

1 THE STATE OF OHIO,)
) SS: JEFFREY P. SAFFOLD, J.
2 COUNTY OF CUYAHOGA.)

3 IN THE COURT OF COMMON PLEAS

4 CRIMINAL DIVISION

5 THE STATE OF OHIO,)
)
6 Plaintiff,)
) Case No. CR-22-671659
7) C/A No. N/A
JIHADA AARON,)
)
8 Defendant.)

9
10 - - - -

11 DEFENDANT'S TRANSCRIPT OF PROCEEDINGS

12 - - - -

13 APPEARANCES:

14 MICHAEL C. O'MALLEY, Esquire, Prosecuting Attorney,
15 by: Eben McNair, Esquire,
16 Jeff Maver, Esquire, Assistant County
Prosecutors,

17 On behalf of the Plaintiff;

18 Brant DiChiera, Esquire,
Lauren Esarco, Esquire,

19 On behalf of the Defendant.
20
21
22

23 Gretchen E. Windenburg, RPR, CRR
24 Official Court Reporter
Cuyahoga County, Ohio

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CUYAHOGA COUNTY, OHIO

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13 BE IT REMEMBERED, that at the January,
14 A.D., 2024 term of said Court, to-wit, commencing
15 Monday, February 26, 2024, this cause came
16 to be heard before the Honorable Jeffrey P. Saffold,
17 in Courtroom No. 17-A, Courts Tower, Justice
18 Center, Cleveland, Ohio, upon the indictment filed
19 heretofore.

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I N D E X

STATE'S WITNESSES DIRECT CROSS REDIRECT RECROSS

James Hamby	152	183	220	225
James Kooser	227	230	240	--

DEFENDANT'S WITNESSES

David Faigman	18	63	92	98
Jeff Kukucka	104	127	143	149

STATE'S EXHIBITS

ADMITTED

901	CV of Dr. James Hamby	241
902	report of Dr. James Hamby	241
903	history of firearm and toolmark analysis	241
904	2009 NRC report	241
905	Ames I	241
906	PCAST	241
907	Ames II overview	241
908	Ames II	241
909	DOJ statement on PCAST	241
910	list of post PCAST studies	241
911	consecutive barrel study	241
912	consecutive barrel study update	241
913	Glock cases (3,156) study	241
914	subjectivity and bias in DNA mixture	241
951	CV of James Kooser	241
952	CCRFSL 2020-6488 paperwork/notes	241
953	CCRFSL 2020-6488 toolmark report	241
1004	photograph of ballistic evidence	241
1034	photograph of ballistic evidence	241
1041	photograph of ballistic evidence	241
1044	photograph of ballistic evidence	241

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

DEFENDANT'S EXHIBITS	ADMITTED
A affidavit and CV of David Faigman	241
B NRC report - 2008	241
C NRC report - 2009	241
D PCAST	241
E CV of Dr. Jeff Kukucka	241
G CCRFSL 2020-6488 paperwork/notes	241

JOINT EXHIBITS	ADMITTED
State's 1069/Defendant's F affidavit of Dr. Kukucka	241

- - - - -

State's Opening Statement	10
Defendant's Opening Statement	6
State's Closing Argument.....	261
Defendant's Closing Argument.....	244

1 MONDAY MORNING SESSION, FEBRUARY 26, 2024

2 THE COURT: We are on the
3 record in Case Number 671659, case captioned
4 State of Ohio versus Jihada Aaron. Mr. Aaron is
5 present in court today along with his counsel,
6 Mr. Brant DiChiera and Ms. Lauren Esarco. And
7 the State of Ohio is represented by Mr. Ben
8 McNair, and a woman I have not had the pleasure
9 of meeting.

10 MS. FORCHIONE: Tasha Forchione,
11 Your Honor. Good morning.

12 THE COURT: Tasha Forchione?

13 MS. FORCHIONE: Yes, Your Honor.

14 THE COURT: Nice to meet you.

15 MR. McNAIR: Judge, I will be
16 joined by Jeff Maver. He had an issue and had
17 to take his child to the doctor this morning.

18 THE COURT: He is certainly
19 welcome, and hope everything goes well with his
20 child.

21 We are here today as a result of a
22 filing made by the defense. The motion is
23 captioned, motion in limine to exclude expert
24 firearms identification testimony or, in the
25 alternative, to limit such testimony. And then

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1 an oral hearing is requested. There's been a
2 lot of sort of back and forth over when we could
3 try to get this hearing in. I understand that
4 there's witnesses that have been flown in from
5 out of state. So I think we are in agreement
6 that the witness who was flown in is going to go
7 first; is that right?

8 MR. DiCHIERA: That's my
9 understanding, Your Honor. That is our witness,
10 David Faigman.

11 THE COURT: Bearing in mind
12 that I have already read what you have filed
13 thus far, if you would like to make a brief
14 opening statement just for the record, I will
15 allow it.

16 MR. DiCHIERA: I would, Your
17 Honor, and thank you. Good morning. I want to
18 be clear about the relief that we are seeking
19 today from the Court.

20 THE COURT: Clear and brief.

21 MR. DiCHIERA: We are not seeking
22 the exclusion of all ballistics testimony. We
23 are not seeking to discard the entire science.
24 We are not seeking to dismantle the county's
25 forensic laboratory. Instead, we are seeking

1 bring the law in line with the science, because
2 for decades Ohio courts have essentially
3 rubber-stamped the admission of firearms
4 identification testimony. They have become an
5 echo chamber of stare decisis. But things in
6 this country are changing. In places like
7 Baltimore, in places like Chicago, the Bronx,
8 Yolo County, California, Oregon, Washington,
9 D.C., those jurisdictions have limited the
10 admission of firearms identification testimony.

11 We are intending to call two witnesses
12 during this hearing, Your Honor. Our first
13 witness is David Faigman.

14 THE COURT: Hold on one
15 second. Go ahead.

16 MR. DiCHIERA: Mr. Faigman is the
17 dean of the University of California College of
18 Law, San Francisco. He is the preeminent
19 national scholar on scientific evidence. He
20 publishes the treatise as it relates to that.
21 He has written and testified extensively about
22 what's called the foundational validity of
23 ballistics science, what is the science
24 underlying these purported identifications. And
25 we will seek to qualify him as an expert in the

1 field of research design, scientific
2 methodology, and statistics, and applied
3 science.

4 He will testify that despite numerous
5 recent studies, that the principal underlying
6 firearms comparison, that each firearm is unique
7 to the exclusion of all other firearms, is
8 unproven. He will testify that the pivotal
9 question for the Court in this hearing is how to
10 treat an inconclusive finding in these studies,
11 and that a closer look at recent studies, black
12 box studies, reveals an astonishingly high error
13 rate; 33 percent in the first study from the
14 Ames laboratory, up to 53 percent in the second
15 Ames study for bullets, and 44 percent for
16 cartridge casings. Essentially a coin flip as
17 to whether the determination by the examiner in
18 the study was correct.

19 He will talk about other design flaws
20 in the studies as well, that the examiners are
21 not representative of the field as a whole, that
22 many of them drop out of these studies during
23 the course of the study. I could spend a long
24 time talking about what Dean Faigman is going to
25 say, but I will leave it to him to state his

1 position in Ohio.

2 THE COURT: I appreciate that.

3 MR. DiCHIERA: Our second witness
4 is Dr. Jeffrey Kukucka. He is a psychologist
5 who specializes in the intersection of cognitive
6 bias and forensic science. He is well-published
7 on that subject. He consults with forensic
8 labs. He does presentations about what
9 cognitive bias is and why it's so pernicious,
10 especially in the context of forensic science.
11 He is going to testify that our county
12 laboratory, that their procedure for firearms
13 comparison makes it prone to cognitive bias; and
14 therefore, prone to error.

15 Because, of course, firearms
16 comparison itself is a subjective science, that
17 the lab procedures do not allow for blind peer
18 review. And most importantly, the examiners in
19 this case, Mr. Aaron's case, were subject to
20 extraneous information. They were provided a
21 synopsis of the offense in this case, the name
22 of the victim, that he was purportedly with his
23 brother when he was murdered, that the suspect
24 was a black male, that there was a stolen car
25 involved, and that car was stolen from an

1 elderly couple at gunpoint. This is all
2 information that should not have been provided
3 to the examiner but was.

4 And it might seem like little harmless
5 errors, but over time these things compound and
6 they raise significant concerns about the
7 reliability of the work being done at the
8 examiner's office. This coupled with the design
9 flaws of the studies and the lack of
10 foundational proof of firearms identification
11 should give the Court serious pause about the
12 wholesale admission of the State's proffered
13 evidence.

14 So today we urge the Court to make a
15 decision that is consistent with the science, to
16 grant our motion to limit the State's experts to
17 testifying solely about the identification of
18 class characteristics as it relates to the
19 questioned firearm in this case. Thank you.

20 THE COURT: Thanks
21 Mr. DiChiera. Mr. McNair.

22 MR. McNAIR: Thank you, Judge.
23 I take issue with a lot of what Mr. DiChiera
24 just said. He said that he is not asking you to
25 make a determination about the admissibility of

1 ballistic and tool mark evidence in every case.
2 That is exactly what they are asking you to do.
3 If you follow their line of reasoning to its
4 logical conclusion, that is exactly what they
5 are telling you that you should do.

6 They say that the theory of firearms
7 examination is not a scientific theory. They
8 say that exclusion is the only appropriate
9 remedy for this type of evidence. They say that
10 this Court should exclude that evidence as
11 scientifically invalid. It's not specific to
12 this case. This is not like a suppression
13 hearing where they are asking you to do
14 something specific to this case because of
15 something that the police officers did or
16 something that we did. They are saying that
17 this is scientifically invalid and it should
18 never be admissible in any court ever.

19 And incidentally, that is what their
20 expert has said. Dean Faigman has previously
21 said, and I anticipate will say today, the
22 research literally doesn't support the ability
23 to match a cartridge case or bullet to a
24 particular firearm. And I take issue with
25 something else Mr. DiChiera said. He said that

1 our witnesses would testify --

2 THE COURT: Mr. McNair,
3 Mr. McNair, just tone it down just a little bit.
4 It's just a hearing today. There's no jury.
5 And it's not about you versus Mr. DiChiera.
6 Mr. DiChiera is making arguments on behalf of
7 his client. I would like to hear you make
8 arguments on behalf of the State of Ohio. But
9 we don't need to be attacking each other 10
10 minutes into a motion practice.

11 MR. McNAIR: I will endeavor to
12 lower my volume. And I appreciate the
13 professionalism of your comments towards me.

14 And I apologize for being loud, but I
15 am loud because this is enraging in a way, that
16 they are asking you to do something that
17 literally no other Ohio court has done, that the
18 Eighth District has looked at several times,
19 including just earlier this year. The Eighth
20 District considered the exact arguments that
21 they are asking you to consider out of this case
22 from Maryland, and they found it lacking merit
23 and decided that this evidence should come in.

24 Our examiners, these examiners, when
25 they testify, they do not say that a particular

1 bullet or a particular cartridge case was fired
2 from a firearm to the exclusion of all other
3 firearms. That's what Mr. DiChiera told you
4 they would say. That is not what they say.
5 When they testify, they testify about
6 identifications or exclusions to a reasonable
7 degree of forensic certainty within their field.
8 And that to a reasonable degree of forensic
9 certainty within their field, that is the
10 limiting language that Daubert puts on expert
11 testimony. Daubert does not require that
12 experts testify about error rates or things like
13 that. That very language is the limiting factor
14 that Daubert requires.

15 And I anticipate that you will hear
16 how it is that they were able to reach those
17 conclusions, that when they are looking at
18 either fired projectiles or cartridge cases, you
19 will hear about how toolmarks are imparted to
20 them. I know you have already reviewed that
21 from the briefs. And you will see actual images
22 of evidence from this case and hear from the
23 examiners and the technical reviewers about how
24 they are able to match up this evidence.

25 You also see examples of exclusions.

1 So on this slide now, there are two cartridge
2 cases that are not fired by the same firearm.
3 And what they are asking you to do is unique
4 within the State of Ohio, it is wide-ranging,
5 and it will be chaos-inducing. And, Judge, I
6 see that you are shaking your head, but think
7 about this for just a moment --

8 THE COURT: I shake my head
9 because what I want to make sure you understand
10 is that I am going to do what the law directs me
11 to do, but I am not going to do it with regard
12 to some sort of parade of horribles argument.

13 MR. McNAIR: I understand that.
14 And if you do what the law directs you to do, I
15 would submit that what the law directs you to do
16 in this case, every time either the Ohio Supreme
17 Court or the Eighth District has looked at this
18 issue and ruled on it, is to allow our firearms
19 examiners to testify as they ordinarily do,
20 which is to matches or identifications and
21 exclusions or to inconclusive results to a
22 reasonable degree of forensic certainty within
23 their field.

24 And we raised this in our brief, but
25 it bears repeating. Because the other thing

1 that their position requires is that innocent
2 people will die in prison. And I know that
3 Mr. Filiatraut explained this a little bit in
4 his brief, but I just want to touch on this.
5 This sort of evidence has been used to exonerate
6 people. The first time the Ohio Supreme Court
7 looked at the admissibility of ballistic
8 evidence, it was to exonerate Edward McMullen.
9 There are other individuals who have been
10 exonerated by this type of evidence. Anthony
11 Hinton. Just scrolling through the National
12 Registry of Exonerations. Patrick Pursley.

13 And these are people that if you
14 follow their line of reasoning and Dean
15 Faigman's line of reasoning to its logical
16 conclusion, which is that this sort of evidence
17 has no scientific validity, it has no probative
18 value, that a person cannot say that a
19 particular cartridge case or bullet was fired
20 from a particular firearm, that is exactly what
21 experts had to say to get these men out of
22 prison.

23 We touched on this a little bit in our
24 brief, but there is an increase in push to
25 incorporate this sort of evidence and post

1 conviction testing of this sort of evidence when
2 individuals believe that they have been
3 wrongfully convicted. And so just as
4 individuals can currently submit additional
5 evidence for DNA testing or request that items
6 be entered into CODIS, there is now a push and
7 there is statutory authority, in I believe at
8 least seven states, for other forensic evidence,
9 including firearm and toolmark examination
10 evidence, to be subject to post conviction
11 testing and in some cases, and in the case of
12 Mr. Pursley, to be entered into -- in that case
13 it was IBIS or a NIBIN-like database to
14 exonerate him.

15 What they are saying is, look, you
16 can't rely on this. Those guys have to stay in
17 prison and they have to die there. Because that
18 is the only thing that got them out was an
19 examiner like them being able to come into a
20 courtroom and say these bullets or cartridge
21 cases were fired from a particular firearm to a
22 reasonable degree of forensic certainty within
23 our field.

24 THE COURT: Thank you,
25 Mr. McNair. Mr. DiChiera, do you want to call

1 your first witness?

2 MR. DiCHIERA: Yes, Your Honor.
3 We will call David Faigman.

4 THE COURT: Did you all
5 resolve your issue about separation of
6 witnesses? It's the Court's inclination to
7 separate witnesses whenever there's going to be
8 contrary views offered, so I think in my
9 inclination that you all can do that.

10 MR. DiCHIERA: That's fine, I
11 don't have a problem with the State's expert
12 being present for the testimony.

13 THE COURT: Then it's fine
14 with me. How are you, sir?

15 THE WITNESS: Very good, thank
16 you, Your Honor.

17 THE COURT: Raise your right
18 hand for me, please. Do you swear to tell the
19 truth, the whole truth, and nothing but the
20 truth as you shall answer unto God?

21 THE WITNESS: I do.

22 - - - -

23 The DEFENDANT, to maintain the
24 issues in its part to be
25 maintained, called as a witness,

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1 DAVID FAIGMAN, who, being first
2 duly sworn, was examined and
3 testified as follows:

4 - - - -

5 THE COURT: Excellent. Come
6 on up.

7 - - - -

8 DIRECT EXAMINATION OF DAVID FAIGMAN

9 BY MR. DiCHIERA:

10 Q Good morning, sir.

11 A Good morning.

12 Q Could you please say and spell your name for the
13 Court.

14 A David Faigman. D-A-V-I-D, F-A-I-G-M-A-N.

15 Q Mr. Faigman, I want to start with questions about
16 your background and experience. What is your educational
17 background?

18 A I have a bachelor's from the State University of
19 New York College of Oswego. I have my master -- I have a
20 double major in psychology and history. I have a master's
21 in social psychology from the University of Virginia. And I
22 have a Juris Doctorate from the University of Virginia.

23 Q What do you do now?

24 A I am the chancellor and dean at the University of
25 California College of the Law San Francisco, and I have an

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1 appointment in the School of Medicine at the University of
2 California San Francisco department of psychiatry.

3 Q What did you do before being appointed dean?

4 A I had been on the faculty at UC Law San Francisco,
5 which used to be UC Hastings, since 1987. I taught
6 property, evidence, constitutional law, and classes on
7 science and the law.

8 Q And so you teach scientific evidence?

9 A I do. I teach a class called scientific methods
10 for lawyers. Not currently.

11 Q Do you teach any courses relating to scientific
12 evidence outside of the University of California School of
13 Law?

14 A I do. I have taught for almost 20 years now at
15 the National Judicial College in Reno, Nevada for primarily
16 state court judges. And I have taught in judicial education
17 programs in multiple states including California, Texas,
18 North Dakota, Florida, Virginia, Pennsylvania. And I have
19 also taught for the Federal Judicial Center.

20 Q Have you presented on the topic of scientific
21 methodology?

22 A I present often on the subject. When I teach, I
23 often teach about research design, scientific methods, and
24 statistics in various areas, including forensic science of
25 course, medical causation, behavioral psychology, and

1 neuroscience.

2 Q So you are involved in scholarship relating to
3 scientific research?

4 THE COURT: Hold on one
5 second. I want to give you my full
6 concentration. One moment.

7 Forgive me.

8 MR. DiCHIERA: No problem.

9 Q Dean Faigman, you were talking about -- you were
10 testifying about your scholarship involving scientific
11 research?

12 A So I published well over 60 articles on the use of
13 scientific research and legal decision-making including
14 courts, legislatures, administrative agencies, and in
15 constitutional cases. I've published three books on the
16 topic, and I am the general editor and author of a
17 five-volume treatise entitled modern scientific evidence.

18 Q What is the modern scientific evidence treatise?

19 A So modern scientific evidence began as a
20 two-volume treatise in 1995 in response to the U.S. Supreme
21 Court's decision in Daubert versus Merrill Dow
22 Pharmaceuticals. The concept was to provide essentially a
23 bench book for judges as well as for lawyers on the methods
24 of science as well as the legal framework in which the
25 science is to be situated.

1 Q Are you aware of whether your work in scientific
2 methodology has been cited?

3 A It's been cited widely by state and federal courts
4 and it's been cited by the United States Supreme Court.

5 Q Have you served as a peer reviewer or editor of
6 any other publications?

7 A I served fairly regularly as a peer reviewer. I
8 am on the --

9 THE COURT REPORTER: I'm sorry, you're
10 on the?

11 A Law and human behavior editorial review board. I
12 have been asked to be a reviewer for science, for nature, as
13 well as for the National Science Foundation.

14 Q Are you a member of the National Academy of
15 Science?

16 A No, I am not.

17 Q Were you ever a member?

18 A I was not a member of the National Academies, but
19 I have served on the committee of the National Academies of
20 Science.

21 Q What did you do as a committee member?

22 A In the early 2000s, the Department of Energy was
23 using the polygraph machine to evaluate the security
24 clearances of senior scientists in the nation's nuclear
25 labs. Congress asked the National Academies to put together

1 an expert panel to review the validity of using polygraphs
2 as a screening task, and so I served on that committee to
3 evaluate the foundational validity of polygraphs, primarily
4 for screening purposes, but we also considered its courtroom
5 use.

6 Q I imagine the State is going to ask you, are you a
7 firearms examiner?

8 A I am not a firearms examiner.

9 Q Are you a toolmark examiner?

10 A I am not.

11 Q Are you a member of the AFTE?

12 A I am not a member of AFTE, which stands for the
13 Association of Firearm and Tool Mark Examiners.

14 Q Can you explain how your training in scientific
15 methods allows you to evaluate the validity of different
16 disciplines like toolmarks?

17 A So I have been trained in statistics and research
18 design, originally in graduate school, and I have
19 essentially dedicated my 38 years of my professional career
20 to the subject of how scientific methods can be employed to
21 answer legal questions, again at the courtroom level, but
22 also at the legislative or administrative agency levels.
23 And so I have been involved in everything from medical
24 causation questions, forensic science questions,
25 neuroscience. I was on a MacArthur -- two MacArthur

1 networks on law and neuroscience. So I am broadly trained
2 in what you would call applied science.

3 Q What is applied science?

4 A So applied science would be distinguished from,
5 say, theoretical science in the sense that -- or science
6 that might be done outside the real world. So if you are
7 interested in the rate at which a feather drops from, say, a
8 four-story building, you could ask the question what would
9 be the rate of descent in a vacuum, which might be pure
10 science. But applied science would be what is the rate that
11 the feather would drop in the real world from four stories,
12 where barometric pressure, wind speed, and other pressures
13 would affect that determination.

14 Q Besides those that you have already mentioned,
15 have you served on any other panels or committees relating
16 to scientific methodology or research?

17 A So I was not on the panel, but I was a senior
18 advisor for President Obama's President's Council of
19 Advisors on Science and Technology. It's referred to as
20 PCAST. And I was a senior advisor for their report that was
21 published in 2016.

22 Q What did you do in your role as senior advisor?

23 THE COURT: Let me --

24 MR. DiCHIERA: I'm almost there.

25 THE COURT: Let's get on down

1 to our issue.

2 Q What did you do in your role as --

3 A I reviewed drafts of the report. I met with
4 committee members to discuss the drafts of the report.

5 Q We will talk more about PCAST in your testimony.
6 Based on your training and your experience, your education,
7 is there a particular field to which you claim expertise for
8 today's hearing?

9 A So my expertise is generally described as
10 scientific methods, research design, and statistics.

11 Q Have you been qualified to testify as an expert in
12 courts before?

13 A Yes. More than two dozen cases.

14 Q Can you recall offhand which courts have qualified
15 you as an expert in that area?

16 A Well, many have. Baltimore, Washington, D.C.,
17 Portland, Yolo County, California, San Diego several times,
18 Chicago, Cook County. So both state and federal.

19 Q To your knowledge, have those courts relied on
20 your testimony in forming their opinions in firearms
21 identification cases?

22 A Several have and cited or quoted me in their
23 published opinions.

24 MR. DiCHIERA: I have what I have
25 previously marked for identification purposes as

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1 Defense Exhibit A. May I approach?

2 THE COURT: You may.

3 Q Dean Faigman, I am handing you a document that I
4 have labeled as Defense Exhibit A. Do you recognize that
5 document?

6 A I do.

7 Q What is it?

8 A It's my affidavit that I submitted in this case
9 which includes my CV as well.

10 Q Your CV is included as an appendix?

11 A That's correct, appendix A.

12 Q Is that a true and accurate copy of your CV?

13 A At the date it was dated. It may have changed
14 slightly since then.

15 Q What's the date of the affidavit?

16 A September 2023.

17 MR. DiCHIERA: Your Honor, at
18 this time we would ask that Mr. Faigman be
19 qualified as an expert in the field of
20 scientific methodology, research design, and
21 statistics, and applied science.

22 THE COURT: Objection?

23 MR. McNAIR: Judge, we object.
24 We object and I would like to voir dire the
25 witness on his qualifications.

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1 THE COURT: In that particular
2 field --

3 MR. McNAIR: Yes, Judge.

4 THE COURT: -- you have an
5 objection? It will be overruled. He will be
6 qualified as an expert in that particular field.
7 You will certainly be free to cross-examine him.

8 MR. DiCHIERA: Thank you, Your
9 Honor.

10 Q So, Dean Faigman, you mentioned this term
11 foundational validity. What is that?

12 A So foundational validity was a term of art that
13 was used by PCAST. Basically what it refers to is the way
14 any scientist or any researcher would evaluate a field by
15 both looking at the methods used and the studies themselves
16 as well as whether the findings in the studies could be
17 generalized to a broader population.

18 Q What is required for a discipline, let's say,
19 firearms to demonstrate that foundational validity?

20 A Well, the problem in any field would be the
21 different factors that you would want to look at. So just
22 to take my analogy, if you are interested in whether a COVID
23 vaccine is valid, and the researcher studied 18- to
24 50-year-olds, it might very well be accurate for that
25 population. If you wanted to say it was foundationally

1 valid for all populations, you would want to look at
2 adolescents, you would want to look at toddlers, you would
3 want to look at people older than 50, you might want to look
4 at folks that have a pre-existing condition.

5 So when you ask about a field generally, you
6 are asking a very big question. And the same would be true
7 in firearms. You would be asking under different
8 circumstances in field work, using different guns or
9 different tools, using different materials in the cartridge
10 cases of the bullets. So it would be a fairly robust area
11 of research that would have to be done.

12 Q So how does your training in scientific
13 methodology allow you to evaluate the field of firearms and
14 toolmarks?

15 A So I am trained in the basic question of how you
16 do hypothesis testing. And so if the claim is that firearms
17 examiners are accurate in their comparisons, that's
18 something that can be directly tested.

19 Q Has the mainstream scientific communities studied
20 the foundational validity for firearm and toolmark
21 examinations?

22 A They have. Initial report looked at the
23 possibility of creating a national database for ballistic
24 imaging, which was published in 2008. There was a 2009
25 report that looked at general fields of forensic

1 identification. And then the 2016 PCAST report.

2 MR. DiCHIERA: Your Honor, I have
3 what I have marked as Defense Exhibits B, C, and
4 D. If I may approach. For the purposes, by the
5 way, Judge, these will be provided in a digital
6 copy to the Court since they are voluminous.

7 Q All right. Dean Faigman, I am handing you Defense
8 Exhibits B, C, and D. Can you identify what those are?

9 A Yes. Exhibit B is the 2008 National Research
10 Council for the National Academies of Sciences ballistic
11 imaging report. Exhibit C is the 2009 National Research
12 Council for the National Academies of Sciences report on
13 strengthening forensic science. And Exhibit D is the 2016
14 PCAST report.

15 Q Let's start with --

16 THE COURT: I'm sorry, what
17 was D?

18 THE WITNESS: It's the 2016
19 PCAST report.

20 Q Let's start with Exhibit B, the 2008 ballistics
21 imaging report. What professionals were involved in writing
22 that report?

23 A That report was done primarily by scientists,
24 computer scientists, statisticians looking at the question
25 of whether they could create a national database, primarily

1 for newly-manufactured weapons.

2 Q So did that report consider firearm examination
3 evidence?

4 A No, it didn't consider courtroom use of firearms.
5 It was asking the more general question about creating a
6 database.

7 Q What findings, if any, did the report make?

8 A Well, they commented that the question of
9 uniqueness had yet to be demonstrated. Of course uniqueness
10 is not a necessary prerequisite to doing comparisons, but
11 they basically concluded that given the great variability
12 created in test-fires, that it would be not worth it to
13 create a national database because it would be too inexact.

14 Q What do you mean by uniqueness?

15 A So the claim is that guns as they shoot bullets
16 and eject cartridge cases leave striae or marks that are
17 unique to the individual weapon.

18 Q Moving to Exhibit C, who was involved in creating
19 that report?

20 A So Exhibit C had a mixture of mainstream
21 scientists, judges. It was co-chaired by the chief judge of
22 the D.C. Circuit, but also had forensic scientists as well
23 as more traditional mainstream scientists.

24 Q What sort of issues did that report deal with?

25 A It was looking generally at whether the scientific

1 literature was sufficient to support the fields that it
2 looked at, including DNA, fingerprints, firearms, toolmarks,
3 and others. And then it was also making recommendations to
4 the future and recommended that an independent federal
5 agency be created to oversee forensic science in the United
6 States.

7 Q Was there a criticism of firearms identification
8 science in that 2009 report?

9 A Yes. It was highly critical of the AFTE theory
10 and the fact that the research had not looked at a number of
11 factors that traditional scientific research would look at,
12 like basic accuracy, repeatability, threshold standards and
13 so forth.

14 Q Was there a difference in that report between how
15 they treated DNA and firearms?

16 A So they considered DNA to be the gold standard of
17 forensic science, that they found that it was fundamentally
18 valid, at least for single-source DNA. And that other
19 areas, including fingerprints, at the time, but also
20 firearms and toolmarks, had been under-researched and
21 under-theorized.

22 Q The last exhibit you have in front of you, Exhibit
23 D, that's the PCAST report?

24 A That's correct.

25 Q What was the purpose of PCAST?

1 A So PCAST was looking at a number of areas, again
2 including DNA, fingerprints, and firearms and toolmarks, as
3 well as footwear impression and others. Basically looking
4 at feature comparison areas of work, and asked the question
5 whether each of those areas had reached in the committee or
6 council's view of foundational validity.

7 Q What conclusion, if any, did PCAST reach about the
8 foundational validity of firearms identification?

9 A It concluded categorically that firearms and
10 toolmarks had yet to reach foundational validity.

11 Q Are you aware of any literature regarding firearms
12 or toolmark identification that PCAST disregarded?

13 A No. They were accused of having disregarded some
14 research. They asked again. Initially they had asked the
15 field to supply both published and unpublished studies on
16 this so they could review that literature. After the report
17 came out, they were criticized for having not looked at all
18 the literature. They asked for that literature to be
19 supplied to them and it subsequently had not -- was not
20 supplied to them.

21 Q So PCAST looked at most of the available
22 literature of ballistics studies at the time?

23 A So far as I know, they looked at everything that
24 anybody presented to them. So they gave opportunities for
25 the field to provide that research literature.

1 Q Did they make any recommendations regarding
2 firearms identification?

3 A Not sure I know what you are referring to.

4 Q Like did PCAST make any recommendations for
5 further studies?

6 A Yes, they -- what all scientists do under almost
7 any circumstances is call for more research, because
8 research rarely is perfect or solves all the questions that
9 you might have. They primarily were calling for more black
10 box studies to be done. At the time in 2016, only one black
11 box study had been done and it was originally announced in
12 2014, but had yet to be published in a peer-reviewed
13 journal.

14 Q What's a black box study?

15 A So a black box study is nothing unusual in
16 science. It's where you know the inputs and you can assess
17 the output. So if you are interested -- so random
18 controlled trials would be an example in medicine. If you
19 are interested in whether taking a baby aspirin a day
20 reduces your likelihood of heart disease, you can have an
21 experimental group that gets the baby aspirin a day, you can
22 have a controlled group that gets the placebo, a sugar pill.
23 You don't need to know what's going on in the body. You can
24 just assess whether the group that got the experimental drug
25 had lower heart disease than the group that got the placebo.

1 And so the black box study is very elegant
2 because you create the input and then you can assess the
3 output. So it could be tea leaf reading, it could be
4 crystal ball reading, it could be anything. You don't need
5 to know what's going on in the black box to assess its
6 effectiveness.

7 Q So specifically when we are talking about firearms
8 identification, why in your opinion are black box studies
9 important?

10 A Well, part of the problem with the theory that
11 AFTE proposes is that it's very subjective. And because
12 it's subjective, we almost by definition don't know what's
13 going on in the brains of the examiners. And so you can't
14 do a white box study -- you can do a white box study, but
15 it's difficult to handle if every examiner is using a
16 different threshold or a different standard. So given the
17 subjective nature of it, black box study would be the most
18 elegant way to measure it. And it also gives you the
19 opportunity to actually control what the inputs are in terms
20 of what the quality of the inputs are, the difficulty of the
21 test, and then evaluate their validity and accuracy on the
22 back side.

23 Q When you are looking at the studies that have been
24 performed in firearms identification, what sort of studies
25 are you running across?

1 A So the PCAST, when they ask for the studies, most
2 of the studies that have been done prior to 2016 were
3 referred to as set-to-set studies. So set-to-set studies
4 are essentially looking at, say, 15 known exemplars or
5 samples and -- or I am sorry, 10 known exemplars and 15
6 unknown. And the idea is just to match them up to say this
7 one came from this one, this one matches this one, this one
8 matches that one.

9 The problem with set-to-set studies, when
10 they're closed set-to-set studies, is every question has an
11 answer. So they have been likened to a Sudoku puzzle. They
12 are also very dependent. Once you solve one, you do the
13 easiest one, every next one, even the hardest ones, become
14 easier than they otherwise would have been. And so even the
15 researchers now doing black box studies have been very
16 critical of the set-to-set studies. They have very low
17 error rates, but they also have very low inconclusive rates.
18 So they seem to be fairly simple exercises.

19 Q And we will get to inconclusive shortly.

20 You testified about a study that occurred in
21 2014 that was a black box study?

22 A Right, it's referred to -- it's the Baldwin study.
23 It's referred to as the Ames I study.

24 Q What were the results of the Ames I study?

25 A So the researchers reported about a 1 percent

1 error rate in Ames I, but when you actually look at the
2 mistakes that were made in the research, the error rate
3 balloons to about 30, 33 percent.

4 Q What are those mistakes in your opinion?

5 A So the problem -- and I think this is really the
6 crux of the matter, Your Honor. The problem is that in
7 field work, you have three possible answers, maybe a fourth,
8 but three essential possible answers to the question
9 presented. One is that the unknown cartridge case or bullet
10 came from a known cartridge case or bullet. And that would
11 be an identification. Another answer would be it came from
12 a different source, so that would be an elimination or
13 nonmatch. Or the third possibility is we can't answer it.
14 If the answer is inconclusive, there is either too many
15 marks or too few marks, too many striae, but simply we don't
16 have an answer on the identification or exclusion or
17 elimination.

18 When they did the research, they of course
19 were creating the samples. And so they knew whether it was
20 the same gun, same source, or it was a different gun,
21 different source. So inconclusive was not an answer to the
22 test. So it's like creating a true/false exam. But when
23 the research was done, they riled the examiners to say
24 inconclusive. So although none of the exemplars, none of
25 the samples were created as inconclusive, inconclusive was

1 allowed to be an answer to the question. So, again, it's
2 sort of like giving a true/false exam and allowing the test
3 subject to say I don't know.

4 The bigger problem, and it continues to this
5 day, which is really quite remarkable from any standpoint,
6 is that they actually counted the inconclusives as correct.
7 So you could theoretically -- and, in fact, some examiners
8 did this -- answer every single question inconclusive and
9 get a hundred percent correct.

10 Q So what is the proper way in these studies for
11 them to treat inconclusives?

12 A So as I understand, there are really only three
13 ways to deal with inconclusives. Because, again, they have
14 created the tests, and because they have created the tests,
15 they know the answer as either identification or
16 elimination.

17 And so one way to do it, which is the way the
18 researchers did it, is to treat inconclusives as not only
19 not wrong but actually correct. And the way they do that --
20 they don't say that, but the way they do that is they
21 include all the comparisons in the denominator, but they
22 don't include inconclusives, which are mistakes, in the
23 numerators. So they are not counting them at all. They are
24 counting them as correct. So that's one way to do it, which
25 I think is inappropriate.

1 The second way, which is what PCAST did, is
2 they said, well, let's not count them at all. We will only
3 count the questions you answered and we will throw out all
4 the ones that you say inconclusive. The problem with that
5 is now you are not getting -- now you are only answering the
6 easy questions. Because if it's a hard question -- I mean,
7 imagine the State Bar exam. If you took the multi-state and
8 you had 200 questions and you only got tested on the ones
9 that you decided to answer, everybody would pass the exam
10 because you are only answering the easy questions and you
11 are not being counted on the others. So I think that's also
12 inappropriate. And to my chagrin, when I was an advisor to
13 PCAST, we didn't catch that or I didn't catch that and we
14 simply didn't count it.

15 The third possibility is to count
16 inconclusives as incorrect, as errors, which again, it's not
17 an answer. So the problem, Your Honor, is that -- how do
18 you -- so it's true that sometimes an inconclusive could be
19 the correct answer even in the research. I accept that
20 that's possible. But you wouldn't expect it to be
21 50 percent of the time. You might expect it to be 2, 3, or
22 4 percent. But if you were really doing research in this
23 area, you want to test that hypothesis.

24 And so it's actually very easy to test. All
25 you would need to do is give the same sample to, say, a

1 hundred examiners. And let's say the sample was an
2 identification, because you created it so you knew it came
3 from the same gun. Let's say 70 out of the hundred say it's
4 an identification. Well, they got it right and they should
5 get credit for that. But let's say 30, looking at exactly
6 the same sample, say it's inconclusive. How do you treat
7 the numbers then. Well, the researchers treat it as a
8 hundred out of a hundred because they counted the 30 as
9 correct. So that's a hundred percent. The PCAST report
10 said, well, we are going to count the 70, so 70 out of 70,
11 that's a hundred percent. And I would say no, it's actually
12 70 out of a hundred, that's 70 percent. And so there is no
13 fourth way in my view to deal with inconclusives.

14 Q Are you familiar with the Ames II study?

15 A I am.

16 Q What is that?

17 A So the Ames II study was done by its own terms to
18 resolve the challenge raised by the PCAST report. So it was
19 intended to be the most comprehensive black box study,
20 looked at both cartridge cases and bullets. So Ames I had
21 only been a cartridge case study, not a bullet study. So
22 they wanted to look at both the cartridge cases and the
23 bullets.

24 And then there were three phases to Ames II.
25 Phase one looked at the accuracy rates of the examiners.

1 Phase two looked at what they called repeatability or
2 reliability in scientific terms between the examiner at time
3 one and the same examiner at time two. So it's really what
4 we would call intra-rater reliability. Was the grader or
5 the test subject consistent with himself or herself.

6 And then phase three of Ames II was asked the
7 question, would a different examiner be consistent with the
8 first examiner at time two as compared to what the first
9 examiner did at time one. So that would be in scientific
10 terms call inter-rater reliability.

11 Q Can you walk us through the results of the Ames II
12 study?

13 A Generally I can.

14 Q Yes.

15 A So, again, the researchers report very, very low
16 error rates because, again, they don't count inconclusives
17 as errors and they count them as correct. So they -- again,
18 they don't count them in the denominator -- I am sorry, they
19 count the comparisons in the denominator, but they don't
20 count the inconclusives in the numerator. So they are
21 essentially counting inconclusives as correct answers in the
22 error rate determinations. So they do report about
23 1 percent error rates for false positives and false
24 negatives. That's phase one.

25 If you count inconclusives as errors, as I

1 do, the error rate for bullets goes up to about 53 percent
2 because there's so many inconclusives, and the error rate
3 for cartridge cases goes up to about 44 percent. So it
4 explodes when you count inconclusives. But even, again,
5 just superficially, to have 50 percent or so of
6 inconclusives in a study where you created the samples -- so
7 you know ground truth, you know whether it's the same gun or
8 a different gun -- ought to create concern among researchers
9 as to what's going on in a field that has such a high rate
10 of I-don't-know answers when the answer is known by ground
11 truth.

12 Phase two of the study asks the question,
13 which is a very legitimate question, is a grader consistent
14 with himself or herself at time one and time two looking at
15 exactly the same result. And somewhat surprisingly, because
16 you would expect it to be near a hundred percent, they had
17 error rates approaching 30 percent. And so even examiners
18 looking at the same material are not consistent with
19 themselves. And then the question of whether an examiner
20 was consistent between time one when he or she was doing it
21 and another examiner was doing it at time two, the
22 consistency rates were even lower, approaching 70 percent
23 inconsistent.

24 Now, I will say that most of the
25 inconsistency, again, is in that inconclusive range and not

1 the true positive or false positive range. But, again, the
2 fact that even the examiner is not consistent with himself
3 or herself ought to raise great concerns in the research
4 community.

5 Q Do you have an opinion as to why the inconclusive
6 numbers are so high in these studies?

7 A So I think that the speculation -- and we don't
8 have a specific answer to it -- appears to be that they know
9 that their field is being tested. And if you know that not
10 only you are not going to get credit off for getting it
11 wrong, you are actually going to get credit for getting it
12 right --

13 MR. McNAIR: Objection. I am
14 objecting because his answer is now going into
15 speculation about the mental states of
16 participants in the study, and I think that is
17 beyond even what this Court has qualified him as
18 an expert in, to say that he can offer an
19 opinion about the potential mental state of a
20 subject in a study.

21 MR. DiCHIERA: I can ask some
22 foundational --

23 THE COURT: I am going to
24 allow it. But, Mr. McNair, I understand what he
25 is doing. I understand when he's giving an

1 opinion that is more limited to his area, when
2 he's giving an opinion that is more lay in his
3 nature. This seems more like a lay opinion.
4 But he's allowed to give a lay opinion as well.

5 A So if I were taking a test -- so if I were taking
6 the California Bar exam and I knew I was not going to get
7 credit off for answering it "I don't know," I would answer
8 the hard questions "I don't know." So I think that what's
9 going on, which again, is just common sense, that you are
10 going to default to inconclusive when you are not sure of
11 the answer because you don't lose any credit for doing so.

12 Q And you have a psychology background; is that
13 right?

14 A I do, research psychology.

15 THE COURT: So now you want to
16 turn him into an expert in psychology?

17 MR. DiCHIERA: I don't. I just
18 wanted to clarify.

19 Q You talked about the three phases of the Ames
20 study. I know we talked about phase one and two. I don't
21 think we talked about phase three.

22 A So I mentioned phase three. The question there is
23 between one examiner and a second examiner and whether they
24 were consistent with one another.

25 THE COURT: Before we move on,

1 I do have a question. On that issue of -- that
2 raised the objection, this idea that maybe they
3 leaned towards inconclusive because they had a
4 sense that that answer would create the
5 appearance of genius because they got everything
6 right, did they know the way that inconclusives
7 would be determined or assessed?

8 THE WITNESS: Yes. It's
9 well-known in the field that that's the way
10 inconclusives are treated.

11 THE COURT: But they're
12 treated three different ways?

13 THE WITNESS: No. The
14 researchers only treated one way, Your Honor.
15 The researchers treat it as correct. PCAST
16 treated it as we are not going to count it at
17 all. And I and other critics of the field say
18 that it ought to be treated as an error. But in
19 the field, the studies are uniformly consistent.
20 And so perhaps the most recent study is Max
21 Gyll did a study at Arizona State where he was
22 a little bit more skeptical of treating
23 inconclusives as correct. But the Ames I, Ames
24 II, Koehler study, the Best and Gardner study,
25 they all treat them as essentially correct.

1 BY MR. DiCHIERA:

2 Q Phase two and three -- and correct me if I am
3 wrong, Dean Faigman -- of the Ames II study deal with the
4 idea of repeatability and reproducibility?

5 A That's correct. So in science, scientists, unlike
6 courts, distinguish the term validity from reliability. So
7 validity translates most correctly as accuracy. And so
8 phase one was looking at the accuracy rates of the examiners
9 when he knew ground truth. Very often in science you want
10 to evaluate reliability, which is consistency. So, for
11 example, if a thermometer is always 10 degrees too high,
12 always 10 degrees too high, it can have a hundred percent
13 reliability and zero percent validity.

14 And so there are a number of areas of science
15 where you can't get at ground truth. In fact, my area, what
16 I teach in psychiatry, we don't have ground truth for, say,
17 schizophrenia or bipolar disorder. And so what scientists
18 do, because they don't have ground truth, is they look at
19 reliability rates between psychiatrists for diagnosing
20 schizophrenia or bipolar disorder. And if the reliability
21 is not there, we know that the validity is not there. If
22 you don't have reliability, you can't have validity.

23 In firearms, of course, we do and are able to
24 create studies where we know ground truth. And so what was
25 interesting about Ames II is they had the validity

1 information, but then they were interested -- which made a
2 lot of sense, because it's a subjective judgment, asking the
3 question of whether we as subjective decision-makers are
4 consistent with ourselves or are we consistent with each
5 other. That's a very fair and interesting question.

6 So, again, let me be clear, I think Ames II
7 was trying to do something that was admirable. And where I
8 come from in my background, I want them to do more research,
9 I want them to do good research. The problem with Ames II
10 is that they ended up not counting all the mistakes that
11 were being made, not that they were not making a good effort
12 to study a field.

13 Q And regarding Ames II, do you have an opinion on
14 whether the results of that study -- what they indicate
15 regarding the reliability of firearms identification?

16 A So the problem with Ames II is shared by a number
17 of other studies, Your Honor. It's not just how you deal
18 with the inconclusives. There are other very fundamental
19 methodological mistakes that they make. Probably the
20 biggest one is that they don't know the difficulty of the
21 test. So what's happening in this field, which is really
22 out of the -- really quite extraordinary is that everybody
23 seems to be getting a hundred percent. I have never given
24 an exam and I have never taken an exam where you always get
25 a hundred percent.

1 So typically in testing you get some sort of
2 a distribution, you know, the classic bell-shaped curve.
3 And it might be bimodal, so you have two, but it's always
4 some sort of a distribution. And so the first question is
5 why aren't we getting some sort of a distribution. And so
6 we don't know how difficult the test is, which is done again
7 all the time where we evaluate the difficulty of the
8 materials that you are given. And you can do that one of
9 two ways. You can do it by pretesting, which is to actually
10 give it to a group and create easier and harder tests --
11 which we do all the time and that's the way the Bar exam
12 actually is normed -- or you could have comparison groups.

13 So a benchmark of firearms identification is
14 that experience and training is a -- the basis for the
15 expert opinion. So you would think that somebody that had
16 two weeks or a month or six months of training would be at a
17 different performance level than somebody that had 25 years
18 experience and training. And the research has not studied
19 that systematically because, again, everybody seems to be
20 getting A-plus on these exams. And in the Ames II study,
21 they did evaluate whether experience and training was
22 related to performance, and they found no relationship,
23 which again, for a field that's based on experience and
24 training, ought to raise a few concerns.

25 So those are two big issues in terms of

1 difficulty. But then there are other problems, too.
2 Another huge problem in this area is that the sample
3 population, the subjects in the research are not necessarily
4 representative of the field more generally. So very often
5 they will go to a professional conference and they will ask
6 for volunteers to participate in the study, and we don't
7 know whether they are actually representative of the broader
8 population. And so it would be, again, validating a vaccine
9 looking at only 18- to 35-year-olds. They may not be
10 representative of a broader population and so we want to
11 know that. So you don't just ask for volunteers. You try
12 to make sure that you have a representative sample.

13 And then the other big problem that I
14 identified in my affidavit is that this research has a very
15 high dropout rate, meaning that a lot of people that begin
16 doing the research don't finish doing the research. So Ames
17 II, for example, had a 69 percent dropout rate, so there's a
18 lot to do and a lot of people just decided I have had
19 enough, I don't want to be part of this research any longer.
20 But that then suggests that the folks that are left are not
21 representative of any group. They are the true believers.
22 They, first of all, were volunteers to begin with, and then
23 they were volunteers that decided that they had enough and
24 they were going to drop out.

25 And so there's a lot going on here. The

1 inconclusive question I think is key because it suggests
2 that the error rates are huge, but I think there are other
3 very fundamental methodological problems with this research
4 that are certainly shared by Ames II.

5 Q Does the fact that the firearms field has
6 generated a lot of literature, a lot of studies, reports
7 mean -- does that support foundational validity to you?

8 A No. So PCAST and the scientists generally always
9 ask for more research to be done. PCAST was quite explicit
10 that more black box studies needed to be done and that
11 different laboratories should be doing that research because
12 you don't want just one laboratory producing everything you
13 might know about a field. But when you do more research, if
14 the more research that is done is not very good or has huge
15 error rates associated with it, having just done the
16 research doesn't just get you over some threshold.

17 Q What about the fact that examiners, practitioners
18 in this field have been opining about firearms
19 identification for over a century? Does that impact
20 foundational validity?

21 A No. The opinion of firearms examiners -- the
22 problem with firearms examiners knowing whether they're any
23 good or not is that they don't have the feedback loop. They
24 don't know. So if I am a harbor pilot and I am in the same
25 area of water all the time, if I hit a -- you know, a

1 sandbar, I get feedback from that. If I am an electrician
2 and I am not a very good electrician, I am dead. If I am a
3 plumber, I will flood the house. So a lot of professions
4 that courts rely on all the time and everybody relies on
5 have the feedback loop. Firearms examiners don't get a
6 feedback loop.

7 So there are lots of examples historically.
8 My favorite is for more than a thousand years, medical
9 doctors bled people when they had a congestive ailment. In
10 fact, George Washington was bled four times before he died
11 of congestive illness. And clinicians would bleed people
12 and people got better, and so that was their proof that
13 bleeding people worked. Until the 19th century, when they
14 did random controlled trials on bleeding, that it turned out
15 not to be a good therapy.

16 But in forensic science, that's true as well.
17 We used to use certain arson indicators that we don't use
18 anymore. After 1995, hair identification was given up by
19 the F.B.I. Comparative bullet-lead analysis was given up by
20 the F.B.I. So there are lots of examples where -- bite
21 marks ought to be given up by everybody. So there are lots
22 of examples where people in expertise thought it was
23 effective, and then when you actually sat down and did the
24 research, it turned out not to be valid.

25 Q Why is the casework that's performed by the

1 ballistics examiners not informative to your opinion?

2 A Well, again, because you don't get feedback on
3 whether you are accurate or not. And a conviction is not,
4 you know, proof of anything. Obviously it's rather circular
5 reasoning, so you want to do independent tests where you
6 know -- if you can, where you know ground truth. And,
7 again, the way research is done, it's very often
8 experimental where you are actually manipulating the
9 variable. It could be a natural experiment. You could
10 actually see what's happening in the laboratories. It could
11 be a blind test in a laboratory, which is possible and we
12 know that from the Houston lab study. So there are
13 different ways, different paradigms that scientists use to
14 get at the question of how good is this expertise.

15 Q Can the results of one study be used to
16 extrapolate and establish the validity of an entire field?

17 A Typically not. There's really -- the studies are
18 always going to be imprecise and not apply generally. So,
19 again, when you look at any area of science, whether it's
20 social science like eyewitness identification where there
21 are literally hundreds, if not thousands, of studies on
22 factors that interfere with eyewitness identification,
23 medical studies -- I used to think -- there were a number of
24 studies that indicated that drinking red wine was actually
25 good for you, and now there are several studies that

1 indicate that drinking red wine is bad for you. I don't
2 know whether drinking red wine is good for you or bad for
3 you because the science continues to progress and continues
4 to evolve. And we want to do more and better studies. So
5 we will never rely -- should never rely on one, two, or just
6 a few studies, especially studies that are not done very
7 well or have arguably high error rates.

8 Q Are you familiar with the work of Dr. James Hamby?

9 A Generally, I am.

10 Q You are aware of the studies that he has conducted
11 regarding Glocks?

12 A I am.

13 Q And in those studies, the examiners made no
14 mistakes in their identification of --

15 A That's my understanding.

16 Q -- which casing came from which firearm?

17 A Yeah, these were set-to-set studies. And they
18 seem to be ongoing as well.

19 Q So for the Court, what is the difference between a
20 set-to-set study and a black box study?

21 A So the set-to-set studies when they're closed --
22 and the Hamby studies are, at least the one that's
23 continuing -- you, again -- you have 10 known rifle barrels,
24 you have 15 exemplars, and you are trying to match them up
25 to samples that came from the known. And, again, it's that

1 Sudoku puzzle problem. It's just a matching exercise. You
2 can't really articulate error rates the way you
3 conventionally do because you don't know how many
4 comparisons they have made, so you don't know what the
5 denominator is supposed to be. And they also seem to be
6 very easy, which is really interesting when you compare it.
7 And, again, I don't -- my position is not that there's not
8 anything there. I think that there's probably something
9 underlying, that they're clearly marks that people are
10 looking at.

11 But when you compare the set-to-set studies
12 where everybody is getting everything correct, there are
13 very few inconclusives, less than one percent inconclusives,
14 and then you do black box studies, which are more the gold
15 standard of how you do research, and you have 50 percent
16 inconclusive rates, you have to ask the question what's
17 going on. So it's not unlike -- I analogize it to, you
18 know, the FDA looking at mouse studies. If the mouse
19 studies are uniformly demonstrating that some substance is
20 an effective medical treatment and then you give it to
21 humans, and the humans have the 50 percent error rate
22 attached to it, you are not going to rely on the mouse
23 studies. Why would you.

24 And so the set-to-set studies are sort of
25 like mouse studies. They're not completely irrelevant.

1 There's a value there to get started in this field. But
2 what PCAST is saying is, if you want to move on and actually
3 test what examiners are doing, the black box study is going
4 to be the gold standard to use.

5 Q Now, the set-to-set studies like the ones
6 conducted by Dr. Hamby, do report out an error rate just
7 using a Bayesian inference?

8 A Yes. Well, they report out an error rate in terms
9 of the number of false positives and false negatives, and
10 then they do a Bayesian analysis that is mostly irrelevant
11 and unnecessary.

12 Q Why do you say that?

13 A So the way Bayes' -- so I did my master's research
14 on Bayes' theorem. So Bayes' theorem asks the question of
15 how you update subjective probability. So if I have a
16 subjective probability that X is true at, say, 30 percent, I
17 think it's 30 percent likely that X is true. And then I
18 hear some hard quantitative information that Bayes' theorem
19 is just an eloquent way of saying what's called a posterior
20 probability. Your 30 percent should go up to a certain
21 amount, say 80, 90, 98 percent. It's -- you have to, first
22 of all, make up the prior probability because it's a
23 subjective probability that -- by definition we all have
24 different subjective probabilities. And no court in the
25 United States has adopted likelihood ratios or Bayes'

1 theorem because it doesn't add anything to the analysis,
2 either in that context or any other context.

3 Q So what weight, if any, should the Court give to
4 these closed set studies?

5 A I would say minimal weight. Again, if that's all
6 you had, then you might say there seems to be something
7 that's valuable here. But once you have better studies that
8 indicate they don't have something here, then you wouldn't
9 go back and say I am going to go back and rely on the mouse
10 studies.

11 Q Your affidavit touches on cognitive bias. Can you
12 please explain your concerns surrounding that?

13 A So cognitive bias is well-known in behavioral
14 psychology, and of course my degree is in social psychology,
15 so it's something that we study. Robert Rosenthal, who was
16 then at Harvard and then moved on to UC Davis when he
17 retired, looked at what he called the Pygmalion effect. And
18 what he did quite cleverly was to give elementary school
19 teachers standardized test scores that were randomly
20 assigned to students, and then evaluate how the teachers
21 evaluate the students in light of their expectations based
22 on the standardized test scores.

23 And what he found was that what we now
24 believe generally to be true as common sense, that you tend
25 to see the world the way you expect to see the world. So

1 you resolve ambiguity in light of this previous information
2 that you have, which would be the standardized test scores.
3 And so Itiel Dror -- which is I-T-I-E-L, Dror, D-R-O-R -- a
4 researcher at the University of -- I think University
5 College London, has looked at this cognitive bias question
6 in the forensic sciences. So he looked at fingerprints and
7 he looked at DNA interpretations, and he found in two of the
8 more gold standard areas of forensic science that this
9 cognitive bias could still impact interpretations of
10 fingerprint examination and DNA interpretation.

11 Q And as it relates to firearms examination, what
12 concerns do you have as to cognitive biases?

13 A So if the examiner has background information and
14 is looking at something that is subjective by definition,
15 highly ambiguous because of the marks and striae that
16 they're looking at --

17 MR. McNAIR: Objection. Just,
18 again, this is beyond the area of expertise even
19 in which this Court is qualified in. He is not
20 an expert in cognitive bias. The Court
21 qualified him as an expert in research design,
22 scientific methodology, and statistics. We are
23 way beyond that.

24 THE COURT: So I've indicated
25 my intention is to be thoughtful as to when he's

1 testifying within his areas of expertise and
2 when he's giving lay opinions. I am not going
3 to bar him from giving an opinion about the City
4 of Cleveland if he's inquired of it and it's
5 relevant. So if he wants to talk about bias
6 within the world of researchers, I will allow
7 him to testify to it and you will be able to
8 cross-examine him on it.

9 A So bias is actually a key aspect of research
10 design. The reason why we blind experimenters and we blind
11 research subjects is so when you are doing the study on baby
12 aspirin, you want the researchers not to know who got the
13 baby aspirin and who got the placebo, and you want the
14 people getting it not to know if they got the baby aspirin
15 or the placebo.

16 So that idea of bias is everywhere in
17 research design actually. And it is true also in forensics.
18 And if you know that the defendant was the partner of the
19 victim and that the -- when he ran from the police, he threw
20 the gun over the fence, all that information is going to
21 give you a -- sort of initial starting point to when you do
22 the examination. So just like we want experimenters to be
23 blind to experimental condition, we would like if possible
24 forensic examiners to be blind to any background
25 information.

1 THE COURT: So your point is
2 scientists are human, too? They are affected by
3 biases?

4 THE WITNESS: Exactly, Your
5 Honor.

6 THE COURT: Do you have an
7 objection to that, Mr. McNair?

8 MR. McNAIR: Judge, I think
9 just so long as we are clear that this is a lay
10 opinion, I will have some questions about it,
11 that's fine.

12 THE COURT: I think I can bear
13 out the differences.

14 Q Dean Faigman, we are getting close, but just a few
15 more questions. First, do you have an opinion as to whether
16 or not toolmark identification techniques can be tested?

17 A Yes, I think it can be tested and has been tested.

18 Q Do you have an opinion about whether toolmark
19 identification techniques have been appropriately or
20 reliably tested as to establish its validity?

21 A In my opinion it has not yet been adequately
22 tested to demonstrate what they would call individualization
23 or the ability to connect a particular cartridge case or
24 bullet to a particular gun, or particular cartridge case to
25 another cartridge case, or a bullet to another bullet.

1 Q Based on your analysis, your research, your
2 writing, do you have an opinion about whether toolmark
3 identification has been subject to appropriate peer review?

4 A It's not been -- it's been subject to some peer
5 review, but again, the peer review is just a process for
6 reviewing the material. It depends on the quality of the
7 peer reviewers and ultimately you want to ask about the
8 quality of the research.

9 Q Again, based on your analysis, do you have an
10 opinion about whether toolmark identification has a known
11 rate of error?

12 A I don't think we know the rate of error because of
13 the poor methodological designs that are used. And if there
14 are -- and if errors in my view are appropriately defined,
15 the error rate is very high indeed.

16 Q 53 percent for --

17 A The --

18 THE COURT REPORTER: I'm sorry, I
19 didn't hear your question.

20 Q I said, 53 percent for bullets in the Ames II
21 study?

22 A So in the Ames II study, that's right, about
23 53 percent for bullets and about 44 percent for cartridge
24 casings.

25 THE COURT: I'm sorry, what

1 were those numbers representing?

2 THE WITNESS: The error rate if
3 you include inconclusives as mistakes.

4 Q Is there a mainstream scientific community in your
5 opinion for firearms?

6 A I think that there is a mainstream scientific
7 community. I think there's an increasingly large group of
8 mainstream scientists who have started looking at the work
9 that's being done in firearms and toolmarks. Not just
10 myself, but people like Nick Scurich at the University of
11 California Irvine, Michael Rosenblum who is a
12 biostatistician at Johns Hopkins. So in addition to the
13 government reports, there is an increasing number of
14 academic scientists who are raising concerns about the
15 methodologies used.

16 Q We have been talking about the AFTE theory of
17 identification. Is that accepted by the mainstream
18 scientific community?

19 A The AFTE theory is not accepted or not accepted
20 exactly. It's difficult -- because you are doing black box
21 testing, if the examiner says they're using the AFTE theory,
22 you don't care one way or the other. They could, again, be
23 looking at a crystal ball. The question is are they
24 accurate in what they are using.

25 So the problem with the AFTE theory is that

1 it is essentially implausible on its face. So what the AFTE
2 theory calls upon examiners to do is to answer the question
3 whether the comparison you are doing here is more unlike
4 similar marks made by different guns. So you have to have
5 this library of different guns that create similar marks, or
6 more like the same gun that creates similar marks and trying
7 to do kind of comparison, comparison, comparison across the
8 range.

9 So computers might work that way. In fact,
10 my estimation is, and I think I published along these lines,
11 that five, 10 years from now artificial intelligence and
12 computer mapping and 3-D technology will get us somewhere in
13 that world where you are doing a one-to-one comparison
14 through thousands, if not tens of thousands, of exemplars.
15 But the human brain doesn't work that way. We just know
16 that, again, from a lay perspective. We don't have memory
17 of thousands of different source samples that are similar
18 and same source samples that are similar and do that kind of
19 calculation. So on its face, the AFTE theory is
20 implausible.

21 Q And really in your opinion it's really about the
22 results of the studies, the black box studies more than what
23 the theory is?

24 A Right. We don't need to know why the baby aspirin
25 works if it works. Now we today know why it works, but we

1 didn't need to know that to prescribe it.

2 Q But why should the Court not defer to the toolmark
3 examiners in this case?

4 A Well, I think that no scientific field should
5 simply be deferred to. Anybody, if you are buying a car,
6 you don't defer to Ford Motor Company. You look at Consumer
7 Reports and you look at some independent agency. If you are
8 deciding whether a drug is effective, you don't just ask
9 Merrill Dow Pharmaceuticals. You would like to ask the FDA
10 or some independent evaluator.

11 Q So if the research study, if Ames I and II don't
12 support this ability to compare casing and say that it came
13 from a particular firearm or a bullet came from a particular
14 firearm, do you have an opinion as to what the literature
15 would support in respect to statements that examiners can
16 make about the source of marks on cartridge cases or
17 bullets?

18 A So I think that the research would well support a
19 statement that the cartridge case or bullet in question came
20 from a class of guns or type of gun, not from a particular
21 gun. So that happens all the time in science. We might
22 study whether benzene causes cancer, let's say a type of
23 leukemia. We might be able to say something about the
24 population, that there is an increased relative risk of
25 getting leukemia from being exposed to benzene. But whether

1 a particular plaintiff's leukemia was caused by benzene
2 exposure, that's a different type of problem in science and
3 a different problem in the courts as well.

4 And so I liken the firearms example to
5 exactly that. They are pretty good and there's good reason
6 to believe that they're very good at identifying class
7 characteristics, to say it came from a Glock, but to say
8 that it came from a particular Glock, the research does not
9 support that.

10 MR. DiCHIERA: One moment, Your
11 Honor. No further questions. Thank you.

12 THE COURT: Before I turn it
13 over to the government for cross-examination,
14 we'll take maybe a five to 10-minute convenience
15 break. Let's plan to be back in the courtroom
16 no later than 11:25.

17 You are welcome to step down, but just
18 remember you are under oath, so don't discuss
19 your testimony with anyone.

20 THE WITNESS: Okay, thank you.

21 - - - -

22 (Recess taken.)

23 - - - -

24 THE COURT: Back on the record
25 in Case Number 671659. At the time we broke, we

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1 were about to begin the cross-examination by
2 Mr. McNair.

3 MR. McNAIR: Thank you, Judge.

4 THE COURT: Witness, I would
5 just remind you that you are under oath.

6 THE WITNESS: Okay, thank you,
7 Your Honor.

8 - - - -

9 CROSS-EXAMINATION OF DAVID FAIGMAN

10 BY MR. McNAIR:

11 Q Hello, Dean.

12 A Hello.

13 Q So I want to start kind of where Mr. DiChiera left
14 off. Your testimony in essence is that the research
15 literally doesn't support the ability to match a cartridge
16 case or bullet to a particular firearm; is that a fair
17 characterization?

18 A That's fair.

19 Q And your opinion isn't necessarily that that
20 should be limited in some sort of fashion, except for
21 talking maybe a class of gun or type of gun -- I want to
22 circle back to that -- but your opinion is that that should
23 be just excluded really as a wholesale matter, that
24 individualization should be totally excluded; is that fair
25 to say?

1 A Yeah, I guess the way I would frame it is that I
2 would not exclude a firearms examiner from testifying, but I
3 would limit what they could testify to to class
4 characteristics or a class of gun.

5 Q So testimony that a particular cartridge case or
6 bullet was fired by or not fired by a particular firearm,
7 unless you can make that elimination with class
8 characteristics, your opinion is that that should not come
9 into court, that that is not foundationally-valid testimony?

10 A That's correct.

11 Q Would you agree with me that if an individual were
12 exonerated because of that sort of testimony or evidence,
13 that they should be reincarcerated? That if that is the
14 only basis for which someone was exonerated, that is not a
15 foundationally-valid basis to exonerate them?

16 A Well, I think the exoneration question is separate
17 from the evidentiary question. When I teach evidence, we
18 always say that evidence is one brick in the wall. It's
19 rarely the entire wall. And so I would say that whether
20 it's for somebody who claims to be innocent or somebody that
21 you think is guilty, if the examination is not reliable and
22 valid, that it should not be relied on. But of course in
23 the case, if it turns out that the class characteristics
24 don't match -- it would be unusual to have gotten an
25 identification if that were the case ever -- then obviously

1 that would exonerate somebody or not exonerate somebody, but
2 would make the evidence not particularly worthwhile.

3 Q Well, I guess I will ask the question a little
4 more pointedly. If the only brick in the wall of evidence
5 for exoneration, so to speak, if that only brick were a
6 firearm and toolmark examiner's opinion to a reasonable
7 degree of forensic certainty in their field, that a
8 particular bullet or cartridge case was fired from a
9 particular firearm, would you agree with me that that
10 exoneration should not stand?

11 A I agree that any statement of individualization
12 has not yet been demonstrated to be valid. I would leave it
13 to the Courts to decide what happens to the individual.

14 Q I want to talk about what -- we have discussed a
15 little bit already with Mr. DiChiera about what qualifies
16 you to render this opinion. And if I understand it
17 correctly, is it -- I am going to use a simpler term. Is it
18 that you are kind of an expert in the study of studies or in
19 the study of research?

20 A Yes, I suppose I am an expert in methodological
21 design, which obviously includes statistical design as well.

22 Q So someone could come to you and learn how to
23 appropriately design and conduct a study that would get to
24 the error rates of firearm and toolmark examiners?

25 A Well, I probably wouldn't do it on my own. So I

1 think that I am a great believer, and I exercised this
2 during my career, of looking for co-authors who complement
3 my area of expertise. But when I have been on the MacArthur
4 networks and I have been on the National Academies
5 committee, the reason for my value is that I can speak
6 science.

7 So, in fact, in the early 2000s, Michael
8 Sacks and I proposed to the MacArthur Foundation to put
9 together teams of mainstream scientists and forensic
10 examiners to do robust testing in this field. So I would
11 put together a team if I were going to study it myself. And
12 I have offered in testimony and I offered to Dr. Hamby that
13 I would be thrilled to be invited to be part of a team going
14 forward to test this area of expertise. I have yet to be
15 invited to do so.

16 Q So if I understand you correctly, your expertise
17 is sufficient to tell a different group that the study that
18 they had or the study that they conducted is lacking in
19 foundational validity, but it is not sufficient to create a
20 study that would have foundational validity?

21 A No, I would disagree with that statement. I think
22 that I would be a very good part of the team. But, again,
23 firearms examination like other areas have nuances and
24 subtleties. If you wanted to do blind testing in a
25 laboratory obviously, I would need the cooperation of a

1 laboratory like the Houston lab or some other lab to do
2 that. So I am just being realistic, that I have been
3 trained to be critical of research. In fact, that's
4 probably the first thing I did in research methods in
5 graduate school was to look at published studies and
6 critique them. So, yes, I think that by myself I am quite
7 able to see the weaknesses of research. If I were going to
8 design a study and go out and get examiners and just collect
9 the data and analyze the data, I would want a team to
10 accompany me to do that.

11 Q So if we use maybe one of your earlier examples
12 about grading a test, your expertise is sufficient to grade
13 a test, but not to construct the test?

14 A No. Again, I would be -- my expertise would
15 include constructing the test, but I am not so presumptuous
16 that I wouldn't ask for assistance in doing that. So,
17 again, it's just a simple question of, yes, I think I have
18 the expertise to create new tests, just as I did with the
19 suggestion how do you deal with the inconclusive rate. It
20 would be easy enough just to test that one hypothesis of
21 giving the same sample to a hundred examiners and seeing if
22 there was consistency among them.

23 Q Well, my question is really about your ability
24 standing alone. So I guess I want to take out any team
25 members or potential team members to this question.

1 Your testimony is that you, standing alone,
2 Dean Faigman, you are sufficiently qualified to critique
3 these studies, but not sufficiently qualified, again on your
4 own without any other team members, to appropriately design
5 such a study?

6 A No, I disagree with that statement. I think that
7 I am on my own able to appropriately define the studies.
8 When I'm called upon -- what I am saying is, what I am
9 probably not okay to do by myself is to implement or carry
10 them out. So I would be thrilled to design it and then work
11 with forensic examiners and others to actually carry out the
12 study. In terms of designing the study, I think I am more
13 than capable of doing that. But, again, implementing the
14 study and having done it in terms of collecting data, it's
15 very time-intensive affair. And you would need access.

16 Q Have you designed studies?

17 A Yes, I have.

18 Q What areas have you designed studies in?

19 A Primarily behavioral psychology.

20 Q Have you overseen or administered or actually
21 conducted those studies beyond the design stage?

22 A Yes, I have.

23 Q In that same area, in behavioral psychology?

24 A That's correct.

25 Q Have you taught classes in statistics?

1 A I have taught classes that have included
2 statistics, yes, and probability theory.

3 Q And one of my favorite question phrases ever: Are
4 you now or have you ever been a member of the American
5 Statistical Association or the Association for Institutional
6 Research?

7 A I am not and I have never been.

8 Q Have you ever been a member of or consultant to or
9 worked in any capacity with the Federal Committee on
10 Statistical Methodology?

11 A I have not.

12 Q And we are talking a lot today about error rates.
13 And really what we are driving at when we are talking about
14 these studies is you want a study that lets you know what
15 the error rate is when these folks are doing actual
16 casework; is that fair to say?

17 A That's what you would be generalizing to, that's
18 correct.

19 Q Would you agree with me that it's important to
20 know something about how actual casework is done to be able
21 to generalize from a study or a research setting to whether
22 that is something that will translate to the actual
23 casework?

24 A I think that would be one element, but I wouldn't
25 say that that's the be-all end-all.

1 Q So, for example -- I know we have been using a lot
2 of examples today, but if we were to study the proficiency
3 of car mechanics in conducting alignments and as part of
4 that study if we put a 10-minute limit on how long a
5 mechanic could perform an alignment, if it turns out that a
6 normal alignment typically takes between 30 and 60 minutes,
7 would you agree with me that the -- that that component of
8 the study, that extra condition means that you are not going
9 to get a realistic read of how proficient mechanics are at
10 performing alignments?

11 A I think it's a fair statement.

12 Q Because the study condition is much harder than
13 the real life condition; fair to say?

14 A Well, again, the study condition is probably
15 holding lots of things constant that would not be held
16 constant in practice. So your question contemplates a
17 less-than-full understanding of what might be going on. So
18 in the study, you may not have to look at anything but the
19 alignment, and that might only take 10 minutes. But in
20 practice, when you are doing the alignment, you are also
21 looking at tire pressure, you are looking at brakes, you are
22 looking at other things. So -- I have water, but I
23 appreciate the offer.

24 So you would -- again, the nature of research
25 is that it's always somewhat artificial. So if you hold all

1 the other factors constant, then the alignment part might
2 actually be 10 minutes. But I agree with you that if the
3 actual alignment part should take you 30 minutes, giving
4 them only 10 minutes may not be a fair representation of
5 what happens in practice.

6 Q Can we agree generally that if a test condition is
7 harder than a casework condition, that could be something
8 that will affect the error rates that you see in a test?

9 A I think anything that's inconsistent between the
10 testing regime and the real world regime that's not
11 consistent would be problematic for generalizing.

12 Q Now, turning back to what you and Mr. DiChiera
13 argue qualifies you to render the opinions that you have
14 rendered, is it fair to say that you have read and are
15 familiar with and can discuss in some detail the various
16 studies that have been conducted on firearm and toolmark
17 examinations, whether they are set-to-set studies or the
18 black box studies?

19 A So most of my reading has been on the black box
20 studies. I have not systematically reviewed all of the
21 set-to-set studies.

22 Q And with the studies that you have reviewed, is it
23 fair to say that you are arguing that you were qualified to
24 opine on whether they are appropriately designed and will
25 lead to valid conclusions?

1 A That's correct.

2 Q When we are talking about discussing these in some
3 detail, you know the general conclusions of the studies that
4 you have read, I am not asking you to recall specific
5 percentages or numbers.

6 A That's fair.

7 Q If a study asks examiners to compare -- let me
8 back up. We have talked about a lot of different ways that
9 studies can be conducted. There's the black box studies,
10 there's the set-to-set studies. We could have a study where
11 ammunition is fired from two different firearms, say a Glock
12 and a Taurus, and then examiners receive maybe four items,
13 four cartridge cases or four bullets, whatever it might be,
14 and then they're asked to answer the question as part of the
15 study, look, tell us how many guns are involved here. And
16 it could be that you have all from the same Glock, or from a
17 Glock and a Taurus, or some from a Glock and some from a
18 Taurus, or two different Glocks or whatever?

19 A Right.

20 Q Would that be one way perhaps to appropriately
21 design a study?

22 A If you were simply interested in class
23 characteristics, that would probably get at the class
24 characteristics question.

25 Q So tell me a little bit more about what you mean

1 by that. Why would that not get at individual
2 characteristics?

3 A Well, the way you designed it and the question you
4 asked, as I understood it, was are you distinguishing those
5 that were shot from a Taurus versus those that were shot
6 from a Glock. And that's a -- that's the class that I am
7 referring to as the type of gun that would have fired the
8 bullets or the cartridge cases.

9 Q Well, I guess my question is about a design where,
10 again, you have ammunition fired from Glock, ammunition
11 fired from Taurus, and then we send four pieces of
12 evidence, cartridge cases and bullets, to an examiner like
13 these folks and we kind of do what we ask them to do in real
14 life, which is, look, tell us as best you can how many
15 firearms are involved in this set of evidence that you have
16 and then they will get one, two, three, or four of those
17 things correct?

18 A Right.

19 Q Would that be maybe a fair way to design a study?

20 A Again, to evaluate class characteristics. I am
21 not sure I am seeing the individualization in your study
22 design.

23 Q Well, if we have multiple firearms, and it could
24 be all from the same Glock or from different Glock or
25 things like that, that would get at individual

1 characteristics; fair to say?

2 A It would, but the -- the way I thought you were
3 designing it was that you had one Taurus and one Glock and
4 the question was whether they matched up in two different
5 guns. If you had three Glocks and one Taurus, that might be
6 more the design that you are looking for.

7 Q And if I left you with the impression that it was
8 just one from each manufacturer, then I apologize. That was
9 a poorly-worded question on my part.

10 You talked a little bit about experience and
11 how that correlated to performance in Ames II. And Ames II
12 found no correlation between experience and performance,
13 right?

14 A According to the researchers.

15 Q In Ames I, is it fair to say that there was a
16 correlation between experience as a firearm and toolmark
17 examiner and performance in Ames I?

18 A I don't remember seeing those -- that correlation.

19 Q Well, would you agree with me that in Ames I, they
20 found that the vast majority of false positives -- 20 out of
21 the 22 false positives were committed by just five of the
22 218 examiners?

23 A That's correct, but they didn't systematically
24 look at that factor. It was anecdotal.

25 Q Regarding the dropout rate in Ames II, it's fair

1 to say we really don't know why that dropout rate was what
2 it was?

3 A No, we have no idea.

4 Q And it could be that the more experienced
5 examiners were told by their lab directors, hey, you have to
6 get back to actual casework, I can't have you doing this
7 test work? One possible explanation?

8 A It's possible, but you still have the question --
9 I mean, still the issue for me is whether the remaining
10 test-takers are representative of the broader community. So
11 the whole point of doing this research is to say these
12 subjects are like the community that you are generalizing
13 to. So even in your example that the more experienced
14 dropped out, that still is not telling us what we want to
15 know, which is a cross-section, if possible, or a
16 randomly-defined cross-section of the firearms community
17 participated in the research.

18 Q Let's talk a little bit about PCAST. That was
19 Defense Exhibit D. We have cross-marked that as State's
20 Exhibit 906.

21 Your involvement with PCAST, was that a paid
22 position or a volunteer position?

23 A Volunteer positon.

24 Q And today is this a paid position or a volunteer
25 position?

1 A I am paid.

2 Q How much were you paid?

3 A To be honest, I don't remember. I think it's
4 about 425 an hour, somewhere in that neighborhood.

5 Q Is there any sort of cap on that?

6 A I don't remember.

7 Q Now, the conclusion that PCAST reached about
8 firearm and toolmark identification and foundational
9 validity was that it lacked foundational validity at the
10 time, but they said that you just needed one more
11 appropriately-designed study to achieve it; is that --

12 A That's not what PCAST said. PCAST said you need
13 additional studies. They didn't say one more study. That
14 comes from a comment by Eric Lander in a Fordham Law Review
15 article. So it's just the chair of the committee that said
16 that subsequently.

17 Q And we talked about how PCAST does not count
18 inconclusives as errors, right?

19 A That's right.

20 Q And the position in PCAST was, look, you just take
21 the inconclusives out and then what's left, the conclusive
22 calls, either eliminations or identifications, those are
23 your numerators for the total number of items?

24 A That's correct.

25 Q And when we do that, we still get an error rate

1 pretty well under 5 percent; is that fair to say?

2 A That's correct.

3 Q And what's the significance of that 5 percent
4 error rate? Is there a call-out to that number in PCAST?

5 A They consider it to be a low error rate.

6 Q And then if we do that same analysis that PCAST
7 recommended, removing of inconclusives, for Ames II, we get
8 error rates for bullets of roughly 2.9 percent and for
9 cartridge cases of roughly 2 percent; does that sound about
10 right?

11 A That sounds about right.

12 THE COURT: That was which
13 study?

14 MR. McNAIR: Ames II, Your
15 Honor.

16 Q And PCAST also calls out false positives as
17 especially important because false positives can lead
18 directly to wrongful convictions; fair to say?

19 A That's correct.

20 Q The individuals who participated in PCAST, I think
21 there were 19, I'll say, members of PCAST and then another
22 14 advisors like you; does that sound about right?

23 A That sounds about right.

24 Q So 33 folks total. I am not going to hold you to
25 that number. We will just call it 33.

1 A Okay.

2 Q Do you know if anyone else in those 33 who is
3 advocating the same position that you are today, that
4 inconclusives should definitively be counted as errors in
5 the field of firearm and toolmark analysis?

6 A No, I wish somebody had, but we weren't paying
7 close enough attention. We didn't catch it.

8 Q Have you reached out to any of the other advisors
9 or members to say, hey, we should submit an open letter or
10 be more vocal about this or we have got to get the word out
11 because we had a major error in this report that we gave to
12 the president?

13 A Uh-huh, well, we gave it to President Obama. No,
14 I haven't done that, but it's a good idea.

15 Q Would you agree with me that studies that are
16 conducted on items of ballistic evidence that are fired from
17 firearms composed of sequentially-manufactured parts, right,
18 so barrels -- you understand what I am --

19 A I understand.

20 Q You are tracking. That that sort of work is more
21 difficult than what firearm and toolmark examiners typically
22 encounter in the field?

23 A I don't know if that's true. It's presumed in the
24 literature by firearms examiners that it's true, but I don't
25 know for a fact that it's true. It's a hypothesis. I have

1 never seen it tested.

2 Q I mean, doesn't common sense just kind of tell us
3 that?

4 A I am not sure. So I have thought about this,
5 because they're pristine if they're taken right off of the
6 manufacturing line. So the -- any differences will show up
7 very clearly because there are no other marks. So one of
8 the challenges of the AFTE theory is that there's no
9 discussion about when dissimilarities should be discounted
10 to the point that it becomes an elimination.

11 So when you look at the research,
12 eliminations appear to be very, very hard to do because
13 the -- it's what's called specificity, which are the true
14 negatives. They're really hard to identify. And so I
15 thought about this problem of if something has no wear and
16 tear through experience, meaning, you know, being shot and
17 being subjected to the elements where lots new marks are
18 going to become a part of that, that that might actually be
19 harder.

20 So I don't know the answer, but I think it's
21 a testable proposition. I agree with you that the
22 researchers think that that's true, but I haven't actually
23 seen it tested. And it doesn't necessarily line up with my
24 sense of common sense. But that's why you test. We don't
25 know the answer.

1 Q I guess let me put it a different way.

2 Would you agree with me that it is uncommon
3 that examiners in their casework will encounter cartridge
4 cases and bullets fired from sequentially-manufactured
5 firearms?

6 A Yeah. It would be very surprising if they did.

7 Q And you are not aware of research into the area of
8 how marks are imparted onto a bullet or cartridge case as a
9 firearm is used throughout the course of its life?

10 A Well, we know that the theory is that marks are
11 imparted onto the softer metal because of the wear and tear
12 and experience of the weapon. So the problem, Your Honor,
13 it's an area of science called signal detection theory,
14 which is very well-known. So radar is basically signal
15 detection theory. And so if you want to pick up an
16 airplane, you need to pick up the airplane, but there is a
17 lot of noise. So the question is how do you detect the
18 signal from the noise. And so, as PCAST talked about, you
19 basically are trying to detect the signal out of the striae
20 on the bullets or the marks, impressions on the cartridge
21 cases. And so there is signal there without question, but
22 there is a lot of noise. And so through the wear and tear
23 of the weapon, there ought to be more noise.

24 And so my hypothesis -- and, again, it's
25 testable -- is when you have consecutively-manufactured --

1 you know, whatever the mark is, ejectors or whatever it
2 might be of the rifle barrel, if they haven't been put into
3 use, then the signal might actually be stronger because
4 there's no noise. And so I just don't know the answer to
5 the question. And I think it's quite testable. But to your
6 point, you know, as you get wear and tear on the weapon,
7 there is going to be more noise. We just don't know how to
8 discount that noise in practice.

9 And I think that's where the inconclusives
10 are coming from. The inconclusives are coming because there
11 is a lot of noise that they can't eliminate but they can't
12 identify either. So, again, I think this is an area -- it's
13 really a fascinating area to study. I just think it's been
14 under-researched and under-theorized, but I think that there
15 is a lot of opportunity here to do some really high quality
16 research.

17 Q So you were not familiar with research where
18 someone, for example, takes a firearm and fires a thousand
19 rounds through it and then compares the first bullet and
20 cartridge case to the 1,000th bullet and cartridge case to
21 try to see how those marks have changed over the course of
22 firing?

23 A Yeah, I know that there is research. In fact, I
24 think the Hamby research does exactly that.

25 Q Now, regarding the inter-rater repeatability and

1 reliability that you discussed in Ames II, where one person
2 looks at something, they make a call, and then they show it
3 to a different examiner. If, for example, we had a scenario
4 where an examiner looks at a piece of evidence and then it
5 is shown to 10 other examiners, and nine of those other
6 examiners reach a different conclusion, that would be very
7 bad for that field of science; fair to say?

8 A I would say that's pretty bad, yes.

9 Q Are you aware of the DNA study that PCAST looked
10 at on that exact issue with multi-source DNA?

11 A Yeah, with multi-source DNA, I am familiar. I am
12 not familiar with the specifics. I would have to go back
13 and look at it.

14 Q Well, that was a study where one examiner looked
15 at a piece of evidence and then 17 other examiners looked at
16 the same DNA mixture evidence.

17 A Uh-huh.

18 Q You are familiar with the study that I am talking
19 about?

20 A I am familiar with the phenomenon. I am not
21 sure -- could you tell me who the authors of the study are.

22 Q Well, I will give you a copy. This is going to be
23 State's Exhibit 914.

24 A Okay, yeah, I am familiar with this study.

25 Q And that gets referenced I think in section 5.2 of

1 PCAST on page 75.

2 A I will take your word for that.

3 Q But in that study, an examiner looked at a DNA
4 mixture, it was shown to 17 other examiners, and of the 17
5 other examiners only one agreed with the original examiner?

6 A That's my understanding.

7 Q So at least as compared to DNA mixtures, based on
8 Ames II, firearm and toolmark analysis has a better
9 inter-rater repeatability or reliability?

10 A I am not sure that it's directly comparable, but I
11 agree that -- with the proposition that mixed-sample DNA is
12 an area that's difficult to interpret. And we don't have
13 research where the firearms were given to 10 or 17
14 additional folks to look at.

15 Q In this specific case, the case against Mr. Aaron,
16 have you looked at any of the actual ballistic evidence or
17 reports or anything like that in this case?

18 A No, I have not.

19 Q So is it fair to say that you can't identify
20 anything that the analysts in this case did that was
21 incorrect or inconclusive, incompatible with the AFTE,
22 anything like that?

23 A No, I didn't look at the specifics of this case.

24 Q And, again, your attack is really on the
25 application of the general theory; you have nothing negative

1 to say about the actual casework done in this case?

2 A My critique is of the scientific research
3 literature supporting what they did in this case, but I have
4 no opinion about the process that they used in this case.

5 Q Do you happen to know the difference between cut
6 rifling and polygonal rifling?

7 A Not specifically, no.

8 Q Could you explain to the judge the difference
9 between class characteristics and subclass characteristics?

10 A Yes, I can. So a class characteristic is a
11 function of the manufacturing process that's consistent
12 through the entire class that's been created --

13 Q Actually, I'm sorry, Dean, if you will permit the
14 interruption, I will take you at your word that you can. I
15 won't actually make you do it.

16 A Oh, okay.

17 Q And I think Mr. DiChiera touched on this, but you
18 have never actually performed a firearm and toolmark
19 comparison or observed one performed or anything like that?

20 A No, I have not.

21 Q Now, you talked a little bit in your direct about
22 feedback, and feedback that firearm and toolmark examiners
23 receive. Would peer review be a form of feedback?

24 A It's a -- real peer review would be. The
25 verification procedure in firearms is not a feedback in the

1 same way.

2 Q So what do you mean by that?

3 A So the feedback that I am talking about actually
4 comes from Dan Kahneman who won the Nobel Prize in
5 economics. And so he studied this extensively and argued
6 that the only value to experience is when you get actual
7 feedback that you can depend on and then learn from. If the
8 verification procedure is not blind, for example, or is not
9 extensive, then it may not give you any real feedback. We
10 don't even know if that's necessarily accurate. And so the
11 feedback might actually be inaccurate.

12 The peer review -- so peer review is
13 different than verification. So peer review in science is
14 when you have an article that's submitted to, you know,
15 science magazine and they send it out to three reviewers
16 that don't know who wrote it and they review it. That's
17 peer review.

18 Verification in the firearms context is
19 examiner one finds a -- reaches a conclusion and gives it to
20 a second examiner in the same lab. How that's done
21 obviously matters, but I wouldn't necessarily say that
22 that's what Dan Kahneman is talking about in his feedback.

23 Q In terms of feedback for firearm and toolmark
24 examiners, would the various studies that have been
25 conducted, whether they're black box studies or match test

1 studies, would that be a form of feedback?

2 A It's not feedback. It's information about the
3 accuracy of what they're doing in their examinations, but --
4 it's certainly feedback about their field, but it's not a
5 feedback loop. So when, you know, I change electrical
6 outlet and I get shocked, that's feedback. It's a different
7 notion of what Kahneman is talking about as a feedback loop.

8 So doctors use feedback loops in when they do
9 what's called differential diagnosis. So you go to the
10 doctor and you say I have a stomachache. And the
11 doctor says, well, what did you have for dinner last night.
12 And you say, well, I had a super burrito. And they say,
13 it's probably the super burrito that's causing your stomach
14 illness, come back in 24 hours. In 24 hours, you are not
15 any better and they think it's a lesion or an ulcer or
16 something else. They treat it and if it gets better, they
17 think they got the diagnosis right. That's a feedback loop.
18 It's not perfect, but it's a feedback loop.

19 Q We talked a little bit about cognitive bias and
20 this concern that examiners may have information from the
21 police department or wherever that will inform them and
22 might nudge them in a certain direction?

23 A Potentially.

24 Q If an examiner receives such information from a
25 police department -- for example, if they received a

1 collection of firearms and also some evidence items, be they
2 bullets or cartridge cases -- and the police told the
3 examiner, look, one of these is the murder weapon and we
4 just need to know which one, is that the sort of thing that
5 could cause that cognitive bias problem?

6 A No, I don't see the cognitive bias there.

7 Q So if they're getting evidence, right, they're
8 getting fired bullets or cases and they're getting firearms,
9 and they're being told by the police one of these matches
10 this, is that the sort of thing that could cause cognitive
11 bias?

12 A Well, if a -- I wouldn't necessarily say it's
13 cognitive bias. I would say you are creating a closed set
14 test and you are saying one of these matches this gun, come
15 up with the best one. It's sort of like when you do a
16 lineup, one of the things that they have learned in
17 psychological research is if you give a lineup and you say
18 the perpetrator is in this lineup, then you get many more
19 mistakes because they look for the person who looks most
20 like the perpetrator.

21 Q That's why we are not allowed to do that.

22 A Hmm?

23 Q That's why we are not allowed to do that.

24 A Exactly. And so that's why you shouldn't do it in
25 firearms either. But I wouldn't call it cognitive bias. I

1 would call it something else.

2 THE COURT: What would you
3 call it?

4 THE WITNESS: It's just a closed
5 set design. You should always have an open set
6 design. So you'd say it's possible that the
7 firearm is not here, it's possible that the
8 perpetrator is not in the lineup. We want you
9 to pick the person, we want you to pick the gun.

10 Q I am getting a little ahead of myself. I'll just
11 go through a couple of exhibits with you. So I am going to
12 hand you State's Exhibit 905. Does that appear to be a fair
13 and accurate copy of the Ames I study?

14 A It appears to be.

15 Q This is not a trick question. I didn't slip
16 another page in there or anything like that.

17 A I trust you as an officer of the court.

18 Q I am going to hand you State's Exhibit 907. Does
19 that appear to be a fair and accurate copy of an article
20 discussing the setup of Ames II and how Ames II was
21 conducted?

22 A That's correct.

23 Q Then State's 908, does that appear to be a fair
24 and accurate copy of Ames II?

25 A Of the -- yes, not of the entire study. The

1 original study that, you know, of course was -- appeared on
2 the website in 2020 and then they took pieces of it and went
3 out to publish it subsequently.

4 Q And then State's 909, does that appear to be a
5 fair and accurate copy of the Department of Justice's
6 response to the PCAST study? And I will acknowledge that
7 those are from two different administrations, right. PCAST
8 is 2016 and the exhibit that I just handed you was 2021, a
9 different administration?

10 A That's correct, that's my understanding.

11 Q Let's go through a couple of other things. I am
12 going to give you State's Exhibit 901. This is a copy of
13 Dr. Hamby's CV. And I am going to flip to the end of it.
14 And I will hand you this and a highlighter and I will ask
15 you to just sort of tick off -- we are at the publication
16 section. Tick off the publications that Dr. Hamby has
17 authored or participated in that you read and are familiar
18 with and could discuss in some detail. I won't make you
19 actually discuss them.

20 A I don't know that I would know them by title. I
21 would have to go back through my notes. But let me see if I
22 can pull a few out.

23 I think that these are the three that I would
24 be relatively confident on.

25 Q And then --

1 A But most of them I am not. They're not black box
2 studies.

3 Q And I am going to ask you to do something similar
4 with State's 910. This is just a list of largely post PCAST
5 studies and papers that have been written. And, again, I
6 understand some of them are black box, some of them are not.
7 But I will ask you to do the same thing, just sort of check
8 off or give a swipe for the ones you are familiar with.

9 A Most are not only not black box, but some are
10 critical of the field. You know that.

11 Q Right. All I am asking you to do --

12 A These are both pro and con.

13 Q Yes. All I am asking you to do is look through
14 the list and check off the ones that you have read and are
15 familiar with and could discuss in some detail.

16 A Okay.

17 THE COURT: Mr. McNair, this
18 is time-consuming and I am not certain that it
19 has value.

20 MR. McNAIR: It will, Judge.
21 It does look like the witness is almost done.
22 If you will give us just a few more moments
23 here. I am just about done with my cross, in
24 any event.

25 A Okay. I can't guarantee I got them all, but --

1 Q Fair enough. Thank you, sir.

2 Just one last issue. When firearm and
3 toolmark examiners testify, are you familiar with or aware
4 of the fact that when these folks come in here they will say
5 that an item is either an identification or an exclusion to
6 a reasonable degree of forensic certainty within their
7 field, but they will not say that it is to the exclusion of
8 all other firearms in the world? Is that a fair statement?

9 A I agree they say that. So far as I can tell, it's
10 completely meaningless. So when I teach judges, I always
11 ask judges what to a reasonable degree of forensic or
12 scientific certainty means, and they say we don't know,
13 don't ask us, ask the experts, they're the ones who say it.
14 And when I ask the experts -- and you should ask your
15 experts what does it mean, and they will say we don't know.
16 Or the experts I have asked will say we don't know, ask the
17 judges, they're the ones who make us say it.

18 So it doesn't really have any meaning in
19 science to say to a reasonable degree of forensic certainty,
20 because threshold determinations on that issue are always
21 context-specific. So the example I give, I teach forensic
22 psychiatrists and I ask them what -- to a reasonable degree
23 of psychiatric certainty, what does that mean. And they
24 will say it depends. If they are diagnosing somebody as
25 mentally ill for purposes of prescribing medication, that

1 would have a very low threshold. So what it means to have a
2 certain degree of psychiatric certainty is a variable
3 threshold. If they are diagnosing somebody as mentally ill
4 for purposes of civil commitment, where they might not get a
5 due process hearing for a year, then they'll put a higher
6 threshold.

7 So what it means to say to reasonable degree
8 of psychiatric certainty depends completely on the context
9 and the consequences of making a mistake. And presumably
10 any other area of forensics, medical ought to be treated
11 similarly.

12 MR. McNAIR: We'll ask him and
13 I am sure that Brant will let you know what he
14 says. Thank you very much.

15 THE WITNESS: Okay, thank you.

16 MR. DiCHIERA: Just briefly, Your
17 Honor, like three questions.

18 THE COURT: Go ahead.

19 - - - -

20 REDIRECT EXAMINATION OF DAVID FAIGMAN

21 BY MR. DiCHIERA:

22 Q Dean Faigman, Mr. McNair asked you some questions
23 about this issue of inconclusives and whether the other
24 individuals that were involved with PCAST shared your views.
25 Do you recall that?

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1 A I do.

2 Q Are you aware now of other researchers who do
3 share that view, that inconclusives should be treated as
4 incorrect?

5 A Yes, there are many that share that view, but it's
6 a debatable point among folks looking at this as to what to
7 do with inconclusives.

8 Q Can you tell us who those researchers are that
9 agree with your determination?

10 A Certainly. Nicholas Scurich, professor at
11 University of California Irvine; Michael Rosenblum, a
12 biostatistician at Johns Hopkins; Jeff Salyards, a former
13 lab director --

14 THE COURT: Are these people
15 testifying?

16 MR. DiCHIERA: They are not.

17 Q Can you explain why again in your opinion that
18 inconclusives should be treated as errors?

19 A Fundamentally, you have created the test where
20 there are two answers, because you know ground truth,
21 identification, and elimination. You have not created, but
22 you could create, inconclusives as an answer and they're
23 answering I don't know or inconclusive and therefore that
24 would be an error. And that the two alternative ways to
25 deal with it, which is to treat them as correct or not to

1 treat them at all, again just from a common sense standpoint
2 don't make a lot of sense.

3 MR. DiCHIERA: Just one moment.
4 No further questions. Thank you.

5 THE COURT: Any follow-up on
6 that?

7 MR. McNAIR: Not on that,
8 Judge, thanks.

9 THE COURT: I have to ask.
10 You know, you strike me as a brilliant man by
11 all accounts, very thoughtful, and it just -- I
12 struggle with the idea that as a group nobody
13 thought this might be an issue. You know, you
14 said a couple of times, you know, we missed it.
15 And it really is the basis of your testimony.
16 Help me to understand.

17 THE WITNESS: Yeah, it's a great
18 question, Your Honor. We -- I probably read the
19 report four times, I met with the committee
20 multiple times, but we were doing the DNA. To
21 be honest, a lot of the battle was over the
22 fingerprint section. The original version of
23 the firearms was looking at other things. There
24 was the footprint analysis, the bite marks,
25 there's -- it's a very long report, as you can

1 see, and just had not gotten into it. And it
2 was probably a year or so afterwards when I
3 started thinking through that PCAST had simply
4 said, well, just not count them at all and what
5 that would do as a common sense, practical
6 matter to people taking a test. And that's
7 where it occurred to me.

8 So you are absolutely correct, that I
9 kick myself every day for not bringing it up
10 with the committee because it would have been --
11 they might have projected it. I think that
12 there's certainly an argument for not counting
13 it at all or counting them separately. But,
14 again, when you -- and, again, from my
15 perspective and just trying to be thoughtful
16 about it, and I appreciate your compliment, Your
17 Honor, but it's -- when you go from an
18 inconclusive rate in the set-to-set studies of
19 about one percent to inconclusive rates of
20 50 percent or greater in the black box studies,
21 that just raises alarm bells.

22 And in -- just to give you one other,
23 we don't know exactly what the inconclusive rate
24 is in field work. Eric Smith, an F.B.I. analyst
25 in another case that I was involved in, said he

1 estimated just anecdotally it was about 12 to 13
2 percent. And so you have this diagnostic test
3 that appears very weak. And that was the
4 problem, too, with polygraphs as well. It
5 wasn't that polygraphs were completely
6 invaluable or completely valueless; it was just
7 that they were very weak in accomplishing what
8 they purported to accomplish.

9 And so when you have a diagnostic test
10 that is inherently this weak -- let's say it was
11 a pregnancy test. Pregnancy has, like firearms,
12 either you are pregnant or you are not pregnant.
13 That's beside the point. The issue is does the
14 test actually capture pregnancy or not
15 pregnancy. And if you had half of the outcomes
16 inconclusive when you knew that the answer is
17 pregnant or not pregnant, would you ever buy
18 that test. Nobody would buy that test. The FDA
19 wouldn't approve that test.

20 So as you look at this research, you
21 are looking for something that works better as a
22 diagnostic test when the consequences are quite
23 great.

24 THE COURT: Listen, I don't
25 ask the question to beat you up. I just wanted

1 to get an understanding of how you went down
2 this path.

3 THE WITNESS: Yeah, I appreciate
4 that.

5 THE COURT: And essentially it
6 was just that it was a multi-faceted --

7 THE WITNESS: Yeah, I think it
8 was that there are hundreds of pages that we are
9 reviewing and we were not as deep into it as we
10 should have been on each individual. And a lot
11 of the debate ended up being about the DNA
12 chapter. The fingerprint chapter frankly had
13 two black box studies and that drove our
14 analysis, but the argument was -- my argument at
15 least was that they weren't distinguishing
16 because the fingerprint community doesn't
17 distinguish how many characteristics you need as
18 a minimum. And so I am perfectly fine with the
19 fingerprint when you have eight, 10, 12
20 characteristics because the random match
21 probability is going to be very, very low no
22 matter what. When you only have three, four, or
23 five characteristics, then you should be more
24 worried about fingerprints.

25 So a lot of my argument, just to tell

1 you a little bit of the backstory, was more
2 about what they were doing on that chapter in
3 terms of if that reached foundational validity.
4 And, again, something that if I could go back, I
5 would have paid more attention to the firearms
6 and toolmarks.

7 THE COURT: Any follow-up on
8 that, Mr. DiChiera?

9 MR. DiCHIERA: No, Your Honor,
10 thank you.

11 THE COURT: Mr. McNair.

12 MR. McNAIR: I do.

13 - - - -

14 RE CROSS-EXAMINATION OF DAVID FAIGMAN

15 BY MR. McNAIR:

16 Q Just on the pregnancy point. When individuals are
17 taking pregnancy tests, that is trying to detect a substance
18 known as hCG, right? That's human chorionic gonadotropin, I
19 think. Did I say that correctly?

20 MR. McNAIR: I'll get you the
21 spelling.

22 A I don't know how to spell it.

23 Q But when it is under 5 million international units
24 per milliliter, then someone is not pregnant; when it's over
25 25, someone is pregnant. But there is an inconclusive range

1 in there, right? Between five and 25, it is inconclusive?

2 A Yes.

3 Q Fair to say?

4 A Yes. In fact, that's kind of my point. My point
5 is -- and I think the firearms community agrees with this --
6 there is a band of inconclusive. If inconclusive is
7 sometimes correct -- and we know that, you know, if you do a
8 blood test, say, for cancer, which happens all the time,
9 there is absolutely positive, absolutely negative, and then
10 inconclusive. What do we do with the inconclusives in
11 medicine. We do -- in pregnancy, we do a blood test. In a
12 blood test for cancer, you do surgery or you do some other
13 invasive, more extensive test.

14 And so the first thing I would call for in
15 this area -- and I think there's actually research that may
16 just be starting now, where you create research samples
17 where inconclusive is the correct answer. And that would
18 bring us much further along.

19 MR. McNAIR: Thank you.

20 THE COURT: So your concern
21 with Mr. McNair's point using the pregnancy test
22 is that in the Ames test, they took what should
23 not have been inconclusive and called it
24 inconclusive?

25 THE WITNESS: That's right.

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THE COURT: Any follow-up?

MR. DiCHIERA: No, Your Honor,
thank you.

THE COURT: Thank you.

THE WITNESS: Thank you, Your
Honor.

THE COURT: We will be in
recess until -- well, as you all know, I may be
beginning trial this afternoon at 1:30, so we
are going to set a schedule with those lawyers.
It's a bench trial. We're going to set a
schedule with those lawyers and with you all, so
why don't you plan to be back here at 1:30 and
then we will talk about specifics beyond that.

- - - -

(Lunch recess.)

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1 MONDAY AFTERNOON SESSION, FEBRUARY 26, 2024

2 THE COURT: We are on the
3 record in 671659. We are rejoining the hearing
4 in progress. The defense has a second witness
5 that they intend to call by way of Zoom. That's
6 Dr. Jeff Kukucka. Let me just hear from both
7 parties and make certain that there's no
8 objection to this witness testifying in this
9 matter.

10 MR. McNAIR: Judge, my
11 understanding is that my predecessor on this
12 case had no objection, and so therefore I have
13 no objection.

14 MR. DiCHIERA: We also have no
15 objection. If any of the State's witnesses were
16 going to appear remotely, we would have no
17 objection.

18 THE COURT: And your client
19 has no objection?

20 MR. DiCHIERA: That's correct.

21 THE COURT: It's this Court's
22 policy that if either party has an objection to
23 a Zoom witness, then I don't allow it. But
24 hearing no objection from either of the parties,
25 including the defendant, I am going to allow

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CUYAHOGA COUNTY, OHIO

1 this witness to testify in this hearing by way
2 of Zoom.

3 So to that end, Mr. Kukucka, can you
4 raise your right hand for me please? Or,
5 Dr. Kukucka. Can you hear me, first of all?

6 THE WITNESS: Yes, sir.

7 THE COURT: I guess since your
8 right arm is up, that's an indication that you
9 can hear me.

10 MR. McNAIR: Judge, do you have
11 one of the Zoom mics?

12 THE COURT: I do not. Doctor,
13 can you hear me well?

14 THE WITNESS: I can hear you
15 reasonably well, Judge.

16 THE COURT: Let's wait until
17 we get a microphone set up. We are off the
18 record.

19 - - - -

20 (Off the record.)

21 - - - -

22 THE COURT: Back on the
23 record. Doctor, will you raise your right hand
24 for me, please? Do you swear to tell the truth,
25 the whole truth, and nothing but the truth as

1 you shall answer unto God?

2 THE WITNESS: I do.

3 - - - -

4 The DEFENDANT, to maintain the
5 issues in its part to be
6 maintained, called as a witness,
7 JEFF KUKUCKA, who, being first
8 duly sworn, was examined and
9 testified as follows:

10 - - - -

11 THE COURT: Doctor, a couple
12 of quick questions for you. Do you have anybody
13 else in the room with you?

14 THE WITNESS: No, sir.

15 THE COURT: Do you understand
16 that even though you are testifying remotely,
17 you have been sworn in and the effect of that is
18 that you are testifying under the pains and
19 penalties of possible perjury charges?

20 THE DEFENDANT: Yes, sir.

21 THE COURT: With that,
22 Ms. Esarco, I will let you proceed.

23 MS. ESARCO: Thank you, Your
24 Honor.

25 - - - -

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1 DIRECT EXAMINATION OF JEFF KUKUCKA

2 BY MS. ESARCO:

3 Q Sir, would you mind please stating your name and
4 spelling it for the record.5 A Yes, ma'am. This is Dr. Jeff, J-E-F-F, Kukucka,
6 K-U-K-U-C-K-A.

7 Q Dr. Kukucka, are you currently employed?

8 A Yes, ma'am.

9 Q Where are you employed at?

10 A I am currently an associate professor of
11 psychology at Towson University in Towson, Maryland.12 Q Could you share with the Court your education and
13 experience to hold that position?14 A Sure. I hold a Bachelor of Arts degree from
15 Loyola college in Maryland in psychology in 2009, a Master
16 of Arts degree in forensic psychology from the John Jay
17 College of Criminal Justice in 2012, and a Doctor of
18 Philosophy degree in psychology from the City University of
19 New York Graduate Center in 2014.20 Q How long have you held your position with Towson
21 University?22 A I have been at Towson since August 2014, so nearly
23 10 years.

24 Q And, Doctor, have you ever testified before?

25 A I have, yes.

1 Q And could you explain to the Court what your
2 testimony involved?

3 A I have testified as an expert in cognitive bias in
4 the States of Illinois and Massachusetts in various hearings
5 where there was dispute over the validity of forensic
6 science evidence.

7 Q And in both Massachusetts and Illinois, you were
8 qualified as an expert in cognitive bias?

9 A Yes, ma'am.

10 Q Have you ever presented on the intersection of
11 cognitive bias and forensic firearms?

12 A In court or generally speaking?

13 Q Generally speaking. Are you on any committees,
14 have you spoken at any --

15 A So I often speak to various audiences of forensic
16 science practitioners, defense attorneys, prosecutors,
17 investigators, and so on about these issues. I also serve
18 on the OSAC for forensic science. That's O-S-A-C. Which is
19 a U.S. federal organization under NIST, the National
20 Institute of Standards and Technology. That was established
21 10 years ago to collectively develop and promote
22 research-based best practices for all forensic science
23 disciplines.

24 Q And to be clear, though, you are not a forensic
25 examiner?

1 A That's correct. I am a psychologist.

2 Q Have you been published or had peer review
3 involving your research?

4 A Yes. I have published approximately 50 papers in
5 peer-reviewed academic journals, including a mix of
6 psychology journals and forensic science journals.

7 Q Are you aware if your publications have ever been
8 cited?

9 A Thousands of times, yes.

10 Q Dr. Kukucka, I would like to point your attention
11 to Defense Exhibit E. I believe that was e-mailed to you.

12 A Yes, ma'am.

13 MS. ESARCO: Your Honor, may I
14 approach?

15 Q Dr. Kukucka, what is that document, Defense
16 Exhibit E?

17 A This is a copy of my curriculum vitae, or CV for
18 short.

19 MS. ESARCO: Your Honor, at
20 this time I would move to qualify Dr. Kukucka as
21 an expert in cognitive bias and submit Defense
22 Exhibit E.

23 THE COURT: Any objection from
24 the State?

25 MR. McNAIR: No, Your Honor.

1 THE COURT: He will be so
2 qualified.

3 MS. ESARCO: Thank you, Your
4 Honor.

5 Q Dr. Kukucka, prior to testifying today -- and we
6 are going to get into your specific involvement in this
7 case, but did you prepare any documentation for your
8 testimony?

9 A I did. I submitted a written report explaining my
10 opinion.

11 Q That is your affidavit?

12 A Yes, ma'am.

13 Q Do you know the date of your affidavit off the top
14 of your head?

15 A I do not.

16 Q If I were to show you a copy of your affidavit,
17 would that refresh your recollection?

18 A Yes, it would.

19 Q Dr. Kukucka, can I turn your attention to Defense
20 Exhibit F?

21 A Yes, ma'am, that is my affidavit signed and
22 submitted on October 10, 2023.

23 MS. ESARCO: Your Honor, may I
24 approach?

25 THE COURT: You may.

1 MS. ESARCO: At this time, Your
2 Honor, I would move to admit Dr. Kukucka's
3 affidavit, Defense Exhibit F.

4 THE COURT: Any objection?

5 MR. McNAIR: No objection to
6 the authenticity that that is his affidavit. I
7 might have objections to points in it.

8 THE COURT: That's fine. But
9 just in terms of its admissibility. The weight
10 to be given is a different analysis altogether.

11 MR. McNAIR: Right, I
12 understand. As long as we are clear on that
13 point, then no objection.

14 THE COURT: It will be
15 admitted.

16 MS. ESARCO: Thank you, Your
17 Honor.

18 Q Dr. Kukucka, did you have a chance to review your
19 affidavit prior to testifying?

20 A Yes, ma'am.

21 Q So let's touch on -- can you explain for the Court
22 what is cognitive bias?

23 A Cognitive bias is a term that psychologists use to
24 describe the fact that every individual person views the
25 world through their own lens. So oftentimes, what happens

1 is that multiple people, depending on their internal factors
2 or external factors, may look at the same information and
3 interpret it in markedly different ways.

4 Q And can you give an example of when cognitive bias
5 can exist?

6 A Sure. So there are many -- there are many
7 research-based examples and many familiar examples. You may
8 recall in the somewhat recent past there was an internet
9 phenomenon called the dress, where some individuals
10 perceived the dress as being black and blue, others
11 perceived the same image as being white and gold. That
12 would be a familiar example to most folks. As would
13 something like, for example, watching a sporting event with
14 someone else, and even though you are witnessing the same
15 event, disagreeing on the outcome of a play or the
16 appropriateness of a referee's decision or something of that
17 sort.

18 In a research context, there have been
19 umpteen studies again demonstrating how multiple individuals
20 with different mindsets can look at the same information and
21 interpret it in different ways. In one study, for example,
22 they showed individuals' photos of adults and children and
23 asked them to evaluate the similarity between them, how
24 similar the two looked. And some of those folks were led to
25 believe that the adult and child were related, that they

1 were parent and child. The others were told that they were
2 unrelated. And as it turns out, when presented with that
3 expectation, their interpretation of their facial similarity
4 changed dramatically.

5 So, again, the common thread here is that we
6 have the same information being interpreted differently by
7 two different onlookers as a function of either their
8 personal beliefs or experiences or the context in which
9 they're operating.

10 Q And is it fair to condense that explanation to say
11 this is something that your brain just does?

12 A Absolutely. It is something that our brain does
13 automatically. It's not willful, it's not intentional, it's
14 not even conscious much of the time. In fact, it has
15 evolved as part of our brain structure for good reason. It
16 only tends to serve an adaptive process by allowing us to
17 process information efficiently and encouraging us to behave
18 in adaptive ways, but it can interfere with the search for
19 objective truth in situations.

20 Q Now, I want you to hold that thought, but before
21 we get into exploring that part of your affidavit, what can
22 be sources of bias within an individual?

23 A So some of those sources are going to be internal;
24 a person's prior experiences, beliefs, desires, expectations
25 and so on, which I collectively tend to refer to as one's

1 mindset. It could also take -- come from external factors,
2 such as the context in which information is presented, the
3 order in which information is processed. So it could be a
4 characteristic of the procedure or the person or some
5 combination of the two.

6 Q And, Doctor, can I turn your attention to the
7 pyramid diagram within your affidavit?

8 A Yes, ma'am.

9 Q Can you just explain to the Court what that
10 pyramid represents?

11 A So this is a taxonomy of the various sources of
12 cognitive bias in forensic situations, which are ranked from
13 sort of the most context-specific to the most general, most
14 sort of engrained in our human nature. Some of these have
15 received quite a bit of research-based attention over the
16 past few years.

17 Q What do you mean by research-based attention?

18 A There are now a large number of studies
19 demonstrating that these sources of bias can and do
20 influence the outcomes of forensic science decisions.

21 Q So is it fair to say that a forensic examiner
22 doesn't have the ability to will away their cognitive bias?

23 A That is correct. Bias is not a character flaw,
24 it's not a deficiency; it's a part of how our brain works.
25 So when a psychologist, like myself, uses the term cognitive

1 bias, we are not suggesting incompetence or malfeasance of
2 any kind.

3 Q Now, can you elaborate how can you -- are there
4 safeguards or procedures that an individual should take to
5 prevent this intersection of cognitive bias in a forensic
6 laboratory?

7 A Absolutely. So as you mentioned a moment ago,
8 unfortunately willpower is not sufficient because cognitive
9 bias is so automatic in us. You know, in the same way that
10 we can't choose not to sneeze, we can't choose not to be
11 biased. The more effective way to circumvent bias is
12 through procedural changes that inoculate one against the
13 sources of bias in the first place.

14 Q What are those procedural changes or safeguards?

15 A One example would be making sure to be strategic
16 and thoughtful about the order in which one examines
17 information. We know in psychology that the same
18 information evaluated in a different order can produce a
19 different outcome. So making sure to prioritize the most
20 diagnostic and relevant information in one's analysis is
21 important. On the other side of the coin, it's important to
22 avoid anything -- any information that is irrelevant to
23 one's opinion. That could sway one's opinion
24 unintentionally.

25 Q What other disciplines, if you are aware, utilize

1 these steps to prevent cognitive bias in their analysis?

2 A There are several and I am happy to say that
3 number is growing. Through my work with the OSAC, where we
4 are personally involved in the development and publication
5 and dissemination of forensic science best practices, I have
6 helped to oversee the development of standards in
7 disciplines such as DNA analysis, the analysis of trace
8 materials, bloodstain pattern analysis, friction ridge
9 comparison colloquially known as fingerprint or latent print
10 analysis, photogrammetry which entails sort of extrapolating
11 measurements from within digital images, and crime scene
12 investigation as well. All of those disciplines -- and
13 that's not necessarily an exhaustive list, but off the top
14 of my head, all of those disciplines have, as evidenced by
15 their newly-revised best practice standards, have begun
16 taking the sorts of steps that I just described to protect
17 their examiners against bias.

18 Q And how does the traditional firearms community
19 compare to these other disciplines like trace and DNA?

20 A In my experience they have been a bit slower to
21 adopt those reforms. You know, which is not to say that it
22 hasn't happened on a piecemeal basis, but in terms of
23 changing policy -- sweeping policy changes, again, in my
24 experience, the field of firearms identification has lagged
25 behind other fields.

1 Q Do you have any reason or can you opine as to why?

2 A I don't.

3 Q Now, if I could just turn your attention to this
4 case specifically. And you noted that you reviewed some
5 documents in preparation of your affidavit. Do you have
6 those in front of you?

7 A Yes, ma'am. So I believe they constitute Defense
8 Exhibit G.

9 Q Yes. What did you review, Doctor?

10 A I'm sorry?

11 Q I'm sorry, I'm a little hoarse. What did you
12 review in preparation, specific to this case, the State of
13 Ohio versus Jihada Aaron?

14 A So I reviewed only documents that are directly
15 germane to the firearms analyses in this case. So the
16 evidence submission sheets that accompanied the submission
17 of the relevant ballistics evidence through the laboratory,
18 I reviewed the examiner's worksheets, cartridge case,
19 bullet, and test-fire worksheets, as well as the examiner's
20 final report. I did not review anything beyond that.

21 MS. ESARCO: Your Honor, can I
22 approach?

23 THE COURT: You may.

24 MS. ESARCO: Your Honor, I am
25 handing you what's been marked as Defense

1 Exhibit G. That's the lab submission sheet.

2 MR. McNAIR: Is it just the lab
3 submission sheet or the whole packet?

4 MS. ESARCO: It's the whole
5 packet. And that's the original copy. May I
6 proceed, Your Honor?

7 THE COURT: Yes.

8 MS. ESARCO: Thank you.

9 Q Doctor, after reviewing this submission sheet, in
10 your opinion, what, if anything, could have created
11 cognitive bias within the examination?

12 A So when I review materials like these, I am really
13 looking for two things. The first thing I am looking to see
14 is what information was made available to the examiner
15 before they conduct their analysis, and whether any of that
16 information is extraneous and therefore could have
17 inappropriately influenced their analysis and ultimately
18 their opinion. The second thing I try to piece together is
19 what procedures the examiner, and more broadly the
20 laboratory, followed when they went about analyzing that
21 evidence and, as this laboratory did, verifying that opinion
22 as well in the form of an internal peer review.

23 Unfortunately, in this case I did not see any
24 precautions taken against cognitive bias. There is some
25 indication that the examiner received information that was

1 irrelevant to the task at hand, and that information could
2 well have influenced their opinion subconsciously. I also
3 did not see any effort on behalf of the examiner to
4 respecify or otherwise articulate the criteria that underlie
5 their decision, specifically their identification decisions.

6 And then third, with respect to verification,
7 unfortunately in this case the verification was not
8 conducted in what we would call a blind fashion, meaning the
9 peer reviewer was aware of the opinion that they were being
10 asked to corroborate. All of those things we know create
11 fertile ground for bias to affect an examiner's ultimate
12 decision.

13 Q Now, what precautions -- well, let me back up.
14 What is peer review?

15 A So peer review in a forensic science context, that
16 some would call verification, is in theory a very valuable
17 safeguard against error insofar as one examiner is more
18 likely to make a mistake than are two examiners to
19 independently make the same mistake.

20 So for that reason, when a forensic analyst
21 renders an opinion, many laboratories, this one included,
22 have a procedure whereby a qualified colleague independently
23 reviews that same evidence, in this case the same bullets,
24 to see if they independently reach the same opinion, which
25 of course corroborates and therefore strengthens that

1 opinion.

2 In this case unfortunately it appears that
3 the verification may not have been truly --

4 THE COURT: Stop, stop, stop.

5 THE WITNESS: I'm sorry.

6 THE COURT: That's okay.

7 Anyone in the courtroom, if you want to have a
8 conversation you are welcome to, but you have to
9 take it outside of the courtroom. Now,
10 everybody gets one free shot, but the next time
11 I have to tell you, I have to put you out of the
12 courtroom. Does everybody understand? I am not
13 singling anybody out. I am just making sure
14 everybody understands. If you want to have a
15 conversation, you are welcome to it, but you
16 have to go outside of the courtroom.

17 I am sorry, go ahead, Doctor.

18 THE WITNESS: No worries.

19 Q Doctor, could you please continue? My apologies.

20 A No, not a problem. So as I was saying, in this
21 case unfortunately the verification was not conducted in a
22 blind manner. The verifying examiner was aware of the
23 initial analyst's opinion and therefore the opinion they
24 were being asked to confirm, which we know from the research
25 creates an inherent predisposition to concur, and therefore

1 does not provide truly independent corroboration of that
2 initial opinion.

3 Q What other information, if you know, in your
4 review of the report could have inappropriately affected the
5 analysis?

6 A So unfortunately many evidence submission forms,
7 and this one is no exception, include pieces of information
8 as standard procedure that are not germane to a forensic
9 analysis. Things like the nature of the crime or the nature
10 of the charges, the name of the submitting officer. The
11 big -- one particularly big issue is case summaries. Case
12 summaries often convey irrelevant information to forensic
13 experts. So in this case, for example, the analyst was told
14 the location of the shooting, they were told that the -- one
15 of the individuals involved was driving a stolen car, that
16 one of the individuals involved was attempting to purchase
17 cannabis. These are all things that really should have no
18 bearing on, you know, the analysis of ballistics evidence,
19 which is what falls within the purview of their expertise.

20 Q Let me pose for you a hypothetical. For example,
21 if an examiner's office is overworked and/or understaffed,
22 how could that affect the outcome, if you know?

23 A Overworked and/or understaffed. So it would
24 certainly limit their ability to implement some effective
25 procedures to protect against bias. I am not going to say

1 that it would be impossible to protect one's self against
2 bias, but smaller labs definitely have to take different
3 approaches to that than larger laboratories do that have the
4 luxury of having lots of staff and flexibility.

5 Beyond that, I can't really speak to how
6 those factors would affect the outcome of an analysis, if at
7 all.

8 Q Would it be fair to say that it would make peer
9 review difficult?

10 A It would insofar as, you know, if we took the
11 extreme example of, let's say, a laboratory only had one
12 expert in a certain area, peer review would be very
13 difficult because the only way that they could actually do
14 it would be to contract with an examiner from another
15 laboratory.

16 In a smaller lab that has only, say, two
17 examiners, it becomes impossible to keep them blind to at
18 least the identity of who is doing the peer review because
19 if it's not me, it must be the other person. However,
20 that's not to say that they couldn't conduct the peer review
21 in a blind fashion by simply making sure that the second
22 examiner is unaware of the conclusion that the first
23 examiner reached.

24 You know, it's not fundamentally different
25 than anyone who has ever wanted to get a second opinion from

1 a mechanic or a doctor, right. You would be foolish to go
2 into the second doctor or the second mechanic and tell them
3 exactly what the first person said, because at that point
4 your opinion that you are getting is no longer truly
5 independent.

6 Q Doctor, are you familiar with the NIBIN system?

7 A Yes.

8 Q Could you just briefly explain to the Court what
9 NIBIN is?

10 A So NIBIN is a technology that examiners or
11 investigators sometimes have the ability to use to identify
12 potential matches or, to use the colloquial term, to an
13 unknown item of evidence. So, you know, if there is a
14 bullet that's recovered and there's no -- no potential
15 source has been identified, the examiner or the
16 investigators can effectively search a large database of
17 known sources, known items to see if the computer identifies
18 any of those sources as potential matches to this unknown
19 item.

20 Q And in your opinion, if the examiner knew that
21 there was a NIBIN lead in a case, could that create
22 cognitive bias?

23 A I do believe it would create pressure to acquiesce
24 to the computer's judgment. So, you know, in that case,
25 similar to peer review, the examiner's judgment would not be

1 truly independent of the algorithm of the computer's
2 conclusion. There is a risk that they would be predisposed
3 to agree with the computer if, of course, they know the
4 computer's opinion before they look at the evidence for
5 themselves.

6 In other words, they would approach the
7 analysis with the expectation that there should be
8 correspondence between these items because they are aware
9 that the computer has already detected correspondence
10 between those items, so they're, you know, prejudiced -- and
11 I don't mean deliberately prejudiced, but they are naturally
12 inclined to detect similarity.

13 Q Doctor, just one more brief question. Is your
14 goal to discredit the entire discipline of forensic
15 scientists?

16 A Absolutely not. So my goal is to strengthen
17 forensic science. You know, psychology throughout history
18 has been applied to many other disciplines, things like
19 business, marketing, aviation, web design and so on.
20 Because we know that anytime there is a human element to
21 something, psychologists can help to optimize that task.
22 Forensic science is no different. Over the past decade or
23 so, it's become clear that there is a considerable human
24 element to forensic science analyses. And folks like myself
25 and my colleagues, we have attempted to conduct research and

1 publish research to figure out how exactly we can optimize
2 forensic decision-making in ways that are practicable for
3 forensic laboratories.

4 So, again, the answer to your question is
5 absolutely not. I am not trying to discredit forensic
6 science. My goal is to make it stronger using my expertise
7 in psychology to supplement their expertise in their
8 respective disciplines.

9 MS. ESARCO: Your Honor, may I

10 have one moment?

11 THE COURT: You may.

12 Q Doctor, I am sorry to jump back. Just one more
13 question and I skipped over this during the steps and
14 procedures. My apologies.

15 A No problem.

16 Q In your affidavit you note this concept of
17 preregistration. Could you describe that to the Court?

18 A So in other domains of science, including my own
19 domain, psychology, researchers are now increasingly
20 encouraged to both preregister and to replicate research
21 studies. These changes came out of concern over the
22 reliability of research findings that there was a -- there
23 was significant concern that researchers were producing
24 findings that were not trustworthy because there was an
25 incentive to either selectively analyze, selectively

1 collect, selectively interpret data in ways that supported
2 their hypothesis that may not have been as faithful as it
3 could have been.

4 So what scientists are now encouraged to do
5 is two things. First, before we embark on a study, we are
6 strongly encouraged to do what's called preregister that
7 study. And by that I mean create a transparent public
8 record of the measures that we intend to collect, the
9 analyses that we intend to perform, a description of from
10 whom we intend to collect data, and how much data we intend
11 to collect, and more importantly advanced stipulation of
12 what our hypotheses, what our predictions are.

13 The reason for that is the researcher is
14 essentially making a public contract with themselves that
15 they are then expected to adhere to, which decreases the
16 risk of them sort of, for lack of a more scientific term,
17 fudging their results in ways to make them more attractive
18 or more in line with what their predictions were.

19 Another key element of that is the emphasis
20 on replication, the fact that one single study rarely
21 settles an issue, right. That a finding needs to be
22 demonstrated to be reliable time and time again across
23 different researchers, different settings, different time
24 periods and so on to make sure that it is, in fact, a robust
25 and trustworthy finding.

1 So, you know, in psychology, among other
2 fields, we have very much taken a look in the mirror and
3 looked for ways that we can make our research practices as
4 sound as they possibly can be.

5 Q You used the term fudging the results. Is it fair
6 to simplify that we don't want to move the goal post after
7 the fact?

8 A That's correct. So we would refer to it as
9 HARK'ing, H-A-R-K, which stands for hypothesizing after the
10 results are known. Basically you don't want the data to
11 inform your hypotheses, right. Hypotheses should inform
12 your interpretation of the data. We don't want to leave any
13 room for hindsight bias, post hoc reasoning where
14 researchers can pretend as if this was their expectation all
15 along.

16 Again, it's sort of analogous to writing a
17 contract with one's self and saying, look, here is what I am
18 going to do in this experiment. If I find X, then my
19 hypothesis is supported. If I do not find X, then my
20 hypothesis is not supported. Rather than giving sort of a
21 post hoc justification, which we know is vulnerable to all
22 sorts of biases and could therefore produce an unreliable
23 outcome.

24 Q So with preregistration in mind and your
25 independent review of this case specifically, how did

1 preregistration apply in this case, if at all?

2 A So for any discipline that requires the comparison
3 of patterns, it could be striations on a bullet, it could be
4 fingerprints, it could be handwriting samples, what have
5 you, whenever an examiner is comparing two items, one of
6 which we know the source, the other we don't know the
7 source, and they're trying to render a judgment as to
8 whether those two items came from the same source, what we
9 advise doing is first analyzing the questioned item on its
10 own and making note of any particularly meaningful
11 reproducible diagnostic features within that item that would
12 justify a decision of identification, a decision that shares
13 the same source as the known item.

14 So what the examiner is effectively doing in
15 that scenario is writing the rules that they're going to
16 follow. They go in, they prespecify these are the criteria
17 that I have identified in the questioned sample as being
18 meaningful. I am now going to look for those same
19 criteria -- I am sorry, those same features in the known
20 sample. And if X number of them are present or if you know
21 these certain features are present, then that will justify
22 an identification decision.

23 What that prevents is circular reasoning and
24 it prevents the analyst's analysis of the questioned item by
25 being -- from being tainted by their knowledge of what the

1 known item looks like. In other words, we want examiners to
2 approach questioned items with an open mind and to conduct a
3 thorough analysis where they pick up on all of the
4 meaningful information contained within that sample.

5 Unfortunately, there is some research showing
6 that if examiners don't do that, if they don't look at the
7 questioned item on its own before comparing it against the
8 known item, it actually narrows the scope of their analysis
9 because they tend to focus on similarities between the two
10 items rather than both similarities and differences.

11 Q And you could opine that the examiners in this
12 case did not follow the preregistration procedures?

13 A I saw no indication in their worksheets that they
14 prespecified what features -- the presence of which features
15 would justify an identification. Generally speaking, the
16 rationale that was provided for their decisions was quite
17 vague, talking about -- you know, using terms like slightly
18 different or not sufficient or sufficient, but without
19 really giving any sort of quantification of what exactly
20 that means. So it was -- you know, again, as far as I could
21 tell, there was no effort to prespecify features that would
22 justify an identification elimination or what have you.

23 MS. ESARCO: Your Honor, may I
24 have one moment?

25 THE COURT: You may.

1 MS. ESARCO: Doctor, nothing
2 further, thank you. Thank you, Your Honor.

3 THE WITNESS: Thank you. Yes,
4 ma'am.

5 THE COURT: Cross-examination.

6 MR. McNAIR: Sorry, Judge, just
7 the last couple of questions prompted us to want
8 to send some additional exhibits to the doctor.
9 I am sorting that out with Mr. Maver right now.
10 I apologize for the delay.

11 THE COURT: Not a problem.

12 - - - -

13 CROSS-EXAMINATION OF JEFF KUKUCKA

14 BY MR. McNAIR:

15 Q Hello, Doctor. I apologize for that delay.

16 A No worries. Good afternoon.

17 Q Good afternoon. My name is Ben McNair. I am a
18 prosecutor from our prosecutor's office. Let's start off,
19 just so I don't forget later, are you being paid for your
20 work in this case, sir?

21 A Yes, sir.

22 Q What is your rate or your fee? How does that
23 work?

24 A So I am paid for the amount of time that I spend
25 reviewing materials and preparing my report as well as

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1 testifying here today.

2 Q And what is that hourly rate?

3 A I am being paid at a rate of \$260 per hour.

4 Q Do you have any opinion as to the validity or the
5 reliability of the firearm and toolmark evidence that you
6 have looked at in this case?

7 A So I do believe there is cause for concern over
8 cognitive bias here, simply because there were no
9 precautions taken against it. I am not in a position to say
10 definitively whether it is valid or invalid, but I do have
11 cause for concern.

12 THE COURT: You are not going
13 to ask him if getting paid could cause him a
14 cognitive bias? Seems like the obvious
15 question.

16 MR. McNAIR: Well, because it
17 is so obvious, Judge, I wasn't sure that I
18 needed to ask it.

19 THE COURT: I'm sorry for the
20 interruption.

21 Q Well, here, let me flip the script a little bit.
22 We had talked earlier in this proceeding about exonerations
23 that had been achieved with firearm and toolmark analysis.

24 If the firearm and toolmark analysis that you
25 have reviewed in this case were being offered to exonerate

1 someone, what might you have to say about that? And if it
2 is the only piece of evidence exonerating that person.

3 A I'm sorry, could you repeat the question?

4 Q Sure. So if the firearm and toolmark evidence
5 that you have examined in this case were being offered to
6 exonerate an individual, maybe an individual who is now
7 claiming that he was wrongfully convicted and he is
8 currently serving a life without parole sentence, if that
9 were being offered to exonerate that individual, and if it
10 were the only evidence that was being offered to exonerate
11 that individual, what would you say about that? Is this
12 evidence we should rely on or should we just completely
13 disregard it?

14 A I would say very much the same thing that I said
15 in my affidavit, which is that, you know, the -- look, I am
16 not here to comment on the validity of the discipline as a
17 whole; I am here to comment on the procedures that were
18 followed in these particular analyses, which unfortunately,
19 in light of what we now know about the human element of
20 forensic science and the role that cognitive bias can play
21 in influencing and in many cases misleading forensic
22 decisions, I would say that I do not have the utmost
23 confidence in the judgments that were rendered here. Partly
24 because of the procedures that were followed or in some
25 cases not followed, and partly because of the extraneous

1 information to which these examiners were privy.

2 I think there is a considerable risk that if
3 another expert were to truly independently evaluate these
4 same items of evidence but while following what are now
5 recommended best practices for avoiding cognitive bias, I
6 think there is a considerable risk that they would reach a
7 different opinion of these same items.

8 Q So I want to talk about that, about the sort of
9 extraneous information that the examiners in this case in
10 your view may have been exposed to.

11 And in your hierarchy of potential causes of
12 cognitive bias, that kind of case-specific data is at the
13 top, right? That is the most dangerous thing in terms of
14 potentially causing cognitive bias?

15 A So I wouldn't say most dangerous. It's the
16 most -- it's the most case-specific is what we would call
17 it. But I do want to be clear, data and contextual
18 information are different sources of bias. By data we mean
19 information within the forensic evidence itself that could
20 prompt bias. For example, the simplest example of this
21 would be in a forensic handwriting situation where an
22 examiner is attempting to evaluate the characteristics of a
23 person's handwriting, but they could be biased by the actual
24 content of the writing, that is to say what the words
25 themselves are.

1 Contextual information is different because
2 contextual information, as we refer to it, is information
3 that is not directly germane to the analysis itself. So
4 certainly anything pertaining to the ballistics evidence is
5 relevant here. But there also was a lot of information
6 provided that was not relevant, things like the race of the
7 individual involved, the nature of the crime, the name of
8 the submitting officer, the content of the case summary and
9 so on.

10 Our contention and what a lot of other
11 forensic disciplines are now doing is making sure that
12 experts' judgments are circumscribed to the area for which
13 they have specific expertise. So that is what many
14 disciplines have begun to adopt is making sure that if you
15 are a fingerprint expert, your judgment is derived from the
16 fingerprints. If you are a firearms expert, your judgment
17 is derived from the cartridges and the bullets and the
18 firearm, and not influenced by other factors that should
19 have no bearing on your judgment.

20 Q So let me give you this example, and the Court has
21 heard this example before with a different witness. But if
22 the police came into the lab and they were delivering
23 evidence and they have, for example, a series of firearms
24 and then they have some cartridge cases or bullets or
25 whatever they have and they tell the lab, hey, one of these

1 firearms is the murder weapon that fired these bullets or
2 cases, is that an example of something that might cause
3 cognitive bias?

4 A I believe it is, yes. I think it's certainly not
5 the worst case that I have seen, but it does communicate to
6 the examiner implicitly or otherwise that there is a correct
7 answer, that one of these items should be matched to the
8 cartridges that were found, which implies that, you know, if
9 that doesn't happen, that the lab would have made a mistake.
10 So it does create some pressure, some degree of
11 predisposition to believe that, oh, the murder weapon is, in
12 fact, present, now it's my job to find it. Which is not,
13 from my perspective as a bias expert, as desirable as coming
14 in with an open mind and saying let me see if the murder
15 weapon is here or not.

16 Q Excellent. Now, what is the error rate that is
17 caused by cognitive bias?

18 A It's difficult to say because we don't know -- we
19 don't have good real world data on how often bias operates
20 and we also don't know the ground truth in real world
21 context. What we can say for sure is that cognitive bias
22 frequently leads examiners to different opinions. And that
23 could be the same examiner evaluating the same evidence on
24 two different occasions, or two examiners evaluating the
25 same evidence on the same page.

1 We know by definition that if two examiners
2 look at the same evidence and disagree as to the conclusion,
3 at least one of them must be mistaken. So in situations
4 where we don't know ground truth, we don't talk so much in
5 terms of accuracy and error rates. What we talk about is
6 variance, variability between examiners. Because when you
7 don't get consistency in examiners' judgments, we know that
8 somehow it has to be wrong.

9 Q I would like to take a few minutes and talk about
10 some of the factors that you identified and the materials
11 that you received that may have been cause for cognitive
12 bias.

13 A Yes, sir.

14 Q So one of the first factors you identify is that
15 it's not clear that the questioned items were analyzed
16 separately before comparing them against the known items; is
17 that a fair characterization?

18 A Yes, sir.

19 Q And I am asking this out of genuine ignorance. I
20 am not asking this to suggest that either the Public
21 Defender's Office hid information from you or that you did
22 not ask for more information or anything like that. It is
23 out of ignorance and curiosity on my part.

24 Apart from Defense Exhibit G, which we have
25 cross-marked as State's Exhibit 952, did you receive any

1 other information about other crimes, either homicides or
2 other crimes linked to a firearm at issue in this case?

3 A No.

4 Q Were you aware that there were other crimes
5 including homicides linked to a firearm at issue in this
6 case?

7 A No.

8 Q So certainly not aware that this -- that a firearm
9 at issue in this case was one of the most prolific crime
10 guns that the ATF had ever detected?

11 A No, sir. I very intentionally limit the scope of
12 my analysis to only documents that are directly relevant to
13 in this case the firearms opinions so as not to bias myself.

14 Q And I understand why you do that and I am not
15 suggesting that there is anything wrong with you limiting
16 yourself in that way. But I ask these questions because
17 those other sorts of factors, can those provide perhaps
18 another non-nefarious reason for why evidence may have been
19 analyzed in the order in which it was analyzed?

20 A I am not sure I follow. I would -- I would still
21 advocate that, you know, we know from the research that
22 prematurely jumping into a comparison of questioned and
23 known items limits the thoroughness of the comparison and
24 can lead examiners to misinformation that they would
25 otherwise deem important. So regardless of context, it

1 would still be my contention that to the extent possible,
2 the items should be analyzed individually before it's
3 compared.

4 Q Well, then on that note, would you agree with me
5 that it is not always possible to analyze every questioned
6 item in a case separately before comparing it against a
7 known item? So, for example, if there are cartridge cases
8 that are recovered that might be questioned items, you might
9 recover a known item, such as a firearm that you think is
10 used, and then later recover additional cartridge cases or
11 link through NIBIN additional cartridge cases? Can we agree
12 on that?

13 A So one of the reasons that I think it's important
14 to examine the questioned items first, particularly when
15 there are multiple questioned items, is to make sure that
16 the examiner can identify which features of those questioned
17 items are reliably reproducible. We know that in the
18 process of firing a firearm, there are random variations,
19 right. Even between multiple fires from the same firearm,
20 there is going to be random variation. The job of the
21 examiner is to make sure they understand which features are
22 random and which ones are diagnostic of a potential
23 identification. It's harder to do that unless you first
24 analyze and intercompare those questioned items to make sure
25 you know what's -- you know, to use the research terms,

1 what's signal versus what's noise, right. What's meaningful
2 versus what's random.

3 Q Well, I take your point about questioned items
4 that may already be at the lab, but would you agree with me
5 that it is not every case where all of the questioned items
6 are in the lab's possession and only then do we get known
7 items and no additional questioned items; is that fair to
8 say?

9 A That's fair, yes.

10 Q The second factor that you talk about is exposure
11 to task-irrelevant contextual info that is known to
12 influence forensic opinions. And you have touched on a
13 couple of things, so one of them is the nature of the crime
14 and the charges. And the submission sheets that you looked
15 at, which was Defense Exhibit G, do you have any knowledge
16 of the practices and procedures at the Cuyahoga County
17 Regional Forensic Science Lab in terms of their intake of
18 evidence?

19 A I do not.

20 Q And so, I mean, just to be fair, you have no idea
21 if this same submission sheet is used for all evidence or if
22 it is only used when there is ballistic evidence or anything
23 like that?

24 A That's correct.

25 Q And to be fair, if you look at even just the first

1 page of Defense Exhibit G, which is State's 952, there are
2 evidence items that are identified, such as items 36 through
3 41, that don't appear later in the firearm and toolmark
4 evidence; fair to say?

5 A Yes. Those appear to be DNA items.

6 Q And do you have any idea what those items are?

7 A No, I do not.

8 Q Do you know anything about what our local lab
9 requires before they will even test items in various ways,
10 whether it be for DNA or for trace or for firearm and
11 toolmark analysis?

12 A I do not.

13 Q The factual summary that's provided on page 4 of
14 this exhibit, Defense Exhibit G, do you have any idea if the
15 firearm and toolmark unit even looks at that or uses it in
16 any way?

17 A I can't be sure, no.

18 Q And could it, in fact, be the case that that
19 information is really there more so for the DNA unit so that
20 when they are trying to assess which items are most likely
21 to provide relevant and probative evidence, knowing for
22 example that a vehicle was taken in a carjacking and so you
23 could potentially have DNA in there from the original owners
24 or occupants and then also the carjackers and also whoever
25 else handled it that night, that that would help them triage

1 what is likely to be most fruitful; is that fair to say?

2 A Yeah, no, your point is well-taken. You know,
3 while we know that they have access to the information, I
4 cannot be sure that they considered it.

5 Q And you can't be sure that the firearm and
6 toolmark unit was even aware of some of this information;
7 fair to say?

8 A That's correct.

9 Q The name of the submitting officer, you mentioned
10 that as a potential source. I am not asking you to -- I am
11 not asking you to withdraw your point about that, but could
12 you understand how the name of the submitting officer might
13 be something important that the lab needs to know so if they
14 figure out either that there was evidence that was
15 mis-submitted or mis-tagged, that they know who to go back
16 to to figure that out or get elimination standards for DNA
17 or things of that nature?

18 A So I am not sure I would agree with that actually.
19 I know other laboratories have successfully redacted that
20 information or they had an individual upon intake make sure
21 that that information doesn't get relayed to the analyst.
22 You know, as a bureaucratic matter, as you just mentioned.
23 I don't know what their standard procedure is here, but
24 other laboratories have certainly concocted ways, even if
25 they're understaffed and backlogged and such, to make sure

1 that that information has no risk of being transmitted to
2 the analyst.

3 Q Let's go a little bit farther in. So, for
4 example, one of the things that you talked about was
5 information available to the verifier. You are talking
6 about -- I think you know this, but correct me if I am
7 wrong. You know that one examiner will look at a series of
8 evidence, they will reach whatever conclusions they reach,
9 they document that in Defense Exhibit G that you have, and
10 then a different examiner called a verifier will look at the
11 same evidence and --

12 A That's correct.

13 Q And are you aware of in this case whether that
14 second examiner, whether the verifier looked at any of the
15 first examiner's notes?

16 A The fact that the examiner -- the verifying
17 examiner initialed on these same forms might suggest that
18 they did indeed have access to them in advance. Certainly
19 in advance of initialing, if they could have read what the
20 notes were. It is, of course, much more problematic if they
21 had access to the initial examiner's notes and conclusion.

22 Q So, for example, you have no idea if the verifier
23 only first ever sees the notes after they have done their
24 own independent microscopic verification and they are going
25 to sign-off on this?

1 A No, unfortunately, we have no documentation either
2 way.

3 Q And regarding preregistration, are you familiar
4 with the Ames studies on firearm and toolmark examination?

5 A To a degree, yes.

6 Q And we e-mailed you an exhibit that is marked as
7 State's Exhibit 907. I don't know if you have had a chance
8 to look at it yet.

9 A I have it up right now.

10 Q And that exhibit has previously been identified as
11 a summary of the way the Ames II study was set up that was
12 released prior to the findings in Ames II.

13 Are you familiar with that study that we have
14 marked as State's 907?

15 A I actually am not familiar with this particular
16 paper, no, sir.

17 Q But if that paper -- and I realize now I am asking
18 you a hypothetical because you are not familiar with that
19 particular paper. But if that paper set forth the things
20 that you talked about, such as how the test is set up and
21 how they have called for examiners and how it will be
22 administered and what they're testing, is that in compliance
23 with the sort of preregistration that you are talking about?

24 A Assuming that the -- all of this was made public
25 record before the data were collected, which I don't believe

1 was the case, but the point of pre -- the important part of
2 preregistration is the pre, right. That that sort of public
3 contract has to be done before data are collected.

4 Q Regarding the quantifications of the conclusions,
5 we e-mailed you I think two other photographs and I am just
6 going to kind of pull them up here --

7 A Yes, sir, I have 1018 and 1021.

8 Q I think there were two separate ones after that.

9 A I see it, yes. 1034 and 1044.

10 Q Give me just a moment so I can pull this up so the
11 judge can see it, too.

12 MR. McNAIR: Jeff, what did you
13 send him, 44?

14 MR. MAVER: 34 and 44.

15 Q So looking, for example, at State's 1034, I take
16 your point about the words that the examiners' used in their
17 documentation, but let me ask you, first of all, did you
18 receive these photographs or other photographs like them in
19 the materials that were sent to you?

20 A No, I did not.

21 Q Were you even aware that photographs were taken
22 documenting identifications and eliminations?

23 A I believe it was mentioned on the worksheet, but
24 the worksheet itself didn't include the photographs.

25 Q But is it fair to say that if we wanted some sort

1 of quantification, we could look at the photographs that are
2 used to document identifications, for example in State's
3 1034 or in State's 1044, and we could, for example, count,
4 if we wanted to and have enough time, the individual striae
5 or impressions that are left on any particular piece of
6 evidence?

7 A It is possible, yes. The bigger issue for me is
8 that there is no -- so I take issue with the use of the word
9 quantification here because it's difficult to say how much
10 or how many similarities are needed in order to justify an
11 identification, unless those criteria are articulated in
12 advance.

13 Q So, for example, looking at State's Exhibit 1044,
14 if we wanted to, we could count the individual impressions
15 that are displayed there and we could just count and add one
16 every time it changes from light to dark indicating an
17 additional impression, couldn't we? It would take a long
18 time, but we could count them?

19 A In theory, yes.

20 MR. McNAIR: All right, Doctor,
21 thank you very much for your time and attention.
22 I don't have any more questions for you.
23 Mr. DiChiera may have some more or the judge
24 may.

25 THE WITNESS: All right, thank

1 you, sir.

2 THE COURT: Ms. Esarco.

3 MS. ESARCO: Thank you, Your
4 Honor.

5 MR. McNAIR: Or, sorry,
6 Ms. Esarco.

7 MS. ESARCO: No problem.

8 - - - -

9 REDIRECT EXAMINATION OF JEFF KUKUCKA

10 BY MS. ESARCO:

11 Q Doctor, just briefly. And to be clear, Defense
12 Exhibit G, the lab submission sheet, that's not the original
13 copy; that's a photographed copy, right?

14 A Yes.

15 Q The Court has the original copy provided by the
16 State of Ohio in discovery.

17 MS. ESARCO: If that's
18 accurate, Your Honor, you should have blue
19 markings on your sheet.

20 THE COURT: It's accurate.

21 Q So we talked about inappropriate information that
22 can affect an examiner's analysis. And you have testified
23 that trace and DNA and other disciplines, they exclude and
24 limit that inappropriate information, right?

25 A Yes, ma'am. They're now encouraged and indeed

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1 required to do so as a matter of policy.

2 Q Now, here, if I could turn your attention to page
3 137 of the lab submission sheet, Defense Exhibit G. Let me
4 know when you are ready.

5 A Yes, ma'am.

6 Q Okay. So that lists the, in your words,
7 inappropriate information that the examiner would have had,
8 including the race of the suspect, the gender, the location
9 of the shooter, the fact that the car was stole even? So
10 that should be your page 4.

11 A Yes, ma'am, I got you.

12 Q Now, if I could direct your attention to the
13 bottom of -- it's my page 137, I believe it's your page 4.
14 At the bottom of the page, are there a set of initials
15 there?

16 A The initials S.D. appears in blue ink at the
17 bottom right-hand side.

18 Q Now, if you could flip two pages over, it's my
19 page 139, your page 6 of 27. Let me know when you are
20 ready.

21 A Yes, it appears that S.D. was the assigned
22 examiner in this case.

23 Q And the examiner had access to what you described
24 as that inappropriate information?

25 A The presence of their initials would suggest that

1 they did, yes.

2 Q And on your copy and I believe the Court's copy
3 that's notated in its blue original ink, right?

4 A Yes, ma'am.

5 Q Now, can you explain the variability between
6 examiners and why that's important? I believe the State
7 mentioned that during the State's cross-examination and I
8 don't think I touched on it.

9 A Sure. So with respect to firearms specifically,
10 there has been research done showing that even in the
11 absence of bias and influences, there is a surprising amount
12 of variation between examiners' judgments. And by that I
13 mean repeatability, which refers to the same examiner
14 reviewing the same evidence on two different occasions and
15 the extent to which their judgment is consistent with
16 themselves, as well as reproducibility where they have
17 multiple independent examiners analyze the same evidence at
18 the same time to see if they reach the same conclusion.

19 In one large study, for example, they found
20 that upwards of one-third of the time, examiners' judgments
21 were not consistent between examiners, nor were they
22 consistent with themselves when they were given the same
23 evidence to analyze twice. And, again, it's important to
24 emphasize that this -- these differences of opinion are
25 occurring even in the absence of cognitive bias, which is a

1 testament to the inherent subjectivity and the human element
2 of this analysis. When you then add cognitive bias and
3 factors that can create bias, that variability can become
4 even greater.

5 So in one study, for example, they had
6 ballistics firearms experts analyze the same bullets on two
7 separate occasions. And although the bullets themselves
8 were the same, what they changed was the content of the case
9 summary that accompanied those bullets, things like where
10 the bullets were found, you know, whether they were in a
11 window or in a -- the body of a deceased person and so on.
12 And even though the bullets themselves did not change,
13 nearly by virtue of changing the case summary that
14 accompanied that bullets, 28 percent of the time firearms
15 experts changed their opinion of the same bullets. And,
16 again, when that happens, we know that someone made a
17 mistake because if the judgments are different, one of them
18 by definition has to be incorrect.

19 Q Any evidence in this case, if you are aware, how
20 is variability applied here if at all?

21 A I mean, as far as I could tell, there was not any
22 recognition of variability. I mean, the verification
23 procedure is supposed to be a way of gauging the extent to
24 which examiners are independently reaching the same opinion
25 about the same items. But as I mentioned earlier, if the

1 verifier in this case had access to the original examiner's
2 notes or their conclusion, that verification is not truly
3 independent; it just provides the veneer of corroboration.

4 Q And if I could turn your attention back to page 6
5 of 27.

6 A This is page 139?

7 Q Yes, my page 139.

8 A Yes, ma'am.

9 Q So we know S.D. was the examiner. Could you
10 describe for the Court and the record what else is described
11 at the bottom of that page?

12 A So it appears that the verifier, I believe the
13 name is Kooser, K-O-O-S-E-R, signed to indicate their
14 agreement on the same form.

15 Q And that would be the same -- the technician, the
16 examiner, and the verifier all had access to each
17 individual's conclusion?

18 A It would appear as though that is the case.

19 Q What's the problem with that, Doctor?

20 A Again, it's no different than if you want a second
21 opinion from a mechanic, right. If you are unhappy with the
22 first mechanic's opinion and you want a truly independent
23 second judgment, you wouldn't go to a new mechanic and tell
24 them what the first mechanic said. And for good reason,
25 because you would be rightfully concerned that the second

1 mechanic's opinion would be tainted by the first mechanic.

2 The same sort of process unfolds in forensic
3 laboratories that don't perform blind verification. In one
4 study, they actually collected data on real world firearms
5 identifications and verifications over the course of a year,
6 some of which were done in a blind fashion and some of which
7 weren't. And what they found, which is unsurprising to a
8 psychologist like myself, is that when the verifying
9 examiner knew what the original examiner's opinion was and
10 therefore what opinion they were being asked to confirm,
11 they were considerably more likely to agree with that
12 opinion. Whereas if we kept the verifier blind to the
13 original examiner's opinion, they were considerably less
14 likely to agree with it. Because their opinion was truly
15 independent, they weren't predisposed to agree with their
16 opinion.

17 Q Here this was a rubber stamp, right?

18 MR. McNAIR: Objection.

19 THE COURT: Let's rephrase the
20 question.

21 MS. ESARCO: Your Honor, may I
22 have a moment?

23 THE COURT: You may.

24 MS. ESARCO: Nothing further,
25 Your Honor, thank you. Thanks again, Doctor.

1 THE WITNESS: Thank you, ma'am.

2 MR. McNAIR: I do have just --

3 THE COURT: You may.

4 MR. McNAIR: Thanks.

5 - - - -

6 RE-CROSS-EXAMINATION OF JEFF KUKUCKA

7 BY MR. McNAIR:

8 Q So, Doctor.

9 A Yes, sir.

10 Q I will try not to rack up your bill too much more.

11 So I just want to be clear, you are not here to comment on
12 or opine on the validity or reliability of the science of
13 firearm and toolmark examination; fair to say?

14 A Not at large. I am commenting on what I see as
15 the reliability as applied in this particular instance, but
16 I am a conduit for the research and for the science.

17 Q And one of the things that you included in your
18 affidavit was that if another examiner were to perform an
19 independent and context-free analysis of these same bullets
20 and cartridges that -- and I am no longer quoting you, but
21 that may be a way to solve or cure everything you have
22 testified about today; is that fair to say?

23 A I do believe it would be helpful, yes. If they --
24 if an equally qualified examiner were to conduct a truly
25 independent and context-blind analysis, I would have much

1 more confidence in their opinion than what I see here, yes,
2 sir.

3 Q And, I mean, just to be blunt about it, one of the
4 things that the Public Defender's Office could do is seek an
5 independent examination by an independent firearm and
6 toolmark examiner; fair to say?

7 MR. DiCHIERA: I mean, objection.
8 Personal knowledge. I don't think he knows how
9 our office works.

10 THE COURT: Objection
11 sustained.

12 Q But if such an independent analysis were to be
13 undertaken and it were undertaken in a way consistent with
14 what you have opined to today, that could cure this issue,
15 right, this cognitive bias issue?

16 A That opinion would certainly be more probative
17 than the opinion rendered here, if they take those
18 research-based precautions that I describe in my report.

19 MR. McNAIR: Okay, perfect.
20 Thank you.

21 MS. ESARCO: Nothing further,
22 Your Honor, thank you.

23 THE COURT: Doctor, you can
24 shut the Zoom off.

25 THE WITNESS: All right, thank

1 you, sir.

2 THE COURT: Mr. DiChiera,
3 Ms. Esarco, do you have any additional
4 witnesses?

5 MR. DiCHIERA: Your Honor, we
6 have no further witnesses, and we would rest our
7 presentation subject to the admission of our
8 Exhibits A through G.

9 THE COURT: Mr. Prosecutor.

10 MR. McNAIR: Judge, we do have
11 a witness who is here and could testify. I am
12 also happy to start in the morning. I know it's
13 getting late, and I at least could use a brief
14 break before we did anything else lengthy.

15 THE COURT: You are welcome to
16 that. Why don't we take about a 5- to 10-minute
17 recess for a convenience break.

18 - - - -

19 (Recess taken.)

20 - - - -

21 THE COURT: We are back on the
22 record in Case Number 671659. The defense has
23 rested subject to the admission of their
24 exhibits, and the government has indicated that
25 they have one or two witnesses that they would

1 like to call.

2 Why don't you call your first of those
3 witnesses, Mr. McNair.

4 MR. McNAIR: Thank you, Judge.
5 The State calls Dr. James Hamby.

6 THE COURT: Come on up,
7 Doctor. Stop just short of the witness stand
8 for me, please. Do you swear to tell the truth,
9 the whole truth, and nothing but the truth as
10 you shall answer unto God?

11 THE WITNESS: I do.

12 - - - -

13 The STATE, to maintain the
14 issues in its part to be
15 maintained, called as a witness,
16 JAMES HAMBY, who, being first
17 duly sworn, was examined and
18 testified as follows:

19 - - - -

20 THE COURT: Come on up. Be
21 seated. You may inquire.

22 MR. McNAIR: Thank you, Judge.

23 - - - -

24 DIRECT EXAMINATION OF JAMES HAMBY

25 BY MR. McNAIR:

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1 Q Good afternoon, Dr. Hamby.

2 A Good afternoon, sir.

3 Q I know that you prepare or have seen a lot of
4 these documents before, but I want to go through some things
5 with you.

6 First, I am going to hand you State's Exhibit
7 901. What document did I just hand you there, sir?

8 A Let me quickly give it a check. This is my most
9 updated copy of my curriculum vitae.

10 Q And I want to be considerate of the Court's time.
11 Could you summarize, as succinctly as you could, what your
12 area of specialty or expertise is and what sort of training
13 or education or experience you have that qualifies you in
14 that field?

15 A Yes, sir. I am a certified firearm and toolmark
16 identification examiner. Was certified from my training
17 with the U.S. Army crime laboratory back in 1970 to '72.
18 Went for a two-year-long course of instruction in that
19 field. Subsequent to that, I have an Associate's degree in
20 administration of justice from Los Angeles Community
21 College, a Bachelor of Science degree from the University of
22 the State of New York in liberal studies, a Bachelor of
23 Science degree in sociology from University of Maryland, a
24 Master of Arts degree in secondary education from Michigan
25 State University, a Ph.D. in forensic science specializing

1 in firearms identification from the University of
2 Strathclyde in Glasgow, Scotland. I received that degree in
3 2001. The others were subsequent to that obviously.

4 Q And so your doctorate is actually in forensic
5 science with an emphasis in the field that we have been
6 talking about this whole time, firearms and toolmark
7 identification?

8 A Yes, sir.

9 Q Have you taught this subject matter to other
10 individuals?

11 A I checked the other day -- well, I am also a
12 visiting professor at the Naif Arab University for Security
13 Services in Riyadh, Saudi Arabia. I am a Ph.D. dissertation
14 specialist with the National Forensic Science Laboratory at
15 the University in Gandhinagar, India, a Ph.D. dissertation
16 specialist with the Oklahoma State University, and a few
17 other entities.

18 Q When you say that you are a Ph.D. dissertation
19 specialist, could you just explain -- the judge may know,
20 but I do not know -- what does that mean?

21 A Simply, Your Honor, looking at dissertations that
22 are being put forth by students from those universities and
23 judging their -- the external -- I am an external Ph.D.
24 advisor to those schools.

25 Q Have you testified as an expert before?

1 A Approximately 500 times over my 53-year career.

2 Q You don't have to identify every jurisdiction, but
3 could you give the judge a sense of the breadth of
4 jurisdictions, both nationally and internationally, in which
5 you have been recognized as an expert in the field of
6 firearm and toolmark examination and identification?

7 A Yes, sir. I have testified in numerous states in
8 the United States, to include Ohio. Maybe 15 to 18 states.
9 I have testified in Japan, Okinawa, Taiwan, Korea, Thailand,
10 Vietnam, Palau, Saipan. I mentioned Guam. And also of
11 course our State of Hawaii. Because that was our
12 geographical area of service when I was with the Army crime
13 lab in Japan.

14 Q In your capacity as a firearm and toolmark
15 examiner, have you ever been called upon to testify by the
16 defense?

17 A Yes, sir.

18 Q Have you been called upon to testify by the
19 defense in the State of Ohio?

20 A I have.

21 Q In this county?

22 A I have.

23 Q Have you trained other individuals in the field of
24 firearm and toolmark examination and identification?

25 A Yes, sir. At last count, approximately 60

1 examiners from 15 different countries I have trained
2 personally and I have also helped mentor many others. When
3 my wife and I travel overseas to meetings, we also visit
4 crime labs. So to date I have been to about 35 labs in
5 countries all around the world.

6 Q Have you been contacted by or contracted by any
7 federal agencies to conduct this sort of training or give
8 presentations?

9 A Yes, sir.

10 Q And what departments or agencies have those been?

11 A Well, at the federal level, I was contacted by the
12 National Institute of Justice to help write the firearms
13 training module that they put out. It's still up on their
14 website. I did chapter two on history, and advised on a few
15 of the other chapters. I get these alphabets confused.
16 That was NIJ. The state department contracted me to work
17 for the Organization of American States on a cross-border
18 excursion between Belize and Guatemala on a shooting. So I
19 worked with the chief of the federal lab in Mexico City, and
20 she and I investigated the ballistics evidence and made a
21 report to the OAS.

22 I was contacted and contracted by the United
23 Nations Office on Drugs and Crime to train four examiners
24 for the Country of Palestine, and physically traveled to
25 Ramallah to train over a period of time. The state

1 department also contacted and contracted me to train
2 examiners for the Belize National Forensic Laboratory in
3 Belize City. That was over about a four-year period. I
4 trained four examiners from start to finish. There's been
5 many, many others.

6 Q Are you familiar with an organization known as the
7 Association of Firearm and Tool Mark Examiners?

8 A Yes, sir.

9 Q Have you ever been the president of that
10 organization?

11 A I am a past second vice, first vice, president,
12 immediate past president. I headed the journal for 12
13 years. I was on the Scientific Advancement Committee for a
14 number of years. I have attended 52 meetings in a row.
15 That means 52 years' worth of attending. So, yes, I am
16 intimately familiar with it.

17 Q And have you written or published materials on
18 your work as a firearm and toolmark examiner both
19 specifically and generally?

20 A Both generally and specific. The latest ones I
21 have submitted to the Arab Journal of Forensic Science and
22 Forensic Medicine while I was over in Riyadh teaching this
23 past December to the forensic science students. It's on the
24 evaluation, where I looked at 3,156 different Glock
25 cartridge cases from that many pistols manufactured over a

1 30-year period in both Austria, their home base, and also
2 Smyrna, Georgia, which is near Atlanta. And I looked at
3 these, to include 12 that I have physically gone to the
4 plant and they manufactured 12 consecutively-rifled slides
5 for me that was interspersed throughout that 3,516. I was
6 able to do that. Also used IBIS to look at 517 of those to
7 see if they could make an identification and/or exclusion as
8 part of that study.

9 Q You just mentioned IBIS. What is IBIS?

10 A IBIS is an Integrated Ballistics Identification
11 System, I-B-I-S. It's fielded by the forensic technology
12 out of Montréal, Canada, who I have also worked for. I went
13 to London and did a study to see about installing that
14 system at the Metropolitan Police of London some years ago.
15 So IBIS is the actual instrument. The NIBIN, the National
16 Integrated Ballistics identification system, is the system
17 that ties all of these IBIS units together throughout the
18 United States. There's about 200 of them. Canada uses a
19 system that's called CIBIN. England calls it NABIS, which
20 is National Automated Ballistics Identification System. The
21 Caribbean basin, where I trained in Belize, they have a
22 system and that's tied together in the system throughout the
23 Caribbean nations.

24 MR. McNAIR: Judge, at this

25 time we would offer Dr. Hamby as an expert in

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1 the field of firearm and toolmark analysis and
2 identification.

3 MR. DiCHIERA: No objection. But
4 of course our issue here is the extent to which
5 such testimony can be offered.

6 THE COURT: I understand. He
7 will be qualified.

8 Q Dr. Hamby, we have heard some testimony about
9 this, and the judge, before he was on the bench, was a
10 practitioner and so he is somewhat familiar with this, so
11 you can move through it I think fairly quickly.

12 But could you just give us an explanation of
13 firearm and toolmark examination and identification
14 generally and how it is applied in casework?

15 A Yes, sir. Well, starting, Your Honor, in 1970
16 when I as a field CID agent with the U.S. Army, was selected
17 to go to the two-year course at the U.S. Army crime lab,
18 then at Fort Gordon, Georgia, our job was to provide firearm
19 and toolmark identification to all branches of the military.
20 And when I was in Japan, we provided service also to the
21 F.B.I., DEA, ATF, Customs. Any U.S. component.

22 Firearms and toolmarks are simply looking at
23 fired components, both bullets and cartridge cases, looking
24 at firearms and toolmarks, it can be anything as a tool. It
25 can be a knife, a screwdriver, a pair of pliers, any variety

1 of things where one item is harder than the other, and the
2 job is to see -- to do pattern matching, see if two items
3 share a common source and/or if they don't share a common
4 source, or in the some cases if it's an inconclusive because
5 there is just insufficient data to render a conclusion.
6 That's information that's then provided back to whomever the
7 customer is, whether it's the prosecution, the defense,
8 private attorneys, whomever.

9 Q Now, you have heard testimony primarily from the
10 first defense witness about a series of studies that have
11 been conducted and reports, primarily one report, that had
12 been issued regarding this field, firearm and toolmark
13 examination and identification.

14 Are you familiar with those studies that have
15 been discussed in court today?

16 A Yes, sir, I am familiar with all of them. I
17 participated in the Ames I study and several others that
18 have been done. I could not participate in the Ames II
19 because the requirements of the researchers was you had to
20 be an accredited laboratory. By that time I had retired and
21 was not in an accredited laboratory. Although, the one I
22 directed in Indianapolis for 20 years was certainly
23 accredited in all of the various forensic disciplines, to
24 include crime scene. So, yes, I participated in Ames I. I
25 know the researchers, I have been to the laboratory at the

1 university. It's an Ames laboratory, which is operated by
2 the Department of Energy.

3 Q And a different witness looked at the exhibit I am
4 about to show you. I am going to show you State's Exhibit
5 910. That is the list of post PCAST papers and studies that
6 Dean Faigman looked at and he checked off some of those as
7 being studies that he had read or was familiar with. There
8 are, I think, 54 or 55 papers and studies listed in there.

9 How many of those are you familiar with and
10 have read and could discuss in some detail if called upon to
11 do so?

12 A Well, I am familiar with all of them because I put
13 this list together. There's some excellent post -- what
14 PCAST said in essence is we have one foundational validity
15 study. We need one more and it will validate the science.
16 Well, subsequent to their 2016 issuance of that report,
17 which as an aside was not accepted by our then Attorney
18 General Loretta Lynch, nor our then President Barack Obama.
19 They chose not to accept the report. But nonetheless, there
20 was some good data within that report. The Ames study was
21 in my judgment excellent. So there have been many, many
22 others who would more than qualify for the one study that
23 Dr. Lander and crew said must be done. There's probably 15
24 more since then, to include some that have been recently as
25 late as the middle of last year.

1 Q These studies that have been conducted -- let's
2 first talk specifically about Ames II. Could you give the
3 judge an overview of how was Ames II conducted, what sort of
4 evidence items were examiners looking at?

5 A Yes, sir. The -- Your Honor --

6 Q Actually, I am sorry, here. I want to kind of cut
7 to the chase. So is it fair to say that in Ames II,
8 examiners were sent items to compare and they would receive
9 a total of three items, two of which were categorized as
10 known and then one that would be unknown, and they would
11 have to determine whether that third item was either an
12 identification or an elimination or an inconclusive?

13 A It followed much the same approach as they did in
14 Ames I, but they also included bullets and cartridge cases.
15 The F.B.I. physically generated all of the evidence. They
16 chose the absolute hardest ammunition possible, like Tul
17 ammo, which is manufactured in Russia, which marks horribly.
18 They chose the worst possible guns that mark horribly
19 because they wanted to -- they wanted to more than test the
20 science. They generated these specimens. Those were then
21 sent to the Ames laboratory to send them out blindly from so
22 the F.B.I. had no interconnecting for that. And they were
23 sent out in waves of two or three at a time to those that
24 had signed up.

25 Q And so explain that a little bit more to the judge

1 about how difficult this study was in terms of the evidence
2 that was given to examiners. And you talked about the
3 ammunition that was selected, so let's start there with just
4 the ammunition.

5 What was the significance of the ammunition
6 that was selected for Ames II and why did that choice of
7 ammunition make it much harder for examiners to conduct
8 comparisons?

9 A Well, part of it was because it was selected with
10 the idea to see how far we could push the limits of the
11 testability, if you will, of the system, both firearm --
12 they used very inexpensive firearms or cheap, they used some
13 very hard ammunitions. And there was a variety of these
14 that they sent out and that was the purpose, was to try and
15 make it as incredibly hard as possible, as averse.

16 As opposed to like the Glock study that I
17 did. And I did these all manually I looked at number one up
18 to 3,156, put one away, and then I looked at two all the
19 way. And just kept doing that. It took about nine months
20 to do that study, five, six days a week. Glocks are
21 incredibly easy, if you will, in that context. We talked
22 about you can -- if it's Helen Keller, you can look at them
23 and see the identification. It's just the way it is.

24 Q So Glocks mark well, so to speak?

25 A Incredibly well.

1 Q And you mentioned that the ammunition used in Ames
2 II was harder ammunition. Do you mean just harder from a
3 metallurgical standpoint, it is a physically harder
4 material?

5 A The primers on Tul ammunition that comes -- that's
6 manufactured at the Tul arsenal in the Soviet Union --

7 Q Sorry, if I could interrupt you, that is spelled
8 T-U-L-A?

9 A T-U-L.

10 Q Thank you.

11 A Former Soviet Union. I am sorry. Now Russia.
12 But it has incredibly hard -- the brisance of the primer is
13 incredibly hard. It doesn't take markings well at all.
14 It's also a steel case as opposed to our normal brass or
15 aluminum cases that we use in the United States primarily.

16 Q And what's the significance of that, of the fact
17 that it is a steel case and the vast majority of ammunition
18 encountered in casework in the United States is either
19 aluminum or brass cases?

20 A It's incredibly harder to make -- to find markings
21 and to be able to have them be sufficient for
22 identifications. That's why you end up with either a lot of
23 inconclusives or unable to identify.

24 Q You mentioned that the firearms that were chosen
25 for the study were firearms that were -- I forget how you

1 phrased it, but that made it difficult on the examiners in
2 the Ames II?

3 A Yeah, some were inexpensive or cheap. So the
4 metallurgical processes in manufacturing those firearms
5 doesn't lend themselves to producing the marks that you
6 would expect to see from commercially-manufactured firearms
7 within the United States.

8 Q And how do the Ames II firearms compare in terms
9 of the visibility of their markings to something like a
10 Glock that's maybe more common in the States?

11 A They're harder, most of them.

12 Q Can you say anything about whether the sequential
13 manufacturing of firearms or the assembly of firearms from
14 sequentially-manufactured parts, how does that affect an
15 examiner's ability to make a determination?

16 A Well, yeah, the reason we use
17 consecutively-manufactured components is because another
18 study that I did, I followed a friend of mine that started
19 it and I completed it -- it's still ongoing and that's
20 the -- looking at bullets that are fired from
21 consecutively-rifled barrels. These happen to be Ruger
22 barrels, .9 millimeter caliber. As of yesterday I have 802
23 respondents from 34 countries that have been able to
24 identify these. It's a closed set study, but it still shows
25 the ability of examiners worldwide using different types of

1 comparison microscopes and/or ballistics imaging to make
2 identifications and say, yes, these unknowns were fired from
3 these barrels. And in the manufacturing process, you can't
4 get any closer than manufacturing barrel one to two to three
5 to four. I mean, it's physically impossible. So if there
6 is a best chance of being able to make an error, it would be
7 something that's manufactured one after the other.

8 We have also done studies where we have --
9 well, I did one that was -- I test-fired 10,000 .40 S&W
10 cartridge cases through a Glock pistol and looked at one to
11 10 all the way up to 10,000 to show replicability of striae.
12 The other one that I did with my colleagues in Japan over
13 there. We did a .45 ACP firearm and we test-fired 5,000
14 bullets and cartridge cases and looked one to 10 all the way
15 to 5,000 to show the variance in striae, which you would
16 expect, and impressed marks on the fired cartridge case.
17 Because the gun barrel is going to change. It's 4140 steel
18 and over a period of time it's going to change. That's just
19 part of how steel operates. So there's -- so you do both
20 consecutive and you also do nonconsecutive studies just to
21 show the differences.

22 Q I see we are getting close. Let me maybe
23 authenticate three exhibits and then --

24 THE COURT: Before you do
25 that, will you inquire as to what a closed set

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1 is and a set-to-set?

2 MR. McNAIR: I will, Judge. Do
3 you want me to do that first?

4 THE COURT: Just so it's
5 clear.

6 Q So, Dr. Hamby, could you just explain to the judge
7 what do you mean by a closed set study and how does that
8 compare to a set-to-set study?

9 A Okay. A closed set is actually sampling without
10 replacement. That means in the 10-barrel test that I did,
11 which I followed on for my friend, he started it and I --
12 actually I needed -- I needed a chapter for my Ph.D. thesis,
13 so I stole his stuff and -- didn't steal it. He let me have
14 it. The way he had set up the original participation was he
15 fired -- he gave every participant 10 packets of two of each
16 bullets. Two from barrel one, two -- all the way up to 10.
17 Then he gave 15 unknowns marked A through Zed, as they would
18 say in Scotland, and -- but they were -- I marked them, so
19 they weren't the same A through Z. I actually did a flip
20 file so they were all erratic. So the 240 sets I sent out
21 were all different. If you got a set and I got a set and he
22 got a set, they would all be different. That's a closed set
23 because there is no sampling without replacement.

24 A better way to have done it would have been
25 to have had 12 barrels and sent out 10 and then have two

1 extra bullets that went along that didn't match any of the
2 10. That would be more of a set-to-set. The Ames sent like
3 three bullets, two from A barrel, one yes, maybe no.
4 Incidentally, I heard Mr. Faigman discussing that. There
5 were no people that reported back all inconclusives on that
6 set. Because I talked to the good doctor that put that set
7 together and he came to talk at our meeting, and I said why
8 can't we go back and find out who committed those 22 errors
9 and he said because it was an anonymous report by our
10 universities. We would have no idea who did commit them.
11 It's just impossible.

12 Q So you are talking about the five examiners in
13 Ames I who accounted for 20 of the 22 errors?

14 A Yeah, there's no way he could go back and rectify
15 that. But he also told me no one listed every one as an
16 inconclusive. So that's a set-to-set because you are trying
17 to compare these two to this one. This one may have
18 matched, may not have matched. But the closed set is, like
19 I said, with my 10-barrel.

20 Q So let me show you a couple of exhibits briefly
21 here. State's Exhibit 911, is that the original study that
22 you published on the 10 consecutively-rifled .9 millimeter
23 Ruger barrels?

24 A Yes, sir.

25 Q And then State's Exhibit 912, is that the more

1 recent updated study that you published on that same set of
2 barrels?

3 A Yeah, it's -- technically it's not been studied.
4 It's -- they use a double-blind peer review system for the
5 Arab Journal. And it's gone through that process and will
6 be published within the next two months I suspect.

7 Q Then State's Exhibit 913, is that a fair and
8 accurate copy of your paper on the 3,156 Glock cartridge
9 cases?

10 A Yes, sir. Again, this has gone through the system
11 for the Arab Journal and will be published. I presented
12 both of these at AFTE meetings over the years, so these are
13 just updates.

14 MR. McNAIR: Dr. Hamby, we had
15 a 4:30 cutoff, so I don't want to push it too
16 much further. I think we will probably resume
17 tomorrow.

18 THE COURT: So we will take a
19 break for the evening. I will remind you,
20 Dr. Hamby, that you will remain under oath, so
21 you are not to discuss your testimony with any
22 parties or anyone for that matter. And just be
23 back here at 9 tomorrow morning.

24 THE WITNESS: Thank you, Your
25 Honor.

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THE COURT: You may step down.

Does the State or the defense have any issues to
spread upon the record before we close for the
day?

MR. DiCHIERA: No, Your Honor.

MR. McNAIR: No, Your Honor,
thank you.

THE COURT: We are adjourned.

- - - -

(Thereupon, court was adjourned.)

1 TUESDAY MORNING SESSION, FEBRUARY 27, 2024

2 THE COURT: We are back on the
3 record in Case Number 671659. When we broke
4 yesterday evening, Dr. Hamby was on the stand.

5 Doc, I will remind you that you remain
6 under oath.

7 THE WITNESS: Yes, sir.

8 THE COURT: Mr. McNair.

9 MR. McNAIR: Thank you, Your
10 Honor.

11 BY MR. McNAIR:

12 Q Dr. Hamby, I want to go through a few more
13 exhibits with you. I am going to give you what we marked as
14 State's Exhibits 902 and 903. State's 902 that I sat in
15 front of you, what is that, sir?

16 A This is a -- let me double-check the last page.
17 So this is the declaration I submitted in this case dated
18 September of last year.

19 Q And then State's 903, what is that document, sir?

20 A This is an article that I and my professor in
21 Strathclyde did on the history of firearms and toolmark
22 identification. We published it in our 30th anniversary
23 issue of the AFTE Journal.

24 Q I am going to try to save us a little bit of time
25 with this question, but is it fair to say that in that

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1 article and in many of the articles that we have already had
2 authenticated either by you or by other witnesses, that
3 there is an accurate explanation of the application of the
4 association of firearm and toolmark examiner's methods for
5 identifying or examining cartridge cases and bullets?

6 A Yes, sir, but actually we presented that theory of
7 identification actually in 1992. I was on the Scientific
8 Advanced Committee that helped formulate that. We did this
9 internally so we could share with people that we were
10 training this is how we do what we do. But it had
11 previously been done since 1906, because AFTE was actually
12 formed in 1969.

13 Q And the work that firearm and toolmark examiners
14 do, is that work that requires either skills or knowledge
15 that is beyond the knowledge or experience that is typically
16 possessed by laypersons or even by other forensic
17 scientists?

18 A It's certainly its own forensic specialty. A
19 chemist -- my wife happens to be a DNA analyst who is now
20 retired. She could not do firearms identification, nor
21 could I do DNA analysis. So it's a sub-forensic specialty.

22 Q And you have already talked about some of the
23 training that you have provided to other individuals and
24 agencies, both domestically and internationally, but is
25 firearm and toolmark examination something that does require

1 specialized training or education or experience in order to
2 perform correctly?

3 A Yes, like any specialty. It would be like being a
4 lawyer. You would have to have training as a lawyer to be
5 one. Same thing as a forensic scientist specializing in
6 firearms and toolmark identification. You have to receive
7 training in that specialty, be it a guy or a gal.

8 Q When we are looking at the field of firearm and
9 toolmark examination, is that something that is based on
10 reliable scientific, technical, or other specialized
11 information?

12 A Yes, sir. I mean, the founder of firearms and
13 toolmark identification, at least in the United States, is
14 Colonel Calvin Goddard who was both an M.D. and I think also
15 a Ph.D. Very, very learned man. He was incredible. He
16 went all over Europe and formed the forensic -- Bureau of
17 Forensic Ballistics back in the early 20s, worked on the
18 Saint Valentine's Day Massacre. So, yeah, it's a science --
19 it's science-based, if you will.

20 Q Now, the theory on which firearm and toolmark
21 examination is based, is that something that we can test
22 objectively and has that been tested objectively?

23 A It's been -- yeah, it's been tested very
24 objectively over the 53 years that I have been doing it.
25 It's not just something that's come to pass. Like I say, in

1 1906 was the first case really in the United States, that
2 was the Affray at Brownsville case, where some soldiers
3 allegedly shot up the town. They took their fired cartridge
4 cases and their rifles, took them to Frankford Arsenal. And
5 the scientists and engineers at the arsenal determined that
6 these cartridge cases that come from these rifles, some were
7 inconclusive just because they didn't mark properly.

8 Q The testing and research that has been done on
9 firearm and toolmark examination, has that been subject to
10 peer review either in published articles or by other
11 elements of the forensic community?

12 A Yes, sir. Both published articles in the
13 Association of the Firearm and Toolmark Examiner's Journal,
14 the Journal of Forensic Sciences, the Forensic Science
15 International. Like I said yesterday, I have got two
16 articles that are in peer review -- finishing up peer review
17 now with the Arab Journal of Forensic Science.

18 Q Is there a known or quantifiable error rate that
19 we see in the studies of firearm and toolmark analysis?

20 A Yes, sir.

21 Q What is that known or quantifiable error rate?

22 A Industry -- for want of a better word,
23 industry-wide it's one to one and a half percent.

24 Q Is this field, firearm and toolmark examination,
25 is this something that has gained general acceptance in the

1 scientific community?

2 A It has certainly for the 53 years I have been
3 doing it, yes.

4 Q Do you, for example, know of labs that might have
5 a DNA section and a fingerprint section, but not a firearm
6 and toolmark section?

7 A That's potentially possible. For example, I
8 inspected the RCMP lab in Edmonton, Canada years ago for the
9 Standards Council of Canada. The RCMP labs now have
10 withdrawn firearms to two of their six labs just because
11 that's the way it worked out for them. So -- and now the
12 Edmonton lab does not have firearms. You have to take it to
13 Ottawa or to Vancouver.

14 Q I guess I want you to explain that a little bit.
15 Was a consolidation of labs and lab personnel because of --
16 I will just leave it at the way evidence generally comes in
17 in Canada, or was that because they were turning away from
18 firearm and toolmark examination?

19 A Oh, yeah. My bad. Yes. It was a consolidation
20 of resources so that you didn't have to -- and plus, a
21 couple of other provincial labs had opened up, so they
22 didn't need as many personnel at the RCMP labs at that time.
23 I know -- and this is worldwide. Like I said yesterday, I
24 visited labs in 35 countries. I have trained people from 15
25 countries. Like when I go to conferences, I always go visit

1 labs. I was in Athens last year. I was in various other
2 labs in the last couple of years. There's no lab in the
3 United States, nor the world that has ever ceased doing
4 firearms and toolmark identification.

5 Q The studies that we looked at in State's Exhibit
6 910, why were those studies performed? What were they in
7 response to?

8 A Well, these -- when PCAST came along in 2016 --
9 and incidentally, I applaud many of the findings that they
10 came with. What's interesting is an earlier version of
11 PCAST before the final report was generated actually showed
12 that firearms and toolmarks had foundational validity. The
13 final report showed there was only one study that they
14 considered appropriate for foundational. And so they said
15 you must have at least one more, we encourage additional
16 research, et cetera.

17 So these 50-some things that I keep track of,
18 because I read them all and maintain files because I am
19 interested in the field, was generated as a result of saying
20 to PCAST, okay, we are going to give you additional
21 foundational validity, which is actually a made-up term. It
22 doesn't have any validity at all, but still. So that term
23 was made up, okay, we go by it. And so we have subsequently
24 done all of this research, covering every base that
25 potentially could be covered as an examiner of both firearms

1 and toolmarks and any other subset of what's done in that
2 discipline.

3 Q And just to be fair, the 50-some papers that are
4 listed in State's 910, those are not all studies like Ames I
5 and Ames II? Those are included in there, but some of those
6 are papers sort of arguing about other studies or, for
7 example, the re-examination of the 10
8 consecutively-manufactured Ruger barrels that you did?

9 A Yes. I mean, there's a variety of things. There
10 are several of them that are actually studies that comport
11 with what PCAST wanted as far as a set that would show --
12 that it was done just like Ames I, so an open set that could
13 determine what the error rate was.

14 Q You testified a fair bit yesterday about the
15 difficulty of the evidence involved in Ames II in
16 particular, that they were lower quality firearms and steel
17 cartridge cases and about how that is much more difficult
18 than what examiners might encounter in regular casework.

19 And I give you that preface because I want to
20 ask if you are familiar with a study that was performed at
21 the Houston Crime Lab?

22 A Yes, sir.

23 Q Could you explain that study a little bit to the
24 judge and how that was set up differently from Ames I and
25 Ames II?

1 A Yes, sir. Actually, Your Honor, the Houston
2 Forensic Science Laboratory, which is nonpolice -- it's a
3 county agency that does work for any and all, just like my
4 lab in Virginia and/or Indianapolis -- they actually
5 submitted cases into the system unbeknownst to the
6 examiners, actual cases they had generated and submitted
7 into the system and asked the examiners to look at them.
8 And the examiners did not know they were a dummy case, for
9 want of a better word. And then they looked at their
10 results and what their -- and they did the whole thing. You
11 examine the case and you hand it to your verifier who looked
12 at it, and then they looked at the answers that were
13 generated as a result of that study.

14 In this study, one of the participants was a
15 member of CSAFE, which is in Ames, Iowa at the university,
16 the Center for Statistics and Applications in Forensic
17 Evidence, and they said that inconclusives were not an
18 incorrect answer. Because there were a few inconclusive
19 answers, which you would expect if you are examining
20 evidence. It's just the way it is. In looking over the
21 years, the inconclusive rate while I was doing cases or
22 running my labs was probably 20 percent. The exclusion rate
23 saying that this gun did not fire was probably 20,
24 30 percent. And the others would be identifications.

25 Q And could you talk a little bit more about that.

1 We heard -- you know, the whole thrust really of the first
2 defense witness we heard from was that inconclusives should
3 be counted as errors. And I understand that's a change in
4 his position and contrary to PCAST, but why should
5 inconclusives not be counted as errors?

6 A Well, because they're not in error.

7 Q So explain that a little bit more to the judge.
8 Why do you need to be able to have an inconclusive finding
9 as an option, even when you know as part of a test that you
10 set up that a particular item was fired from a particular
11 firearm?

12 A All right, sir. Well, let me go backwards a
13 minute. The foundational validity study, Ames I, that was
14 talked about by PCAST as being the study that should be
15 emulated, et cetera, et cetera, had inconclusives. That
16 study was funded by the Defense Forensic Science Center.
17 The director at that time was a Dr. Jeff Salyards. This was
18 done in 2014. I participated in that test.

19 Fast-forward to 2016, PCAST said yes, this is
20 the gold standard, if you will, for firearms and toolmark
21 identification. Fast-forward about six years later, now
22 Dr. Salyards who paid for that test, if you will, through
23 the Defense Forensic Science Center, was fine with that
24 test, it was wonderful. Obviously, he worked with the
25 researchers. Dr. Baldwin and other researchers. Max Morris

1 is a world-class statistician, et cetera. The researchers
2 said inconclusives were not an error. And that's what the
3 researchers said. It's their test.

4 Now, about two years ago, Dr. Salyards, who I
5 happened to oppose in court, said, oh, okay, I have changed
6 my mind, inconclusives are now an error. Well, there's
7 about six people on the defense circuit that say that.
8 Okay, that's their right. I don't agree with it. I have
9 only been doing this, like I say, for 53 years and I have
10 had inconclusives my entire career. It's going to happen
11 just because of the nature of evidence.

12 And it's not an incorrect answer in the sense
13 that it doesn't -- it's a no harm, no foul. Because my job
14 as a forensic scientist is to ensure the proper
15 administration of justice from my viewpoint, and then it's
16 up to the Court to decide am I to be declared an expert or
17 not. It's not my -- I don't put myself forward as an
18 expert. It's up to the judge to say yes or no. But an
19 inconclusive is not a negative towards administration of
20 justice, because in my judgment I would rather let 10
21 people -- 10 guilty go free than one innocent go convict.

22 Q And if we were to force examiners to make a
23 conclusive call in every case, that you must either have an
24 identification or an exclusion, unless the item is
25 unsuitable, what would that do to the error rate if we

1 forced examiners to make conclusive calls and refuse to let
2 them have an inconclusive result?

3 A Well, it would be like the two witnesses yesterday
4 that said our error rate is 30 to 50 percent. I have worked
5 probably 10,000 cases in my career. I have had many of them
6 re-examined by defense examiners. I have worked defense
7 cases for both federal and state prosecutors, local
8 prosecutors, private defense attorneys, and that's just not
9 possible. They're attempting to take a trinary conclusion
10 and make it a binary conclusion. It can't be a yes or a no.

11 He talked about the pregnancy test. There is
12 a scope in there where you can't tell whether somebody is or
13 is not pregnant. But let's go to a Pap smear. Females
14 undertake Pap smears. The error rate on Pap smears, last I
15 read, is about 16 percent. Because you have a histologist
16 that's looking at that Pap smear to see if there's any
17 squamous cells possible present. Sometimes you can see them
18 and sometimes you can't.

19 But if you go to a radiologist because you
20 think you may have a broken arm, and it happens to be a
21 hairline crack, is it a break or is it a hairline crack.
22 That's not a yes or a no. It's I don't know. It's
23 inconclusive at that time.

24 Q In terms of replicating casework in a test
25 environment, do you know of any lab anywhere that does not

1 allow an inconclusive result in casework?

2 A No, because they wouldn't be doing their job.

3 Q And to be fair, we see inconclusive results in
4 other forensic fields, right, in DNA?

5 A Oh, certainly.

6 Q In fingerprints, in even drug chemistry testing we
7 see inconclusive results?

8 A Exactly.

9 Q Dr. Hamby, just a few final questions. Would you
10 agree with me that it is not the case or you are not making
11 the claim that a firearm and toolmark examiner can say that
12 a particular cartridge case or bullet was fired from a
13 particular gun to the exclusion of all other guns that have
14 ever been manufactured in the history of the world?

15 A Yeah, well, that -- that verbiage when I first
16 started training in 1970 was used. Subsequent to that, I
17 think the verbiage now is -- and we have even gotten away
18 from a reasonable degree of scientific certainty or
19 ballistic certainty. Those are more legally made-up terms.

20 I can just tell you that this cartridge case
21 or this bullet was fired from this gun to the best -- to my
22 best known ability as an examiner having examined, et
23 cetera. I mean, there's some proper verbiage there.

24 And as I go back to the study concerning the
25 Glock cartridge cases, I can tell you with certainty that

1 when I tell you that I can identify to the exclusion of the
2 other 3,155 Glock cartridge cases that I did in this study
3 to themselves and to no one else, you could ask the
4 question, well, then could there be 3,157 or eight.
5 Anything is possible. But scientifically from -- at least
6 from this study I can tell you no. And I have been through
7 the factory many, many times. I was a consultant to Glock.
8 That's where I got all the cartridge cases. It's part of
9 their quality assurance program. I decided to do that. And
10 that's why I also subjected it to the IBIS unit.

11 MR. McNAIR: Dr. Hamby, thank
12 you very much. I appreciate your time today. I
13 am sure one of the other attorneys is going to
14 have some questions for you. Thank you, Judge.

15 THE WITNESS: Thank you, sir.

16 THE COURT: Do you need a
17 water or anything?

18 THE WITNESS: I have one, sir,
19 thank you.

20 THE COURT: You may inquire.

21 MR. DiCHIERA: Thank you, Your
22 Honor.

23 - - - -

24 CROSS-EXAMINATION OF JAMES HAMBY

25 BY MR. DiCHIERA:

OFFICIAL COURT REPORTERS
CUYAHOGA COUNTY, OHIO

1 Q Good morning, Dr. Hamby.

2 A Good morning, sir.

3 Q Dr. Hamby, I heard you testify that you have been
4 involved in the firearms community for 50 plus years; is
5 that correct?

6 A 53 as of last August.

7 Q And that you have been traveling around the world
8 doing trainings at different laboratories?

9 A Yes.

10 Q I think you testified that you have been to 35
11 different countries?

12 A Well, no, I have been to 50 plus countries. I
13 have been to forensic laboratories in 35 countries, plus
14 about 200 in the United States.

15 Q When you go to -- so 200 plus labs you have been
16 to?

17 A In the U.S.

18 Q And then foreign labs on top of that?

19 A About another 35 overseas, yes.

20 Q 235 labs total?

21 A Uh-huh.

22 Q So when you go to these labs, you will consult
23 with them; is that right?

24 A Well, or visit or share information. An example,
25 I was at a forensic conference in Madeira, Portugal with my

1 wife and we went back into Lisbon to spend a couple of days,
2 so I arranged to go to the National Forensic Lab in Lisbon.
3 And I spent about four hours teaching them on history and
4 just sharing information.

5 Q Do you ever advise them as to lab procedures?

6 A I have done that. I have also -- I came from an
7 accredited -- my laboratory was accredited.

8 Q In Indiana, right?

9 A Yes. And also we were the first laboratory
10 accredited in the Illinois State Police Lab when I was there
11 in 1982.

12 Q So if you were designing a lab, a forensic lab,
13 you would want to start with first having qualified
14 examiners; is that a fair statement?

15 A Well, that -- sure, you have to have that before
16 you can order the space, the equipment, et cetera.

17 Q And you would want those examiners to be as
18 unbiased as possible in their work?

19 A Okay.

20 Q Yes?

21 A Sure.

22 Q And you want them to report out the science,
23 right? So for AFTE, that's either an identification,
24 inconclusive -- and I know we have three categories of
25 inconclusive -- or an elimination?

1 A Or the fourth category is unable.

2 Q Unable. To compare unknown samples with known
3 samples, right, that's what they do?

4 A Yes.

5 Q So there's no reason for an examiner to know, for
6 example, that the case they're working on is a homicide or
7 just a shooting?

8 A I think you are probably talking about linear
9 sequential unmasking.

10 Q I am just saying, if you are running a lab, your
11 examiners are doing comparisons, does it matter what kind of
12 case it is? Do the facts of the case matter to the
13 examiner's conclusions?

14 A They don't have to, but traditionally that's the
15 way it's been done.

16 Q Traditionally, the examiner does get --

17 A Can. Sure. Some labs are now stripping out that
18 information.

19 Q But the way that you were trained, they give
20 information about the case?

21 A Yeah, and that's -- that was pretty typical. To
22 some degree it still is today, but it's changing a bit. In
23 my judgment it doesn't affect the product or the work
24 product of the examiner in examining the components.

25 Q So if the examiner knows, for example, the race of

1 the suspect, you don't believe that influences their
2 decision at all?

3 A Not really.

4 Q Or the name of the investigating detective?

5 A I mean, you have to work with somebody. I mean,
6 when I have trained people, I have done that on purpose. I
7 have given people false police reports and said, okay, this
8 murder gun, this gun fired one of these cartridges and give
9 them this big salacious thing about the person was this, he
10 was this color, this race, did this, and just to try and
11 really get them ginned up to make a false ID. It has no
12 effect.

13 Q When did you do that?

14 A I have done it throughout -- like I say, I have
15 trained some 60 people from around the world.

16 Q Were your findings ever -- in this context, were
17 those findings ever reduced to a peer-reviewed study?

18 A No.

19 Q I think we all agree that the field of ballistics
20 comparison is a subjective field?

21 A Well, there's some subjectivity and there's some
22 objectivity.

23 Q The actual comparison, the examiner making the
24 identification, that's a subjective determination?

25 A Well, yeah, after you go through the objective

1 area of class characteristics.

2 Q So let's talk about either peer review or
3 verification. I think we have been referring to it two
4 different ways. Having a second examiner --

5 A Yeah.

6 Q -- look at a first examiner's results?

7 A Yeah, there are three ways it's primarily done or
8 can be done.

9 Q Well, again, if you are designing your lab, you
10 would want to have a verification procedure; is that right?

11 A Well, in fact, I think it's required by ANAB which
12 is the accrediting body.

13 Q So, yes, you would want -- you would want
14 verification?

15 A Sure.

16 Q And you would want that verification to be done by
17 another qualified examiner?

18 A Well, it has to be.

19 Q And you would want that verification to be blind?

20 A Not necessarily.

21 Q Blind means that the verifier wouldn't know the
22 original examiner's results.

23 A Yeah, like I say, that's one way you can do it.
24 It doesn't have to be done that way.

25 Q So in your opinion that's not necessary?

1 A Well, like I say, there's three ways you can do
2 it. A lab -- the F.B.I. lab, for example, works with you as
3 the examiner on the case, you issue your report to the unit
4 chief, you put the evidence back on the shelf, the unit
5 chief then assigns that case to a second examiner who
6 reworks the case totally without any knowledge whatsoever of
7 the first examiner, and then issues their report and that
8 goes to the unit chief and he or she compares it. Well,
9 that's a total waste of time and effort and resources.

10 And another way to do it is, I work the case
11 and I just hand it off to you and I said, okay, check this
12 for me. And I don't give you any clues as to whether it is
13 or wasn't or could be. The third way is I work the case and
14 I even leave the markings on the lines and grooves and say
15 check this for me. I have done this -- I have done all
16 three and it hasn't impacted my ability to make the
17 verification or lack thereof.

18 Q So the way that the F.B.I. lab does it is a waste
19 of time in your opinion?

20 A Yeah. It would be like you retrying the case
21 twice.

22 Q Do you believe that labs should keep an error
23 rate, meaning keep track of their mistakes?

24 A I think labs do.

25 Q In the context of firearms, do you think that

1 would be inappropriate?

2 A No. I think it's done for all the forensic
3 scientists.

4 Q For all?

5 A Yeah. Because if you work a case and you hand it
6 to me for verification, whether it's blind or I already have
7 knowledge, and there's a disagreement, then there has to be
8 a form filled out showing -- I am forgetting the exact
9 verbiage of it now, but it's a form showing that there is a
10 disagreement between examiner A and examiner B. So that
11 then corrective action, if needed, could be taken.

12 Q So if the lab kept track of that, they could
13 report out an error rate; is that fair?

14 A I don't know how -- I don't know how you would
15 generate and report out that error rate. I mean, I have
16 supervised firearms examiners for -- I mean, I have been a
17 director of several labs with multiple firearms examiners,
18 plus the ones I have trained. I don't know -- I am trying
19 to grasp exactly how we would arrive at that error rate.

20 Q So I want to talk about the studies that the State
21 was asking you about. I want to talk broadly about studies
22 and then kind of narrow it down.

23 For these sorts of studies, do you agree in
24 principle that a diverse group of participants, of examiners
25 is important?

1 A Well, yeah. I think we do have diverse group of
2 participants.

3 Q And that you want those participants to be there
4 for the whole study; you don't want them to drop out, right?

5 A Well, optimally you would like to have that, but
6 then sometimes life gets in the way. If you are talking
7 about Ames II, one of the problems there, it was such a
8 study of such a massive undertaking that ended up what
9 happening is lab directors went to the examiners who had
10 volunteered to work this study and said, excuse me, we have
11 a job here to do for the community and we have to work cases
12 and put out answers to our partners, whether they're law
13 enforcement or the courts or whatever. Because sometimes
14 the courts will say, hey, this case needs to be put higher
15 on the docket.

16 Q Let's focus on Ames II. You did not participate
17 in Ames II; is that right, Doctor?

18 A That is correct. I was unable to because of the
19 parameters.

20 Q Because you were retired?

21 A I'm sorry?

22 Q Because you were retired?

23 A I was not from an accredited laboratory.

24 Q And the identity of the examiners was kept
25 anonymous?

1 A Yeah.

2 Q That's right?

3 A Same as Ames I, correct.

4 Q So you don't know the identity of all of the
5 examiners that were participating in Ames II, right?

6 A No, I know the identity of a number of them
7 because you talk to each other at AFTE meetings and they'll
8 say, hey, I was --

9 Q I was part of this, sure.

10 A -- involved blah, blah, blah.

11 Q Is that where you learned that some of the labs
12 were calling people back to work during these conversations
13 at the AFTE conferences?

14 A Well, yeah, from the examiner or from talking to
15 fellow lab directors who said we really, really, really want
16 to participate, but it was such an odious burden on the
17 laboratory and our ability to provide service to our
18 customers that we just had to draw back.

19 Q Did you ever compile a list specifically of the
20 labs that withdrew their examiners from Ames II for that
21 reason?

22 A No.

23 Q So it's an anecdote?

24 A Yeah, sure.

25 Q In your capacity testifying today, Dr. Hamby, do

1 you claim expertise in research design?

2 A I am not a psychologist. I had enough research
3 design in doing my Ph.D. to help design some of the chapters
4 that I had to fulfill the requirements of the doctorate.

5 Q But you don't claim an expertise in research
6 design?

7 A No.

8 Q Do you claim an expertise in statistics?

9 A No. I am not a statistician.

10 Q You designed some studies we have been talking
11 about?

12 A True.

13 Q Those are closed set studies, you agree?

14 A Well, some are closed, some are open.

15 Q Some are what?

16 A Open.

17 Q Open set. And you claim that, at least for the
18 Glock study, that zero mistakes were made?

19 A Yeah, that's correct.

20 Q And there was some testimony, at least in your
21 opinion, that Glocks are easy to identify?

22 A Well, yeah, they're easy -- I guess I have to
23 rephrase that. They're easy to identify if you are a
24 qualified examiner.

25 Q Sure. And do you share the same opinion, for

1 example, for Taurus firearms?

2 A Taurus aren't bad. They have got pretty good
3 breechface characteristics.

4 Q So Taurus, not bad. What about Rugers?

5 A Rugers are good. That was the 10-barrel study
6 that used Ruger.

7 Q What about Colt?

8 A No problem.

9 Q Smith & Wesson?

10 A No problem.

11 Q The firearms that were used in the Ames II study
12 were Rugers, Jimenez, and Berettas?

13 A Jimenez would be a problem.

14 Q Jimenez, more difficult?

15 A Yeah, well, it's a less expensive gun and the
16 machining and stuff is less well-defined.

17 Q What about Beretta?

18 A Beretta is good.

19 Q Those are expensive, right, from what I have
20 heard?

21 A Yeah. Yeah, I have been fortunate, I have been to
22 probably about 15 firearms manufacturers in the U.S. and
23 Japan. I have been to several ammunition companies in the
24 U.S., South Africa, Canada.

25 Q You were the president of AFTE; is that right?

1 A That's correct.

2 Q How long were you president for?

3 A It's a one-year term.

4 Q How many terms did you serve?

5 A Well, one because you are the second vice
6 president, then first, then president, and then immediate
7 past. So you have continuity of board.

8 Q So you held all of those positions is my
9 understanding?

10 A Yes. And I was the editor of the journal for 12
11 years.

12 Q I want to talk about the AFTE theory.

13 A Sure.

14 Q So we need to I suppose be clear. This AFTE
15 theory came out in 1992?

16 A That's correct.

17 Q And you were part of --

18 A Yeah, there was a scientific advancement committee
19 that had been formed for that specific purpose.

20 Q So I am going read you a portion and tell me if
21 it's right. So it reads the theory of identification as it
22 pertains to the comparison of toolmarks enables opinions of
23 common origin to be made when unique surface contours of two
24 toolmarks are in sufficient agreement. That's the first
25 part.

1 A Yes, sir.

2 Q And then it goes on to define sufficient
3 agreement. And at the conclusion of that section, it says
4 the statement that sufficient agreement exists between two
5 toolmarks means that the agreement is of a quantity and
6 quality, that the likelihood another tool could have made
7 the mark is so remote as to be considered a practical
8 impossibility.

9 A All right, sir.

10 Q Is that correct?

11 A I believe that -- I mean, I don't have it
12 memorized, but that sounds reasonable.

13 Q I mean, it's what you helped write, right?

14 A Yeah, I mean.

15 Q So when Mr. McNair was asking you about how
16 examiners should testify in court, this is really the theory
17 underlying their testimony, right?

18 A Well, this is what we developed -- remember AFTE
19 was formed in 1969. We developed that theory simply to give
20 examiners some verbiage to have an idea of exactly how they
21 approached their -- you know, the work had been done since
22 1906. It's just that we wanted to have some verbiage that
23 would give us a theory of identification.

24 Q So your theory, and this is the same theory as it
25 exists today, is that an examiner testifying in the seat

1 that you are in can identify a match between a sample, like
2 a casing and a firearm, to the practical impossibility of
3 other firearms?

4 A Yes.

5 Q I just wanted to be clear about that.

6 A Yes.

7 Q You testified about the Houston lab study?

8 A Correct.

9 Q You have reviewed that study?

10 A Yes.

11 Q Is it correct that examiners in that study did
12 mark some known casings as inconclusives, meaning we knew
13 that a casing came from a firearm, but the examiner chose to
14 mark it as inconclusive?

15 A Well, I am not -- I don't remember the exact total
16 verbiage of it. I know that they did have an
17 inconclusive -- some inconclusives as part of the studies,
18 yes.

19 Q The ground truth in that study is either -- it
20 would match the firearm or it would not match the firearm?

21 A Okay.

22 Q True?

23 A I don't know for sure.

24 Q And that's the same setup that was used in Ames I
25 and Ames II, right?

1 A Well, yeah, I believe that was the approach.
2 Ames I, I know because, again, I participated in that. You
3 have 15 packets of three fired cartridge cases. You had two
4 that is the known because you always have to look at -- you
5 always have to look at replication of striae and/or
6 impressed marks. That's why you always test-fire, per AFTE,
7 at least two fired bullets or three or four, depends on your
8 lab's protocol, to show you are getting replication.

9 So you had a packet with three, and two were
10 known to come from gun A or B or whatever, and then the
11 third one was did it come from A or B.

12 Q Right. But the examiners would know, right, what
13 the correct answer is for that because they would know
14 whether it came from gun A or B, right?

15 A Well, no. As the test-taker, you didn't know.

16 Q Not the test-taker. The people who put on the --

17 A Yeah, the test providers.

18 Q Yes. So they knew the answer was either yes or
19 no, but many of the examiners that we were talking about
20 chose inconclusive?

21 A Some did, correct.

22 Q So that's the wrong answer?

23 A No.

24 Q Inconclusive makes sense in field work; is that
25 right?

1 A It has to, yes.

2 Q Because let's say I recovered some casings and
3 there's not sufficient enough agreement to make a total
4 comparison to a known firearm, but there are some things in
5 common, right, so I say inconclusive.

6 A Okay.

7 Q Maybe I could say inconclusive A, which is the
8 closest I can get to making an identification, but I am not
9 quite there yet, right?

10 A All right, sir.

11 Q Those casings are subject to environmental factors
12 in a crime scene, right?

13 A Being run over or kicked to the curb or whatever.

14 Q Hitting the ground. The casings that are used in
15 these studies are not subjected to those sorts of
16 environmental factors, right?

17 A Well, in Ames I, yeah, they were reasonably
18 pristine.

19 Q And that makes sense from a study design
20 standpoint. So, again, looking at the examiner's use of
21 inconclusives in a study context, that doesn't give you any
22 concern that an examiner would select inconclusive when they
23 know that it's -- it should either be a match or nonmatch?

24 A No, because one of the problems you have is, first
25 of all, the studies, while I applaud the fact they did

1 everything, and again, I know the people, the researchers
2 that put that study together, is -- it's -- it's not a total
3 study in the sense that you didn't have verification, so you
4 are not -- you are actually -- you are sort of only doing it
5 halfway through. You are not doing it -- you know, if you
6 wanted to make this a real study of the error rate, it
7 should have been you did the case and said XYZ and then I
8 verified your XYZ. That would have been -- that would have
9 generated a more appropriate error rate because you would
10 have had ground truth, but you would have also had the
11 verification, which all labs use worldwide. And like I say,
12 it would have been a more dramatic and appropriate error
13 rate.

14 Q They did that in Ames II, though. They had
15 examiners review other examiners' work, right?

16 A No, they did -- they sent it back out to other
17 examiners, but the examiner doing that case, as I
18 understand, only worked on his or herself. They didn't have
19 it looked at by a second examiner.

20 Q Maybe they didn't review the work, but they got
21 the same casings?

22 A Yeah.

23 Q And they came to different conclusions?

24 A That's possible.

25 Q Well, that's what the study says.

1 A Okay. I have to answer one part of your question
2 there. The other problem is you have, like in the Houston
3 study -- because I am not remembering it a hundred percent
4 right now. I have it available -- is not all of the cases
5 that were being looked at had firearms. Some laboratories
6 have a rule that if you don't have a firearm to look at, the
7 class characteristics -- if the class characteristics are
8 the same, you have to go inconclusive without having access
9 to the actual firearm.

10 Q Well, yes, that makes sense.

11 Do you agree that the imprints, the
12 imperfections that are placed on the parts of the firearm
13 during the manufacturing process, that those are not
14 intentionally made by the manufacturer?

15 A Well, let me make sure I have this correct. The
16 class characteristics that are in place there are
17 intentional?

18 Q Sure. .9 millimeter.

19 A The width of the land and groove, blah, blah,
20 blah. As far as accidental marks that may be generated
21 during the manufacturing process, no.

22 Q And it's through those accidental marks that you
23 are able to make your individual characteristic
24 identification?

25 A Yeah. I mean, example. A gun barrel, normally

1 it's 4140 steel, which is reasonably hard, but then the
2 carbon -- carbide-tipped button is even harder. And that's
3 the second hardest material in science behind diamond. So
4 as that's going through, that causes a disruption to the
5 metallurgical component of that 4140 steel. So like I say,
6 in the 10-barrel test that I did, because I wanted
7 closeness, is I wanted to see what's the subtle changes
8 between that broach going through one, two, all the way to
9 10.

10 Q So the sort of accidental marks that are left,
11 that's incidental to the manufacturing process, right?

12 A Yeah, it's --

13 Q Meaning, there's nobody over at Smith & Wesson
14 saying, hey, let's leave these little unique marks on every
15 single one of our firearms so they can be identified, right?

16 A Correct.

17 Q And the manufacturers that -- these gun
18 manufacturers are not involved in any AFTE training, right?

19 A I have to -- I have to make sure I answer. We
20 have in our AFTE meetings -- and I have been to the last 52
21 years' worth. We have -- except COVID did away with the
22 meeting. We have manufacturers' representatives come in and
23 teach gunsmithing courses, so I guess --

24 Q But they're not saying, hey, AFTE, come to our gun
25 manufacturer so you can see where these accidental -- how

1 these accidental markings are made and we can track them?

2 A No, we have only had one gun manufacturer do that
3 and that's from Mansfield, Ohio, Hi-Point Firearms. They
4 actually changed their rifling and changed the configuration
5 of their breechface to make it easier for us to identify as
6 examiners.

7 Q So High-Point did that for you?

8 A Uh-huh.

9 Q But they're the only one of the --

10 A Yes.

11 Q -- manufacturers?

12 A And it was because the owner who is --
13 unfortunately has died tragically young in my estimation had
14 come to AFTE meetings and we asked him could you do this for
15 us and he says sure. And he did.

16 MR. DiCHIERA: One moment.

17 Q Dr. Hamby, in your opinion, after PCAST, did you
18 feel that your field really needed to be studied any
19 further?

20 A Sure. Because if you look at the 2008 NAS report,
21 Dr. Rolfe was the co-chair of that, and I happened to talk
22 to him. He said -- and his was only to do with ballistics
23 imaging, did we have the capability and should we do it, et
24 cetera. They did say -- paraphrase -- the individual
25 ability has not been fully determined blah, blah. We

1 recommend more studies. As a scientist, I think you should
2 always continue to study your science. That makes sense.
3 The 2009, the path forward -- back to 2008, I was offered to
4 be a member of that NAS report and they chose not to have
5 me, which is fine.

6 2009, in the path forward, we did have four
7 forensic scientists on that panel, one of them who I had
8 worked for in Virginia and one of them who I had taught
9 firearms and toolmark classes for at Indiana University, who
10 said certainly you can make identification, but again, you
11 need more study. So fast-forward to 2016, PCAST said we can
12 always use more studies. And, again, as a scientist who's
13 been doing this for a long time, I agree a hundred percent.

14 Q You met Dean David Faigman yesterday?

15 A Oh, I've opposed him before, yes.

16 Q But you met him in person yesterday?

17 A Yes. I think I met him probably at the American
18 Academy of Forensic Science meetings.

19 Q Am I correct from his testimony that he offered to
20 help you design a study?

21 A I think he's apparently offered somebody. He's
22 never come to me and said let's design a study.

23 Q Is that something you would be willing to do?

24 A Sure. Why not?

25 MR. DiCHIERA: No further

1 questions.

2 THE COURT: Do you need
3 anything, any water?

4 THE WITNESS: I am fine, Your
5 Honor, thank you.

6 THE COURT: Redirect.

7 MR. McNAIR: Nothing off that,
8 Judge. Thank you.

9 THE COURT: I have got a
10 couple of questions.

11 THE WITNESS: Yes, sir.

12 THE COURT: I just want to
13 understand your analysis a little bit as it
14 relates to this idea of trying to determine -- I
15 think you said trinary into a binary.

16 Dr. Faigman testified at some length
17 yesterday, dean rather, about inconclusive
18 results being cast as correct answers.

19 THE WITNESS: Yes, sir.

20 THE COURT: Do you see a
21 problem with that at all?

22 THE WITNESS: No.

23 THE COURT: Even in a universe
24 where we know there is conclusive evidence,
25 right, they're given conclusive evidence as

1 either yes or no and their answer is
2 inconclusive?

3 THE WITNESS: Well, then that
4 would potentially be erroneous. In the firearms
5 field, to go back to regurgitate some of his --
6 he was the senior legal advisor on the PCAST and
7 they had that Ames study actually a couple of
8 years prior to PCAST, and everybody thought it
9 was great to include the person that paid for it
10 from the Defense Forensic Science Center who now
11 has decided that inconclusives are incorrect.
12 There's about six people out and about, and Dean
13 Faigman is one of them and Jeff Kukucka, et
14 cetera. Everything --

15 THE COURT: Is Dr. Salyards
16 one of them?

17 THE WITNESS: Yeah, Jeff
18 Salyards, who was at that time the head of the
19 Defense Forensic Science Center, is now a
20 private examiner. I happened to oppose him a
21 few times as well. Because now there's two
22 things on the field right now. Everything --
23 all the other inconclusives are bad and the
24 other thing is everything is cognitive bias.
25 And I don't find that to be true because I have

1 attempted to interject that into my training and
2 forced people to try and make a decision knowing
3 that it wasn't an appropriate decision and
4 that's part of the training. I had that happen
5 to me where people would say here's the firearm,
6 we know it did it, give us an answer, thank you.

7 THE COURT: I don't have any
8 questions about the cognitive bias issue. I
9 appreciate your responses. I understand your
10 position. But I do want to understand your
11 position a little bit more about this idea of
12 Ames I and how ultimately it was determined with
13 the approval of Dean Faigman that initially it
14 would be okay to characterize inconclusives as
15 correct answers.

16 THE WITNESS: Yes, sir.

17 THE COURT: If we are in a
18 universe where we know there is a binary choice
19 to be made, right or wrong, why do we put
20 inconclusive in the right category?

21 THE WITNESS: Okay, sir.

22 THE COURT: So that's my
23 question.

24 THE WITNESS: Good question.
25 Even in the replication of striae, in the Ames

1 study again that I took, you have got two that
2 were fired from the same firearm and then you
3 had another one that may have been fired from
4 that or may not have been, because they mixed
5 them up. The problem is when you are conducting
6 these studies, not all replication goes across,
7 let's say, 105 cartridge casings. There could
8 be differences.

9 Example, somebody shows you a
10 photomicrograph of a fired bullet -- or two
11 fired bullets and they're 100 percent in
12 accordance. Then somebody has doctored that
13 photograph. Because when you fire a gun, as
14 bullet one goes down the barrel, there is some
15 ejected material that stays in the barrel. So
16 the next bullet when it goes through it, it will
17 pick up or override some of those striae. Same
18 thing will happen with breechface
19 characteristics where it's slamming back across
20 the breech. It may not pick up all the markings
21 at the same time. Plus, again, some labs, if
22 you don't physically have a gun in hand, then
23 you can't -- you can't say yea or nay. You have
24 to go inconclusive. That's to protect, if you
25 will, the innocent from doing that.

1 THE COURT: Maybe I am having
2 a fundamental misunderstanding. Were all of
3 these toolmark examiners given the same
4 information?

5 THE WITNESS: They were just
6 given -- the test came to you and you had to
7 sign up for it blindly and they didn't know --
8 you had to send it back to a different address.
9 And that's part of the university protocol I
10 guess. You have these 15 packets. Each packet
11 contained three fired cartridge casings, two
12 known to be from gun A or B and all the way
13 down, and one that may or may not be from gun A
14 or B or whatever. And that was the only
15 information.

16 THE COURT: But am I right --
17 and if I am wrong, please don't hesitate to tell
18 me because I want to understand.

19 THE WITNESS: Yes, sir.

20 THE COURT: Was there, in
21 fact, a right answer? Was there, in fact, a
22 binary choice, right or wrong?

23 THE WITNESS: Well, potentially.
24 Again, we are back to the issue of sometimes you
25 can't make a binary answer because even if these

1 two came from gun A and this one came from gun
2 A, when they were doing the firearms, they would
3 be able to pluck this one and put it here, it
4 may have been the 150th cartridge case fired.
5 And in that intermediate firing, it may have
6 lost some of its characteristics. So then it
7 wasn't sufficient for an examiner to say, yes.
8 So they had to go inconclusive. Or their lab
9 policy may have said absent a firearm, an actual
10 firearm, you can't call it.

11 THE COURT: So the discrepancy
12 could revolve around the distinction between the
13 lab policies?

14 THE WITNESS: Could be, yes,
15 sir.

16 THE COURT: So some of these
17 examiners were being governed by more stringent
18 lab policies?

19 THE WITNESS: Correct, yes, sir.

20 THE COURT: Which would you
21 say they might result in an inconclusive
22 finding, where someone else looking at the same
23 information might be able, let's say free to
24 make a binary choice that the toolmark examiner
25 that works under that more stringent lab might

1 be limited and therefore have to make an
2 inconclusive finding?

3 THE WITNESS: Correct. And
4 there's another element and that's the level of
5 training that the examiners partook in that
6 test. We sent out a broadcast e-mail to all of
7 AFTE and said please take this test. You don't
8 even have to be an AFTE member to take it
9 because you and I could be AFTE members in lab A
10 and we have colleagues who don't join because
11 they don't want to pay the dues or whatever,
12 they may take the test as well. But you don't
13 know -- the researchers didn't know the level of
14 training. You and I might have 20 years each,
15 another person who took it may have six months.
16 And so the research would have to be further
17 defined as to let's look at level of training
18 and type of training and things of that nature.

19 THE COURT: Let me pose you a
20 hypothetical.

21 THE WITNESS: Sure.

22 THE COURT: And this is done
23 really in the name of me attempting to
24 understand your position.

25 THE WITNESS: Yes, sir.

1 THE COURT: If you have 10
2 toolmark examiners and you give them a black box
3 test to perform, and you know -- it's a
4 controlled experiment, you know the right
5 answer.

6 THE WITNESS: Correct.

7 THE COURT: And nine of them
8 give you what you believe, Dr. Hamby believes,
9 to be the right answer. And then that tenth
10 person -- they're not governed by any separate
11 lab standards. They're all free to make their
12 own determination. They're told this is a test,
13 right?

14 THE WITNESS: Correct.

15 THE COURT: And nine of them
16 give the same answer that Dr. Hamby believes to
17 be the correct answer. What do you do with the
18 tenth examiner that gives you the inconclusive
19 response?

20 THE WITNESS: You would have to
21 look at their level of training and expertise
22 and what have you. And I will give you an
23 example --

24 THE COURT: Hold on. Before
25 you give me an example. So would that be a

1 reflection of a failure on that tenth person's
2 part? It may be a reflection of poor training,
3 poor experience?

4 THE WITNESS: Or maybe when the
5 test was put together, again the sequence of
6 what's the level of test-fire between these and
7 these could have not -- so the test would have
8 to be looked at to determine if, in fact, there
9 was sufficient or insufficient material.

10 THE COURT: Well, remember,
11 now, we are in a universe where we have given
12 them all apples, right. They have got all
13 apples. There's no oranges in there. We have
14 given them all apples and we are asking them to
15 determine whether or not it was, in fact, a yea
16 or nay, that binary choice. And this one gives
17 you the inconclusive. That's my question. What
18 do you do with that inconclusive finding? Do
19 you characterize that person as wrong?

20 THE WITNESS: Well, can I go
21 back to my little --

22 THE COURT: Sure.

23 THE WITNESS: The 10-barrel
24 test, it's still ongoing -- it has been for 30
25 years. I just got my 802nd answer for this

1 test. And this is 10 barrels, two packets each
2 of two bullets each. We are out of bullets now,
3 so we have gone to clone sets. Because
4 polymer -- the ability to replicate stuff with
5 polymer today is phenomenal. So we are sending
6 out polymer sets all around the world. So I
7 have 802 participants from 34 countries to date,
8 18 used some form of ballistics imaging where
9 the human has no intervention. Of that, it's
10 whatever 802 times 15 is. It's pretty
11 substantial.

12 I have had seven inconclusives. One
13 was due to tank rash where the bullet, when it
14 impacted during the firing sequence, caused
15 damage that you couldn't replicate. Another
16 examiner said there's enough damage, I could
17 call it, but I am not going to. And I had two
18 young trainees in South Africa that were taking
19 the test that said we don't feel comfortable
20 calling it, so we are going to call it
21 inconclusive.

22 So you have seven inconclusives out of
23 15,000 potential answers. So that could be
24 looked at. And I did look at these young two
25 trainees with the South African police lab that

1 had only been in training for four months. So
2 that's not an illegitimate answer.

3 THE COURT: I am struggling to
4 understand as I juxtapose your testimony with
5 Dean Faigman's testimony. And you used the word
6 oppose. It's an interesting word, but I
7 understand. Dean Faigman would suggest that --
8 and when we give the 10 apples -- a universe
9 where we have a right answer by Dr. Hamby's
10 standard of right, we have given the 10 toolmark
11 examiners this information and we have a right
12 answer.

13 And then the -- that tenth person --
14 let's change it a little bit. Eight of them
15 give the answer that Dr. Hamby believes to be
16 the right answer based on -- and you're
17 remarkably experienced. I am blown away with
18 your level of experience. Even listing the
19 number of countries, I can tell you I'm
20 impressed by that.

21 THE WITNESS: I am very
22 fortunate.

23 THE COURT: I don't imagine
24 anyone in your field has the same level of
25 experience you do. But I still am struggling to

1 understand this distinction between the way you
2 and Dr. Faigman see this area.

3 You give these 10 experiments, so to
4 speak, these 10 examples, right, and eight of
5 them come back with Dr. Hamby's answer, right.
6 One of them comes back with the opposite, right.
7 We talked about a binary choice and the other
8 one comes back with inconclusive. But the other
9 eight all gave the answer that you believe to be
10 the correct answer. What would you say the
11 success rate in that test would be?

12 THE WITNESS: Well, you would
13 have -- you definitely have to discount the one
14 that came back in opposition.

15 THE COURT: So obviously it
16 came out at 90 percent?

17 THE WITNESS: Exactly.

18 THE COURT: So then is it
19 90 percent?

20 THE WITNESS: Yeah, I wouldn't
21 count -- I have been trained since time in
22 memorial. And with my trainers and my trainers'
23 trainers, inconclusives have never been an
24 issue. If it wasn't for the test
25 providers -- but go away from Ames for just a

1 moment because those were bullets that are
2 subject to this, is there -- I fired these two
3 bullets, but the one I am putting in here that's
4 going to match, it may be 150 out. With the
5 clone technology, like I am using on the
6 10-barrel test, you absolutely -- when you give
7 somebody the 10 apples, you are actually giving
8 them 100 percent, 10 apples. There's no
9 variance because the polymer picks up absolutely
10 every striae, every mark. So you can't say,
11 well, gee, I didn't see enough or I did see
12 enough, because everybody is getting the same.

13 THE COURT: Everybody is
14 getting the same. And that's my understanding
15 of Ames. Everybody was given the same.

16 THE WITNESS: Well --

17 THE COURT: And you get ten
18 answers, one is diametrically opposed, that's
19 binary, right and wrong, but then there's this
20 third that it sounds like Ames characterized as
21 right.

22 THE WITNESS: The research --
23 that was with -- that's the way the researchers
24 developed the research, which -- and I don't --
25 I certainly would never denigrate my --

1 THE COURT: I pick up on the
2 mutual respect. I appreciate it.

3 THE WITNESS: But it's funny,
4 where Dean Faigman now says you should only be
5 able to say this might have been the firing
6 platform, that's not even his verbiage. He's
7 gotten that from a fellow by the name of Bill
8 Tobin who has been using that verbiage now for
9 about eight years.

10 THE COURT: Well, I think he
11 was clear through the examination that his
12 expertise is in scientific methodology, not in
13 firearm and toolmark. So what he's saying is we
14 have failed, me and Dr. Salyards and whoever
15 else, we have failed in the creation of the
16 methodology. Is that how you took it?

17 THE WITNESS: And even my
18 esteemed colleague here at the defense table
19 saying would you entertain working on a research
20 project with Dean Faigman, you bet.

21 THE COURT: I imagine you
22 would.

23 THE WITNESS: In a heartbeat.

24 THE COURT: So the difference
25 between you and Dr. Faigman -- Dean Faigman,

1 rather, is essentially that he would say that
2 that's an 80 percent? If we stick with my
3 apples, that's 80 percent?

4 THE WITNESS: Exactly.

5 THE COURT: One was wildly
6 wrong, one was a little bit wrong. They're both
7 wrong, but for different reasons and different
8 ways. You would say that the one is wrong for
9 sure, but the other one you would count as
10 accurate, but maybe just --

11 THE WITNESS: Well, again, you
12 would have to look at how the test was set up
13 and what are the variances between them. And of
14 course one of the things that I would say, if I
15 were doing a root cause analysis on that, then I
16 would go and find out why did the person that
17 was totally off, why. Why did the person that
18 said it was inconclusive when you had the 10
19 apples, are the 10 apples identical, or were
20 there some blemishes, or smaller in size or
21 whatever. And of course the other thing I would
22 say is -- and of course I do this because I do
23 cases for defense as well, is defense always has
24 the option, at least in my judgment, to contact
25 somebody to come in and re-examine the case,

1 like I have done here actually in Cleveland.

2 THE COURT: I understood that.

3 I appreciate you answering my questions.

4 THE WITNESS: Thank you, sir.

5 THE COURT: Any follow-up on

6 that?

7 MR. McNAIR: Yes, Judge.

8 - - - -

9 REDIRECT EXAMINATION OF JAMES HAMBY

10 BY MR. McNAIR:

11 Q Dr. Hamby, you included, in part of your
12 explanation about why there were inconclusives, something
13 that I want to circle back to. You talked about how when a
14 firearm is fired that there may be material that travels
15 down the barrel along with the bullet, right?

16 A Yes, sir.

17 Q And what effect does that material have on
18 subsequently-fired bullets?

19 A Well, if you have -- depending on the amount of
20 ejected material, or rejected as we call it, it may cause an
21 overriding striae on bullet two or three or five or
22 whatever. Like I say, if you see two identical photographs,
23 then you have got an issue because they have been doctored.
24 There's always going to be a slight variation or difference.

25 Q So is it possible that a firearm can fire three

1 projectiles, but because of that ejection that travels down
2 the barrel and could potentially override striae on
3 subsequently-fired projectiles, that even a well-trained
4 examiner would reach an inconclusive ruling because of that
5 overriding striae on the projectiles fired from the same
6 barrel?

7 A Depends on the barrel, depends on the ejected
8 material, depends on the composition of the bullet; is it
9 brass, is it cupronickel, is it lead, whatever it might
10 happen to be.

11 Q And so I have State's Exhibit 1004 up here on the
12 screen. These striae that we see, is it possible that some
13 of those striae could be -- could either be overridden or
14 other striae could be created by ejection from shot to
15 shot?

16 A Sure, certainly.

17 Q And so even when you have multiple bullets fired
18 from the same firearm, even if we know that they are fired
19 from the same firearm, an examiner might not find sufficient
20 agreement such as to render an identification; is that a
21 fair statement?

22 A It is.

23 Q And in that circumstance, even though they see a
24 lot of agreement, they would have to -- or they could render
25 an inconclusive finding; fair to say?

1 A Correct.

2 Q And in Ames II, they actually include some
3 comments from some of the examiners about how difficult the
4 test was and why they rendered inconclusive findings instead
5 of identifications or eliminations; fair to say?

6 A Yes. I understand there was an incredibly --
7 well, by design, they wanted to include -- the F.B.I. wanted
8 to include some pretty nasty stuff that is out there, yes.

9 THE COURT: To make it more
10 challenging?

11 THE WITNESS: Correct, yes, sir.

12 THE COURT: Mr. McNair, just
13 so that our record is accurate, I don't want
14 there to be any confusion here -- and the
15 confusion could be on my part, so I want you to
16 clear it up. But I want the record to be clear.

17 Ames was not a study where they were
18 given different materials; they were all given
19 the same materials; is that correct?

20 MR. McNAIR: Well, let me say
21 this -- and I am not sure if this will answer
22 your question, Judge. So in each of those
23 studies, it is not the case that each
24 participant received the same material as each
25 other participant. So, for example, when

1 Dr. Hamby participated in Ames I, he may have
2 received materials that -- or would have
3 received materials that other participants did
4 not receive. And there were --

5 THE COURT: Is that accurate,
6 Doctor?

7 THE WITNESS: Yeah, I think so.
8 218 of us participated in Ames I. So we each
9 got our own individual packet. They didn't get
10 it back in and repackage it and send it back
11 out. They generated that number of tests.

12 THE COURT: So it may have
13 been different materials that would have been
14 looked at?

15 THE WITNESS: Well, I think they
16 were trying to use the same cartridge cases in
17 those two or three guns involved. I don't
18 remember exactly what they were. That was 2014.

19 MR. McNAIR: Right, Judge, so
20 in Ames I -- and this is documented or
21 summarized in Ames II, which we have as State's
22 908 -- there were 218 examiners, there were 800
23 specimens examined, and there were 3,270
24 comparisons conducted. But each examiner did
25 not look at the same material as each other

1 examiner. They received different materials.
2 And then for Ames II, it is similar except for
3 the third phase of Ames II. In Ames II, there
4 were 173 examiners. There were -- I won't go
5 through all of these numbers, but there were
6 just over 10,000 each cartridge case comparisons
7 and bullet comparisons.

8 THE COURT: So different
9 examiners looked at different materials?

10 MR. McNAIR: Yes, Your Honor.
11 Except for phase three of Ames II.

12 THE COURT: Because that was
13 the verification?

14 MR. McNAIR: Yes, Your Honor.

15 BY MR. McNAIR:

16 Q And then, Dr. Hamby, just kind of another related
17 question on variance from item to item. We have State's
18 Exhibit 1041 up here. And this is a close-up of an ejector
19 mark on the base of the cartridge case. And would you agree
20 with me that the very top of the ejector mark that we see on
21 the right on the kind of silver-colored cartridge case, we
22 do not see on the left because it would have fallen into the
23 depression of the stamp on the base of that cartridge case;
24 is that a fair characterization?

25 A Yes, sir.

1 Q Is that also the sort of thing that could lead
2 someone to an inconclusive finding, even if we know as a
3 ground truth that these two cartridge cases were fired from
4 the same firearm?

5 A Plus, you have two different materials there. You
6 have brass and you have aluminum and they all take markings
7 differently. Can.

8 MR. McNAIR: Okay, thank you
9 very much.

10 THE COURT: Mr. DiChiera.

11 - - - -

12 RE-CROSS-EXAMINATION OF JAMES HAMBY

13 BY MR. DiCHIERA:

14 Q So you said that different metals can absorb
15 different -- get different marks, right?

16 A Yes, sir.

17 Q So let's say for the Ames II study, they all
18 used -- all the samples that they got were from the same
19 ammunition.

20 A As I understand.

21 Q So there was no variance between the metals like
22 you saw on that exhibit?

23 A No. Again, as I understand, right.

24 Q Did you see the exhibits that the State showed you
25 on the screen here before taking the stand?

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1 A No.

2 MR. DiCHIERA: No further
3 questions.

4 THE COURT: You can step down.

5 THE WITNESS: Thank you.

6 THE COURT: Let's take about a
7 5- to 7-minute convenience break. We are going
8 to be back on the record no later than quarter
9 'til 12.

10 - - - -

11 (Recess taken.)

12 - - - -

13 THE COURT: We are back on the
14 record in Case Number 671659. Mr. Prosecutor,
15 are you going to call your next witness?

16 MR. McNAIR: Yes, Your Honor.
17 The State calls James Kooser.

18 THE COURT: Mr. Kooser, would
19 you raise your right hand for me, please? Do
20 you swear to tell the truth, the whole truth,
21 and nothing but the truth as you shall answer
22 unto God?

23 THE WITNESS: Yes, sir.

24 - - - -

25 The STATE, to maintain the

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1 issues in its part to be
2 maintained, called as a witness,
3 JAMES KOOSER, who, being first
4 duly sworn, was examined and
5 testified as follows:

6 - - - -

7 THE COURT: Come on up. You
8 may inquire.

9 MR. McNAIR: Thank you, Judge.

10 - - - -

11 DIRECT EXAMINATION OF JAMES KOOSER

12 BY MR. McNAIR:

13 Q Mr. Kooser, I am going to show you a couple of
14 exhibits here. State's 951 that I handed you, what is that,
15 sir?

16 A State's Exhibit 951 is a copy of my CV or resume.
17 State's Exhibit 952 is copies of submission forms, reports,
18 and bench notes. And State's Exhibit 953 is a signed copy
19 of firearms analysis report by Examiner Dranuski that I
20 handled the administrative review on.

21 MR. McNAIR: I believe there
22 will be a stipulation that Mr. Kooser is an
23 expert in the field of firearm and toolmark
24 examination?

25 THE COURT: With the same

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1 qualifier?

2 MR. DiCHIERA: With the same
3 qualifier as before, yes, Your Honor.

4 Q So, Mr. Kooser, you know I am asking you just a
5 limited set of questions today, but what was your role with
6 respect to State's 953, that completed firearm and toolmark
7 examination report?

8 A My duties in connection with this report would be
9 to -- it's called an administrative review. I would examine
10 for misspellings, numbers that might be out of order, the
11 correct verbiage.

12 Q And then do you also do any sort of technical or
13 independent microscopic review of the evidence at issue in
14 that report?

15 A Yes, I do a verification. We do a hundred percent
16 verifications in our lab, which means when I do a case and I
17 examine a case, it's handed off to one of the other -- now
18 we have three other examiners. And they will take that
19 evidence and they will examine it as if it's their own case,
20 and make a determination as to whether my findings were
21 accurate or if there was some issues. And then we would
22 review -- the tech review would come first, which is
23 reviewing all of the paperwork, the field notes.

24 Q We have up here on the large screen a page from
25 State's 952 where there are some notes on here talking about

1 different items. Whose notes would these have been?

2 A Those would be Examiner Dranuski's.

3 Q Do you look at those notes prior to conducting
4 your independent microscopic review of the evidence?

5 A No, sir, I do not.

6 Q When is the first time that you see those notes
7 that the initial examiner put on that paperwork?

8 A I won't look at anything that she's done or has
9 written in here until I did my own independent examination
10 of the cartridge cases or bullets or firearms, whatever is
11 involved in a case.

12 Q And going back a little bit earlier in State's
13 952, we see that there was a factual summary of an incident
14 provided by a submitting agency.

15 Do you review this prior to conducting either
16 an initial examination or, as you did in this case, a
17 technical or independent microscopic review of the evidence?

18 A I do not look at what the submitting agency even
19 in my own case has written in their submission. I don't
20 want to know. I don't need to know. My job is to evaluate
21 the evidence that's submitted to me. I don't care what they
22 think or what they believe. So I don't look at it on my
23 own. And when I do someone's review or verification, I
24 don't look at -- I treat it just as if it was mine and I put
25 the same amount of effort into it. And I don't review this.

1 I don't need to know.

2 MR. McNAIR: Nothing more.

3 Thank you, Mr. Kooser.

4 THE WITNESS: You're welcome.

5 THE COURT: Cross-examination.

6 - - - -

7 CROSS-EXAMINATION OF JAMES KOOSER

8 BY MR. DiCHIERA:

9 Q Good afternoon.

10 A Good afternoon, sir.

11 Q When you do your review of these cases, your
12 technical review, do you create your own notes like
13 Ms. Dranuski did?

14 A No, I just sign-off on the bottom if I agree with
15 her results. If I found something out of the ordinary or
16 something that may or may not have been exactly right or
17 might be slightly confusing, I might write a note or put my
18 initials next to it.

19 Q In this case you didn't do that, right?

20 A As far as I recall, no.

21 Q And your initials appear at the bottom of the
22 exhibit?

23 A Yes, sir.

24 Q So I am looking at what's marked as page 7 of that
25 exhibit. There's measurements that are noted here; is that

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CUYAHOGA COUNTY, OHIO

1 right?

2 A Yes, sir.

3 Q Those measurements would have been taken looks
4 like with a micrometer?

5 A Yes, sir.

6 Q Those were documented by Ms. Dranuski?

7 A That's correct, sir.

8 Q So when you are doing your own independent
9 analysis, are you doing those same measurements that
10 Ms. Dranuski did?

11 A No, I did not go back and measure the land and
12 grooves of the bullet. She tends to measure all the land
13 and grooves on every bullet. I don't unless there's some
14 question.

15 Q So in your independent review, you didn't take any
16 measurements; is that fair?

17 A Not of the lands and groove widths of the bullets.
18 No, sir, I did not.

19 Q And if you did take any measurements in this case,
20 they would not have been documented because you didn't write
21 down any notes?

22 A That's correct, sir.

23 Q Am I correct that -- now we have a technician here
24 KMK. That's Kristen Koeth, right?

25 A Yes, sir, that's correct.

1 Q The technician initially gets the samples and sort
2 of starts to work up this worksheet. So this is her
3 handwriting here in black on the top of this exhibit?

4 A Yes, sir.

5 Q And she will put that information into NIBIN?

6 A Well, it depends. NIBIN is a whole nother beast.
7 I believe that's a bullet worksheet, so that would not go
8 into NIBIN. And if it was a cartridge case, as there were
9 cartridge casings in this instance -- and I don't know if
10 Examiner Koeth did the initial workup on the cartridge cases
11 to get into NIBIN or someone else. If she went into one of
12 the cartridge case bays, I could tell you.

13 Q So --

14 A Page 24 is a cartridge case way at the back.

15 Q Okay, 24. Okay. So can we tell from this whether
16 this would have been submitted to NIBIN?

17 A Yes, you can see right on there, R.S., and the
18 date that he picked out for the cartridge case to go into
19 NIBIN. Russell Sackett, he is a NIBIN tech. So the NIBIN
20 techs will oftentimes get the cartridge case or group of
21 cartridge cases into what's called triage where they will go
22 through and make a preliminary determination as to, well,
23 the cartridge cases may or may not have been fired by the
24 same firearm. Then they will pick one out and that's the
25 one that will go into the NIBIN system.

1 Q Is it true that your office doesn't do further
2 comparisons unless they get a request at that point?

3 A We -- well, let me put it this way. We are so
4 backed up that if the detective isn't calling, the case can
5 sit there. Or the Prosecutor's Office. Until there is
6 either a court date or they need the case worked up. We are
7 a little bit backed up in the county lab.

8 Q Can you tell me about that backlog?

9 A Right now, pretty much we are working homicide
10 cases. When we are not working homicide cases as they come
11 in, we are working them as far as the backlog goes. So,
12 again, if a prosecutor calls -- not me, but calls the lab or
13 the supervisor and says, hey, we have got a court date, this
14 is coming up, I need to get this case worked, or has it been
15 worked -- sometimes they have been worked and they just
16 don't know it -- then we will -- the supervisor will decide
17 which case to move around so that we can work the case that
18 they need next. We are really extremely busy.

19 Q So your office is basically getting calls from the
20 prosecutors asking you to prioritize certain cases?

21 A At times, yes, sir.

22 Q Homicide cases?

23 A Yes, sir, usually homicide cases. Sometimes it's
24 just an average everyday shooting that somebody needs for
25 court.

1 Q Can you give us an average turnaround time between
2 when you might have a comparison request made and when you
3 can finally get a report out?

4 A It all depends. I really don't have an exact
5 number on that. I just work the cases as what's up next,
6 what does the boss want me to do. And then it depends on
7 the amount of evidence as was in the case. Some cases take
8 a long time, some cases -- you have got a firearm and two
9 cartridge cases, we might be able to do that in a day, day
10 and a half. You have got like all the bullets in this one,
11 that took some time.

12 Q Are you the only individual doing the verification
13 in your lab?

14 A No. As I said, we now have a total of four
15 examiners. So if I am done with my case, I can say, hey,
16 who's available, who's up, who can verify this. So we
17 verify each other's.

18 Q So you have four examiners at the lab and you all
19 switch off verifying each other?

20 A That's correct, sir.

21 Q So do you know who you're verifying when you do?

22 A Yes.

23 Q So in this case you knew that Sara Dranuski came
24 to some conclusion and that she wanted you to verify it?

25 A Yes, she worked the case and she said, hey, can

1 you verify this case.

2 Q Did she tell you that she made some
3 identifications in this case?

4 A No. She just asked me to verify the case.

5 Q You have that exhibit still in front of you. So
6 page, I think, 4 has the synopsis of the case on it, of the
7 submission sheet?

8 A Yes, sir.

9 Q Do you see the initials in the lower right-hand
10 corner there?

11 A Yep.

12 Q Those are Sara Dranuski's initials, correct?

13 A Yes, we initial -- normally we initial each page
14 that goes into the system, unless -- she has her initials on
15 the bottom along with the date.

16 Q And she was the examiner that did the testing in
17 this case?

18 A Yes, sir, that's correct.

19 MR. DiCHIERA: One moment.

20 Q If you were doing the examination in this case,
21 like Ms. Dranuski, would you have been aware that there is a
22 NIBIN investigative lead?

23 A Sometimes we are, sometimes we are not. We used
24 to be because we did the correlations ourselves, and now the
25 correlations are being done at the NIBIN correlation center.

1 So they then send out the NIBIN lead. We used to send the
2 NIBIN leads out right from our office, but now they are sent
3 out from the correlation center. The detectives get them or
4 the agencies get them and then we are asked to compare
5 whatever they find. If they get a gun and they say here's a
6 gun, that NIBIN has given us a lead that it may match the
7 crime that you have, they then submit the gun, we will fire
8 the gun, and then we will independently make our
9 determination as to whether the gun fired the cartridge
10 cases and/or bullets or not.

11 Q So you would be aware in that circumstance that
12 the NIBIN computer system has given you a lead to a
13 particular firearm that you are then testing?

14 A That's what the NIBIN system does, yes, it gives
15 us -- or it gives the police department a lead that it
16 thinks there may be a match between firearm and cartridge
17 case, yes, sir.

18 Q And the examiner is doing work and your lab would
19 be aware of that before they make their comparisons?

20 A Sometimes. Sometimes we are not. I am working a
21 case that's coming up for Kristin Karkutt. And as I was
22 researching for my court testimony, I saw that someone had
23 submitted a firearm months after I completed my work on the
24 case. So in that case I didn't know there was a firearm and
25 I didn't even know when they submitted the firearm, and no

1 one called and said, hey, we have got a firearm that might
2 go. So sometimes you do, sometimes you don't.

3 Q I understand that in your work on this case that
4 you did not know what Ms. Dranuski's conclusions were.

5 If you were working this case, would you
6 have -- in your capacity again as a verifier, would you be
7 able to access this worksheet before doing your comparison
8 if you wanted to?

9 A Yeah, if I wanted to, I could pull it up. As I
10 said earlier, I make a firm commitment not to look -- I want
11 to keep bias out of everything. Bias is a big issue today.
12 I don't want them. I don't need to know. But, yeah, I
13 could have, but I didn't.

14 MR. DiCHIERA: No further
15 questions. Thank you.

16 THE COURT: Any follow-up?

17 MR. McNAIR: Nothing off of
18 that, Judge, thank you.

19 THE COURT: It's probably a
20 silly question. I just want to ask.

21 THE WITNESS: I am sure it's not
22 a silly question. Go ahead.

23 THE COURT: Do any of the
24 other examiners have you review their work when
25 they found a negative?

1 THE WITNESS: An elimination?

2 THE COURT: Yes.

3 THE WITNESS: Oh, yeah. When
4 they ask you -- as I said, when someone hands --
5 me, either Tom or Kristen, they hand me the
6 case, I take that case and I take that evidence
7 just like it's my own, like I am working it.
8 And I start from the beginning. You have heard
9 me testify time and time about how I do all of
10 that. And I go through all of that. Do I know
11 ahead of time that they have a negative? No. I
12 don't know what they have until I look at it.
13 And I treat it as if it's mine and I work it the
14 same way. Once I have worked it and made my
15 determinations or verifications, whatever you
16 would like to call it, then I will look at what
17 she's put on these notes. And if I agree, then
18 I sign. And if I don't agree, then there would
19 be an issue and we would have to discuss it.

20 THE COURT: So in all
21 fairness, I think I have only ever seen you
22 testify when you did the initial examination.

23 THE WITNESS: Yes, pretty much,
24 yeah.

25 THE COURT: And I characterize

1 it as sort of a simple question because
2 obviously if they only gave you inclusions --
3 right?

4 THE WITNESS: Right.

5 THE COURT: -- then you would
6 know each time when reviewing somebody's work
7 about who's saying there's a match.

8 But I just wonder if when you do the
9 examination you treat it any differently when
10 you have an exclusion?

11 THE WITNESS: No, I treat it,
12 just like I said, as I do my own. I examine --

13 THE COURT: Hold on. When you
14 are the first one doing the work. When you are
15 the one, not doing the verification.

16 THE WITNESS: Oh, do I ask them
17 or do I tell them, hey, I got a -- no. I hand
18 them my stuff and I go, take a look at this.

19 THE COURT: And you don't
20 treat it any differently when you determine that
21 these bullets can be excluded? You do the same
22 thing?

23 THE WITNESS: I think I
24 understand what you are asking. Yeah, I do the
25 same thing every time, all the time.

1 THE COURT: Regardless of what
2 your result was, your finding was, you pass it
3 over blind to --

4 THE WITNESS: Yes, yes. I say
5 here's this case, I am done. Like I said,
6 whoever has got a moment between cases, whoever
7 is kind of up. They try to establish a
8 rotation, but it's difficult because people are
9 in court, people are out of town. So anyway,
10 yes, I would hand it to -- we will say Kristen.
11 And I say, hey, I have completed this, could you
12 verify this, verify my results.

13 THE COURT: Irrespective of
14 your findings?

15 THE WITNESS: Right. Yes, sir.

16 THE COURT: Any follow-up on
17 that?

18 - - - -

19 REDIRECT EXAMINATION OF JAMES KOOSER

20 BY MR. McNAIR:

21 Q I guess I will just point out, Mr. Kooser, if we
22 look at State's 953, this report includes all four
23 possibilities, right? For different items of evidence there
24 are inclusions, there are exclusions, there are some that
25 are unsuitable and there are some that is inconclusive; fair

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CUYAHOGA COUNTY, OHIO

1 to say?

2 A That is correct, sir.

3 THE COURT: My question was
4 just a general question, but I understand. Any
5 follow-up?

6 MR. DiCHIERA: Nothing on that,
7 Your Honor, thank you.

8 THE COURT: Thank you. Good
9 to see you.

10 THE WITNESS: You, too.

11 THE COURT: Mr. McNair, any
12 additional witnesses?

13 MR. McNAIR: Your Honor, at
14 this time, subject to the admission of our
15 exhibits and any potential rebuttal argument,
16 the State rests.

17 THE COURT: Do either of the
18 parties have any objections to either of the
19 other parties' exhibits?

20 MR. DiCHIERA: No.

21 MR. McNAIR: We do not.

22 THE COURT: So then all of the
23 exhibits introduced by the movant and by the
24 government will be admitted.

25 I am happy to hear arguments. If you

1 want to do it now, if you want to take a
2 few-minute break, whichever you prefer. I do
3 start taking evidence in a rape trial at 1:30.
4 So if you don't do it in the next few minutes,
5 we will have to keep you until maybe tomorrow
6 sometime. And I don't want to push you all. If
7 you need time to prepare, I am happy to have you
8 come back another day this week.

9 MR. McNAIR: Could we go off
10 the record for just a moment?

11 THE COURT: You may.

12 - - - -

13 (Off the record.)

14 - - - -

15 THE COURT: I have discussed
16 off the record some of the issues that the Court
17 is concerned with just in the name of helping to
18 perhaps narrow the presentation of the parties.
19 But in that discussion it's occurred to the
20 Court that it might make more sense not to push
21 them into making arguments this afternoon,
22 rather give them time to prepare concise
23 presentations and not feel rushed.

24 So we will adjourn this afternoon and
25 we will meet back Thursday afternoon at 1:00 for

1 arguments for and against the motion. Anything
2 else from the government?

3 MR. McNAIR: No, Your Honor,
4 thank you.

5 THE COURT: Anything else from
6 the defense?

7 MR. DiCHIERA: No, Your Honor,
8 thank you.

9 THE COURT: We are adjourned
10 until Thursday at 1:00.

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12 (Thereupon, court was adjourned.)

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1 THURSDAY AFTERNOON SESSION, FEBRUARY 29, 2024

2 THE COURT: We are back on the
3 record in 671659, case captioned State of Ohio
4 versus Jihada Aaron. We are here today on the
5 29th to hear closing arguments in the motion
6 hearing that started Monday of this week, the
7 26th. I should indicate for the record that
8 Mr. Aaron is present along with his counsel,
9 Mr. Brant DiChiera and Lauren Esarco. And the
10 State of Ohio is represented by Assistant
11 Prosecuting Attorneys Jeff Maver and Ben McNair.
12 You all have had a chance to prepare for your
13 arguments and I will be anxious to hear from you
14 both.

15 It's the defense's motion, so I will
16 turn to you first and last. Mr. DiChiera or
17 Ms. Esarco.

18 MR. DiCHIERA: Thank you, Your
19 Honor. Good afternoon. I do want to thank the
20 Court for its attention in the first two days of
21 testimony. I think the Court has a good
22 understanding of the importance of this hearing
23 and the importance of the issues.

24 I want to start my remarks by pulling
25 us back to the Daubert standard. Because

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1 really, that's what this hearing is about is
2 does this evidence get past Daubert. The Court,
3 in its gatekeeper role, should this go to a
4 jury. And Daubert puts the burden on the
5 proponent of the evidence, in this case the
6 State, to show that this scientific evidence by
7 a preponderance of the evidence should reach the
8 jury. And that's codified in Evidence Rule
9 702(C).

10 And when we look at the Daubert
11 factors, the first question is can this theory
12 be tested. So you heard from Dr. Hamby, the
13 theory -- the AFTE theory is that a trained
14 examiner can make an identification that a
15 particular bullet or cartridge came from a
16 particular gun to the practical impossibility of
17 all the weapons. And we can talk about what
18 qualifiers to put on that. The State in their
19 open said no, it's to a reasonable degree of
20 scientific certainty, that helps cure it. You
21 know, I said, well, they're really saying it's
22 to the practical exclusion of all firearms. The
23 theory is that they can make the identification.
24 And that's what's important. And that's what
25 the jury potentially could hear.

1 So can this be tested. Well, you
2 heard that prior to 2008, it really wasn't. And
3 then in the series of articles starting with the
4 National Academy of Sciences ballistics imaging
5 report, National Research Council, they decided
6 we need to study this discipline more. So, yes,
7 of course it can be tested.

8 And what those tests have shown, as
9 this field has been subject to more scrutiny, it
10 is that it's not as reliable as we thought it
11 was. And when we look at the studies that have
12 been done pre and post PCAST, Dean Faigman
13 correctly identifies that it's these black box
14 studies that are the gold standard. They're
15 akin to a clinical trial, right. They're
16 double-blind. Those are the sorts of studies
17 that we should rely on in making our
18 determinations.

19 And when you look at Ames I and Ames
20 II, both black box studies, when you look at the
21 inconclusives, both of these studies had an
22 astonishing rate of inconclusive determinations.
23 And that's not consistent with field work and
24 that's inconsistent with what the results should
25 have been on both tests, on both -- in both

1 studies.

2 So, yes, it's been tested, but does it
3 have an error rate, right. Taking us again back
4 to Daubert. And as Dean Faigman testified, when
5 those inconclusives are counted as wrong
6 answers, misidentifications by the examiners,
7 the error rate balloons in Ames to 33 percent,
8 in Ames II somewhere between 44 percent up to
9 50 percent. Essentially a coin flip.

10 And I want to focus on the
11 inconclusives and why the Court should treat
12 those as errors. In these studies we know
13 ground truth. They were designed in a way that
14 the people who design the study knew whether
15 there should be an identification or not. We
16 knew, for example, in Ames I, three of the
17 casings were known, one was unknown. Each
18 examiner got a packet to make a comparison. So
19 we knew what the right answer was. And we have
20 an overwhelming amount of examiners picking the
21 wrong answer.

22 Now, I know the State is going to say,
23 okay, the AFTE theory allows us -- allows
24 examiners to make inconclusive findings in the
25 field, and that does make sense. You recall the

1 State put up an exhibit, I think 1041, when they
2 were doing their examination of Dr. Hamby and it
3 was a picture of two different bullets made of
4 different metals, right. Well, the impression
5 on this one is slightly different than this one,
6 so this is an inconclusive. And that makes
7 sense. And I think Dr. Hamby testified that
8 environmental factors can damage casings. When
9 you are making the comparison, maybe you are not
10 all the way there.

11 But the difference in these studies is
12 it's the same ammunition, right. It's the same
13 metal. It's the same model of firearm. They
14 tried to create some consistency. And actually
15 in Ames I, one of the first things they asked
16 the examiners to do is to take a look at the
17 known samples. We are telling you that these
18 three casings came from the same gun. And look
19 at them and tell us if you -- if the markings
20 are defined enough to make that determination.
21 Tell us if these are poorly-marked cartridges.
22 Because maybe that could excuse an inconclusive
23 finding, I mean, if there's some inconsistency
24 between markings.

25 Now, we heard that Dr. Hamby has done

1 a study to show that after a certain point,
2 markings are consistent after you fire the gun a
3 certain amount of times. But they asked these
4 examiners in Ames I to do that. And you know
5 when they did, only 2.3 percent of the known
6 samples were poorly marked. Okay. But when you
7 have -- I mean, I can tell you the numbers
8 exactly. For Ames I, 216 examiners. 45 of
9 those examiners said that all 10 comparisons
10 where there were different sets were
11 inconclusive. 77 were a mix of inconclusive,
12 identification, or elimination. So that's not
13 2.3 percent of examiners because of some poor
14 marking issue or difficulty issue. There's
15 something more there.

16 So what explanation can there be. And
17 I think we have offered several explanations.
18 One is, of course, these examiners know they're
19 being tested. They know, if you look at the
20 instructions of Ames I, which of course the
21 Court is going to receive in evidence. The
22 instructions are, look, we are trying to
23 establish what the error rate is for your
24 profession. Again, all volunteers were part of
25 these studies. So your profession is now all of

1 a sudden -- it's been accepted for 40, 50 years,
2 now it's under scrutiny and we are putting you
3 to the test. I would be hesitant if I were an
4 examiner to make a wrong identification at that
5 point. If I know that I can make an
6 inconclusive and it won't be counted against me,
7 I would do that. And I think that's a
8 reasonable explanation given the circumstances
9 and given how the firearms community has reacted
10 to this criticism.

11 So the other issue arising from Ames
12 II is what we have been referring to as
13 repeatability and reproducibility. Will the
14 same examiner make the same determination given
15 the same samples and do the examiners agree with
16 each other. And, again, when you count the
17 inconclusives, they contradict their own
18 results. Some were between 24.4 to 37.8 percent
19 of the time, and different examiners contradict
20 other examiners 36.4 percent to 59.7 percent of
21 the time.

22 This isn't a
23 one-study-fixes-the-problem situation. I know
24 we keep hearing testimony, well, PCAST wants
25 just one more study. That's not true. And it

1 really shouldn't be true for any scientific
2 discipline, that one study somehow alleviates
3 all the problems and allows wholesale
4 introduction of this type of evidence. The
5 foundational validity, right, of ballistics
6 evidence is still under scrutiny and continues
7 to be studied and will continue to be studied.

8 The Innocence Project has joined us as
9 amici and, you know, I hope that that assuages
10 the State's concerns about potential exonerees
11 needing access to ballistics testing. I would
12 ask the Court to take three major points away
13 from their brief. First, is they have
14 provided --

15 MR. McNAIR: Objection. I
16 would like to object to the consideration of
17 that brief. That was filed out of rule. The
18 Innocence Project, as I understand it, knew when
19 this hearing was starting. They knew for months
20 about this hearing and when it was starting.
21 They filed that pleading literally the day
22 before or the business day before this hearing
23 was to start. And we just have not had
24 sufficient time to fully review it and be able
25 to fully respond to all of the many errors and

1 omissions that it makes. So we are objecting to
2 consideration of that pleading.

3 THE COURT: So I am not going
4 to disregard the pleading, but what I will give
5 you time to do, if you would like to have it, is
6 to respond in writing, to make a -- to make a
7 response. And I won't make a ruling until I
8 have given you the chance to make that response.

9 MR. McNAIR: Thank you, Judge.

10 THE COURT: Is that the only
11 complaint, that it was not timely?

12 MR. McNAIR: I mean, I have --
13 from my limited review of it, I have many
14 substantive complaints about it.

15 THE COURT: Procedurally?

16 MR. McNAIR: Procedurally it's
17 just that it was out of rule.

18 THE COURT: I am really,
19 Mr. McNair, disinclined in Cuyahoga County to
20 eliminate filings because of lateness. We have
21 a practice in this county of late discovery,
22 late responses, late motions. And until we fix
23 that problem, I don't think I can take a stand
24 in one case and be strict in the interpretation
25 of timing.

1 MR. McNAIR: I certainly
2 acknowledge that customer practice within the
3 county, and I think the Court's remedy of giving
4 us sufficient time to fully digest it and
5 respond to it is an adequate remedy. Just as we
6 see in trials where there might be late
7 discovery and the Court says, well, look, ship
8 that witness back, and you can look at the
9 discovery.

10 THE COURT: Are you thinking a
11 couple of weeks?

12 MR. McNAIR: Yes, I think a
13 couple of weeks would be fine. I would like to
14 consult with appeals and with Mr. Filiatraut.

15 MR. DiCHIERA: Judge, I guess to
16 be clear, we are not asking the Court to make a
17 decision right now, you know, at the end of our
18 remarks. There's lots of exhibits to go over,
19 there's affidavits on both sides, there's
20 studies to read. And I know the Court will.
21 And I am not asking the Court to make a decision
22 about all of this on the fly.

23 But what the Innocence Project brief
24 does do and where it perhaps fills in some of
25 the gaps in our briefing is it gives the Court a

1 complete list of other courts that have
2 addressed this issue and have come to the
3 conclusion that in some way this evidence needs
4 to be limited. Whether limiting it to
5 identification only based on class, or limiting
6 it in some other way, putting qualifiers on it
7 before it gets to a jury. The Innocence Project
8 has provided you with an extensive list of
9 cases.

10 Second, really, the focus of their
11 brief is how this Court should couch the
12 language. And they outline sort of the five
13 options that are available, the pros and cons of
14 each. And they endorse what Dean Faigman
15 testified to, that based on the available
16 science and the literature, the appropriate
17 instruction or limiting instruction is that
18 examiners can make identification based on
19 brand, class, caliber, right twist, left twist,
20 and they can do that well. But until this field
21 is studied further, to say that a particular
22 casing came from a particular gun is not
23 appropriate.

24 Finally, the Innocence Project does
25 talk about this problem of inconclusives in

1 black box studies. Now, I remember from the
2 Court's inquiry of Dean Faigman, he acknowledged
3 that when he was part of PCAST, he didn't see
4 this. And I would say at that point, Ames was
5 really the only black box study where these
6 inconclusive results were coming up at the time
7 that PCAST was written. Now, there's been more
8 since then.

9 But in their brief, the Innocence
10 Project points to other scholars, six other
11 published articles where other scientists have
12 called into question how to treat inconclusives
13 in a study like this where there's a binary
14 choice, yes or no, how do you deal with the
15 inconclusive problems. So he is not alone in
16 his criticism.

17 And I would like to say, you know,
18 Dean Faigman is a deeply serious man. He
19 publishes the treatise on modern scientific
20 evidence. I would suggest to the Court that he
21 wouldn't stake his reputation in the scientific
22 community by offering this criticism without a
23 basis for it. And others have joined him in
24 that criticism.

25 You heard the testimony from

1 Dr. Kukucka. And I understand that there's
2 going to be a tendency to focus on Dr. Faigman
3 and what to do with these studies. But I would
4 submit that Dr. Kukucka's testimony is important
5 because when you are talking about featured
6 comparison sciences, ballistics being one of
7 them, it's a situation where cognitive bias can
8 exacerbate already-existing problems.

9 So Dr. Kukucka testified that our
10 county lab does fail to take precautions. And
11 we are not talking about anything that's
12 groundbreaking. Don't let your examiner see the
13 case synopsis. We know that the examiner in
14 this case at least initialed the page that had
15 the case synopsis form on it. She didn't
16 testify at the hearing, so we don't know whether
17 she read it, but she certainly was exposed to
18 it. And, you know, when I asked Dr. Hamby if
19 you were designing your ideal lab, would you
20 want your examiners to be exposed to this case
21 extraneous information. He said, yeah, we were
22 all the time at his lab in Indiana, but it
23 didn't impact my work.

24 But that's the whole thing about
25 cognitive bias. It's subconscious. And I

1 believe Dr. Hamby was a well-meaning
2 professional examiner that spent 50 plus years
3 in this field and I think he tried to do his
4 work well. But that's the problem with
5 subconscious biases. Even if we are
6 well-meaning, when we are exposed to these
7 issues it impacts our work. And it's not made
8 up. Dr. Kukucka's affidavit cites the studies
9 that show that cognitive bias can impact the
10 forensic sciences.

11 Do a real blind verification. I
12 appreciate Mr. Kooser saying that his review in
13 this case was independent. But it wasn't blind.
14 He knew whose work he was reviewing. He had
15 access to the worksheet if he wanted. The
16 F.B.I. lab does it blindly. But in Dr. Hamby's
17 testimony, he described that as a waste of time.

18 THE COURT: Are you suggesting
19 that Mr. Kooser was testifying untruthfully?

20 MR. DiCHIERA: No. What I am
21 saying is to make it truly blind, they would
22 have to have no access to the worksheets.

23 THE COURT: But he said he
24 didn't access the information.

25 MR. DiCHIERA: That's true. And

1 the larger point is, their policy would still
2 allow an examiner, if they wanted to, to access
3 the worksheet. So in that sense there's no
4 attempt to make it blind. I believe him, that
5 he did an independent review. But the overall
6 setup in the lab is that there's no attempt to
7 make it blind.

8 THE COURT: There's no
9 requirement.

10 MR. DiCHIERA: Right, there's no
11 requirement for it to be blind. Mr. Kooser said
12 he did an independent review.

13 I anticipate the State will offer
14 criticism and will suggest that we could have
15 hired our own ballistics examiner who could have
16 operated in an independent fashion, blind
17 fashion, and re-evaluated the evidence in this
18 case. Our suggestion is beside the point. The
19 real question is, how does a jury receive this
20 evidence. Whether we wanted an independent
21 evaluation or not is not the point we are
22 making. The point we are making is the studies,
23 testimony of Dean Faigman suggest that this
24 science is not reliable enough for
25 individualized determinations of ballistics.

1 Dr. Hamby's testimony I would submit
2 was in many ways anecdotal. He did not
3 participate in the Ames II study. There's -- I
4 suppose he talked to people at the AFTE
5 conference who indicated the test was difficult.
6 And it should be difficult. If forensic science
7 is attempting to prove its foundational
8 validity, it should be difficult. I'm sure the
9 studies regarding DNA testing are difficult.
10 You don't want this to be an easy result.

11 And, I mean, I anticipate the State
12 will also say, well, Glocks mark easy based on
13 Dr. Hamby's study involving Glocks. And he said
14 the same thing for, you know, Tauruses and
15 Rugers and Colts, that those also were
16 relatively easy for him to identify. But I
17 guess you can't have it both ways. I mean,
18 either guns mark well or they don't. And it
19 can't be an excuse for the inconclusives that we
20 see in the study, that they didn't mark well.

21 Judge, I am aware that we are asking
22 this Court to break new ground in Ohio, but I am
23 also confident in saying that based on my
24 conversations with our experts, my conversations
25 with my colleagues, with the Innocence Project,

1 that no court in Ohio has ever received the
2 9expert testimony that this Court received this
3 week. And that's how the law changes. As the
4 science progresses, so, too, must the Courts.
5 And this Court has to step into its gatekeeper
6 role.

7 So we would ask the Court to grant our
8 motion in part, to limit the testimony to
9 identification of class characteristics. If it
10 would aid the Court, we can submit findings of
11 facts and conclusions of law. I know the State
12 wants to respond to the amicus. In any way we
13 can aid the Court, we are willing to do that.

14 THE COURT: You are certainly
15 welcome to do that. I would not be offended.

16 I sense you are about to sit down.
17 Before you do that --

18 MR. DiCHIERA: No, go ahead, ask
19 me questions.

20 THE COURT: Just one question
21 for you, really. Would doctor -- or Dean
22 Faigman appears to testify to his -- the
23 weakness in the study, but not to an advancement
24 in science. And you just indicated as science
25 advances, you know, we break new ground. But

1 have you given me an advancement in science to
2 consider?

3 MR. DiCHIERA: The advancement is
4 in the way that we are studying. So Ames I and
5 II are black box studies. The Houston lab study
6 was an attempt to see if you can really do blind
7 testing in a lab setting, right. They sent
8 samples and identified it as real casework so
9 the examiners would think -- not know that
10 they're taking a test, right, to eliminate that
11 potential bias, right.

12 So the science is improving in the way
13 that we test it and that's where the advancement
14 is. And I would say even in the Houston lab
15 study, the inconclusive problem still persisted.

16 THE COURT: So it's not so
17 much an advancement in science as it is a
18 study -- further study and further understanding
19 of the studies that we have?

20 MR. DiCHIERA: Right. Thank you.

21 THE COURT: Mr. McNair.

22 MR. McNAIR: Thank you, Judge.

23 THE COURT: I will tell you
24 before you start, Mr. McNair, I don't want you
25 to feel as though you have to respond to

1 Mr. DiChiera's comment that the State is going
2 to say that we could get our own expert, because
3 really that argument would fall on deaf ears.
4 Because that really isn't their point. They
5 know that they have access to the science.
6 They're questioning the validity of the science.

7 MR. McNAIR: Right, well, I am
8 definitely going to say that at some point.

9 THE COURT: You don't have to.
10 I am just telling you, you don't have to.

11 MR. McNAIR: I do want to take
12 issue, before I get into my slide deck, with a
13 couple of things that Mr. DiChiera just said.
14 So one was that the 2008 NRC report -- I forget
15 exactly how they phrased it -- and, Brant,
16 please forgive me if I am mischaracterizing what
17 he said. But basically that there was a lack of
18 studies before 2008. And that is simply not the
19 case. The 2008 report both itself documents a
20 variety of firearm and toolmark research done
21 prior to it, and you have in other exhibits,
22 specifically in Exhibits 901, 907, and 909,
23 chronological lists of firearm and toolmark
24 experiments that were conducted, including
25 experiments that were conducted prior to 2008.

1 THE COURT: Were they black
2 box?

3 MR. McNAIR: One of them -- the
4 2003 study by Bunch and Murphy was a
5 double-blind open set study on cartridge cases.
6 It was conducted on 10 examiners on cartridge
7 cases fired from Glocks. That's the one that
8 came to mind immediately. There may have been
9 others, but I remember that one in particular.

10 The second I think completely
11 incorrect point he made was trying to get a
12 sense of what the inconclusive rates should be
13 based on Ames I vis-à-vis Ames II. And these
14 studies were completely different in terms of
15 trying to figure out what the baseline
16 inconclusive rate should be. Ames I used
17 brass-cased ammunition. And you heard
18 testimony, and it is undisputed, that
19 brass-cased ammunition marks much more easily
20 than steel-cased ammunition. Ames I also used
21 Ruger firearms. And you heard testimony, and it
22 is undisputed, that Ruger firearms mark much
23 better in terms of being able to distinguish
24 case marks than Jimenez firearms that were used
25 to generate cartridge cases in Ames II.

1 Ames I also used randomly-acquired
2 firearms, whereas Ames II used
3 sequentially-manufactured firearms. And --

4 THE COURT: Let's stay on that
5 first point for just a minute, because I have
6 heard that now a few times.

7 MR. McNAIR: Which first point,
8 Judge?

9 THE COURT: The point that
10 they used difficult firearms. You are not
11 arguing, as I understand it, that this passes a
12 Daubert standard as it relates to easy firearms.
13 You are saying that this passed the Daubert test
14 for firearms generally. So I don't understand
15 why we say we have -- those were tough firearms.

16 MR. McNAIR: Well, I'm --

17 THE COURT: Tough ammunition.

18 MR. McNAIR: I am going to get
19 into this a little bit later about why the
20 difficulty of the design in Ames II is so
21 significant, especially as it relates to Dean
22 Faigman's complete lack of knowledge of firearm
23 and toolmark examination. And he acknowledged
24 that he has never performed or attempted to
25 perform one. He has never even observed one.

1 He is unfamiliar with different types of rifling
2 and retrace characteristics.

3 And so a lot of the things that are
4 significant, significant design details in Ames
5 I and Ames II and in other studies, are honestly
6 just lost on Dean Faigman because he is -- and I
7 don't mean to -- he is an obviously very
8 well-educated and bright person, but he is
9 hopelessly out of his depth when he is trying to
10 critique these firearm and toolmark studies.
11 And you heard him acknowledge, he admits to you
12 that he is not qualified to design one of these
13 studies on his own. And it is the lack of
14 knowledge about how firearm and toolmark
15 examination is done and all of the many, many
16 factors that go into it that makes him
17 completely unqualified to design one of these
18 studies on his own.

19 THE COURT: I understand that.
20 Listen, I appreciate your critique of Dean
21 Faigman. I do. And I think you have done it in
22 a way that's still respectful of him, and I
23 appreciate that.

24 But what I am getting at is this idea
25 that we ought to minimize negative outcomes with

1 emphasis on the difficulty of the exam. Because
2 I don't think you're proposing that toolmark
3 examiner expertise ought to come in in cases
4 where the equipment is easy to assess. You
5 would have me rule in your favor regardless of
6 what kind of firearm was used and what kind of
7 ammunition, I think.

8 MR. McNAIR: Exactly, Your
9 Honor. I would have you rule the same way the
10 Ohio Supreme Court and the Eighth District have
11 ruled, which is that this evidence comes in
12 regardless of exam difficulty. And when the
13 exam is difficult, the result that the examiner
14 reaches may very well be inconclusive. And I
15 will talk about that more in-depth in the slide
16 deck.

17 THE COURT: So your point is
18 just to say that it might lend itself to an
19 inconclusive finding?

20 MR. McNAIR: Well, my point
21 right now on Ames I versus Ames II is that you
22 cannot look to Ames I for a baseline
23 inconclusive rate and then contrast that with
24 Ames II because of the difficulty of Ames II and
25 because of all the other variables that are

1 different between those two studies, whether it
2 be the material of the cartridge cases -- even
3 the number of items that examiners received in
4 Ames I was greater than Ames II. And all those
5 different factors make it honestly just
6 completely unfair to look to Ames I and say,
7 well, this is a good indicator of what the
8 baseline inconclusive rate should be and so why
9 is it so much higher in Ames II.

10 THE COURT: And I understand
11 that point. What I was curious about,
12 Mr. McNair, is, you know, a world in which we
13 are maybe parsing out the firearms and
14 ammunitions that we feel comfortable having
15 these experts testify to. Would you go that
16 far?

17 MR. McNAIR: The results of
18 Ames II show that you do not need to parse out
19 what examiners can and cannot reach conclusions
20 on to a reasonable degree of forensic certainty.
21 Because -- and this just happened in a trial in
22 this courthouse while we were having this
23 hearing. When an examiner cannot reach a
24 conclusion, either in identification or an
25 exclusion, to a reasonable degree of forensic

1 certainty in their field, then their conclusion
2 is that it is inconclusive.

3 Kristen Koeth, another examiner in the
4 lab, testified earlier this week in an
5 aggravated murder trial where the defense was
6 self-defense. There were several projectiles
7 that were recovered from the decedent's body.
8 The defendant admitted to firing those
9 projectiles all from the same firearm. That
10 firearm was recovered and test-fires were able
11 to be generated from that firearm. And her
12 testimony in that case was that she had to
13 render an inconclusive finding with respect to
14 the projectiles recovered from the body.

15 And there are technical reasons for
16 that because the projectiles were made of a
17 blend of polymer and copper, and those
18 particular projectiles just don't mark that
19 well. But that is a perfect example of where
20 someone -- we know what the ground truth is.
21 And if she were subject to the cognitive bias
22 that the defense suggests she might have been,
23 she would also know what the ground truth is.
24 And yet she reached the appropriate forensic
25 finding, which was inconclusive.

1 THE COURT: So I understand
2 your answer to be then that it just lends itself
3 to inconclusive findings, but not wrong in the
4 sense that -- not inaccurate or incorrect
5 findings?

6 MR. McNAIR: That is correct,
7 Your Honor. And then just the last point
8 Mr. DiChiera said that State's 1041 showed an
9 inconclusive comparison. That is not what that
10 exhibit showed, and you will see it in the slide
11 deck. That actually shows two cartridge cases
12 that were fired from the same firearm, but it
13 shows how even the same ejector can mark
14 slightly differently based on the head stamping
15 or the case stamping of the base of the case.

16 So you have seen these before. These
17 are the defense claims. And I do appreciate
18 Mr. DiChiera's acknowledgement that they are
19 asking you to break new ground. And I have no
20 issue with defense attorneys asking courts to
21 break new ground. If Ernesto Miranda's attorney
22 had said, hey, you confessed, that's it, you
23 have to plead to a rape, then we wouldn't have
24 Miranda V Arizona. But that attorney was not
25 asking that judge to completely overrule binding

1 precedent in that Appellate District and in that
2 State Supreme Court. And that's what we have
3 here. We have both the Ohio Supreme Court and
4 the Eighth District saying this sort of evidence
5 comes in.

6 I am going to deal with our witnesses
7 in reverse order because Dr. Kukucka is I think
8 a little faster to dispense with. He
9 acknowledged to you that he was not here to
10 comment on the validity of the science. When I
11 gave him the example of what might cause
12 cognitive bias, I said, hey, if a detective
13 comes in and says one of these weapons is a
14 murder weapon, here are the items, tell us which
15 one is the murder weapon, he agreed that that
16 was I think a fantastic example of something
17 that would cause cognitive bias. And he didn't
18 characterize it as fantastic, but he said yes,
19 he would be very concerned that might cause
20 cognitive bias.

21 THE COURT: You thought it was
22 fantastic?

23 MR. McNAIR: I did.

24 THE COURT: It was one that
25 you came up with.

1 MR. McNAIR: Well, I am going
2 to circle back to that because you will recall
3 that Dean Faigman, when I gave him the same
4 example, he said no, that wouldn't cause
5 cognitive bias. And that is just another
6 example of how when he is outside of his
7 admittedly impressive, but very limited
8 wheelhouse, he gets the wrong answer.

9 Dr. Kukucka acknowledged that he was
10 not familiar with how the evidence was actually
11 examined in this case. And the reason I asked
12 him those sorts of questions was because we knew
13 that Mr. Kooser did not do the sorts of things
14 that Dr. Kukucka was concerned about, that he
15 did not know what the prior examiner's results
16 were, that he did not look at the factual
17 summary for the case.

18 He acknowledged that defense could
19 cure any of his concerns with their own
20 independent examination. And he said that both
21 in his testimony and in his written report. And
22 he acknowledged that State's Exhibit 907 was
23 probably a good example of the sort of
24 preregistration that he was talking about for
25 Ames II, which is State's Exhibit 908.

1 And then on the quantification issue,
2 he took issue with the lack of quantification
3 that appeared both in the notes of the firearm
4 and toolmark examiners and their final report,
5 but he acknowledged when shown this exhibit
6 that, yes, we could, in fact, go through and
7 count line by line every time it changes from
8 light to dark, all the striae. If we really
9 wanted to quantify each of these comparisons, we
10 absolutely could. It would take a very long
11 time because there are a lot of points of
12 similarity, but we could do it.

13 Let's move on to Dean Faigman.

14 THE COURT: Let me stop you
15 for a second. Just in reading through some of
16 what you all have submitted in your briefs, you
17 know this idea of the objective versus
18 subjective, there wasn't much inquiry in this
19 hearing about this idea of why don't we count
20 them. And I brought it up for both counsel to
21 digest before closing arguments, that issue. I
22 think your response at the time, Mr. McNair -- I
23 don't want to hold you to it, but it was
24 something like that's not a concern of the --
25 what was the first study? Not the first study,

1 but the study preceding Ames.

2 MR. McNAIR: Well, there are
3 several studies that preceded Ames.

4 THE COURT: When I asked the
5 question, I thought you might say that.

6 MR. McNAIR: Are you talking
7 about PCAST?

8 THE COURT: Maybe it was
9 PCAST, yes. You were referencing PCAST. We
10 were off the record. We were having a
11 conversation off the record about some of the
12 Court's concerns. And you said in PCAST that
13 there's no number given, so it's -- and there's
14 no qualms about the fact that it is left
15 nonobjective.

16 MR. McNAIR: I remember this
17 portion of our discussion now, yes.

18 THE COURT: And just in
19 looking at some of the case law, both inside of
20 the district and out, there is a lot of
21 discussion about the lack of objectivity.

22 MR. McNAIR: So the objectivity
23 is in a couple of components. First, it is in
24 the class characteristics and the subclass
25 characteristics. Those are objective components

1 of any item when they're looking for firearm and
2 toolmark analysis. And although it is not
3 documented, these either impressions or striae
4 when examiners are looking at them are
5 objective. I mean, the number of striae that
6 are there are objective. We could sit here and
7 we could go through and count them, and we
8 don't.

9 And it may be that in the future that
10 scanning microscopy allows us to get some quick
11 and accurate count of all of those individual
12 marks. But until that technology is developed,
13 right now we rely on trained examiners to know
14 when there is sufficient agreement between two
15 items. And as you heard from testimony and as
16 you will have in the exhibits, that agreement is
17 closer agreement than two items produced from
18 consecutively-manufactured tools.

19 THE COURT: I understand the
20 standards. It's interesting.

21 MR. McNAIR: Well, and in that
22 vein, it is similar in that sense to the
23 evolution of DNA analysis, where DNA analysis is
24 now largely done, especially within this county,
25 by computers where they are computer likelihood

1 ratios. I know you have been practicing long
2 enough to know that it was not always done that
3 way. It was a hand-and-eye comparison where
4 they were looking at the peaks on
5 electropherograms and deciding is there
6 sufficient agreement between these
7 electropherograms.

8 THE COURT: Do you know that
9 even then, Mr. McNair, each lab had its own
10 standard?

11 MR. McNAIR: I do. And they
12 would have different cutoff thresholds. Some
13 labs would only consider amounts above or below
14 certain levels.

15 THE COURT: And here we have
16 no standard.

17 MR. McNAIR: Well, here we do
18 have a standard.

19 THE COURT: Well, an objective
20 standard.

21 MR. McNAIR: Judge,
22 respectfully I disagree.

23 THE COURT: Help me
24 understand.

25 MR. McNAIR: Here we do have an

1 objective standard.

2 THE COURT: Help me
3 understand.

4 MR. McNAIR: So here the
5 objective standard is, when these firearm and
6 toolmark analysts are being trained, in a way it
7 is looking -- it is almost like the reverse of
8 how counterfeit detection agents in the Secret
9 Service are trained. And so I am not sure if
10 you encountered this in your federal practice at
11 all, but when those agents are trained, you
12 would think that they would look at a series of
13 fake bills and be able to -- you know, they
14 learn kind of what telltale signs to look for.

15 They actually do the opposite. They
16 just study the real notes, the real Federal
17 Reserve notes extremely intensely. And so when
18 they examine a note that does not have all the
19 things that it should have that they almost
20 intrinsically know should be there, it jumps out
21 at them and pops out at them.

22 And here in the firearm and toolmark
23 field, you have examiners who are trained, look,
24 this is how similar two things can look when
25 they are produced by consecutively-manufactured

1 tools. If we take a barrel off of the assembly
2 line and then we take the very next barrel off
3 of the assembly line, that is as close as we
4 will possibly get to having identical marks,
5 unless they came out of the same barrel. And so
6 if you see something that is closer than this
7 over a wide variety of examples in training --
8 and you heard testimony from Dr. Hamby about how
9 he even tries to inject cognitive bias into
10 training -- then you know that they're in
11 sufficient agreement.

12 And if this were so amorphous, if this
13 were so wishy-washy and kind of voodoo science,
14 then why don't we have more defense teams hiring
15 their own experts to say no, no, no, these were
16 fired from two completely different guns. Or
17 even to say what they found to be an
18 identification, what the State's witness says is
19 an identification based on my review is
20 inconclusive. Because you will recall that for
21 a very long time, we did see more independent
22 challenges to DNA when it was an arguably more
23 subjective standard. But we don't see that with
24 firearm and toolmark analysis.

25 THE COURT: Mr. McNair, I

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1 understood everything you said just now. And
2 let's be clear, you're right, this is settled in
3 Ohio, right. The question is am I willing to
4 break new ground. I'm sure you know from your
5 review that there is very little argument that
6 this is objective. The only question is, is it
7 subjective, but subjective and does it still
8 pass muster. I haven't heard -- well, I haven't
9 read a lot of lawyers in their briefs or judges
10 in their rulings saying that this is objective.
11 It seems like you are suggesting that.

12 MR. McNAIR: I am suggesting
13 exactly what you heard, that there are
14 components of this that are objective and that
15 there are things that if you wanted greater
16 quantification, we certainly could get to an
17 objective number such as with this exhibit
18 that's on the screen.

19 And the point from our earlier
20 discussion that I was making was that that
21 difference about whether this is objective or
22 subjective or kind of where in the examination
23 that line is, is that has never been a concern
24 for either PCAST or Dean Faigman or anyone else
25 who has criticized this field. The critique of

1 the field is not based on whether it is
2 objective or subjective. The critique of the
3 field, at least from Dean Faigman's point of
4 view, is based on what he believes the current
5 research shows or does not show.

6 THE COURT: And, listen, I
7 started my question of you just now by
8 acknowledging that that really hasn't been a
9 part of our record much. It's been sort of an
10 aside. And that's fine. You know, I don't say
11 that to be critical of either of the parties.
12 I'm just saying that in my reading and in my
13 understanding of the case law, that is a part of
14 the objection to the science, is that you can't
15 replicate it because -- or it's not as easily
16 replicated because you are not looking at
17 numbers. You can't standardize it because we
18 are not looking at numbers.

19 MR. McNAIR: I completely
20 disagree that it is not as easy to replicate.
21 Looking at firearms and toolmarks I think is
22 more replicable than DNA analysis. I mean, DNA
23 a lot of times you consume it.

24 THE COURT: Yeah, I think I
25 shouldn't say can't be replicated. It can't be

1 quantified and can't be done so in an objective
2 way. In other words, you could show a thousand
3 scientists porn and they will all tell you it's
4 porn, so you will have a replicated response
5 it's porn. And our standard for what's porn is
6 you'll know it when you see it. And that seems
7 about like what this is.

8 MR. McNAIR: I am actually
9 going to push back on that a little bit. Potter
10 Stewart said that about obscenity, not about
11 pornography.

12 THE COURT: I know, I used the
13 term porn. Obscenity. You will forgive me.
14 Everywhere I said porn, insert the word
15 obscenity.

16 MR. McNAIR: I take your point,
17 Judge. I guess my point back to you is that
18 that is not their basis for trying to have this
19 evidence excluded and that is not the basis on
20 which any other court has excluded this
21 evidence. At least to my knowledge. If you
22 know the case where this evidence has been
23 excluded on that basis, I welcome learning about
24 it. But I don't know of any example where this
25 has been excluded on that basis.

1 And my point about PCAST being fine
2 with or not making an issue of whether it is
3 objective or subjective was that that was really
4 not their concern. When they were talking about
5 foundational validity -- and I will get back to
6 that or deeper into that a few slides from
7 now -- their concern was not whether this is
8 objective or subjective. Their concern was how
9 well has it been tested. Regardless of whether
10 it's objective or subjective, how well has this
11 been tested. And what does that testing tell us
12 about how much we can rely on witnesses when
13 they come into court.

14 Just before I move on, Judge, any
15 other questions on that point?

16 THE COURT: No, no.

17 MR. McNAIR: So you heard from
18 Dean Faigman -- and this is essentially his
19 claim. I read this line to him and asked him if
20 he agreed with it and he did, that the research
21 literally does not support the ability to match
22 a cartridge case or bullet to a particular
23 firearm. As I stated, I gave him the same
24 cognitive bias example that I gave to the
25 cognitive bias expert. Dean Faigman's testimony

1 was that that example would not produce
2 cognitive bias. And that is just one example
3 of -- again, not that he is not a bright guy,
4 but he is out of his depth when he is out of his
5 field.

6 I gave him State's Exhibit 910, which
7 was a list of the post PCAST studies. And you
8 will have that in evidence and you will see that
9 he only highlighted, I don't know, maybe a dozen
10 of the more than 50 studies that were in there.
11 And the reason I did that is because his
12 testimony is this: He's telling you that based
13 on the research into this field, the research
14 does not support the ability to do this. But
15 when he highlights what research he's actually
16 reviewed, it's not all of the research. There
17 is a vast, vast amount of research that he is
18 simply unfamiliar with. And so it's strange
19 credibility for him to say that the research
20 doesn't support this when he's not even familiar
21 with what all the research is.

22 THE COURT: And I'll tell you,
23 Mr. McNair, I don't put a lot of credence in
24 that. You sort of put him on the spot and gave
25 him a highlighter while testifying and asked him

1 to look at the names. And I think his first
2 answer was I don't remember them by name, but I
3 will endeavor to engage in this and so he did.
4 I don't think that that's evidence that he's not
5 well-read in the field or evidence of much
6 weight to this Court.

7 MR. McNAIR: Even if you double
8 it and he's familiar with half of the studies,
9 that still leaves half of the body of research
10 into this field that has been done since PCAST
11 that he is not familiar with.

12 THE COURT: I hear you.

13 MR. McNAIR: And then
14 separately we have even the value to place on
15 PCAST. As you know, PCAST was not accepted by
16 the then president or Attorney General. There
17 is a post PCAST response from the Department of
18 Justice that you will have as State's Exhibit
19 909, and that report basically makes this face
20 at PCAST the whole time. And it goes through
21 and it takes issue with a lot of the things that
22 PCAST does and says. It dissects how some of
23 the references that PCAST relies on don't
24 support the claims that PCAST makes.

25 And I am not going to bore you with

1 all of these details. You will have State's
2 909. But it does a fairly detailed takedown
3 showing that PCAST makes this claim based on
4 this source of reference, and that is not what
5 that source of reference supports.

6 And it does that in particular with
7 foundational validity and this whole notion of
8 foundational validity. It really takes PCAST to
9 task for saying that it reviewed more than 2,000
10 studies and experiments and found only three of
11 them to be of any merit. Two in fingerprints
12 and one in firearm and toolmark examination.
13 And just think about that for a moment, to
14 say -- to look at this enormous body of research
15 and to say that less than a tenth of a percent
16 of it is worthy of our consideration.

17 And then it takes issue with the
18 conditions that PCAST sets on any study that can
19 provide foundational validity, such as Ames I or
20 Ames II. It takes issue with the fact that
21 those conditions are nonseverable. It takes
22 issue with the fact that those conditions are
23 really not novel standing on their own. And it
24 goes through how the limits that PCAST puts on
25 research in order for it to consider that

1 research as contributing to foundational
2 validity are just not realistic. And I will
3 talk about that a little more in detail.

4 Dean Faigman acknowledged that he
5 wasn't qualified to design an appropriate study
6 into firearm and toolmark examination on his
7 own, that he was unfamiliar with different types
8 of rifling. We have talked about these other
9 points, that he's never performed or observed
10 firearm and toolmark examinations.

11 And his main point is that
12 inconclusives should be counted as errors. And
13 this is really the thrust of their argument,
14 it's the thrust of the Innocence Project's
15 argument. This needs to be true in order for
16 them to have a leg to stand on, that
17 inconclusives unequivocally have to be counted
18 as errors. And so I am going to go through why
19 they're not.

20 First of all, this is a
21 bait-and-switch. To now come in and tell you
22 and any other judge, hey, we should count
23 inconclusives as errors is a complete
24 bait-and-switch. And that is because PCAST
25 never makes Dean Faigman's claim. PCAST says

1 what to do with inconclusives. It says to just
2 take them out of both the numerator and the
3 denominator. And you heard Dean Faigman
4 acknowledge that when you do that, the error
5 rate goes from under 1 percent to between 2 and
6 3 percent. But that is still under the
7 5 percent threshold that PCAST says is good. He
8 doesn't cite to any other study that actually
9 counts inconclusives as errors. That is to say
10 he doesn't cite to a medical study or a DNA
11 study or a fingerprint study or something else.
12 Just something else out there in the scientific
13 world where whatever testing they're doing they
14 count inconclusives as errors.

15 THE COURT: Well, what he's
16 talking about is inconclusive when we know that
17 the right answer should not be inconclusive.

18 MR. McNAIR: I am going to talk
19 more about that in just a moment.

20 And that it is simply not mainstream
21 science to count inconclusives as errors. And
22 he told you it was him and -- you heard both
23 from him and from Dr. Hamby, it is basically a
24 small handful of academics who are making this
25 argument. And they are making it really just in

1 opinion pieces. Again, there's no study that
2 they ever designed and executed where they count
3 inconclusives as errors. It is just a small
4 handful of academics arguing that we ought to.
5 And that small handful of academics does not
6 include the other 32 people who are on PCAST.

7 And you have heard Dean Faigman
8 acknowledge -- and I think it was a damning
9 acknowledgement. He's in here telling you that
10 this is a massive problem. This is a problem
11 that completely undermines the reliability and
12 the validity of fairly critical evidence in a
13 lot of serious criminal court proceedings. And
14 he has never gone back to any of the 32 people
15 who were on PCAST to tell them, hey, maybe we
16 should write an open letter, or what do you
17 think about this position, do you agree with me,
18 will you sign an open letter with me, will you
19 write a paper with me.

20 THE COURT: How do you know
21 that to be true?

22 MR. McNAIR: That was his
23 testimony.

24 THE COURT: That he's never
25 spoken with people about this problem?

1 MR. McNAIR: Yes. I asked him
2 that. I specifically asked him have you ever
3 gone back to any of the other 32 other folks on
4 PCAST and say, hey, that report that we gave the
5 president, there's a massive freaking problem in
6 that report and we should be counting
7 inconclusives as errors.

8 THE COURT: I don't remember
9 that testimony. I can look at my notes. But I
10 thought that even Dr. Hamby went on to say that
11 there is another doctor who was instrumental in
12 the PCAST procedures and he, too, has come out
13 and said I agree with Dean Faigman. I think his
14 name was Salyards.

15 MR. McNAIR: I don't believe
16 there's a Dr. Salyards in PCAST, but Mr. Maver
17 can look at the list of names right now.

18 THE COURT: Do you not
19 recall -- I don't want to put you on the spot,
20 but Dr. Hamby --

21 MR. McNAIR: I remember him
22 talking about another doctor whose name started
23 with S. I don't recall the specific name.

24 THE COURT: Salyards.

25 MR. McNAIR: Okay.

1 THE COURT: So I got the sense
2 that Dr. Faigman -- Dean Faigman had
3 attempted -- this isn't terribly relevant, but
4 just as an aside.

5 MR. McNAIR: I think it is
6 pretty relevant. I think it says something that
7 when he was on PCAST, that he was totally fine
8 with not counting inconclusives as errors and he
9 was totally fine with Ames I being an
10 appropriately-designed study that establishes
11 the foundational validity of firearm and
12 toolmark examination. And now he is being paid
13 \$425 an hour and he has a very different view.

14 THE COURT: Yeah, so that's a
15 bridge too far. You are suggesting -- and I was
16 hoping you weren't making this suggestion --
17 that this is disingenuous on his part?

18 MR. McNAIR: I don't think it's
19 disingenuous on his part. I think that he
20 genuinely believes what he's telling you.

21 THE COURT: Well, then that's
22 not affected by how much he was paid. So let's
23 not attack his credibility in that way.

24 MR. McNAIR: Well, Judge, you
25 were the first one to ask about whether the

1 amount that somebody was being paid might be a
2 form of cognitive bias.

3 THE COURT: No. You asked a
4 question, I made a joke about it. Because I
5 think all of these people are going to do the
6 right thing regardless of the few hundred
7 dollars an hour they make to testify. So when
8 you asked that of the cognitive bias expert, I
9 made a joke because I wanted to make certain
10 that everybody was clear that I wasn't going to
11 be giving any weight to the fact that they had
12 been paid, so I wanted to introduce some levity
13 around the issue. I am not going to disregard
14 any of these experts, certainly not Dr. Hamby or
15 Dean Faigman or -- Kukucka?

16 MS. ESARCO: Yes, Your Honor.

17 THE COURT: -- for the fact
18 that they were paid. As practitioners, we know
19 that we have to pay experts to get them to come
20 in to testify. That's what you do. If your
21 point is to say that for other reasons, reasons
22 having to do with -- maybe with what the dean
23 acknowledged, having to admit that he was wrong,
24 or if you want to say that he's wrong now, so be
25 it. But I don't think it's fair to suggest that

1 he's made this up because he was going to get
2 \$400 to fly to Cleveland.

3 MR. McNAIR: No, I am not
4 suggesting Dean Faigman is -- well, I guess let
5 me put it this way. I believe that Dean Faigman
6 believes that what he is saying now is correct
7 and he acknowledged that what he said or what he
8 agreed to with PCAST was incorrect. But my
9 point is that if this is such an obvious error
10 that other scientists should so readily agree
11 with, why has he not gone back to any of the
12 other members of PCAST and said, hey, we made an
13 obvious error in this report to the president of
14 the United States and we should come out and
15 correct that. And he said he had not done that.

16 THE COURT: Yeah, I'm not
17 going to argue the point. I don't remember that
18 inquiry. Like I said, I will go through my
19 notes. I don't think it's a controlling issue
20 here, though.

21 MR. McNAIR: And Mr. Maver has
22 indicated to me that the name of the doctor you
23 mentioned that starts with S is not in PCAST, so
24 that must have been some other association he
25 had. I am not sure.

1 THE COURT: It was Dr. Hamby
2 who testified that --

3 MR. McNAIR: I remember him --

4 THE COURT: -- Dr. Salyards
5 had both taken this position and he disagrees
6 with it.

7 MR. McNAIR: I remember him
8 testifying about another doctor who had that
9 same position, but that doctor based on what
10 Mr. Maver is telling me does not appear in PCAST
11 or is not -- is not one of the 33 people who
12 drafted or revised on PCAST. And then again he
13 does not cite to any other field that counts
14 inconclusives as errors. There's no other field
15 he points to to say, look, when the FDA does
16 studies of medications or medical devices,
17 inconclusives or errors, there is -- this is
18 simply a notion that they come up with almost
19 out of nowhere.

20 This point that inconclusives have to
21 be allowed in casework, I don't think there's
22 any disagreement on that. I don't think any
23 reasonable person could come in here and tell
24 you that in casework, examiners must reach
25 either an identification or an exclusion on

1 every piece of evidence. Because that is not
2 practical. We don't see that in any forensic
3 discipline, not even in DNA. There is no
4 dispute that this last point is true, that
5 inconclusives must be allowed in casework. And
6 it's going to be important in just a moment
7 here.

8 THE COURT: You are talking
9 about a world where we know that inconclusive is
10 the wrong answer?

11 MR. McNAIR: Well, inconclusive
12 is not the wrong answer, Your Honor. Even in
13 Ames I and II. And I am going to talk about
14 that in just a moment here. And I understand
15 your point, and that is Dean Faigman's point,
16 but his lack of knowledge of how firearms impart
17 marks onto cases and bullets is significant.
18 And he acknowledges that his lack of knowledge
19 in that field is significant. And it is that
20 lack of knowledge that is creating this blind
21 spot where what he thinks is an error is, in
22 fact, an absolute necessity, even when we know
23 ground truth in an experiment.

24 You were asking about this earlier and
25 I want to make a couple of points now about how

1 these studies were designed to be much harder
2 than casework. In Ames II, you had steel-cased
3 ammunition. It is undisputed that steel-cased
4 ammunition does not receive marks nearly as
5 easily as aluminum or brass-cased ammunition.
6 And also that brass-cased ammunition is the most
7 frequently encountered ammunition in the actual
8 casework.

9 So even just on the choice of
10 materials that was used in Ames II, Ames II was
11 much, much harder than actual casework. And
12 that is important because what these studies are
13 trying to test, what they are trying to get at
14 is what is the actual error rate in casework.
15 How likely is it that some examiner could come
16 into court and say something that could
17 potentially lead to a wrongful conviction. That
18 is what we really care about here. And so the
19 fact that these experiments were so much harder
20 than actual casework is extremely important
21 because it shows that, if anything, these
22 experiments are going to overshoot the actual
23 error rate.

24 You heard testimony that they used
25 poorly-marking firearms. And they used one set

1 of firearms for the cartridge cases. For the
2 cartridge cases, they largely controlled the
3 difficulty of the marks by using steel cases.
4 They used other firearms for the bullets. And
5 you heard testimony that the Jimenez firearms in
6 particular are very, very poorly-marking
7 firearms. They're just low quality. And there
8 is not enough consistency of marks shot to shot
9 from those firearms oftentimes to make an
10 identification.

11 There was also a complete lack of a
12 second examiner validating any of their work.
13 And you heard testimony from Mr. Kooser that one
14 of the ways that they check off on their work
15 before anybody comes into court and could
16 potentially say the wrong thing is having a
17 second examiner look at it. And if they have
18 some point of disagreement, then they talk
19 through it. And they will both look at the
20 evidence and if they can't reach an agreement,
21 then they have a separate procedure for that.

22 And here you just have one examiner
23 looking at incidentally a very small number of
24 items. And that is important because in this
25 experiment -- and I am talking specifically

1 about Ames II now -- they only received three
2 items. Whether it was bullets or cases, each
3 test examiner would receive two items that they
4 were told were fired from the same firearm and
5 then a third item that either was or was not
6 fired from the same firearm.

7 As you know just from presiding as a
8 judge or your experience in practice, it is
9 unusual that we have only three items in any
10 firearm and toolmark comparison. Sometimes we
11 have only three, sometimes we have only two, but
12 usually we have a lot more. And I say this
13 because when you look at all of these factors
14 together, you see just how much harder Ames II
15 was designed to be than actual casework. And
16 when we are -- when what we are trying to do is
17 measure the actual error rate of examiners who
18 are going to come into court, that is
19 significant. The fact that this is so much more
20 difficult than anything they do before they come
21 in here and sit in that chair is significant.

22 You also heard that in Ames II, all of
23 these items were produced from
24 consecutively-manufactured firearms. And that
25 is important because as you know that is the

1 closest association that we will ever have
2 between any two items. And it is vanishingly
3 unlikely. Even Dean Faigman acknowledged it is
4 vanishingly unlikely that any examiner in actual
5 casework will examine items that are so closely
6 related.

7 Every single comparison was designed
8 to be difficult. The examiners had very little
9 information. They had extremely difficult
10 items. Everything about Ames II was designed to
11 put them under as much possible pressure as they
12 could. And you will see how this differs from
13 casework. You will have State's 953. That's
14 the firearm and toolmark report from this case.
15 And you see that in actual casework, frequently
16 not only are there many more items, are there
17 items more suitable materials from
18 better-marking firearms, but also in casework
19 there are a lot of gimme's, you know. And so
20 when you have a projectile that's fired from a
21 barrel with cut rifling and a projectile fired
22 from polygonal rifling, that's an easy gimme.
23 That's an easy elimination.

24 THE COURT: Mr. McNair, I
25 understand every point you are making with

1 respect to this slide, but it just strikes me
2 that the title is wrong. It shouldn't say why
3 inconclusive is not an error. It should say why
4 inconclusive may occur. Why these errors may
5 occur in this study. But to say why
6 inconclusive is not an error and then to say
7 look how hard the test was, I am failing to
8 understand.

9 MR. McNAIR: Part of this --
10 well, not -- there are several more slides all
11 on this topic.

12 THE COURT: Maybe there's
13 more, but looking at this slide, what I see is
14 very valid points as to why this is not a real
15 world study, and how in the real world you
16 wouldn't have any of these things. And so it
17 would be fewer errors. But in terms of why
18 inconclusive is not an error, that seems like a
19 misnomer for the slide.

20 MR. McNAIR: Well, I am going
21 to get into this in a little bit, but I will
22 give you a preview now. Part of why
23 inconclusive cannot be an error is because you
24 are trying to measure the actual error rate that
25 occurs in the real world. And there is no other

1 forensic discipline in which when we experiment
2 on that discipline and try to test its validity,
3 where we remove potential conclusions from the
4 experiment. And in firearm and toolmark
5 examination, you have effectively six possible
6 conclusions. You can have an identification, an
7 exclusion, there are three different types of
8 inconclusives, and then you can have a finding
9 of unsuitable. And to remove half of the
10 potential conclusions that a forensic witness
11 could reach is simply not fair in some sense.

12 THE COURT: Listen, I don't
13 disagree with that point. That's not lost on
14 me. But just take a look at your slide and ask
15 yourself does this -- does this list, this
16 bullet list of things that made this study
17 untenable, remarkably difficult, does it mean
18 that these were not errors. I am not suggesting
19 for purposes of this exchange with you that I
20 believe all inconclusives should be counted as
21 errors. I want you to understand that. Maybe
22 put your guard down a little bit. I am not
23 saying that. I am not saying I necessarily
24 agree with Dean Faigman. I am just saying these
25 are explanations for why an error might occur.

1 If we have as ground truth -- that's the
2 starting point. Ground truth is really A or B.
3 There wasn't a trinary choice. Ground truth was
4 that it was either A or B, right?

5 MR. McNAIR: Yes. I want to
6 respond to your question and I will preface my
7 response by saying I have not yet reached my
8 final form on this issue. There are more
9 slides. But my other point would be what
10 reasonable person, what reasonable experiment
11 designer could look at all of these factors in
12 the experiment and say, you know what, not only
13 are we going to do this, we are going to take
14 away half of your possible conclusions. In what
15 possible world does that fare in any forensic
16 discipline?

17 THE COURT: Well, I don't
18 think he was suggesting that we would take
19 inconclusive away from them as a possible
20 conclusion. I think he's just saying we would
21 grade it as a wrong answer.

22 MR. McNAIR: That gets back to
23 this being a bait-and-switch. Because when Ames
24 I was performed and when all the other studies
25 before Ames I were performed and when all the

1 studies that you'll have in State's 910 were
2 performed, nobody was arguing that inconclusives
3 should be counted as errors. And you have Dean
4 Faigman and Dr. Salyards --

5 THE COURT: Salyards.

6 MR. McNAIR: -- Salyards and
7 another fairly small group of academics making
8 that argument, but it's a pretty small group.
9 And, again, they don't point to any other field
10 where inconclusives are counted as errors. They
11 don't say, look, in this FDA study where we know
12 ground truth inconclusives are counted as
13 errors. They don't point to a treatise where
14 that is an acceptable or a widespread practice
15 in research methodology.

16 They are making this very limited
17 argument in this very limited field. And they
18 don't tie that to any other field. They are
19 trying to excise firearm and toolmark
20 examination for I don't know what reason and say
21 in this field, and apparently in this field
22 alone, inconclusives should be counted as
23 errors. And my point with this slide is that is
24 not fair. And it is not fair to require someone
25 to design an experiment where inconclusives are

1 counted as errors when that, one, is not widely
2 accepted, and is not done in any other field.

3 THE COURT: I get it and I
4 certainly get your bait-and-switch because you
5 are after the fact telling them, oh, we are
6 going to take your answers where you said
7 inconclusives and we are going to count them as
8 wrong without having told them that ahead of
9 time. I understand that. I understand that.
10 My only complaint was that it seemed like what
11 you were really doing here was being critical of
12 the test because you are saying it's difficult.

13 MR. McNAIR: No. I am critical
14 of the notion that you are going to design an
15 experiment that is difficult and then take away
16 half of their conclusions.

17 THE COURT: You are getting
18 ready to move from the slide, and I only assumed
19 you were because there's no more room left.

20 MR. McNAIR: I think we are at
21 the last line, Your Honor.

22 THE COURT: So I didn't want
23 you to move on and not have asked you the
24 question.

25 MR. McNAIR: Well, and again,

1 my point is in what other forensic discipline --
2 or not even any other forensic discipline. In
3 what other discipline generally would we tell
4 someone, hey, these are the six answers that you
5 are normally allowed to give in the real world
6 and we want to test how well you are performing
7 in the real world. And not only are we going to
8 make this test extremely difficult, we are going
9 to take away half of the answers you are allowed
10 to give. Because we all agree that they have to
11 be able to say inconclusive in the real world.
12 That must be an acceptable answer in every
13 forensic discipline.

14 THE COURT: The problem,
15 though, Mr. -- I want to let you move on, but
16 the problem is --

17 MR. McNAIR: I am not sure you
18 do, Judge.

19 THE COURT: Well, the problem
20 is nobody is suggesting that you should tell
21 them that they can't choose inconclusive. The
22 problem is according to the group who created
23 this study -- and I understand that you are
24 saying it was an unbelievably difficult study,
25 but the problem is you want them to be free to

1 say inconclusive, but you have given them
2 materials that should lead to a conclusion.
3 See, that's the problem. And --

4 MR. McNAIR: But --

5 THE COURT: Hold on. You
6 know, the example I gave Dr. Hamby was --

7 THE COURT REPORTER: Your Honor, I'm
8 sorry --

9 MR. McNAIR: Sorry, I was
10 coughing.

11 THE COURT REPORTER: The example I
12 gave Dr. Hamby?

13 THE COURT: The example I gave
14 Dr. Hamby was that you, Dr. Hamby, would be the
15 arbiter of truth and you have determined that
16 this is ground truth and you send them out with
17 ground truth in your pocket. And ground truth
18 is that it's positive or it's negative -- what's
19 the proper term? Conclusive or?

20 MR. DiCHIERA: Identification or
21 elimination.

22 THE COURT: So you have
23 determined that inconclusive is not accurate.
24 You have done it with great difficulty. You
25 have done it through all of the struggles that

1 you talk about with the refiring and the carbon
2 buildup and everything else. But you have
3 determined, Dr. Hamby, an expert in the field,
4 that the answer here is X and they're coming
5 back with Y.

6 So by that simple analysis, you are
7 not telling them they can't go with Y, right.
8 They're allowed to choose Y. It just so happens
9 it's the wrong answer. Now, that's not to say
10 that you should necessarily conclude
11 inconclusive as a wrong answer. But in an
12 instance where you have given them all the
13 materials and you determined ahead of time the
14 right answer is C and they go with B, it's hard
15 to say that B was the right answer.

16 MR. McNAIR: Judge, that is a
17 perfect segue to my next slide, and I am going
18 to explain why much of what you just said was
19 mistaken. And Dr. Hamby testified about this
20 point, that even if the experiment designer
21 knows what ground truth is, you heard his
22 testimony that it may not be possible for even a
23 well-trained, well-qualified, very experienced
24 examiner to distinguish between or to make a
25 conclusive finding on two items that were

1 produced by the same tool.

2 THE COURT: Let's pause there
3 for a minute. I think that's a great point. I
4 think that's a great point. And I say this and
5 I will give you both a chance to respond to it.
6 I think that's a great point, but -- and maybe I
7 am making the false assumption here. My
8 assumption is that they're doing it not from
9 firing a bullet from a gun and going and putting
10 it in a box and saying go evaluate this.
11 They're looking at these things and making a
12 determination. Again, we say ground truth, but
13 ground truth based on an examination. So I'm
14 assuming that the examination of these materials
15 was done by the Dr. Hambys of the world and then
16 it's sent out with the knowledge of what the
17 right answer is.

18 MR. McNAIR: No, that is
19 absolutely not how Ames I and II were designed.
20 And when you look at Ames I and II and when you
21 look at the exhibit we have, State's 907, which
22 explains how Ames II was set up, that is
23 absolutely not how Ames I and II were designed.

24 THE COURT: So we started
25 talking about this the other day and I want us

1 to -- you talk about baseline truth. I want us
2 to have a baseline truth.

3 Were they given materials that a
4 Dr. Hamby had looked at and determined what the
5 baseline truth was, or were they just given guns
6 and bullets?

7 MR. McNAIR: Well, they weren't
8 given guns. They were given cartridge cases and
9 bullets. But, no, the way these were
10 conducted -- and I am going to get into this
11 because this is critically, critically
12 important.

13 THE COURT: And I am going to
14 give Mr. DiChiera an opportunity to chime in in
15 just a moment.

16 MR. McNAIR: Certainly. As I
17 told you before, I think that these sorts of
18 conversations are the most productive,
19 especially in an issue that can be confusing.
20 Dean Faigman's position requires --

21 THE COURT: Stop. I want to
22 have a baseline understanding. I want to have
23 ground truth as to what happened. Did they give
24 them cartridges and bullets that they examined
25 and determined were fired from the same gun and

1 then they sent it out, or did they just fire a
2 bullet from a gun and give out the shell
3 casings?

4 MR. McNAIR: So I think the
5 phrasing of your question reveals a
6 misunderstanding -- or a potential
7 misunderstanding on Dean Faigman's part, that
8 even someone who is quite bright I think cannot
9 fully appreciate the significance of how these
10 test items were provided. In Ames I, the items
11 were fired in sequences of 100 and then an
12 examiner would receive items from that sequence
13 of 100, but it would not necessarily be the
14 first, second, and third item. They could
15 receive items 15, 50, and 85. And then in Ames
16 II, similarly, items were generated in sequences
17 of 50 and the examiner would not receive
18 sequentially-created items. And there are a
19 whole host of downstream effects from that.

20 THE COURT: Mr. McNair, I'm
21 sorry, I think you are underestimating my
22 ignorance. We know they were fired from the
23 same gun. We, as the creators of the
24 examination. My question is, did they look at
25 the materials first before sending them out?

1 MR. McNAIR: No.

2 THE COURT: That's the
3 question. And that's the question I want to
4 give Mr. DiChiera a chance to respond to also.

5 So when you are talking about ground
6 truth, ground truth obviously is that there was
7 a gun and they fired a bullet from it and took
8 the shell casing and they do their work. So we
9 know that was fired from the same gun. The
10 question is, before they sent it out, did they
11 examine what they were going to send out and
12 determine as a ground truth that someone
13 qualified in this field ought to be able to
14 determine the right answer? Do you understand
15 the difference in the question?

16 MR. McNAIR: I understand your
17 question, and they did not do that.

18 THE COURT: So you are
19 suggesting they just fired it, put it in the
20 box, sent it out without ever looking to see,
21 oh, was this mangled, was it -- they didn't look
22 at it themselves and determine based on their
23 expertise in the field anyone ought to be able
24 to say yea or nay?

25 MR. McNAIR: That's correct,

1 Your Honor. There was no microscopic
2 prescreening of the test items before they were
3 sent out, so there was no one who -- there was
4 no one like Dr. Hamby who, before the items were
5 sent out, can say Ames II looked at them under a
6 microscope and determined whatever, that these
7 two bullets didn't rub up against each other in
8 the water tank and make some additional marks
9 that might be confusing to an examiner, or that
10 these two bullets are, in fact, distinguishable
11 as having been fired from a different firearm,
12 or even that these two bullets are identifiable
13 as having been fired from the same firearm.

14 THE COURT: Mr. DiChiera, do
15 you agree with that?

16 MR. DiCHIERA: So I guess just to
17 clarify --

18 THE COURT: Do you understand
19 my question? Because I think there's been a
20 misunderstanding about what my question was.

21 MR. DiCHIERA: I understand your
22 question correctly. You are saying before the
23 bullets or cartridges were sent out, were they
24 microscopically examined?

25 THE COURT: Yes.

1 MR. DiCHIERA: The answer to that
2 is no. The examiners knew which were known and
3 which -- sorry, the research designers knew
4 which were known and which were questioned. But
5 that was my earlier point with Ames I is they
6 asked the examiners, look at these samples and
7 see if they're poorly marked, if the known
8 samples are poorly marked. And only 2.3 percent
9 of those samples came back as being poorly
10 marked and not suitable sort of for comparison.

11 THE COURT: Okay. So they
12 were not pre-examined?

13 MR. McNAIR: Correct, Your
14 Honor. And Dean Faigman's position -- I am not
15 sure if you are looking at me or if you are
16 looking up in thought.

17 THE COURT: I am in thought.
18 Mr. DiChiera.

19 MR. DiCHIERA: Yes, I'm sorry.

20 THE COURT: If the samples
21 were not pre-examined, what's your argument for
22 saying that inconclusive is the wrong answer?

23 MR. DiCHIERA: Because the people
24 who designed the study still knew the right
25 answer.

1 THE COURT: They knew the
2 right answer because they were there when the
3 shot was fired.

4 MR. DiCHIERA: Right.

5 THE COURT: But they never
6 examined it to see if conclusive markings were
7 left.

8 MR. DiCHIERA: Right. And I
9 think that's an important part of the testing,
10 right. Because in Ames I they asked them to
11 look at these known samples and determine if
12 they're poorly marked or marked appropriately.
13 And only a few examiners said that they were
14 marked insufficiently.

15 And actually, you know, I failed to
16 mention this earlier, but in Ames I, it says
17 that the fraction of samples that reported as
18 inconclusive cannot be attributed to a large
19 fraction of poorly-marked known or questioned
20 samples. That's on page 19 of Ames I.

21 So they said we are getting way too
22 many inconclusives -- even assuming that some of
23 the known samples were poorly marked after we
24 shot them, that there's still this problem with
25 the number of inconclusive responses that were

1 given, that it outpaces the number of examiners
2 who said that these were poorly-marked cases.
3 So there's still a right and wrong answer. And
4 there's always going to be something, you know,
5 on the margins, right, some cases are going to
6 be poorly marked and that's fine. But the
7 number of inconclusives should be consistent
8 with that.

9 THE COURT: All right. Go
10 ahead.

11 MR. McNAIR: So, Judge, the
12 observation that you just made I think is quite
13 critical. Because Dean Faigman's position, for
14 it to have a toe to stand on, it has to be the
15 case that a conclusive result is possible for
16 each and every one of these test items. And
17 there is zero evidence that that is the case.
18 In fact, all of the evidence is that many of
19 these items cannot be conclusively either
20 identified or eliminated.

21 Now, I am going to go through why.
22 And you have already touched on a couple of
23 those things. We know that in order to make an
24 identification or an elimination, that there
25 must be sufficient either agreement or

1 disagreement of the individual characteristics.
2 I have already talked about all of the other
3 reasons from a prior slide about why it might be
4 very, very difficult to have sufficient
5 agreement to make an identification. That is,
6 the materials used, the poorly-marking firearms,
7 the limited number of test items, and the fact
8 that the test items were not necessarily
9 generated in sequence.

10 So even apart from all of those
11 reasons, you have testimony from Dr. Hamby about
12 ejection and how that can cause overriding of
13 striae and impressions. And we saw some
14 examples of that and you will see them again.
15 So what he is talking about is that you could
16 have small bits of material that are in the
17 barrel of a firearm that can cause markings like
18 this that I am indicating here or could override
19 markings like that or mask markings like that.
20 And when you only have three items that you are
21 looking at, it can be very, very difficult to
22 reach a conclusive finding, one that you would
23 be willing to say is to a reasonable degree of
24 forensic certainty in your field with all of
25 those limitations.

1 And here's another example where you
2 can see even between these two items
3 side-by-side that there are minute differences
4 between them. And this is where the number of
5 test items that are available to the examiners,
6 particularly Ames II, is so critical. Because
7 they only have two items that they are told come
8 from the same firearm and then a third item that
9 may or may not come from the same firearm. And
10 we are going to get into the weeds a little bit
11 on the number of inconclusives and the sets that
12 they show up in and how critical that is to
13 showing why inconclusive must be available to
14 the examiners in Ames II.

15 This is State's Exhibit 1041 and this
16 shows one of the limitations that you can have
17 when you have a small number of test items.
18 These cartridge cases shown here in State's
19 1041 --

20 THE COURT: Is this the
21 exhibit that Mr. DiChiera made reference to?

22 MR. McNAIR: Yes, Your Honor.
23 These cartridge cases are identified. There is
24 an identification between these two cartridge
25 cases, and it is not based solely on the ejector

1 marks that are shown here. But the reason I
2 show you this exhibit is because this shows the
3 limits of toolmark impressions on cases that are
4 fired from the same firearm.

5 So, for example, you see that the
6 uppermost portion of the ejector mark in the
7 cartridge on the right is absent from the
8 cartridge on the left because it would fall into
9 this depression of that case stamp. Similarly,
10 you see a slightly elevated ridge on the lower
11 portion of the ejector mark on the cartridge on
12 the left that is absent from the cartridge on
13 the right because of, again, the depression from
14 that case stamp.

15 And so when you only have three items
16 that you are looking at and you have limitations
17 like this -- and these limitations are appearing
18 in all of the items because, again, nobody is
19 looking at them before they go out to the
20 examiners to say, okay, is there sufficient
21 agreement between these two cartridge cases.
22 And so these could be two cartridge cases that
23 an examiner in Ames II is told come from the
24 same firearm.

25 I talked about this a little bit

1 already in response to your earlier question,
2 but the collection of test items also was a
3 factor. And you see this particularly in the
4 comments that examiners give in Ames II. When
5 examiners have a firearm that they -- well, let
6 me back up a little bit.

7 The two items that the examiners were
8 given that came from the same firearm, that is
9 meant to replicate the AFTE method of firing at
10 least two shots from the same firearm and then
11 seeing if there is sufficient agreement between
12 them. And the problem is that when examiners
13 are doing that in the field, so to speak, in
14 actual casework, they know the exact number of
15 shots that occur from item to item when they are
16 test-firing a firearm to develop those two known
17 cartridge cases. In Ames II they did not know
18 that number. They didn't know if it was from
19 case number one in case number 50, or case
20 number one in case number 1,000. Because they
21 were just not provided with that information.

22 And you heard testimony from Dr. Hamby
23 that marks will change slightly as firearms fire
24 projectiles. And that depending on the type of
25 firearm, if you put a thousand rounds through

1 it, it might not be possible to match item
2 number one with item number 1,000. And that
3 varies by firearm and that varies by type of
4 ammunition. And this is all information that is
5 known in a casework setting, but that was
6 unknown to the examiners in Ames II. And this
7 shows up in their comments that are included in
8 the Ames II exhibit you will have. And, in
9 fact, they did not receive sequentially-created
10 items. And that is, again, critical.

11 So this gets back to this kind of
12 blind spot in Dean Faigman's knowledge. There
13 are all of these kind of in-the-weeds details of
14 Ames II and Ames I and other studies, that
15 because he is unfamiliar with the actual science
16 of firearm and toolmark examination, he just I
17 think honestly does not understand how all of
18 these factors affect the studies and require
19 that inconclusive be available as a result.

20 When we look at the data from Ames II,
21 inconclusive is much more likely in the
22 nonmatched sets. So when I am talking about
23 these and when you are reading about these, the
24 matched sets are those sets where they get two
25 items that they are -- that are the known items

1 and then the third item is matched to those two.
2 And so the ground truth would be that all three
3 of those items were created by the same firearm.
4 The unmatched sets are where it was created by a
5 different sequentially-manufactured firearm.

6 And that is what we would expect,
7 right. That if there is some difficulty in the
8 examination, we would expect inconclusives to
9 appear more in the unmatched sets. So for
10 bullets -- when bullets were a matched set,
11 inconclusives were only 20 percent of the
12 results. When it was an unmatched set, that
13 jumped to more than 64 percent. And then even
14 when you look just within the inconclusive
15 results, the vast majority of the inconclusives
16 were either that neutral middle inconclusive or
17 tending towards elimination. And then we see
18 similar numbers for the matched and nonmatched
19 cases. Inconclusives were much more likely in
20 the nonmatched sets. And within the
21 inconclusives in the nonmatched sets, they
22 tended towards either neutral or elimination.

23 All this goes to show why Ames II, if
24 anything, greatly overstates the potential error
25 rate and why what you see in actual casework,

1 before someone sits in that chair, is much
2 likely to be a far lower error rate. In Ames II
3 and in Ames I and in many of the other studies,
4 they did not have the benefit of a second
5 examiner. And this is critical because in Ames
6 II, 80 percent of the examiners made no errors.
7 And it was a very small number of examiners.
8 Only six of them who made 29 percent of all of
9 the errors in Ames II. And that shows how
10 important it is to have a second examiner to
11 catch those sorts of errors.

12 I talked about this and you will have
13 these comments, but the comments from the
14 examiners reveal why -- well, reveal
15 additionally why inconclusive must be available
16 as a result. They talked about how they lack
17 the firearms to produce the test items, so they
18 don't know the sequence in which they're being
19 generated. And that was a common complaint
20 amongst the examiners. They had a single
21 unknown sample whereas, again, in casework they
22 frequently have many unknown samples. And they
23 had great reservations about the repeatability
24 of the marks from item to item, again because of
25 the extraordinary difficulty of the test. And

1 there is no way for those examiners to know if
2 they had, again, the first item, the thousandth
3 item. They just didn't know. They were not
4 given that information.

5 Judge, if you get this wrong, I don't
6 want it to be because I didn't fully answer a
7 question or fully give you an explanation. And
8 I don't know that I will have another chance to
9 address you or argue these points.

10 THE COURT: If I get this
11 wrong, meaning differ from you?

12 MR. McNAIR: Well, differ from
13 the Eighth District and the Ohio Supreme Court.
14 And so if there is anything that you feel I have
15 not sufficiently addressed, I want to address
16 that now. And you have been very courteous in
17 engaging me in the dialogue to clarify your
18 thoughts and draw points, and I sincerely
19 appreciate that. If there is anything that you
20 think that I have not fully or adequately
21 addressed, I want to do that now.

22 THE COURT: I think I
23 understand your points.

24 MR. McNAIR: Thank you.

25 THE COURT: Mr. DiChiera or

1 Ms. Esarco.

2 MR. DiCHIERA: Thank you, Judge.

3 I know we have been through this a lot. And
4 Mr. McNair can interrupt me if I am wrong, but I
5 suppose I want to be clear. In both Ames
6 studies, when they receive -- when the examiners
7 receive the packets, there were some marks --
8 samples marked known and others were questioned.
9 So the examiners knew which ones were known.
10 They were either marked with a K in Ames II or
11 in another fashion in Ames I, but they always
12 knew that, okay. They're telling us that these
13 two or these three came from the same firearm.
14 So in a way I know the Court asked earlier, but
15 why didn't -- why wasn't there microscopic
16 evaluation of those known items. They were told
17 that they came from the same firearm.

18 I want to offer pushback on the notion
19 that the Ames II test was too difficult. And
20 you heard testimony from Dr. Hamby that really
21 the toughest firearm is the Jimenez. So in the
22 Ames II test, the Jimenez was only used for the
23 casing comparisons and those came from 10
24 different Jimenez firearms that were not
25 consecutively manufactured. The rest of the

1 weapons that were used, there were 10 Rugers and
2 then 27 Beretta firearms. And Dr. Hamby
3 testified that those are easier to make
4 identifications with. So all of the bullet
5 samples that they were asked to compare to did
6 not come from the Jimenez firearm.

7 I know and I think the Court
8 appropriately observed that we glossed over the
9 subjectivity part of this. The AFTE theory is
10 indeed subjective. Dean Faigman touches on the
11 subjective nature in his affidavit and he says
12 that it's not entirely fatal to this being
13 admissible science, but it needs to be
14 objectively verified. And the way that we
15 objectively verify this is through those black
16 box studies. And when those black box studies
17 are telling us that the error rate is
18 potentially over 50 percent, that theory has not
19 been objectively verified.

20 Dr. Salyards, who has been sort of
21 mentioned here and there, he was interviewed by
22 PCAST. So he does appear in the PCAST report.
23 He was not a part of the team that led PCAST,
24 but he was interviewed about, and in particular
25 he's commenting about, how closed set studies

1 should not be relied upon because they are like
2 solving a Sudoku puzzle. So that is sort of his
3 involvement with PCAST. And of course he's
4 joined Dean Faigman in his criticism of the way
5 to interpret the results from the research.

6 THE COURT: What about that
7 idea that Dr. Faigman -- Dean Faigman hasn't
8 made any effort to ring the alarms?

9 MR. DiCHIERA: I mean, it's
10 interesting. He has been ringing the alarms.
11 He has been testifying about this since 2020, I
12 know he's been cited in court opinions as an
13 expert. So I believe he realized his omission.
14 He offered the explanation to the Court that
15 PCAST had a broad mandate to consider all the
16 forensic sciences. Their focus was
17 fingerprints, but he has been published I would
18 say extensively about this issue.

19 THE COURT: On this issue?

20 MR. DiCHIERA: Yes. So at some
21 point we made reference to an article titled, I
22 believe, the field of forensic ballistics is
23 flawed or something to that effect. That was
24 published in 2022 by Dean Faigman.

25 THE COURT: So what was your

1 point in that, Mr. McNair? I mean, if he's
2 published articles publicly criticizing,
3 pointing out the flaw or what he perceives to be
4 the flaw --

5 MR. McNAIR: So the article
6 that Mr. DiChiera is referencing is an op-ed.
7 It is not an article that is peer-reviewed. It
8 is not a study that shows why we should count
9 inconclusives as errors.

10 THE COURT: But your point was
11 to say that he hadn't come out publicly against
12 what he saw was a flaw.

13 MR. McNAIR: No, my point was
14 that he has not gone back to the other
15 individuals who created or advised on PCAST and
16 recruited them into this effort. And my point
17 is that if this is such an obvious error, then
18 why do we see such a small number of academics
19 writing such a small number of articles about
20 this issue. Why would we not see a study that
21 shows us why we should count inconclusives as
22 errors.

23 THE COURT: But he has
24 publicly stated his position about as well as
25 you can, in that he's written on the issue to

1 people who read in this area.

2 MR. McNAIR: He has. He has,
3 but when you look at -- even when you look at
4 the filing that the Innocence Project filed, I
5 think they listed seven articles that argue this
6 point, that we should count inconclusives as
7 errors. And my point is that if this is such an
8 obvious problem in science, if it is that clear
9 that inconclusives should be errors, why do we
10 have this literal handful of articles and why do
11 we have 32 other prestigious members of PCAST
12 who have not reached the same conclusion. And
13 that is because it is a minority position. A
14 position of a very, very small minority of
15 academics.

16 THE COURT: Do you have a
17 majority of academics somewhere refuting this
18 position?

19 MR. McNAIR: Most academics
20 haven't felt the need to push back on this. And
21 in one of the articles that you will have -- I
22 forget exactly which exhibit number it is, but
23 it is an article that Dean Faigman co-authors
24 with a Nicholas Scurich. Scurich is
25 S-C-U-R-I-C-H, common spelling of Nicholas.

1 They identify this supposed back and
2 forth as though to make it sound like there is
3 tension within the scientific community. But
4 then when you look at the back and forth of the
5 articles, I think all except for maybe one of
6 them are co-authored by Mr. Scurich. It may be
7 Dr. Scurich. I don't know.

8 And my point is that they're trying to
9 make it seem like this is an issue when it is
10 just this small group of people who are making
11 this claim. They are not publishing studies
12 showing why this claim has any validity. They
13 are not recruiting other academics to that
14 position. They don't point to any federal
15 agency that implements this policy of counting
16 inconclusives as errors. I mean, they're
17 just -- they are literally just stating it and
18 they don't cite to anything in support of it
19 except for themselves. And the vast majority of
20 other scientists just haven't felt the need to
21 respond directly to this small group of people
22 making this unsupported whole cloth claim.

23 MR. DiCHIERA: One of the
24 questions the Court is going to have to answer
25 is how you define the relevant scientific

1 community. And --

2 THE COURT: What I am not
3 going to do is assume that because more people
4 haven't signed on in agreement, that means they
5 disagree. I think that would be unfair. I will
6 certainly read whatever articles are within your
7 briefs contrary to Dr. Faigman's position, but I
8 can't assume that the people who haven't written
9 on the issue would disagree with Dr. Faigman
10 just by virtue of not having written on the
11 issue. Their silence is not definite.

12 Also, I have to say the fact that
13 there is a small group of scientists or a
14 minority of scientists who believe this doesn't
15 make it wrong. At some point there was a
16 minority of scientists who believed that the
17 world was round, right. I mean, it takes time
18 to get people to come around to the position of
19 right when the majority is wrong.

20 MR. McNAIR: That is an
21 excellent example, Your Honor, and I will tell
22 you why. Because right now the vast majority of
23 scientists don't think you count inconclusives
24 as errors. All the scientists associated with
25 PCAST, none of them, nowhere in PCAST does it

1 say that you should count inconclusives as
2 errors.

3 THE COURT: So I have to ask
4 you, how do you know that that's true? That's
5 the piece I am missing. Have they said that?
6 Is there a letter?

7 MR. McNAIR: There is nothing
8 in PCAST about counting inconclusives as errors.

9 THE COURT: But the problem
10 is -- and I don't want you to misunderstand me.
11 I am not signaling how I come down on the issue.
12 I just don't understand how you can say because
13 there has been silence that means they disagree
14 with Dr. Faigman.

15 MR. McNAIR: If you do research
16 or experimentation in any field, I am not aware
17 of any field or any experiment that has been
18 done where inconclusives are counted as errors.
19 And that is because they are not counted as
20 errors. The world is round. And you have this
21 small group that is saying, no, actually the
22 world is flat. But they don't point to any
23 study or any authority. They have nothing,
24 nothing to show why you should count
25 inconclusives as errors apart from these

1 arguments that they're making. They don't point
2 to some study, like Moderna did on the COVID
3 vaccine, where they counted inconclusives as
4 errors and why that was critically important to
5 do it that way. They don't point to some study
6 of medical devices that was submitted to the FDA
7 where they counted some inconclusive results as
8 errors, pregnancy tests or whatever.

9 THE COURT: I guess what I
10 would ask you, Mr. McNair -- and I made a
11 commitment to you, and I will be true to my
12 commitment, I will look through what you gave
13 me. You made a presentation -- and I am sorry,
14 Mr. DiChiera, I will give you all the time you
15 need.

16 MR. DiCHIERA: That's fine, Your
17 Honor.

18 THE COURT: But you made a
19 presentation contrary to Dean Faigman's
20 position; fair to say?

21 MR. McNAIR: Absolutely fair to
22 say.

23 THE COURT: Will I find more
24 learned folks than you in the area who have
25 written similarly?

1 MR. McNAIR: Well, I guess I am
2 not quite sure which point you are talking
3 about.

4 THE COURT: Well, this idea
5 that inconclusives should not be counted as
6 errors. You made a lot of good points, valid
7 points, points that I don't discard, even though
8 you and I have gone back and forth in the name
9 of creating an understanding. And those are
10 good arguments on your part. But I'm curious,
11 are there articles that have been written
12 disagreeing with the position that Dean Faigman
13 has taken?

14 MR. McNAIR: Yes.

15 THE COURT: So those are the
16 ones I would like you to point me to.

17 MR. McNAIR: PCAST disagrees
18 with his position.

19 THE COURT: Post PCAST.

20 MR. McNAIR: Ames II disagrees
21 with his position. All of the articles
22 identified in State's 910 disagree with his
23 position. Actually, no, I want to take that
24 back. I don't know that all of them do because
25 I know we included some that -- or I think we

1 included some that argued the other side and I
2 think he picked up on that in his testimony.

3 THE COURT: He did. So when
4 you say Dean Faigman is in a distinct minority,
5 you say that and you supported it initially just
6 now by saying people haven't joined in. That
7 hasn't done much in the way of a battle cry. He
8 hasn't rallied the troops. And then Brant says,
9 well, he's written these articles, he's been
10 published on this very topic. As along with
11 this Dr. Salyards person, I guess.

12 Do we have people who have published a
13 contrary opinion? And don't tell me, just being
14 cute, Ames II. Do you have a study -- not a
15 study, but just articles suggesting that Dean
16 Faigman is incorrect?

17 MR. McNAIR: In the -- yes. I
18 don't know that you will have those specific
19 articles, but in -- well, I want to be a little
20 careful here because I am trying to recall the
21 footnote, but there is a footnote in an article
22 that Dean Faigman co-authors with Scurich where
23 they cite to those -- to that back and forth
24 between Scurich and his group of co-authors and
25 this other group of people who have taken it

1 upon themselves to push back and say, look, this
2 is -- there is nowhere else that this is done.
3 And that is largely their point is there is
4 nowhere else that this is done.

5 THE COURT: And I didn't mean
6 to be glib when I said more learned than you,
7 but you understand what I am asking. I am
8 saying we have an expert in the field of
9 scientific methodology who is saying that this
10 method is inappropriate, here's the method I
11 propose. And you are calling him a minority in
12 the area. So I am asking you, do you have a
13 majority opinion to show me?

14 MR. McNAIR: We do, and my
15 point about the earth being round or flat is
16 that PCAST and everything that came before it
17 took the view that you do not count
18 inconclusives as errors. The world is round.

19 THE COURT: Yes, but if you
20 believe Dean Faigman -- and I am not suggesting
21 that you ought to, but for purposes of my
22 question of you, if you believe Dean Faigman,
23 that was simply an oversight.

24 MR. McNAIR: It's a pretty big
25 oversight for 33 brainiacs to make.

1 THE COURT: His testimony was
2 essentially oops. And if you recall, I allowed
3 you all to question him at great length. At the
4 end I turned to him and said, listen, I have a
5 lot of respect for your obvious genius, but are
6 you telling me oops. And his response was yes,
7 and I -- I'm embarrassed about it, I wish I had
8 done better.

9 So my question is: Have experts in
10 the field said no, no, no, it was quite right,
11 disregard his oops? Do you have writing in that
12 area to support your very thoughtful slide
13 presentation?

14 MR. McNAIR: There are
15 references in what you will have to that
16 writing. I don't know that we have supplied
17 that writing independently. In part because it
18 is a fairly obvious point, that if this is such
19 an obvious oops, why are other people not coming
20 to that same realization.

21 THE COURT: But that's just
22 it, Mr. McNair. You can say that over and over
23 again, but you are just saying people haven't
24 signed up publicly to agree with Dean Faigman.
25 Okay, I accept that. But that doesn't mean that

1 they're not in their homes right now embarrassed
2 like Dean Faigman was but just haven't come
3 forward yet to share it publicly.

4 My question of you -- and I am
5 encouraging you to get me some documentation,
6 you can do it as a post-hearing brief -- the
7 people who are in this field have said disregard
8 Dean Faigman, we were quite right in the way we
9 designed this.

10 MR. McNAIR: Yes, Your Honor,
11 there are other individuals who I think you
12 would characterize as more learned than me who
13 have made that position or who would have taken
14 that position and pushed back on Dean Faigman.

15 But, again, part of my point about the
16 silence of everyone else is show me one other
17 study, show me a study where inconclusives are
18 counted as errors. They can't. Dean Faigman
19 can't. Show me somewhere where inconclusives
20 are counted as errors. And he can't. He can't
21 say, well, the FDA does it or DNA does it or
22 fingerprints does it. Because it doesn't
23 happen. Inconclusives are not errors. There is
24 no other forensic discipline where inconclusives
25 are counted as errors. There is no other

1 scientific discipline where inconclusives are
2 counted as errors. Or at least if there is, I
3 am unaware of it and apparently so is Dean
4 Faigman.

5 MR. DiCHIERA: When the
6 overwhelming number of responses in these
7 studies, true/false studies, when the
8 overwhelming number of responses is
9 inconclusive, there is a problem. That's it.
10 That's what it has to be. You can expect some
11 inconclusives, yes, maybe it marked poorly,
12 maybe it was too hard, maybe the examiner was
13 poorly trained, maybe they were getting pressure
14 from their lab to go home. But when the
15 overwhelming response is inconclusive, I don't
16 know when it's true or false, that science has
17 not been established.

18 Like Mr. McNair, I am happy to answer
19 any further questions the Court has.

20 THE COURT: Well, I think I
21 have an understanding. I will read the amicus
22 brief, which I have not yet because candidly it
23 was filed under the wrong Case Number. So I
24 think I had my bailiff come out and let you both
25 know that so you would be aware and hopefully

1 that will get remedied. So I will take a look
2 at it.

3 I tell you what I will do, I will wait
4 until I have got your response sort of alongside
5 it. So I will hold off on reviewing it a week
6 or so after you have had a chance to respond.
7 Maybe a week or so after that I will make a
8 ruling.

9 You all are welcome to supplement the
10 record in any way you would like with
11 post-hearing briefs. And if I have additional
12 questions, I may very well bring you back in and
13 we might have a brief hearing. Because I do
14 have an area of concern, but it's something that
15 I think I ought to wait until I reviewed more of
16 the documents that you all have provided because
17 maybe the answer is in the documents.

18 So we will be in recess on this
19 hearing I suppose until -- why don't we plan to
20 come back maybe the 13th or the 14th of March.

21 MR. DiCHIERA: 14th I think would
22 be better for my schedule.

23 Judge, would the Court order the
24 transcript of this proceeding at State's
25 expense?

1 THE COURT: I'm happy to.

2 MR. DiCHIERA: Thank you.

3 THE COURT: 14th.

4 MR. McNAIR: I have something
5 at 11, Judge, but apart from that, I am pretty
6 flexible that day.

7 MR. DiCHIERA: The afternoon?

8 THE COURT: Yes, let's do the
9 afternoon. Probably would be easier for
10 everybody. So we will set it at 1:30 on the
11 14th. We are adjourned.

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13 (Thereupon, court was adjourned.)

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C E R T I F I C A T E

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2
3 I, Gretchen E. Windenburg, Official Court Reporter
4 for the Court of Common Pleas, Cuyahoga County, Ohio,
5 do hereby certify that as such reporter, I took down in
6 stenotype all of the proceedings had in said Court of
7 Common Pleas in the above-entitled cause; that I have
8 transcribed my said stenotype notes into the typewritten
9 form, as appears in the foregoing Transcripts of
10 Proceedings; that said transcript is a complete record
11 of the proceedings had in the cause and constitutes a
12 true and correct Transcript of Proceedings had therein.
13
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15

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18 Gretchen E. Windenburg, RPR, CRR
19 Official Court Reporter
20 Cuyahoga County, Ohio
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CUYAHOGA COUNTY, OHIO