Forensic Science & Crime Scene Investigations
About Me

- Leanna Farnam

- Education:
  - Bachelor’s of Science in Biochemistry from Simmons University
  - Master’s of Science in Forensic Science from Boston University
  - Currently pursuing PhD in Criminal Justice at University of MA at Lowell
About Me

- **Current Position:**
  - Forensic Science and Science Program Chair at Lasell University in Newton, MA
  - Volunteer Forensic Consultant for Innocence Project

- **Previous Positions:**
  - Forensic Scientist for Massachusetts State Police Crime Lab
    - Forensic DNA Analyst
    - Serologist/Criminalist
    - Crime Scene Responder
  - Research Scientist/Engineer for Department of Defense
  - Genetics Lab Manager for Brigham and Women’s Hospital
About Me

Some statistics:

- Processed >50,000 DNA samples
- Processed >2,000 Sexual Assault Evidence Collection Kits
- Testified >100 times in state, federal and civil court
- Processed >500 crime scenes
  - Fatal/non-fatal shootings
  - Fatal/non-fatal assaults
  - Fatal/non-fatal stabbings
  - Sexual assaults
  - Robberies
Crime Scene Investigations
Real Life vs. TV
TV Myth #1

- Crime scenes always happen during the day, during your regular work hours
Fact #1

- Crime scenes typically happen in the middle of the night - you don’t get much sleep as a crime scene investigator!
TV Myth #2

- Crime scenes only happen in really nice indoor spaces or outdoors in really nice weather
Fact #2

- It sometimes rains, snows, gets very hot, or gets very cold
- Some indoor spaces will have rats, cockroaches, no electricity
TV Myth #3

- A case can be solved from crime scene to DNA analysis in ~24-48 hours
Fact #3

- It typically takes 2-3 years for a case to be completed and go to court
TV Myth #4

- Forensic science is only cool, never gross
Fact #4

- It is cool, but you can’t have a sensitive stomach
- You will see blood, guts, and dead bodies
- Remember, all of those things smell too!
What does a typical day look like?
Daily Schedule

- It varies from lab-to-lab
- Typically work regular hours Monday-Friday in the lab to process cases
  - Fingerprint analysis
  - DNA analysis
  - Forensic chemistry analysis
- Crime scene responders are typically on rotation
  - “On call” one day per week and one weekend per month
Daily Schedule - Example

- 7:00 AM: Go to work at the lab
- 3:30 PM: Day ends at the lab and go home
- 1:00 AM: Get called out to a crime scene
- 8:00 AM: Leave the crime scene
- 8:30 AM: Log in all evidence
- 9:30 AM: Go to work at the lab
- 5:00 PM: SLEEP
Daily Tasks

- In the lab:
  - Process a case using various procedures and instrumentation
  - Analyze results
  - Write reports
  - Review case files and reports of other analysts

- At the crime scene:
  - Document all evidence at the scene
  - Perform preliminary tests as necessary
  - Properly collect and package all evidence
  - Log all of the evidence in using LIMS software
What are some other responsibilities that someone outside the field may not know about?
Additional Responsibilities

- Typically spend a lot of time preparing for court and testifying.
- Also spend a lot of time waiting!
  - Waiting for search warrants to be signed
  - Waiting for your turn to testify
Other occupations related to the field?
Other Occupations

- Crime scene investigator
- Serologist/criminalist
- Forensic DNA analyst
- Forensic chemist (drugs/toxicology/bomb & arson)
- Fingerprint analyst
- Forensic pathologist
What education and training is required?
Education Requirements

- Need a Bachelor’s degree in a science
  - Forensic Science
  - Biology
  - Biochemistry
  - Chemistry
- Cannot be a Bachelor’s in Criminal Justice!
- There are specific college course requirements for forensic DNA analysts as well
Training Requirements

- Typically must complete 6 months of training before you can begin actual casework

- Training includes:
  - Mock casework
  - Written exams
  - Competency exams
  - Mock court
What other occupations would I be qualified for?
Other Occupations

- Any occupation in science
  - Research science
  - Biology
  - Chemistry
  - Biotechnology/Pharmaceuticals
- Law enforcement
  - Detective
How does this apply to what I am currently learning?
Education

- You need to know math and science to be a forensic scientist
  - Regularly take measurements at a crime scene and in the lab
  - Regularly perform calculations to set up procedures in the lab
    - If those calculations are wrong, you likely will lose your sample!
  - Need to understand biology and how DNA functions to understand how to analyze biological materials
  - Need to understand how chemistry works to understand how to analyze chemistry results
  - Need to know chemistry because you will need to prepare chemical reagents yourself for the field and the lab
Education

- You need to know how to write properly to be a forensic scientist
  - Need to write formal reports that are going to be presented in court
- You need to be able to read challenging scientific literature to stay on top of forensic developments
  - You get better at reading by...reading
If this is my career goal, what should I focus on my freshman year?
Freshman Year

- Focus should be on successfully accomplishing the basic science courses
  - Introductory biology
  - Introductory chemistry
- Forensic-specific courses don’t happen until later
- Note: Look for FEPAC-accredited forensic programs
  - May soon by a forensic requirement
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Questions?
Contact Information

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- Office: 617-243-2252