

Grim Glamour: Forensic Pathology

OBJECTIVES/RATIONALE

Forensic pathology is often seen as an exciting yet macabre field of work—a fascinating myth perpetuated by television dramas like the popular *CSI* and *Quincy, ME*. Although the occupation is diverse and stimulating, solving crimes and performing post mortems are not all adventure and glitter. It can be physically and emotionally taxing. The student will describe the career path of the forensic pathologist, list their duties, and compare forensic pathology to other forensic medical professions.

TEKS 121.2 (c) 1D, 3A, 6A, 6B
121.15 (c) 3D

TAKS ELA 1,4

KEY POINTS

POWER POINT: *Forensic Science: The Search For Hidden Truths*

KEY POINTS

I. If you are interested in aspects of medicine and law, there are a number of fascinating medicolegal careers. The most instantly recognizable is the field of forensic pathology.

II. Terms:

- A. *Forensic*— word of Latin origin meaning forum or court
- B. *Pathology* – the study of disease
- C. *Pathologist* – a specialist in the study of disease
- D. *Medical examiner (ME)* – a pathologist who performs autopsies to determine cause of death
- E. *Litigation* – a lawsuit
- F. *Expert witness* – a specialist who will provide professional testimony in a court of law

III. What is a forensic pathologist?

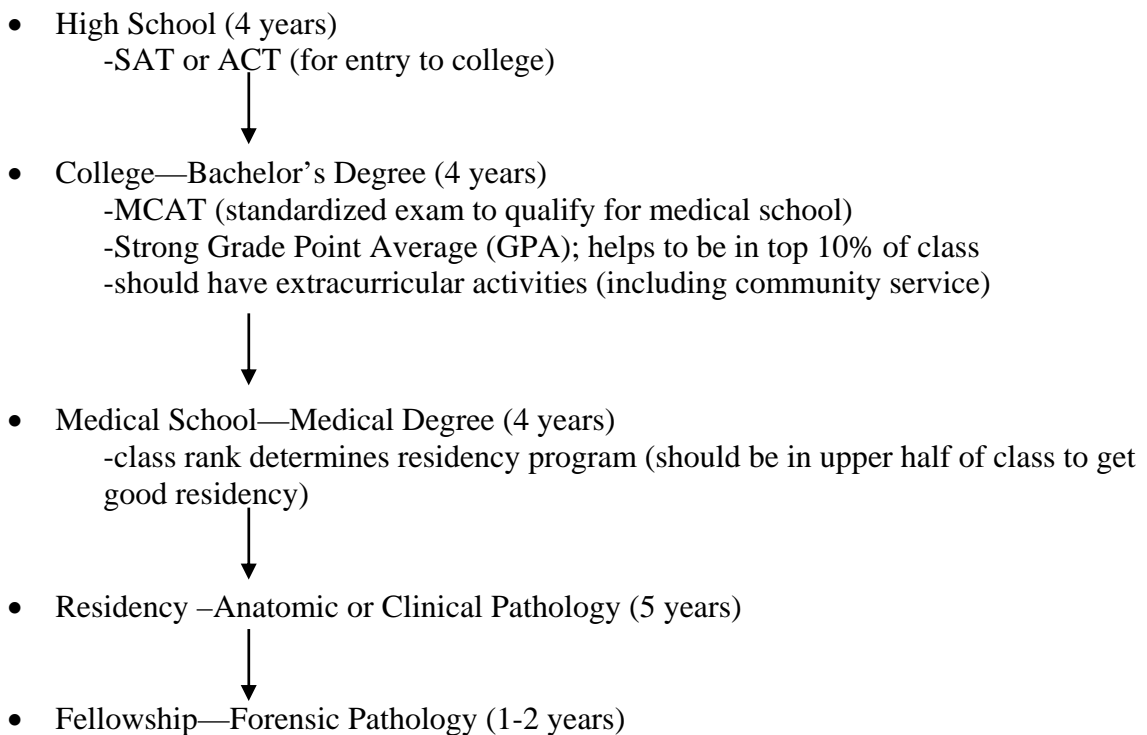
- A. a medical doctor who performs anatomical examinations to establish cause of injury or death
 - 1. Cause of death is generally determined by autopsies and may be classified in several ways:
 - a. natural
 - b. accidental
 - c. suicidal
 - d. homicidal
- B. In addition to autopsies, what else do forensic pathologists do?
 - 1. examine assault victims
 - a. photograph and document wounds as potential evidence for litigation
 - b. verify wound marking(s) with victim's account of how injury occurred
 - 2. go to the site where a death occurred
 - a. look for clues and evidence that might help determine cause of death
 - i. pattern of blood splatters, fibers, etc.
 - ii. talk with neighbors, family, witnesses, etc.
 - 3. meet with homicide investigators, police officers, families - acquire and share information and ideas
 - 4. consult other medical doctors with autopsy/toxicology findings
 - 5. testify in court as an expert witness

- IV. What personality attributes are desirable in a good forensic pathologist?
1. a talent and interest in the sciences (biology, chemistry, physics)
 2. a good understanding of human behavior and be able to think like a detective in order to develop insight into the heart and mind of a criminal (good idea to take psychology, anthropology, and criminology electives in college)
 3. an interest in law
 4. detail oriented (often times, details hold the key to solving mysteries surrounding death)
 5. good communicators (talk with diverse group of people—police officers, families, medical professionals, etc.)
 6. good public speakers (must be able to articulate information to judge, jury, reporters)
 7. a good problem solver

V. What type of training is required for forensic pathologists?

- A. Since forensic pathologists are medical doctors, the training is long and arduous. But if you have a passion for medicine and see school as an agreeable learning endeavor, this career can be a meaningful undertaking.

1. **THE ACADEMIC PATHWAY**



VI. What is the income potential for a forensic pathologist?

- A. The salary depends on experience, geographical area and level of responsibility.
B. Generally the annual income range is between \$100,000 and \$180,000.

ACTIVITIES

- I. Read handout, *A Day In The Life Of A Forensic Pathologist* and discuss in class.
- II. Research and design a poster on a forensic science career other than pathology such as: forensic artistry, forensic entomology, forensic nursing, forensic anthropology, forensic engineering,

forensic odontology (dentistry), forensic psychology, forensic toxicology, wildlife forensics, criminalistics. (Poster Project Criteria)

MATERIALS NEEDED

Forensic Science Books

The following web sites may be used for forensic science career investigation:

Forensic artist: http://ani1299.tripod.com/vol_003_no_001/reviews/tb/page008.html

Forensic artist: <http://www.forensicartist.com/index.html> (wonderful site that describes various services performed by forensic artist including composite drawing, facial reconstruction, computer image-enhancement age progression)

Forensic toxicologist: <http://www.abarbour.net/>

Forensic entomology: http://folk.uio.no/mostarke/forens_ent/forensic_entomology.html (fascinating in a morbid way—site has some excellent information)

Forensic nursing: <http://healthcare.monster.com.au/articles/7135/>

<http://www.psna.org/Career/forensic.htm>

http://www.nurseweek.com/news/features/02-01/forensic_web.asp

http://www.nurseweek.com/news/features/02-02/clues_web.asp

} All offer good info for this new branch of nursing.

Forensic odontology (dentistry) <http://www.dentistry.adelaide.edu.au/forensic/>

Forensic anthropologist: <http://www.anthro.umt.edu/studguid/forensic.htm> (for “bones only” people)
<http://people.uncw.edu/albertm/>

Forensic psychology: <http://www.geocities.com/Athens/7429/forensicpsychprep.html>

[http://www.wcupa.edu/ACADEMICS/sch_cas.psy/Career_Paths/Forensic/Career08.htm\(excellent\)](http://www.wcupa.edu/ACADEMICS/sch_cas.psy/Career_Paths/Forensic/Career08.htm(excellent))

Forensic engineering <http://www.criminology.fsu.edu/faculty/nute/Fscareers.html> (small paragraph)

ASSESSMENT

Successful completion of forensic science career poster. (Criteria forms and Rubric)

Successful completion of interview-based report. (Sample interview questions)

ACCOMMODATIONS

For reinforcement, the student will list the requirements for a career in forensic science.

For enrichment, the students will Interview a forensic scientist and write a report based on the interview. (Sample interview form).

REFLECTIONS

A Day In The Life Of A Forensic Pathologist

Note: The following dialogue is based on an HSTE teacher's shadowing experience.

Monday, Eight-thirty a.m.

Dr. Steve Pustilmic (Pus-TIL-mik) sits at a desk in a small cluttered office talking on the phone with a cardiologist. Medical terms like "cardiomyopathy" and "heart anomaly" were used to discuss a recently deceased patient. Hanging up the phone, he looks across the room and acknowledges me with a nod of the head.

"You must be the high school teacher?"

"That's correct. You must be Dr. Pustilmik."

"Correct."

"I've got some paperwork to tend to—then the autopsy techs will be in and we'll get started. Just follow me around and I'll explain what I'm doing."

We go to an adjacent conference room where he begins writing. Occasionally he would look up and mumble something about the physical findings he was documenting.

"Young kid," he comments. ". . . a twin, and suddenly—boom, he drops dead. Family is devastated and concerned, of course, for his twin. Want to know if the condition is genetic."

At that point a man in a suit arrives with a portable baby bassinette and pillow.

"Good, you brought it," says Dr. Pustilmic. "Don't tell me *that's* the pillow!"

"Sure is," replied the man.

The newly arrived man's beeper went off and he excused himself while he made a call.

"See that guy?" Dr. Pustilmic asked, referring to the fellow in the suit. I nodded.

"He's a homicide detective. Let me ask you—you a mom? Yeah? Well, did you let your children sleep with you when they were little?"

I replied "no".

"NO? 'No' you say? AND WHY IS THAT???" he roared?

"Well, I didn't want to establish codependent sleeping habits. Besides, I was afraid my husband or I might roll on the baby."

He pointed a finger at me while slamming his other hand on the table exclaiming, "That's RIGHT! You were afraid you'd *roll* on the baby. Just last week we get a baby in. Infant was sleeping with the parents—the father rolls on him and the baby is smothered. See that bassinette? Two-month old baby died in there yesterday. Baby had reflux and asthma. Now, did the reflux trigger an asthma attack that caused the baby to die or did the baby asphyxiate in that bassinette?"

"If the baby had reflux, couldn't his death have been caused by aspiration?" I inquired.

"Nope—lungs looked clear. But, the asthma could have irritated the respiratory tract and initiated an asthma attack. Here comes the detective. Let's see what he has to say about this big pillow he brought."

The detective has a seat and pulls out a stack of photos.

"Let's start with the pictures," the detective says. "Here's the baby when we were first called on the scene."

The child was fair-skinned with fine blond hair. He looked as though he was sleeping. Faint red spots were visible on the body. Dr. Pustilmic explains that these spots appear after death as blood begins to escape from capillaries. There were more pictures of the baby: front, back, sides. Then came photos of the bassinette, followed by different shots of the parent's bedroom, which demonstrated the exact position of the baby's tiny bed. So many details, I realized. A small infant pillow was visible in the bassinette.

“See these pillows?” the detective asks. “Well, I went back to the home like you suggested and told the parents that we would like to examine the bassinette and pillow that the baby was sleeping on when he died. I expected her to bring me the little baby pillow we saw when we first arrived at the scene. Instead, she brings back this big pillow *and* the baby pillow! I asked her if the baby was sleeping on the big pillow when he died and she said he was,” he incredulously added.

Dr. Pustilmik reached over and examined the thick, fluffy pillow. He shook his head and asked the detective to set the bassinette up. They proceeded to place the big pillow at the bottom of the bassinette. The homicide detective then placed the small infant pillow under the larger one and explained that the mother did this to elevate the baby’s head due to his reflux. The baby was on his stomach when they put him down to sleep. Dr. Pustilmik pushed his hand into the thickness and the pillow billowed well beyond his wrist.

“Well,” he sighed, “even if the baby turned his head to the side, he wouldn’t be able to breathe for long. The cell spaces in the pillow collect carbon monoxide. Death by asphyxiation—accidental. End of story.”

“Do I say anything to the parents yet?” asked the detective.

“Let me get the lab results back from the clinic first,” the doctor requested.

He turned to me—“It’s tough,” he stated. “Young parents. They thought they were doing what was best for the baby. Now . . . the guilt they will feel.”

The detective left.

“You want to interview me before we get started in the lab?” he asked.

“Sure. For the record, how would you define a *forensic pathologist*?”

He gave me an amused look and replied, “They are doctors who are *privileged* to look under the skirts of society.”

Ha! The playful type—fortunately, I like that in a person.

I found out that Steve Pustilmik had gone to medical school at Washington University in St. Louis. After completing his basic medical training he left for Yale to begin a medical residency in vascular surgery. Smart guy. Early during his stint, he sat in on a lecture that was delivered by a forensic pathologist. He knew from that moment on that forensic pathology was the field for him.

“Doctor, can you give me a succinct list of your daily duties?”

“Sure—but it won’t be succinct,” he assured me. After which he proceeded to give the history of coroners, which dated back to the Middle Ages and Renaissance! It was an engaging account, but before he could finish, a large, casually dressed man appeared at the door. Peering at me from the threshold he looked slightly perplexed.

“And who might you be?” he asked me. “Oh yes, the teacher,” he recalled. “Is that right?”

“That’s right. I’m Ms. Kacher, and you are . . .?”

“Dr. Harvey,” he answered before directing his attention to Dr. Pustilmik. “Steve, the techs still aren’t here and we need to get started on the drug-overdose victim. Family wants the body by 4:00 for a showing this afternoon.”

“Coming back to the lab?” Dr. Pustilmik asked me.

Gulp. I was used to working with the living.

“Lead the way, Doctor.”

The lab was a crowded space with carts and special stretchers for the deceased. Two “bagged” bodies were already in the room. On one side of the room, built-in shelves held a vast array of internal organs preserved in jars of formaldehyde—their favorite pathological findings, probably. Dr. Pustilmik walked down a connecting hall to a back room. I could see that it was a holding area for bodies. Upon his return, he was wheeling a third bagged-body back to the lab.

“I’m going to change. Be back in a minute,” he informed me.

Suddenly, I was alone with three dead bodies. I looked around at the array of medical tools hanging on pegboards, laying on counter tops and carts. There didn’t seem to be any particular

ordering of instruments and supplies. On the floor, not 4 feet away, was a puddle of clothes—jeans, shirt, boots. Dentures were resting in the middle of the discarded garments. Abandoned remains of a recently deceased person I realized. *Don't these guys pick up after themselves, I wondered?* I was overwhelmed with a desire to straighten the place up. My obsessive/compulsive personality tendencies were never far from the surface.

Dr. Harvey was first to arrive. He began gathering a camera and equipment when Dr. Pustilmik returned. I was glad to see him. He was dressed in dark blue scrubs. He donned a water-resistant apron, gauntlets, and gloves.

“Ready?” he inquired, as he tossed gloves my way.

He began unzipping the black bag. I held my breath. It was a man—completely naked. Whew. I felt momentarily deflated. How vulnerable we are in death.

First there was the physical examination of the outside of the body. Every scar and tattoo was documented. Dr. Pustilmik pointed out needle marks on the right inner arm. There was also evidence of a fresh “stick”. Eyes were opened, their color noted. Mouth was checked for oral prosthetics. Next, photos were taken from above the victim, then from the sides. The deceased was rolled laterally and held in place while a photo was taken of his bare backside.

“What is it that you enjoy most about your work?” I asked the pathologists.

“Everything,” Dr. Pustilmik remarked.

“That’s right,” Dr. Harvey joined in. “Why, the clinical pathologies we get to see here—you might never get to see them in a hospital setting. Once, I had a woman who had breast cancer. She was in denial until the last and never did have any medical intervention. By the time she arrived here, the cancer was big as a cauliflower. It’s rare to see breast cancer run its normal course. Generally, patients who die from breast cancer have had surgery, chemo, and radiation. By the time we get them we see the metastatic tumors—not the clinical course that breast cancer would typically take.”

During his explanation, I heard a redundant clipping sound behind me—like branches being pruned on a tree. I turned around to see Dr. Pustilmik cutting through anterior ribs with what looked like pipe-cutting shears.

The torso skin had been incised down the middle and folded back. Dr. Pustilmik cut the remaining ribs, and then removed the entire anterior wall of the rib cage. I walked over for a closer look and marveled at the now exposed structural components. The pathologist took a large syringe with a long needle and began aspirating blood from the aorta. This would go to the clinical pathologist at the hospital for chemical analysis. One-by-one, Dr. Pustilmik began removing organs in the thoracic cavity and placing them in a vat. I couldn’t get over the speed at which he was able to dissect, all the time observing the color and integrity of each organ.

“Ah—lungs feel heavy. Heavy lungs can indicate cardiac failure,” he told me.

Upon finishing with the thoracic cavity, he excised the diaphragm and began removing the contents from the abdomen. Within minutes I was staring into an empty ventral cavity.

“Get that marker above the door and begin to write,” he requested.

As each organ was placed on a scale, I recorded its weight on a large dry erase board. When we were finished, a tissue sample from each organ was placed in a special jar. It would be stored in the event future tissue testing was needed. Individual organs were then sliced crosswise multiple times and examined for anomalies or lesions. I knew that the anatomic pathologists would have to wait for the blood chemistry tests to come back from the lab before a definitive diagnosis could be made regarding drug overdose induced death.

By the end of the day my legs were fatigued. This was very physically exhausting work. I could see that forensic pathologists were always on the move.

“So, is this a typical day in the life of a medical examiner?” I asked.

“If I’m not in the field investigating a death or giving testimony in court.”

“You seem to really enjoy your work, Doctor.”

“That’s right—because I’m privileged enough to look under the skirts of society.”

“Ha! It’s fascinating, but I’ll stick to teaching.”

Student Criteria: Career Poster Project

<p><i>The following information must be included on your poster:</i></p> <ul style="list-style-type: none"> -name of career -description of career -working conditions -desirable personal attributes for career -education/training -annual salary range <p>*your name on back of poster</p>	<p><i>The following information must be included on your poster:</i></p> <ul style="list-style-type: none"> -name of career -description of career -working conditions -desirable personal attributes for career -education/training -annual salary range <p>*your name on back of poster</p>
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Rubric: Career Poster

Criteria	Comments	Score
Thoroughness: (50%)		
Career description 10%		
Working conditions 10%		
Training/Education 10%		
Job Outlook 10%		
Salary Range 10%		
Creativity/Aesthetics 15%		
Neatness 15%		
Spelling/Grammar 20%		

Total

Criteria	Comments	Score
Thoroughness: (50%)		
Career description 10%		
Working conditions 10%		
Training/Education 10%		
Job Outlook 10%		
Salary Range 10%		
Creativity/Aesthetics 15%		
Neatness 15%		
Spelling/Grammar 20%		

Total

Interview Questions: Forensic Science

Student Interviewer _____

Date _____

Forensic Occupation _____

1. What exactly is forensic (field you're investigating)?
2. When did you decide that you wanted to have a career in forensics?
3. How much education do you need to work in your field of forensics?
4. What is a "normal" day for you? (tasks)
5. What personality traits are important for someone going into your field?
6. Do you have any recommendations as to what type of college it is best to attend when an individual plans on going into your field?
7. How do you cope with emotionally harrowing cases?
8. Do you have a particularly memorable case?
9. What do you like best about your job?
10. What do you like least about your job?
11. Why do you think forensic science is so popular nowadays?
12. What advice might you give to an individual who is interested in going into your field?

Books on Forensic Science

Forensic Art and Illustration, 1st Edition, by Karen T. Taylor, CRC Press LLC, ISBN 0-8493-8118-5.

Very nice book—full of artistic techniques including clay facial reconstruction, computer imaging, forensic sketching, etc.

The Casebook of Rensic Detection: How Science Solved 100 of the World's Most Baffling Crimes, By Colin Evans, ISBN, 0471076503.

This book takes the reader on a absorbing journey through the world of criminal evidence collection and analysis. From tried-and-true investigatory tools like fingerprinting to the DNA profiling, from ballistics to bite marks, from reading stories in the activities of insects to reading the stories human bones tell, this book explains forensic science techniques in terms the layperson can understand.

The Bone Lady: Life as a Forensic Anthropologist, By Mary H. Manhein, Penguin USA, ISBN 014029192X.

Manhein, an expert on the human skeleton, assists law enforcement by providing profiles of remains that help narrow the identification process when traditional means used by medical examiners are no longer applicable. In her book she shares many fascinating cases that include the science underlying her analyses as well as the human stories behind the remains.

The Forensic Science of "CSI", By Katherine M. Ramsland, Berkley Publishing Group, ISBN 0425183599.

Interesting book written by a forensic psychologist who goes behind the scenes of the TV show, CSI, to investigate the reality of the dramatic crime-solving techniques.

Dead Men Do Tell Tales, By William R. Maples & Michael Browning, Bantam Doubleday Dell Publishing Group, ISBN 0385479689.

Forensic anthropologist Maples revisits his strangest, most interesting, and most horrific investigations, from gruesome and baffling dismemberment cases to the revelation of the identify of long buried skeletons.

Criminalistics: An Introduction to Forensic Science 7th, By Richard Saferstein, Prentice Hall PTR, ISBN 0130138274.

Good book for that describes the application of science to criminal investigation in a style that easily comprehended by the individual who has no background skills in science. The book presents actual case histories and many illustrations.

Dead Reckoning: The New Science of Catching Killers, by Michael M. Baden & Marion Roach, Simon & Schuster Trade, ISBN 0684867583.

This book allows the reader to visit a class where students blow mouthfuls of their own blood onto one another in order to better understand blood-spatter patterns. The author takes the reader on a virtual tour to workshops that study the effects of temperature and humidity on the life cycle of maggots populating a corpse. Learn how much of someone's drug history can be detected in a single strand of hair.

The Bone Detectives: How Forensic Anthropologists Solve Crimes and Uncover Mysteries of the Dead, By Donna M. Jackson & Charlie Fellenbaum, Little, Brown & Company, ISBN 0316829617.

This is an introduction to the work of scientists and artists who extract clues from skulls and other human bones to determine identity. The discussion focuses on a skull found in a Boy Scout camp and follows the stages of study as police and anthropologists work to identify a murder victim, solve the crime, and prosecute the perpetrator.

Maggots, Murder, and Men: Memories & Reflections of a Forensic Entomologist, By Zakaria Erzincinlioglu, St. Martin's Press, Inc., ISBN 0312287747.

This book describes the application of insect biology to the investigation of crime. The book ranges over cases from history, prehistory, and mythology to the present day in as gripping and readable as a good thriller!

Digital Evidence and Computer Crime: Forensic Science, Computers, and the Internet with Cdrom, By Eoghan Casey, Academic Press, Inc., ISBN 012162885X.

If you like (and understand) computers, this is an excellent read. Readers will also learn about relevant legal issues and will be introduced to deductive criminal profiling.

Criminal Profiling: An Introduction to Behavioral Evidence Analysis, 2nd Ed, By Brent E. E. Turvey, ISBN 0127050418.

Good one. The author is a private forensic scientist and criminal profiler.

Portraits of Guilt: The Woman Who Profiles the Faces of America's Deadliest Criminals, By Jeanne Boylan, Pocket Books, ISBN 0671034863.

Written by the profiler who drew, among others, the infamous hood-and-sunglasses sketch of the Unabomber. In this book she tells her own story, from childhood in Colorado through her difficult training in the Pacific Northwest, to her current work for the FBI. She details her unusual interview and sketching methods, which have made her one of the most successful profilers in the country.