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THE IMMUNE SYSTEM

This diffuse organ has the assignment of monitoring the identity of the body. Its basic constituents are lymphocytes and antibody molecules, which recognize both foreign molecules and one another. It is supported by the spleen, the "brain" of the immune system and further supported by the thymus. The unsung partner of both the spleen and the thymus and the lymphocytes is the diaphragm. The therapeutic acronym for the immune system therefore is D.S.T.L. Attention is required to all of these components for maximum immune response.

THE IMMUNE SYSTEM

This diffuse organ has the assignment of monitoring the identity of the body. Its basic constituents are lymphocytes and antibody molecules, which recognize both foreign molecules and one another

by Niels Kaj Jerne

The immune system is comparable in the complexity of its functions to the nervous system. Both systems are diffuse organs that are dispersed through most of the tissues of the body. In man the immune system weighs about two pounds. It consists of about a trillion (10^{12}) cells called lymphocytes and about 100 million trillion (10^{20}) molecules called antibodies that are produced and secreted by the lymphocytes. The special capability of the immune system is pattern recognition and its assignment is to patrol the body and guard its identity.

The cells and molecules of the immune system reach most tissues through the bloodstream, entering the tissues by penetrating the walls of the capillaries. After moving about they make their way to a return vascular system of their own, the lymphatic system [*see illustration on page 4*]. The tree of lymphatic vessels collects lymphocytes and antibodies, along with other cells and molecules and the interstitial fluid that bathes all the body's tissues, and pours its contents back into the bloodstream by joining the subclavian veins behind the collarbone. Lymphocytes are found in high concentrations in the lymph nodes, way stations along the lymphatic vessels, and at the sites where they are manufactured and processed: the bone marrow, the thymus and the spleen.

The immune system is subject to continuous decay and renewal. During the few moments it took you to read this far your body produced 10 million new lymphocytes and a million billion new antibody molecules. This might not be so astonishing if all these antibody molecules were identical. They are not. Millions of different molecules are required to cope with the task of pattern recognition, just as millions of different keys are required to fit millions of different locks.

The specific patterns that are recognized by antibody molecules are epitopes: patches on the surface of large molecules such as proteins, polysaccharides and nucleic acids. Molecules that display epitopes are called antigens. It is hardly possible to name a large molecule that is not an antigen. Let us consider protein molecules, which include enzymes, hormones, transport molecules such as hemoglobin and the great variety of molecules that are incorporated in cellular membranes or form the outer coat of viruses or bacteria.

Antigens and Antibodies

Each of the innumerable protein molecules is made up of polypeptide chains: linear strings of a few hundred amino acids chosen from a set of 20 amino acids. The number of amino acids in a large protein molecule is about equal to the number of letters in the column of text you are now reading, which is a linear string of letters chosen from an alphabet of 26 letters. Different protein molecules have different amino acid sequences just as different texts have different letter sequences. The string of letters in this column of text has been neatly "folded" into successive lines. The polypeptide chains of a protein molecule are also folded, although not so neatly. Their structure looks more like what you would obtain by haphazardly compressing a few yards of rope between your hands. There is nothing haphazard, however, about the folding of a particular polypeptide chain; the folding, and thus the ultimate conformation of the protein molecule, is precisely dictated by the amino acid sequence.

The parts of the folded chains that lie at the surface of a protein molecule make up its surface relief. An epitope (or "antigenic determinant") is a very small patch of this surface: about 10 amino acids may contribute to the pattern of the epitope. As Emanuel Margoliash of the Abbott Laboratories and Alfred Nisonoff of the University of Illinois College of Medicine showed for different molecules of cytochrome *c*, the replacement of just one amino acid by another in a polypeptide chain of a protein frequently leads to the display of a different epitope. The immune system recognizes that difference and is able to check on mutant cells that make mistakes in protein synthesis. Not only can an individual immune system recognize epitopes on any protein or other antigen produced by any of the millions of species of animals, plants and microorganisms but also it can distinguish "foreign" epitopes from epitopes that belong to the molecules of its own body. This recognition is a crucial event, since antibody molecules attach to the epitopes they recognize and thereby earmark the antigens (or the cells that carry them) for destruction or removal by other mechanisms available to the body.

Epitopes are recognized by the combining sites of antibody molecules. An antibody is itself a protein molecule consisting of more than 20,000 atoms. It is made up of four polypeptide chains: two identical light chains and two identical heavy chains. A light chain consists of 214 amino acids and a heavy chain of about twice as many. Antibody molecules are alike except for the amino acids at about 50 "variable" positions among the first 110 positions, which constitute what is called the variable region of both the light and the heavy chains. At the tip of each variable region there is a concave combining site whose three-dimensional relief enables it to recognize a complementary epitope and make the antibody molecule stick to the molecule displaying that epitope.

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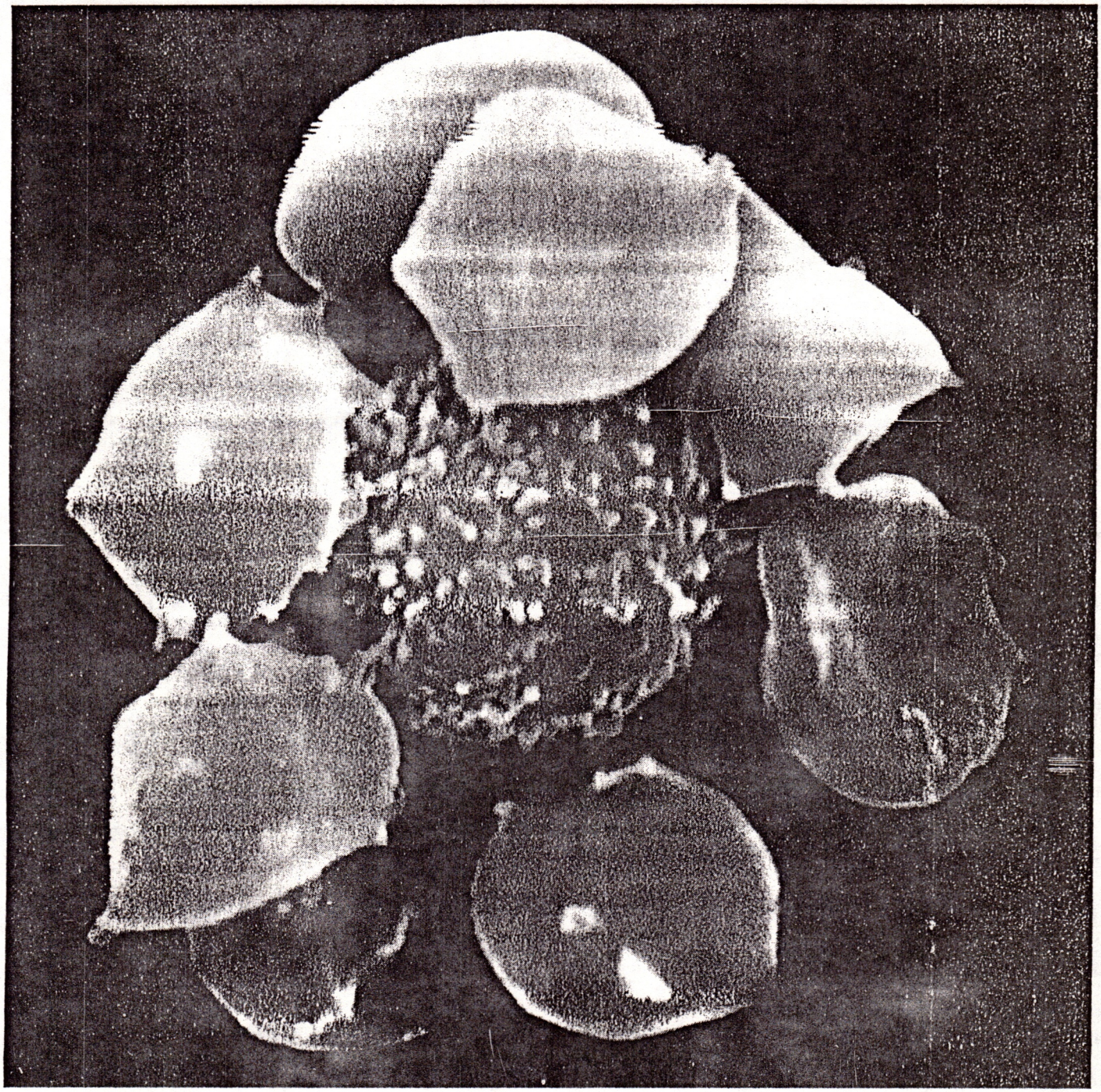

HUMAN LYMPHOCYTE is a major cell in the immune defense system, recognizing invading antigens by means of special receptors on its surface. In this scanning electron micrograph a human *T* lymphocyte is surrounded by several washed red cells from sheep blood. The two kinds of lymphoctyes in blood, *T* and *B*, look the same in the electron microscope. For some unexplained reason, however, *T* lymphocytes carry receptors for the sheep red blood cells. Those receptors have caused the cells to adhere to the surface of the lymphocyte. In the light microscope such aggregates resemble a rosette. The rosettes provide a method widely used for counting *T* lymphocytes. The micrograph was made by C. Lynn Burek of Wayne State University School of Medicine. The enlargement is about 5,000 diameters.

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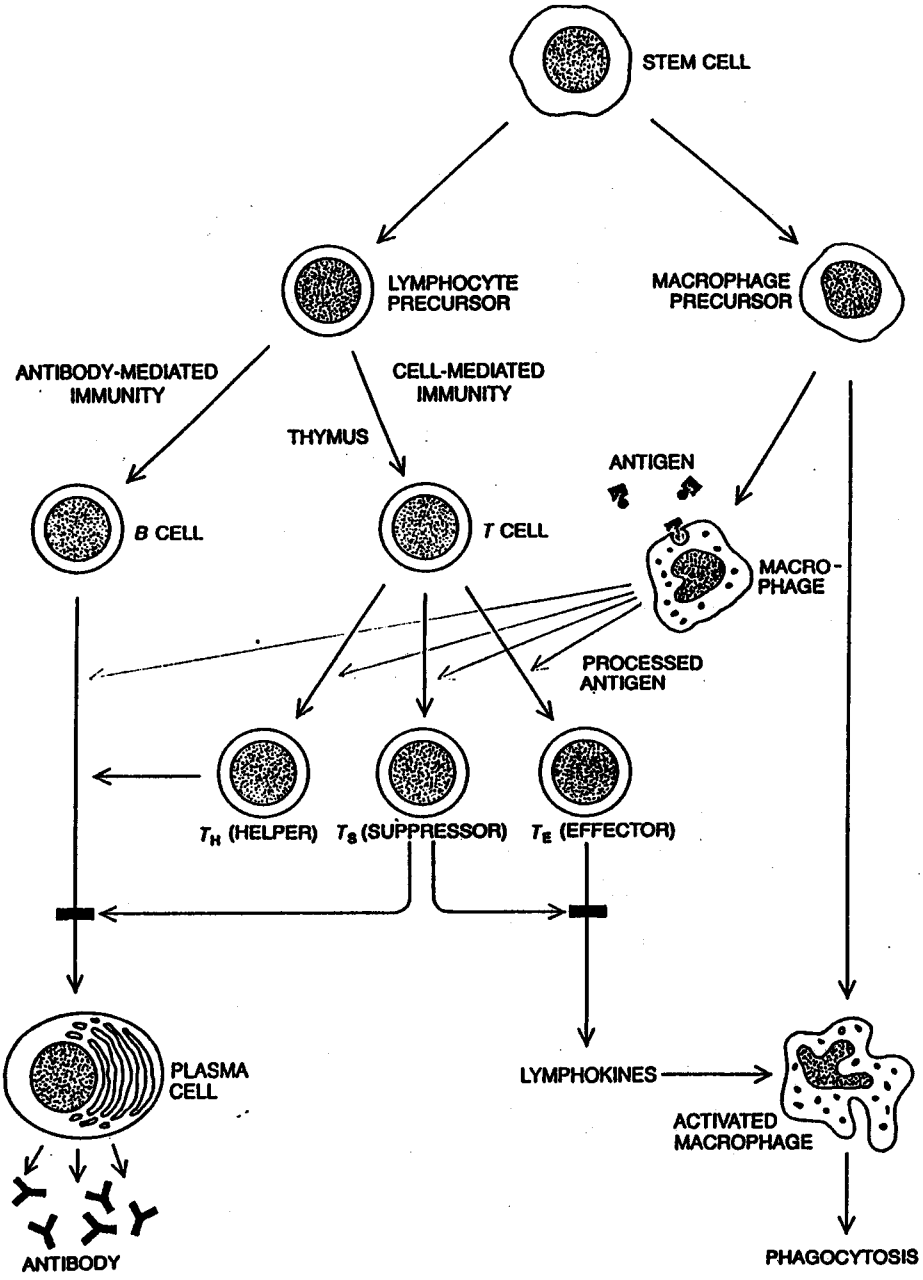

DEVELOPMENTAL PATTERNS of *T* and *B* lymphocytes from their origin in stem cells of the bone marrow are depicted. The *B* cells evolve directly from the stem cells; the *T* cells develop under the influence of the thymus gland. On stimulation by an antigen *B* cells differentiate into plasma cells secreting the antibodies that attack bacteria and viruses before they enter the cells of the host; this is antibody-mediated immunity. *T* lymphocytes exert their effects directly; this is cell-mediated immunity. There are also subpopulations of *T* cells: helper cells, which interact with *B* cells to amplify the production of antibody; effector cells, which carry out the direct cell-killing functions of *T* cells and make the lymphokines that are responsible for delayed hypersensitivity, and suppressor cells, which regulate both parts of the immunological response. Some macrophage cells present antigens to *T* and *B* cells in the proper orientation; others are activated by lymphokines to destroy invading microorganisms (phagocytosis).

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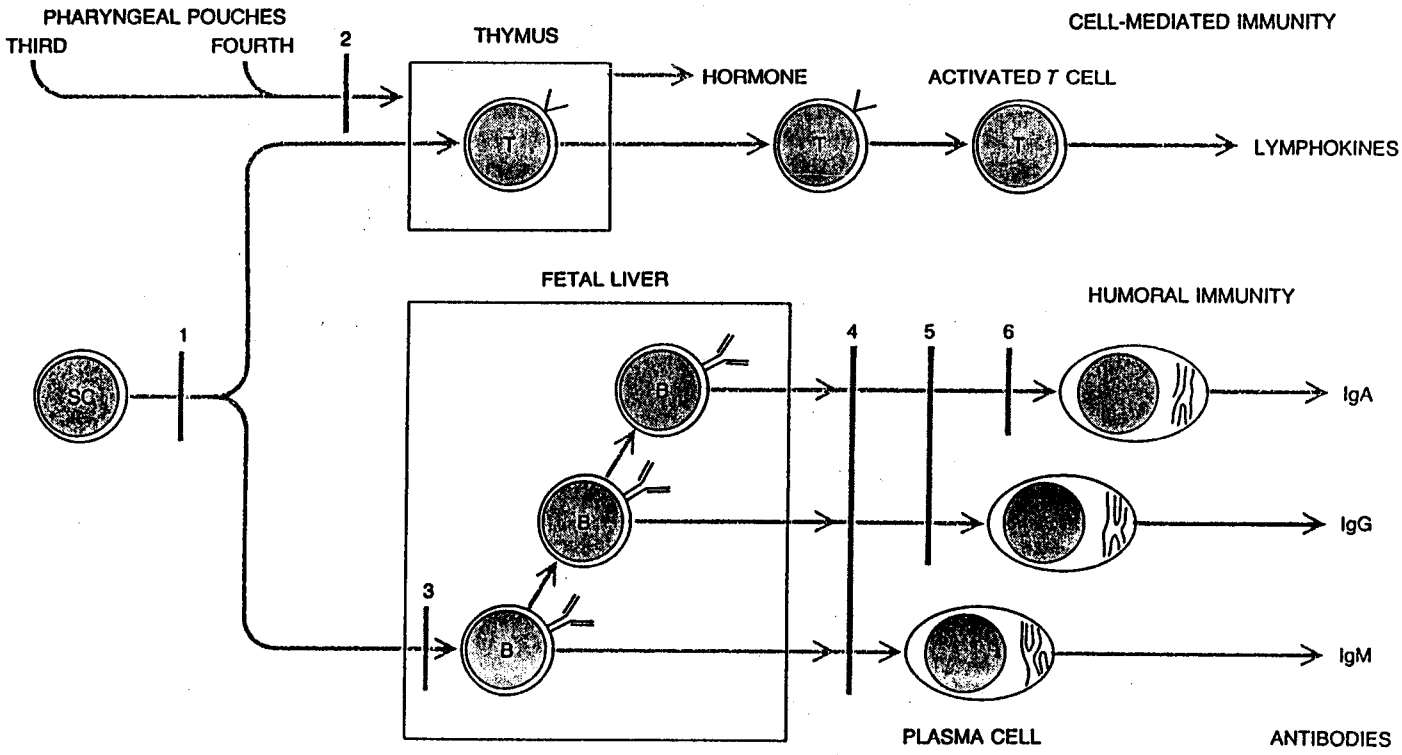

IMMUNODEFICIENCY DISEASES can be considered defects in the differentiation of lymphocytes and lymphoid tissues. The absence of both *B* cells and *T* cells suggests a failure of lymphocyte precursors and can be repaired by transplanting stem cells (*1*) from the fetal liver or the bone marrow. Individuals born without a thymus (*2*) lack cell-mediated immunity; the functions of this system can be restored by the transplantation of a fetal thymus. The failure of stem cells to develop into *B* lymphocytes (*3*) is a congenital, sex-linked disorder first described by Ogden C. Bruton; presumably it derives from a defect of the *B*-cell-induction site, probably the fetal liver. In other disorders of antibody production *B* cells are present but they are not stimulated by antigens to divide and develop into mature plasma cells. The arrest of differentiation may be absolute, and therefore lead to a deficiency of all classes of immunoglobulins (*4*); it may involve cells making IgG and IgA (*5*), or it may be confined to IgA-secreting cells only (*6*).

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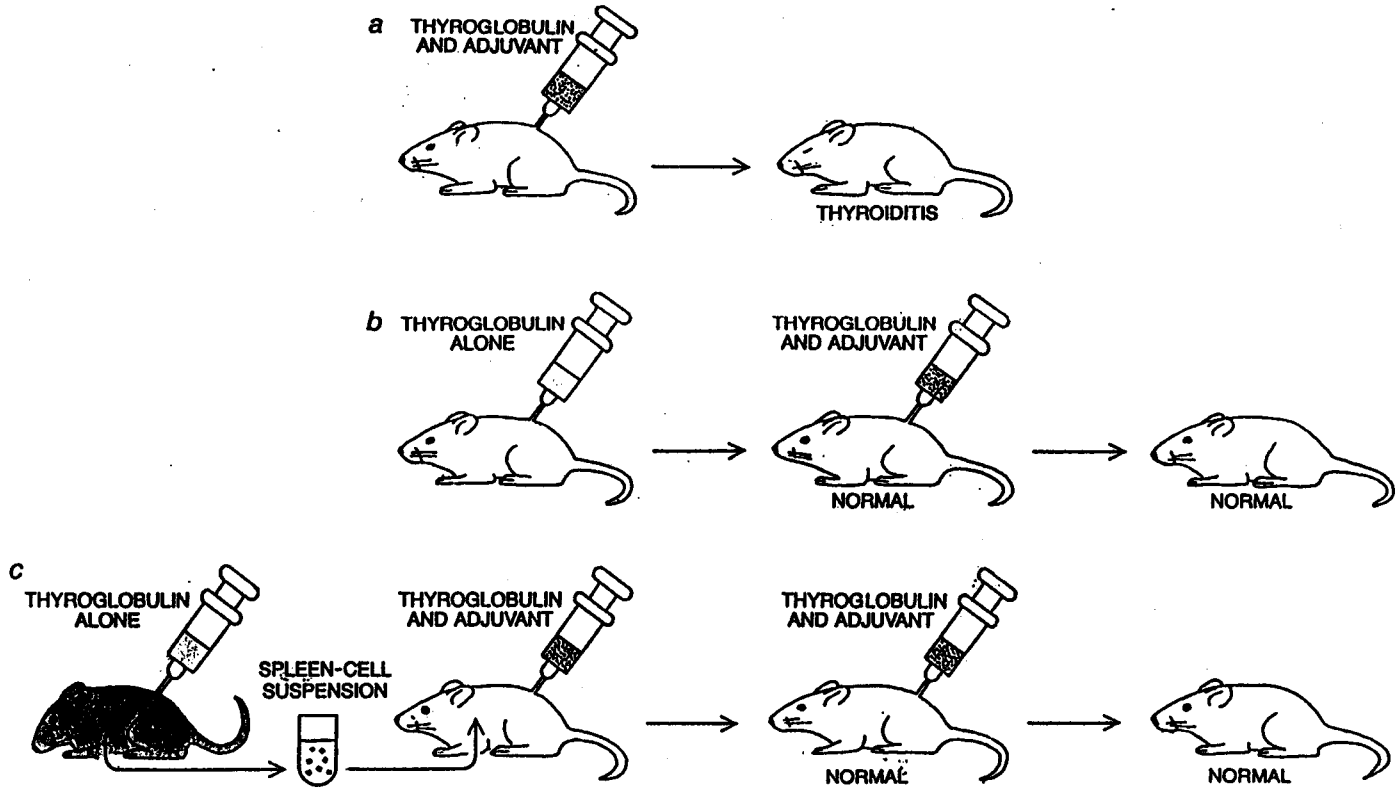

EXPERIMENTS WITH THYROGLOBULIN show varying results depending on the injection. If a mouse is injected with thyroglobulin and Freund's complete adjuvant (*a*), experimental thyroiditis is induced. A mouse injected with thyroglobulin alone shows no response (*b*) and does not develop thyroiditis even if it is later given thyroglobulin plus adjuvant. If that mouse's spleen is removed and a suspension of spleen cells is injected into a normal mouse (*c*), there is no response. The living spleen cells transfer the unresponsiveness.

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Negative Effects of Nutrient Deficiencies and Excesses on Immune Function

Nutrient		Cell-Mediated Immunity	Humoral Mediated Immunity	Innate Immunity
Vitamin A	deficiency	—	—	-
	excess		-	-
Thiamine	deficiency		-	-
Riboflavin	deficiency		-	
Pyridoxine (B6)	deficiency	—	—	—
Vitamin B-12	deficiency	—	-	
Pantothenic Acid	deficiency	-	—	
Folic Acid	deficiency	—	—	
Vitamin C	deficiency			—
	excess		-	
Vitamin E	deficiency	—	—	—
	excess	—	—	—
Biotin	deficiency		-	
Niacin	deficiency		-	
Iron	deficiency	—	-	—
	excess		—	
Zinc	deficiency	—		—
	excess		—	
Copper	deficiency			—
	excess		—	
Magnesium	deficiency		—	
Selenium	deficiency	--	-	--
Protein	deficiency	---		--
Total Lipids	excess		—	
Cholesterol	excess			--
Essential Fatty	excess	--	--	--

Fig. 1&2 Courtesy of: Larry Johansen, Director of Marketing Research, Standard Process Labs, Inc., Milwaulkee, WI.

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Immune System Organization

I. Innate Immunity
   A. Digestion of bacteria by stomach acid and enzymes
   B. Resistance of skin to invading organisms
   C. Phagocytosis
      1. Neutrophils
      2. Monocytes
   D. Reticuloendothelial system
      1. Macrophages
         a. lymph nodes
         b. alveoli (in lungs)
         c. Kupffer cells (in liver sinuses)
         d. spleen
         e. bone marrow
      2. Lymphocytes (see acquired immunity)

II. Acquired Immunity
   A. Humoral-mediated immunity
      1. B-lymphocytes
      2. Plasma cells
      3. Antibodies (immunoglobulins)
         a. attack invading substance
         b. activate complement system
         c. activate anaphylactic system
   B. Cell-mediated immunity
      1. T-lymphocytes
         a. helper T-cells
         b. suppressor T-cells
         c. effector T-cells
   C. Null cells

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Three Kinds in the Fountain of Life

Amino acids come in three general classifications: water-fearing, water-attracting, and charged. Another way to put this is nonpolar, polar, and charged, respectively. The nine water-fearing or hydrophobic amino acids are the molecules GLY, ALA, VAL, LEU, ILE, PRO, PHE, TRY, and MET. This means they do not bind to water molecules. If you have ever tried to dissolve carbon in water, you will see what hydrophobia is all about. The old adage that oil and water don't mix is due to the water phobia of carbon. There simply is no way for water, which is polar (has an electric field), to hook up with carbon conveniently. The fact that some amino acids are water-fearing is very important in the functioning of the protein layer separating cells.

A polar, or water-attracting, molecule is one that, though electrically neutral, generates an electric field surrounding it. A charged molecule, of course, contains one or more electrical charges. The main key with polar amino acids is the presence of the hydroxyl (OH) or a single oxygen that attracts polar molecules. The six polar amino acids—SER, THR, CYS, TYR, ASN, and GLN—all are electrically polarized, and thus are able to bond with water molecules.

The five remaining chargeable amino acids are neutral molecules that assume a charged state when immersed in a solution which is considered to be pH neutral. (The pH refers to the concentration of free protons found in a solution. Acids have lots of protons, so they are said to be pH low; water is pH neutral; bases are pH high, with an absence of protons in solution.) The charged amino acids—ASP, GLU, LYS, ARG, and HIS—are all able to bond electrically with other molecular structures.

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IVF TEST INTACT MUSCLE; CORRECT

TEST INTACT MUSCLE AGAINST RIGHT BRAIN HUMMING; OBSERVE

TEST INTACT MUSCLE AGAINST LEFT BRAIN MULTIPLICATION TABLE; OBSERVE

IF RIGHT BRAIN WEAKENS USE NINE WATER FEARING AMINO ACIDS

IF LEFT BRAIN WEAKENS USE SIX WATER LOVING AMINO ACIDS

TEST INTACT MUSCLE VISUALIZING ANATOMICAL PART

TEST FRONT HIND BRAIN VISUALIZING EYES OPEN EYES CLOSED HORIZONTAL

TEST BRAIN STEM CORTEX BY VISUALIZING TYES OPEN EYES CLOSED IN VERTICAL POSITION

IF WEAKENING OCCURS USE FIVE CHARGED AMINO ACIDS, USE FIVE CHARGED AMINO ACIDS IF WEAKENING OCCURS IN EITHER HORIZONTAL OR VERTICAL POSITION

TEST APPROPRIATE AMINO ACIDS BY INGESTION ON TONGUE LINGUAL RECEPTORS. WE HAVE USED UP TO FOUR A DAY WITH GOOD GENERAL AND SPECIFIC RESPONSE.

USE ELECTRON POISING PRODUCTS ALONG WITH OTHER APPROPRIATE NUTRIENTS.
SOME PATIENTS HAVE REQUIRED TWO VARIETIES OF AMINO ACIDS.
LOOK FOR REVERSAL OF GUIDELINES ABOVE IN CASES OF LONG CONTINUED SUBSTANCE ABUSE.

POST CHECK - E.I.D. & EYE QUADRANT DIRECTION
CORRECT BY REVERSAL OF EYE WEAKENING POSITION WITH APPROPRIATE RESPIRATION & FACIAL FLUSH TECH.

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FURTHER OBSERVATIONS ON THE SKIN

The Harvard Child Study Center in Boston revealed that premature children evidenced somewhat of a retardation in both lingual and manual control, as well as in postural and locomotive control. Control of bowel and bladder sphincters, significantly enough, have been found in premature children later, causing difficulties. The attention span is short, and such children were inclined to be highly emotional, jumpy, and unusually shy.

The lack of adequate time for the birth preparatory responses is the critical situation. Finding of later and more difficult episodes in control of bowel and bladder sphincters is a significant observation.

Cesarean delivered babies suffer from a number of disadvantages compared to normal time delivery. The mortality rate, interestingly enough, is two to three times as great as those who followed to vaginal delivery. This is a fact not too well known. At full term, the rate is twice as great in Cesarean delivered babies as naturally delivered ones. In elective Cesarian deliveries, that is to say in non-emergency Cesareans, the mortality rate is again still higher than vaginal delivered babies. In emergency Cesareans, the mortality rate is 19% higher than in vaginal deliveries. Death from respiratory disorders is ten times more frequent in Cesarean delivery than vaginal delivery.

Pediatricians have known that Cesarean babies tend to be characterized by greater lethargy, decreased reactivity and less frequent crying than vaginal delivered children. A number of biochemical differences have been found between Cesarean deliveries and normally delivered babies, such as a higher acidosis, lower serum proteins, lower serum calcium, higher potassium in the Cesarean delivery.

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You will also recall, in quoting Montague, that attention has already been drawn to the fact that gentled animals show in adults a more efficiently developed immunological system than rats who have been non-gentled. This is really a remarkable finding. How this works is at present unknown, but it has been suggested that emotional environment or responsive hormones may affect the development of thymic functions, which play a significant role in the establishment of immunological competency. The hypothalamus, which is also known to play a role in the regulation of immunity, may also play a role here.

In many of the auto-immune diseases, it is well known that the thymus does play a role, and Therapy Localizing the bowel or any other area involved in auto-immune disease such as colitis, or a very severe skin problem, is a very good idea.

Therapy Localize the area of the bowel or the skin, over the lesion in the skin problem, for example. Then Therapy Localize the thymus, and many times this produces a response. Then find a directional contact that will balance the response, or a respiratory factor that will abolish it; then treat accordingly.

Then, naturally, one adds the thymus -- and it is remarkable, sometimes, how much thymus is needed to neutralize chemically the skin reflex. In colitis, for example, the patient may need as high as 12 to 16 thymus daily to eliminate the response. If this was all one was doing, that would be the thing, but also abolish the skin response manually by manipulation, and this reduces the amount of chemical neutralization required.

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Neurotransmitters. It is likely that the brain has several hundred neurotransmitters, chemicals which are the lubricators of our dealings with our environment and one another. Rather than seeing the brain as an electronic organ, it is helpful to see it as a large chemical factory with millions of spurts from perfumelike bottles taking place every millisecond. Neurotransmitters help messages cross the *synapse*, or the connection between neurons, the basic cells of the brain. Neurotransmitters are stored in little pouches called *synaptic vesicles* and are emitted when communication between neurons is necessary.

Neutrophils. Over half the army of white blood cells designed to fight disease is made up of these special cells born in the bone marrow. About 100 billion of these warriors are produced every day. When called upon by chemicals released at the sight of invasion, they immediately change shape to fit better through the vessels of the body. Once on the scene, they stick a tiny foot (called a *pseudopod*) through any convenient crack that may exist, engulfing the invader with their own bodies. They then digest the invader quickly and efficiently. The neutrophils come in wave after wave of attack until the job is done. They do their work every day in healthy and sick people, sometimes overworking in hot reactors and perhaps underworking in cold reactors. I hypothesize that the stickiness developed in the vessels to help the neutrophils get a foothold (in this case, a pseudopodhold) may relate to the clogging of the arteries in the "heart allergy" of hot reactors. I also hypothesize that neutrophils become sluggish in cold reactors, perhaps not attending fully to the summons from problem areas.

Norepinephrine. This neurotransmitter is related to memory and the reward system in the brain, and it is secreted during states of pleasure. Norepinephrine is found in the autonomic nervous system outside the brain.

Null cells. Neither T nor B cells (therefore called "null"), these cells include the NK or "natural killer" cells that attack abnormal cells, tumors, and cells infected with viruses.

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Immune cells. About 1 trillion of the following white blood cells: macrophages, T helper cells, T suppressor cells, T killer cells, B cells, and memory cells (these cells circulate in the blood or lymph, storing remnants of prior immune reactions).

Immunoglobulins. These are long, complex, folded chains of protein that are on the surface of B cells. There are many types of immunoglobulins, for example, immunoglobulin A (IgA), which is related to defense against respiratory illness and tends to decrease in persons who are more "power-oriented" than "people-oriented."

Interleukin-1 (IL-1). Secreted by the macrophages, this protein activates T helper cells and causes the brain to raise the body's temperature which, in turn, increases the efficiency of the immune system.

Interleukin-2 (IL-2). Secreted by the T helper cells, this protein signals for production of T killer cells.

Left hemisphere and right hemisphere. Some research has shown that the left hemisphere controls the reaction of T killer cells and that right-hemisphere dominance may relate to problems with the immune system and depletion of T killer cells. I hypothesize that hemisphere dominance is partially under our control and, therefore, that our immunity can be enhanced by learning hemispheric control. It is no longer correct to assume that left- or right-hemisphere dominance is superior. Utilizing the entire body and brain working together seems to be the most healthy orientation.

Lymphocytes. Special white blood cells from the lymph system. A T cell is a lymphocyte.

Lymphokines. Proteins by which immune cells communicate with each other.

Macrophages. These are giant white blood cells that serve primarily as the mop-up crew of the immune system. (*Macro* means "large," and *phage* means "to eat.") These cells clean up after T killer cells have injected any abnormal cells with deadly toxins. Once the toxin is injected, the abnormal cells begin to look as if they were barbequed, and eventually they explode. The debris from the explosion is cleaned up by the macrophages. The surveillance theory of cancer suggests that in cold reactors' immune systems, T killer cells and macrophages are too sluggish to keep control of the millions of abnormal cells that are developed every day, particularly if the hypothesis is correct that the bored brain creates even more abnormal cells for the body to "play with."

Mast cells. Concentrated in the skin and respiratory system, these translucent cells play a key role in allergies, which are overreactions of the immune system.

Monoclonal Antibodies. Hybrid cells made from healthy B cells joined with cancerous B cells, these experimental cells called *Hybridomas* divide rapidly and can attack and destroy cancer cells while leaving healthy cells intact.

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Endorphins, enkephalins, and lipotropins. Most scientists refer collectively to this family of natural opiates in the brain as the "endorphins." Enkephalins have been shown to enhance the activity of T killer cells in cancer patients. The lymphocytes probably have receptors on them to respond to and work with these miracle chemicals. Research has shown that some forms of music can lead to a "thrill" accompanied by secretions of endorphins. Any activity producing a reported "high" is accompanied by endorphin increase and, therefore, enhancement of immune function. Recent research has shown that endorphins not only invigorate the attack against cancer by T killer cells but also increase the number, percentage, and effectiveness of the immune cells. As with all opiates, it is possible to get hooked even on these natural opiates, and the Goldilocks "just-right" emphasis is just as important with these brain chemicals as it is with all other body systems.

Epinephrine. This is a catecholamine from the adrenal medulla that can impair the immune system.

Gamma interferon (IF). This protein does the same job as IL-2 and BCDF, and it also keeps the macrophages working at the site of the battle.

Hippocampus. A part of the old brain, the hippocampus is located near the temporal lobe of the human brain. It is related to novelty, challenge in life activities, and memory. Research indicates that memory may depend more on novelty and challenge than on simple reward or pleasure. I hypothesize that this area of the brain is deprived of stimulation or malfunctions in some way in the cold reactor, thus resulting in a disruption of the pattern of stimulation of the supersystem.

Hormones and stress. For the hot reactor, the principle neurotransmitters tend to be epinephrine and norepinephrine. In the cold reactor, adrenocorticotropic hormone enters the blood and stimulates the adrenal cortex (the outside of the adrenal glands) to release different hormones, the mineral corticoids, and the glucocorticoids. I hypothesize that the mineral corticoids are hormones related to the hot reaction, while the glucocorticoids are present in more abundant quantities in cold reactors who are attempting to flee rather than fight. The interaction between mineral corticoids and glucocorticoids is very complex, and much more needs to be learned regarding this interaction.

Hot cycle. Remember that we are all hot and cold and that we are talking about daily orientation and behaviors, not personalities. The hot cycle of response is essentially a left-hemisphere dominance pattern, resulting in an alarm state mediated through the amygdala and hypothalamus, which, in turn, causes the pituitary (master) gland to secrete excess stimulation to the medulla of the adrenal glands. This results in hormones which raise blood pressure and generally prepare and sometimes overprepare the body for defense.

Hypothalamus. You have learned that this part of the brain is the brain of the head brain. It literally directs the brain in daily activities. When some parts of the hypothalamus are stimulated in research programs, immune function decreases (stimulation of the medial hypothalamus in rat brains), while stimulation of other parts of the hypothalamus tends to have positive effects on the immune system.

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B-cell differentiation factor (BCDF). Produced by T helper cells, this lymphokine signals some of the B cells to stop dividing and to start producing their antibodies.

B-cell growth factor (BCGF). Secreted by T helper cells, this protein causes B cells to multiply.

Catecholamines. These hormones from the adrenal medulla were among the first "stress chemicals" studied. The two catecholamines are epinephrine (called *adrenaline* in England) and norepinephrine. Over time, epinephrine particularly weakens the immune system.

Cell-mediated and humoral-mediated immunity. Usually involving the T cells, cell-mediated immunity is involved in the rejection of transplanted tissue; it is a type of immunity designed to fight off invasion from "other" elements entering the body. Humoral-mediated immunity is involved in protecting the body against bacteria and other toxic substances. It is humoral-mediated immunity that can sometimes go awry in autoimmune disease.

Cold cycle. This is a trend, not a personality. The pattern is characterized by right-hemisphere orientation in coordination with the hippocampus and relates to hypothalamus and pituitary stimulation, which directs the cortex of the adrenal glands to yield an increase in cortisol and to depress sex hormone levels, thus deenergizing the body and its defense system.

Corticosteroids (cortisol). These hormones from the adrenal cortex help regulate the immune system. Depression is a mood state associated with corticosteroids, and research suggests that depression impairs immune function.

Dopamine. The neurotransmitter dopamine connects the limbic system, or the lower part of the brain, to the cortex, or the higher part. It also serves a role in reward, and is particularly related to the control of motor activity. People with Parkinson's disease typically show severe shaking and tremors which are caused by a lack of the neurotransmitter dopamine.

Einstein's theory of relativity. In the chapter on time, we learned that time is a hypothesis and reflects our view of life more than do ticks on a clock. We discovered that time is relative. Research by psychologist Dr. Gary Schwartz suggests that by understanding Einstein's theory about the way in which time itself can change, we may actually be able to slow down the aging process. He suggests that clocks (and therefore time), relatively speaking, are slower at lower elevations than at higher ones due to the presence of gravity. This was theorized and proved by Einstein. Perhaps by focusing on our own centers, getting next to the earth, getting close to nature, and amplifying our own sense of gravity and oneness with the earth, we can slow the tick of our own life clocks and lead longer, healthier lives.

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Alpha-melanocyte-stimulating hormone. This is a newly discovered healing chemical of the brain that is capable of fighting off fever 25,000 times more efficiently than aspirin. This internal fever fighter may be under the control of our own mental imagery.

Amygdala. This is a part of the limbic system, or the one-fifth of the brain that sits on top of the spine or "caps" the spine. It is related to anger, rage, and impatience. I hypothesize that this part of the brain tends to hyperfunction in the hot reactor, causing a part of the hypothalamus to interact with the pituitary gland for a hot hormonal pattern.

Angiogenisis. This process, unique to cancer cells, allows new blood vessels to "feed" the growing tumor. By the time cancer is detected, the tumor has increased to more than 10 billion cells due to this special "feeding process." The supersystem must be strong enough to battle on this numerical scale.

Antigens. These are substances that cause the immune system to produce antibodies. Antigens can come from outside the body or can be produced from within.

B and T cells. Both called *lymphocytes* because they are transported through a special clear medium called the *lymph fluid*. You have felt your lymph glands enlarge when you have had an infection. T and B cells are born inside the bones. The T cells move on to the thymus gland, where they are trained for their special jobs (see below). No one knows exactly where or how the B cells are trained, but we know their preparation is extensive, for their jobs are highly specific. Perhaps in hot reactors T and B cells are overtrained, overready, and overexcitable, while in cold reactors the training program is deficient and the student cells begin their careers unprepared and unmotivated.

T killer cells. One of the three kinds of T cells, these cells hang around in the lymph glands and go to work killing viruses and foreign tissue with their potent poisons. The T killer cells are known to be involved in defense against cancer by scavenging normal cells that have gone awry. Perhaps a cold reactor has a depression of this scavenging function.

T helper cells. A second type of T cell, these cells help the B cells, which have the complicated job of identifying and destroying unique and sometimes disguised invaders.

T suppressor cells. These are cells designed to keep the immune system from getting out of control. The hormone testosterone, found in higher amounts in men, allows T suppressor cells to flourish and perhaps is related to the fact that the immune system of men is weaker than that of women. Perhaps the hot-reactor style causes the T suppressor cells to heat up, resulting in less efficient defense against some diseases. In women, the situation is reversed, and T suppressor cells are restricted by the presence of estrogen. Women may have stronger immune systems because they have comparatively fewer T suppressor cells. Women are also known to be more prone to autoimmune disease, or the situation of uncontrolled immune function that results in the system's attack of itself.

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PROCEDURAL PATTERN FOR DIAPHRAGMATIC TECHNIC

(1) When you examine the patient's lower thorax for lateral thrust or expansion on deep inspiration, place your hands on the lower lateral thoracic area and feel or observe the lateral thrust or lack of it on inspiration. Make an observation as to which side seems to lack lateral thrust the most.

(2) Place the patient's hands palm up and palm down on the cervical column and test the appropriate muscle, such as the fascia lata. In the absence of any overt cervical segment pathology there should be no weakness on general testing. Have the patient take a deep breath; test the fascia lata again; observe the result. Have the patient let all the air out; test the fascia lata again; observe the result. Usually in diaphragmatic problems the patient Therapy Localizes on expiration. This is the rule, although there certainly may be the exception.

(3) Turn the patient over and have him lie prone and test the patient for dorsal lumbar junction fixation by testing the lower trapezius bilaterally. There should be a dorsal lumbar junction fixation accompanying this diaphragmatic problem. This will T.L. on expiration. Correct the dorsal lumbar junction fixation by the usual method; return the patient to the supine position and rechallenge the cervical column by Therapy Localization on the phase of respiration, usually forced respiration, that produced the positive result. This dorsal lumbar junction fixation correction does not correct this situation usually.

(4) On the side of the least or diminished lateral thrust on the lower thorax, test for "turn in" of the psoas. A crude test of psoas function is to turn the feet inward (medial rotation) one at a time, and observe the degree of internal rotation of the feet. The side of the hypertonicity of the psoas will turn in the least. This usually coincides with the side of the least lateral thoracic thrust on a deep inspiration.

If these two situations are reversed, be sure to use the Umbilical-K-27 switching technic.

When these two signs coincide, do the reactive spindle cell activation on the psoas muscle. This is done by putting the patient into the usual psoas muscle test. Take your thumb and index finger, and as the patient resists your effort to take the psoas muscle into a functional test, drive your hand deeply into the abdomen. As he resists your effort, you will feel the psoas muscle rise in the abdomen. As you feel it rise, take your thumb and index

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finger and press into the abdomen, into the psoas muscle, bringing your thumb and index finger together – or you may have an assistant do this, using spindle cell activation into the belly of the muscle. Return limb to its normal position; have the patient Re-Therapy Localize the cervical column using both hands – palm up and palm down; have the patient use the phase of respiration that produced the weakness that should now be intact to any phase of respiration, and the leg turn-in should be equal and adequate and normal.

Despite the negative T.L., vertebrally challenge the 3rd, 4th and 5th cervicals for possible vertebral segmental subluxation; do the same to the Lovett positive vertebral sections of the lower lumbar spine and you have accomplished the task of balancing the diaphragm on a left and right basis. An interesting exception to the usual rule of the lateral thrust of the thorax being lost on the side of the diaphragmatic involvement is displayed when there is a simple psoas muscle weakness due to neurolymphatic, neurovascular, or any of the 5-finger I.V.F. concepts, patterns.

Repeat in vertical weight bearing position.

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RIGHT THORACIC DUCT TECHNIQUE