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Knowing By Heart:
Cellular Memory in Heart Transplants

by

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Throughout history, a number of individuals in the scientific community have proven reluctant to accept or even acknowledge new concepts simply because they have not been able to fit them into the confines of their limited understanding concerning the natural world. In the realm of heart transplantation technology, uncharted and controversial territory is beginning to emerge as a result of a concept known as cellular memory. What is cellular memory, particularly in relation to the technology of heart transplantation? And is cellular memory, in fact, a valid concept worthy of further investigation? These are precisely the concerns/questions I intend to address today.

On May 29, 1988, a woman named Claire Sylvia received the heart of an 18-year-old male who had been killed in a motorcycle accident. Soon after the operation, Sylvia noticed some distinct changes in her attitudes, habits, and tastes. She found herself acting more masculine, strutting down the street (which, being a dancer, was not her usual manner of walking). She began craving foods, such as green peppers and beer, which she had always disliked before. Sylvia even began having recurring dreams about a mystery man named Tim L., who she had a feeling was her donor.

As it turns out, he was. Upon meeting the "family of her heart," as she put it, Sylvia discovered that her donor's name was, in fact, Tim L., and that all the changes she had been experiencing in her attitudes, tastes, and habits closely mirrored that of Tim's (Sylvia179). Some members of the scientific community and of society, as a whole, may brush this off as being merely a strange coincidence. However, some believe that episodes such as this one offer evidence of a concept known as cellular memory, which

is beginning to gather more and more attention in the scientific community as the technology of heart transplantation improves and affects more people throughout the world (Bellecci 1).

Cellular memory is defined as the idea that the cells in our bodies contain information about our personalities, tastes, and histories (Carroll 1). Evidence of this phenomenon has been found most prevalently in heart transplant recipients. Though cellular memory may seem too far-fetched for some, several scientists and physicians have looked further into it as a valid concept and have come up with various theories to try and gain more understanding of it.

Some have tried to gain a deeper understanding of cellular memory through the realm of chemistry. One such scientist is Candace Pert, Ph. D., who studies biochemistry. Her findings helped support one belief which a growing number of scientists have now adopted: "every cell in our body has its own 'mind'…and if you transfer tissues from one body to another, the cells from the first body will carry memories into the second body" (Sylvia 221). In other words, these scientists believe cellular memory does, in fact, exist…although they would probably prefer not to word their belief as such.

Candace Pert discovered that at least one aspect of our minds has been distributed to other organs throughout the human body. She found that the brain and the body send messages to each other through short chains of amino acids known as neuropeptides and receptors. These amino acid chains were previously known to exist exclusively in the brain. However, Pert and her colleagues have found them in places all throughout the body, especially in major organs such as the heart (Pert 1).

Another scientist whose attempts to grasp the concept of cellular memory were made through chemical terms is Dr. Andrew Armour. Armour was one of the early pioneers in neurocardiology, a new discipline in which the communicative relationship between the brain and heart via the nervous system is explored. Recent research has shown that communication between the heart and brain is a "dynamic, ongoing, two-way dialogue,

with each organ continuously influencing the other's function" (HeartMath Institute 1). In 1991, Armour introduced the concept of a functional "heart brain." He discovered that the heart has its own intrinsic nervous system and that the complexity of this system is great enough to qualify it as a "little brain" in its own right. Thus, Armour calls the heart's intrinsic nervous system the "little brain in the heart."

Basically, the heart's brain is an intricate network of several types of neurons, transmitters, proteins, and support cells that allow it to act independent of the "cranial brain—to learn, remember, and even feel and sense" (HeartMath 1). Information is translated into neurological impulses by the heart's nervous system and sent from the heart to the brain through various pathways. These impulses reach the medulla, located in the brain stem, where they have a regulatory role over many of the blood vessels, glands and organs. However, they also reach higher centers of the brain, where they may influence "perception, decision making and other cognitive processes" (HeartMath 2).

Armour describes in his book, Neurocardiology, that the heart's intrinsic nervous system, which functions independently of the brain and nervous system at large, is what allows a heart transplant to work: under normal circumstances, the heart and brain communicate with each other via nerve fibers running through the spinal column. In a heart transplant, however, these nerve connections are severed and do not reconnect for an extended period of time, if at all. Fortunately, the transplanted heart is still able to function in its new body using its intact, intrinsic nervous system (HeartMath 2). Certainly the independent quality of the heart's "little brain" would have a part in retaining and recalling cellular memory, regardless of whose body may be housing it. However, as previously stated, the discipline of neurocardiology is relatively new, so theories such as this may not yet be firmly established in the scientific community.

Some physicians and scientists have tried to gain understanding of cellular memory through psychological, metaphysical, and even supernatural terms. One can see why they would go to these unconventional lengths in order to try and explain cellular memory when faced with such disturbing incidents as this: several years ago, an eight-year-old

girl received the heart of a ten-year-old girl who was murdered. Shortly after receiving her new heart, the girl began having recurring nightmares about the man who had murdered her donor. She believed she knew who the murderer was. Her mother finally brought her to a psychiatrist and after several sessions, the girl's psychiatrist "could not deny the reality of what the child was telling her." They decided to call the police and, using the descriptions from the little girl, they found the murderer. According to the psychiatrist, "the time, the weapon, the place, the clothes he wore, what the little girl he killed had said to him. . .everything the little heart transplant recipient reported was completely accurate" (Pearsall 7). Needless to say, the psychiatrist was eager to find any available explanation for this particular patient's experience.

Several transplant surgeons have contributed to a theory for cellular memory essentially based on psychological and metaphysical conditions, which Dr. Paul Pearsall has pieced together. Pearsall is a psychoneuroimmunologist, or a licensed psychologist who studies the relationship between the brain, immune system, and an individual's life experiences. Pearsall calls this theory the "Lowered Recall Threshold" (Pearsall 120). Basically, it suggests that the immunosuppressive drugs that transplant recipients must take are what bring about associations to donor experiences in recipients. Immunosuppressive drugs minimize the chances of rejection of the new, foreign heart by suppressing the recipient's immune system. Scientists believe these drugs could also possibly act as psychotropic, meaning "acting on the mind" (Merriam-Webster 1090), stimulants that lower the patient's "thresholds for accessibility" and enhance their perception, allowing them to recall memories they may have long forgotten. In other words, transplant recipients who claim to be having experiences with the cellular memories of their donors are actually just recalling their own memories of their own life experiences (Pearsall 120). However, in instances such as the eight-year-old girl's who received the murdered girl's heart, this certainly does not seem to be the case.

James Van Praagh, one of the "foremost spiritual mediums in the world" (James 1), speculates that cellular memory is due to the presence of the donor's spirit that has not yet moved on to its next home. Praagh is a "survival evidence medium," one that is able to

make connections between the world of the living and the world of the dead by providing proof of life after death through detailed messages. In his own words, he "feels the emotions and personalities of the deceased" (James 1), much like Whoopi Goldberg in the film, *Ghost*. Praagh points out that donated organs often come from young people who were killed in unexpected ways, and died quickly. Because their spirits feel they have not yet completed their time on earth, they may linger in whatever physical aspect of them is still being put to use; in this case, their donated heart (Sylvia 229).

An extension of this theory, developed by other spiritual mediums, suggests that because of the suddenness of many donors' deaths, the donor's spirit may not have yet realized that its body is dead. Thus, the transplanted heart continues to function as if it were in its original body, not realizing that its original owner is no longer there (Pearsall 119). Theories such as these are indeed very intriguing and do seem to make sense for cellular memory. However, because theories involving spiritual phenomena are somewhat elusive and difficult to prove scientifically, many people are reluctant to accept them as truth.

Hospitals are very strict concerning the disclosure of donor information to recipients. In order to protect the family members of the donor as well as the recipient, hospital authorities do not allow recipients to know anything about the person whose organ they have received (Sylvia 200). Despite this control, many nurses claim that cellular memory is really just the patient piecing together information about the donor that they may have gathered from discussions by various health-care staff who were around them. This is called the "Hospital Grapevine Theory" (Pearsall 119). Although it is unlikely that these discussions could have taken place in the patient's presence while he or she was conscious (because of the hospital policy concerning disclosure), it is possible that the health-care staff talked about the donor while the patient was anesthetized.

One previously discussed heart transplant recipient, Claire Sylvia, thought this may have been the case with her cellular memory experiences. However, once she contacted one of the physicians present in the operating room where she received the transplant, she found

that the room had been absolutely silent. . ."the way Dr. Baldwin (the surgeon) likes it" (166). At least for Sylvia's case, the Hospital Grapevine theory does not seem to apply.

Of course, not all heart transplant recipients experience as great a degree of cellular memory as Claire Sylvia, if any at all. One such individual is Larry Slagle, one of my professor's friends, kind enough to allow me to interview him. On May 19, 1995, Larry, a then 60-year-old man, received the heart of a 33-year-old motorcyclist who had been killed while riding in Delaware (or so he vaguely remembers being told by the transplant coordinator). When asked whether he or anyone else around him has noticed changes in his person since the operation, Larry jokingly replied that he now finds himself craving "beer and peppers" all the time (referring to Claire Sylvia's experience with cellular memory: after her operation she began craving beer and peppers, like her donor). Apparently, he had read up on cellular memory, but still gave "no credence" to the theory. There were some changes that he did admit to though: he finds that he has become more kind, more inclined to set goals for himself (like bicycling regularly, an activity he enjoyed prior to his operation), and he now has a tremendous desire to feel useful. Also, despite his delight at being alive, he mentioned that he is very irritable. This particular change, he claims, is due to Pritazone, one of many immunosuppressive drugs he takes daily. His explanation for the other changes all had to do with the psychology of being a transplant recipient: the renewed kindness came out of being a beneficiary of "such kindness and skill," the desire to feel useful came out of his attitude that "to get a gift like that and waste it would be a terrible thing," and the goals he sets for himself are his "answer to depression," his way of going on with life. In other words, Larry feels he has not experienced any degree of cellular memory…or "at least been aware of it," as he chose to put it.

Although my interview with Larry did not yield the results I had hoped for (a compelling account of cellular memory, of course), he did pose some interesting questions that challenged my resolve about cellular memory and really made me think. One question that particularly struck me was: If cellular memory is, in fact, a valid concept, then why doesn't it occur more often than not? Bruce Lipton, a former Stanford research scientist who received training in cellular and developmental biology, proposed one possible

explanation for this trend. His reason implements Candace Pert's discovery of neuropeptides in the heart, which function as keys that fit into specific types of receptors located on the surface of heart cells:

A transplanted heart comes with the donor's unique set of self-receptors, which differ, naturally, from those of the recipient. As a result, the recipient now possesses cells that respond to two different "identities." Not every recipient will sense that a set of cells within their body is now responding to a second signal. But if anyone is going to experience this change, it might well be a dancer who is acutely aware of her own body, referring to Claire Sylvia. Sylvia 222.

In other words, instances of cellular memory in heart transplant recipients may be relatively uncommon since the average transplant recipient most likely does not have a finely tuned awareness of his/her own body (refusal to take note of their body's signals may actually be what landed them in line for a transplant in the first place). Thus many transplant recipients probably would not notice the, many times, subtle changes that may occur due to the second set of receptors now present in their body.

Although instances of cellular memory do seem to be the exception to the rule, one must not allow them to be ruled out entirely. In the words of famed psychiatrist and philosopher, William James, "If you wish to disprove the laws that all crows are black, it is enough if you prove one single crow to be white (Bellecci 2). These rare instances of cellular memory are medical white crows.

There may not be enough evidence to say one way or another whether cellular memory is valid. However, judging from the theories and accounts of cellular memory discussed above, one can certainly see a need for further investigation of it. Cellular memory may be baffling, and the scientific community may know very little about it. But is that not the impetus behind most scientific research? To explore the unknown and find answers to the unanswered? I believe that it is. And for that reason, I believe that we, as members of society, owe it to the generations to come to support research in this area. With further investigation of cellular memory, perhaps someday we will be able to really

unlock the heart's mysteries and memories and truly understand what the statement, "knowing by heart," means.

The extent to which cellular memory is currently being investigated reaches only as far as heart research. One of the more cutting-edge heart research institutes is HeartMath, located in Boulder Creek, California. Here, the relationship between the heart and brain, and the ways in which this relationship affects one's physical, mental, and emotional health is explored.

Cellular memory has not yet entered the arena of serious investigation, though I believe it should. Perhaps scientists could work to find a cure for cellular memory, a means for suppressing memories in donor organs so that recipients would not have to undergo the emotional stress caused by cellular memory, in addition to the physical trauma that they have suffered during the operation.

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