

**The Forensic Scientist:
Expert Testimony and Ethics**

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**The Forensic Scientist:
Expert Testimony and Ethics**

Evidence
Witness
Ethics
Testimony

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Forensic

- fo·ren·sic\[fə'renzɪk, fə'rensɪk\]adjective
 - Belonging to, used in, or suitable to courts of judicature or to public discussion and debate
 - of or relating to courts of law.
 - Argument
 - Evidence

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Evidence

What exactly is (forensic) evidence?

“(Forensic) evidence is any matter, verbal or physical that can be used to support the existence of a factual proposition.”

Forensic Science Handbook, Volume I, Second Edition

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Evidence Types

- Direct
 - Witness recollections of actual events
 - Audio/video of actual events
- Circumstantial
 - Tangible objects related to actual events
 - Fact and expert witness statements
 - Not a witness to actual events
 - **Lay mis-understanding often subordinates this evidence to direct evidence**

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Evidence Sources

- Testimony
 - Verbal/written statements
 - Direct
 - Circumstantial
- Physical
 - Tangible objects
 - Direct
 - Circumstantial
 - Actual objects
 - Laboratory findings of relevant materials

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Evidence Sources

- Demonstrative
 - Tangible objects
 - Audio-visual aids
- All evidence is presented in Court by witness testimony

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Evidence Admissibility

- Legal foundation must be laid for admission of evidence
 - Authentication
- Procedural rules for scientific evidence
 - Federal Statutes
 - State Statutes
 - Federal Rules of Evidence
 - Case Law
 - “Frye”, “Daubert”

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Evidence Authentication

- Proponent of evidence must provide a basis for trier of fact to accept that the item is what it is claimed to be
- Preservation and custody
 - Protection from substantial change from its original state when it was seized or collected
 - Protection from alteration, degradation, contamination or tampering
 - **Evidence integrity**

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Evidence Authentication

- Chain of custody
 - Begins with the original source
 - Custody may be a person or location
 - Each contact with the item must be able to show:
 - Circumstances under which custody was taken
 - Precautions taken to prevent alteration, degradation, contamination or tampering
 - Change or tampering can be identified if it has occurred
 - Circumstances under which custodian relinquished care, custody and control of the item

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Evidence Authentication

- Chain of custody
 - Not an absolute to support evidence integrity
 - Lay mis-understanding may overstate the significance of the "chain"
 - May not necessarily define evidence integrity
 - Does not exclude other proof of evidence integrity

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Scientific Evidence Admissibility

- General Acceptance Standard
 - Frye v. U.S. (D.C. Cir. 1923) 293 F. 1013
 - Murder conviction where defendant had argued for admission of a systolic blood pressure deception test (lie detection test)
 - Supreme Court ruled such was *not generally accepted* and affirmed the conviction
 - Supreme Court established the *General Acceptance* standard

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Scientific Evidence Admissibility

- General Acceptance Standard
 - Frye v. U.S. (D.C. Cir. 1923) 293 F. 1013
 - Provides a definition of “general acceptance”
 - Does **not** define the field in which the methodology must be accepted
 - Frye cannot distinguish between science and “pseudoscience”
 - Who generally accepts the science?
 - When does science become generally accepted?
 - How does science become generally accepted?
 - Leeches and bloodletting?

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Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - Federal Rules of Evidence 702, 1975
 - Supersedes “Frye Test”
 - Threshold questions for admissibility
 - Is the “scientific” evidence based on good science?
 - Is it reliable?
 - Was a hypothesis generated and was it tested empirically?
 - Admissibility of *reliable* science
 - Reliable science will become generally accepted
 - Admissibility of *relevant* science
 - Good science may not necessarily be relevant

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Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - Federal Rules of Evidence 702, 1975
 - Trial Judges became the “gatekeepers of science” and of expert evidence
 - Judges must now understand the principles and methods that underlie scientific studies and the reasoning upon which the expert evidence is based
 - **Will chemistry or statistics be required to pass the bar?**
 - **Witness MUST EXPLAIN science so the Judge understands**
 - May be assisted by:
 - Court appointed experts and Special Masters

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Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - Federal Rules of Evidence 702, 1975
 - Not unlike vetting standards for peer-review of scientific publications
 - Rules do not become legal precedent until an infraction is challenged
 - Appellate decision

Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993)
 - Suit alleging Bendectin® (Vit B₆/doxylamine) caused birth defects
 - Plaintiff expert opinion based upon *in vitro* and *in vivo* animal studies and re-analysis of other studies employing methods not directly related to humans
 - No published studies supported the allegation
 - Summary judgement for the defendant

Scientific Evidence Admissibility

- “Daubert” Factors
 - The expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or determine a fact in issue,
 - The testimony is based on sufficient facts or data,
 - The testimony is the product of reliable principles and methods,
 - The expert has reliably applied the principles and methods to the facts of the case, and
 - In some federal courts, a Daubert challenge must occur regarding any review of an expert.

Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - General Electric Co. v. Joiner, 522 U.S. 136 (1997)
 - Upheld trial Court’s gate-keeping function to determine admissibility of scientific expert witness testimony
 - Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999)
 - “Daubert” reliability requirement applies to all expert opinions, not just scientific

Scientific Evidence Admissibility

- Reliability and Relevance Standards
 - Crawford v. Washington, 541 U.S. 36 (2004)
 - Defendant has a right to confront his accuser
 - Violation of 6th Amendment
 - Melendez-Diaz v. Massachusetts, 557 U.S. 305 (2009)
 - Forensic drug evidence
 - Bullcoming v. New Mexico, 564 U.S. 647 (2011)
 - Forensic toxicology findings presented by substitute analyst
 - Has the potential to require every laboratory analyst to appear in Court

Witness

- Provides information to the Court
- Anyone with personal knowledge relating to the incident at issue
- Lay witness is limited to knowledge acquired by personal encounter, observation or perception through their five senses

Fact Witness

- Anyone qualified with special knowledge or skill gained by education, training, experience or combination
- Limited to expertise in a specialized subject area
- Present facts acquired beyond individual senses
 - Lab analysts, scene technicians

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Expert Witness

- Functions of a fact witness
plus...
- Apply scientific theory to specific facts to formulate an **opinion**
 - Standards recommended by American Academy of Forensic Sciences

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Expert Witness

- Scientific function
 - Knowledgeable in examining evidence and forming an opinion as to the significance of that examination
- Forensic function
 - Communicating that opinion and its basis to the Judge and jury

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Expert Witness

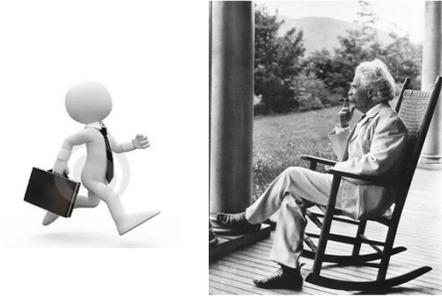
- Forensic expert must articulate
 - Collecting, testing, evaluating evidence
- Forensic expert must be
 - Impartial
 - Credible
 - Coherent
- Assist trier of fact (Judge or jury) to
 - Understand methods
 - Understand conclusions

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Who is an Expert?



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Expert Witness Qualification

- Federal Rules of Civil Procedure 26
- State statutes
- Local court rules
- Case law
 - Daubert v. Merrell Dow, etc.

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Expert Witness Qualification

- Federal Rules of Civil Procedure 26
 - Witness may be required to produce the following
 - Summary opinion
 - Basis of opinion
 - List of publications
 - Previous testimony
 - Disclosure statement

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Witness at Trial

- Trial preparation
 - Prior Preparation Prevents Poor Performance
- Voir Dire (fact/expert witnesses)
 - Judge/Jury second impression of the expert
 - First impression is your bearing before voir dire
- Direct examination
 - Expert is placed before the trier of fact as credible
- Cross examination
 - Expert credibility is challenged

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Expert Witness Testimony Standards

- American Academy of Forensic Sciences
 - Academy Standards Board
 - Standards for practice in forensic sciences
 - Standards for testimony of forensic scientists
 - https://www.aafs.org/research-insights-featured/search?page=1&keywords=testimony&limit=7&status_standard=2%2C4

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Trial Preparation

- Trial preparation
 - Review case report (summary opinion)
 - Review case notes (basis of summary opinion)
 - Review of credentials, conflicts
 - Review prior experience with similar cases
 - Knowledge of specific issues that may be examined
 - Testimony of prior cases with similar issues

Voire Dire

- From Norman French, “to speak the truth”
- Examination to establish a witness’ qualifications, relevance and potential bias
 - Jurors
 - Expert witnesses
 - Education, training
 - Experience
 - Certification

Voire Dire

- Proponent asks questions to establish the witness’ qualification as an expert
- Opponent asks questions to establish matters that might prevent the witness’ qualification as an expert
 - Expertise, relevance, bias
- Opponent may stipulate to the witness’ qualification as an expert

Qualified Expert

- A witness is not deemed an expert until qualified by the Court
- There is no absolute rule as to the degree of knowledge required to qualify a witness as an expert in a given field except
 - Must know more than the “average” person
- Expertise may be limited to a specific area
- When are you qualified as an expert?

When a Judge says you are

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Qualified Expert

Q Ms. Jones, are you an expert in the field of forensic entomology?

A1 Yes

A2 I am knowledgeable in the field of forensic entomology

A3 I have been qualified as an expert in forensic entomology in previous matters before the Court

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Qualified Expert



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Ethical Expert

- Credibility
- Honesty
- Competency
- Proficiency
 - Quality of Work Product
- Neutrality
- Transparency

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Ethical Expert

- **Does not** “help” the Judge, jury, prosecutor, defendant or client
- **Does** educate the Court
- Has no agenda regarding the verdict
- Has the agenda to ensure the Court hears the correct science and **understands it**
 - It is fine to have no answer when no answer can be had
 - It is fine to change opinions with alternate facts

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Ethical Expert

- What you say in Court does not stay in Court
 - Testimony is forever memorialized
 - If you are true to the science, you will never have to recall what you said
- The outcome of an ethical dilemma is **who** will suffer the consequences of **your** actions
- An ethical breach or lapse can lead to miscarriage of justice or end a career

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Ethical Expert

- Character is what you are
- Character is built over a lifetime
- Reputation is what you are expected to be
- Reputation can reverse in a single news cycle

- Ethics v. Loyalty

“What you do will come back to bite you in the ass.”

Odafin Tutuola

Ethical Expert

- Rules of professional conduct
 - Government, business enterprises and professions such as forensic science; law; medicine
- Code
 - Systematic and reasoned-based statement of accepted and expected levels of conduct within the profession
 - Defined code for public officials and employees
 - Failure to comply bears criminal or civil liability

Ethics is the Law

- State laws define codes of ethics for public officials and employees
- Code of Alabama 1975
 - §36-25-1 through §36-25-30
- State Ethics Commission established
- State employees with salaries above \$50,000 must file annual Statement of Economic Interest with Ethics Commission

Codes of Ethics

National Commission of Forensic Science
<https://www.justice.gov/archives/ncfs/page/file/788576/download>

Society of Forensic Toxicologists
<http://www.soft-tox.org/ethics>

American Society of Crime Laboratory Directors
<http://www.asclcd.org/wp-content/uploads/2014/08/Code-of-Ethics.pdf>

These are examples of codes, not to exclude many others

Scientific Ethics

- Assume nothing
 - Conduct examinations in a vacuum
 - Post-analysis evaluation may direct further examination
 - Remove personality from examinations
- Consider everything
 - Presume inaccuracy
 - Challenge everything

Scientific Ethics

- Forensic examinations are not a game show
 - You get no points for speed
 - You only get points for accuracy and reliability

Scientific Ethics

- Data is plural of datum
- Data show nothing
 - Data do not speak for themselves
 - Data require interpretation
 - Context

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Scientific Ethical Breaches

- Malfeasance
 - Submit false reports
 - Steal, alter or destroy evidence
- Concealment
 - Credentials
 - Testimony based upon faulty examination
- Incompetence
 - Credentials
 - Testimony based upon unproven methods

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Scientific Ethical Breaches

- Confirmation bias
 - Seek facts to support a theory
- Myopia
 - Ignore rather than reconcile opposing opinion
- Relationship bias
 - Tailor testimony to fit the facts, investigation or individual benefit
 - Evidence Shaping

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Scientific Ethics

- Data/hypotheses must be challenged
 - Flog them until they fail
 - Only then will you be confident in their accuracy and reliability
 - You must be your own toughest challenger
- **Forensic science is a full contact sport**
 - Preparation for anything less is a disservice to you and the Courts

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Scientific Ethics

- You must know your limitations
- You must know your failings
 - To acknowledge them is to be transparent
 - To acknowledge them is to cure them
 - To conceal them is an ethical breach
 - **Lose your ego**

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Look and Act the Part

- You have only one opportunity to create a good or bad first impression
- You have been called as an expert so you are expected to perform accordingly
- You are expected to appear knowledgeable, organized, confident and professional
- You are expected to articulate knowledge, organization, confidence and professionalism

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Effective Testimony

- You are the expert
- You are not testifying “for” anyone, regardless of statements counselors may make during examination or cross-examination
- You exhibit no bias on behalf of either party
- You are unconcerned about the outcome of the trial, only the correct use by the Court of your expertise

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Effective Testimony

- Your appearance speaks before your mouth
- Like it or not, the jury will judge you before you enter the witness stand
 - Dress neatly, conservatively and professionally
 - Keep the jewelry modest
 - Walk with a purpose

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Courtroom Attire



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Courtroom Attire



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Effective Testimony

- Survey the courtroom before entering to determine which side of the bench to approach
- Stand next to the witness chair to take the oath unless instructed by the Judge otherwise
- Greet the court reporter silently
- Stand when the jury enters/leaves
- After the oath, sit in the seat erect and with a slightly forward lean

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Effective Testimony

- Do not cross your legs above the knees
- Do not cross your arms
- Position the microphone comfortably in front of you so you will not have to lean to be heard
- Hold your head up when speaking
 - The jury is not at your feet in the witness box

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Effective Testimony

- Rehearse your qualifications; spell your name
- Speak clearly and in complete sentences; you are not in conversation
- Enunciate; avoid slang, lazy or regional speech (dropping the “g” in “ing”, over yonder, ya’ll)
- Avoid filler words (um, okay, right, you know)
- Pause rather than babble between thoughts
- **Use correct grammar**

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Effective Testimony

- Look at the counsel when asked a question
- Speak to the jury when you respond
- As you speak, look confidently but not condescending or intimidating at each juror
 - You must appear sincere, truthful and respectful
 - You must determine whether your testimony is understood and accepted

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Effective Testimony

- Listen fully to the question before responding
- Never attempt to answer a question unless you fully understand it
- Respond only to what is asked
- Never interrupt; this is perceived as rude and aggressive
- Answering a question too quickly gives the appearance of being anxious or rehearsed

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Effective Testimony

- Your response must be objective and concise yet sufficient to answer the question
- Do not ramble; you will lose the jury with any response beyond a single thought
- Avoid lecture or lengthy explanation unless absolutely necessary; then, consider the Judge and jurors your students
- Avoid areas about which you are not asked
- Avoid areas beyond your expertise

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Effective Testimony

- Avoid using scientific or laboratory jargon
- If you must use technical terms, explain them to the jury and spell them for the court reporter
- If possible, create a visual image for the jurors
- Nothing appears so condescending or is more boring than techno-speak
- **Lose the pronouns**

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Effective Testimony

- Believe, verb
 - Accept without basis!
- Belief, noun
 - Acceptance without basis!
- Scientific testimony has a basis so there is no need for belief!

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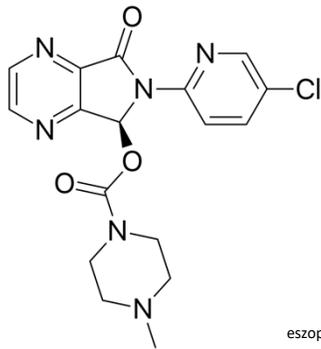
Effective Testimony

- Q: Looks here like you were drinkin'
A: Nope, I was fishin'
Q: What do you do when you go fishin'?
A: I cool off with beer
Q: I call that drinkin'
A: Nope, drinkin's when you're in a bar

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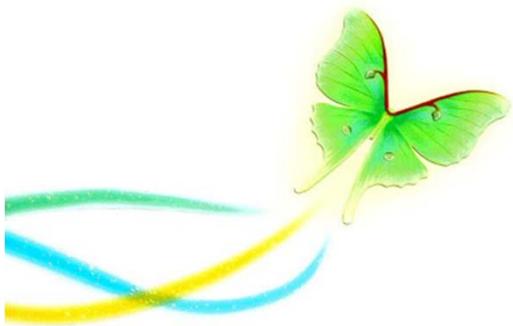


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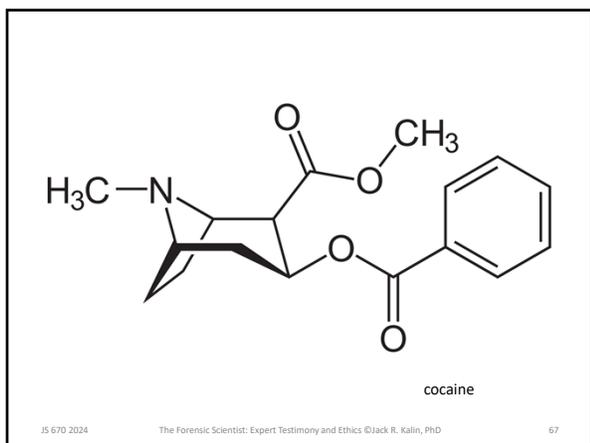
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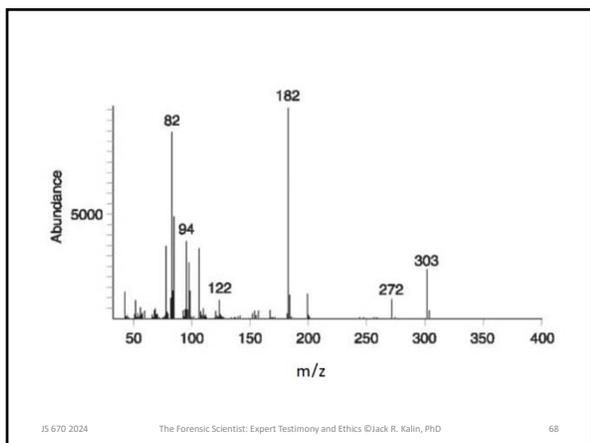


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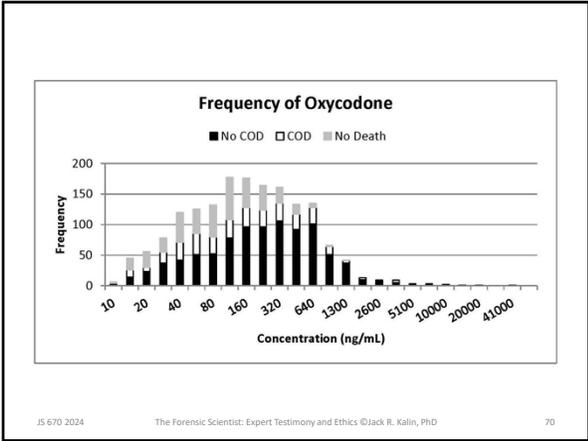
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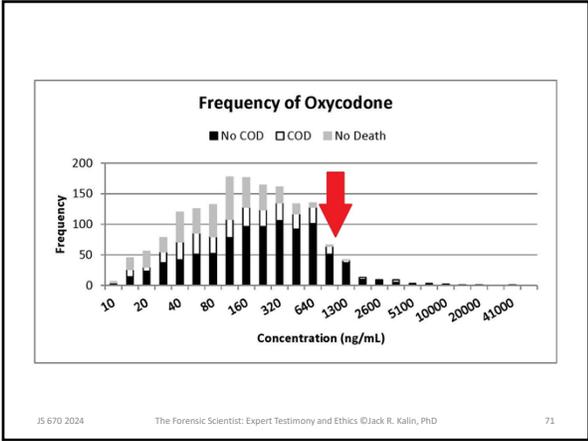
66











Effective Testimony

- Proof-read your documents and exhibits
- Be prepared for anticipated questions but respond naturally, not rehearsed
- Be prepared for unanticipated questions
 - Confusing questions may be due to ignorance or purposeful deception
 - As an expert, you must be able to determine the difference and respond accordingly
 - If you must correct someone, don't be insulting

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Effective Testimony

- Be prepared for hypothetical facts
 - As an expert, you may be asked to render an opinion based upon facts not in evidence or are theoretical
 - As an expert you are permitted to comment whether hypothetical facts are reasonable before rendering an opinion

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Effective Testimony

- Your posture speaks before your mouth does
 - Posturing can make or break your testimony.
 - Your posture is a dead giveaway to your convictions.
 - Leaning slightly forward shows persuasion when delivering evidence.
 - Leaning away shows skepticism or indifference.

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Effective Testimony

- Personal opinions have no place in Court
- Be objective and keep to the facts you know
- Avoid gratuitous remarks
 - Responses can “open the door” to unanticipated cross-examination
- You are there as an expert in your profession. If asked your opinion, simply state, “Based on the findings, it is my opinion....”

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Effective Testimony

- Do you have an opinion?
 - Yes
 - No
 - I don't know
 - None can be rendered

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Cross-Examination

- Opinion testimony
- Fallibility of methodology and results
- Reproducibility of results
- Compensation
- Integrity

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Cross-Examination

- Inconsistent statements
- Transcripts of previous proceedings
- Motive
- Interest
- Bias
- Fees and compensation
- Omissions
- Treatises or other publications
- Experience

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Cross-Examination

- Conviction of crimes
- Personal knowledge of facts
- Errors in the report
- Unknown facts
- Analytical tests not performed
- Lack of access to all relevant documents
- Possibility of alternate opinion
- Absoluteness

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Cross-Examination

- Be prepared to acknowledge alternate facts
 - As an expert you are able to tell the Court whether such alternate facts are reasonable
- Be prepared to revise your opinion based upon reasonable alternate facts
 - The expert role is to be honest and transparent
 - **Humility trumps obstinacy unless obstinacy represents truth**
- **Lose your ego**

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Cross-Examination

- Remain calm, composed and consistent
- Do not change your posture or demeanor
- Cross-examination may attempt to un-settle you and discredit your testimony
- If cross-examination is unable to discredit your testimony, it may be re-directed toward your credentials, and/or attempt to create the appearance of personal bias or incompetence

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Cross-Examination

- Be prepared for a personal attack
- Be prepared for how your responses may be challenged
- Be prepared to deliver a response without faltering or looking away
 - Yes
 - No
 - I don't know
 - No one can know

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Cross-Examination

- Cross-examination may try to force a categorical answer, i.e., a "yes" or "no"
 - Complete and correct answer may be nuanced
 - You may ask the judge to clarify your response

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Cross-Examination

- If you try to respond "yes, but" or "no, but", the "but" will never be heard.
- If a simple "yes" or "no" answer does not bring out the whole truth, the witness should inform the Court the question cannot be answered "yes" or "no."
- The Court may insist on a "yes" or "no" but will likely permit the witness to make any needed explanation

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Cross-Examination

- The witness is sworn to give the truth and the whole truth and if a "yes" or "no" answer doesn't do that, the Court will afford protection when it understands the situation because it would not have the witness violate their oath

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Cross-Examination

- There are certain questions often asked with the intent to discredit or cause confusion regarding your testimony
 - Ambiguous question
 - Compound question
 - Authoritative texts

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Ambiguous Question

- This is designed to have a double meaning
- No matter how you answer, your response can be manipulated to impugn your testimony
- Avoid responding directly
- Identify such questions to the Court and ask that they be rephrased for clarification before attempting to answer
 - “Please be more specific”
 - “Error”

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Compound Question

- This is designed to include one part that is true and the other part false
- Any attempt to answer both parts at the same time will put you in a “Catch 22”
- Avoid responding directly

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88

Compound Question

- Identify such questions to the Court and ask that they be rephrased for clarification before attempting to answer
- Answer each part of the question separately
 - “Given this is a compound question, let me answer the (first/second) part...”
 - You don’t know nothin’ about my client, do you!

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Voir Dire/Compound Question



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90

Authoritative Texts

- Cross-examination may ask whether the witness regards certain persons or texts as recognized authorities in the field about which they are testifying
- This is an attempt to create a “virtual” expert or resource not subject to appearance, voire dire or cross-examination.

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Authoritative Texts

- This is preparatory to asking whether the witness agrees with certain statements which those authorities made in writings, etc.
- If presented with a text, the witness may ask the Court for time to read and understand it before acknowledging its authority
- In reality, very little is authoritative, although much may be deemed useful resource

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Authoritative Texts

- If the witness **does not** recognize them as authorities, cross-examination on such authority cannot be pursued
 - Witness may be accused of ignorance
- If the witness **does** recognize them as authorities, the witness must be prepared for cross-examination on such authority

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Objections

- Do not answer any question objected to by either side until the Court has ruled on the objection
- If the witness has started the answer, he or she must stop if any objection is raised by either side and may not to continue until the Judge or either counsel indicates it is proper to continue

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Objections

- If the witness has forgotten the question the witness should ask that the question be repeated

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Notes

- Only bring to the stand notes, files, or other material for help in testifying and that you are willing to have the Court see
 - Transparency

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Expert At Last

- Credibility comes through acceptance
- To be an effective expert witness, you must
 - Look the part
 - Speak the part
 - Act the part
 - **Be the part**
- The more you practice, the more proficient you will become
- The ethical expert will sleep at night

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97

Final Thoughts

- An expert knows ignorance. A fool knows all.
- Ignorance is not knowing. Stupidity is not knowing ignorance.
- Think, speak, preferably in that order.
- Speech may be unnecessary.
- You have 2 eyes, 2 ears and a brain. That gives you 5 defenders of your mouth.

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98

Final Thoughts

- LUCAS
 - Listen to the question
 - Understand the question
 - Consider your response
 - AnsWER the question
 - Shut up

Jere Joiner, et al.

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99

Thanks

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My Cousin Vinny

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100
