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## The Matrix

Connective tissues in the body vary in type, structure, function, and volume. The connective tissue known as fascia is generally understood to be composed of three major components. Collagen is a firm, dense, yet flexible component that gives fascia its structure. Collagen is a protein. Elastin is, as its name implies, the elastic, highly flexible moveable component that largely defines function. The periosteum is a fibrous membrane covering bone and is largely composed of collagen. Skin—the great organ that covers the body—is semiporous, flexible, elastic, and, as one would suspect, made up to a large degree of elastin.

Then there is the ground substance. The osteopath R. Paul Lee has written a wonderful book. (*Interface, Mechanisms of Spirit in Osteopathy*). In it, he defines ground substance as a ground regulation system, or the extracellular matrix (ECM). He calls it a colloid, which is a substance of insoluble particles, suspended in a solid, liquid, or gas. Because all metabolic factors pass through the matrix to and from the cell, the condition of the matrix has everything to do with cellular function. This ECM is the staging ground for the cell. In the brain and central nervous system, including the dural tube the ground substance, the extracellular matrix, the watery field, the living ocean in

which nerve cells reside is cerebrospinal fluid. Cerebrospinal fluid is ground substance. CSF is a colloid, I believe.

Lee quotes A.T. Still, “The functional connection between the capillary bed and the cell via the extracellular matrix and its disturbances is the starting point of many diseases.” Still is also quoted as saying, “The soul of man, with all the streams of pure living water, seems to dwell in the fascia of the body.”

The basic composition of this living ocean is water. Water is almost nonexistent in its natural state in the body. It is consumed as one drinks a glass of water but from that point it instantly changes its consistency. It dilutes, binds, blends, and mixes with numerous minerals, chemicals, acids and nutrients to form various fluids (or extracellular/intracellular matrixes) of the body. Water makes up most of the three major fluids in the body: blood plasma 90–92%, lymph 96%, and CSF 98.5% (These figures from Dr. Bruno Chikly’s book *Silent Waves*). Other body fluids composed largely of water include synovial fluid, bile, gastric juice/acid, intestinal secretions, breast milk, mucus, saliva, pancreatic juices, semen, sweat, tears, sputum, amniotic fluid...and the list goes on. Water is also a major constituent of other parts of the body: tendons and ligaments 80%, muscles, intestines 77%, lungs and liver 72%, cartilage 70%, fat 65%, bone 25–35%. Water content in the body varies with age. Water represents 74–97% of the total body mass of the fetus. It is 72% in the newborn, 60–70% in the adult and 50% in the elderly. Water varies by fluid compartments. In the average adult about 28 liters, or 40%, of total body mass is intracellular and approximately 14 liters, or 20%, of total body mass is in the extracellular matrix. (These figures are also from Chikly.)

Lee says biological systems are open and dissipative, exchanging energy with the environment. Biological systems process, organize, and utilize information in the form of electrostatic charge and electri-

cal current. These charges and currents exist in water and fibers of the connective tissues. (Becker, *Cross Currents*) They transmit information in the form of molecules, ions, protons, and electrons. (See chapter “What is Release?”) Sutherland speaks about this when talking about potency of CSF. He taught that many messages are carried simultaneously, needing only the right receiver to be tuned to the correct frequency for the proper information to be transmitted. This transmission or transmutation is in the cerebrospinal fluid and in the lymphatics.

Emanuel Swedenborg in 1719 in his paper “On Tremulation” writes, “Our whole living and moving nature endeavors to express itself by means of tremulations.” Was he talking about transmutation? Swendenborg speaks of tremulation as communication. It resembles an “axillary motion,” a motion that takes place at the center alone. Tremulation is the most subtle form of motion that exists in nature and it possesses wonderful and distinctive properties differing from all other motions.

Water trembles, air moves, fire moves so swiftly that the tremulation is almost instantly communicated to us from the sun itself.

He continues, “It may be seen from this that the whole nature of tremulation consists in the effort of a thing to recover the balance which it was about to lose.” Interesting—if we apply this to CST and CSR.

He speaks of meninges, the dura, arachnoid and pia mater... “in these reside most sensibly the most subtle sensation and in these, as in little mirrors, may be seen the real nature of tremulation.” He continues, “It is known that the tremulation flows with the rapidity of lightning over membranes and nerves, from one end to the other, in an instant making the most subtle waves over the whole expanse, like the oscillation in water or in the atmosphere. The dura mater applies itself

closely to the bones, seeking, as it were, to incorporate itself with them in order to give them nutrient by its fluid.”

And finally, “ The tremulation is therefore at once communicated from the spine with all its membranes and vertebrae to the cranium.”

A.T. Still says, “There is an interchange among all the fluids of the body, and a change, or transmutation, occurring in that fluid. It is not an outflow over the nerves, although the change follows along to the area where the terminals of the peripheral nervous system dwell with the lymphatics.” He said that “the lymphatics consume more of the waters of the brain than the entire viscera.”

John Upledger, in one of his many books sites several important functions of water. In his book, *CranioSacral Therapy—Touchstones for Natural Healing*, he writes:

“Water is a universal solvent within the body. Water moves from the heart as it is pumped through the large arteries to the smaller ones. It travels to the capillaries and into the interstitial space between the cells. It backs out of the cells into the interstitial fluid—returning either to the blood system or the lymphatic system. It goes into the blood stream, then through the liver and kidneys getting rid of waste it has collected. It also picks up antibodies from the liver for circulation. Water goes to the spleen to gather more fresh antibodies and immune cells. It goes to the lungs getting rid of carbon dioxide it collected, trading it for oxygen which it then delivers to the tissues. It also goes to the liver, stomach and small intestines for collection and disbursement of nutrients.”

It is impossible to speak of the extracellular matrix of the body without looking at the lymphatic system. A fabulous reference is *Silent Waves* by Dr. Bruno Chikly. He writes:

“Hippocrates (460–377 BC) identified white blood cells and throughout written history, at least in the last two thousand years, there has been an awareness of a circulatory system of fluids important to body function. The first illustrations of human lymphatics was published by Johann Vesling in 1653.

“The lymphatic vessels are a vital part of the circulatory pathways of the body. Blood leaves the heart by way of arteries and returns to the heart by way of the venous return flow system *and* the lymphatic pathways. Lymphatic fluid originates in the extracellular fluids or the oceans of water in which all cells reside. There is an entire network of tiny capillaries within the spaces between the structures of the body and the connective tissues.

“The lymphatic system fine tunes the drainage of the interstitium (connective tissue) and thus constitutes a source of overflow for the water and excess substances in the interstitial environment.”

The lymphatic capillaries begin extremely thin, then gradually increase in size with the recovered extracellular fluids being moved along many minute muscles, ducts, and trunks which gradually lead to venous pathways back to the heart. This lymphatic system acts to transport large proteins, foreign body pathogens (germs, toxins, etc.) to lymphatic nodes which function like filter systems and break down and collect particles and pathogens so they can be removed from the body by way of organ elimination, i.e., digestion, urine, sweat, and lung excretions. Lymph moves by way of peristalsis (that is the rhythmic contraction of smooth muscles to propel contents through the digestive tract), valves, and the milking action of skeletal muscles. Lymph is collected and moved along by muscle contractions, valves, lymph nodes until layer by layer, in larger and larger lymph vessels, it drains into the venous return flow system at the left and right subclavian veins.

Tensions in the neck, chest, shoulders and upper spine obviously play a key role in fluid movement in the body. Lymphatic drainage, craniosacral therapy, massage, and exercise therefore are intimately related and vital as vehicles for decreasing tone, increasing relaxation and promoting circulation of this kind.

The real beauty of all these fantastic scientists, physicians, and practitioners—from A.T. Still, Lee, Sutherland, to Chikly and Upledger—is the growing awareness that the life of the body is fluid. The great diluter, unifier, metabolizer, and universal fluid life element is water. We move blood and organs and fascia and lymph and CSF and energy and emotions. What we are all dealing with is the living ocean of water. And if the author, Masaru Emoto is right, and water has consciousness, and we are all able to focus our intentions on healing and the best interests of the patient; then we will all be moving medical care forward into a new frontier of intentional integrative medical care that will help all humans and our precious Space Ship Earth heal, and move forward into the next millennium.