

# **EXHIBIT “A.2”**

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**ANATOMIC, CLINICAL AND FORENSIC PATHOLOGY**

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RE: Forensic pathological opinion regarding the death of Melissa Trotter, decedent in Harris County Medical Examiner Case No. 99-02, and victim in *State of Texas v. Swearingen*, no. 99-11-06435-CR, in the 9<sup>th</sup> District Court, Montgomery County, Texas.

REFERRAL: From Hilder & Associates, P.C., Attorneys for Larry Ray Swearingen

CASE: *Swearingen v. Quarterman*, Case No. 4:09-cv-300, in the United States District Court for the Southern District of Texas.

**SUMMARY**

A forensic opinion was requested regarding the date of death of Melissa Trotter. The specific forensic question was how long the body of Ms. Trotter could have lain dead in the forest environment in which it was discovered. A conclusion was reached based on the examination of microscopic slides made in Harris County Medical Examiner case no. 99-02 in the context of other evidence (*vide infra*).

Tissue architecture and subcellular detail that is clearly visible by routine light microscopy of the heart, nerve, fat and vascular tissue on the slides in this case would have disappeared within two or three days under conditions prevailing in the Sam Houston National Forest where the body was found. Leaving aside speculation that the body was preserved elsewhere by refrigeration before it was left in the National Forest, the following conclusion can be stated with scientific certainty: the microscopic evidence demonstrates that Ms. Trotter died no more than two or three days before the body was recovered on January 2, 1999.

**MATERIALS REVIEWED**

Five microscopic slides in Harris County Medical Examiner case no. 99-02, each containing heart, nerve, fat, vascular, blood and lung tissue, were reviewed by routine light microscopy. The slides were made from a histology block in case no. 99-02. A series of photomicrographs was made of the tissue on the slides and are attached as Group Exhibit 'A'.

The autopsy report authored by Dr. Joye M. Carter in case no. 99-02 was reviewed, along with autopsy photographs and crime scene photographs. The autopsy report is attached as Exhibit 'B'. A reproduction of a photograph of the crime scene is attached as Exhibit 'C'. A video tape of the crime scene was also reviewed. The tape was made by the Montgomery County Sheriff's Department and showed the position of the body of the victim and the immediate environment from which it was recovered. A photograph of the body at the crime scene showing the exposed torso is attached as Exhibit 'D'.

Certified daily weather data for the period from December 8, 1998 to January 3, 1999, for the Conroe, Texas area, which was collected at the Montgomery County Airport and published by the National Oceanographic and Atmospheric Administration ("NOAA"), was reviewed, as was the unedited hourly Conroe, Texas area data collected at the Montgomery County Airport and published by the National Oceanographic and Atmospheric Administration ("NOAA"). A summary chart of the daily weather data was also reviewed and is attached as Exhibit 'E'.

The trial testimony of Dr. Joye M. Carter in cause number 99-11-06435-CR was reviewed, as were police reports in Montgomery County Sheriff's Department case no. 98A017441/69 describing the crime scene and the discovery of the body.

### **BACKGROUND**

On December 8, 1998, Melissa Trotter was reported missing. On January 2, 1999, the body of Ms. Trotter was recovered from the Sam Houston National Forest (National Forest) north of Conroe, Texas. The body, as seen in crime scene photos and the crime scene video, was found face-up in a relatively open space in the forest. It was exposed to the elements, as opposed to being buried or partially buried or in a container or wrapping. The photos and videotape show that the body is in a supine position, one arm above the head, the other extended. Ms. Trotter's sweater and bra were bunched around the neck, leaving her torso and breasts nude. The lower extremities were clad in blue jeans and socks. These items of clothing appear relatively fresh and unsoiled. Police reports state that the body showed very little decomposition and that there was no odor emanating from the body.

On December 11, 1998, three days after Ms. Trotter disappeared, the defendant, Larry Ray Swearingen, was arrested by law enforcement, and incarcerated in the Montgomery County Jail. It is my understanding that he has been in custody continuously since that time.

On January 3, 1999, Dr. Joye M. Carter, performed the autopsy of Ms Trotter's body at the Harris County Medical Examiner's Office. Photographs were taken at the autopsy documenting the body's external appearance and the appearance of organs that were dissected out during the internal examination of the body. These include photographs of the spleen and heart and the stomach and its contents. According to the autopsy report, tissue samples were taken from all major organs and preserved in formalin. The report does not mention microscopic slides, the results of microscopic examination, or the preservation of tissue in histological blocks.

A histology block was obtained in this case in January of 2009 that contained samples of heart, nerve, vascular, fat and lung tissue. Five slides were prepared from the histology block by the Harris County Medical Examiner Office and were received on Tuesday, January 20, 2009, at the Tarrant County Medical Examiner's Office, 200 Felix Gwozdz Place, Fort Worth, Texas. The five slides represent step sections (sections at different levels) through the paraffin tissue block. The slides were stained using a standard H and E (hematoxylin-eosin) stain.

### **HISTOLOGY RESULTS**

Overall architecture is intact in each type of tissue that was sampled at autopsy and preserved in the histology block, including alveolar walls, blood vessels, fat cells and muscle cells. Striations in the cardiac muscle are also discernible and the fragment of nerve is normal. Nuclei are plentiful and well preserved in the cardiomyocytes (heart cells), in the endothelium in lung and vascular tissue, and in smooth muscle and nerve cells. Well-preserved erythrocytes are present in capillaries and larger vessels. Some alveoli contain eosinophilic edema fluid. Amorphous debris and scattered bacteria, typical of postmortem artifact, are present in some areas. Putrefactive changes including mild coagulation of cytoplasm and fading nuclear detail are detectable, but very early.

#### **Heart Tissue**

Well-stained nuclei are present in nearly all of cardiomyocytes (heart muscle cells). Bacterial growth is evident that would ordinarily accelerate decomposition; however, the cardiomyocytes are well-preserved and nuclear basophilia is prominent.

Very fine cross striations (Z-bands) are visible in the cardiomyocytes. These bands are caused by actin and myosin protein fibers which disappear after one to two days as they denature. The autolyzed heart tissue then loses this cytoplasmic detail. The cytoplasmic detail

present in this tissue would have disappeared within 24-48 hours after death, at which time only cellular outlines with red and purple smudges would remain.

The disappearance of nuclear detail within one or two days of cell death is a phenomenon recognized in all basic medical pathology texts. In heart muscle, the period in which heart muscle loses nuclear detail has been worked out by Genest, et al.<sup>[1]</sup> According to the Genest criteria, the nuclear basophilia throughout the heart will be lost and nuclear staining will not occur after 48 hours following death of the individual.

The appearance of the cardiomyocytes indicates that death did not occur more than two or three days before recovery of the body from the Sam Houston National Forest.

#### **Nerve Tissue**

A piece of nerve tissue which is sectioned longitudinally was present in the Harris County Medical Examiner slides in case no. 99-02. It is represented in photomicrograph DSCN3190. Identification of the tissue as nerve tissue is based on the nuclei which are elongated and pointed. The tissue is also surrounded by fat cells. Smooth muscle tissue, however, can look similar, and additional staining would have to be conducted in order to make a definite identification.

The forensically important details are as follows: (1) there is clear staining of the nuclei of the cells and the nuclei are plentiful and well preserved; (2) There is nuclear staining in the endothelial cells of the small blood vessels in the nerve, and nuclear basophilia are well preserved. The nuclei are plentiful and easily visible in nearly every cell; (3) red blood cells

visible in the small blood vessels visible at the periphery of the nerve cell have not lysed, nor have they extravasated; and (4) the large white fat cells bordering the nerve tissue are intact.<sup>[2]</sup>

The subcellular detail, principally the nuclei seen in this photomicrograph, disappears within a matter of 2 or 3 days after death unless the tissue is fixed and preserved. The appearance of the nerve, fat and blood tissue is that of fresh tissue from a recently deceased person and is nearly identical to that from a live person.

The condition of the tissue depicted in photomicrograph indicates that death did not occur more than two or three days before the body was recovered in this case.

### **Vascular Tissue and Fat Tissue**

Vascular tissue was present in fat and lung tissue on the Harris County Medical Examiner slides. Photomicrograph DSCN3180 depicts the lumen of a blood vessel at a relatively high magnification. The vessel contents include intact red blood cells, which are the round bright pink objects, and coagulating protein which is the lighter pink substance. In the lower right hand quadrant, the darkly stained lobulated object may be a neutrophil (a white blood cell), which ordinarily breaks down within 24 hours. The red blood cells also have not clumped. In several examples, the disc shaped appearance typical of red blood cells is apparent.

Photomicrograph DSCN3181 shows the lumen and wall of a blood vessel that has been cut longitudinally (lengthwise). Within the lumen there are numerous red blood cells, which have not clumped or lysed. The endothelial lining is detectable immediately proximate to the luminal space. Nuclei of the endothelium are present and stain normally. Smooth muscle

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<sup>[1]</sup> See, Genest DR, Singer DB., *Obstet Gynecol.* 1992 Oct;80(4):593-600; Genest DR., *Obstet Gynecol.* 1992 Oct;80(4):585-92; Genest DR, Williams MA, Greene MF, *Obstet Gynecol.* 1992 Oct;80(4):575-84.

<sup>[2]</sup> The brown cloudy looking material is a formalin artifact, which means the tissue was put in a fixative, likely 10% formalin. Formalin tends to concentrate in fatty and bloody tissue. It is not a sign of autolysis.

forming the intermediate layer of the vessel is also intact. Nuclei are present, staining and intact in this smooth muscle tissue. As is well documented in basic pathology textbooks,<sup>[3]</sup> nuclear basophilia disappears within two or three days of cell death whether the phenomena is cell death in a living organism or in a dead organism.

There appears to be some shrinkage of the muscle cells that form the intermediate lining of the blood vessel, but this happens very quickly post-mortem and is seen in virtually all autopsies, even after hospital deaths. The outer tissue layer is collagen. The appearance of the tissue is that of fresh tissue exhibiting architecture and cellular detail that disappears within two to three days after death unless the tissue is fixed and preserved.

Photomicrograph DSCN3182 shows a blood vessel that has been cut transversely and is surrounded by fat tissue. The smooth muscle of the vessel wall is clearly visible and fresh in appearance. Several nuclei are evident and have stained. The absence of other nuclei in other cells cannot be attributed to autolysis. It is an artifact of transverse sectioning. The smooth muscle cells are elongated cells. The nuclei in this type of cells may be located peripherally and therefore do not lie in the same transverse plane. The transverse section will therefore miss many nuclei that nonetheless are present. Red blood cells are plentiful, contained entirely within the lumen, and they are intact virtually without exception.

The fat cells are also all intact. Several nuclei of these large globular cells have been captured and stain normally. Fat cells are large (50 to 100 microns and more, as opposed to 7 microns for a red blood cell), and their nuclei are flattened and located at the periphery of the cell. As a result, a microscopic section, whether it is made transversally or longitudinally, is likely to miss the nuclei of many fat cells.

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<sup>[3]</sup> See, Robbins and Cotran, Pathologic Basis of Disease, at 19-20; Anderson's Pathology, at 574-75.

Photomicrograph DSCN3183 shows well preserved fat cells. The section has captured several nuclei which are staining. The thin pink lines are the thin layers cytoplasm of the fat cells, which is displaced to the periphery by the fat molecules that fill the vacuole of the cell. This tissue is well preserved, which would not be the case if decomposition had progressed much more than 48 hours under conditions in the National Forest.

Photomicrograph DSCN3184 shows vascular tissue surrounded by fat cells. The left half of the photograph shows a blood vessel that has been cut longitudinally. The cellular detail is remarkably well preserved. Blood cells are plentiful, and intact. They have not clumped or lysed. In the upper left hand quadrant, the connection between two blood vessels is apparent. In the lower central part of the photo is a relatively large vessel that has been cut transversally. Smaller transversally cut vessels appear above and to the right of this structure. The lumens of all vessels are open and filled with plentiful intact red blood cells. The fat cells, without exception, are intact. The appearance is of tissue of a very recently deceased person.

Photomicrograph DSCN3185 shows vascular tissue at higher magnifications. At this level, the nuclei of the smooth muscle forming the walls of the blood vessels are easily seen. They are plentiful and stain well. This detail would be lost in a maximum of two or three days after death absent steps to fix and preserve the tissue.

Photomicrograph DSCN3188 shows capillaries within fat tissue. This is almost perfectly preserved tissue. The red blood cells are bright red. There is dark nuclear staining of the nuclei of the endothelial cells surrounding the capillaries. Autolysis is so minimal that the tissue in this photomicrograph is indistinguishable from a biopsy of similar tissue from a living subject.

If Ms. Trotter's body had been in the National Forest from the date of death until the date it was recovered, the vascular tissue, blood, and fat tissue would not retained its structure and detail unless death occurred no more than two or three days before recovery.

### Lung Tissue

Photomicrographs DSCN3173, DSCN3174 and DSCN3175 are photographs of lung tissue taken at increasingly higher levels of magnification.

Photomicrograph DSCN3173 is the least magnified. It shows well preserved lung tissue. The walls of the alveoli, which are the small air sacks in which the bronchioles terminate, are intact. The septa or folds of the alveolar walls, which increase surface area, facilitating gas exchange, are evident.

Some of the alveolar spaces have filled with fluid, which is evident particularly in the right upper quadrant of photomicrograph DSCN3173. This may be to cardiogenic shock that occurs during strangulation, which can force fluid into the lung spaces.

What looks like brown flecks is what is known as anthracotic material. This is caused by particulate matter in air pollution and in cigarette smoke. The record in this case indicated that Ms. Trotter was a smoker.

In the lower left quadrant of DSCN3173, several blood vessels are seen. The lumen contains plentiful blood cells which have not clumped.

Even at low magnification the coloration and the structure of the tissue is that of well preserved tissue that has undergone minimal autolysis. The walls of the alveoli are formed by endothelial cells which are elongated to form a membrane that is only several microns thick. Nonetheless these fragile structures are intact throughout this section of tissue, with the

exception of the artificial breaks caused by sectioning the tissue in making the microscope slides.

DSCN3174 shows lung tissue at higher magnification. The photomicrograph shows that the fine architecture of the alveolar sacs is well preserved. The alveoli are formed by epithelial and endothelial cells. The individual cells are elongated – stretched in appearance – to form a membrane that is only a few microns thick, yet these structures appear well preserved even at higher magnification.

At the level of magnification used to produce the image in DSCN3174, subcellular structures, particularly the nuclei appear. Here we see staining of the nuclei of the epithelial or endothelial cells. Unless the tissue is frozen or fixed, this detail disappears after about 96 hours in lung tissue according to Genest, *et al.*, *supra*.

Photomicrograph DSCN3174 reveals that the brown flecks that were indistinct in DSCN3173 and might have been an artifact of slide preparation, are what is called anthracotic material or anthracotic pigmentation. This is fine particulate matter that is inhaled by the individual. It is more abundant in people who live in polluted city environments and in those who smoke. Ms. Trotter's cigarette habit would account for the prevalence of anthracotic material seen here. The anthracotic pigmentation is concentrated in macrophages (white cells responsible for cleaning and extruding foreign material from the body) the outlines of which are discernible. This cellular detail would not be evident under the microscope if Ms. Trotter's body had been in the forest more than two or three days before recovery.

Photomicrograph DSCN3175 is lung tissue. Nuclei are abundant and clearly staining in the elongated endothelial (or squamous epithelial) cells that form the alveolar walls. The fine structure of the alveoli is illustrated particularly well in this photomicrograph. The cells forming

the alveolar walls are highly attenuated, i.e., stretched thin to form a thin membrane of cytoplasm. The width is barely more than the nuclei contained within, and at some point the membrane appears even thinner than these organelles which are typically 5 microns in diameter. The septae, or folds, of the alveoli are clearly visible.

As in the other photomicrographs, the cellular detail is remarkable, and would have been lost in two to three days after death due to autolysis unless the tissue had been fixed and preserved.

DSCN3176 and DSCN3178 are also photographs of lung tissue. DSCN3176 shows edema and anthracotic pigmentation. The structure of the alveoli in the lower left hand quadrant is intact. The tissue in the right hand portion of the photograph is pink due to the influx of fluid into the alveoli. This is not a consequence of autolysis but of cardiac failure. The concentrations of anthracotic pigmentation are in macrophages

DSCN3178 is another photomicrograph of lung tissue. The upper central part of the photomicrograph is light pink indicating edema. Macrophages containing anthracotic pigmentation are present throughout with the exception of the upper right hand quadrant. The outline of these white cell is apparent, showing that they are intact. It appears that some endothelial cells have sloughed off into the alveolar spaces in the upper left hand quadrant and in the lower half of the photograph. This is indicative of some autolysis. However, the nuclei are present and staining even in the sloughed cells. The large round cell with the large nucleus shown in the lower left hand quadrant of photomicrograph DSCN3178 is most likely a type II pneumocyte, as it is plump due to the large amount of cytoplasm. The cellular detail is remarkable. Differentiation of cell types, and cell structures, can readily be made. Autolysis is minimal.

DSCN3179 is a photomicrograph of tissue seem photomicrograph DSCN3178, but at higher magnification. The nuclei of the endothelial that apparently have sloughed into the alveolar space are evident. The outlines of the macrophages are particular clear. Once activated, the life span of these white cells, even in living tissue, is only a day or so. The macrophages in this photograph been activated; they have phagocytized the inhaled anthracotic material, which remains concentrated within these cells showing that cell membranes of the macrophages are intact.

The architecture and cellular detail seen in the lung tissue would not be discernible in a body left in the environment of the National Forest unless death occurred within two or three days of recovery.

#### **GROSS ANATOMY**

The internal findings and photographs of internal organs are consistent with the results of the microscopic examination of tissue preserved in the histology block in Harris County Medical Examiner case no. 99-02. The description of tissues and of the autopsy procedures to which Dr. Carter subjected the tissues indicates that the organs are from a recently deceased individual. Dr. Carter was able to remove organs, such as the spleen, liver and pancreas, intact and section them. Dr. Carter was able to obtain samples of every major organ and preserve them in formalin. Photographs show nothing but fresh and well preserved tissues.

#### **Internal Findings**

Dr. Carter found the pancreas intact and was able to remove it and section it (cut it in slices for gross examination). She was able to identify the pancreatic duct and describe the parenchyma. The pancreas characteristically liquefies or autolyzes quickly after death. Pancreatic cells produce digestive enzymes. Upon death, metabolic processes that prevent the

enzymes from acting on the pancreas' own tissue cease. Liquefaction of the pancreas to the point it loses microscopically recognizable internal structure may occur within 24 to 48 hours even under hospital or morgue conditions where the environment and temperature are controlled.

The condition of Ms. Trotter's spleen at autopsy also supports the conclusion that her body was not exposed in the forest until well after Mr. Swearingen was incarcerated. Like the pancreas, the spleen autolyzes relatively rapidly even under hospital and morgue conditions. The autopsy report's description of the spleen, however, is that of an organ from a recently deceased person.

Dr. Carter's examination of the liver is further proof that Ms. Trotter's body could not have been in the National Forest for more than a few days. The liver is a large solid organ that disintegrates rapidly after death. However, Dr. Carter was able to remove the liver and section it. Gross examination did not reveal perforation in the liver tissue due to gas bubbles, which would have formed soon after death under conditions found in the Conroe area in December 1998 and January 1999.

Dr. Carter's findings upon examining the gastrointestinal tract indicates that Ms. Trotter's body was exposed in the National Forest for only a short period of time before recovery. Dr. Carter reports that she found the esophagus intact. She dissected the stomach, and was able to rinse and examine the gastric mucosa. She found both the large and small bowel intact and unperforated. The mucosal lining of the intestines was still present at autopsy. Mucosa is a fragile tissue that readily decomposes under temperature conditions such as those reported for the Conroe area in December of 1998 and January of 1999. It is in virtue of metabolic processes in the living organism that the gastric mucosa and intestinal mucosa are not digested by the enzymes that they secrete. After death, these tissues quickly disintegrate.

Dr. Carter reported that the weight of the body clothed was 113 lbs, while the nude body was 105 lbs. Medical records show that approximately two weeks before December 8, 1998, Trotter weighed 109 pounds at her doctor's office. The weights are remarkable in that they demonstrate no loss in body mass or a very insubstantial loss. Even if a corpse is not scavenged by insects or carnivores, it will lose substantial mass in less time than 25 days when exposed under conditions prevailing in the National Forest.

#### **Autopsy photographs**

Photographs of the stomach (attached as Exhibit 'F' and 'G') confirm that Dr. Carter was able to remove this organ and dissect it. In bodies that have been exposed for more than several days under conditions in which Ms. Trotter's body was found, the stomach wall autolyzes and perforates, causing the contents to spill into the surrounding peritoneal space. This is because the stomach contains digestive juices one of which is hydrochloric acid. Upon death, when the tissues of the stomach are no longer producing protective secretions, these juices – gastric enzymes and acids – rapidly eat away the stomach wall causing the organ to disintegrate. Even in living persons, the gastric wall will perforate in a similar manner if subjected to an episode of ischemia.

Attached as Exhibit 'H' to this report is the photograph of the spleen that Dr. Carter removed during autopsy. The spleen is a sponge-like organ that contains many vascular spaces and performs the important physiological function of removing red blood cells that are old or damaged and essentially worn out. After death it autolyzes and liquefies rapidly.

The spleen in Autopsy photograph 002, appears to have been dissected since there is a longitudinal incision through the capsular surface and into the parenchyma. The capsular surface is smooth and glistening and the edges of the incision are sharp. Autolysis appears to be minimal

to none, and the photograph of the spleen has the appearance of an organ taken from a live or recently deceased individual.

Photographs of Ms. Trotter's heart show that the muscle was still red and relatively fresh looking at autopsy. Exhibit 'I'. The darkening and shrinkage characteristic of decomposition are absent. There are several long incisions and several shorter ones. The edges of the incisions are sharp. Pericardial fat tissue is seen in the upper left part of the photo surrounding the aorta. It is glistening and well preserved. The pericardium, except for the incisions, is otherwise intact and the surface is smooth and glistening. Again, the appearance of the heart is what one would expect to find upon autopsy of a recently deceased individual.

#### **FINDINGS BY OTHERS**

I have been asked to address the findings of other pathologists who reviewed this case, and the opinion of the courts with regard to these findings. In its opinion of January 26, 2009, in *In Re Swearingen*, cause no. 09-20024, the Court of Appeals for the Fifth Circuit states that,

We note the inconsistencies in the forensic evidence presented by Swearingen. Dr. Carter's affidavit describes "marked decomposition of the head and neck region" and finds that the body was exposed in the woods "within fourteen days of discovery." Dr. G. M. Larken suggests that the body was in the woods and deceased for 3-4 days. Dr. Luis Sanchez concludes that the body was likely in the field for 10-15 days but was "some place else before that." Dr. James Arends, an entomologist, testified that the body was "stored someplace cold" ("frozen") before being placed in woods based on the different decomposition from one end of the body to another. Finally, Dr. White analyzed tissues that he concluded "are of an individual that has been dead no more than two or three days." Obviously, although each expert opines that the body was not placed in the woods on December 8, 1998, the differences undermine the credibility of their conclusions.

I have reviewed the affidavits of Dr. Carter and Dr. Larkin, and was present during Dr. Sanchez's testimony. These pathologists had seen the microscopic slides when they gave their opinions.

Dr. Larkin's and my view that that the gross findings indicates that Ms. Trotter's body was in the woods for significantly less time than the fourteen days does not mean that there is doubt among the pathologists about what the evidence shows, nor does it mean that the evidence is inconclusive, regarding whether the body of Melissa Trotter was left in the woods after Mr. Swearingen was incarcerated. The consensus of these forensic pathologists, based on gross anatomy, is that Ms. Trotter's body could not have been in the National Forest more than fourteen days, which means that the pathologists are in agreement that the body was left in the woods at least one week after Mr. Swearingen was incarcerated. Again, it is important to bear in mind that the microscopic appearance of the organs and tissues was unknown and was not taken into consideration by Dr. Carter, Dr. Sanchez or Dr. Larkin at the time these opinions were formulated.

The State and the courts have argued that the Dr. Carter's findings upon dissecting the stomach support the State's theory that Ms. Trotter died at least twenty two days and as much as twenty-five days before her body was found. According to both the State and the courts, the stomach contents contained the remnants of a meal that Ms. Trotter ate either at the College Campus or at McDonald's restaurant on the day she disappeared. These allegations have always been, and remain, pure speculation unsupported by any of the facts in evidence.

Autopsy photographs of the stomach show chyme mixed with some bloody fluid that is probably due to the dissection. The description Dr. Carter gave at trial of the stomach contents is consistent with the ingestion of a wide variety of foodstuffs commonly served at home and at numerous institutions. Dr. Carter described pieces of white meat, some green vegetable material, and some white material that she thought might have been from a potato. Dr. Carter was unable to say what animal the white meat was from or what plant was the source of the

green substance. There is, in fact, nothing at all about the stomach contents to suggest, much less conclude beyond reasonable doubt, that Ms. Trotter's body was exposed in the Sam Houston National Forest for more than two or three days.

The State and the courts have also relied on Dr. Carter's testimony that fungi or mold she says that she observed on Melissa Trotter's body indicated that the body had been in the woods for approximately 25 days. Dr. Carter's autopsy report and testimony does not indicate that samples of fungi and mold were taken or the type of fungi or mold identified. The record does not indicate where specifically the fungi or mold was found, nor indicate whether growth was luxuriant or sparse. Autopsy photographs were not taken in order to document the presence of fungal or mold growth. The discoloration of the skin that is seen in those photos that were taken of the body is typical of what is seen in early stages of decomposition and cannot be attributed to the growth of fungi or mold.

### CONCLUSION

The slides in Harris County Medical Examiner case no. 99-02, when examined by routine light microscopy, clearly showed tissue architecture and subcellular details that disappear within two or three days of death, unless the tissue is fixed and preserved. It is therefore scientifically certain that Ms. Trotter body was recovered no more than two or three days after it was left in the National Forest. Without evidence that the body was preserved in another location before being deposited in the National Forest, the microscopic evidence permits only one forensic conclusion, and that is that Ms. Trotter died no sooner than December 29 or December 30, 1998.

The gross anatomical findings corroborate the conclusions that must be drawn from the histology in this case. The descriptions and photographs of internal organs are of the tissue of a recently deceased individual.

Larry Swearingen was incarcerated on December 11, 1998, and has remained in custody since that time. The scientific evidence conclusively demonstrates that Mr. Swearingen could not possibly have killed Ms. Trotter and left her body in the National Forest as the State maintains.

A handwritten signature in black ink that reads "Lloyd White" followed by a stylized flourish.

Lloyd White, M.D., Ph.D., S.T.L.

Dated: 14 April 2009