

## Review Article

# The Gut Flora-Centric Theory Based on the New Medical Hypothesis of “Hunger Sensation Comes from Gut Flora”: A New Model for Understanding the Etiology of Chronic Diseases in Human Beings

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We are continuously losing the war on the prevention and control of Chronic Diseases (CDs) such as obesity, hyperglycemia, hypertension, hyperlipidemia and various kinds of tumors. After about two decades of careful studies and based on the rapid scientific progresses of many laboratories in the world, we finally decided to propose a new hypothesis of the “Gut Flora-Centric Theory (GFCT)” with the key issue that “the human hunger sensation comes from the gut flora other than from the feeding center of the human brain” to address the etiology of CDs. Based on this hypothesis, the hunger sensation and the following eating behavior seemed to be caused and guided by the gut flora to digest and utilize the gastrointestinal mucosa as their food for proliferation. After we eating food, the gut flora will in turn digest the food and no longer destroy the gastrointestinal mucosa. When the gut flora was destroyed because of the abuse of antibiotics and unhealthy lifestyles and bad eating habits, the disordered gut flora will produce more and more CDs-inducing factors and metabolites to the human body which will continuously induce and maintain the CDs status in our body. When we controlled the hunger sensation initialized by the gut flora sending to the human brain per meal time, the volunteers can easily enter the status of flexible fasting for one or two weeks without needing any food or vegetables and fruits except for only needing water during these days with normal life style. A large number of CDs such as obesity, metabolic syndromes, hypersensitivity syndrome, abnormal immune functions and endocrine disorders were observed to be significantly improved after the flexible fasting operations. Therefore, the GFCT theory will probably provide a new perspective and shed light for prevention and control of CDs.

**Keywords:** Gut flora; Gut flora-centric theory; Hunger sensation; Flexible fasting; Fasting; Chronic diseases; Prevention and control of chronic diseases; Health care management; Current medicine; Traditional Chinese Medicine; Medicine version 3.0

**Abbreviations**

CDs: Chronic Diseases; DGF: Disordered Gut Flora; FF: Flexible Fasting; HGF: Healthy Gut Flora; GFCT: Gut Flora-Centric Theory; GFFP: Gut Flora-First Principle; PCCDs: Prevention and Control of CDs.

**Introduction**

There are an increasing number of Chronic Diseases (CDs) not only in China but also in other western countries, such as obesity, diabetes, Parkinson’s disease, Alzheimer’s disease, autism, cancer, etc [1]. It is also very difficult for us to understand and unwillingly to accept these facts, why there are so many CDs in nowadays all over the world even in the 21<sup>st</sup> century with advanced scientific and technological achievements in our human society. Therefore, the doctors and patients have to work together to face the fact of CDs day after day and year after year, although the bad mood for near despair is

rising because of the high incidence of CDs in the world. Actually, the widespread famous words by Dr. Turdeau EL “To cure sometimes; to relieve often; to comfort always” is helpless in some degree to express this embarrassing situation during the fact of Prevention and Control of Chronic Diseases (PCCDs) [2]. Almost all of us did not believe and did not want to believe the CDs will possibly beat off our human beings, but the fact is that we human being are losing this war fighting on CDs. In addition, more and more appetite of our human beings is nearly out of control and results in depression, autism, mental diseases, etc. Why we have the CDs? What is the etiology of the CDs? What’s happened during the development of CDs? Will the CDs be cured in this century? Where are we going? Where do we come from? Who we are? Actually, these kinds of questions need to be addressed in the future of human beings as well as in the study of the PCCDs.

Our laboratory has been working in the study of PCCDs for about 20 years. Before the year 2012, we mainly followed the traditional

research style aimed to figure out the etiology of CDs, especially from the viewpoint of the mutations of the human genes and the irregular expression or abnormal modifications of the human proteins. Like other laboratories, we used the gene expression analysis technology such as gene-chips, qPCR or other proteomics approaches to study the relationship between the genes and proteins with CDs as well as using the animal models, however, it is clear that, also like other laboratories in the world, we did not find the “real” reason causing the CDs. It is easily to see and understand that during the formation and development of CDs, there are more or less mutation and irregular expression of some human genes and proteins, however, why these errors occurred? Nobody knows why. Many scientists mainly believe the notion that “the errors in human genes and proteins are the chief criminal of human CDs”, but obviously this is not enough to address the etiology of CDs.

In such a severe situation, we began to deeply think and ask in reply this serious question from 2013: what is the real etiology of the human CDs? Is there probably any fatal error in our current knowledge on the etiology of CDs causing the failure on PCCDs? Based on many times of self-experience using my own body and long-term thinking coupled with intuition, what is very surprising to us, it seems that we very likely found out the etiology of the human CDs, that is because of the feeding behaviors (“eating food”) in our daily life. However, this is not the key point of the etiology of CDs. We very unexpectedly found that we eat because we feels hunger, but the “hunger sensation comes from the gut flora” other than the previous widely accepted knowledge as expressed in classical textbooks that “hunger sensation comes from the feeding center of the human brain” seemed to be the key point in our studies. In other words, we found that the reason that we need to eat food was not because we ourselves feel hunger, but because our gut flora need some food and energies to complete their proliferation in our human gut to clone their babies as well as their genes. This is our new and key hypothesis in the PCCDs. We are now having more and more evidences to support these notions, where the most important thing is that when we replace the diet per meal with some special prebiotics, our hunger sensation will significantly decrease and even disappear! These situations could be easily continued for one or two weeks for most of us. During these days, the volunteers only need to replace the diet per meal with some special prebiotics (10g per meal) and without any food even a little bit of fruits and vegetables. This situation was called Flexible Fasting (FF) in our studies, which is different from other fasting approaches because during the fasting period, the people are allowed to take in a small amount of fruit and vegetables sometimes. During the one week of FF operation, the volunteer only need to feed the gut flora with some special prebiotics (10g per meal) and only need to drink about 4,000ml of water every day and worked as usual. During the one week of FF operation, the body weight will easily decrease for an average of 4kg without obvious discomforts. We have completed these studies in more than ten hospitals and have demonstrated the safety and effectiveness of the one week FF operation by monitoring the informative clinical indicators. Interestingly, we found that the one week FF operation is not only an unprecedented technology for reducing the body weight, but also valuable for the improvement of the hyperlipidemia, hypertension, hyperglycemia as well as the gastric ulcer and gastritis [3-6].

Actually the FF technology was developed and firstly demonstrated from the begin of the year 2013, where I (the only author of this paper) am the first volunteer to intermittently test this technology by myself for at least six months. After the FF operation, my own body weight reduced 20kg totally and the fatty liver was finally disappeared in half of the year. The Body Mass Index (BMI) of mine reduced from 33.1 (90kg/1.65cm/1.65cm) to 25.7 (70kg/1.65cm/1.65cm) in my own test. After the year of 2013 that we have more and more successful cases in the clinical studies on body weight controls, we gradually recognized that we need to reanalyze and reexamine our current medical knowledge as well as the etiology of CDs.

From the year of 2008 or earlier to the end of 2012, I am always a fat man suffered from fatty liver as well as the hyperglycemia. I tried a number of approaches wishing to reduce my body weight but failed and then gave up this idea for body weight control. However, when I read the papers by Dr. Gordon and Dr. Liping Zhao introducing the relation of gut flora and the obesity, I renewed my hope for reducing my over-weighted body weight [7-10]. After I easily and successfully test the one week FF operation using my own body, I finally not only agreed that the gut flora is really closely related with obesity, but we also develop the unprecedented discovery that “hunger sensation comes from the gut flora” other than from the feeding center of the human brain. In addition, we gradually found that the reason of our daily feeding behavior was also initialized and guided by our gut flora. What is even more surprising to me is that the signal of our eating behavior is actually guided by the gut flora other than the previous knowledge of by the human brain. Therefore, we finally decided to propose a new hypothesis of the “Gut Flora-Centric Theory (GFCT)” to develop a new theory, which will not only help us to recognize the structure of our body but also the etiology of CDs. What’s more, we tend to believe the human appetite also seemed to be initialized and transferred to our body by the gut flora, which will be addressed below. As we have reported our clinical evidences on one week FF approach elsewhere, here we will introduce our new theory of the GFCT theory in details [3,11-13]. Of course we need to point out that as a new theory, a great deal of information with logical reasoning was introduced in the GFCT model to help us to understand the derivation and formation procession of the GFCT theory.

Frankly speaking, from the viewpoint of the GFCT theory, the human body is actually a dual DNA system, where the 1<sup>st</sup> DNA system is the human genome to make the human body itself run well, and the 2<sup>nd</sup> DNA system is the gut flora genome to send the hunger sensation to the human body to guide the eating behavior for food and energy [14]. When this isomeric DNA system worked well with high coordination, the human will be health; otherwise a number of CDs occurred and continued in our bodies.

## Detailed Introduction of the Gut Flora-Centric Theory

Now let’s take a detailed look at the development of the human beings, which will help us to understand why and how the GFCT theory was proposed and developed in recent years.

### The gut flora comes to the human body after human baby birth

After fertilization, the parents provided their DNAs to the

fertilized egg, which is the beginning of a new human life. After then, the pregnancy begins when the fertilized egg is implanted in the wall of the uterus. Ten months later, the baby was born and came to this world, carrying with the human DNA systems (the 1<sup>st</sup> genome) in their cells. However, before the baby was born, there are almost countless microorganisms lived in the environment in the earth. As soon as the baby came to this world, these microorganisms (including the vaginal microorganisms, colostrums microorganisms and the microorganisms in the air and elsewhere the body could be directly and indirectly touched) will quickly surround the body of the baby. After a dynamic mutual adaptation and choice, a large number of microorganisms will live in the gut to form the gut flora, which will accompany with the children's whole life. In contrast to the 1<sup>st</sup> genome, the DNA systems from the commensal microorganisms formed the 2<sup>nd</sup> genome of the human baby. Therefore, the human body is actually a super symbiont in the whole human life [14-18].

### **The hunger sensation comes from the gut flora but not the human brain**

Theoretically, the human baby did not have the hunger sensation during the embryonic development in the ten months in uterus, because the pregnant women directly provide nutrition to the fetus through the umbilical cord. However, how did the newly born baby can have the hunger sensation? Actually, the current literatures mainly focused on the human brain that the feeding center controlled the diet demands of the human beings. However, here we will propose the new concept that it is the gut flora other than the feeding center of the human brain should be responsible for the hunger sensation formation and result in the following diet behavior. Frankly speaking, the classical knowledge that if we did not eat any foods, then we will die from hunger is absolutely correct because it seems to be a true fact in our daily life. However, we found that it is just because the insurmountable panic emotion on hunger and the following death pointed out the important direction that how did the gut flora take their food. Let's imagine that when there are about  $10^{14}$  of bacteria lived in our gut, and the gut flora also needs their own food to live and breed their offspring in order to clone their genes. How and who will provide the food for these gut flora? As pointed out before, when I test the one week of FF technology, I constantly found that when I used some special prebiotics to feed my gut flora, then my hunger sensation gradually decreased and even disappeared. Interestingly, this kind of "no hunger sensation" can only keep for 4-6 hours in daytime, which is rather perfectly matching with the time of three meals every day. Therefore, this is actually a kind of counter evidence technology, which we demonstrated that it is not only my own feeling on the decrease and disappear of hunger sensation but also thousands of volunteers with fruitful clinical evidences. Thus, it is quite easy to understand the miraculous design of the nature on human being, that is when the gut flora need food and diet for proliferation and breeding their babies, they will directly "eat" our human gastrointestinal mucosa as their food. This signal will then be quickly sent and forwarded to the human brain (most likely the feeding center) and then the human brain will control the human body to prepare and find the food for eating. When the diet was taken into the gut from the human mouth, then the gut flora will stop eating the human gastrointestinal mucosa and in turn to "eat" and digest the food. Therefore, in my opinion, the human food is actually used for preventing the gut flora to "eat" or

destroy or digest the human gastrointestinal mucosa. Therefore, here we probably found the truth of human eating behavior is that "we human beings eating first for our gut flora, and second for human beings" with logical reasoning together with volunteers validation. In other words, as for the hunger sensation and the motivation of human eating, it is not the human brain but the gut flora itself driven and guided the eating behavior of the human beings [4,5].

### **Chronic diseases are caused by disorder of gut flora**

With the above-mentioned new viewpoints based on the motivation of that "human eating behavior is driven by the hunger of gut flora", we can now figure out the origin of the CDs. It is well known that normally the gut flora of the newly born babies have good and high quality of gut flora which could be termed Healthy Gut Flora (HGF), but when the baby grown up to adult stage and even to elderly stage, the quality of their gut flora will gradually decline and destroy to be Disordered Gut Flora (DGF). In other words, in the whole life of a person, the gut flora tends to be disordered from good and healthy status after birth. There are many factors contributing to the gut flora disorder, for example, the abuse of antibiotic and unhealthy lifestyle and eating habits such as overeating and excessive drinking. In my opinion, when the gut flora was always receiving these kinds of adverse stimulus, then the normal and good gut flora will be gradually destroyed, therefore the DGF will continuously send improper signals to the human gut such as overeating because of excessive breeding of the fat-causing bacteria such as the *Enterobacter cloacae* B29 [8]. Whenever the gut flora was disordered and destroyed, the human gastrointestinal mucosa will be easily destroyed and therefore result in the "leaky gut syndrome", which will cause a large number of unhealthy and even harmful metabolites entering the human body from the human gastrointestinal mucosa. Predictably when the harmful metabolites were enriched in various organs and tissues of the human body such as liver or female breast, then these organs will have more health risks and even be tumourized.

We all know that the human CDs are usually chronic, so our GFCT theory can easily address the origin of CDs that the DGF will continuously contribute to the CDs when the patients usually eating three meals a day without knowing the fact that his DGF keeps sending unhealthy and even harmful metabolites into his body. Unless the patient will have a HGF, it is impossible for him to recover from the CDs. In other words, the human CDs come from the DGF even with normal diet. As for the patients suffered from CDs, even they have normal or so-called healthy foods; however, their DGF will drive the body on the way to obesity, hyperglycemia, hyperlipidemia, hypertension and even cancers. This theoretical analysis also addressed why there are more and more CDs reported to have very close relationship with DGF. According to our GFCT theory, there will be more and more CDs to be identified with DGF. We therefore might as well say that the human body could be considered as a fresh and alive structure to show and to magnify the status of the living gut flora. The HGF will result in a healthy human body, on the contrary, the DGF contributed to human CDs. In short, the health status of the gut flora lived in the human gut determined the health status of human in the mean of human CDs. When the HGF was destroyed to be in disordered status, then even normal diet will continually result in human CDs because of the eating behavior of three meals a day. Only after the DGF was corrected to be HGF, the human CDs could

be significantly prevented and controlled.

### **One week Flexible Fasting (FF) is a preferred approach for PCCDs**

As mentioned above, to correct the DGF to be healthy status should be the first choice for PCCDs. When having the DGF in the human gut, even normally eating behavior is a kind of “chronic suicide” behavior because of wrong metabolic signals produced and input to the human body by DGF continuously. There are a number of methods to fix the DGF such as providing valuable prebiotics and probiotics or using some drugs to inhibit the DGF or using the Fecal Microbiota Transplantation (FMT) technology [19,20]. The patients suffered from CDs should follow the suggestions from their doctors to find a good way to correct or improve their own DGF in the gut. Besides these suggestions, we preferred the patients (especially those suffered from obesity) to use the one week FF approach to help them recover the DGF to HGF because our data showed that the one week FF approach could significantly help to increase the beneficial gut flora using the 16S rDNA sequencing technology [21]. Actually, even the patients did not run the FF approach for one week but only for one or two days every week and continued for one to three months, their DGF could also be improved in some degree [21]. As for myself, I have used the special prebiotics to replace the breakfast for five years, which is also a good way to avoid overeating in order to control the body weight and the obesity related CDs.

### **Human's appetite comes from gut flora**

As we have introduced our hypothesis that “hunger sensation comes from gut flora” and providing a number of logical discriminating analysis on the relationship between the human body and the gut flora, we may deeply analyze the structure of the human body from this new viewpoint. For several thousands of years, the human body was recognized to have two parts, the human body itself forms a living architecture to support the whole body (mainly the muscles, bones and other tissues), and the human brain responsible for learning and memory and the spirit. Regarding the biological basis of the mental activities, the classical textbooks mainly point to the human brain vaguely but not other tissues and organs. Where does the man's mind and spirit come from? Yes, we believe the fact the man's mind and spirit come from the human brain. However, where does the man's appetite come from? Actually, during the past several years on testing the GFCT theory again and again, we more and more believe that some of the human's appetites seemed to come from the gut flora other than from the human brain. In fact, we found that when a man loves a kind of special food, it seems because of his gut flora needs this kind of food as biochemical substrates for proliferation and breeding. If there is no enough this kind of food, then the special gut flora will not complete the proliferation and the man will express depression emotion. There are a number of reports on allotriophagy and the tendency of some people preferred some kinds of food and hating some other foods, these kinds of situation could easily be explained from our GFCT theory, that is, a man's gut flora saved the man's memory on food using the gut flora DNA system and sending the demands of the corresponding signals for proliferation of the bacteria. Similar situations could be widely observed in nature, for example, there are a large number of meat-eating bacteria lived in the gut of tigers, lions and wolves, on the contrary, there are a larger number of herbivorous bacteria lived in the gut of horses, cows and

sheep. The mutual selection was designed by the nature to meet the food demands for different kinds of animals. In human beings, the omnivorous bacteria lived in human gut and therefore defined that the human food should include both the meat and vegetables to guarantee the diversity and richness of the human gut flora. This is the reason why we should eat both the meat and vegetables in order to maintain the diversification of our gut flora, where the human appetite was hypothesized in our GFCT theory to be stored and saved in different kinds of bacteria.

### **The trinity structure of the human body and mind**

Based on the above discussions, now it is necessary for us to redefine the new structure and architecture of the human being. According to the GFCT theory, we would like to provide the new model of the human beings, where there are three parts for the holonomic understanding of the human beings. The first part is the physiological system (the human body itself) of the human (physiological system), the second part is the gut flora system responsible for the psychic system of the human (psychological system), and the third part is the human brain responsible for the mental and spirit system including learning and memory, thinking and spiritual demands of the human (psychiatrical system). The human physiological system (which is the human body itself) has only the neutral feature, and only provides the bone and muscle and blood support to the human beings and does not have any psychological and any psychiatrical tendency. However, the gut flora system guided and driven some of the human appetites and the psychological system, which is naturally important to human being because if there is no gut flora the man will not have the hunger sensation and motivation for eating food. In my opinion, some of the man's appetite on material demands comes from the gut flora. When the man have gut flora A, his appetite will express the demands for gut flora A, otherwise will display the appetite B because of the existence of gut flora B. In the GFCT theory, we would rather prefer to figure out the human body as a “video player” while the gut flora is the source of the natural signals containing the “video” of the nature stored in the gut flora DNA system by using the nervous system and psychiatrical system of the human beings. Thus, we prefer the gut flora system leading to the hunger sensation, food needs as well as the material needs of a man, while the human brain leading to the spiritual demands. We have even demonstrated that during the one week FF operation when the people entering the special status of “no hungry and no food”, the spiritual demands significantly raised along with the food needs decreased, which have been constantly observed in our clinical studies.

### **A new era will come with the success on PCCDs**

In the past several thousands of years of history of the mankind, our human beings work hard every day for well providing food and clothing for us, which are almost the most important things in our life. Even the kids also know that “no food will cause die because of hunger”, so everyone works hard in the society to satisfy the food demands is nearly the first-of-all important issue every day. However, from our studies in these years, we have found that the “hunger sensation comes from gut flora” other than the knowledge in classical textbook of “hunger sensation comes from the feeding center in the human brain”. To my knowledge, this is a courageous and subversive founding which will renew the current knowledge to redefine the basis of food demands and the origin and controlling of human appetite as

well as the spiritual needs for our human beings. From our viewpoints of the GFCT theory, as the DGF is the etiology of CDs, therefore, we should develop various valuable and feasible technologies to convert and correct the DGF to HGF. As soon as the DGF was corrected to HGF, the various human CDs would be significantly prevented and controlled. This should be the soul of preventive medicine. Our society will not need to consume excessive investments on PCCDs. Therefore, a new era with successful on PCCDs will naturally come to our society, not only in China but also in other countries.

## Discussion

In this paper we introduced the GFCT theory to address the etiology of human CDs. It is all known that we are continuously losing this war on PCCDs. Although the medical doctors, the patients and their families as well as the governments all of the world worked very hard, however, the high incidence of CDs are urgently calling for disruptive innovation in modern medical systems. After about two decades of careful studies and on the progresses of many laboratories, we finally decided to propose the GFCT theory with the following issues to address the etiology of human CDs, (1) the human body is a host or a container for the gut flora to live, (2) the gut flora lived in the human gut for food in order to proliferation and breeding for their babies, (3) the human hunger sensation comes from the gut flora other than the feeding center of the human brain, (4) the motivation we eating is at first for feeding the gut flora otherwise the gut flora will directly eat and destroy our gastrointestinal mucosa, (5) the human food could be considered as the sacrificial lamb actually for the gut flora prepared by the human beings, (6) when the gut flora was destroyed because of abuse of antibiotics and unhealthy lifestyle and bad eating habits etc, then the DGF will produce more and more CDs-inducing factors and metabolites to the human body which will continuously induce and maintain the CDs status in the human body, (7) not only the hunger sensation but also the signals of some human appetites are also initialized and provided by the gut flora, which means that it is the gut flora but not the human brain driven some of the human appetites to contribute on the human psychological activities, (8) when we control the hunger sensation initialized by the gut flora sending to the human brain per meal time by using some special prebiotics, the volunteers can easily enter the FF status for one or two weeks without needing any food or vegetables and fruits except for only water, (9) many CDs such as obesity, metabolic syndromes, hypersensitivity syndrome, abnormal immune functions, endocrine disorders could be significantly improved by the one week FF operation. Therefore, our new theory of the GFCT model will probably provide a new perspective and shed light on PCCDs.

The GFCT theory will not only contribute a lot for PCCDs, however, this model will provide unprecedented new understanding of the human body, the gut flora, the relationship between the human body and the gut flora. In addition and most importantly from the GFCT theory, we will for the first time know that the human appetites come from the gut flora but not from the human brain, which will figure out a never expected possibility that the human psychological signals come from the gut flora other than from our brain. If demonstrated, we human beings will probably find out the key for the treatment of autism, depression and other mood disorder diseases. What's more, the GFCT theory that the materials demands

come from gut flora and the spirit demands come from human brain will possibly lead to a new understanding of the biology, medicine and physiology, humanities, social sciences, which will therefore contribute new progresses on the philosophy.

Although the GFCT theory is a hypothesis sounds interesting, however there are rapidly increasing evidences to support the GFCT theory. The GFCT theory not only does not oppose the current medical theory that "mutations and the irregular expression and out of control of the human genes and proteins causing CDs", but also more support the notion that "the DGF caused the mutations and the irregular expression and out of control of the human genes and proteins causing CDs". In other words, our GFCT theory advances the current knowledge of etiology of human CDs to be DGF other than the mutations of human genes. From this point, the precision medicine project should also pay more attention to the human gut flora instead of mainly focused on the disorders of human genes and proteins. Therefore, we may document the term Medicine version 1.0 (Med 1.0) for Ancient Medicine (such as Traditional Chinese Medicine), Medicine version 2.0 (Med 2.0) for Current Medicine (Western Medicine), Medicine version 3.0 (Med 3.0) for the New Medicine based on the GFCT theory. In the era of Med 3.0, we should pay the first attention to the health of human gut flora in order to protect the human beings far from CDs. In other words, to guarantee the health of human body, the protection of gut flora is the first-of-all step and should be the key point on the preventive medicine and health care management. This could be recognized as the Gut Flora-First Principle (GFFP).

Now it is a good chance to review some common sayings either in China or in Western countries. For example, in China, the words that "the human CDs were caused by eating" and "obesity is the origin of diseases" could be easily explained from our GFCT theory because of the hunger sensation comes from the human gut flora and uncontrolled eating behavior caused a large number of human CDs including obesity. In Western countries, the famous proverb in English "follow your gut" might actually mean "follow you gut flora" from the viewpoint of our GFCT theory. Therefore, our current work will help to rebuild a new concept to address the human CDs by using the new logical analysis to address the etiology of CDs based on the GFCT theory. In addition, we need to re-recognize the human body from both of the material demand and spiritual demand in order to understand why the human being was designed and created. Based on the GFCT theory, we proposed that the gut flora is the core instruction responsible for the material demand for the human body to form a material basis, while the human brain is the core instruction responsible for the spiritual demand for the human beings to enjoy the spiritual pleasure. Although the delicious food and drinking could also provide the enjoyment feeling to a man, however, these kinds of basic material demands should be mainly taken as the human body to grow up and maintain the biochemical metabolism. If we did not know the essence of the GFCT theory that "some of the human appetites come from gut flora", we will easily drop down and fall into the trap of uncontrolled appetites in enjoying the sensual enjoyment on food. Fortunately, after we can now separate the gut flora from the human body and found the human appetite comes from the gut flora, then we can easily obtain the ability to control ourselves from the attraction of food because it actually comes from the gut flora.

Therefore, we can have plenty of time busy on learning and memory and will enjoy ourselves because of the unprecedented spiritual satisfaction. In other words, we need food because of the hunger sensation transduced from the gut flora in our body, however, the purpose why we human beings are designed and created by the nature is actually to understand the world for spiritual satisfaction. If we lose our control on the gut flora for food, then we will become slaves of the food and appetite, which will give big troubles to our human beings such as CDs, crime and even war. So in my opinion, the mankind was designed and created in order to bridge the material demand initialized by the gut flora and spiritual demand guided by the human brain of the nature. Only after our human beings know the fact that the gut flora preferring for eating and the human brain preferring for thinking, which was the kernel and essence of the GFCT theory, then we human beings will find the way for health and peace and be far away from the CDs, crime as well as the war because of the newly understanding and artistically control approaches on the conflict on material demand comes from the gut flora but not from the human brain. In other words, the state-of-the art of the controlling strategies such as the FF technology on the gut flora by using the biological technologies based on the GFCT theory will give us a new choice to have new futures full of intelligence, wisdom, humanities and human spiritual civilization, because we for the first time can understand and read the languages of the gut flora.

Let's have a further and deeper look at the GFCT theory. It is widely known that learning and memory is critically important for human beings to live in the world. The hippocampus works for the short-term memory, while the cerebral cortex works for the long-term memory. Both of the short-term memory and the long-term memory belong to the abstract memory or the indirect memory because these kinds of memory need the human brain to process a large number of signals and information using the axons and dendrites of the neuronal cells. However, when taking a look at learning and memory from the viewpoint of the GFCT theory, we may unexpectedly find out that the gut flora stored the direct memory on food using their DNA systems. We all know that if there are suitable substrates, then the bacteria can begin their proliferation automatically following the biological law with biochemical reactions and physiological metabolisms. Therefore, it is reasonable that different bacteria remembered their needs for special foods. Could it be said that it is possible that the memory information of human on food was actually stored in our human gut flora to meet the demands on different foods? This is a reasonable and perfect explanation on the direct memory for the human beings needing the food. We need to point out that the "direct memory" did not need to learn, however, the "indirect memory" did need us to learn for the human beings by using the human brain to convert the entities and objects and things to the abstract memory. As mentioned above, the short-term memory was processed in hippocampus and the long-term memory was processed in cerebral cortex, these two important memory events must be processed by the neuronal cells, where the processing process was termed as "learning". On the contrary, the bacteria cells alone did know how to "eat" the foods and did not need to "learn" because the memory on food demands of the bacteria have been already and directly stored in the DNA systems of the bacteria. The proliferation behavior of the bacteria is actually the process for the bacteria to showing the memory on food stored

in the bacteria DNA system. Even if the bacteria were not lived in the human gut such as in the soils in the environment, the natural instincts of the bacteria for foods will also express naturally. However, when the bacteria come into the human gut after baby birth, the gut flora will also express their natural instincts of the memory on food demands. To meet this need, the gut flora will send the hunger sensation to the human brain to guide the eating behavior. Therefore, in our GFCT theory, we tend to consider that the human's memory on foods was the results of joint decisions between the gut flora and the human brain, where the gut flora provided the direct memory on food and the human brain provided the indirect memory on food. In other words, for our human beings, our direct needs for food is guided by the gut flora as direct memory without needs for learning, while our indirect need for food is processed by the human brain by learning and memory processions from babyhood. According to these important issues, we human beings do need foods but should not be greedy and controlled by the foods; otherwise we will be the slaves of the foods. This judgment is also similar for the material demands. On the contrary, only the spiritual demands should be paid most critically important attention for our human beings and the human society to come across the river from the world of material demands to the spiritual demands. In my opinion, this is probably the purpose why our human beings were created in this world. We therefore expect for the human civilization will have a good chance for further development based on the new and deep understanding of the relationship among our human body, our gut flora and our human brain on the basis of the GFCT theory, which will be the one of the essential tasks of our human destiny community for the spark of civilization from material civilization to spiritual civilization in the near future.

## Summary and Conclusion

Frankly speaking, it is usually not necessary to introduce and develop a new theory during the modern times of the scientific researches full of serious and cautious features. However, as that in current situation of nearly out of control of the human CDs, we need to carefully ask in reply and evaluate whether it is right in current medical knowledge. No doubt, no progress. Based on a large number of clinical trials where I used my own body for frequent testing, we finally developed the GFCT theory not only with clinical evidences supporting but also according with biological principles. The reason that the GFCT theory was not found previously is because that too many medical scientists focused on the human body (mainly the human genes and human proteins) and therefore intentionally or unintentionally ignored the importance of the gut flora lived in our body. Most of us would rather believe that we human beings are human beings, and not ready to believe that in the need of food and diet, we lived for our gut flora. On the other hand, I rather believe that the gut flora live for our human beings in other words because only we human beings could understand the order and the law of the nature by using the human intelligence. In other words and in short, our GFCT theory points out these two points, (1) the gut flora guided the human body for eating behavior by introducing the hunger sensation to the human brain and therefore helped the human beings to have a physical structure of the body for living, (2) the human brain helped the human beings to understand the structure and principle of the nature by using the human intelligence in order to understand

why there is the human beings in the world. So, the gut flora guided the human beings to eat, while the human brain was responsible for the human beings to think why we eating food as well as other profound philosophical problems. These are the key points of our GFCT theory. We believe the GFCT theory will not only contribute a lot to the PCCDs but also helped us to think and understand the world in order to find out the truth and the law of the nature (the term “Qiushi” in Chinese), which should actually be the mission of the human beings in the world. If we could not correctly understand the truths of these issues, then we human beings will be still continuously suffered from CDs, crime and war. On the contrary, when we human beings understand the law of the nature, we will be far away from the CDs, crimes and wars. During the history of our human beings on conquering the nature, our intelligence and our wisdom will of course help us to find the path to the light tower of the body-mind-spirit health.

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