Medical criminalistics

What is CSI?

- it follows a set of principles and procedures,
- every CS is unique
- primary / secondary CS
- macroscopic /microscopic CS,
- other classifications (based on type of crime, CS condition, physical location)

Parts:
1. To secure the scene, to record temporary and changeable traces
2. Static: description of traces, photographing, secure the traces
3. Dynamic: movement of the body, collecting the traces

- Basic rule: do not touch anything!

Holistic crime reconstruction
System of evidence discovered and examined in relation to a particular crime
More evidence gives rise to more meaning
Interpretations must be compatible

Origins: the forensic generalist.Introduced in 1894: A practical textbook for magistrates, police officers and lawyers(iur.dr. JBG Gross)

To be a professional schooled broadly in the subject of crime, criminals and scientific methods ≈ forensic specialists
Reconstruction of crime from physical evidence is culmination of long and methodical process
Recognition
Preservation
Documentation
Collection
Transportation
Identification/classification
Comparison
Individuation
Interpretation/reconstruction

Specific duties

Detective / investigator / forensic technician
- Recognition
- Preservation

Forensic technician
- Documentation
- Collection
- Transportation

Specific duties

Forensic scientist / criminalist
- Identification/classification
- Comparison
- Individuation
- Interpretation/reconstruction

It is the work that defines the professional; it is education, training, experience, and the quality of work products that define expertise

Crime reconstruction, to be accurate, MUST BE:

- Based on close scientific examination of the physical evidence and the surrounding environment,
- The result of applying the scientific method,
- Clearly derived by logic and critical thinking

TRASEOLOGY = science about traces
Place of finding
They point to: existence of criminal act, manner and instruments used, offender, motive, victim and his identity

Types of Physical Evidences at Crime Scenes

- Transient evidences
- Pattern evidence
- Conditional evidence
- Transfer evidence; classification by:
  - Type of crime
  - Type of material
  - General nature of the evidence

Classification of Evidence by Its General Nature

Biological	Chemical
Blood	Fibres
Semen	Chemicals
Saliva	Glass
Other body fluids	Soil
Hair	Gun powder
Botanical	Metal
Bone	Mineral
Tissue	Narcotics
Urine	Drugs
	Paper
	Ink

Physical (Impression)	Miscellaneous
Fingerprints	Laundry marks
Firearms	Voice analysis
Handwriting	Polygraph
Printing	Photography
Number restoration	
Footprints	
Tire marks	
Tool marks	
Typewriting	

Types of Physical Evidences at Crime Scenes

- Transient evidences

- Pattern evidence
- Conditional evidence
- Transfer evidence; classification by:
  - Physical state of the evidence
  - Type of question to be resolved
  - According to the way evidence was produced
  - According to the specific type of evidence

Stages in the Analysis of Physical Evidence

First responder
- Securing the crime scene
- Crime scene survey

Documentation:
- taking notes
- video recording
- photographing
- sketching

Collection & preservation - BASIC RULE: Do not touch anything!

Preservation of Physical Evidence on the Body

A. Transport of body
- place paper bags on the hands
- wrap the body in a clean sheet

B. The morgue
- handled as little as possible
- check identification
- not removed the sheet
- not undressed, fingerprinted, washed or embalmed the body

Procedure with the Body - Recovery of physical evidence

Carefully examine for materials adherent to the clothing and skin

B. After recovery the evidences, place them in an appropriate container and label

Hairs and fibers
- artificial / natural origin
- hair / plant fiber
- human / animal
- male / female/ newborn
- part of the body
- cut / pulled out / fallen out
- damaged / changed
- identity
- Human: width 0,02-0,14 mm, uniformed distributed pigment, uniformed cross section, narrow medulla
- Natural hair: pigment distributed in the middle
- Difference depending on the part of the body
- Female hair: less sulphur
- Newborn: thin, without medulla
- Old hair: decrease in amount of pigment, more air
- Cut hair: sharp edges

- Pulled out: with root
- Changes during burning

Body fluids and excrements

- from the surface
- from gastrointestinal tract, kidneys, genital tract, newborns
- semen: in alive woman cca 34 h.
  dead person – up to 3 w.
  confirmation: by UV light
- saliva: the presence of digesting enzyme amylase/place of discovery

Forensic hematology

- filed tests (chemical screening): possible presence
  blood / other painted compound
- laboratory examination: screening test (proof of hemoglobin) and confirmatory ones
- species tests: human / animal (serology)
- blood typing
- origin (M / F, adult/ baby, body part)
- identity

Bloodstains patterns:

- passive stains: drops, flows and pools; typically result from gravity acting on an injured body
- transfer stains: result from objects coming into contact with existing bloodstains and leaving wipes, swipes or pattern transfers behind such as a bloody shoe print or a smear from a body being dragged
- projected or impact stains: result from blood projecting through the air and are usually seen as spatter, but may also include gushes, splashes and arterial spurts