

# ***WHY AN IMMUNE SYSTEM ENHANCED BY BETA GLUCAN MAY BE THE KEY TO A VASTLY IMPROVED HEALTH AND A MUCH LONGER LIFE.***

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## ***YOU HAVE THE POWER TO OVERCOME ALMOST ANY HEALTH PROBLEM***

Scientists have known for a long time that the human immune system is such a complex marvel of power and efficiency, that if it is working properly, it can overcome almost any health problem and keep you living youthfully for a great many years. In fact, some scientists go so far as to say that you are only as young as your immune system, and that the real cause of death is the failure of the immune system.

Science now knows that one of the main reasons people live far below their full potential for youth, good health and long life, is that there is a large number of things which compromise their immune system. This causes the immune system to fail to provide adequate protection, and thus disease occurs easily, and recovery is difficult or even lacking. We become old before our time, and die long before our full allotment of years.

Fortunately, a major breakthrough has recently occurred in the world of nutritional science which holds out the promise that for many of us, the immune system can be brought back to an optimum level and kept there. Allowing us to overcome disease and regain our health, youth, vitality and energy.

## ***YOU HAVE TO BE ABLE TO TURN IT ON - IF IT IS GOING TO WORK!***

Suppose that I gave you a powerful, brand new automobile for your personal use. It had a complex combination lock that protected it from improper use, but without the full combination you could not use it.

Suppose I forgot to give you the full combination. There you would be with all this power and ability, but you could not use it. Oh, you might be able to play the radio, or turn on the lights or roll the windows up or down. But you couldn't really go anywhere. This is the way it is for most of us with regard to our immune system.

We have the system, but the multitude of things we have faced in life have caused us to lose part of the combination. As a result we can only partially turn the immune system on.

Now, what if I gave you the complete combination to the immune system. Suddenly you would be able to turn the whole system on. You would be able to use all of its power and efficiency to overcome illness. That would keep you young and healthy.

## ***BETA GLUCAN IS THE FULL COMBINATION***

### ***THAT TURNS ON THE MASTER CELL OF YOUR IMMUNE SYSTEM!***

For millions of years, the human immune system has had to battle disease causing microorganisms in order to keep us young, healthy and alive.

The whole idea of these nasty little critters gaining entry into our body was so they could use us for food, drink, heat and shelter. Just so they could reproduce and take over the world. Problem is, that in the process of furthering their life cycle a few billion generations, it was going to completely destroy ours.

In order to prevent this, our immune system had to learn to identify these pathogenic micro-organisms very early, just as soon as they showed up on the doorsteps of our body.

About the oldest of these nasty guys who try to take over our body is a member of the vegetable family known as yeast. In fact yeast cells and spores are everywhere. They are on virtually every surface you

come in contact with, and in every breath of air you take in, and on, or in, all the food and drink you swallow.

In order to survive all of this, our immune system had to devise a very sensitive and fast acting identification system that would turn it on at the very first sign of this enemy. What it learned to do, is spot the invader by identifying the chemical nature of its outside cell wall.

The cell wall of the yeast, like most vegetables, is made up of a special molecule that is a structural form of glucose. It is called Beta Glucan, and like all basic glucose molecules it has 6 carbon atoms in its ring like structure. It links itself to other Beta Glucan molecules at the 1<sup>st</sup> and 3<sup>rd</sup> or at the 1<sup>st</sup> and 6<sup>th</sup> carbon atoms. This forms a triple helix (just like 3 spiral stairways running side by side), which creates a very strong structure.

In the 1940's scientists discovered that, what I call the Master Cell of the immune system, had learned to recognize this structure of Beta Glucan as the outer portion of these very serious trouble makers. This Master Cell is the largest of the white blood cells and is called a "macrophage", a word that quite literally means, "a big eater".

The macrophage has 9 different "receptors" that can "switch it on". The significance of this is seen when you realize that most of the things which alarm the immune system will only turn on 1 or 2 of these receptors. However, the macrophage thinks cell walls containing Beta Glucan are on such "bad guys" that all 9 of its "receptors" will "turn on" whenever it makes contact with Beta Glucan.

Thus Beta Glucan is the full combination I mentioned earlier that will "turn on" the full potential of your immune system. It "activates" all 9 receptor sites on the macrophage, the Master Cell of the immune system. By giving your body a nutritional supplement of Beta Glucan you immediately "turn on" the full potential of your immune system. It then goes right into action looking to see what it can do to help you have better health.

### ***THE MACROPHAGE IS THE TRUE MASTER CELL OF IMMUNITY - TO HAVE GOOD HEALTH IT MUST BE FULLY TURNED ON!***

Just because I've told you that Beta Glucan will turn on all 9 receptors sites that will activate the macrophage does not mean a whole lot unless you really understand exactly what the macrophage does. Just because I have told you that it is the Master Cell of the immune system does not mean much if you do not know what that really means. Without fully understanding what that means, you will not be able to understand why the discovery of Beta Glucan and your ability to use it, is going to mean the difference between a shorter life marred with a lot of illness, and a longer, younger one, that is filled with health.

Over the next dozen or so paragraphs, I am going to try to paint for you a clear picture of how the macrophage is the Master Cell of your immune system. I want you to be able to see exactly why it is, that when that Master Cell is fully activated with Beta Glucan, it will program your body to overcome illness and disease, why you will become younger, and why you will live longer and healthier.

### ***IT ALL BEGINS IN THE BONE MARROW!***

Inside the bones, there are tiny cavities in which a substance known as marrow is found. This marrow is the birth place and nursery for the development of the red blood cells, as well as the macrophage, the Master Cell of the immune system. There is a basic cell found there which is know as a "stem" cell, and as the demand for the different types of blood cells is made known to the marrow of the bone, the stem cells manufacture those types of cells, quite literally by the millions per hour.

Once the stem cell has produced an "adolescent" macrophage, it is thrown out onto the fast paced blood vessel "mean streets" of the body, where it has to do two things, learn what its own unique life is all about, and grow up fast. And grow up fast it does! In just 24 hours the macrophage grows from adolescence to full adult maturity increasing in size by as much as five times its original size.

In addition to growing, I said the macrophage has to learn what its own unique and individual life is all about. You see, the macrophage has many different career opportunities facing it when it grows up. During its time of wandering the blood vessel streets of the body, like all growing teenagers, it is observing life and deciding what kind of a job it would like as an adult cell. These are not just “ordinary” white blood cell jobs, these are key and vitally important command positions in the body’s defense system.

### ***YOUR BODY IS AT WAR***

From the moment you were born, your body has been engaged in a great war to keep you alive in a hostile environment. It will be a great aid to your understanding if you will think of the micro-organisms, foreign chemicals, and abnormal cells as the “enemies”, “terrorists” and “invaders” in that war. Then think of your immune system as the police and military that serve as your defense system against them. The macrophages are the “special forces” that serve in key and vitally important command positions in that defense system.

In order to carry out its duties in those vital roles the macrophage has been equipped with the most modern state of the art defense technology and equipment, as well as the skill to use it all very effectively.

The first and most obvious thing about the macrophage is its huge size. It is several times larger than an ordinary white blood cell. This superior size advantage allows it to extend part of its cellular structure out around its enemies like giant arms. It then draws the enemy deep into its interior, where special glands called “lysosomes” release enzymes that not only kill this enemy, but quite literally dissolve it.

Other white blood cells can do this also, but the size advantage of the macrophage allows it to take on enemies that are 8 to 10 times larger than those handled by an ordinary white cell. The other advantage its size gives it, is its huge capacity for destruction. Ordinary white cells can destroy 8 to 10 enemies before they themselves are “used up” and dead from exhaustion. But, not the macrophage, it can destroy up to 100 enemies before its own life and energy are totally spent in your defense.

### ***SEEING THINGS FROM A BROADER PERSPECTIVE***

However, there is a lot more to the macrophage than its superior size and capacity for dealing death and destruction to your enemies by sheer brute physical power. When the macrophage comes upon the enemy, it has detection and evaluation technology that allows it to access what will be needed to deal with the situation. Is it a single enemy bacteria? A dozen, a million? Or is it a virus, or a parasite, or perhaps a toxic chemical? Maybe it is just a piece of debris left over from a dead cell. Or is it a cancer cell, one of millions? Each of these situations requires a different response, and it is to a very large degree the roll of the macrophage to access the situation and initiate the appropriate response.

At first you might just dismiss this as, “Oh that’s nice”. But, the point you may be missing is that failure to launch the “right” response on the initial encounter with the enemy could be a fatal mistake, and the fatality will be YOU!

### ***ITS A MAD, MAD WORLD IN THERE***

We get so used to looking at the outside of our body where we see nothing, and everything happens so slow, that we fail to realize that under our skin there is a mad torrent of activity going on at breakneck speed.

Red blood cells grab the oxygen you need on their trip through the lungs and take it to the tissues and go back for reload approximately every 120 seconds. Its exhausting work, and they are wearing out and being replaced by the million per hour. White blood cells are dying in your defense by the millions every day, sometimes by the millions per hour. All this takes energy, and your body has to produce it to fuel

every function of life, not just for moving your arms and legs, but also to fuel the millions of enzyme reactions that are occurring in every cell of your body, every minute of your life.

Then there is our enemies, they aren't just sitting around either. The bacteria, virus, parasite, and cancer cells are reproducing at the same breakneck speed. In the matter of defending your body, it is not hours that count, it is minutes and seconds. At certain stages, the difference between 1 thousand enemy bacteria and 10,000 enemy bacteria can be as little as one minute. The same can be said for cancer cells.

When the macrophage gets on the scene and detects trouble, it is its ability to grasp the significance of the situation and move swiftly with an appropriate response that could very well determine whether or not you live or die. That is why a fully functioning macrophage is the most valuable ally you can have in your ongoing battle for life. Beta glucan can activate all 9 macrophage receptors and turn it into a fully functioning cell. The first thing that means, is that its surveillance capabilities go on "full alert". Your enemies are not going to get by it without detection and destruction.

### **COMMUNICATION AND COORDINATION**

Once the macrophage comes in contact with the enemy, it has many options as to how to handle the situation. If it is only one or a dozen bacteria or virus, a small amount of debris, or just one cancer cell, it will probably handle the job itself. However, if it is a large toxic spill, or a bus load of terrorist bacteria or virus invaders, or a whole neighborhood of cells that have turned cancerous, things will be quite different. The macrophage has a large arsenal of chemical signals it will send out to other white blood cells to notify them of the problem.

These are called "chemotaxic" agents. Just as the word implies, they are "chemicals" that cause a "taxi" effect to take place. They cause the movement of additional white blood cells into the area where the enemy has been encountered. Not only do the macrophages send these out when there is need for reinforcement, but when ordinary white blood cells get in trouble in tough neighborhoods, they send out chemotaxic signals requesting the macrophages to move in and clean things up. The more serious the situation is, the more of these chemotaxic agents they release, and the greater is the number of reinforcements that arrive at the scene.

### **SPURRING THE TROOPS INTO ACTION**

When the situation is critical, the fully functioning macrophage will also release a substance known as "leukokinen". The word quite literally means "to spur white blood cells into action". The action it generates is to stimulate a group of white blood cells known as neutrophils to begin eating the enemy at a rapid rate. Since neutrophils make up the largest number of white blood cells, over 60%, you can see that this is a vitally important step. The macrophages' leukokinen release also signals the spleen to produce much larger amounts of this same substance. Unless the spleen produces enough leukokinen the body is soon overwhelmed by infection and disease.

If things are really serious, then the macrophage will produce and release another substance known as "interluken 1". As the name implies, this is one of several substances that provides communication between white blood cells. This specific one is used by the macrophages to call upon the white blood cells which have been activated by the "Thymus" gland and thus known as T cells. In response to this chemical message from the macrophages, the T cells will produce a second substance known as "interluken 2".

Interluken 2 will cause a rapid and significant increase in the number of T cells. These new T cells will then be programmed to identify the one specific enemy the macrophage is concerned about. From this activity will emerge a great increase in the number of other types of white blood cells, and they will produce massive numbers of antibodies. Each of these antibodies will be made specifically to identify this one specific invader. These antibodies will now shoot through the blood, quickly identifying and

attaching to the enemy. With the enemy now wearing antibody I.D. tags, all of the many types of white blood cells soon spot them. Then each of the different kinds of white blood cells launch their own unique type of attack against the now identified enemy, and eventually the enemy is destroyed.

## **MACROPHAGES AND CANCER**

We are all aware of the fact that a few rare individuals who have developed cancer have had what is known as a “spontaneous remission” of that cancer. Which means, it seemed to simply “go away” of its own accord. Of course that is not really what happened. What actually took place was that the immune system finally got the upper hand and destroyed the cancer tissue. Oddly enough that is not nearly as rare as most people think. The reality is, that each of us have had cancer or tumors many times throughout our lives. We never knew it because our macrophages detected it early on, and mobilized our immune system against it while it was small and still defeatable by our own natural defense system.

However, there are times when the cancer and tumor cells escape detection by the macrophages for a long enough period of time to allow them to grow so large in numbers that it is almost too big a job for the immune system by itself. That is where standard medical intervention enters the picture. Using surgery to remove most of the cancerous tissue the hope is that the macrophages and the entire immune system will mobilize against the few cancer cells left, and destroy them. The same is true when chemotherapy and radiation are used. The hope is that these powerful tools will kill off the great vast majority of the cancer cells, and then what few remain will be destroyed by the immune system.

Yet we all know only too well, that the best of modern medical cancer therapy does not always succeed. No matter what approach you take in dealing with cancer, eventually it boils down to the immune system winning the battle. It can often get some big help from medical treatment, but in the final analysis those few cancer cells which always manage to escape destruction by the medical treatment, must be destroyed by the immune system or the cancer comes roaring back.

A fully functioning macrophage plays the pivotal role in making sure that the immune system conquers cancer cells. First, while there are only a few of them and the immune system can stop it before it really has a chance to get started. Second, when all the medical treatment is finished and it organizes a mopping up operation that clears the battle field of the last remaining cancer cells which are still alive.

Here is how the macrophage takes care of the cancer problem. The fully functioning macrophage has the ability to recognize cancer cells as an enemy to the body. It has the ability to eat these cancer cells and thus get rid of them before they can multiply and spread. It has the ability to kill these cancer cells by releasing a special cancer killing chemical known as the “Tumor Necrosing Factor” or “TNF”, which as the name implies, kills cancerous tumor cells. More importantly it releases the Interluken 1 that activates the T cells against the cancer. And, not just any T cells, but special T cells which are given the formidable name of “NK” cells, which stands for “Natural Killer” cells. These NK cells now pour down upon the cancer in massive numbers and they release their potent Tumor Necrosing Factor, killing the cancer cells by the droves. Other white blood cells known as Neutrophils move in and clean up the mess by eating the dead cancer cells. Now the lymph system drains away the debris and the cancer disappears in what will be called a “spontaneous remission”.

Since it is clear that the immune system has the ability to wipe out cancer, why is it that spontaneous remissions are so rare. The answer is that cancer cells have several tricks of their own in order to hide and avoid detection until it has grown too large for the immune system to handle. This is why fully functioning macrophages that are on full alert are so vital to our defense. Which is why Beta Glucan is so important, because it has the ability to turn on the macrophages to a fully functioning state of readiness for early detection and destruction of cancer cells before they have a chance to take over our body.

In addition, research has shown that when Beta Glucan is used in conjunction with standard medical treatment the results are outstanding. This is because an activated immune system is the key to the final victory once medical therapy has wiped out the large numbers of cancer cells. It is only if the immune

system can now finish the job, clearing out those last few remaining cancer cells that true victory is achieved.

Without the macrophage's ability to identify the enemy early on, and to annihilate them on the spot when small in number, or to mobilize the entire immune system against the enemy when the situation is more serious, none of us would live through another week of life.

### ***MACROPHAGES - THEY ARE EVERYWHERE!***

We have just seen that macrophages play a key role in defending the body, and in organizing the body's entire immune arsenal against the enemy. Now, I want you to get a mental picture of where they are located.

#### *Neighborhood Patrol*

First of all, very few of them are in the blood stream. Only a few rove in and out of the blood vessels, going out into the surrounding tissue neighborhoods wandering around looking for bad guys, then back into the blood vessel to move down the street a ways and then into a new tissue neighborhood to check it out. You might think of these macrophages as being like police patrol cars cruising the quiet peaceful neighborhoods of a city with an ever watchful eye for suspicious looking characters. Most of the time if they do spot a trouble maker they are able to take care of it right then and there all by themselves.

#### *Border Patrol*

However, some of the macrophages make a career choice to be stationed on the outside perimeters of the body. You might think of them as being like those who chose a career in law enforcement as part of the U.S. Border patrol. They are stationed in the skin as part of a complex network of the immune system, there they are known as Langerhans' cells (named after the doctor who discovered them).

Every day our skin comes in contact with billions of potential microscopic enemies. The skin is such an effective barrier that almost none of them ever get into the interior of the body. But, what if you get a scratch, a cut or scrape, or even stuck with a thorn? Suddenly there is a hole from the outside world directly to the interior. Tens of thousands of the enemy, perhaps millions, push to get in. yet, as you know from personal experience, unless it is a real open wound, most of the time, it just gets a tad swollen around the edges, a little red and sore, and you soon forget all about it. that is because the macrophage Langerhans cells are doing their job. They use all of their techniques and equipment to subdue the enemy right there at the border. No terrorists are allowed to slip through the border of your skin and play havoc with your health.

#### *Special Forces - MALT*

The eyes are a major exposure to the outside world, and because their surface must be constantly kept wet, it is an ideal surface for our external microscopic enemies to attach to. As the eyelids sweep the surface of the eye every few seconds, they shove a lot of the debris and microscopic enemies under the lids. The interior covering of the eyelids is called a mucous membrane and it is loaded with members of a "Special Forces" team known as the "Mucous Associated Lymphoreticular Tissue" or, thank goodness "MALT" for short.

Them members of this elite team are, you guessed it, macrophages that chose a career of being stationed in these tissues. As you well know, they do a great job, and in spite of the enormous hazards they face every day, we seldom get an eye infection. Of course the interior of our nose, our mouth, throat, pharynx, bronchial tubes and lungs are also covered with these same mucous membranes bathed in moisture. With every breath we take, debris of every type, from plain old dirt and pollen, to cancer

causing chemicals comes streaming in. Along with spores of yeast and fungi and virus particles, and bacteria by the thousands. This area is even more hazardous because now it is also dark, warm and there is always something to eat. The perfect environment for our enemies to live and reproduce in. Needless to say, the MALT team of macrophages are here in a beautiful coordinated defense system that routinely handles the job with great efficiency every time you take a breath.

### *Special Forces - GALT*

Just as we have a constant assault upon our body every time we breathe, even more so, we have a major assault by our microscopic enemies every time we put something in our mouth. In fact, scientists state that 90% of the micro-organisms that enter our body, gain entrance via the things we put in our mouth. They range from food and beverage and spoons and forks, to dirty fingers and fingernails, to pencils, pens, paper clips, blades of grass, and well, just about anything that we hold in our hands as we absent mindedly work or think. Not to mention, the lip to lip contact of a kiss. All of which are the potential source of millions of pieces of debris, toxic chemical particles, to micro-organisms of every type imaginable.

The tissue that lines the esophagus, the stomach, the small and large intestines, and rectum are filled with dense network of interconnected "barracks" where large numbers of macrophages are stationed. These barracks filled with macrophages ready to defend the tissues of the gut from assault, are known as "Peyer's Patches" (named after the doctor who discovered them). Together they make up a "special forces" team that is known as the "Mucous Associated Lymphoreticular Tissues" or, fortunately also know as "GALT".

Not only do the "special forces" GALT macrophages have to deal with 90% of the micro-organisms that enter the body, but in the large intestine, the colon, they also have to deal with an overwhelming and very shocking amount of micro-organisms. For living IN the colon is MORE cells as micro-organisms than make up the entire human body. Most of these are outright disease causing pathogenic organisms. Virtually all of them, if allowed to get out of control, would quickly become pathogenic. Fortunately for all of us, 24 hours a day, every day of our life, the macrophages that make up the special forces of GALT are doing an outstanding job and we almost never become ill because of the micro-organisms that have gotten into our guts.

### *Special Agents - Kupfer Cells*

When it comes to keeping you alive, the liver is right at the top of the list, right up there with things like the heart and brain. It does more to maintain the proper balance of your body chemistry than any other organ in your body. More than that, it keeps you from dying from the poisons of your own bodily processes. Then the blood and lymph vessels return from the tissues they have drained away most of the toxic by-products of the biochemical processes of life that have to take place in each cell and tissue of your body. The liver has to neutralize those toxic substances or you will die from your own self generated poisons.

You already know what a putrid mess the fecal material is as it leaves our body. What you may not know is that so great is the amount of bacteria in your colon, that 25% of that fecal material is bacteria. You also already know that unless you have diarrhea, most of the time the fecal material that leaves your body is fairly solid material. However in order to pass through your body, the food and beverage is combined into a slurry of material that is about the consistency of wet runny applesauce. Now I have a question for you. Where did all that fluid go that turned the material in your intestines from wet and runny, to a solid fecal stool? The answer is that it was all withdrawn into the blood stream and taken to the liver.

What a challenge the liver must now face. For in the fluid that is withdrawn from the forming fecal material, is all kinds of physical debris particles, toxic chemicals and millions of pathogenic micro-organisms. Everything from bacteria, and yeast cells to virus particles and a lot of other pathogenic

organisms, like prions, that we are just barely learning about. This terribly dangerous and toxic material coming from the colon would kill us all so quickly we would not live through the day were it not for the Special Agent macrophages stationed all over the liver and known as Kupfer Cells (again named after the doctor who identified them).

What a job they do! Killing and eating every type of pathogenic organism that passes through the liver, as well as devouring toxic debris. By the time the blood leaves the liver, it is chemically well balanced and fortified with vitamins, minerals, glucose, amino acids, special proteins, enzymes, and fatty acids. It is also clean and pure, not a trace is left of the dangerous micro-organisms that entered the liver by the millions, or any of their disease and cancer causing toxic poisons.

### ***MACROPHAGES - THEY'VE GOT YOU COVERED***

Wherever you turn, whether it is the skin, the mucous membranes, the guts, or the liver, there is a complex network made up of specialized macrophages totally armed with the capability of dealing with just about any type of outside threat to the health of your body. Quite literally, this giant network of macrophage cells has got you covered in a web of protection.

Before I leave the subject of just how well the macrophages protect you, I just have to cover one more aspect of their marvelous contribution to your good health. We certainly don't know all the things they do for us, but science keeps finding more and more ways they help us. Ways that are very surprising. For example, a couple of decades ago, no one in the field of science had a clue that macrophages can play a major role in protecting us from getting atherosclerosis and sugar diabetes, but they do!

By now we all know that oxidized cholesterol, known as LDL cholesterol, builds up along the arteries and is a major contributor to the development of atherosclerotic plaques that can lead to heart attacks and strokes. What we did not know until very recently, is that when the macrophage systems is fully functioning, they eat this LDL cholesterol right off the arterial walls. They keep our arteries clean and clear.

Science now knows that sugar diabetes comes in two types. One type generally occurs early in life, often called Juvenile Diabetes or Type I. It is caused by an infection of the cells of the pancreas that secrete insulin. The infection destroys this ability and leaves the individual without the ability to produce insulin, thus causing sugar diabetes. Fortunately, at the first sign of this type of an infection, it is now possible to use Beta Glucan to create fully functioning macrophages which will stop this infection right in its tracks, before serious damage can occur.

The other type is called Adult Onset Diabetes, or Type II. It is mostly caused by substances collecting on the insulin receptor surfaces of the body's cells, and thus blocking the uptake of insulin bearing sugar from the blood and into the cell. As a result, the cells lack sugar from which to make energy, and the blood has too much sugar. Until very recently, no one knew that one of the things fully function macrophages did, was to eat away the material blocking the insulin receptor surfaces. This allows the sugar bearing insulin molecule to be taken up into the cell, thus dropping the blood sugar to normal levels.

### ***FULLY FUNCTIONING MACROPHAGES THE KEY TO GOOD HEALTH***

In addition to those we have discussed here, there are other members of the macrophages Special Forces located all through the body standing guard and mobilizing the body's massive immune system at the first sign of assault by an enemy. No matter whether it is simply physical debris that will clog up the fine and delicate machinery that makes up the cells of the body, or toxic cancer generating chemicals, or vicious disease causing micro-organisms, the macrophage is the key to your immune system. It is the first to really "know" what to do. It has the greatest "first strike" capability. It has the greatest "command and control" resources to launch and coordinate major war against the enemy.

However, macrophages have to be “turned on” in order to be fully functioning. Many of our tiny enemies have figured this out, and they have developed mechanisms that tend to “lull” the macrophages receptors into a false sense of security that everything is all right. As a result, the enemy takes over our body, and causes all types of health problems as this wonderful and powerful system ignores them.

Fortunately, purified, particulate Beta glucan (1/3.1/6) that has been derived from the cell wall of “Baker’s Yeast” (*Saccharomyces cerevisiae*) is quickly “recognized” by all 9 of the activating receptor sites of the macrophage. Immediately this “turns on” the macrophage. It quickly goes from a passive “stand-by” mode, to a “fully-functioning” mode.

By fully functioning, this means it is on alert, looking for potential enemies. It also means it is using its vast communications network to notify other members of the immune system that there may be problems and to be on the lookout for trouble.

Suddenly debris particles that had been building up in the body, like garbage piling up in the streets during a sanitation worker’s strike, is spotted and devoured. The lymph and blood vessels become cleaner and more efficient. The debris covering insulin receptor sites is cleared off and insulin bearing sugar is once again taken into the cell and the risk of Type II diabetes declines.

LDL cholesterol which has been choking off fine capillaries and arteries is cleaned up. Memory, thinking, hearing and balance in the elderly improves, even male erectile dysfunction problems are relieved. The risk of heart attacks and strokes declines.

Toxic and cancer causing chemicals that had been ignored are now identified, clean up and removed, thus reducing the risk of developing cancer.

Of course, in those conditions where the body has developed a disease or illness because the macrophages had been lulled into a false sense of security that allowed disease causing organisms to grow and flourish, suddenly begins to see improvement as fully functioning macrophages swing into action. Eventually, as Beta glucan continues to alert the macrophages day after day, the immune system gains the upper hand over the illness or disease condition which had been previously neglected by the immune system. By bringing the full force of the immune system to bear against the disease condition, eventually the disease gives way and the body is able to rebuild full and glorious health.

### ***HOW BETA GLUCAN “GETS TO” THE MACROPHAGES***

When the Beta Glucan is taken into the body in a capsule, it goes down into the stomach where the capsule will dissolve and release it. Since Beta Glucan is not affected by the acids of the stomach, it is not harmed or altered in any way. As the Beta Glucan moves on down through the intestinal tract it is not harmed or altered by any of the digestive enzymes.

All along this entire trip through the intestinal tract, the Beta Glucan is passing by the outposts of the immune systems’ macrophage Special Forces located in the Peyers’ Patches. Since this particular patented form of Beta Glucan is extremely, extremely small, much of it being no more than one micron in diameter, it is easily whisked along with the water that is constantly being drawn into the intestinal wall for absorption. Once this microscopic particle of Beta Glucan reaches the intestinal wall the macrophages stationed there readily recognize it as part of their oldest of enemies.

Recent research featuring the Beta Glucan being used here, was conducted at the University of Nevada School of Medicine under the direction of Dr. Ken Hunter. Using the electron microscopic he was able to actually photograph the Beta Glucan as it made contact with the macrophages. In a conversation with me, Dr. Hunter assured me that the one micron size Beta Glucan used here was over 100 times more effective at reaching and activating the macrophages than the 100 micron and larger size particles of Beta Glucan that are so commonly available.

### **IMPORTANT CAUTION:**

Beta Glucan is a very common substance in nature and can be found all over the place. However, there are two factors you need to be aware of.

FIRST, is that very, very little of all that Beta Glucan is of the specific type we are talking about here with the exact molecular structure that will activate the macrophages. Most of it will not.

SECOND, even if you get the exact right type, it won't work unless enough of it is reduced down to the one micron size that will allow it to be carried along with the intestinal water into the intestinal cell wall, where it can come in contact with the macrophage. Getting the Beta Glucan down to this size is a very, very difficult thing to do, and it is very costly. Virtually all the Beta Glucan on the market today is NOT covered by the patented process that creates the type of Beta Glucan discussed and being used here. Some may claim they have a patented Beta Glucan. You need to be aware that this is a misleading advertising and promotional trick. The patent they refer to does NOT cover the vitally important one micron size. It is merely an application patent, meaning they added some ingredient such as vitamin C to their Beta Glucan and then patented the use of that combination for some specific use. It is really a meaningless patent. However, it is used in the advertising and promotion to make people think it is the same patented Beta Glucan that is being used by the medical schools and that is being presented here, and IT IS NOT!

### ***GENERATING A FULL IMMUNE SYSTEM RESPONSE***

Once the macrophage in the intestinal wall comes in contact with this one micron particle of Beta Glucan, what degree of response level should the macrophage give this remnant of its age old enemy? As the macrophage examines the Beta Glucan with its receptor sites, first one is activated and then another, and another, until finally all 9 receptors have been turned on. This is what we now call a full scale Top 9 Alert, the highest category a macrophage can have. This is how we get a fully functioning macrophage.

Now fully activated and alert, the macrophage sends out its chemical signals into the surrounding tissues, and even more importantly, also into the blood and lymph stream to be carried throughout the body to other members of the white blood cell defense team. Now they too go on alert.

As an individual takes more Beta Glucan capsules over the course of the day, and then day after day, the particles make their way along the intestines, gradually more and more of it is swept along with the water into the intestinal wall where more and more frequent contact is made with the macrophages located there. As this happens with greater frequency and intensity, there is a greater amount of immune chemicals released into the blood and lymph stream by the macrophages. This causes an ever increasing level of alertness and activation to occur in the rest of the immune system throughout the whole body.

If there is no enemy to be found by the immune system, no debris, no toxic substances, no bacterial, fungal, viral, or parasitic enemies, then nothing happens. However, if such material is present, the chances that the immune system will locate it and take care of it in a health promoting way is very, very high indeed. It is in this way that orally administered particulate Beta Glucan can greatly increase the effectiveness of the entire immune system.