, proteins, water and essential minerals.
In 2007, there was a study done to detect correlation between egg consumption and risk of cardiovascular diseases. 9734 adults aged 25 to 74 years were considered in the study which reached to an understanding that Consumption of greater than 6 eggs per week (average of 1 egg or greater per day) does not increase the risk of stroke. In subgroup analysis among diabetics, higher consumption of eggs was associated with an increased risk of coronary artery disease. (Qureshi Al, et al, 2007).

Dr. Jonny Bowden (nutrition specialist) and Dr. Stephen Sinatra (highly respected and sought-after cardiologist with 35 years' experience), in their book *The Great Cholesterol Myth,* debunk the greatest fraud that has been perpetuated by the pharmaceutical companies and doctors on human beings. Dr. Malcolm Kendrick is a Scottish doctor and author of The Great Cholesterol Con (2008), also debunks our assumptions on what constitutes a healthy lifestyle and diet. He has also showed in his book that Statins, drug used to lower cholesterol, are the most profitable drug in the history of medicine and the key reason why Pharma Company will not let it go away so easily despite mounting evidence against its efficacies. Recent independent studies have shown that Statin use for primary prevention has minimal or no value in reducing heart attacks and mortality (Sultan and Hynes 2013).

What Is Cholesterol, and Why Do You Need It?

Yes, you read that correct. You need cholesterol to stay alive.

Not only is cholesterol not bad, it is one of the most vitally important substances inside of your body. Our bodies are made up of trillions of cells. Cholesterol is an integral and important part of our cell membranes, the membranes that enclose each of our cells, and also of the membranes surrounding all the organelles inside the cell. Daily billions of our cells die a natural death and new ones gets formed. That's right, you do need cholesterol to form healthy new cells. Cholesterol provides strengthening to the cell membrane and aids in the stronger cells. (Holthuis and Menon 2014) Cholesterol helps in the synthesis of steroids molecule, which include bile salts used in digestion, regulatory steroid hormones such as estrogen, cortisol and vitamin D. (Lipton 2007). Cholesterol also helps in the formation of your memories and is vital for neurological function. The human brain is particularly rich in cholesterol: around 25 percent of all body cholesterol is accounted for by the brain. Every cell and every structure in the brain and the rest of our nervous system needs cholesterol. It is the fundamental building block of sex hormones produced in our body. All the cells in our bodies have to communicate with each other. How do they do that? They use proteins embedded into the membrane of the cell. How are these proteins fixed to the membrane? With the help of cholesterol! Cholesterol and stiff saturated fatty acids form so-called lipid rafts, which make little homes for every protein in the membrane and allow it to perform its functions. Without cholesterol and

saturated fats, our cells would not be able to communicate with each other or to transport various molecules into and out of the cell. As a result, our bodies would not be able to function the way they do. Cholesterol also prevents unaccounted foreign bodies (polar molecules) from entering the cell's cytoplasm.

Our liver makes 80% of your body's cholesterol needs. I am sure our liver is not an idiot to do so. The vital roles above suggest that cholesterol should not be treated as the villain but instead a foot soldier doing its duty.

So How Come Cholesterol become a demon?

How to Lie with Statistics by Darrell Huff, is an interesting book which highlight how politicians, marketers and others can manipulate a set of numbers to tell any story they wish. Now the obvious question that might be coming to your mind is that if cholesterol was so essential, why modern science has demonized it so much? To understand this let me take you back to the 1900s. The Lipid Hypothesis or the Cholesterol Theory was developed by a German pathologist named Rudolph Virchow. After studying arterial plaques from corpses, he found that the plaque was consisting of cholesterol. He theorized that cholesterol in your blood led to the development of plaques in your arteries. In 1913, Nikolaj Nikolajewitsch Anitschkow, a prominent Russian pathologist (who study the cause and effects of disease) along with his colleagues, experimented the impact of cholesterol on animals. They identified that if rabbits are fed with high cholesterol diets, leads to atherosclerosis (narrowing of the artery because of plaque build-up). Hope you remember that arteries are the tubes which take blood away from heart to the body.

There was just a bit problem. Cholesterol is found in all foods of animal origin. There is no cholesterol in anything vegetarian. Rabbits being vegetarian, surviving on grass and small plants, their bodies don't know how to process animal food. The cholesterol can get stuck to any part of the rabbit's body including the blood vessels. In the later experiment when the dogs or rats were fed with the same diet, plaques in the arteries didn't happen. And this sort of planted the seed of the cholesterol theory in the science community. And if I could show you the pictures how rabbits were kept, I can bet their stress levels were high. Why have I mentioned stress? You may ask.

Well, Bruce Lipton in his book, *biology of belief* mentions that scientists have shown that in the lab experiments on rats who were loaded with cholesterol. Despite such prominent level of cholesterol in their systems, rats didn't form the endothelial cell plaques which are typical of atherosclerotic blood vessels. Further study found that role of histamines. Histamine is a stress related hormone that prepares the body to deal with anticipated injuries and inflammation when the fight-or-flight response gets activated. It was proven in experimentation that rats when given antihistamines did not develop the typical signs of atherosclerosis. The results of animal studies point to the role of chronic stress plays in the exacerbation and promotion of cardiovascular disease. When the histamine was administered with cholesterol, resulted in plaques in the arteries.

Along with Stress another main culprit which has only been recently accepted is Sugar. Massive amounts of sugar in processed food is fuelling the obesity epidemic and must be reduced, say academics. Sugar has been even rated on the same scale as the tobacco and alcohol in the level of damage they are doing to our bodies. Robert H. Lustig, M.D. at University of California, in one of his lectures debunked the last 30 years of nutrition information in America. We all know that what is being followed in America is adopted quickly by rest of the world too.

Now all the scientific exploration on atherosclerosis started moving in the direction Anitschkow has highlighted. The seed for demonizing cholesterol had been sown. The inference was if you eat a lot of cholesterol, your arteries get blocked. In other words, cholesterol contributes to the development of atherosclerosis, a condition in which cholesterol-containing plaques form within arteries. These plaques block the arteries and reduce the flow of blood to the tissues the arteries supply to. Cholesterol is found in all foods of animal origin. There is no cholesterol in anything vegetarian. Now in 1950s a biochemist named Ancel Keys, published a study that compared heart disease and calories we intake from fat consumption, in half a dozen countries. He found that more the fat you consume the more the deaths from heart disease. He got a smooth nice trend line with % of calories intake from fat as x-axis and number of deaths as y-axis. Ancel's research and findings got him immediate fame. Ancel not only got his picture featured on the cover of TIME magazine (January 1961) but was also labelled as the father of lipid hypothesis. Lipid hypothesis goes like this: If you eat food high in saturated

fat it will result in high cholesterol in your blood. High cholesterol in your blood can Clough your arteries and hence cause coronary heart diseases. So, the central dogma became that keep the fat as low as possible if you want to keep your heart happy. Avoid all saturated fats.

There was just a slight problem.

1. People forget that when a researcher starts of any study, she creates a hypothesis which can then be tested with the real data. Hypothesis is nothing but your belief of truth. Turns out that Keys had reliable data from 22 countries but when plotted on the x-y graph, the results were all over the place. You can hardly make a buzz in the scientific community with a zig zag trend line. “So, like any really dedicated researcher, Keys threw out the data that didn’t fit in and published his result. Keys left out countries where people eat a lot of fat but had very less heart diseases (Holland and Norway) and countries where people had a high heart disease and eat low fat (Like Chile).” says Denise Minger, author of *Death by Food Pyramid.* When in anticipation of more grant money and quick fame, we fudge data to suit our belief (hypothesis), we are doing a grave mistake for all humanity.

2. Another key problem is the difference between correlation and causation. The Ancel study found that there was a high correlation between deaths due to heart attacks and the fat consumption. Correlation doesn’t mean that it causes heart attacks. Our media is the worst in such cases. You can very easily find these kinds of distortion in the daily news. Let me give you an example. Suppose you are a great observer. You have a great eye for detail. You notice that whenever there is a fire, invariably there is a fire brigade nearby. You reach to an interpretation that somehow the deaths due to fire and fire brigade are related. To avoid deaths, we must try to minimize the presence of fire brigade near any area. Sounds stupid, right? Well now read the above study again by replacing death by fire with death by heart attacks and fire brigade with cholesterol. Still sounds, funny? Well we have been blaming the fire brigade for the cause of deaths till now. In fact, we all know why fire brigade is near a fire. This is the same reason why cholesterol is there in the artery.

> Just because cholesterol is at the crime spot doesn't makes it a criminal. Real culprit is not even identified and we start to hold the people at the crime location responsible. Cholesterol is trying to prevent an inflammation in the body. It is there to repair the damage done to the cells in the arteries.

Below are some of the comments made by renowned doctors.

In her book *Know your facts*, Mary Enig who is a renowned biochemist, claims that "the (lipid) theory is totally and completely wrong. It was a theory made from whole cloth and then pushed."

Another Doctor, Michael R. Eades claims, "It has become the part of the zeitgeists, everybody knows saturated fats are bad for you but when you get back looking at the medical literature and you root back to find out where this whole idea came from, Its Bogus!"

"Lowering your cholesterol is next to impossible with diet and often dangerous with drugs-and it won't make you live any longer" said Thomas Moore in his article in the September 1989 issue of The Atlantic.

'Good' & 'Bad' Cholesterol: No Such Thing

When the word got out that cholesterol is a poor predictor of heart disease, medical community came out with good and bad cholesterol. We started calling LDL (low density Lipoprotein, discovered in 1970s) as the bad cholesterol and HDL (high density lipoprotein) as the good cholesterol. I laughed once I figured out why LDL was called bad and why HDL was called good. We will come to that later but hope you have noticed the full form of LDL and HDL. Both are proteins. As I have discussed in chapter 2 on the formation of protein, Blood is used to transfer any nutrient including protein, hormones to various parts of your body. Since cholesterol does not dissolve in our watery blood, its transport inside the body needs a vehicle. "Fatty substances therefore must be shuttled to and from our tissues and cells using proteins. Cholesterol combines with other fats and proteins to be carried through our blood stream, since fat and our watery blood don't mix well. LDL and HDL are forms of proteins and are far from being just cholesterol." Says Ron Rosedale, MD. He furthers adds, "Cholesterol is just cholesterol. There is only one cholesterol. There is no such thing as 'good' or

‘bad’ cholesterol.”

Now let’s explain why LDL is called bad and HDL is called good. LDL carries the cholesterol from liver, where most of the cholesterol production happens, to body’s tissues, cells and arteries. Basically, it takes cholesterol wherever it is needed in our body. I have already highlighted that cholesterol is the vital component of every cell, hormones in your body. Cholesterol is our friend who is helping our body to repair. It’s like a cement that hold the bricks together. When a crack develops somewhere, you put the same cement to repair the damage.
HDL, on the other hand, takes the cholesterol from your body’s tissues and arteries and bring it back to the liver for recycling. Note that the cholesterol is send back to the liver for recycling instead of sending it to our excretory system for elimination. “It is taking it back to your liver so that liver can recycle it; put it back into other particles to be taken to cells and tissues that need it. Your body is trying to make and conserve the cholesterol for the precise reason that it is so important, indeed vital, for health,” says Dr. Rosedale.

Now let’s come to the laughter part. Even if you are a doctor and I am challenging some of your long-held beliefs, you can chuckle too if no one’s watching. So, some smart people reported, well since LDL is taking cholesterol to our body and we already know how bad cholesterol is for us (extension to our dogma). Let’s call this guy bad! Remember my fire brigade analogy! LDL is our fire brigade going towards the place where fire is there. So, if you have this belief that whenever the fire brigade leaves a station in hurry then some people die, you can start believing that the outgoing fire brigade is bad. Now let’s come to HDL. Again, those smart people saw that HDL is taking cholesterol away from our body to our liver. Now your previously held beliefs help you think that this should be a good thing as we already know the cholesterol is bad. Hope you had a smile as I had. So, bottom line is there are no bad or good cholesterol. All cholesterol is good. One is recycling and other is taking the cholesterol to body. In case your LDL is high, we don’t have to blame it to the cholesterol. There is a fire somewhere internally which this fire brigade is going to extinguish. We should find what is causing that fire and stop blaming the fireman.

In 1982, American Heart Association, American medical association and the

US department of Agriculture advised their entire population to reduce their total fat consumption by 30-40%. But it was not impossible to foresee where the world was being pushed towards the cliff. Energy from food comes to us in three forms: fat, carbohydrate, and protein. Since the proportion of energy, we get from protein tends to stay stable, whatever our diet, a low-fat diet effectively means a high-carbohydrate diet. The main problem with high carbohydrate diet is that you tend it eat more as you will always feel hungry. The most versatile and palatable carbohydrate is sugar and refined flours. In 1974, the UK medical journal, the Lancet, sounded a warning about the possible consequences of recommending reductions in dietary fat: “The cure should not be worse than the disease.”

Dr. B.M. Hegde, in his article Cholesterol Ghost Everywhere says, “Usual range of normal cholesterol has been, since my college days, between 150-250 mg per decilitre. Recently the American bosses of cholesterol research thought it fit to change this time honoured normal range by declaring three levels for humans thus:

less than 200 mg/dl.....DESIRABLE.

200-239 mg/dl.....BORDERLINE-HIGH.

More than 240 mg/dl.....HIGH [7].

The story behind this is intriguing. My hunch is that there are at least 50-60 million Americans in the normal range of 200-250 mg, who by the above classification are not only frightened out of their wits, but come under the net for life long anti-cholesterol drug therapy. With the present drugs being sold at such phenomenal prices the catch would not be less than 10 billion dollars per year for the drug companies. Apart from this there does not seem to be any other valid reason in the medical literature to support this new-found wisdom on the part of the cholesterol pundits!”
Dr. Bowden and Dr. Sinatra agree that while Big Pharmacies are busy raking in over $31 billion annually by selling cholesterol lowering drugs with terrible side effects to unknowing victims, their success is putting the innocent public’s health at risk.

Dr. Mercola highlights, “The American Heart Association (AHA) recommends that your total cholesterol should be less than 200 mg/dL

(milligram per decilitre), but what they do not tell you is that total cholesterol level is just about worthless in determining your risk for heart disease, unless it is above 330. In addition, the AHA updated their guidelines in 2004, lowering the recommended level of LDL cholesterol from 130 to less than 100, or even less than 70 for patients at very high risk. To achieve these outrageous and dangerously low targets, you typically need to take multiple cholesterol-lowering drugs. So, the guidelines instantly increased the market for these dangerous drugs.

Selling Sickness: How the World's Pharmaceutical Companies Are Turning Us All Into Patients, by Ray Moynihan, an international health journalist, and Alan Cassels, a pharmaceutical policy researcher blames pharma industry for the menace. Authors say, "By stacking expert medical advisory panels, Pharma is able to lower the bar that defines disease. Thus, in a campaign to promote the idea that "high" cholesterol is a life-threatening health hazard, the diagnostic guidelines that define "high" cholesterol were lowered several times to broaden the population being targeted: from 13 million according to the 1990 guidelines; to 36 million according to the 2000 guidelines; to 40 million according to the 2004 guidelines. Pharma achieved this remarkable cholesterol "epidemic" with help from the expert advisory panels, the majority of who had financial ties to the manufacturers. Eight out of nine of the 2004 panel – including a high official at the National Institutes of Health – served as paid consultants for these drugs' manufacturers. Cholesterol-lowering drugs (statins) bring in revenues of more than $25 billion a year."

Walter C. Willett, M.D., Dr. P.H., is Professor of Epidemiology and Nutrition at Harvard T.H. Chan School of Public Health and Professor of Medicine at Harvard Medical School. Dr. Willett has focused much of his work over the last 40 years to study the effects of diet on the occurrence of major diseases. He too admits that in his entire career he hasn't found any relation of calories from fat with any health issues. There are over 20 studies done which have shown that elderly people with high cholesterol levels have lived longer than those who have a low cholesterol. Cholesterol is the mother of all hormones- Sex and stress hormones – like cortisol, testosterone. If cholesterol is not the problem for poor heart health then what is?
We will discuss this in detail later in this chapter.

It is not the science of medicine that is bad but it is the "scientist" that twists

the facts to suit his convenience, that is bad. What is even bad is that the whole scientific community works like a black box and try to defend their dogmas no matter what. Karl Popper, a great thinker of his time once said, " Knowledge advances not by repeating known facts, but by refuting false dogmas." But some groups in scientific community don't pay attention to these lines. Those who even try to refute are shunned from the community. Once the hypothesis is established, it must be defended at all cost. The same happened with the cholesterol. Recent studies have indicated that ADHD, ADD, Autism are all related to this low cholesterol mantra. The human brain is the fattest organ in your body and is made from 70% fat. Clinical observation studies have related imbalance dietary intake of useful fats to impaired brain performance and diseases. Most of the brain growth is completed by 5-6 years of age. Low fat diets have resulted in an explosion of these diseases in last 2 decades. World has paid a huge price till now with only people really profiteering from this are the drug companies and all those colluding with them. They will not let their cash cow to go away so easily. That is the only reason why despite mounting evidences, books, articles highlighting the cholesterol myths, cholesterol lowering drugs remains to be the top spinners of money for the pharma industry.

There was this Jupiter (Justification for the Use of Statins in Prevention: An Intervention Trial Evaluating Rosuvastatin) Study which is been in support of using Statins and their ability to lower cholesterol levels. Perhaps no recent trial has resulted in more controversy than the JUPITER trial, which was first published in 2008. Many critics of the study claimed that the trial was "flawed" on many levels and biased by commercial interests. JUPITER, first released in 2008, involved 17 802 healthy men and women with normal LDL-cholesterol levels. 8,901 patients were kept in placebo and 8,901 were given statins. The JUPITER study found that during the study period, there were 68 heart attacks in the placebo group and only 31 heart attacks in the group that took statins. So according to these numbers statins produced an astonishing 58% reduction in heart attack risks. (Ridker, 2008)

On the surface, these stats look pretty impressive and had led doctors to recommend these drugs. But here's the trick. Dr. Lorgeril identified how the study was simply a manipulation of data. In real terms, heart attack risk went from 0.76% (68 out of 8,901) in the control group to 0.35% (31 out of 8,901) in the statin group. Statistically, this means a real risk reduction of less than

0.5%. The data indicate that for every 300-people taking these expensive drugs, only one life might be saved. (Lorgeril, et al 2010). There is a growing body of research that suggests that statin use has side-effects that outweigh the benefit they bring in the fight against cholesterol, and therefore, against heart disease. Statins, which have to be taken life-long, have side-effects like muscle pain, memory loss, liver damage and increases susceptibility to diabetes.

Germ Theory Myth

Another example of the dismissal attitude is when the word germ theory was coined. The germ theory of disease states that many diseases are caused by microorganisms like bacteria and viruses. First instance of the germ theory dates back to 1550s but it was until 1880s that Robert Koch and Louis Pasteur who made this theory global. One of the postulates of the Koch's theory was that the cultured microorganism should cause disease when introduced into a healthy organism. Max Joseph Pettenkofer (1818–1901) was a Bavarian professor and hygienist. He was an anticontagionist, one who believed that bacteria were the main cause of disease. Robert Koch claimed that bacteria *Vibrio cholerae* caused cholera. One of the Critics, Max von Pettenkofer, of the theory openly gulped down the entire glass of water filled with vibrio cholerae, bacteria Koch believed caused cholera. To everyone's disbelief, he remained unaffected. There was an article published later described the incident: "For unexplained reasons he remained symptom free, but nevertheless incorrect." (DiRita, 2000)
As usual science, audaciously criticised and rejected this anomaly. If someone claimed that the germs entering healthy body will make it sick, why was this man not affected? Isn't there a gap somewhere? Instead of understanding what is causing such exceptions, scientists like truly religious community, discard anything which questions its words. There cannot be any exceptions. If there are then the theory is not corrected or complete. Germ Theory has never been proven to be a valid theory. It was only accepted because it was a way of making money out of gullible people. Money talks, so it was accepted and a huge pharmaceutical industry has since flourished to cater for this pathetic theory.

Louis Pasteur's "germ theory" became the medical paradigm, the controlling medical idea, for the Western world. In its simplest form, the germ theory

proposes that the body is sterile and that germs come from outside cause disease. The medical community started to look for the right pill to kill off the germ. This concept became ingrained into medicine and medical research. Most research goes to looking for the right pill for a specific disease.

Antoine Bechamp was a French scientist best known for breakthroughs in applied organic chemistry and for a bitter rivalry with Louis Pasteur. He is often regarded as the real expert on Germ Theory. But his theory differed from Pasteur in that he stated that "germs are the result of a disease and are not the cause of it. When Germ Theory was formulated nobody knew anything about hormones, gut bacteria. It is now we know that microorganisms are already present in our body all the time. They are not our enemy but our dear friends. Not many people realize that bacteria and viruses are the result not the cause of disease. Another huge mistake in understanding the difference between correlation and causation?

In early 1910s E.C. Rosenow, Nobel prize nominee, took bacteria and by changing the temperature and food in their environment, was able to change them from benign to infectious microbes and back again. In conventional medical terms, that would be the equivalent of changes monkeys into humans and then back into monkeys again. It beautifully disproved the basis of the germ theory of disease. While "disease germs" can be created, and infection transmitted, the host must provide a similarly toxic environment, meaning they are already sick (may be in the mind) in some way, for virulent organisms to take hold and trigger infection, otherwise the "germs" will de-evolve and become harmless, or unable to provoke a disease state. The "germ theory" demands that exposure means disease, and that simply doesn't hold true in the real world. (truthquest2)

We have been educated to be terrified of bacteria and to believe in the idea of contagion. The acceptance of the germ theory and widespread bacteriophobia resulted in frenzied efforts to avoid the threat of germs. The medical-pharmaceutical industry began the relentless search for the perfect drug to combat each disease-causing microbe. A whole new era of modern medicine was inaugurated including *vaccination*, which was instituted to confer "immunity" against specific germs by way of vaccines and sera. “The specific disease doctrine is the grand refuge of weak, uncultured, unstable minds,

such as now rule in the medical profession. There are no specific diseases; there are specific disease conditions, “said Florence Nightingale. In the book *Pasteur: Plagiarist, Impostor*, R.B. Pearson explodes the germ theory. He highlights that the germ theory is false, and that illness is practically always due to errors of diet or way of living, the germs being present solely as scavengers of dead and waste tissues and foods, and not as the cause of the disease.

People, you must start using common sense more often. We have been fooled long enough by some crooks and money spinners. Who is getting benefitted by the germ theory? The only people who are getting benefitted are the multinationals who are selling billions of dollars’ worth of hand washes, hand sanitizers and other complimentary products. You are consistently told that germs are out there to make your sick. Wash your hands frequently as these germs enter our body from outside.

Vaccination is another outcome of the same theory. You can now infer that the vaccination especially the child vaccinations are useless too. There are many cases in history where despite taking vaccination of mumps, chicken-pox, whooping cough and so many more, people have contracted those diseases. In fact, most of the vaccinations which are being given to you are harmful chemicals. One of the common vaccinations used for Whooping cough, or pertussis contains formaldehyde, aluminium hydroxide, aluminium phosphate, thimerosal, and polysorbate 80. That means that every such vaccine contains carcinogenic, neurotoxic, and immunotoxin. Dr. Mercola highlights that Common vaccination sold for hepatitis B contains 50 percent ethyl mercury and is, by itself, a potent neurotoxin.

Similarly, science is still ambiguous about its claim that HIV virus causes AIDS. Billions of Dollars are spent each year globally to do research and treat patients. Science is still not able to understand why people despite infected with HIV don’t express the disease? Richard C. Strohman is emeritus professor of molecular and cell biology at the University of California, Berkeley. He says, “If ever there was a rush to judgment with its predictable disastrous results it has been the HIV/AIDS hypothesis and its aftermath. Announced at a press conference prior to the publication of any scientific proof, complicated and confused by early legal arguments concerning theft of the 'French' virus by American researchers, the continuing

inability of a worldwide scientific effort to muster clear proof for causality of AIDS by HIV, the inability – after 10-plus years and billions of dollars – to generate any progress in prevention or therapy, and amid growing controversy about effectiveness of drugs like AZT to have any benefit, the HIV/AIDS hypothesis remains simply that: a theory with erratic correlation, but no proof of causality, between HIV and AIDS." Over 2,000 scientists, medical professionals, authors and academics are on record that the “HIV-AIDS” theories, routinely reported to the public as if they were facts, are dubious to say the least.

Let us now look at some of the very common conditions which affect us.

COMMON COLD

Sneezing, scratchy throat, runny nose - everyone knows the first signs of a cold, probably the most common illness known. Common cold is so common that it affects billions of people around the world every year. Trips to doctor per adult ranges from 2 to 6 per year. Most common pathogen which is often blamed for common cold is rhinovirus (which describes the WHAT of diseases). If you talk to your doctor or go to any medical blogs, you will find the list of reasons how you catch cold. Few common across board are: getting near someone who is infected, inadequate washing of your hands, weather change (which tell us How of diseases). Note that science doesn’t answer why questions. If I believe that the above explanations are true, why not everyone in your class, office, or family fall ill. When I was small kid, I always noticed that despite my sneezing near my mother, she would never catch a cold. Also during 1990s, hand washing was not even an obsession in India. Climate and temperature was changing for her as well. You might have also seen some friends who catch cold quickly while some don’t, not even once a year. Obviously, we are not allowed to question our doctors and medical fraternity on such anomalies. Even if you did, they will make up assumptions about you including unhealthy diets, weak immune system, pollution etc. Hand wash companies are busy propagating to wash your hands, sanitize your hands but I don’t see that people around me are falling ill less frequently This is happening despite washing hands every hour. Some where there is a miss which nobody is openly talking about.

There were many studies done on the common cold. Most studies have found

that the common cold was 10 times more common in people who have some sort of frustrations. Dr. Amit Goswami in his book *Quantum Doctor*, mentions about the substantial evidence that the stressful life events can alter your body's defence mechanism. In a famous article in New England Journal of Medicine showed that Psychological stress was associated with an increased risk of acute infectious respiratory illness. Volunteers were either exposed to cold viruses or harmless placebo. The researchers found out that the risk getting cold was directly proportional to the amount of stress in a person's life. The most interesting part was the conclusion that the effect of stress on colds was independent whether a volunteer shared housing with another infected volunteer. Moreover, the relation between stress and colds was similar for those with and without infected roommates. In short, your level of stress was associated with your catching the cold, irrespective of your exposure to virus. (Sheldon, etal, 1991). Some of the Stress emotions include: distress, nervous, sad, angry, dissatisfied with self, angry at yourself, upset, irritated, depressed [8].

As Dr. Hedge says, "Common cold virus is there in my nose and your nose all the time. They are in the environment as well. When your immune system goes down, it catches you." Frustration and anger are very bad for your body. Cold is a kind of a sign that body gives you to relax and take a break. Your body is giving you a signal that you are giving undue importance to the external stressors. It is high time we stop treating common cold as a disease but as alarm which our body is buzzing. It's a sign from the body for you to notice. Next time you catch a cold, introspect if you have been frustrated, angry, disappointed in last few days. The moment you let go and relax the body, automatically our immune system picks up. This is the main reason what body is forcing you to do. It is going to have its say sooner or later. You must have also noticed that if you take proper rest and cared for, you automatically heal within few days without taking any medications.

Louise Hay is a metaphysical lecturer, teacher and the bestselling author of numerous books. In her book, *You Can Heal Your life*; she mentions the probable cause of number of diseases including Colds (Upper-Respiratory Illness). She attributes these to "Mental confusion, and unable to manage things the way you want, feeling hurt."

You might be thinking why my doctor never asks me if I am under any stress before giving me any medication. There is a long story behind this which we

will touch upon in next chapter in detail. For the heads-up, it has to do something with the belief system of science.

Anyways, next time you are feeling any of the emotions from the Zevon and Tellegen's list, take a small break, relax and let go of the event or person that is causing you the stress. Sit quietly and if possible meditate for 5-10 minutes. I am telling this from my personal experience. I was a regular visitor to my doctor before I got into meditation and discovered the truth about the 'why' of the conditions like common cold. Once I understood *why* it happens to people, I have not eaten a single antibiotic or paracetamol since. It has been more than a year now and I feel so much in control of my health. I have discovered the secret of a healthy body.

Vicks VapoRub is a widely used balm or cream to get relief from symptoms like common cold, cough, and congestion. Vicks VapoRub was banned in North America and many European countries as it is declared not good for health it can create Asthma, TB etc. It is declared as Toxic by WHO. Except Vicks, other medicines like D'Cold and Vicks action-500 also banned outside India.

Vicks Action 500 Extra is a fixed dose combination of paracetamol, phenylephrine and caffeine, which was banned by the Ministry of Health in a notice issued in 2015.

HEADACHE

Headache is another common condition which causes frowns to billions of faces around the world. WHO estimates that almost half of the adult population have had a headache at least once within the last year. Another key fact mentioned in this 2016 report was: "Headache has been underestimated, under-recognized and under-treated throughout the world." George Zaidan, in his TED talk, defines pain as, "An early warning system that protects you from the world around you and from yourself." Pain is necessary for avoiding us and others to harm us

Why it happens?

The International Headache Society (IHS) categorize headaches as primary, when they are not caused by another condition, or secondary, when there is a

further underlying cause (like brain tumor, alcohol-induced hangover, blood clots). As discussed above, headache is usually a symptom of an underlying problem, whether it is a primary or secondary one. It's like smoke for an underlying fire. Most common reason for primary headaches are stress related emotions like tension, disability in managing a situation etc. Due to continuous tension, muscles that cover your skull contract and cause pain. If you don't believe me, observe closely the next time you have headache. You will invariably find out that something is causing you tension or uneasiness. The moment you relax your head muscles, the pain also goes away. These small doses of tension for a prolonged period is also the reason of hair fall problem. In case you are not under any tense situation and still having headaches, immediately visit your doctor to find the underlying cause. Without much surprise, Tension headaches are more common among women than men, especially among those with high stress levels.

What to do about it?

What do you do when you have a headache? Do you pop an over-the-counter pill or do you run for the Pain relief balm? In either case, you are attacking the smoke without seeing from where and why the smoke is coming in the first place. For every headache, there is a reason of the pain in your head. If you look closely, headache is your body's mechanism to alert you to something. A painkiller can be any one of several drugs, from over-the-counter (OTC) medications like ibuprofen, naproxen and aspirin. Painkillers work by blocking the brain's perception of pain. These drugs do this by binding to opiate receptors in brain cells, thus interfering with the signals transmitted by the nervous system to the brain. These painkillers come with a huge list of side effects. Whether a painkiller is prescribed by a doctor or acquired on the street, these drugs can cause profound changes to the brain and body of the user. Although some damage can occur with short-term drug use, the most extreme or dangerous changes to the brain and body typically occur with long-term use and abuse of painkillers. Till now I am only talking about the side effects of the mild ones. So, if you are an OTC pill popper, every time you get a headache, you better stop doing so. Also note that I am not prescribing the pain relief balm or spray.

Best way to treat a headache is to first acknowledge the pain and thank your body for showing that something was wrong. Relax for few minutes and

embrace the pain. Figure out what or who is causing you the tension. Once you have figured it out, smile and let the muscles on your head to relax. Meditate for a few minutes, if required.

In her book, *molecules of emotions*, Candace Pert, PhD says that time has come for us that when we get a headache not go for a painkiller but to sit in one place, meditate and get your mind in a state of tranquillity when neurohormones opioids gets secreted from the forebrain and your headache disappears.

Hypertension/High blood pressure

Lot of people are affected with either high or low blood pressure. Medical term for high blood pressure is Hypertension. Blood pressure has always been expressed in millimetres of mercury. (mm Hg) Hypertension can be secondary or primary. Secondary hypertension (10% cases) can be caused by another condition that affects your kidneys, arteries, heart or endocrine system. Primary hypertension (90% cases) can be caused by unknown condition. Technically speaking, what causes high blood pressure are narrow, stiff and/or clogged arteries. Every blood pressure reading consists of two numbers or levels. They are shown as one number on top of the other. Sphygmomanometer is the mechanical device used by almost all doctors for measuring our blood pressure. An inflatable cuff is wrapped around the upper arm and inflated and connected to a column of mercury next to a graduated scale. This squeezes a large artery in the arm, stopping the blood flow for a moment. Blood pressure is measured as air is let out of the cuff and blood flows through the artery again. Listening with a stethoscope over the artery allows a doctor or nurse to hear the first pulse as the blood flows through. This is the systolic pressure. The diastolic pressure is noted when the sounds stop. Normal blood pressure is 120/80 ("120 over 80").

The first number is your systolic blood pressure. It indicates how much pressure your blood is exerting against your artery walls when the heart beats. The second number is your diastolic blood pressure. It indicates how much pressure your blood is exerting against your artery walls while the heart is resting between beats.

Why it happens?

In more than 90% of patients, it is very difficult to determine one clear-cut cause of hypertension and most doctors' suspect, that there is a variety of things at play. Hypertension develops slowly over the years, which is why it is symptom-less most of the time – until something triggers a heart attack, stroke or another condition.
It is assumed that many factors contribute to hypertension. These factors include: stress, high salt intake, smoking, obesity, lack of physical activity, globalization, genetic and the list goes on and on. So, if we collate all the factors, two main possibilities exist: the cause may be genetic or environmental. If you go by medical literature, there is no one reason why you might end up developing hypertension. "Hypertension is too complicated a matter to be decided on the spot by doctors alone, without due concern for the human being's total environment," says B.M. Hegde, who is a renowned cardiologist. Hence our doctors cannot cure it as they don't know what can cause it but there is a treatment which includes medication, reduction of Sodium intake (because it holds excess fluid in the body, and that creates an added burden on the heart.)

Hypertension is an intelligent physiological expression of our body to a perceived danger. The threat can be emotional, nutritional. Our whole body is controlled by our nervous system. We also call it automatic nervous system. Without our knowledge, it takes care of us. Anybody who has high blood pressure, goes to the doctor will invariably be told that they have a disease called hypertension. Little did doctor and researchers realize that this is not a disease. It is merely a symptom or body's warning signal that something is not right. Patients and doctors must be intelligent enough to listen to the body. It is high time we stop considering our body as a dumb thing which needs medical intervention for every symptom. All we should do is correct the cause whether emotional like stress or nutritional like dietary.

What to do about it?

The answer is easy, but it requires giving up passive beliefs you have made in your mind based on directives issued by the western authorities. Hypertension drugs makers are among the biggest money spinners in the world. Sir George Pickering one of greatest researchers of Hypertension, wrote "More people make a living in this world off hypertension, then die of it". There is huge money involved in this business with an estimate to reach

35 Billion dollars by 2020 just by selling blood thinners.

Before we understand how to deal with hypertension, let's have a look at the current medication in the market and how it works. Four main categories of drugs are used to treat high blood pressure: diuretics, beta blockers, calcium channel blockers, and drugs called ACE inhibitors

1. ***Diuretics*** – This class of medication increases the amount of urine your body produces. This causes body to lose salt and water quickly hence decreasing the volume of the blood.
2. ***ACE (Angiotensin-converting enzyme) inhibitors -*** This class of medications works by blocking the body's production of Angiotensin, a hormone that aids in the tightening of the blood vessels. As a result, the blood vessels become more relaxed, and the pressure of the blood inside the vessels decreases.
3. ***Beta-blockers -*** These medications work by slowing down the heartbeat and decreasing the strength of each beat. This means blood is pumped through the vessels with less force, which lowers blood pressure
4. ***Calcium channel blockers -*** Calcium channel blockers are drugs that block the entry of calcium into the muscle cells of the heart and arteries. The entry of calcium is critical for the conduction of the electrical signal that passes from muscle cell to muscle cell of the heart, and signals the cells to contract.

   It also is necessary for the muscle cells to contract and thereby pump blood. These smart drugs inhibit the calcium hence decreasing the speed and strength of each heartbeat.

Just take a moment and notice all the top medications and how they work. Are you pleased? Well you shouldn't be. First, none of them are even trying to find or correct the root cause. All they are doing is messing up with the normal functioning of our organs. One is trying to abnormally interfere in the functioning of our heart cells while another is trying to mess with the hormones are body is producing. Second, these drugs come with a laundry list of side-effects. Side-effect which tops the list is the fear that is installed in us by calling hypertension as a silent-killer or may be propagating that 1 in

every 3 people have a risk of developing high blood pressure. ACE inhibitors can cause harmful side effects for pregnant women and their developing babies. Diuretics may decrease the body's levels of the mineral potassium, which can lead to Anaemia, Weakness, leg cramps, or fatigue. Beta-blockers may cause Asthma, depression, sleep problems among many others.

"We underestimate the side effects of many of these drugs," said Dr. Stevo Julius, chief of hypertension at the University of Michigan Medical Center in Ann Arbor.

“Hypertension doesn’t require any medicine. It is being dubbed as a disease so that pharma companies can produce/sell chemicals for that” says Dr. S. Vijayaraghavan. “These medicines obviously don’t target the root cause of the problem which can be anything from physical or emotional.” Not only this, medical community has labelled hypertension as one of the reasons of heart attack. "We thought we'd wipe out heart attacks by lowering the blood pressure, and we haven't yet," said Dr. Norman Kaplan of the University of Texas Southwestern Medical School in Dallas.
The editors of The Lancet, a British medical journal, cautioned that potential adverse effects may often occur among people who take drugs for high blood pressure, a condition that generally produces no symptoms in its earliest stages.

I’m not a doctor and I’m not providing you medical advice here. High blood pressure is a valid concern, but to correct the imbalance it is important to understand what defines “high” blood pressure and why it is elevated.

But before that let us understand “normal”. So, what is normal? As late as the 1950s, elevated blood pressure was considered by many expert physicians to be necessary for the adequate blood movement to vital organs. A former traditional rule-of-thumb was that normal systolic BP equals one’s age plus 100.

If you were 80, the pressures within 10% or so of 180 should not have alarmed anyone. In the 1970s, intervention wasn’t even recommended until pressures exceeded 165/95. Prior to 2003, 140/90 was considered normal. In 2003, American College of Cardiology (ACC) and American Heart Association (AHA) revised these numbers and lowered them further. Since 2003, 120/80 mmHg has been considered the traditional textbook definition of normal blood pressure. The recommendations stated:

- Blood pressure of 120/80, considered normal
- Blood pressure readings of 130–139, considered "pre-hypertension"
- Blood pressure above 140/90, considered high blood pressure.

"Today, a reading of 120/80 is considered "textbook normal," but according to earlier blood pressure standards, someone over age 40 can have a 140/90 reading and it can be considered perfectly acceptable. Depending on age and the state of one's health, readings above 140/90 can also be considered 'normal'. That said, the current thinking which suggests that a reading over 120/80 is considered 'high' and requires medication to lower blood pressure, simply isn't true," says Jennifer Zumbrink, a doctorate in Naturopathy.

Duane Graveline is a physician (MD) who worked in the space program and for more than two decades in private practice. His reading of the research literature as well as his own experience made him realize that current practices relating to BP are irrational and harmful.

"Many a time, the number in the reports might alarm the practitioner himself and, he could draw wrong conclusions, in the first place. If only the doctor could sit back, take a couple of deep breaths, and then listen carefully to the patient's woes, trying to soothe his frayed nerves; the next recording of the pressure could even have come down so much that the patient could not possibly be labelled hypertensive at that time! This scenario is not rare as many would want to believe," says Dr. Hegde. "To add to the doctors' problems is the fact that hypertension, per se, is not a disease. It is, at best, a risk factor for future degenerative diseases, like stroke, heart attack, renal failure, and retinal diseases."

"It should at least start a conversation about why normal is set where it is. If we make slight changes to where we set normal blood pressure, it has huge implications in the numbers of people we identify as being at risk.'' said Brent Taylor, core investigator for the V.A. in Minneapolis and assistant professor of medicine at the University of Minnesota.
When we reduce the guidelines of normal, immediately billions of people, around the world become ill. Currently the drug companies are pushing to lower even these numbers to make more people sick. It doesn't need an Einstein's brain to know who the real beneficiary here is. Drug companies are

milking billions of dollars every year on such drugs. Once someone become a blood pressure patient, he will never recover permanently just by being on medication. This can temporarily reduce the numbers as they are just blood thinners. The reason is not very difficult to understand, the drugs are not targeting the actual cause but trying to supress the symptoms. As long you keep taking the drugs, your readings will be normal.

What can we do?

What happens when you are suddenly frightened? If you notice carefully your heart starts to beat faster. Same happens when we are under stress. Body doesn't know what is happening outside. It reacts the same way if a lion comes before you or if your boss is planning to give you a pink slip. This is body's fight and flight response. Only difference is that in former, you can run away from the scene or you can fight. In our office situation, neither is possible. When the situation is solved, your blood pressure will automatically come down. Same happen when we are mediating. Mahatma Gandhi had a blood pressure of 200/120 all his old age and who was losing sleep and health? Of course, the British. His heart was all right; his liver was all right, because his mind was alright. He didn't hate anybody. Our problem is that one size should fit all. Every single person from his birth is unique, but everyone should come under this limit. There is a good analogy to explain the way patient are treated beside normal. Assume average Indian height is 5.4 plus minus 2 inches (mean plus 2 standard deviation). Imagine Amitabh Bachan comes for a check-up. He is absolutely abnormal with the height of 6.2. Our treatment is cut of his legs and make him 5.6. Now Jaya Bachan walks in for check-up, she has a height of 4.6. She will be ideal candidate for transplanting those legs because she will also come under normal. That is what we are doing in hypertension and diabetes also. Age and psychological reasons are not even considered before labelling someone "high-BP patient".

As the name suggest, hypertension is directly related to our tension/stress levels. Another big cause, already discovered earlier in cholesterol discussions, is excess consumption of sugar. Consuming too much sugar for an extended period causes Insulin, released into our blood stream. Insulin can increase blood pressure via several mechanisms: increased renal sodium reabsorption, activation of the sympathetic nervous system, alteration of trans membrane ion transport, and hypertrophy of resistance vessels. (Salvetti, et

al, 1993). It is the insulin resistance that make your arteries stiff. It causes inflammation in your arteries which when repaired by body leads to the condition called atherosclerosis. Insulin resistance causes sodium retention. When sodium increases potassium decreases in the body. Insulin resistance also block the absorption of potassium by your cells. Potassium deficiency can cause hypertension. There is a huge confusion relating to this topic. Nobody seems to point their finger directly towards the sugar. There is enough evidence out there which point that the root cause of stiffening of arteries is insulin resistance. Which leads to the root cause of excess sugar/carbohydrate consumption. Note that this excess sugar is responsible for host of other symptoms including obesity and diabetes.

Stress is another big feature which can speed up the process of development of hypertension. As an alternative to drugs, hypertensive patients often opt to pursue a natural approach to reduce blood pressure by managing their stress. Meditation seems to play a significant role in lowering blood pressure due to its ability to reduce stress. In fact, the National Institutes of Health has funded at least five research studies demonstrating the effectiveness of meditation, specifically the Transcendental Meditation technique, on reducing hypertension. A 2007 meta-analysis found that TM technique created a significant reduction in blood pressure.

Another study supported by a $3.8 million grant from the NIH tracked 201 subjects with coronary heart disease over 9 years. The researchers concluded that meditators showed not only a significant reduction in blood pressure, but they also had nearly 50% lower rates of heart attack, stroke and mortality compared to non-meditating controls. Harvard research in 2011 also highlighted that mindful meditation helped reduce anxiety, stress, depression, headache, high blood pressure among many more. Joel W. Hughes, Ph.D., and David M. Fresco, Ph.D., both associate professors of psychology in the College of Arts and Sciences at Kent State University found that mindfulness-based stress reduction (MBSR) can reduce high blood pressure. Simple breathing exercises and yoga asanas can help you tackle the condition. Exercising, losing weight and following a healthier diet are additional tools to reduce blood pressure. The first change in your diet should be to reduce salt intake and reduce carbohydrate intake.

Diabetes

Diabetes is another line of “disease” which has no cure (with medical science). But Boy oh boy, aren’t you lucky, we have got the treatment.

Diabetes is an altered response of our body to certain nutrients we are consuming. Energy from food comes to us in three forms: fat, carbohydrate, and protein. Proteins are broken down by our digestive system into amino acids, carbohydrates to glucose, fats to fatty acids. Carbohydrates are actually made up of various permutation and combination of glucose molecules. Refined carbohydrates – removed of all the fibre, causes a sudden gush of sugar into our blood. When carbohydrates from the foods you consume are digested, glucose is the smallest molecule into which a carbohydrate is broken down. The simpler the carbohydrate, the quicker it will be converted to sugar. Glucose molecules are absorbed from intestinal cells into the bloodstream. The role of glucose is to provide energy to our trillions of cells. When we ingest sugar in our body, it is carried across the cells by the help of our watery blood. An average adult carries 5 litres of blood. Our body can only tolerate 1 table spoon of the sugar we use in our kitchens. That’s it. When people talk about “blood sugar,” they mean “blood glucose.” Normal blood glucose level is between 70 to 100mg/dL. 1 deciliter is around 100ml and a milligram is very little, about 0.0002 of a teaspoon. So, if you do the calculation, it comes out normal glucose to be only 5g of sugar for our entire blood. 5gm of sugar corresponds to a single teaspoon of sugar. And how much do we consume? Well let’s do some calculations:

One slice of bread (even some of your favourite whole wheat) contains as much as 2 to 4 teaspoons of glucose, one small bowl of rice may contain 4 to 5 teaspoons of sugar, one chapatti made from Maida or highly refined wheat may contain 3 teaspoons of sugar. Milk has lactose (250ml cup contains naturally occurring sugar called lactose – which is converted into glucose by our body). On top of this, add the 2-3 cups of tea, coffee plus our occasional sweets, and potatoes (part of almost all cooked vegetables). We are easily consuming 25 to 30 teaspoons of sugar every day. This adds up to 150 gm of sugar, daily! What will happen to all these excess sugars? Our Endocrine system has an intelligence build to handle such a situation. When the glucose level is higher than what is required, our brain sends signals to pancreas to secrete insulin. Insulin is a hormone made by the pancreas that removes the excess sugar (glucose), to be moved into the cells for energy or to store it for future use.

1. Once carbohydrates are absorbed from food, they are carried to the liver for processing. First priority for the body is to burn or use it for energy and it will push some glucose into the bloodstream. When you are running a marathon, excess sugar consumed during that time is burned for energy requirements. Insulin, which is produced by your pancreas, aids in the transfer of glucose through cell walls. Glucose enters each cell of the body and is used by the cell's mitochondria as fuel. Insulin binds to its receptors on the target cells, which open gates of the cells to let sugar in. Insulin works as the key to the cell gates. Insulin is like an escort, who takes the excess sugar to various parts of our body.

2. Unused glucose will be saved in our glucose warehouses i.e. liver and muscles. Storage is done in liver and muscles as Glycogen by a chemical process called glycogenesis. Once glucose is inside your liver, glucose is phosphorylated into glucose-6-phosphate, or G6P. G6P is further metabolized into triglycerides, fatty acids, and glycogen. Glycogen is the form in which the body stores glucose. Glycogen serves as a backup fuel source when blood glucose levels drop. Body needs to keep the supplies filled so that it can be used to maintain the blood sugar level. Suppose you are stuck on an island with nothing to eat. As soon as you blood sugar level starts to fall, brain will send a message to your liver and muscles to release the stored glucose._Sad news is, your liver and muscles can store only a small amount of glucose as glycogen. But worry not; our body has got an unlimited storage of glucose as well.

3. When your body has more glucose than it needs for energy and has reached its storage capacity for glycogen, the increased insulin prompts the liver to convert glucose into triglycerides, which are then transported to fat cells. Triglycerides are a kind of fat (lipid) which is found in our blood and is produced by our liver. Like glycogen, fat is stored for future energy; however, glucose stored as fat can contribute to weight gain and obesity. Remember those love handles and belly fat! If you're eating more glucose than your body needs, your body can store too much triglyceride. Like cholesterol, triglycerides also need protein packaging for it to travel via blood stream. Triglycerides are continually in circulation ready to be metabolized to provide a source of energy. When present in excess, triglycerides can be stored in fatty deposits primarily in specialized fat cells called adipocytes, which comprise a specialized fatty tissue called adipose tissue, which may

lead to obesity and related health conditions if it extends over time. Their elevated level has been linked to a greater chance for heart disease as well. Ahrens found separately with Margaret Albrink that triglycerides mattered in coronary disease more than total cholesterol, and came to think that carbohydrates cause heart disease and not fats (Teicholz, p. 58–59)

“During the Palaeolithic period, many thousands of years ago, our ancestors ate primarily vegetables, fruits, nuts, roots and meat—and a wide variety of it. This diet was high in fats and protein, and low in grain- and sugar-derived carbohydrates. The average person's diet today, on the other hand, is the complete opposite, and the average person's health is a testament of what happens when you adhere to a faulty diet. Humans today suffer more chronic and debilitating diseases than ever before,” says Mark Sisson, a fitness author and blogger.

And now you have had a short course in ‘why obesity is an epidemic’.

Excess glucose in your bloodstream, medically termed hyperglycaemia, may cause several symptoms such as poor coordination, lethargy, dizziness, headaches and fainting. Chronic high blood glucose levels may also be toxic to your liver, and may increase your risk of developing diabetes

Diabetes is a condition in which our body is unable to manage the excess blood glucose. Too much unregulated sugar in your blood can cause serious, sometimes life-threatening health problems. You might be wondering why our body is working so hard to keep our sugar levels to check. You on the other hand love sweet treats, right? Why is our pancreas and liver doing what they are doing? Understand that sugar is toxic to our body. Excess glucose causes huge list of problems including obesity (visceral fat around our gut), nerve damage, inflammation (which is the important reason for heart diseases, hypertension and strokes), cancer (sugar feeds cancer). These are just the physical injuries which it causes but there is tons of emotional havoc that diabetes creates.

Type 1 Diabetes : In the first type, the beta cells in our pancreas, which secrete the insulin hormone, become weak. This is generally due to overworking for many years. Our pancreas is not designed to handle 150gm

of glucose/day for the rest of our lives. Weakened beta cells leads to less insulin generation by pancreas. As per the lock and key analogy explained earlier, less key in the blood means less export of glucose into the cells. Your body can't properly get the energy and fuel it needs from glucose. This leads to more glucose circulating in the blood stream. Type 1 diabetes is generally managed by insulin injections. They have to keep taking insulin externally all their life. Fun fact, Insulin was discovered in 1921 from the pancreatic extract of dogs.

Type 2 Diabetes : In the second type**,** pancreas is able to produce the required insulin but something wrong happens with the insulin receptors on the cells. The receptors stop responding to these insulin hormones. They build a sort of resistance which is often termed as Insulin resistance. Take this analogy for instance, suppose you are the insulin receptor in the cell (there are thousands of such receptors on many target cells) and insulin is like the customer care guy. Let's assume you are a very understanding and patient man. Every time the customer care executive calls, you answer politely. If we compare it with the frequency of our sugar intake, the customer care executive starts calling to you every 5 hours. You might still be politely handling the calls. Sooner or later, you will start building a resistance towards the caller. After years of patience, you might stop answering the calls altogether. This is what happens with our cells. The cells stop responding to the insulin, who are coming far too often to bother them. Unhealthy diets, including refined carbohydrates, sugar can cause type 2 diabetes. Type 2 diabetics account for 80-90% of all diabetics.

This is the same glucose which is released in case you are under stress and need sudden surge of energy. It is also used to generate energy when we are fasting or exercising.

Among vegetarians, carbohydrates consumption is almost 70% of our diets. We hardly get any fats (apart from our cooking oils). When we eat proteins and fats, there is a very little insulin response as compared to when we eat carbohydrate rich diets.

There is often a debate as to what is the reliable source of energy to the body. We have always been told if you are feeling low or tired, eat a chocolate or gulp a quick energy (glucose) drinks. We have been constantly fed that sugar gives us instant energy. Well, they were not wrong. Sugar does give us instant energy but do we really need instant energy for our day to day activities? Energy given by sugar is unstable, and the side effects of over consuming are disastrous.

Meanwhile energy derived from proteins and fats are more stable and long-term. This is the exact reason is why having high carbohydrates diets always keeps you hungry. Fat is the body's most concentrated source of energy, providing more than twice as much potential energy as carbohydrate or protein. Fat is a more efficient fuel per unit of weight than carbohydrate. Carbohydrate must be stored along with water. Our weight would double if we stored the same amount of energy. As for protein, our bodies don't maintain official reserves for use as fuel. Rather, protein is used to build, maintain, and repair body tissues, as well as to synthesize important enzymes and hormones. Cells produce the proteins from the amino acids.

Fat-adapted running is an emerging philosophy in the long-distance running community. Some runners—especially ultradistance athletes— are trying low-carb, high-fat (LCHF) diets in an attempt to teach their bodies to use fat for fuel. A few pro runners, like marathoner Zach Bitter, have switched to LCHF diets. Dr. Eric Berg highlights the reason why sugar gives you sudden burst of energy. He explains that if the body is given a chance to choose between sugar and fat, for energy, it will always prefer sugar. The reason why it goes after sugar first is because that sugar creates the most damage. So, when you eat sugar, it puts the body in emergency situation where it has to dispose it of first. It is not the most preferred fuel but also the most dangerous fuel to be disposed. Body will either try to burn it or stick it into cells, store as triglycerides.

What to do about it?

Yes, you guessed it right. Avoid food items which cause a spike in blood glucose. Dietary carbohydrates fall into two categories: simple carbohydrates, or sugars, and complex carbohydrates, or starch and fiber. Most of the simple carbohydrates in our diet come from sugar, or glucose, white rice, white flour and high-fructose corn syrup, used to sweeten a wide variety of foods. Fruit

juices and soda cans also contribute to lot of simple sugars. Avoid food items made from refined carbohydrates (whole wheat or white bread, potatoes, pastas, chips, cakes, pizzas, alcohol etc.). For those who squeezed their eyebrows after seeing their whole wheat bread on the list, let me give you the details. In an article published in The Telegraph in 2014, it was reported that many types of brown and wholemeal bread contain higher levels of sugar than white loaves. But fruit juice is also, according to the American obesity expert Robert Lustig, basically just sugar and is therefore, in his view, a 'poison'. Lustig is the author of *Fat Chance: The Bitter Truth about Sugar*, published in 2012. Robert sees sugar as the major culprit in the obesity crisis. Not so surprising, except for his shock revelation that the worst sugars may be those that appear the 'healthiest'. Lustig highlights that our eating habits are killing us. In this timely and important book, Dr. Robert Lustig presents the scientific evidence for the toxicity of sugar and the disastrous effects of modern industrial food on the hormones that control hunger, satiety, and weight. Leptin (from Greek leptos, meaning "thin"), "the hormone of energy expenditure", is a hormone predominantly made by adipose cells that helps to regulate energy balance by inhibiting hunger. Leptin is opposed by the actions of the hormone ghrelin, the "hunger hormone". Both hormones act on receptors for the cells in hypothalamus to regulate appetite to achieve energy homeostasis. In obesity, like resistance of insulin in type 2 diabetes, a decreased sensitivity to leptin occurs, resulting in an inability to detect satiety despite high energy stores.

As mouth-watering as a sugar-laden ice-creams or icing-topped cupcake is, we should all know by now that sugar isn't exactly healthy. In fact, it may be one of the worst things you can eat (that is, if you're trying to live a long, healthy life). The way the sweet stuff impacts your body is way more complex than just causing weight gain. In fact, when you eat a ton of sugar, almost every part of your body feels the strain—and that's shocking news for your health in both the short term and especially the long term. One study from UC San Francisco actually found that drinking sugary drinks like soda can age your body on a cellular level as quickly as cigarettes.

There is one more thing you should avoid i.e. Stress. We will discuss the harms stress causes to our body in detail, in the next chapter.

You will still find people who would say: oh it's because of your sedentary lifestyle that you have gained so much weight, you don't go to gym. Ask

them to explain the diabetes epidemic among 6-month-olds. There are thousands of small children who are on diabetes medication. It pains my heart to see them taking insulin injection at such an early age. The cause and effect is so often wrongly used here. We are told that because you eat too much and don't work out we are fat and diabetic. The real cause and effect goes like this. Since we are obese, we are always hungry and our body resist workout.

"All lifestyle related "diseases" are an intelligent physiological expression of our body which cannot be treated by a chemical drug because our body is self-regulating and self-healing. Our body is intelligent, we are stupid," says Dr. S. Vijayaraghavan. First thing to realize is that despite you having normal blood sugar, your insulin levels can be high. Just because your blood sugar is normal in the tests, doesn't mean you are safe for all eternity.

Pure, White and Deadly by John Yudkin (British Professor), a book widely derided at the time of publication, had back in 1972 highlighted the dangers of over consuming sugars. A British scientist sounded the alarm that sugar – and not fat – was the greatest danger to our health. But his findings were ridiculed and his reputation ruined. In fact, Dr. Yudkin was propagating this theory while Ancel Keys was busy propagating the lipid hypothesis. Yudkin paid a high price for speaking against the common beliefs of that time. Prominent nutritionists combined with the food industry destroyed his reputation, and his career never recovered. He died, in 1995, a disappointed, largely forgotten man. While the whole west was ready to launch their last battle towards fat and cholesterol, we had this visionary man who could foresee the dangers mankind was being directed to. He summarizes the evidence that the over-consumption of sugar was leading to a greatly increased incidence of heart diseases, and that in addition it was certainly involved in dental problems, probably involved in obesity, diabetes and liver disease, and possibly involved in gout, dyspepsia and some cancers. The last Chapter of *Pure, White and Deadly* lists several examples of attempts to interfere with the funding of Yudkin's research and to prevent its publication. It also refers to the rancorous language and personal smears used by Ancel Keys to dismiss the evidence that sugar was the true culprit.

Keys wrote, for example:

"It is clear that Yudkin has no theoretical basis or experimental evidence to support his claim for a major influence of dietary sucrose in the etiology of

CHD; his claim that men who have CHD are excessive sugar eaters is nowhere confirmed but is disproved by many studies superiors in methodology and/or magnitude to his own; and his "evidence" from population statistics and time trends will not bear up under the most elementary critical examination. But the propaganda keeps on reverberating..."[9,10]

Irrespective of the things said by Ancel keys, everything prophesized by Yudkin, in his book has already become true.

In the US, the latest edition of the government's official dietary guidelines includes a cap on sugar consumption. In the UK, the chancellor George Osborne has announced a new tax on sugary drinks. Sugar has become dietary enemy number one. David Diamond, Ph.D., of the University of South Florida College of Arts and Sciences shared his personal story about his battle with obesity. Diamond shows how he lost weight and reduced his triglycerides by eating red meat, eggs and butter. Only thing he cut back was sugar. Sugar in the form of breads, rice, potatoes etc. His doctor, who was a cardiologist, asked him not to go on this diet as his current cholesterol levels are already sky high and he will kill himself if he go on high fat and low carb diet. During the years, not only David lost weight and lowered his cholesterol levels to normal but also lost weight. His doctor who was monitoring the entire process termed his case as an anomaly!

We replaced steak and sausages with pasta and rice, butter with margarine, eggs with muesli. But we still grew fatter. The intention behind this was to stop heart diseases. Did we? How did the world's top nutrition scientists get it so wrong for so long?

Artificial Sweeteners

To those who were taking a sigh of relief by thinking, well I only drink diet cola and use sugar Free (zero calorie). By offering the taste of sweetness without any calories, artificial sweeteners seem like they could be one answer to effective weight loss. When you have a 330ml of carbonated beverage with 35g (7 teaspoon) of sugar in front and a diet version of the same soda- zero calorie. Picking the diet soda seems to be a no-brainer. Well, I have shocking news for you.

Artificial sweeteners have been shrouded in controversy ever since saccharin,

the first no-cal sweetener, was discovered in 1878. Even then, public health advocates questioned whether these lab-created sweeteners were truly safe; saccharin, after all, was discovered accidently by a chemist working with coal tar, a carcinogenic material. Nearly 140 years—and an infinite number of conflicting studies—later, the issue still isn't settled. Saccharin which is 300 times sweeter than sugar -- was used during World War I and World War II to make up for sugar shortages and rationing. In the 1970s, the FDA was going to ban saccharin based on the reports of a Canadian study that showed that saccharin was causing bladder cancer in rats. The American Heart Association (AHA) and American Diabetes Association (ADA) have given a cautious nod to the use of artificial sweeteners in place of sugar to combat obesity, metabolic syndrome, and diabetes with a FDA warning label that read, "Use of this product may be hazardous to your health." Artificial sweeteners have been scrutinized intensely for decades.

Critics of artificial sweeteners say that they cause a variety of health problems, including cancer. That's largely because of studies dating to the 1970s that linked saccharin to bladder cancer in laboratory rats. Because of those studies, saccharin once carried a warning label that it may be hazardous to your health. In the Multi-Ethnic Study of Atherosclerosis, daily consumption of diet soda was associated with a 36% greater risk for metabolic syndrome (a cluster of conditions — increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels) and a 67% increased risk for type 2 diabetes. Aren't these diseases that artificial sweeteners may help prevent in the first place?

The San Antonio Heart Study documented weight change in men and women over a seven- to eight-year period and offers evidence that weight gain and obesity were significantly greater in those drinking diet beverages compared with those who did not drink them. In another study, where the participants were adolescents, intake of artificially-sweetened beverages was associated with increased body mass index and increased body fat percentage in males and females at a two-year follow-up. Meanwhile, in Australia, where drinking artificially-sweetened beverages has increased while drinking sugar-sweetened beverages has declined, the rate of obesity has not decreased but been on the rise. Currently the brands which have artificial sweeteners are advertising that their drinks are not recommended for children! I wonder why?

In a European study, the risk for developing type 2 diabetes more than doubled for participants in the highest quartile of diet beverage consumption, compared with non-consumers. Of course, sugar-sweetened beverage consumption was also associated with an increased risk of type 2 diabetes.

Another study published in CMAJ, interpreted that evidence from trails does not clearly support the intended benefits of non-nutritive sweeteners for weight management, and observational data suggest that routine intake of non-nutritive sweeteners may be associated with increased BMI and cardiometabolic risk. (Meghan, et al, 2017) Susan Swithers, PhD, professor of behavioural neuroscience at Purdue University and a leading researcher on artificial sweeteners says that your gut gets confused when you eat zero-calorie-but-super-sweet artificial sweeteners. The sweet taste sends a signal to your gut that something high calorie is on its way, so your gut anticipates foods that do, in fact, have a high calorie count. But when those don't arrive, your gut doesn't utilize the foods efficiently, and that causes a cascading effect that interferes with your body's hunger signals. Your metabolism slows down.

In the book Excitotoxins: The Taste That Kills, Dr. Blaylock points out the dangerous side effects of aspartame. He says, “Substances like Aspartame can cause harm to the brain and neurosystems which causes neuro degenerative diseases like Alzheimer and others. No doubt, we have been scammed by the "cholesterol & fat" is evil propaganda from the 1970s.... that has led us to have more obesity and chronic diseases plus more Big Pharma profits than ever.

Many investigators have shown that hyperglyceridaemia can be induced in normal subjects and greatly exaggerated in hyperglyceridaemia patients by high carbohydrate diets. Sugar raises the cholesterol and triglycerides.

CANCER

“It is calculated that the new generation, the generation born today, each second man and each third woman will have this illness,” says Dr. Ivaris Kalvins, Scientist & Inventor, Director- Latvian Institute of Organic Synthesis.

Cancer is caused when a cell of the body starts to grow out of control. Such

cell may become cancerous. Cancer cell growth is different from normal cell growth. Instead of dying, cancer cells continue to grow and form new, abnormal cells. In addition, these cells can also invade nearby tissues. This is a property that normal cells do not possess. Normally, the body safeguards against cancer via numerous methods, such as: apoptosis or a process by which abnormal cells die on their own accord, helper molecules (some DNA polymerases), aging, etc. In cancer cells, the damaged DNA is not repaired, and the cell does not die. Note that what triggers the change in the cell gene, is not known but we have a laundry list of cancer causing suspects. These abnormal cells with abnormal DNA, duplicates. The new cells all have the same defective DNA of the original cancer cell. A normal cell and a cancer cell work alike. Cancer is probably one of the rare diseases which our body self-generate.

Now if I start interpreting this data, I can understand what is happening but did we really understand why it is happening? What causes the gene mutation in a cell?

Now the interesting part starts. Till very recently the medical community believed that the cancer can be generated in any cell of the body (barring a few). Now researchers and doctors have found out that they were wrong. Only the stem cells can become cancerous. So, what is a stem cell? Well, stem cells are those magical cells who can take the shape of any cell in our body. So, a stem cell can take a shape of a heart cell or a liver cell or even a brain cell. It is this mother of all cells which takes the hit when you get cancer. This mother cell then slowly replicates and form clusters and tumours. Another fact is that these stem cells are present throughout the body and can hence cause in various organs.

We all know that the fact that the cure of cancer has not been identified till now. Plenty of drugs and treatment have been tested, but they often don’t seem to work. One person can take a cancer treatment gets better while another person with the same cancer (at same stage), taking the same drug, does not get better. So, after decades of research and billions of dollars spend on cancer research, why haven’t we cured cancer?

According to the WHO report on Cancer, estimated 9 million people died in 2015. The report also warned that the number of new cases is expected to rise by about 70% over the next 2 decades. According to the world cancer report by IARC (2014), the total annual economic cost of cancer in 2010 was

estimated at approximately US$ 1.16 trillion. These numbers are simply mind numbing. The numbers might have moved upwards by 2017.

Sometimes this question comes to my mind: If I were a pharma company who is motivated to increase shareholder value, will it be wise for me to find a cure to cancer or to find a new treatment of cancer? If as a lay man I have to answer it, I would be putting myself out of business in case I find a cure to the problem. I don't think that is a good business model and will not interest the shareholders, either. If I can treat a person for a long-extended period, it will generate huge revenue for me. Anyways, it's just me and my thoughts. There is also a possibility that our medical experts have never really understood 'cancer'. This is what the expert said. Albert Szent-Györgyi von Nagyrápolt, a Hungarian biochemist who won the Nobel Prize in Physiology in 1937 wrote "I don't know what cancer is because cancer cell works just like normal cells and I don't know the distinction between the two and I don't know how to treat a cancer cells without killing the normal cells."

International Agency for Research on Cancer has identified 120 possible agents which can cause cancer. Do you know that some of the foods which you might eat every day are Group 1 carcinogenic?

1. Processed meat
2. Alcoholic beverages
3. Hot beverages
4. Polluted Air etc.

Surprised?

But do every one of us consuming the above gets cancer? What is so special about these persons that their own cells turn against them?

What are the treatments?

Most varied type of cancer treatment depends on the stage of cancer. It may consist of chemotherapy, radiation, hormone therapy and surgery. Many people can be there on medication for multiple years even after the cancer surgeries.

Chemotherapy has a bad history and very few people know it. Chemotherapy agent was discovered by accident in 1940s, during world war II. In Italy, an

incident led to the release of nitrogen mustard gas that affected several hundred soldiers and civilians. (Jules Hirsh, JAMA, 2006; 296(12): 1518-1520) When some of the doctors were doing the autopsy of the corpses, they found that the lymphocytes of these corpses had dropped down drastically. Just to let you know, leukaemia (a form of cancer) happened when abnormal lymphocytes accumulate in the blood and certain organs, where they caused complications. Some of the doctors got an idea that they can treat leukaemia with this cytotoxic.

Chemotherapy comes from the history of making highly toxic poison Nitrogen mustard gas. Even some of the chemotherapy agents used today are derived from the mustard gas, which was once stock piled by the nations as a chemical warfare agent. A study published in PLOS ONE found that 9 out of 10 doctors (even when terminally ill) would avoid treatments such as chemotherapy – despite recommending it to their patients. They will not give it to their wife and children. So, what does that tell you? He is not going to do this treatment, why should you?

Chemotherapy is a practise to treat patients with the most powerful toxins known to human. Chemo is poison. The people who administer these chemicals to patients wear all kind of protective suits, gloves, head masks. Even a 5-year-old can understand that this is a dreadful thing. Doctors are giving poison to already ill person. Even if it might kill the cancerous cell, it will massacre the healthy ones too.
“We know that 97% people who undergo chemotherapy are dead in 5 years. This study was published in 2004 edition of Journal of Clinical Oncology. When they tell us, chemo is our only chance, it’s the first lies you hear,” says Bob Wright, founder of American Anti-Cancer Institute.

“Tomoxfin is the most common drug that most women are put on when they get breast cancer. But doctor don’t tell them that it is identified as a carcinogenic by American cancer society and WHO. It doesn’t make sense to prevent cancer you give women a carcinogenic drug that can cause cancer in other parts of her body,” Dr. Veronique Desaulniers, Breast cancer survivor, Physician. This is so shocking. The top drug prescribed to treat breast cancer is a carcinogenic. Instead of curing patients we are eliminating the patients by generating new cancers. Dr. Ben Johnson, M.D. warns, “It is estimated that 2020, more than half of cancer will be medically induced from drugs and

radiations. Medical establishment itself will soon be the leading cause of cancer in America."

Let's talk about radiation therapy. We all have seen the yellow triangular radiation symbol on the doors of radiations rooms in the hospitals. So, what does that symbol mean? It means it is dangerous to enter to the room without doctor's permission. Why it is dangerous, because the cells exposed to these radiations can be potentially damaged. These strong radiations damage the DNA of your cell. Damaged DNA is the exact reason why you got cancer in the first place. The treatment will affect the healthy cells surrounding the cancer cells as well.

It sounds funny but why would a doctor prescribe these harmful treatments to patients? Dr. Borris M.D. answers this. He says, "You can lose your license if you don't prescribe chemo & radiations. Doctors are required to do it." "Unfortunately, doctors in U.K., Australia, America can risk losing their medical license if they recommend anything other than gold standard which is chemo & radiation," says Laura Bond, Investigative Health Journalist & Author.

"There are many physicians who truly want to help these patients. They have a fear that they will be ostracized in their own community if they embrace some alternate therapies," says Dr, Joseph Mercola.

There therapies annihilate the healthy cells in the body and damage other organs which makes the recovery from cancer almost a miracle. The chemical used to actually treat cancer are the cancer-causing agents. Maybe that is exactly why the cancer patients die due to multiple organ failures.
Looks like we can join the dots and understand what's happening here. The reason why we have not seen any progress in curing the cancer is the amount of money being made in the war of treating the patients. Each session of chemo costs approximately $7000 and the average patients pay anywhere around $40,000 for the entire sessions of weeks. With millions of cancer patients around the world, I will let you crunch the numbers. We cannot blame the scientific community for not able to find a cure till now. There is just insane amount of money involved and it is only growing dramatically.

In 2015, Dr. Farid Fata Michigan a cancer specialist was imprisoned for 45 years. Federal prosecutors called him the "most egregious fraudster in the

history of this country." To Fata, they said, "patients were not people. They were profit centers," according to CNN. Some 553 patients were mistreated in the abuse. $35 million worth of unnecessary chemotherapy was prescribed to the patients, shockingly to some who didn't even had cancer! "They came to me seeking compassion and care. I failed them," Fata told US District Judge Paul Borman, during his sentencing, according to NBC.

This is just one such incidence where the culprit was caught. Experts believe that there might 100s of such doctors out there who might be doing the same and they are not caught. Dr. Irvin Sahni, M.D. warns, "Oncology is unbelievably lucrative field of medicine, if you are on the business side of it." Sources say that the doctors make a percentage of money for every dollar of chemotherapy subscribed.
It is completely unacceptable that oncologist profit from the treatment they prescribe, that are justified by their own diagnosis. Mike Adams gives an appropriate analogy. He says, "It's kind of like taking your car to a greasy mechanic somewhere who is not very honest and he says 'well your engine needs to be replaced or your car is going to blow up down the road. But he is just making that up as he wants the business. If you believe him then you have to pay all money for the procedure your car never needed. Same thing happens in the cancer industry every single day in America."

So, what can we do?

The sum up of all the above revelations is that we cannot trust our doctors blindly. We have to get educated and take the matters of health in our hands. The reason why you should know about the history of medicine is because people are dying because of lack of knowledge. If you ask most doctors today, nothing can heal cancer. They will try to cut it out, burn it and kill it. Sometimes they have success in temporally slowing down the inevitable. The reason why they will never have a cure is because as long as the root cause is not removed, the problem will always be there.

Dr. Leonard Coldwell, a Doctor of Naturopathic Medicine who has a Ph.D. in Psychology. A native of Germany, Dr. Coldwell has been a natural health practitioner for the past 35 years. His specialty is cancer and stress-related illness. He says, "In my experience, every cancer can be healed in 2 to 16 weeks. Some cancer can be cured in minutes. Every senior doctor is aware of cases with spontaneous healing. The minute the body becomes alkaline and

oxygen rich, the cancer stops. It can take 2 days to couple of weeks but it stops. The aim is to bring the body to the healing ph level (7.36-7.5)." Coldwell also highlights the amazing healing power of vitamin C and E in his video. Not only it's beneficial in curing cancerous growths but also helpful in treating cardiovascular problems. There is a big propaganda done these days to wage a war against these cancer healing vitamins. Lot of researches are done showcasing that the Vitamin A and E actually increase cancers in people. Dr. Leonard explains why research and reality are so different. "The Vitamins used in the study are artificial chemical created in labs and they say see it doesn't work! Of course, it will not. Chemical don't work, nature does!"

"Stress is a major root cause of cancer and must be reduced and eliminated. Removing stress from your life allows the body to do what it was designed to do; be healthy and disease free," says Paul Nison, Author/Speaker.

Anita Moorjani in her bestselling book, *Dying to be Me,* she highlighted how after fighting cancer for almost four years, she achieved the true healing. Moorjani describes in detail her hospital stays, and the painful tests she had to endure. At the end, she eventually loses consciousness and her husband is given this grave diagnosis from her doctor: "There's nothing we can do for your wife. Her organs have already shut down. She has tumours the size of lemons throughout her lymphatic system, from the base of her skull to below her abdomen. She won't even make it through the night." After her Near-death experience, not only she recovered within few weeks, but also gives hope and comfort to those of us who would rather avoid the subject. In her fascinating book, she has given the mantra for true healing which none of the allopathic doctors can give you. THE MOST FREQUENT QUESTION people ask her is why she got cancer. She sums up the answer in one word: **FEAR**. What was she afraid of? Just about everything, including failing, being disliked, letting people down, and not being good enough. She also feared illness, cancer in particular, as well as the treatment for cancer. She was afraid of living, and was terrified of dying.

Skin diseases – Acne, Pimples

There are number of skin conditions that affect humans. Skin diseases are among the most widespread problem among youngsters. The common

problems are pimples, acne.

How it is caused?

We are told by our doctors or family that pimples or acne are caused by unbalanced hormones during puberty. Sometimes it also happens due to excess oil secretion on our face sebaceous gland, a small gland in the skin which secretes a lubricating oily matter (sebum) into the hair follicles to lubricate the skin and hair. Now doctors are reporting that the ‘Adult Acne’ is becoming a reality and there is 200% rice in the adults seeking specialist acne treatment. To explain Adult acne, doctors and dermatologists agree that the rise is largely due to an increase in **stress and poor diet**.

Why it is caused?

Nobody thinks this! Nobody knows about it! Why do I have acne? What is so special about me? Why my other friends are not having a single scar on their face? How come their hormones are so balanced and their oil secretion so normal. Instead of asking these questions we immediately start looking for external and quick solutions. We buy expensive creams, face washes and start eating dangerous medical drugs. We stop eating fats thinking since my body is producing more oil, it is better to avoid any external oil going into our system. We hardly recognize that there must be something wrong with me due to which I am getting this problem. Skin is a reflection of what is going on inside of you. Example, what happens when someone embarrasses or you feel shy? Your face turns red! When you are enthralled, you get Goosebumps. Why?

Skin is actually your body's largest organ by size. Skin has similar machinery as our brain. Understand that skin is a huge sensor packed with nerves for keeping the brain in touch with the outside world. This communication works in both the direction. When you are under stress and anxiety (due to say divorce, troubled relationship, losing a job, unhappy with life, anger issues with authority, unexpected health issues or lack of sleep), it gets reflected on your skin first. From dark circles to early wrinkles to pimples all are symptoms of a disturbed mind. No amount of anti-acne creams and face washes can help cure this problem until you cure your mind. Unresolved emotions show on your skin.

Diet also plays a significant role here. Research suggests the spike in insulin caused by starchy, sugary foods and drinks with a high glycaemic index (GI) (White bread, chocolates, sugary soda, rice cakes, most crackers, bagels, cakes, doughnuts, croissants, waffles, most packaged breakfast cereals) could lead to acne by instigating sebum production. “I’m not saying you can ohm your pimples away, but taking a look at the root cause, and certainly decreasing stress levels, could be a secret ingredient to your arsenal of skin-clearing techniques. In reducing cortisol, you’re putting an end to a molecular pathway (comprised of heavy hitters like prostaglandins, cytokines, neuropeptides, immune cells, and hormones) that could lead to devastation on skin tissue, to put it kindly,” writes Neuroscientist and Mind-Body Expert, Claudia Aguirre in her blog. Unwillingly the modern science is understanding the mind-skin relationship. Psychodermatology is a new medical subspecialty emerging from the combination of psychiatry and dermatology.

Well that was a lot of information. So, what we have learned so far against most diseases, can be summarized as below:

Stress + Sugary diets = Poor Health. Cholesterol is found at the scene of crime but it is not the criminal. Cholesterol is a good guy and doing lot of good things for you daily. Sugars and trans fats are the silent killers.

Chapter 4: Science of Dis-eases

"The most exciting phrase to hear in science, the one that heralds the most discoveries, is not "Eureka!" (I found it!) but "That's funny…" ~ Isaac Asimov

Modern (Western) medicine or Allopathy is a clear case of deceits, lies and a big fat propaganda. They are not made to cure you. They are purely for masking the symptoms and continue to make you sick. Pharma are in the business to earn more money and profits. These are not my words but of people who have seen this industry up and close.

"Remember, there are two ways drug companies can make money: Invent new drugs, or invent new diseases," writes Dr. Jay Parkinson, M.D., M.P.H., about the fake disease-creation industry.

In her book *Disease mongering*, Lynn Payer has packed case studies and interviews of prominent physician about 'Disease Mongering'. Book looks in depth how drug companies and medical professionals are preying on their patients by keeping them convinced that they are ill, or are in immediate danger of becoming sick.

You see, to make more money the drug companies needed to figure out a way to get healthy people to buy drugs they don't need, which won't cure what they don't have, and potentially have unpleasant to dire side effects, sounds like such a crazy premise, even Bollywood wouldn't buy it.

Yet that's just what's happened, as Moynihan and Cassels document in their book "Selling Sickness". The 1.5-trillion-dollar pharmaceutical industry has plenty of money to spend convincing us that our ordinary travails mask mental illnesses, and common aches and conditions need treatment.
Moynihan and Cassels describes, "There are informal alliances of doctors, drug companies and increasingly patient groups that help to widen the boundaries of illness in order to widen markets for those selling treatments. Often this process is driven by the medical profession, but it's driven with fuel provided by the drug companies."
The authors recount the candid comments made by the retiring CEO of Merck:

"Thirty years ago, Merck's aggressive chief executive Henry Gadsden told Fortune magazine of his distress that the company's potential markets had

been limited to sick people. Suggesting he'd rather Merck to be more like chewing gum maker Wrigleys, Gadsden said it had long been his dream to make drugs for healthy people. Because then, Merck would be able to "sell to everyone." Three decades on, the late Henry Gadsden's dream has come true."

Look at some of the pharma achievements. Shyness is now a disease. Sadness after a traumatic incidence say death in family is now a condition which need medical intervention. They called it Post-traumatic stress disorder (PTSD). Playful childhood is now termed as Attention Deficit Hyperactivity Syndrome (ADHD or ADD). Distracted office workers now have a condition called adult ADD. Natural phenomenon like Menopause are now a medical condition. The list goes on and on.

A founding father of ADHD announced a few months before his death that 'ADHD is a prime example of a fictitious disease. After turning 87 years old, American psychiatrist Dr. Leon Eisenberg made this statement to the German weekly Der Spiegel and seven months later, he died. Apparently, he had decided to clean his conscience before moving to the beyond. Dr. Edward C. Hamlyn, a founding member of the Royal College of General Practitioners, in 1998 stated, "ADHD is fraud intended to justify starting children on a life of drug addiction."

To fatten balance sheets, pharma companies are following the goal of tapping to new markets to create more revenue streams. The business model works best if more and more people consume medicine for as long as possible. Another avenue to increase sales is to broaden the current definition of the diseases. Good example of this is the lowering of the cholesterol and blood pressure normal numbers and definition of who is ill. Another avenue is to find medicine for the healthy. This is what is currently being promoted heavily on Indian television. Healthy people are being advertised to take pills to take more active lifestyle. Oils are being advertised to reduce stress for us! Healthy people are encouraged to take full body check-ups to proactively manage their risks. This is another biggest industry now – Full body scans, where they test some 100s of parameters. The fact is, because of the aim to sell drugs to everyone, and the "bottom line" superseding any other priority, the pharmaceutical industry has systematically devised ways to hook the general public on drugs, regardless of creed, race, even age. A research

article in British Medical Journal which studied if General health checks in adults worked for reducing morbidity and mortality from disease. The research concluded that General health checks did not reduce morbidity or mortality, neither overall nor for cardiovascular or cancer causes, although they increased the number of new diagnoses.
While the hi-tech devices and modern medicine have done a lot to take care of the sick, it seems it is causing injustice to the apparently healthy by over-investigating and over-treating. Extensive, needless health check-ups may reveal insignificant abnormalities in many healthy persons. With the advent of ‘total body scanning' and the myriad laboratory tests and procedures of investigation, everyone can be ‘made' a ‘patient' by detecting insignificant abnormalities which do not call for any intervention.

The problem comes when the ethics and morality is kept at stake, in order to increase sales. The most efficient way to increase sales is to have a great pool of pharmaceutical sales representatives also called ‘sales reps’. Drug reps are still easy to spot in a clinic or hospital. The first duty of doctors, at least in theory, is to their patients. Doctors must make prescribing decisions based on medical evidence and their own clinical judgment. Drug reps, in contrast, are salespeople. They swear no oaths, take care of no patients, and profess no high-minded ethical duties. Their job is simply to persuade doctors to prescribe their drugs. In the article published in PLOS, ex-sales drug rep Shahram Ahari discloses, “It's my job to figure out what a physician's price is. For some it's dinner at the finest restaurants, for others it's enough convincing data to let them prescribe confidently and for others it's my attention and friendship...but at the most basic level, everything is for sale and everything is an exchange. During training, I was told, when you're out to dinner with a doctor, the physician is eating with a friend. You are eating with a client.”
Another 15-year veteran in pharma industry, Gwen Oslen (ex-pharma sales rep), dispels the myth that pharma industry is in the business of health and healing. She instead refers to pharma’s business as “disease maintenance and symptoms management”
She admits, “Our children, our beloved ones, our elderly are considered cash cows that are preyed upon by pharmaceutical reps such as myself, who are encouraged to go in and build “market share” without knowing the misinformation we are distributing, without being aware that the clinical data has been contrived or the volunteer population has been cherry-picked.”

“There is no such thing as a safe drug,” she discloses in her book *Confessions of an Rx Drug Pusher*.

Whistle-blower Blair Hamrick revealed wrong practises undertaken by a pharma company in marketing its drugs and reporting its data. This British pharma giant paid whopping $3billion in settlement to the US government and pleaded guilty of felony crimes. The same pharma company was also fined in China on the charges of bribing the medical professionals.

Another pharma giant was fined $750 million after whistle-blower, Cheryl Eckard, disclosed that substandard drugs was getting manufactured in one of the company’s plant. The company later pleaded guilty and admitted that it distributed the adulterated drugs for diabetics and cancer patients.
History has been filled with court cases and fines on the pharma industry for the havocs they have created on people’s life.

Even if you don’t trust these ex-sales reps, how about the data from FDA? In just last 10 years, FDA has recalled more than 2000 drugs from the markets for hurting and killing people. In 2014, Indian regulatory body banned 344 drugs as the medication was found to be “unsafe” for human consumption. Some of the popular drugs that were initially banned include cough syrups like D'Cold, Phensedyl, Benadryl and Corex, Nimesulide and Vicks Action 500 Extra. Every drug that has been recalled by these bodies was first proven to be safe and effective. Yet over 20,000 drugs have been removed from the markets till now. With such massive mistakes made in registering and marketing drugs, we are playing with lives of millions of patients. Pharma companies are killing people with Sin-thetic drugs. Something is wrong when regulatory agencies pretend that vitamins are dangerous, yet ignore published statistics showing that government-sanctioned medicine is the real hazard.

Adverse drug reactions and iatrogenic illness are the leading cause of death in US in 2001. In the research article, *Death by Medicine*, Gary Null and his team, have highlighted that in year 2001, the total number of iatrogenic deaths was around 7,83,936 followed by deaths related to heart diseases 6,99,697; annual cancer death rate, 5,53,251. This study showed that in US, the leading cause of death were unnecessary medical surgeries, unnecessary hospitalizations, Adverse drug reactions which include drug errors and medical errors to name a few. These numbers are just for US alone whose medicine and drug research we all revere as the best in the world. Imagine the

genocide happening around the world in 2017! Millions of people are dying or developing some medical conditions every year because of unnecessary doctor's intervention where it is not needed.

As per the data from the National Institute of Drug Abuse, in 2016 more than 50,000 Americans died of opioid (used for pain relief or anaesthesia) overdose. The following year the deaths increase to more than 64,000. If you are thinking well this might be due to patients not following doctor's advice or taking too much pills which was not recommended, read on.

Researchers with the Boston Medical Center and others, used the Open Payments program database from the Centers for Medicare and Medicaid Services to identify payments involving an opioid, from pharma to physicians between August 2013 and December 2015. They found that during the tenure, 3,75,266 **non-research** payments were made to 68,177 physicians, roughly equalling $46 million. (Hadland, et al, 2017)

I don't think I need to say any more, you can read between the lines or connect the dots.

Many of us have a relatively simple, understanding of the way the drug development and marketing work. People get diseases; scientists develop drugs to treat those diseases; and marketers sell the drugs by showing that the drugs work better than a placebo. Sometimes, however, this pattern works in reverse. Drug company scientists develop a drug with a range of physiological effects, none of which are terribly helpful, so the marketers must identify and promote a disease for the drug to treat.

Article published in 2000 in the prestigious British Medical Journal, mentioned the good health resulting from doctor's strike in Israel. According to the survey done by the burial societies in Israel done during the period when doctors were on strike. During this five-month period, the number of funerals performed had fallen drastically. (Judy Siegel, 2000)

Why Do Patients Stop Dying When Doctors Go on Strike? Even more comprehensive review of the medical impact of doctors' strikes is published in the prestigious academic journal Social Science and Medicine. A team lead by Solveig Cunningham and Salim Yusuf at Emory and Georgetown Universities in the U.S. and McMaster University in Canada, analysed five physician strikes around the world, all between 1976 and 2003. Doctors

withdrew their labour, in the different strikes analysed, from between nine days and 17 weeks. Yet all the different studies report population mortality either stays the same, or even decreases, during medical strikes. Not a single study found death rates increased during the weeks of the strikes, compared to other times. A review suggests that it's the fact that elective, or non-emergency surgery, tends to stop during a doctors' strike, which seems to be the key factor.

Ben Goldacre is a doctor, academic, campaigner and writer whose work focuses on uses and misuses of science and statistics by journalists, politicians, drug companies. His first book Bad Science reached #1 in the UK non-fiction charts and sold over half a million copies worldwide. His second book Bad Pharma discusses problems in medicine, focusing on missing trials, badly designed research, and biased dissemination of evidence. Ben in his famous TED talk highlighted how he was misled by many researches and drug companies into believing the efficacies of certain drugs. He also mentioned that there are systematic flaws in core medicine. Positive findings are twice as likely to get published as compared to negative findings. He gave a perfect analogy to clinical evidence based medicine, and I quote. “If I flip a coin 100 times, but withheld the results from you for half of the tosses, I can make it look like that I have a coin that always gives heads, compared to a normal (placebo) coin. It doesn’t mean that I was a chancer but you were an Idiot in letting me away.” He even went ahead and called it “Research Misconduct”.
Recent research at Oxford led by Professor Bingel elegantly showed that all healing occurs, NOT because of our pharma drugs but because of patient’s belief in the doctor and the medicines he gives.

This all adds up nicely.

Wait a second. I know what you are thinking. You might be thinking that this is not true because I took a medicine for headache or cold and it worked. My family has done some operation and they are ok now. Well you are right about the effect but the cause is wrongly placed. Let me introduce you to the most dreaded concept, full of voodoo and magic: The placebo effect.

Placebo effect: Power of beliefs

“God heals, and the doctor takes the fees,” said Benjamin Franklin

The word “placebo” comes from Latin and means “I shall be acceptable or pleasing.” “I shall please” hints the kind of treatment done since the early 1700s when there was hardly any proper medicine. Doctors understood the power of placebo and administer fake medicine (just to please people) to improve people’s symptoms. A placebo is anything that seems to be a "real" medical treatment -- but isn't. When a patient gets better by ingesting a sugar pill, medicine defines it as placebo effect. It could be a pill, a shot, or some other type of "fake" treatment. What all placebos have in common is that they do not contain an active substance meant to affect health. In medical research, placebos are used as controls against which the effects of new drugs are measured. So, in simple terms it means an effect caused by our beliefs (that I have taken an actual medicine). Please note that in a research, volunteers are not told if they are taking the placebo or an actual drug.

In the medical schools every student learns, at least in passing, that the mind affects the body. They get a breezy idea that some people get better when they believe (falsely) they are getting a medicine. I am not surprised why the medical community has not called it a mind effect instead of placebo effect. Placebo “masquerades” the actual meaning of the effect, beautifully. Placebo effect is an amazing proof that our mind effect matter (body).

Bruce Lipton is a stem cell biologist. In his best-selling book, *Biology of Belief* he says, “I celebrate the *belief effect*, which is an amazing testament to the healing ability of the body/mind. However, the “all in their minds” placebo effect has been linked by traditional medicine to, at worst, quacks or, at best, weak, suggestible patients. The placebo effect is quickly glossed over in medical schools so that students can get to the real *tools* of modern medicine like drugs and surgery.” Researchers have found that placebos can work just as well as potent drugs, and studies into the placebo effect have also shown that many conventional treatments "work" because of the placebo effect and little else.

There was a study done by Oxford, Cambridge and Hamburg Universities and the research was later published in the prestigious Science Translational Medicine in the year 2011. The study has shown how placebo or your belief helps your body to recover irrespective of the drug given. In other words, if you believe that you have been given a pain killer, your own brain cells will release such strong opioids which would heal your pain. In this study,

patients under severe pain irrespective of the cause, were given strong painkillers (morphine) but were told that this is not morphine but a new vitamin which will not relieve you of your pain but help cure the disease. Not a single patient got pain relief. Then they took that patient to study the other side and ran saline (salt water) drip and told the patient this is morphine and it will cure your pain. Everybody's pain went. To understand this anomaly, researchers did a Functional MRI to see what is going on in the brains of these patients. They found that when the patient believed he was administered a painkiller (when she wasn't), the forebrain produced strong Opioids (much stronger than morphine), the pain got less. When patient didn't believe it was morphine (when it was morphine), FMRI showed that the forebrain slept and nothing happened. Patient's pain didn't go away. (Sci Transl Med. 2011 Feb 16;3(70))
The study backs up the idea that the placebo response plays a role in all treatments for pain, says neuroscientist Fabrizio Benedetti of the University of Turin, Italy.
"It seems like magic, the fact that just thinking or believing that you're getting some treatment or benefit can have actual benefits."

Similarly, many such studies have been done. Even though placebos contain no real treatment, researchers have found they can have a variety of both physical and psychological effects. Participants in placebo groups have displayed changes in heart rate, blood pressure, anxiety levels, pain perception, fatigue, and even brain activity. These effects point to the brain's and as well as our beliefs role in health and well-being. Our brain and body responds to our beliefs. Henry ford once said about the power of mind or belief, "Whether you believe you can do a thing or not, you are right." You might have seen people walking on burning coals without burning their feet. There are also parallelly numerous incidences where people have burnt themselves. Is it their belief that they can do it which causes little to no damage?

In 1951, Dr. Albert Mason was a young anaesthesiologist at Queen Victoria Hospital in East Grinstead, who in his practice often used hypnotism to treat pain and cure common ailments. Mason has not only treated other patients but in one of his interviews also said. "I thought I'd become an anaesthetist. And during that period of training I experimented with the use of hypnotism for the delivery of babies. And delivered about 20 babies by using hypnosis

as the only anaesthetic, feeling that that wouldn't anesthetize the baby." A teenage patient whose skin was so ravaged that after two unsuccessful skin surgeries, his plastic surgeons agreed they could do nothing else to help him. Most of the boy's body -- everything but his face, neck, and chest -- was covered in a "black leathery skin that Mason said, "felt as hard as a normal finger-nail, and was so inelastic that any attempt at bending resulted in a crack in the surface, which would then ooze blood-stained serum." On the acknowledgment from the plastic surgeon, Dr. Albert Mason tried to treat a young boy's warts with Hypnosis. Mason in his first session focussed on right arm. Mason hypnotised the boy and in that hypnotic phase, fed him the thought that the skin on that arm would completely heal and would become pink and soft. Within 8 days after this session, the boys' right-hand skin became 90% healed. From a black and armour-like casing, the skin became pink and soft within a few days. Excited with the result, Mason took the boy to his surgeon. The surgeon was shocked to see the result. It is in this moment Mason came to know that the boy was not suffering from warts, but from a lethal genetic disease congenital ichthyosis. By reversing the symptom of a genetic disease just by the power of mind, Mason and the boy had accomplished which was believed to be impossible. Mason later accepted that his belief of treating the boy shook a little after knowing that he was not treating a bad case of warts, instead an untreatable disease. In further hypnotic sessions, the boy's full body recovered by almost 75% though the effect of the subsequent sessions kept decreasing. Excited by results, Dr. Manson published an article in the British Medical Journal in 1952 with the details of the experiment with the photographs as the evidence. He became an instant star among the patients of similar conditions. Although he tried treating many patients later but in none of the case he could achieve the similar success.

How is it possible for mind to override a genetic programming? How can a doctor's belief that he can treat a patient affect the later outcomes?

There was an interesting research published on BBC news titled 'Fake alcohol' can make you tipsy', researchers found that simply the belief that you are drinking alcohol (but actually u got tonic water) can cause intoxication and impair judgement. Irving Kirsch, associate director of the Program in Placebo Studies at Harvard Medical School, says this is completely plausible. "When we expect to experience something, that

expectation tends to engender, to some extent, that which is expected," Kirsch says. "If we expect to feel pain, that's going to make the pain feel worse ... the stronger we have that conviction, the greater the effect is."

Jeffrey Mogil, the McGill University pain researcher explains, “The placebo effect is the most interesting phenomenon in all of science. It’s at the precise interface of biology and psychology.”

Placebo effect doesn’t apply just to pills. Placebo effects contribute substantially to outcome in most fields of medicine. What is mind blowing, is that doctors have already tried this in case of surgeries and found amazing results. This study was published in 2002 in The New England Journal of Medicine. Dr. Bruce Moseley was the key surgeon who along with his team worked on this research. His team gathered 180 patients from around the US, who were suffering from severe pain due to knee arthritis. Dr. Bruce Moseley, was pretty much sure that knee surgery would help all his patients recover: All medical surgeons considered it obvious that there cannot practically be a placebo effect in a hard-core surgery case. But Dr. Moseley was trying to understand the actual sub-sections of the surgery giving relief to his patients. He divided the patients into 3 randomized groups. For the first two groups, he performed a normal surgery, but the third group was given a “fake” one. The patients under this subgroup were sedated, followed by marking three standard incisions and doctors and staff would just converse and pretend that they are doing a real surgery. They would play a tape on the TV so that the patient cannot get a hint if they are given a fake surgery. It was a perfect drama setup for this group. After around 40 minutes the incisions were sewed up as if the patients had undergone the real surgery. The three subgroups were prescribed the same postoperative treatment & medication, which covered an exercise program.

The results were freakish. Yes, the groups which were given actual surgery improved. However, the placebo group improved similar like the other two groups! (Moseley, et al, 2002). In a period of time, the members of placebo subgroup were doing activities which they reported they could not do before the “surgery”, like walking, playing basketball, etc. The placebo patients did not figure out whether they had gotten a real or a fake surgery, for a couple of years or so. After two years the placebo patients were disclosed that they got a fake surgery. Moseley in the BBC documentary mentioned the reaction of these patients as, “You got to be kidding me, I cannot believe it, there must

be a mistake!" The patients believed that something has happened to change what was going on with their knee. They *believed* they have got a real surgery and it will relieve them of their pain. Such is the effect of placebo. Studies have revealed the powerful impact of placebo in treating no. of diseases, including asthma, Parkinson's disease, depression, Acne etc.

It has been time and again proven that sham surgery works as well as a highly-technical procedure. Placebo Effect Works for Heart Procedures too. It has also been found in research that the outcome of any operation is directly proportional to the patients 'expectations'. In the 1950s a common heart procedure, mammary artery ligation, was highly effective for reducing heart pains, but no better than a sham. (Leonard, et al, 1959) [11]

Another study published in Journal of the American College of Cardiology, which used laser surgery on patients with severe coronary diseases. A total of 298 patients with severe chest pain were randomly assigned to receive low-dose or high-dose laser channels or no laser channels, blinded as a sham procedure. Results were even more shocking. (J Am Coll Cardiol. 2005 Nov 15;46-10) The incidence of 30-day death, or any other complications, occurred in two patients in the placebo, eight patients in the low-dose, and four patients in the high-dose groups. In the long term, it was found that patients who got sham surgery fared just as well of as some of who got a real one. (Leon MB, et al, 2005)

There are many similar cases reported in other leading journals. The effectiveness of fake procedures is a testament to the power of mind and body, and a critical window into human healing.

Dr. David H. Newman, in his book *Hippocrates' Shadow: What Doctors Don't Know, Don't Tell You, and How Truth Can Repair the Patient-Doctor Breach*, argues that medicine focuses on exaggerating their benefits and ignoring or minimizing their perils. Dr. Newman sees a disconnect between doctor and patient, a disregard for the healing power of the bond, and, ultimately, a disconnect between doctors and their Oath. Dr. B.M. Hedge, cardiologist says, "Placebo is the only reason why patient heals, medicinal drugs only have side effects." (first pass effect!)

Nocebo Effect

Everyone has heard the expression “scared to death.” But can the mind influence life and death — or at least our health? Placebo Heals, ‘Nocebo’ Kills. Let me quote you a mock conversation between the doctor and a patient, to help you understand this effect:

Doc: Have you got your biopsy report done?

Patient: Yes Doc. Here it is.

Doc (after looking it for some time): You have got last stage cancer.

Patient (panics): How much time do I have?

Doc: Not more than 6 months. We should better start the treatment quickly.

When a doctor tells a patient that she has cancer and has just half a year left to live, that patient often hears very little afterward. It's as though the physician said "cancer" and then "blah, blah, blah."

Nocebo is a detrimental effect on health produced by our mind, such as the above negative expectations of treatment or diagnosis. While the placebo effect can have a powerful healing effect, as shown in elegant studies in medical and surgical situations where placebo has proven better than drugs or surgery, there has been no study done on the dangerous effects of the nocebo on patients’ life and illness.

Just like our mind can heal us, it also has the capacity to damage our body and health. Nocebo effect says that if you believe that something bad has happened to you and you are not well, your mind can cause physiological damage to your body to suit your belief. Note that this can even happen if you are perfectly healthy in the body. Dr. B.M. Hedge wrote, “In view of the new scientific wisdom on the placebo effect in human illnesses, are we right in giving cancer patients a deterministic predictability prognosis about their future? Does that not further deplete their immune guard? Doctors have been predicting the unpredictable future of cancer sufferers. Why are we nocebo cancer doctors?”

It has been time and again proved that doctors have been the worst predictors of the future of their patients.

Abdel Baset al-Megrahi was the only person convicted of the murder of 270 people when Pan Am flight 103 crashed near Lockerbie in December 1988. Megrahi was found guilty of the worst peacetime atrocity in UK’s history. Megrahi was given just three months to live by Dr. Karol Sikora along with

many other doctors, who later regretted that wasn't an accurate assessment. Serving a life sentence in Greenock, he was released by the Scottish Justice Minister on humanitarian grounds, because he was likely to die of prostate cancer within **three months.** It turned out that Megrahi survived for almost 3 years after that. There were huge implications of this decision and caused great embarrassment to the British authorities.

“Doctors can't be infallible about it. We can't predict what is going to happen to one individual,” admitted Prof Karol Sikora, oncologist.

On the contrary, let me highlight you a fascinating case of a gentleman named, Sam Londe. This case shows the potential process of Nocebo effect. This was depicted in the Discovery Health Channel’s 2003 program, *Placebo: Mind over Medicine*. It highlighted a case of Sam, was diagnosed with cancer of the oesophagus, a condition which was considered 100% fatal in 1974. As everyone predicted Sam died two weeks after the diagnosis. Surprise came when the autopsy found very little cancerous cells (some spots in liver and lung) in his body, certainly not enough to kill him. There was no trace of esophageal cancer that everyone believed killed him. His physician, Clifton Meador later admitted that, “Sam died with cancer, but not from cancer. I thought he had cancer. He thought he had cancer. Everybody around him thought he had cancer…did I remove hope in some way?” So, what killed Sam? Did he die because he believed his doctor that he is going to die? Was he the prime example of the phrase ‘scared to death’? "People get worse because they believe they'll get worse," says Dr. Julio Licinio, chairman of the Department of Psychiatry and Behavioural Sciences at the University of Miami. "It's almost like a negative self-fulfilling prophecy." [13]

Dr. Joseph Murphy in his book, *The Power of your Subconscious Mind*, highlights a powerful instance of nocebo effect. Murphy’s relative went to a famous woman in India who claimed to predict future. She predicted that he has a heart problem and would die by next new moon. His relative was aghast and heartbroken. He called everyone and informed them about the prediction. He strongly believed in the occult power this lady possessed. He was convinced that this was his destiny and started preparing for his death. As the new moon approached he became more and more withdrawn. On the predicted date, the relative suffered a massive heart attack and died. What killed him?

Our beliefs act like some filters, projecting us only the way we believe. So, if

you believe that a president is really really bad, chances are that you will meet people, find blogs/articles and comes across incidences similar to your belief. There is an interesting story of a monk and a traveller. An old monk lived in a hut on the edge of a city. One day a traveller stopped at the old monk's hut and asked, "Old man, what are the people like in this city?" The monk was silent for a moment, sized up the traveller and asked, "What were the people like where you came from?" "It was terrible!" came the reply. Everyone was so mean, nobody helped. The old man replied, "The people here are just like that." The traveller moved on. A few days later another traveller arrived at the hut and asked, "Excuse me, what are the people like here?" In reply the old man asked, "What were the people like where you came from?" "It was great! Everyone helped each other, lots of laughter... wonderful!" "I am happy to report," said the old monk with a smile," the people here are just like that too."

Is it possible to heal by thought alone-without drugs or surgery? The truth is that it happens more often than you might expect. In *You Are the Placebo*, Dr. Joe Dispenza shares numerous documented cases of those who reversed cancer, heart disease, depression, crippling arthritis and even the tremors of Parkinson's disease by believing in a placebo. Similarly, Joe tells of how others have gotten sick and even died the victims of a hex or voodoo curse-or after being misdiagnosed with a fatal illness. Belief can be so strong that pharmaceutical companies use double and triple-blind randomized studies to try to exclude the power of the mind over the body when evaluating new drugs.

Our beliefs are the powerful things. They can change our biology and chemistry. When we recognize that anything and everything that happens to us is somewhere driven by our believes, we hold the key to our destiny. We are the makers of our future. Anything that happens to us is of our making. All thoughts/desires get manifested into our reality. So, from next time onwards, make sure you are thinking only of the things you want in your life. We have the Choice to either live in the fear of diseases or to live a life of love and compassion for others. Your body and surrounding react like your belief. If you live in the fear of diseases, your health will be compromised.

History of Allopathic Medicine

Before we close this chapter, let me help you with the history of chemical based western medicine and why it became the only way for treatment through the world, in less than 100 years. How the definition of the word ‘Doctor’ changed so much? Doctor has its origin from the Latin word ‘docere’ which means teach. How has a teacher – educating people about health, changed to a person who treats diseases through synthetic chemicals?

“One of the first duties of a physician is to educate the masses not to take medication,” said William Osler (1849-1919). But do we really see this?

Dr. Irvin Sahni, a surgeon admits, “We don’t get paid to educate people but paid to write prescriptions. You can imagine that the drug lobby make sure that is the case.”

The moment you visit a doctor, he rushes towards his prescription pad and start scribbling. Are Doctors bad or there is something going on in the background? Turns out there is an invisible force working in this world since the early 1900s which has lead this entire world to present crisis. Unfortunately, only thing doctors are taught while in medical schools is how to prescribe (patent) drugs.

“We have got hours and hours on how to use basically patent medicine, which is what mostly goes on to the prescription pads,” says Dr. Jonathan V. Wright medical director & founder of Tahoma Clinic (USA). Note that anything that can be patented is not found in nature. They are created by molecules (in laboratory) which are alien to the universal wisdom. Medical students are hardly taught about health and nutrition in medical schools which is the very reason why modern medicine is so drug-intensive. But why is the modern medicine mostly allopathy? Why you hardly find any homeopathic doctors around? Why do you keep seeing new pharma (allopathic) shops opening in your area but hardly any homeopathic or ayurvedic shops?

Despite dominance of western reductionist medicine nowadays, even just 100 years ago the situation was very different. It’s worthwhile to look back how we got to this place. In 1800s and early 1900s, medical schools around the world taught lots of different things. There were homeopathic schools, colleges in electrotherapy, naturopathic schools, herbal medicine. It was all there and there was no one way in the caring of the ill. People had a lot of choices and cost-effective and natural treatments was available for all.

John D. Rockefeller is the hero of this story. John was born in 1839 in New York. Its late 1860s, John has just become very rich through extracting oil from the ground. He is widely considered the wealthiest American of all time, and the richest person in modern history. At his peak, his company was controlling 90% of all oil in the United States. Like most businessmen, he wanted to earn more money. He came across an idea of using coal tar, a petroleum derivative to make substances that affect human body. These are called drugs and have a good masking symptoms but overall do not cure the underlying cause of a disease.

Rockefeller noticed that there are already enough old and trusted medical practises in US ranging from herbal to natural to holistic medicine and more. Rockefeller who once quoted to have said “competition is sin”, decided to eliminate this competition in the medical space since the doctors at that time were not pushing enough drugs. The Rockefellers and Carnegies were the most rich and powerful families back in the day. So, in 1910s, Rockefeller and Carnegie (Steel tycoon) foundations decided that the best way to eliminate this competition was to hit the root of this - the medical education. Carnegie foundation commissioned Abraham Flexner to reform medical and higher education in the United States and Canada. The Flexner Report is a lengthy study of medical education in the United States and Canada, written by Abraham Flexner and published in 1910 under the aegis of the Carnegie Foundation. The report was titled “Medical Education in the United States and Canada: A report to the Carnegie foundation for the advancement of teaching”.

You might have already started to see the conspiracy. Did you see the word “advancement”? So, the report was clearly biased towards the present system to heal people, though the present holistic systems were existing for thousands of years around the US and the globe. The report called on American medical schools to enact higher admission and graduation standards and to adhere strictly to the protocols of mainstream *evidence-based* science in their teaching and research.

Report concluded that there are many doctors and medical schools in America, and that all natural healing practises which existed for hundreds of years were unscientific quackery. To no surprise, the report was taken as the ultimate truth and made a law by then government. American Medical Association (AMA), incorporated in 1847, was given the authority to given

new licenses and evaluate various colleges. AHA formed a department in 1913 to eliminate quacks. Medical schools that offered training in various disciplines including electromagnetic field therapy, phototherapy, homeopathy etc. were told to either drop these courses from their curriculum or lose their accreditation. Most large and respected homeopathic colleges were targeted and shutdown. To eliminate competition, all other form of treatments was called unscientific and unfit for future healthcare. Colleges in electrotherapy, chiropractic, naturopathy and other disappeared & doctors unemployed. Every medicine other than allopathy was deemed unscientific and government made sure they have no open breeding ground. In the end if a physician didn't graduate from Flexner approved college and received an M.D. degree, he cannot find a job anywhere. By 1950s, all the schools teaching homeopathy were closed.

Dr. Darrel Wolfe, author & detoxification expert says, "Not surprising the basis of the report was it was far too easy to start a new (allopathic) medical school and most schools that time were not teaching sane medicine. Let me translate that for you. These natural health colleges were not pushing enough chemical drugs. Manufactured by who? Carnegie and Rockefeller"

The story doesn't stop here. Rockefeller and Carnegie foundations immediately, in the name of philanthropy started showering millions of dollars to the best universities in all America. They slowly pushed their own people to be part of the board members for such universities. Universities agreed to allow someone from their foundations, in anticipation of more money later. Once this person was in place, the curriculum of the universities swung completely in favour of drugs and has remained like this ever since. They systematically dismantled the curricula of these schools by removing any mention of the natural healing power of herbs and plants, or of importance of diet to health. Therefore M.D.s of today are so heavily biased towards synthetic drugs. This is what they are taught in schools.

Now came the moment of reaping the benefits of all these heavy investments. Now came the era of heavy patenting and ignoring anything that came from nature. From Saccharine to hydrogenated vegetable oils, our food started coming from chemical factories and laboratories.

Drug Companies and Medicines: Impact on Education and

Doctors

You might think that well that might be the history but in the present century we are clean. Be prepared for a surprise. Pharmaceuticals is the only industry that generates higher profit margins than any other and is no stranger to multi-billion dollar fines for malpractice. Do you know that 9 out of top 10 pharma companies spend more money on sales and advertisement than on the actual R&D. Some multinationals have marketing budgets of almost 2 times to their research and development. Although drug companies keep justifying drug's prices by blaming on the excessive cost of the R&D process, we now know that it's not much on the R&D they are spending our money. Marketing money is spending on influencing doctors, medical students and direct TV marketing. The drug industry, immensely powerful and profitable, spends more than 30 billion dollars each year in promotion and marketing. It has succeeded in tightening its grip over the medical community over the last four decades. It tempts doctors by such offers as free lunches, expensive gifts and foreign trips, which often leads to the unscientific, costly and irrational prescription of drugs. Richard Smith reinforces this further, "Healthcare professional can be bought for a self-adhesive memo pad, pen, coffee mug, or pizza is pathetic. Are we so poor that we cannot buy our own pen, note pad or lunch?"

In year 2009, 200 of the Harvard Medical students challenged the school administrators, demanding an end to the influence of pharma industry in education. The things got escalated when Harvard received the lowest possible grade "F", from the American Medical Student Association, a national group that rates how well medical schools monitor and control pharma industry money. The issue caught more fumes when one of the professors who was aggressively promoting the benefits of a drug to the students, was found that not only that professor was a member of Harvard medical faculty, but also a paid consultant to 10 drug companies. Later investigation found out that of Harvard's 8,900 professors and lecturers, 1,600 were having direct or a family member have had some kind of business link to drug companies. The remuneration in some cases were worth hundreds of thousands of dollars which could bias their teaching or research. Additionally, pharma contributed more than $11 million to the school last year for research and continuing-education classes. The pharmaceutical industry seeks to increase sales by influencing how doctors prescribe

medications. To help achieve this goal, it sponsors the education and ongoing training of doctors. Medical students are subjected to a barrage of advertising that inevitably leads to a physician-industry connection that can be harmful to our health care system. Medical students get exposure to pharmaceutical marketing begins early, growing in frequency throughout their training. Students receive gifts such as free meals, textbooks, pocket texts, small trinkets and even drug samples.

It is recently that regulations are being imposed to prohibit salespeople from treating doctors to gifts, meals and golf excursions and even banned the omnipresent company-branded pens, mugs and notepads that clutter waiting rooms and reception desks. But pharma has many other ways to influence your doctors. Critics have gone to an extent saying that Free flights, meals and match tickets can damage patient care. Doctors are also given all paid expense trips to conferences which are nothing but massive marketing exercise dressed up as medical education. In case a doctor doesn't entertain a medical rep, he might get a call from the company to become a thought leader for their specialization and represent their company in an all paid conference. Who doesn't want to be called a thought leader and this marketing ploy has an almost 100% conversion ratio. Drug reps must target doctors, and doctors in training, because a physician is required for the consumer to purchase their product. Doctors are the real "bread and butter" for the pharma companies and they are the one who are lavishly paid-off.

By all this analysis and the history, we can come up with the realization that medical professional is really like a lap dog of the pharmaceutical industry. Most of the doctors either don't understand this history or too afraid to speak. The bitter truth is that, in general, pharma companies and Western professionals including doctors, see you as a potential market for the chemical factory's products. For Big Pharma, there is no financial incentive to heal you, because a patient cured is a patient lost! Even if you are not sick, Big Pharma is still out there convincing you that you are sick.

"If you notice when a new drug comes out and they call it a 'blockbuster drug', they are not talking if it will cure cancer or blockbuster for health. They are talking about how many bucks we gonna make," criticizes Jonathan Wright, M.D. Remember that all synthetic drugs, which are sold as made from natural or plant extracts, are isolates. Big pharma research natural compounds found in plants and herbs but since it cannot be patented, these

compounds are slightly modified in a lab and patented. If they get a patent, they will market this pill as a wonder drug, simultaneously supressing the original plant as useless, so you won't go to the source of the cure. Ironically, it has been documented many times that the Royal and Elite families still use homeopathy!

Dr. Matthias Rath says, "The birth of pharma industry is actually a deliberate decision of a handful of people – To define disease as a marketplace and build the largest investment industry upon that simple thought."

Look at the P&L sheet of any big pharma. All you see is pharma making huge profits, inability to cure any diseases and propaganda that they are making progress in curing a disease. It is an investment industry which thrives on continuation of existing diseases and launching of new diseases.

To end this chapter, ask yourself if you are proud of the below:

The largest industries in our generation are no.1 Arms and armaments 2. Alcohol & Tobacco 3. Pharma. This is the achievement of our generation. We are spending huge amount of money on things which will neither give us peace nor harmony.

Chapter 5: The Mind-Body Connection

"I want to know how God created this world. I am not interested in this or that phenomenon, in the spectrum of this or that element. I want to know his thoughts; the rest are details."

– Albert Einstein.

"There is no logic to science. Scientists create and adhere to scientific theories for what are ultimately subjective and even irrational reasons" – Paul Karl Feyerabend

Ever seen a dead body? When I was a kid, I saw one. I couldn't interpret what was wrong. Why people were crying near someone lying quietly. What has changed? Why a person with a name is suddenly been referred to as dead-body? Is there something called alive-body? If so, what leaves it which turns it into a dead body? These are some of the questions that intrigued me. I still saw the same human lying on the floor. Same hand, legs, ears, nose, brain (I am sure if you open the skull you will find one). Nothing seemed to have changed from the outside. Has something changed internally? Seems so. Then what has left/died with the body so that despite having all the body organs it cannot even move a finger. It has ears that won't listen, legs that refuse to walk. How trillions of cells die off in a second? It is clear that there was something inside this body which was seeing, listening and breathing. Physical body as such does not even have power to move a finger without this energy.

The English word "spirit" comes from the Latin word 'spiritus', meaning breath. Our ancestors were a smart bunch of people. They could observe that when some animal died the only thing that changed was the breath of the animal. The word spirit has been deformed now as some sort of ghost figure which leaves our body when we die.

Who was breathing, hearing, and thinking within the body? Some say it is life force i.e. energy, some soul. Some say soul exists and it dies with the person (one life theory), while others claim that the soul leave the body and enters another body for rebirth (infinite life theory). The scientific word for spirit or God, to sound really evidence based is "consciousness". There are lot of evidences to infer that the ancient Indian belief that people do take rebirth and the cycle continues until one attains nirvana or moksha. There are a lot of Western research of reincarnations and thousands of stories where people

remembered exactly all the details of their past lives including names of family members, place of birth, how they died etc. Raymond Moody's book, *life after life* highlights this question: Does life continue after death?

Jeffrey Long in his post mentions a now famous conversation between Carl Sagan and the Dalai Lama, Sagan, a scientist and renowned sceptic, asks, "Your Holiness, what if we were to prove, scientifically, that there is no such thing as reincarnation?" To Sagan's great astonishment, the Dalai Lama replied without hesitation that if rebirth were to be disproven, then the word would need to be put forth that Buddhists should stop believing in it. The Dalai Lama, however, then stumped Sagan with the question, "How would one disprove reincarnation?"

Dr Ian Stevenson, former Professor of Psychiatry at the University of Virginia School of Medicine and former chair of the Department of Psychiatry and Neurology, dedicated the majority of his career to finding evidence of reincarnation, until his death in 2007. During his career, Stevenson found around 3,000 children from around the globe who claimed to remember their past lives, which he shared with the scientific community. He also found that 92% of the statements made by some of the children were found true. This ranged from the place of birth to name of family members to why and when they died. 100s of similar cases have been highlighted by the media in India where small kids are able to locate their families and recognized them as soon as they saw their previous lives mom and dad.

Dark Night, Early Dawn: Steps to a Deep Ecology of Mind, Christopher M. Bache has highlighted the work done by Stevenson. He also asked why is that while most of the people born don't consciously remember their past lives (Some do remember when hypnotized and led backwards), what is so special about these kids?

Stevenson found after comprehensively reviewing all his cases that approximately 60% of all such children had died violently in their previous life. They were sudden and unexpected deaths, they often involved acute sufferings. Rest 40% were those who had died suddenly of an illness (below the age of 12) or who died of acute sense of unfinished business (such as mothers with young children). These were those who died suddenly and didn't get time to come to terms with the death and disruption. Most scientists and philosophers ignored Stevenson's work. According to his New York Times obituary, his detractors saw him as "earnest, dogged but

ultimately misguided, led astray by gullibility". I am not telling you to believe the work done by Stevenson but to think on the possibility if this was indeed true?

If you are born on this planet, your physical body must perish. The secret of birth and the secret of death are the two highly guarded secrets of nature. No one really knows the complete story. Near death experiences (NDE) are our only source of information for science, about the other realm. If you believe that soul dies when the body dies then physical sciences has enough evidence that body is all matter and energy. Soul should be the energy part else everybody might have seen souls moving? If soul is pure energy it must follow the law of conservation of energy. The first law of thermodynamics, also known as Law of Conservation of Energy, states that energy can neither be created nor be destroyed; energy can only be transferred or changed from one form into another. How can consciousness die?

If spirit is not energy then what is it? If there is no soul at all, then what is the energy which was running a body and exits suddenly and leaves our body lying motionless on the floor. Is television (body) with power-on (spirit), the right analogy for our body with soul? When the electricity is coming, entire world comes to our drawing rooms, it looks so alive. We feel that our favourite actor is inside this box – alive. The moment you pull the power, the actor vanishes leaving only the black screen. Television suddenly starts looking lifeless and of no use. We don't burn our tv or bury it as it doesn't rot like the body. When we again put the power plug, the actor again appears. Remember that in this whole experiment, electricity never died, it was always there behind the sockets. Electricity is what was giving life to the tv and not the actors. On the lighter node, we cannot see electricity as well!

If soul doesn't die, it must be changed into some other energy form or transferred to someplace else. This theory sounds pretty much in accordance with the beliefs in many religions that the soul after leaving the body goes to another womb/waiting place where it prepares for rebirth. This principle seems to respect the law of conservation of Energy.

Einstein's theory of special relativity (1905) shows that matter (as mass) and energy can be converted into each other according to the famous equation $E = mc^2$, where E is energy, m is mass, and c is the speed of light. Once you start to think about it, the consequences of the formulation of $E = mc^2$ equation were astounding. Einstein proposed a world in which mass is just energy

waiting to be 'set free'. And not just some energy - an enormous amount of it.

The average adult weight is 62 kg. Such a person, according to Einstein, has a rest energy of 5.6 * 10^18 joules. Just for comparison, the bomb dropped on Nagasaki had the energy of 80 TJ. If you managed to explode and set all your rest energy free (which is not achievable, yet), you would cause the same destruction as over 65,000 nuclear bombs. Saying it a lot is an understatement.

Quantum physics, on the other hand says E = m. Consciousness, that energy which flows as waves and is seen or felt as particles, has not been comprehended by many scientists even today. The father of quantum physics, Max Planck, however, had realised that “consciousness is fundamental; even matter gets derived from consciousness and not vice-versa.” Consciousness has a Latin root. It is derived from the word, conscious, which means aware. Consciousness is nothing but awareness. Some call consciousness as spirit, God and what not. Even the best surgeon will not be able to heal a surgical wound in a dead body without consciousness! Energy therefore runs the world and heal all ills.

It's well known that plants use energy from sunlight to make food, but plants are not the only living beings that have a complex relationship with, and need for, light. Dr. Fritz-Albert Popp proved that light in your body is stored by, and emitted from, your DNA. The DNA inside each cell vibrates at a frequency of several billion hertz (which is the same range at which modern cell phone communication systems also work). The vibration is created through the coil-like contraction and extension of your DNA -- which occurs several million times per second -- and every time it contracts, it squeezes out one single biophoton; a light particle. All the photons that are emitted from your body communicate with each other in this highly structured light field that surrounds your body. Following the work of Popp, scientists around the globe have begun to consider that your body's communication system might be a complex network of resonance and frequency. Today, scientists across the world are investigating the energies that propel, and likely even rule, life itself and light energy, sometimes referred to as biophoton emission. A Russian scientist, Pjotr Garjajev, has managed to intercept communication from a DNA molecule in the form of ultraviolet photons — in other words, light. This won't come as a surprise to anyone who is familiar with the biophoton work of Fritz-Albert Popp. The biophoton camera is able to

capture the light emitted from our body. It showed that the light emissions of healthy people follow a set biological rhythm as if all our cells are dancing in harmony. What happens to our emission when we ill? It was found that light emissions from cancer patients had no such rhythms and appeared scrambled, which suggests their cells were no longer communicating properly. This creates confusion at the cellular level. Even stress influence people's biophoton emissions, causing them to inflate in response to the stress. Illness Occurs When Biophoton Emissions are Out of Sync. (The Power of Biological Light in Healing)

Experiments done by quantum pioneer like Harold Saxton Burr, professor at Yale University conducted an experiment which showed that before the appearance of certain diseases, like cancer, there is a measurable change in the organism's energy field (Burr and Northtrop 1939)

We are all made from energy vibrations and matter is nothing but the illusion of our physical senses. Similar concept is 'Maya' (another word for illusion) in Indian philosophy. In yogic science, we call this energy as prana. In Chinese medicine this energy body is called Chi. Prana or Chi is the subtle energy which gets recharged when we eat food, sleep, meditate and breathe. In India, we often speak that Prana leaves the body when someone dies. When we are suicidal, it's the same prana which becomes very low. Prana is linked to our enthusiasm to live and face life.

If you are given a chance to choose from this energy and physical body, you will be choosing energy since without energy, physical body means nothing!

You are energy. It is energy that sustains and maintains your entire existence. Many people believe that life is given by our heart, lungs and other organs. I have already shown you that we are made from human cells and ten times germ cells. While our organs and physical body do keep us up and running, it is our energy body that gives life to them. Our energy body powers our physical body. Energy is the common medium of your mind, emotions, body and soul, in case you believe all these are different. Physical body you are given will rot away when the prana cable is pulled off.

Pranic Healing is a highly evolved and tested system of energy medicine developed by Grandmaster Choa Kok Sui that utilizes prana to balance, harmonize and transform the body's energy processes. Pranic healing is a claimed energy healing system founded and promoted by Choa Kok Sui

(1952–2007), a Filipino entrepreneur and philanthropist of Chinese descent. The healing modality claims that prana (energy) can heal ailments in the body by contributing to the person's energy field.

Master Choa once wrote: “Just because science is not able to detect and measure life energy or prana, doesn’t mean that prana doesn’t exist or doesn’t affect the health and well-being of the body. In ancient times, people were not aware of the existence of electricity, but this doesn’t mean that electricity did not exist. One’s ignorance doesn’t change reality; it simply alters the perception of reality, resulting in misperception and misconception of what is and what is not, what can be done and what cannot be done.”

The basis for Pranic Healing stems from observations made by certain sensitive people who are said to perceive “energy fields” or “auras” surrounding the human body. The colours in the “aura” and the “energy centres” are said to shift constantly reflecting the state of health of the body. By projecting “energy”, the healer is said to be able to change the “aura” and therefore the state of health. Pranic Healers are trained to sense and project these “energies” even without being clairvoyant. The Pranic Healing process involves three steps or stages. First, the healer gives blessings and recognition to masters and teachers that have provided guidance. Second, the healer scans the energy or the aura of the subject to diagnose any anomalies. And third, the healer cleans and energizes the body, the chakras, and the aura of the subject with prana of appropriate frequency to promote healing. To test this theory, Dr. Joie Jones, Professor of Radiology Sciences, University of California, Irvine performed an extensive laboratory Study of *Pranic healing* using rigorous mainstream scientific methods. He took some human cells in a petri dish and damaged the DNA of the cells using high powered gamma rays. You already know that if the DNA of the cells are damaged, they don’t survive long. The cells were divided into two groups: treatment and control. Half are being allowed to die normally. The other half, in separate containers but in the same space, were receiving Pranic Healing. Experiments were carried out in which petri dishes were protected by shielding which excluded all electromagnetic radiation, including X-rays and gamma rays.

10 different pranic healers were asked to heal these cells through their practices. The goal of the Pranic Healers involved in our study was to alter the effects of radiation and enhance the survival rates of the cells. He created over 500 different experiments and found that in an average 90% of the

treated cells survived (expected is 50%). Most researchers would be thrilled by this high success rate but Jones was troubled. What prevented all the cells from surviving? Why was the survival rate not 100%? Then one day the idea occurred to him: what if it was karma of the cells? Since the cells were from a human, maybe they are also carrying the karma of that man. Then added another variable in to the experiment, Karma. They asked a third participant to be present to observe the process. Their another job was to donate $100 of their hard-earned money to any charity and pray that any good karma that came to them because of this donation be directed to the cells and to their recovery from the effects of radiation. He conducted another 100 such experiments and found the survival rate to reach almost 96% after adding the Karma variable. Shocking, isn't it?

Can you guess what happened after that? The study was not taken very well by his colleagues and they claimed that he was practicing some occult energy or voodoo.

Pick a piece of Stone or sand particles. They are made from Silica atoms. We have all studied the chemical formula of Silicon in our chemistry lessons. Silicon denoted by $_{14}Si^{28}$, where the 14 negatively charged particles revolve around a centre with 14 protons and 14 neutrons. A dead looking stone is made up of millions of Silicon atoms which are very much alive and vibrating all the time. Who is giving stones the energy? Even the stones formed in kidneys have a vibrational frequency. Doctors channelize constructive interference for treating kidney stones, a rare case where the laws of quantum mechanics have been effectively used as a therapeutic tool in modern medicine. Kidney stones are crystal balls whose atoms jiggle at specific frequency. Doctors non-invasively focus a harmonic frequency on the crystal ball i.e. the kidney stone. Interference is what happens when two or more waves come together. Depending on how the peaks and troughs of the waves are matched up, the waves might add together or they can partially or even completely cancel each other. Constructive interference occurs when the focused energy waves interact with the atoms in the kidney stones. Due to constructive interference, atoms of the kidney stones vibrate rapidly enough for the stones to explode and dissolve. The remaining smaller fragments can then be easily passed out from the system without any excruciating pain that accompanies larger stones. All the thing and living organisms in this planet are at the minutest level, atoms which are vibrating, swirling. Fun fact, one of

the fundamental particles that we know of, the electron, is something we have never even observed directly. We have no proof electrons exist. Zero. What we do have are many theoretical models which include the concept of an electron and do a remarkably excellent job of predicting how things will behave. In philosophy, this is the divide between ontology (the discussion of what the world is) and epistemology (the discussion of what we can know about the world).

We have never seen an electron by our naked eyes but we believe that they exist. But the concept of God is often rejected on the premise: we cannot see them; hence they don't exist. Is it just me or do you also find this funny!

Why Western Medicine hates the concept of "Mind"

In his Book *Biology of Belief*, Bruce says "I was after all a traditional biologist for whom God's existence is an unnecessary question: life is the consequence of blind chance, the flip of a friendly card, or, to be more precise, the random shake of genetic dice. The motto of our profession, since the time of Charles Darwin, has been: "God? We don't need no steenking God!"

Rene Descartes, regarded as the father of modern western philosophy, much of subsequent Western philosophy is a response to his writings which are studied closely to this day. Descartes left behind an irrevocable philosophy that since only matter can affect matter and mind is not made from clearly material substance, it cannot influence the body. Biomedicine embraced Descartes' demarcation of mind and body since it's always easier to affect the matter then to an invisible and subtle mind. Separating mind from the body has caused the current biomedicines to be only dealing with one aspect of the human life without knowing or submitting to things which you don't know or cannot know. Instead safer option is to say it doesn't exist. Current science is not exploratory in nature. Only research which can result in a new profitable technology is promoted. This new technology should be sellable. If you cannot sell it, why would someone invest in such a research? When science is purely to drive business, we might sometime not even get to know the complete truth.

You might ask, why so much defiance against God or the church? Well to understand this we must go into mythology and to as early as 4th Century.

Western thoughts have originated from the Biblical and the Greek mythology. Greek beliefs were based on defiance of the Gods who lived on Mount Olympus. The goal of Greeks was Elysium, a place meant for people who lived a heroic life. To win a place in Elysium humans had to defy gods. This was the final destination of mythic heroes such as Achilles, Perseus, Theseus etc. They also believed in one life with an urgency to do important things and "I am the authority and I bow down to no one."

The Roman Empire was the extension of this belief. It was this belief which inspired Alexander of Macedonia, in 4th century BCE to conquer the world. For centuries, the Roman empire was the most extensive political & social structure in western civilization. When Roman empire collapsed in 5th Century, Christianity became the dominating force across Europe. There was a flip from 'defying God' to believing and complying to one all-powerful God. People resisted.

Europe was torn between Greek way and the biblical way and later the protestant way and the catholic way. Every 'way' was convinced that the other was wrong and they were right (one truth or my way). The end of Crusades saw the start of scientific revolution in Europe with the rebirth in the inspiration from the Greek beliefs. Once again, the truth imposed by authorities, kings or Churches were rejected and truth based on evidence was sought. Everything had to be explained in mathematical equations.

Devdutta Pattnaik in his book *Business Sutra* says," The scientist was the Greek hero on a lone quest, those who opposed him were the Olympians Gods. The scientific spirit inspired discoveries, inventions and industrialization. With scientific exploration, society no longer needed the anchors of faith. Knowledge mattered, not belief!" Many protestants made their way to the newly discovered continent of America; the new promised land. It is no surprise that most scientist are proud 'atheists'.

With *dissent* against God sorted out, you might be thinking what mind had to do in this. What is the reluctance of the western medical establishment in accepting mind-body disease or healing? It can be summarized by Dr. Amit Goswami in one word: DUALISM. In his book *Quantum Doctor,* he explains "Mind-body medicine for the western medical practitioner conjures up images of a dualistic mind separate from the body, (a discarnate soul, as it were) acting on the body." Everything is considered matter. Mind being the

invisible. This was acceptable because Science elsewhere (physics and biology) had eradicated dualism in favour of a monoism based on matter – everything is matter. In essence, mind was looked upon as a part of body specifically the brain.

You can now understand that it was the beliefs that actually let to the elimination of anything which cannot be seen under a lens. Hence despite astounding proof of the influence of mind on the body, western medicine continues to ignore it for everyone's menace. Beliefs can be a strong force!

There was a famous dialogue in the Bollywood movie - OMG! Oh my God, where the actor mentions: if you take away their God from people, they will make you their God. Same happened with Science. Sooner or later, science became the new God. Education was designed and taught as the ultimate truth which cannot be challenged. "Scientific "facts" are taught at a very early age and in the very same manner in which religious "facts" were taught only a century ago. There is no attempt to waken the critical abilities of the pupil so that he may be able to see things in perspective. "At the universities, the situation is even worse, for indoctrination is here carried out in a much more systematic manner. Criticism is not entirely absent. Society, for example, and its institutions, are criticised most severely and often most unfairly... But science is exempted from the criticism." says Paul Karl Feyerabend.

There is famous parable in healthcare community. There were three friends who came to a beautiful river side for picnic. The chilly water is rushing down into a series of cascading waterfalls making a gurgling sound. The lush green surrounding, birds chirping added serenity and peace to the whole place. Suddenly they hear the loud noise of a child cry and asking for help. On looking closely, they see many children are in water and needed immediate rescue. The children were getting swept away downstream by the river. As they looked upstream, there were more children coming downhill. First friend said, "I am going to rescue as many children who are about to drown and those who have most risk of falling over the waterfall". Saying this he jumped into the river.

Second friend said, "I am going to collect some wood and build a raft. In this way, I can save more children quickly." As these two were busy doing their efforts they notice more children were slipping through and falling over the waterfall. They anxiously looked up for the third friend but he was nowhere to be seen. They finally spot him. He was swimming upstream, saving

children as he goes away from them. They shout to him “Where are you going? There are children here to save.” The third friend replies “I am going to find out who or what is throwing these children into water.”

In the science of medicine and healthcare, first friend is the specialist, the ER doctor who are needed for immediate rescue. Second friend who are helping us managing our chronic conditions like diabetes. They help us with ways to raft our life. Third friend is the one we truly miss. There are not many of them out there. They are the one who want to understand *why* something is happening in the first place. We all understand that all the three friends are needed but we need more of the 3rd friend who can control the condition which will stop people from falling continuously into the river of sickness .

Definition of Health

For more than 5,000 years, Ayurveda has been practiced promoting wellness in India. Ayurveda comes from the Sanskrit words ayurs (life) and Veda (knowledge).

“Samadosha samaagnischa samadhatu mala kriyaaha|

Prasanna atmaindriya manaha swastha iti abhidheeyate” – Sushruta Samhita

To truly understand illness, we must first understand wellness. Do we really understand what health or wellness is? World health organization defined health in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (physical or mental weakness).” Can you fully comprehend what this means? Ayurveda defines health as a component of complete body, mind and spirit:

“Samadosha, samagnischa samadhatumala kriyaha prasanna atmenindriya manaha swasthya iti abhidheeyate”

This simply means one is in perfect health if she eats well, digests well, sleep well excretes well and has content and pleasant state of mind and spirit. It covers every aspect of health beautifully. B.M. Hedge defines a person as healthy If he has enthusiasm to work. So, if you get up in the morning and ask yourself this question: Do I *have* to go to work today or do I *want* to go to work today? If this answer is ‘have’ you might not be completely healthy. To understand true healing, we should understand human body and how it

works. We have already seen in earlier chapters that we are not a standalone human being, though we may appear to be so. Somebody who has defined the word illness and wellness has done it beautifully. The word illness and wellness has the real meaning embedded in it. I-llness comes when we have a strong feeling of **I** and we-llness comes when you have a feeling of **We**. Your body is a perfect epitome of 'WE'. You are a colony of 100 trillion cells. Each of these cells love every other cell. And for every human cell we have 10 germ cells all over our body to keep us alive. Your body is a living epitome of cooperation and compassion. Imagine how an injury in one part of the body activates all our mechanisms to start healing. Our brain cells do not say Oh leg is a stupid organ, why should I work overtime to look into its problem. Our lungs, blood don't hate any cell. Oxygen is given to every cell as and when needed. What happens when you have a fractured leg? Your other leg takes the full load of the body. I don't object that this is not my responsibility alone. If you want to look for harmony, you don't have to go too far. Look yourself in the mirror. When our mind is peaceful and happy, your body responds with health. When your mind is clogged with ill feelings and unhappiness, body responds in empathy, too. It can get manifested into variety of ways.

In the book, *Missing Microbes: How the Overuse of Antibiotics Is Fuelling Our Modern Plaques*, Dr. Martin J. Blaser, Director of the Human Microbiome Program at New York University, warns about the overuse of antibiotics and formation of antibiotic resistance. Indiscriminate killing of human microbiome that is responsible for chronic conditions like diabetes and obesity. Humans and other animals form a life-sustaining bond with other microbes in our gut. These microbes are very essential for our survival. All these cells not only live peacefully with other cells but also take care of each other. Our cells love every other cell from your body and the cells of other organisms. There is a feeling of We. When we take care of everybody around us, when we not only talk about compassion but also exhibit it around us, we tend to be healthy. When we start hating other human being, our cells get confused as to why is he hating the other man, we are all the same - cells. In such cases, our body starts to act against our own cells – a condition called autoimmune disease. Buddhist for the similar reason try to be very careful how they treat even the smallest of organism. This is an act of showing true compassion. Sri Sri Ravi Shankar says," The day you feel unhappy, leave your room and ask people: What can I do for you? The service you do will

bring a revolution within you.”

The feeling of I (superiority or thinking somebody inferior) can never be understood. Even if you are super rich, you can never survive without the oxygen. Remember, the oxygen in our atmosphere is because of those small bacteria which lived on this planet billions of years ago. We are alive because some bacteria worked tirelessly for billions of years to generate enough oxygen for us to exist. We are dependent on sun. If sun stops rising, you know it’s almost time to leave this planet. For our meal, we are dependent on some poor farmer in some part of the world. For our clothes, we are dependent. Despite having millions of dollars, you cannot buy a cloth if someone is not making it in the first place. Natural Silk is produced by insects. When you were born you couldn’t even survive for one day without help from your mother or father. You might have realized that this whole universe is supporting you to stay alive. Realize this fact and you might get away with the feeling of ‘I’. You are nobody. Even if you die today, the world will continue to move on tomorrow.

Stress

You must be seeing this word in all the previous chapters. This is invariably present in the ‘What’ for almost all diseases. It’s kind of a seed for all diseases. You can search for the reasons why people get cancer, heart attack, blood pressure, headache, common cold etc., you will invariably find Stress to be conspicuously present in all the list. Yet we don’t see the missing link!

So, what is Stress? Example: Cramming for a test, trying to get more done then you have time to do, important presentation. Stress is an emotion we all experience when we are challenged or overwhelmed but more than just an emotion, Stress is primarily a physical response. The reason why it generated in the mind is because what is Stress for me might not be stress for other. I might get stressed by seeing a snake while a herpetologist might feel happy to see one. He might even be intrigued to go closer to it. Stress is body’s internal mechanism to save you. When stressed, the body thinks it is under attack and switches to ‘fight or flight’ mode, releasing a complex mix of hormones and chemicals such as adrenaline, cortisol to prepare the body for physical action. Stress affects pretty much all of us at some point in our lives. Stress is not necessarily a ‘bad’ thing. Without this brilliant ability to feel

stress, humankind wouldn’t have survived. Our cavemen ancestors, for example, used the onset of stress to alert them to a potential danger, such as a tiger.

What happens to your body when our body is under stress or perception of danger?

When our senses (say eyes or nose) perceive an environmental stress such as danger or a threat, cells in the nervous and endocrine systems work closely together to prepare the body for action. Physiological reactions occur when an individual launch into fight or flight mode, prompting the system to focus solely on survival. When you wake up, or you’re facing a stressful event, your pituitary gland reacts (after a trigger from hypothalamus). It sends a signal to the adrenal glands to produce just the right quantity of cortisol. Cortisol reaches every part of the body through our blood stream. Almost every cell contains receptors for cortisol and so cortisol can have lots of different actions depending on which sort of cells it is acting upon. This transition sets off a chain of reaction beginning when the brain directs blood away from the extremities towards core, thereby oxygenating the lungs, major muscles, the heart, back and legs. Acute Stress can cause heart beat to reach speed up to 200 beats/min. It also results in increase in blood sugar levels, palpitations and suppression of the immune system. This allows body for maximum running or striking power. Signalling molecules from several origins work to provide an energetic boost in a variety of ways. When various chemicals reach to receptors on liver cells, it triggers a signalling cascade that produces glucose from larger sugar molecules - glycogens. Meanwhile circulating cortisol sets fatty acids free to be transformed into energy. These molecules are rapidly excreted into the bloodstream, supplying a boost of readily available energy for muscles throughout the body, preparing them for exertion. To give body even more fight or flight, the brain directs the digestive track to come to a halt. This activity also send signal to the brain’s decision making and thought processing center, the prefrontal cortex to shut-off. That is why when we are under such state, rational thought and reasoning takes a back seat and in its place, instinct and training takes place. For body to survive, our immune system is temporarily supressed. The immune system activities are not needed as desperately as the survival mechanisms. In fact, any activity which is spending energy and not helping in the survival mechanisms are suppressed. See how intelligent our cells are?

Such stress fighting mechanism is necessary for our survival and were supposed to last only for few minutes or so. But the things have changed now. We are no more in the jungles but in our safe homes and offices. Now we are always stressed. Our present stress is not due to dangerous animals but due to our bosses, bad relationships, worry about future and past. With our corporate kind of setup, we can rarely be in a fight-or-flight mode. You can blame your company policies for that but nonetheless. When we are not able to release this stress or when this happen too often, problems start to develop. Primitive flight-or-fight mechanism not only changes your brain, but also damages many of the other organs and cells throughout your body. When you are under stress, adrenal glands secrete cortisol, adrenaline and Norepinephrine hormones into our blood stream. Adrenaline and norepinephrine goes throughout your body and is largely responsible for the *immediate* reactions we feel when stressed. Remember the day when you were waking casually in your house and suddenly your sister jumped from behind the door and screamed, to terrify you. You jumped backwards and were left with your heart pounding. Your muscles are tense, you're breathing faster, you may start sweating. That's adrenaline.

Cortisol on the other hand works by hindering some body functions that aren't crucial in the moment, like reproductive drive, immunity, digestion and growth. It increases your blood sugar from glycogen stores in your liver and muscles for fuel to your brain and muscles. It also opposes insulin action and causes insulin resistance which helps maintain the higher blood sugar.

1. Elevated cortisol over the long term consistently produces glucose, leading to increased blood sugar level. We already know sugar causes inflammation in our body which can cause arterial plaques to weak immune. I don’t have to explain to you what will happen if our immune system is suppressed for an extended period. You can catch anything from common cold to hypertension to heart attacks.

2. Premature aging is another huge side effect of stress. Look at the faces of some of the seers like Sadhguru or Sri Sri Ravishakar. Despite ages of 50 or more there are no fine lines, wrinkles on their relaxed and calm faces. In fact, you will see a natural glow on their faces. The cream companies are busy selling anti-aging and anti-wrinkle chemical to women in their 30s, while the

root cause is never addressed. It is the Stress and how you handle it defines how your face would look.

3. Your prefrontal cortex, your front part of the brain is responsible for your personality. It is also involved in decision making and social behaviour. You are affecting your brain when under unregulated stress. Cellular changes happen in the hippocampus, the part of the brain responsible for learning and memory. Slowed or halted neuron production can result in the shrinkage of your brain.

4. Apart from that, there are many other side-effects including insomnia, irritable behaviour, anger, fatigue, headaches among others.

I think you must have already got the fair idea what can stress do to you. Stress also results in anger, worry, fear and other negative emotions.

Unsurprisingly, Dr. Herbert Benson, Professor of Medicine at Harvard Medical School, has concluded that stress is responsible for up to 90% of all doctor visits.

UCLA epigeneticist Cole, in his research has identified another culprit. Though stress plays a key role as a risk factor in disease, Cole identified our social relationships as an even bigger cause. These do sound logical because most of our stress is caused by our interactions with people (our bosses, colleagues, neighbours, spouses etc.).

There will always be stressful situations in our modern lifestyle. But what matters to your entire body is how you respond to it. Our bodies and mind are made to react but we have to learn the art of responding. The Taoists have a famous teaching about an empty boat that rams into your boat in the middle of a river. Anger might be the first reaction of most people. When you look back, you notice it is empty. While you probably wouldn’t be angry at an empty boat, you might have otherwise got into an argument with the boatman.

The point of the story is that the other kids who teased you as a child, the driver who cut you off yesterday, the boss who shouted at you – are all in fact empty, rudderless boats. They were compulsively driven to act as they did by their own unexamined wounds; therefore they did not know what they were doing and had little control over it. Just as an empty boat that rams into us isn’t targeting us, so too people who act unkindly are driven along by the unconscious force of their own wounds and pain. Our first goal is to realize

this and act with kindness.

Until we realize this, we will remain prisoners of our grievance, our past, and our victim identity, all of which keep us from opening to the more powerful currents of life and love that are always flowing through the present moment.

If fact human life has three dimensions: Physical, Mental and Spiritual. Since we are not connected spiritually to who we are, we somehow never able to see the big picture. Our mental dimensions take the hit whenever we are under stress. Research has found that social media is not good for our mental health. Why? Well let's see you are having a wonderful day and suddenly you decide to check your social media page. You notice, one of your friend has moved to the US, another got a new car, someone got a nice promotion. I don't have to tell you what will happen to the mind of most people. This can cause a feeling of frustration with your life, job etc. and a perfectly beautiful day is ruined! This happens because we are not connected spiritually (not religiously). We don't realize every human being born on this planet has his unique path and by comparing ourselves to others is the first mistake we make. Remember you are unique just like everyone else!

Your main goal in life is to identify emotions like jealousy, hatred, anger, frustration, fear and replace it with the emotions of gratitude, love and compassion. How do we do this? Well identify what is causing negative emotions, say your job (you might feel stifled), troubled relationship etc. and try to slowly and systematically reduce such stressors. Do what you really love to do. Holly Butcher, who died at the age of 27 of cancer wrote, "If something is making you miserable you do have the power to change it. Have guts to change. You don't know how much time you have got on this earth so don't waste it being miserable."

It is great that we take care of our body. We might have perfect abs, perfect BMI but if you don't have peace of mind, you cannot enjoy life. Sooner or later your mental emotions will be visible in your physical body. If you are really concerned about health, take care of you mind! Popping a pill for any symptom will not help you unless you correct the root cause of the problem. Symptom will initially go but it will again come back sooner or later.

Why does a young man, apparently healthy, die suddenly of a massive heart attack despite his done everything scientifically correctly while an elderly gentleman with advanced coronary artery disease chugs on beyond eighty? –

B.M. Hegde

Thoughts & Beliefs

What is the fastest thing on this planet? No, it's not the Bramhos missile or any stealth plane. It's your thoughts! Your thoughts are so fast that within a split second you can be in Singapore or US or even Moon. Your thoughts can also time travel. It can take you in to the past events and time and possesses the power to foresee the future. Nothing is more important than the thoughts you hold in the mind. We have an average 50,000 thoughts a day and the reality is that not only most of these thoughts are the same we had yesterday but they are negative thoughts either dwelling in something bad in the past or potential wrong that can happen in future. The second we have negative thoughts, we start changing the biochemical reactions in our body. In India, we have a famous saying: "Chinta Chita Saman" which means worrying is like preparing your own deathbed. Our thoughts create us. Most people feel that situations or people are responsible for their anxiety, depression but the hard reality is that there is no situation/person in this world that can cause you anxiety. It is your psychological reaction to any situation that can cause you to experience anxiety, not the situation itself. Let me explain this with a beautiful story.

Once upon a time when Buddha was teaching in a village, a crowd of people came towards him and hurled abuses at him. They said: "You are as stupid as every other saint. You are nothing but fake." Confronted with the angry words, Buddha remained calm and did not react at all. Buddha kept a faint smile on his face which made the crowd even angrier, and they abused him even more. When they saw that their abuses are getting no response, they walked away. Buddha's companions got very angry seeing their master being wrongly humiliated but remained silent as their master would feel hurt. On query Buddha turned to them and said: "Some days ago I passed through a village where people presented me with sweets. As I don't eat sweets, I did not accept these presents, so what do you think the villagers did with them?"

Someone replied: "They shared them amongst themselves."

Buddha said: "That is correct. I did not accept their gift, so it belonged to them and they shared the sweets. So, what are they going to do with their anger and abuses? I have not accepted them, as I don't accept useless things.

It is up to you to insult me – but so it is up to me not to accept the insults, as I don't like to get burdened unnecessarily. By our response to abuse we can choose to make it ours or not, we can choose who owns and keeps the bad feelings."

What would you have done if you were in place of Buddha. I am not saying that everyone can be or behave like him but we can take this very important lesson: We might not have control on what will happen to us but we can build control on how we react.

Thought and beliefs drive our lives. They have full control to make your life happy or sad. They can make you ill or well. We have already seen the power of the nocebo and placebo effects. Thoughts have the power to travel across geographies – telepathy. Brain is the head of your nervous system. It's the main organ of our body which regulates everything in our body. Have you ever seen your body moving to do anything without you asking for it? Even for body to get out of the bed, you need to first have that thought. Thought is the mother of all expressions in the body and outside it. It was a thought from somebody that we now have television, refrigerators, mobile phones, car etc. Thoughts are generated not from our genes but from our beliefs that control our lives and realities. In words of Mahatma Gandhi:

"Your beliefs become your thoughts. Your thoughts become your words. Your words become your actions. Your actions become your habits. Your habits become your values. Your values become your destiny."

Why is that some person who goes into a scary ride, his brain releases endorphins – good feeling chemical into their blood, while release cortisol into another. It's the same situation.

You have the power to choose your destiny. Don't give away that power to your genes. Epigenetics have given plenty evidence that we are the master of our lives and not some 20,000 genes. You create anxiety, worry, anger and not the situation. When you truly understand this, it is one of the most liberating feelings you can have. Our thoughts and beliefs create our life. You are the creator of everything. Use your thoughts wisely. Acclaimed Harvard lecturer and best-selling author Shawn Achor writes in the *Happiness Advantage: The Seven Principle of Positive Psychology That Fuels Success and Performance at Work*, "The belief that we are just our genes are one of the most pernicious myths in modern culture – the insidious notion that

people come into the world with a fixed set of abilities and that they, and their brains, cannot change. The scientific community is partly to blame for this because for decades scientists refused to see what potential for change was staring them right in the face."

If you believe that you are poor and you can do nothing about it, your thoughts and ideas will always be regarding poverty and how evil it is. But if you change your belief patterns and thoughts, you will start perceiving opportunities, ideas to get yourself outside the circle of poverty. There are many inspirational stories. Perhaps the story of S. B. Fuller will illustrate how thoughts and beliefs works. S.B. Fuller was born in 1905 to a poor Negro tenant farmer. Tenant families in those days accepted poverty but this family was different. Young Fuller had a remarkable mother. She would often tell Fuller: "We are poor – not because of God. We are poor because father has never developed a desire to become rich. No one in our family has ever developed a desire to anything else." By 1950s, Fuller was among the richest African American in the US. He always gave the credit to his success to his mother for instilling the belief in him that he can be rich. He kept getting ideas and opportunities to match to his belief.

Another famous story is of Indra Nooyi, Chairperson and Chief Executive Officer of PepsiCo. Indra was born in Madras (now Chennai) in a middle-class family. Despite the hardships of that time, her mother made her dream big, that nothing was out of reach. Every day her mother would ask her to write speech about what would they do if they were the president, Chief Minister or Prime Minister in India. Every day it would be a different world leader she would ask her to play. At the end of the dinner both the sisters were asked to make the speech. Although it may sound like a child's play, but it's doing a lot of changes to the psychology of the child. She can think and act like a person she has become for those 5 minutes. It opened her channels that nothing is impossible in this world. You can be anything you want to be. "Even though my mother didn't work and didn't go to college, she lived a life vicariously through her daughters," Nooyi said. "So, she gave us that confidence to be whatever we wanted to be. That was an incredibly formative experience in my youth." When she was offered prestigious positions later in life she knew that she can do it. She always aimed for big.

Louis Hay is a highly respected teacher and healer in the world. She has written 27 books, including *Heal Your Body* and *You Can Heal Your Life*. In

her books, Louise offers profound insights into the relationship between mind and the body. She explains how our limiting thoughts and beliefs control and constrict us. She offers us the powerful key to understanding the roots of our physical diseases and discomforts. Not only she gives what are the limiting beliefs behind diseases from cancer to heart attacks but also provide self help guide how to correct such anomalies. Your thoughts use energy. You need energy to survive. Negative thoughts not only waste our energy but it also supresses the immune system and give you diseases. Hence always invest your energy in changing your life or on things which can make a real difference. Arguing with people on their political or religious belief can spend lot of your energy but you didn't make anything useful out of that wasted energy.

Nutrition:

You are what you eat. One of the most important things we can do for our health every day is to eat wisely. Dietary habits play a significant role in the health and mortality of all humans. Every organism born on this planet, need food to survive. Food makes your body work, grow and repair itself. The kind of food you eat can affect the efficiency of the entire biochemical processes. Body function and the food that sustains it, is infinitely complex. Food is in fact one of the most complicated sets of chemicals imaginable. Ayurveda places special emphasis on Ahara (diet) and Anna (food) as a good life and wellness. In 1992, US Department of Agriculture released the national guide for maintaining good health in form of food pyramid. The guide recommended the reduction of total fat intake and promoted complex carbohydrates. We can clearly see that this diet didn't help the world at all. We got problems like autism, hypertension, heart problems and obesity. Over the years, it was found that the food pyramid was greatly misplaced.

Our mind is directly influenced by the quality of food eaten, food preparation, appearance, aroma and freshness of food. In fact, we as kids were also told that the intention with which the person has cooked the food, affect our minds. If you are eating a meal cooked by your mother, you get all the love she has poured into the meal. Compare this to a restaurant chef, who might angry or grumpy at the time of cooking your food. It is said that the food absorbs thoughts and emotions and gets passed to the diner. That is the exact reason why food cooked by your mother tastes the best and fulfilling

even when compared to the best restaurants in the world. Ayurveda asserts that our entire body is connected and a problem in digestion, can affect other parts of your body too.

Ayurveda classifies food in three basic groups:

1. Light food or Sattva: Food such as fresh vegetables, rice, milk, fruits, nuts when eaten in right quantity can help bring mental harmony

2. Rich food or Rajas: Food such as coffee, wine, spicy, fried food, garlic will simulate fantasy, jealousy and ego

3. Tamas or Dull: Frozen food, left over and meats that may need more time to digest. Such food enhances emotions like greed, laziness

Incompatible Foods: Do you know that two perfectly healthy food when taken together can be bad for your health?

1. Milk shouldn't be mixed with almost anything as milk itself is a complete food. Mixing milk with banana is never recommended as both the food stops the digestion of another. Milk with anything citrus is a bad combination of food.

2. Honey and Ghee in equal quantity is antagonistic in dosage.

There are other dos and don'ts too:

1. Curd, fruits should be avoided at night

2. Drinking too cold or too hot is not favourable for your digestive system

3. Drinking too much water or other drinks along with food can slow down your digestion. Small sips of warm water during the meals can aid digestion.

4. Taking bath immediately after a meal is not recommended. We are recommended to eat at least 2 hours before your bed time. In fact, it's best to eat your dinner by 8pm and windup to sleep by 10.

5. We must avoid heavy meals during night time. Spend some time in sun.

6. Avoid simple carbohydrates like refined flour, sugar (glucose), fruit juices, cola drinks. Go for good amount of fat specially saturated ones like ghee, butter, coconut oil. This is a common misconception that saturated fats cause heart attack while unsaturated fats, especially polyunsaturated fats regulate hormones, strengthen immune system and prevents diabetes and heart

diseases. Ray Peat, a physiologist who studied hormones and dietary fats since late 1960s says, “Polyunsaturated fatty acids or PUFAs in vegetable seed oils (like canola oil, flax seed oil, soy oil, corn oil) are the bane of human health – they actually cause cancer, diabetes, obesity, arthritis and other deadly diseases. Their only appropriate use, is as ingredient in paints and varnishes.” Turns out that by the end of World War II, the seed oil industry was in crisis since the usage of seed oils like flax seed oil in paints and plastics was curtailed due to a new compound found from petroleum. “The industry needed new markets.” Says Peat, “and it discovered ways to convince public that seed oils were better than animal fats. They called their seed oils ‘heart-protective,’ even though human studies soon showed the same results that the animal studies had, namely, that they were toxic to the heart and increase incidence of cancer. Mainly, I'm referring to soybean oil, corn oil, safflower oil, canola oil, sesame oil, sunflower seed oil, and any others that are labelled as "unsaturated" or "polyunsaturated." Almond oil, which is used in many cosmetics, is very unsaturated.”

You might be thinking what so bad about seed oils? Seeds contain toxins and enzyme suppressors. A seed has a power to grow into a full tree and can give life to millions of such seeds. To protect this power from not accidently being eaten away by animals, nature evolved certain chemicals to protect the seed from predators and prevent the germination until the conditions are optimal for sprouting. It is no accident when you mistakenly chew any seed, you will get a bad taste in the mouth. Unsaturated fats are derived from seeds. Despite multiple researches showing the thyroid supressing qualities of these oils, the lobby behind its promotion has been successfully able to market it as “healthy”.

In his article, CJ Puotinen, author of *Natural Relief from Aches and Pains*, highlights that cattle ranchers discovered the difference between saturated fats and unsaturated fats in as early as 1940s. When they fed their livestock with saturated oils (coconut oil) to fatten them, they found that the cattle didn’t gain weight instead it made them lean and active. In late 1940s, ranchers discovered soybeans and corns which had thyroid supressing effects allowed animals to gain more weight on less food. Since then Soy and Corn has been a staple food for feeding the cattle. By 1950s, unsaturated fats were found to have the similar thyroid supressing properties. Scientists found that unsaturated fats damage the mitochondria in our cells. The more unsaturated

fat is the more it supresses cell's response to thyroid hormones. Despite such adverse effects the American Soy associations and others have successfully influenced everyone that it's the other way around. One side, corn and soy are sold to farmers to fatten their cattle and on other hand; these are sold as full of goodness to humans. Sound ironic?

Even more funny is when the vegetable oils were hydrogenated (called Vanaspati), forming trans fats and sold to people as a healthier alternative to clarified butter. From the start, trans fats' earthy origins were a selling point over that of their rivals, saturated fats like ghee and butter. When the saturated fats were demonized, people slowly switched to Trans fats sold in the name of hydrogenated vegetable oils. People were misled to believe that trans fats are a healthier choice. They ranged from Vanaspati oil to margarine. This partially hydrogenated oil is less likely to spoil, so foods made with it have a longer shelf life. All your favourite snacks started getting deep fried in this oil. Some restaurants use partially hydrogenated vegetable oil in their deep fryers, because it doesn't have to be changed as often as do other oils. In 2013, FDA proposed changing its classification of trans fats to no longer "generally recognized as safe," which means food companies would have to prove that the partially hydrogenated oils are harmless before using them. You can now notice the word 0 trans-fat printed on top of many snack-packets.

Unsaturated oils: When oil is saturated, that means that the molecule has all the hydrogen atoms it can hold. Unsaturation means that some hydrogen atoms have been removed, and this opens the structure of the molecule in a way that makes it susceptible to attack by free radicals.

So basically, we must be very careful what we are eating in order to get proper nutrition. I am not saying to avoid this and that but at least start listening to your body. Observe how a particular food makes you feel. Are you gaining weight with the current diet you are following? You must make changes to the way you eat.

Ghee, or clarified butter, has a special place in Ayurveda its role in the daily rituals of cooking and worship. In India, ghee used to be the preferred edible fat. Lately it has come under suspicion after its high content of saturated fatty acids and cholesterol, is believed to be responsible for the increased prevalence of coronary artery disease in Indians. Avoiding ghee in our wheat

breads became a household thing. It became especially prevalent with the younger generations. This western philosophy finally replaced good saturated fats from our Indian kitchens with cheaper and harmful trans-fats. When we worship in our temples, we use (saturated) desi ghee and never trans-fat rich Vanaspati or vegetable oil. Whatever we do to the almighty we should follow to our body is an old saying.

But there's a reason our grandparents still express great confidence in its use, value, or effectiveness. "Ghee has taken the place of one of the most misunderstood foods of our times, besides rice," says Rujuta Diwekar, a Mumbai-based dietitian and author of books such as Don't Lose Your Mind, Lose Your Weight. "It lubricates joints, is beneficial for skin, (ensures) stronger immune function, better memory, heart health, fertility, and for assimilation of vitamin D," she adds.

Look at all the junk that is given to us in terms of movies and television. You generally make conscious choice as to what to watch and what not to watch. To eat healthy, the best way to remember is that is my food made in the laboratory or does nature make it? It is said in Ayurveda: When diet is proper, then medicine is of no need. When diet is improper, then medicine is of no use.

Apart from food, our body also can obtain energy from:

1. ***Sleep***: Sleep is a large, important and familiar part of everyone's life. Along with nutrition and exercise, it is one of the three pillars on which a healthy and happy life is based, and we spend about a third of our lives sleeping. Until the 1950s, most people thought of sleep as a passive, dormant part of our daily lives. We now know that our brains are very active during sleep. Moreover, sleep affects our daily functioning and our physical and mental health in many ways that we are just beginning to understand. While we may not always think about why we sleep, most of us acknowledge at some level that sleep makes us feel better. We feel more alert, more energetic, happier, and better able to function following a good night of sleep. However, the fact that sleep makes us feel better and that going without sleep

makes us feel worse only begins to explain why sleep might be necessary. According to Ayurveda, improper sleep leads to many diseases, especially aggravates Vata. (air and ether) Patterns of sleep vary from person to person and season to season, depending upon their *Prakrati* or body type and the current condition of their physiology, e.g. sleeping during the daytime is alright during summers and afternoon sleep for a diabetic person is very unhealthy. The entire health revolves around how one manages three physiological factors Vata, Pitta and Kapha, before they became pathological. Most of the youngsters feel that sleep is wasting time. Inventor Thomas Edison called sleep a waste of time. Unfortunately for men, sleep deprivation has become a symbol of virility.

When we sleep, where are you? Are you on this earth or have you gone somewhere? Sadly, most of us cannot answer this question as we are not aware what happens between the time one fall asleep and wake up. Dalai Lama calls sleep as the best meditation. The human body cannot function optimally without a certain amount of sleep. Sleep disorders expert Harneet Walia, MD, says, “First and foremost, we need to make sleep a priority. We always recommend a good diet and exercise to everyone. Along the same lines, we need to focus on sleep as well.” So why do we feel so good after a peaceful night of sleep? Or Why do we feel so awful when the alarm clock or some disturbance disrupts our sleep?

1. Melatonin is a hormone produced in the pineal gland of the brain that is responsible for regulating sleep cycles. To adjust the body’s internal clock and fall asleep more easily, many people take melatonin supplements in pill form

2. The endocrine system has a complex response to sleep. The secretion of some hormones increases during sleep (e.g., growth hormone and prolactin), while the secretion of other hormones is inhibited (e.g., thyroid stimulating hormone and cortisol). Sleep is a great stress reliever. I am

sure somewhere in your lifetime you must have noticed that when you were highly stressed or anxious, your sleep was nowhere to be found. [12]

Understand that our body needs sleep for many restoration activities including:

1. Energy conservation: You save calories while you are asleep. Sleep allows you to recharge yourself
2. Brain function: Sleep helps in memory consolidation. This is the exact reason why lack of sleep affects your ability to think, remember and process information. Research has shown that prefrontal cortex as a brain region that may be particularly susceptible to the effects of sleep loss. While we are sleep, brain clears all the waste that is generated throughout the day.
3. Repair: When we are asleep, our body uses the additional energy to do the repairing work with more efficiency.

Arianna Huffington in her short TEDx talk says, “The way to have more productive, more inspired, and more joyful life is getting enough sleep.”

Another trick of the mind is that it works effortlessly. When you try to sleep, your mind resists that. It is only when you stop your effort and become relaxed that your body fall into the mystical world of sleep!

Take care of your sleep as you much as you take care of your biceps. Your brain needs it and you need your brain for good functioning of your body.

Breadth: I have a very easy question for you. What do you think is the single most important thing for you in this world? Did you say your family or job, or your new apartment, car etc.? What if I give all these things to you and take away one thing from you: your breath, will it be a fair deal? I can understand that none of you will be willing to trade your breath for anything this world can offer. Without breath, you are dead!

Suddenly all the things that mattered to you are gone! So, we can conclude that breath is the single most important thing in our lives. What about the duration of this breath? Do we have an unlimited reservoir of breaths or is it limited? I am sure you will agree that we have limited number of breaths before you leave this body. So, we have agreed on two things: first, breath is the most important thing and it is also limited. Something which is limited and so sacred, should be worshipped. But how many of us even pay a single minute of attention to our breaths. When you wake up every day, do you feel grateful that you are still alive? You know that many able-bodied men and women would not see another day. Why is that you are allowed another day?

Breadth is also an important source of energy, which we have completely ignored. The first thing you did coming into this world was to take a deep breathe in. And the last thing you will do on this earth will be to breathe out one last breath and that will be it. This is probably the only thing without which we cannot survive for even couple of minutes, and yet we hardly pay any attention to it. It is the breadth which distinguishes between the alive and the dead. Every cell in your body inhales the oxygen and exhales the carbon dioxide – a process called respiration. Breathing is important because our cells constantly need a new supply of oxygen so they can produce energy – without this vital oxygen, cellular function is impaired, and damage or cell death is possible. Breath is the link between body, mind and emotions. When you are agitated, you breathe differently. When you are upset, our breath is different. And if you are happy, our breath is again different. If you attend to your breath, you can see that your mind can be calmed. The way you breathe is the way your feel.

A yogi measures the span of life by the number of breaths, not by the number of years - Swami Sivananda

When practicing yoga, one of the most important aspects to master is the

practice is breathing. We are continually instructed to “breathe consciously” when we are in yoga class. Another thing taught is to have deep long breaths. Connecting with your breath is a method for being present. When you concentrate on each aspect of the breathing process, you are present; you let go of the past and future and are focused on the moment inside the breath. This is why breathing consciously is its own meditation. Amarjit Singh, a Yoga Teacher writes about the usefulness of conscious breathing. When you breathe consciously you activate a different part of your brain. Unconscious breathing is controlled by the medulla oblongata in the brain stem, the primitive part of the brain, while conscious breathing comes from the more evolved areas of the brain in the cerebral cortex. So, conscious breathing stimulates the cerebral cortex and the more evolved areas of the brain. Consciously breathing sends impulses from the cortex to the connecting areas that impact emotions. Activating the cerebral cortex has a relaxing and balancing effect on the emotions. In essence, by consciously breathing, you are controlling which aspects of the mind dominate, causing your consciousness to rise from the primitive/instinctual to the evolved/elevated. Most people use only 30% of their lung capacity while we inhale and exhale. Pranayama and Bhastrika are the yogic practises to increase our lung capacity to get more oxygen per breath.

Notice how your breath shortens when you are angry while your breath become relaxed when you are either asleep or in an ecstatic mood. We have an intuitive understanding that the breath can regulate our mind and emotions. Most of us have either told others or been told ourselves to "take a deep breath” when things got challenging. One of the reasons why breathing can change how we feel is that emotions and breathing are closely connected. Control of the breath appears to activate brain regions that guide the parasympathetic processes of the body, perhaps thereby inducing its calming effects. Deep breathing has even been found to reduce pain. Excellent breathing techniques are taught by the Art of

Living organization see link. Learn some breathing exercises to get peace of mind which sustains throughout the day.

2. ***Meditation***: Meditation or “mindfulness” is the buzzword all around for good reasons. So, what is meditation? Some people think it is to focus on some object, breath while others think it’s all about controlling your mind and the thoughts originating from it. You have a hint that it is almost impossible to control your thoughts and the fact the more effort we put to control it, the more it runs beyond your reach. Meditation means awareness. Whatever you do with awareness is meditation. "Watching your breath" is meditation; listening to the birds is meditation. As long as these activities are free from any other distraction to the mind, it is effective meditation. Thoughts can still come and if you know that you are having a thought you are in meditation. The only thoughts we have to avoid are the chain thoughts. For example, say you get a thought of the plan to do this weekend. Now you **start** thinking let me ask my friend to plan for a trip. We can go to place A or place B. We can take some beautiful pictures and it goes on and on. Do you see chain of thoughts? You could have easily stopped at the initial thought of weekend plan. Meditation allows you to have occasional disconnected thoughts but don’t encourage them anywhere. You can concentrate on your breath. It’s all about sitting for 15 minutes doing nothing. So how does wasting time like this help us?

Meditation is the deepest form of rest.

It's common knowledge that aging usually promotes brain shrinkage and a loss of gray matter. And this starts without fanfare or much notice even before one turns 30. Using magnetic imaging (MRI), Harvard researchers found that meditation produced physiological changes in the brain's gray matter. Some areas in the brains of the participants thickened after only eight weeks of mindfulness practice. The research was published in 2011 and

represented the first time that physical changes to the brain caused by mediation were documented. The research was conducted at Massachusetts General Hospital by researchers from Harvard University.

Gray matter is where neurons are contained. Neurons communicate with other nerve cells by transmitting nerve signals, to and fro the brain at a speed up to 200 mph. In 2015, a new study by UCLA researchers found that meditation appeared to help preserve the brain's gray matter, the tissue that contains neurons. As a matter of fact, according to Dr. Florian Kurth, a co-author of the study and postdoctoral fellow at the UCLA Brain Mapping Centre, the researchers were surprised by the magnitude of the difference.

New research conducted by the Group Health Research Institute shows that quieting and focusing the mind is one way to help decrease chronic low back pain, and without dangerous, habit-forming opioid-based painkillers. Meditation not only slows brain cell loss but helps the immune system by allowing recovery from fight or flight hormones, especially cortisol, which builds up with even minor chronic anxiety and worry to the point of inviting, rather than warding off, more illness. Reducing chronic cortisol reduces inflammation, and inflammation is the root of most chronic diseases. Your physical health is enhanced from meditation as well.

Other benefits include: Increased attention span, good night sleep, happier mind, slows down ageing, increased immunity among many others.

On a physical level, meditation:

1. Lowers high blood pressure, lowers the levels of blood lactate, reducing anxiety attacks
2. Decreases any tension-related pain, such as, tension headaches, ulcers, insomnia, muscle and joint problems
3. Increases serotonin production that improves mood and behaviour
4. Improves the immune system
5. Increases the energy level, as you gain an inner source of energy.

On Mental level, meditation:

1. Anxiety decreases
2. Emotional stability improves (EQ)
3. Creativity increases
4. Happiness increases
5. Intuition develops
6. Gain clarity and peace of mind

Do you have trouble sleeping, or do you sleep poorly? You might go a long way to fixing these problems simply by implementing a daily yoga and meditation practice. Despite having so much research done on the benefits, it is still shocking why so many people are still not doing it. Apply all the above things for a healthy and happy life.

Diverse ways of treatment

The world is increasingly designed to depress us. Happiness isn't good for the economy. If we were happy with what we had, why would we need more? How do you sell an anti-ageing moisturizer? You make someone worry about ageing and fine lines and wrinkles and what not. How do you sell a fairness cream? You make dark skinned people feel inferior by showing that girls get attracted to fair skinned guys. How do get them buy insurance? Make them worry of your death and what will happen of your children and family. To be calm and peaceful with what you have is no good for the business. This world is all about business.

In a recent study published in Medical Journal BMJ Open, has published the consulting time of doctors. Indians are spending less than 2 minutes for consultation with their doctors. Patients are the losers here, spending more at pharmacies, overusing antibiotics and sharing a poor relationship with their doctors, said the study. What does this study tell about our healthcare system? Our doctors only care about what we have. They just look at the symptoms and not at what caused that symptoms. They quickly check us with their stethoscope, barometer, thermometer, hear us and not even speak a word of kindness. This can be possibly because of the population crisis with enough patients lined up and not enough time to check everyone.

Let us say we have a company which says it has something which can lower the risk of death from heart disease. No, the product is not a company or a pill. But what if they tell you the solution to this is a park!

A study in UK, which involved more than 40 million residents looked for several factors. One's exposure to green space, trees were a powerful influence on control risk of heart disease. The closer you are to Nature or parks the lower your chance to heart disease. This study was found true for both rich and poor. Suddenly "One's Zip code matter more than one's genetic code" in fact your zip code can help shape your genetic code as well.

Despite of such staggering statistics, western science has arrogantly dismissed thousand years of effective Eastern medicine as unscientific, even though it has deeper understanding of holistic treatment of the body. Asians have long hold energy healing as the centre of their treatments. According to Ayurveda, it is believed that the chakras vitalize the physical body and influence the physical, emotional and mental movements of the mind and body. They are considered to be the loci of life-energy (known as prana or shakti), which also flow through them along pathways called nadis.

Everything in creation is made up of electromagnetic energy vibrating at different frequencies that correspond to sound, light and colour. The existence of electromagnetic fields around every object in the world - known as an Aura - is a scientifically proven fact. The Chinese refer to this energy as 'Chi' (pronounced Chee). Chi means aliveness, life force energy, the vital life force energy of the Universe, present within every living thing. Western medical science is now beginning to take a serious look at ancient Far Eastern traditions that focus on Chi, the life force energy which flows through the body pathways - known as meridians and chakras - of all living forms, all beings, to maintain health and wellness, mentally, physically, emotionally and spiritually.

Have you ever though why lizard is able to shed and grow their tails? In the famous book, *The Body Electric*, Robert O. Becker (pioneer in the bioelectric science) presents a fascinating look at the role electricity plays in healing, challenging the traditional mechanistic model of the body. The energy based treatment includes breathing exercises, yoga, meditation etc. are practically free of cost with no side-effects.

Homeopathy which was once criticised has again started becoming popular alternative medicine. Nobel Prize-winning physicist, Brian Josephson noted that the scientific establishment's unscientific attitude he called "pathological disbelief" is embodied by the attitude "even if it were true, I wouldn't believe it." Josephson mentions how the topics like meteorites and continental drift

were initially strongly rejected by the scientist community as impossible phenomenon. Same treatment was given to homeopathy, chiropractic, a more than 100-year-old alternate medicine system which dismissed by medical establishment as *foolish*. In 1988, the world's foremost scientific journal, Nature, rocked the scientific world and the media with a paper that appeared to demonstrate that homeopathy worked. (Benveniste, et al, 1988) As expected conventional scientists disregarded the research and propagated that Benveniste was self-deluded. Although Benveniste's work was supposedly debunked, Luc Montagnier (Nobel laureate) considers Benveniste a "modern Galileo" who was far ahead of his day and time and who was attacked for investigating a medical and scientific subject that orthodoxy had mistakenly overlooked and even demonized.

According to Healing Tao System, "Human urine has strengthening and curative characteristics concerning many deficiencies. One's own urine is a specific medicine for anyone who is ill. It is made for him or her personally and is just right for what he or she needs at the present moment, because it changes its composition all the time. It is not only something that cures, but it also sustains health when taken as a preventative. Taken energetically, one could consider urine to be an exact hologram of both healthy as well as diseased body fluids. All information from the body fluids is collected and stared in the urine. One's own urine is the best medicine for the kidneys that we could imagine. It is clear for any holistic health practitioner that all cycles within the body are interconnected, and this means that the healing of one of those cycles will have a positive effect on the others. Urine was often used at the front, for lack of other medication and as a disinfectant for surgery instruments. A Russia doctor treated many people from far and wide, and was able to alleviate or completely cure illnesses with nothing else than urine therapy, while other methods up until then had failed."

Indian tradition is always looking body holistically. Treat it as one and not a combination of various parts put together. Many eastern cultures have focused on healings through our own mind and thoughts. We can create our own reality as the way we want. Yoga and meditation are the perfect ways of managing our day to day health. Human body works like a closed system in systems biology. It is a self-correcting system and does not need intervention for every minor deviation from the normal. Louis Hay in her bestseller Book, you can heal your self explains how each disease from minor headache, to

pimples to even cancers have their root cause in our thoughts. Thoughts make us or break us.

You had a mind on the day you were born in your mother womb. Mind is present in every cell of the body. It is all in the mind. You cannot treat the minds by giving drugs. All the cures are there in your hand. Pressure points. There is some power that brings you to this planet and then keeps you alive. Once your time is over, it calls you back. You want to stay on this planet but it doesn't allow you more time.

"Paropakaram Artham Idam Shareeram" - The body has been given to us in order to benefit others." The body is given for doing good to others. God is in our heart. The human body is a temple of God. All beings are visible and moving temples of a living God. Therefore, have the desire to serve God through all living creatures. Let your life be filled with this ideal of doing good to others.

REFERENCES:

1. Nobel medical prize goes to 2 Americans, 1 German, By David Simpson, CNN, October 11, 2013
2. DNA Basics, July 16, 2009 - http://genetics.thetech.org/ask/ask320

3. Lohr, R. H. (2005). Acute alcohol intoxication and alcohol withdrawal. In R. M. Wachter, L. Goldman & H. Hollander (Eds.), Hospital medicine (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.

4. Dock, W. Research in arteriosclerosis, the first fifty years. Ann Intern Med, 1958, Vol. 49, p. 699–705. [PubMed].

5. Moore TJ . The Cholesterol Myth. The Atlantic 1989 September.

6. Hegde BM. Cholesterol Saga. 1995. Doctor Speaks. Book. Manipal Foundation.

7. National Heart Lung and Blood Institute. Facts about blood Cholesterol, 1987. US Dept. of health and Human Services.

8. Zevon MA, Tellegen A. . The structure of mood change: an idiographic/nomothetic analysis. J Pers Soc Psychol 1982; 43:111–22.

9. Keys, Ancel (1975). "Coronary Heart Disease - The Global Picture". Atherosclerosis. 22 (2): 149–192. doi:10.1016/0021-9150(75)90001-5. PMID 1103902

10. Yudkin, John (1967). Chemistry, Medicine and Nutrition: Symposium held in Bristol on 14–15 April 1966. London: Royal Institute of Chemistry. pp. 33–44.

11. An Evaluation of Internal-Mammary-Artery Ligation by a Double-Blind Technic - N Engl J Med 1959; 260:1115-1118

12. Van Cauter E, Tasali E. Endocrine physiology in relation sleep and sleep disturbances. In: Kryger MH, Roth T, Dement WC, eds. Principles and practice of sleep disorders. 5th ed. Philadelphia: Elsevier and Saunders; 2011:291-311.

13. Discovery (2003). “Placebo: Mind Over Medicine?” Medical Mysteries. Silver Spring, MD, Discovery Health Channel.