THE FUTURE OF UNDERWATER FORENSICS AND DNA

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The complexity of DNA is so profound that we, in all of our research, are barely scratching the surface. We know that in order to have a DNA strand, the proteins have to be configured properly and in order to have the proteins you have to have the DNA strand. There is no chicken before the egg.

In the 1970's, the "known DNA proteins" were Adenine, Guanidine, Cytosine, Thymine and Uricil. This was changed later because Uricil is one of four chemical bases which are part of RNA. In DNA, the base Thymine is used in place of Uricil. Cytosine, in its design, has the ability to spontaneously undergo "hydrolytic deamination" which results in the Uricil base, having the same capability of establishing a hydrogen bond formation as Thymine. During this same time period, the Mitochondrial DNA was referred to as "messenger" DNA so it becomes obvious that much has been learned since that time. We must also consider Mendel's Law of Genetics [the biological software inherent in pigs is only compatible with pigs], Entropy [law of thermodynamics, everything declines over time] and Biogenesis.

We now know that DNA uses 4 bit three dimensional codes as opposed to today's computers, using 2 bit binary code, ones and zeros. The odds of each different type of strand of genetic software, existing by happenstance [evolution], are 1 in 48 [with 48 zeros behind it] to 1. That is 1, in 48 octillion to 1, that each piece of digital software existing at all.

So, one might ask, why is this important in Underwater Forensics? The answer is simple yet complex because of the scope of the question. The Diver Technologist should understand the basics on what the DNA sample can provide for the case and the conditions in which the DNA may be degraded, compromised and destroyed. The mind set should focus on the viability of any sample obtained for submittal to the lab. He or she must also consider possible locations where viable samples may exist. This is important in considering the "preservation" or "confinement" of an area of the body of the victim. This is, in no way, an easy task because even the least amount of movement by the diver, in the wrong proximity of evidence, can destroy or eliminate whatever evidence existed.

For example, "gloving" or "bagging" the hands in an effort to preserve possible evidence should be done differently than "bagging" the hand or hands to preserve gunshot residue [GSR]. Gum lines [Dental] must be considered as well as the victim's hair. The precipitating events, in most cases, provide a "map" of specific areas that should be observed or preserved because of potential DNA evidence. This does not mean that evidence will be found; rather the proficiency of the Technologist performing his or her job description is methodical, thorough and complete. In some cases, it may seem a bit "over precautionary" to use the Diver Technologist on a case where the deceased victim of a possible sexual assault and is physically next to the shoreline. Once again, the protocols are in place to preserve the evidence, including water and soil samples.

The use of "sterile" syringes and similar non-invasive devices used in the collection process are important tools for the technologist to process the "crime scene".

The genetic "digital coding," "Transcription" in Genetic software [DNA], has to match. There cannot be any "random" or free floating code within the genetic code. Just as different "programs" have different coding, designed to work with specific coding with each program. In the collection process, there need not be any level of concern as to whether or not the "sample" is "human" or otherwise, only that the sample was obtained per protocol. In some cases, multiple samples are present, although it may not be obvious to the technologist. In the water environment, the circumstance in which evidence is acquired is as unpredictable as the environment itself. This is where ingenuity and creative design come into play.

The Technologist needs to be creative in the crime scene setting. There is no such thing as "typical" or "normal" because nothing about an underwater crime scene can be labeled "typical" or "normal". The importance of collecting DNA evidence is not always obvious. One must consider the complexity of DNA in order to understand its value in a court of law. Consider some of the very important elements of DNA that cannot be manipulated or deemed inadequate in any court.

Why is DNA evidence so important in the identification process of any victim or victims? Because the following laws in genetics cannot be withheld or eliminated, not even one of the laws. DNA is the "body plan", the genetic software that is required to produce every kind of tissue, nerve complex, muscle, bone and everything associated with a particular human being. It is what makes one person different than almost every other human being. When we observe the "replication" in epi-genetics, we learn why one of two identical twins develops certain forms of cancer and the other does not. There is a reason why the Law of Information Systems [information has to have a source], Statistical Mathematics, Irreducible Complexity [meaning that every part is required from bottom to top], Specific Complexity [meaning without deviation or modification], Genetic Complexity, and Information Theory exist. We need to accept the symbiotic relationships found within the study of DNA and genetics in general.

The identification of each and every victim must be in the top of the technologist's priority list. In order to accomplish this goal, specialized training must be included within the training curriculum. "DNA" is synonymous with "Identification" in today's society as well as paternity and other forms of identification. Mitochondrial DNA has just recently become known and associated with some forms of identification, but the majority of the public does not understand the premise behind its value or the differences between DNA and Mitochondrial DNA. Perhaps at some point in time, man will understand the importance of many things that are not understood at this point. We must accept the fact that we grapple at our understanding the complete DNA potential or inner workings that bring into being the human being. The thousands upon thousands of genetic code required, creating the human hand or any other body part, is far beyond our understanding. As mentioned previously, each and every genetic code must have a source, a master file that makes up the construct of the human body. Each person is created differently, uniquely and complete with genetic software that is so precise our mind cannot conceive its complexity.

It is nothing like science has ever known before and to even begin understanding the complex workings of this double helix program that creates a three dimensional human being, we realize just how little we actually know. Using DNA, in general, as a method to identify an individual is almost insulting to the science of the DNA. The continued research of DNA is of course necessary in our attempt to understand it. Will we ever understand or be able to locate the source of the genetic code?

The importance of gathering evidence, including DNA samples, requires specific in-depth training. This training is, to a large degree, established by the different DNA research laboratories worldwide. It is the obligation of CSIDTI to develop, with these different laboratories, a general consensus standard in obtaining and maintaining DNA and related evidence per laboratory requirements and suggestions.

The Team effort in accomplishing any goal is as important as the goal itself. We must work together in an effort to improve the quality and integrity of our professional ethics and standards. There cannot be any "borders" or cultural differences in scientific studies and research. This includes the Diving industry, especially those who specialize in Underwater Forensics. We must understand the importance of our work and the integrity we place on our individual guidelines. We know that everything has its own combination, its own sequence and parameters. In working together, we can unlock many things, the most important of which is establishing humanity as a peaceful and compassionate being. Our ability to understand many areas of science is by choice and the absence of political interference.

"In consideration of the cosmos the order of the universe which I, with my limited human mind am able to perceive, yet there are those who say there is no God. What makes me really angry is when they quote me in support of such views" Albert Einstein