

MODEL CROSS-EXAMINATION (FINGERPRINT EXAMINER)  
Jennifer Friedman (Revised February 2017)

You will need to have filed the model discovery motion and obtained the following in order to prepare for this cross: resume of examiner, case file including all photographs, documentation, all AFIS information including all documentation (you should have also requested a candidate list) SOP if it exists, accreditation documentation including audit reports if they exist, proficiency test records if they exist and a copy of all training materials.

You should also have available to you:

1. SWGFAST minimum requirements for latent print examiners (<http://www.swgfast.org/Documents.html>)
2. SWGFAST frequently asked questions (<http://www.swgfast.org/FAQs.html>)
3. "A Review of the FBI's Progress in Responding to the Recommendations in the Office of the Inspector General Report on the Fingerprint Misidentification in the Brandon Mayfield Case" ([www.justice.gov/oig/special/s1105.pdf](http://www.justice.gov/oig/special/s1105.pdf))
4. National Academy of Sciences Report "Strengthening Forensic Science: A Path Forward" (2009)
5. "Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach" ([http://www.nist.gov/manuscript-publication-search.cfm?pub\\_id=910745](http://www.nist.gov/manuscript-publication-search.cfm?pub_id=910745))
6. IAI website <https://www.theiai.org/>
7. Statement of CTS re proficiency tests and error rates ([www.ctsforensics.com/assets/news/CTSErrorRateStatement.pdf](http://www.ctsforensics.com/assets/news/CTSErrorRateStatement.pdf)).
8. It would also be helpful to have Dr. Itiel Dror's studies on cognitive bias which are available on his webpage.
9. National Commission on Forensic Science Views Documents (<https://www.justice.gov/ncfs/work-products>)
10. Organization of Scientific Areas Committee OSAC (<http://www.nist.gov/forensics/osac.cfm>)
11. President's Council of Advisors on Science and Technology(PCAST) "Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods" [https://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast\\_forensic\\_science\\_report\\_final.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf)

You should first interview the examiner and obtain her CV so that you have information on her background, training, base of knowledge and sophistication in order to appropriately plan your cross.

**I. Education:**

*(This section must be modified to be consistent with the examiners level of education and training as described on his or her resume.)*

What is the highest level of education you have attained?

You do not have a Bachelors Degree? You have no college level courses in

Science Courses

Biology

Genetics

Statistics

You do not have a degree in Forensic Science?

Have you ever conducted any research in area print comparisons?

If so, has that research been published?

Where?

Is that a peer reviewed journal?

Have you read any studies that have been conducted in the area of fingerprint identification?

Which Studies?

What journals do you read to stay abreast of new research and findings in the area of print comparisons?

Are you familiar with the report by the President's Council of Advisors on Science and Technology, Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods?

This was a report to the President of the United States?

One purpose was to identify what steps needed to be taken to ensure the validity of forensic science?

Fingerprint comparison was one of the disciplines discussed in the report?

Are you familiar with the 2009 NAS of Science Report entitled "Strengthening Forensic Science: A Path Forward."

Do you know what the National Academy Science is?

Have you ever attended any trainings where it has been suggested that it is preferable on cross examination to state you are unfamiliar with particular articles or books that to have actually read the article or book and be able to testify about it?

*(I have been informed that there have been trainings conducted where print examiners are told it is better for them to say they are not familiar with an report, article or text rather than be familiar and be required to testify about it.)*

Do you know what SWGFAST is?

*(Organization the mission of which is to establish consensus guidelines and standards for the forensic examination of friction ridges.)*

Know what it stands for?

*The Scientific Working Group on Friction Ridge Analysis, Study and Technology  
(SWGFAST)*

Are you familiar with SWGFAST Guidelines for Quality Assurance?

*Are you aware that current standards for minimum qualification require: Prior to becoming a friction ridge examiner, candidates shall possess a bachelor's degree. The degree shall be from an accredited institution and shall include science-related coursework.*

Do you know what the Organization of Scientific Area Committee OSAC is?

## **II. Training**

*(Here is the language from SWGFAST- The training period for a new trainee in the field of friction ridge examination shall consist of thorough instruction (e.g., mentor sessions, research and papers, presentations, moot courts), continued testing, and apprenticeship (supervised casework) for the following duration: Minimum: One year of full-time latent print work with the majority of the time spent on the analysis, comparison, and evaluation of impressions.*

*Recommended: Two or more years of full-time latent print work with the majority of the time spent on the analysis, comparison, and evaluation of impressions.*

You might ask about the following areas:

*Knowledge of various methods used to record known friction ridge impressions and the ability to properly evaluate ridge structure based on each method*

*Knowledge of alteration and mutilation of friction ridge skin*

*Knowledge of genetic abnormalities of friction ridge skin (e.g., dysplasia, cuspal patterns, dissociated ridges)*

*(Questions according to training information received to demonstrate how minimal it is and if it meets SWGFAST requirements)*

Do you attend regular trainings in the area of fingerprint comparison?

When was the last training you attended?

*(These questions should be asked if the examiner has not attended training in some time.)*

Are you familiar with the term Cognitive Bias? Examiner bias? Contextual bias?

Have you had any training on the Cognitive bias?

Do you know who Itiel Dror is?

Have you read any of Dr. Dror's studies on Cognitive Bias?

What is cognitive bias?

Have you been trained on what precautions to take to avoid the effects of cognitive bias in your print comparisons?

Are you familiar with the following studies?

Ulery, B.T., Hicklin, R.A., Buscaglia, J., and M.A. Roberts. "Accuracy and reliability of forensic latent fingerprint decisions." Proceedings of the National Academy of Sciences, Vol. 108, No. 19 (2011): 7733-8.

1/306

Miami-Dade study (Pacheco et al. (2014))

Error rate 1/18

*If the examiner tries to present findings from the study rather than the above error rates you need to ask the following:*

I assume you don't understand what a confidence interval is, is that correct?

A confidence interval is a way to account for the small sample of individuals who participated in the study.

Scientists routinely apply confidence intervals

### **III. Accreditation (These questions are for those who work in unaccredited fingerprint units)**

You work in a unit not a lab

Your print unit is not accredited. The Sheriffs have a print unit- it is accredited. Long Beach PD has a print unit- it is accredited.

Accreditation means that an outside organization examines your unit and determines whether your unit meets minimum level of competence.

Are you familiar with the accrediting agency ASCLD -LAB

Know what that stands for (American Society of Crime Lab Directors- Laboratory Accreditation Board)

Are you familiar with what is required of a lab in order to become accredited?

Require you have what is called a standard operating procedures manual or protocol.

Your unit doesn't have one

SOP sets out the steps that everyone in the unit should follow when examining prints

Require you take proficiency tests each year

Your unit also lacks

You unit has no policy re what happens if two examiners disagree

No policy re how to document the points of similarity you observe

Validation studies (know what they are)

Corrective action logs- when someone makes a mistake, there is an investigation to determine how the error occurred and a description of what changes will be made to prevent that type of error from occurring in the future.

Does your unit keep a corrective action log?

Where is it maintained? What is your policy for what must be included on it?

What is your unit's policy for when an error must be reported?

What is your unit's policy for how disagreements between examiners are resolved?

Does your unit do technical review? Do you know what technical review is?

*(Note many labs do not do technical review they simply do peer review and administrative review.*

*“Technical review is an integral part of a quality assurance program. The American Society of Crime Laboratory Directors Laboratory Accreditation Board (ASCLD/LAB) defines technical review as “A review of notes, documents, and other data that forms the basis for a scientific conclusion” “...an evaluation of the case record to ensure that there is an appropriate and sufficient basis for the scientific conclusions.”*

*Technical review will determine if:*

- The appropriate examinations have been performed.*
- The conclusions are consistent with the documented data and are within accepted practices.*
- There is sufficient supporting documentation.*
- Verifications have been completely and properly documented.*
- The reported results are clear, concise, accurate, and complete SWGDAM document)*

Do you have a policy manual?

Do you take proficiency tests?

If yes,....The proficiency tests are pretty easy aren't they. They are not like real case work. The manufacturer of the tests even says they are pretty easy. Manufacturer Collaborative Testing Services (CTS) says not the same as real case work. ( See

<https://www.ctsforensics.com/assets/news/CTSErrorRateStatement.pdf> )

Christopher Czyryca, the president of Collaborative Testing Services told PCAST members Czyryca explained that that (1) CTS defines consensus as at least 80 percent agreement among respondents and (2) proficiency testing for latent fingerprints only occasionally involves a problem in which a questioned print matches none of the possible answers. He also stated the forensic community disfavors more challenging tests—and that testing companies are concerned that they could lose business if their tests are viewed as too challenging.

When you take a proficiency test you know you are being tested.

#### **IV. Certification**

You are not certified

Do you know what certification is?

Do you know what IAI stands for? (International Association of Identification)

IAI provides certification for print examiners who meet the basic level of competence

There is a written test

There is an oral test

Have you ever tried to take the tests? How many times? You didn't pass?

Your unit doesn't require the people in your unit to be certified

Are you aware that the California Crime Lab Review Task Force recommended all forensic examiners be certified? That was back in 2009. Your lab still doesn't require examiners be certified?

The NAS report made the same recommendation?

## **V. LAPD Audit and Errors (LAPD ONLY)**

Are you aware that your unit is responsible for erroneously matching two individuals in two separate cases to prints that did not belong to them?

Are you aware that your unit didn't catch those errors?

The unit kept the errors secret until an LA Times reporter found out about them when he got a copy of an internal audit that was conducted?

The audit report dated October 2008 states there is a need for immediate action.

States there needs to be an outside independent assessment of the unit conducted.

That didn't happen.

States there is a high risk of error because of the vulnerability of the process and because quality controls measures are inadequate.

Report states blind verification is recommended -that means the person reviewing your work is not supposed to know you called it a match. That's not how LAPD does it. After the audit you tried blind verification but decided it took too much time so stopped doing it.

The report stated it was important for LAPD print unit to become accredited. That was over 6 years ago. The unit is still not accredited.

The print unit still does not have a standard operating procedures manual?

*(Add other aspects of the audit report as relevant to your case. The audit report is available on the PDWEB forensics/fingerprint section.)*

## **VI. Fingerprint Basics**

You start from the premise that everyone has different characteristics or points on their fingers

You have names for the different characteristics e.g. ridge, ridge ending, bifurcation, island, dot

Do you know how many points or characteristics the average complete fingerprint has? (*This answer should range from anywhere between 35 to 175. Ask the examiner to cite his source for his statement.*)

So the average full fingerprint has X points or characteristics that could be compared.

What you do in your job is you look at print that someone collected and you look at the print from suspect or one 20 or more candidates matched by the computer.

What you do is look at the latent using a microscope

Then look at the known using a microscope

Then go back and forth between the two

Make a subjective decision whether the two match

In other words, you basically look at them under a microscope and you look back and forth and look for similarities.

Sometimes you know information about the case, like why the police believe someone is a suspect.

It's your decision whether a characteristic on the print from the crime scene is similar to the one on the suspect.

What you do is subjective.

If there is one real difference between the known print and the latent (the print from the evidence/scene) then it is an exclusion. In other words, one real difference means the print from the evidence couldn't have come from the suspect.

But that's not really how it works because even two latent prints from the same person will never match exactly so you get to decide which discrepancies matter and which don't.

Is that decision based on any empirical studies?

What does the word empirical mean (derived from experiment and observation rather than theory)

So in this case if you see one real difference from the print lifted off of the \_\_\_\_\_ and Mr. \_\_\_\_\_'s print, then Mr. \_\_\_\_\_ is excluded.

But sometimes you decide there are differences between the two and don't call an exclusion.

That is because you decide they are not "real differences."

The decision that they are not real differences is your decision. There is no computer or machine that makes the determination.

You sometimes call these distortions or artifacts.

Could be a smudge, or dust or a surface.

Someone is supposed to review your work to make sure you didn't make a mistake.

But the person who does the reviewing only reviews prints when you say there is a match.

So the person who does the reviewing always knows you think it is a match.

This is a person you work with every day.

*If there are differences, you may want to point out differences between suspect and latent using visuals. This will depend on how closely the prints appear to match and how much of the latent there is.*

## **VII. Work of Examiner**

How many times has a reviewer or supervisor disagreed with your opinion?

How is it decided who is right and who is wrong?

Is there a formal policy? What does the policy state?

*(You should be aware of whether there is a policy and what it says. There will undoubtedly be ways to critique the policy based on the fact that the other reviewers will know the opinions of the previous reviewers. This is information you should have requested in discovery and should have been provided to you. )*

## **VII. Contextual or Observer Bias**

What information did you have about the case or my client before you conducted the comparison?

So the reviewer who is supposed to check to see you didn't make a mistake knows you think it matches.

The reviewer is someone you work with every day.

Also there are times when the investigating officers tell you things about the case-

Here the IO told you \_\_\_\_\_ e.g. suspect confessed, they believe suspect responsible etc.

*If the lab has done training on Contextual bias (see above)*

Dr. Dror trained you about this effect or you have been trained on this effect.

The effect that outside information has on subjective determinations.

There has been a great deal of discussion recently about examiner or contextual bias.

In fact many organizations and researchers are recommending things that should be done by examiners to minimize the effect of examiner bias on the results obtained.

Are you aware recommendations are being made?

Did you know that the FBI issued a report in June 2011 in which it made a number of recommendations that the FBI believes should be implemented by examiners in order to reduce the risk of erroneous matches being called by examiners like in the Brandon Mayfield case?

Suggested examiners should identify characteristics of the latent print before looking at the known print

You didn't do that here

You looked back and forth between the two prints

You were taught that this could cause you to see similarities as a result of contextual effect or bias

## **VIII. Brandon Mayfield**

Are familiar with Brandon Mayfield case

Case where 3 FBI examiners and an examiner hired by the court all erroneously identified Mr. Mayfield's print as having been left on a baggie that held the detonator to the bomb that went off at the Madrid train.

Conducted studies to determine how the error occurred

How 3 top FBI trained examiners with over 30 years total training could make such a mistake

How an independent examiner who was supposed to help make sure an innocent person wasn't wrongly convicted of a crime he didn't commit could make the same mistake.

Lots of theories about how the mistake was made

-Unusual similarity between certain friction ridge details on one of Daoud's known fingerprints and one of Mayfield's known fingerprints.

-Bias or "circular reasoning" caused by the original examiner's use of features he observed in Mayfield's known fingerprint to change his original analysis of the Madrid latent fingerprint.

-Reliance on Level 3 detail to identify Mayfield without taking into account concerns about the quality of the latent fingerprint or differences in Level 3 detail in other areas of the prints, and without checking all copies of Mayfield's known fingerprints to confirm that corresponding Level 3 features were reliably reproduced.

-Reliance on inadequate explanations for differences between the Mayfield known and Madrid latent fingerprints.

-Failure to consider the poor quality of the apparent similarities in Level 2 detail between the Mayfield known and Madrid latent fingerprints.

So in June 2011, the FBI issued a report with recommendations aimed at reducing the risk of errors in fingerprint comparison cases.

Are you familiar with the report?

Have you seen it?

Have you read it?

**Show the examiner the report**

*A Review of the FBI's Progress in Responding to the Recommendations in the Office of the Inspector General Report on the Fingerprint Misidentification in the Brandon Mayfield Case*

The following recommendations were made:

-Examiners must complete and document analysis of the latent fingerprint before looking at any known fingerprint

You did not do this in this case.

-Examiners must separately document any data relied upon during comparison or evaluation that differs from the information observed during analysis

You did not do this in this case

-Verifiers or blind verifiers must separately complete and document their ACE examination

This was not done in this case.

Mayfield was a high profile mistake but not the only mistake ever made.

Talked about earlier the big mistakes LAPD has made.

**IX. AFIS ( AFIS cases only)**

My client was identified solely based in what you call an AFIS hit

That's when a computer takes a latent print and searches a database of fingerprints for ones that are similar.

Computer generates a list of candidates and ranks them according to how similar they are.

Then you compare the print from the evidence to the candidates

But as soon as you find one that you think matches you stop.

Don't look at the rest to see if they match better. *(To be used when your client is close to the top of the list)*

Here there were \_\_\_\_\_prints that the computer generated you never looked at. So you cannot know if one of them is a better match.

You have compared a number of prints and had to go through 3, 4 sometimes more before you find a match.

What is the most you have ever had to look at before you found a match.

*If your client is lower down on the list-*

So the computer found more similarity between the prints that did not belong to my client.

The recent report from the National Institute of Standards and Technology cautions that matches that come from AFIS hits are most prone to error. (page 199)

It states "examiners must recognize the possibility and dangers of incidental similarity." The report suggests you should use higher thresholds when declaring a match in this situation. (page 199)

## **X. NAS Report**

Stated you were familiar with the NAS report

NRC is the most prestigious scientific organization in the country

Founded in 1860 by Abraham Lincoln

Hundreds of its members have won the Nobel prize in science

Report on forensics that had an entire section on fingerprints was published in February of 2009

The committee spent over 2 years researching, hearing testimony and reviewing its findings

Heard from the FBI

Heard from SWGFAST

Heard from IAI

Heard from heads of crime labs

Judges Statisticians

Forensic science professors

NAS reviewed and evaluated the method you use- ACE-V

This committee of this highly prestigious organization determined that the ACE-V is not specific enough to qualify as a validated method.

They determined it "is too broad to ensure repeatability and transparency"

That "merely following the steps of ACE-V does not ensure that one is proceeding in a scientific manner or producing reliable results"

Report says "We have reviewed the available scientific evidence of the validity of the ACE-V method and found none."

States " with the exception of DA analysis, no other forensic method has been rigorously been shown to have the capacity to connect evidence to a specific individual.

"A criticism of the latent print community is that the examiners can too easily explain a difference as an acceptable distortion in order to make an identification."

"Uniqueness does not guarantee that prints from two different people are always sufficiently different that they cannot be confused or that two impressions made by the same finger will also be sufficiently similar to be discerned as coming from the same source."

## **XII. Organization of Scientific Area Committees**

Do you know what the Organization of Scientific Areas Committees is?

Are any members of your lab members of the OSAC?

Do you know what the role of the OSAC is? *To create standards for all forensic science disciplines*

It is recognized that your discipline fingerprint comparison does not currently have any standards that are required to be followed.

### **XIII. PCAST Report**

*See pages 87-104*

PCAST is the President's Council of Advisors on Science and Technology

Prestigious group of scientists (read some names and titles) (page v-ix)

Reviewed thousands of scientific studies (page 65)

Heard from well-known people in the field of forensic print id (Appendix B)

Austin Hicklin (one of the authors of the error rate study)

Henry Swafford

Concluded that there were not enough studies on how often examiners make mistakes.

Your field needs more studies.

Of the two studies that exist PCAST said one showed an error rate of 1/306

The other 1/18

How many comparisons do you do every year?

Do you take proficiency tests? How many each year?

Are they collaborative testing tests?

Are you aware the President of Collaborative testing told members of PCAST that the forensic community disfavors more challenging tests and that testing companies are concerned that they could lose business if their tests are viewed as too challenging?

PCAST said your results do not achieve validity unless you are tested on prints that are like the ones you see in case-work.

Tested on prints that are the same quality as the one here.

Use linear ACE-V

Do you know what linear ACE-V is?

Have you ever used it?

Did not use it here

Problem with not using it is that you may be influenced by what you see in the known print

Linear Ace-V is another way to minimize errors like the one in the Mayfield case.

#### **XIV. Subjectivity and Lack of Documentation**

Familiar with how for example police use breathalyzers to determine if someone is under the influence of alcohol

Give someone the test.

Person blows into the machine

Machine measure the amount of alcohol in the person's breadth and reports the number.

That is an objective test, an objective measure

What you do however is subjective

You compare prints and you decide if there is sufficient similarity

You decide if a difference is real or an artifact

You decide if it's a match

You didn't even write down why you think it's a match.

You did not even document the characteristics you relied on

You didn't write down why you think something is an artifact instead of a real difference

You didn't even tell anyone or write down whether you found differences.

**XV. This Print** (How much of this you use depends on how good the print quality is and how many matching characteristics are present. )

How many characteristics do you see on Mr. \_\_\_\_\_ fingerprint (30-175)?

Don't know

How many characteristics are there on the latent or evidence print?

Don't know

You didn't count.

How many characteristics from the latent matched characteristics from Mr. \_\_\_\_\_

So that is X out (30-175 depending on what he said above)

So if you kept looking and one of those X characteristics didn't match that would be an exclusion?

And you would have to change your opinion

But you didn't keep looking

You just assumed they match

What's level 3 detail (*Need to know if examiner did and what he or she claims she saw*)

Did you look at level 3 detail in this case?

(If he looked at level 3 detail, see the criticism in the FBI report on Mayfield. If he did not, simply state he did not.)

## **XVI. Documentation**

NAS criticized your profession because you don't document so that others can look at your work and evaluate it.

SWGDM recommends technical review. Technical review relies on you documenting what you did.

The FBI has made explicit recommendations regarding documentation.

Are you familiar with the report issued in February of 2012 by the National Institute of Standards and Technology on Fingerprints and Human Factors?

More than 1/4 of the people on the committee were latent finger print examiners and people who work in crime labs.

So this is a report written by your community.

The NIST report states that the report you prepare should ensure that your findings and the limitations of those findings are intelligible to non-experts (page 90)

The report should include all the information you received about the case before you did the comparison (page 97)

This is because we know the research shows that examiners results may be influenced by the information they had about the case before they did their comparison.

You should state in your report any other documentation that exists like your notes (page 98)

The report states the report or the associated documentation should record the features you considered including the features used for verification.

*(You might want to go over the sample report in the NIST document at page 102-103.)*

You did not identify the characteristics on the latent print before you looked at the known print

In fact, you never even marked what you were looking at while you were doing your analysis

You didn't identify the similarities you saw between the two prints

You didn't identify the dissimilarities you saw

You did not even write down why you discounted the dissimilarities

And you did not write down the reasons for your opinion

The International Association of Identification requires "Any associations based on these criteria require, ethically and professionally, that the examiner clearly state any limitations of their conclusions."

So you have to tell the jury that there are limits to your opinion and that this is just your opinion.

The NIST report states you should not be testifying that a latent print matches one person and one person only. (page 72, 138, 198)

That is because there is no research to back up such a claim. (NIST page 197)

You should never state or even suggest that errors are inherently impossible.

Also your profession used to routinely tell jurors that the error rate for the method you used was zero.

But the NAS criticized you. The report said it was foolish for anyone to say error rate zero.

But before the criticism many jurors just like these folks heard you and other examiners claim the error rate was zero'

Even though there were documented errors in the field.

IAI hasn't done any studies of its own.

## **XVII. Longevity of a Print**

Often difficult to see fingerprints in surfaces with the naked eye.

That's why you use powder.

There are documented cases of fingerprints remaining on a surface for years.

You are not able to determine the age of a print.

So you can't tell us when this print was left on the surface

Could have been days, weeks, months even years before you got there.

You cannot date a print.

*You need to have studies that discuss how long prints may remain on a surface.*

## **XVIII. Other Items Not Printed**

You did not attempt to look for prints on \_\_\_\_\_

*Establish that it would have been important to print the above items and he would have had he been told of their importance.*

#### **XVIV. Sum**

The method you use is subjective

It has been criticized because no research has been done to determine how often two prints are so similar an examiner will not be able to tell the difference.

All those studies of twins don't tell you anything about how common it is for two prints to be so similar that an examiner could erroneously conclude a print was made from a suspect when it wasn't.

There are no studies that tell us when errors are likely to occur.

The way you try to check for errors is to have someone else look and compare

But other person knows you thought the prints matched

This case

# of characteristics examine

#did not examine

AFIS if applicable

There were # candidates never even looked at

Don't know if they were a better match

You are only human

If new only been doing this \_\_\_\_\_years

Could have made a mistake

*If he says no,*

FBI with over 30 years made a mistake.

Error rate studies show 1/306 and 1/18 of self-selected expert who knew they were being tested.