

1 (Open court, defendant and jury present.)

2 *THE COURT:* Be seated, please. And
3 Ms. Fuller, if you would please call your next witness.

4 *MS. FULLER:* State calls Dr. Jason Wiersema.

5 *THE COURT:* Come on up, Doctor. Raise your
6 right hand, please.

7 (Witness sworn.)

8 *THE COURT:* Do you have his name spelling?

9 *THE COURT REPORTER:* Yes, ma'am.

10 *THE COURT:* You may proceed.

11 **JASON WIERSEMA,**

12 having been first duly sworn, testified as follows:

13 **DIRECT EXAMINATION**

14 *Q.* (BY *MS. FULLER*) Good morning. Can you tell the
15 jury where you're employed?

16 *A.* The Harris County Institute of Forensic Sciences.

17 *Q.* And what is your position at the Harris County
18 Institute of Forensic Sciences?

19 *A.* I am a forensic anthropologist.

20 *Q.* All right. I want to talk a little bit first about
21 your educational background that deems you to be a forensic
22 anthropologist. So, can you tell the jury your education?

23 *A.* Sure. I have three degrees: An undergraduate
24 degree in anthropology from Texas State University, a
25 master's degree in anthropology from California State

1 University and a PhD from Texas A&M.

2 Q. And can you tell the jury a little bit about some
3 of the fieldwork that you've done in anthropology?

4 A. Sure. Prior to having taken this job, most of my
5 forensic fieldwork was in the context of mass fatality
6 response, which means I responded to a variety of different
7 mass fatality events, including 9-11, the Thailand tsunami.
8 I also was in New Orleans following hurricane Katrina and I
9 excavated mass graves in Bosnia. Those are two other things
10 as well.

11 Q. Tell the jury a little bit about what a forensic
12 anthropologist would do in a mass fatality situation.

13 A. It varies and I've kind of run the gamut. I've
14 done a lot of excavations. I've done mass grave
15 excavations, which is what I did in Bosnia. I also did that
16 in Guatemala but we can also do lab work where once the
17 remains are recovered from a mass grave or a mass fatality
18 scene, we can actually do skeletal analysis of those
19 remains. Usually those are -- or oftentimes those remains
20 are fragmentary; so, what we do is triage those remains and
21 identify what bones are there and try and make inferences
22 from those bones.

23 Q. You mentioned a few of the events that you did as
24 fieldwork. Can you tell us a little bit about what you did
25 at the World Trade Center in New York City?

1 A. Sure. I was there twice, the first time in
2 December of '01, 2001, and at that time I worked as part of
3 the morgue triage process. What that means, as the remains
4 were brought in from the site, there was a team of people,
5 including myself, for a two-week period and a pathologist
6 who would what we call triage those remains. We would open
7 the bag or the package and identify what remains were in the
8 package so that as they moved through the rest of the morgue
9 process, there was some documentation as to what remains
10 were in there.

11 The -- my second -- the second time I
12 participated in that investigation was in the following
13 summer of 2002, I was part of what was called the
14 anthropology verification process. This was a quality
15 control, essentially, project that was initiated by the
16 chief medical examiner's office in New York. The idea being
17 that at some point during the triage process that I had
18 participated in the following -- or the previous December,
19 it was realized that there was a very high level of
20 fragmentation and comingling, meaning that the remains of
21 multiple people had been mixed amongst one another and that
22 they wanted to make sure to put in place a protocol that
23 would allow for that to be resolved; in other words, they
24 wanted someone to go back through those remains and make
25 sure that all of those -- that what was in one package

1 was -- represented a single person. So, myself and two
2 other anthropologists were employed to do that for about
3 four months. We went back through every single piece, about
4 19,000 pieces of remains that came from the World Trade
5 Center and did just that. We went through and identified
6 very small fragments and made sure that there was no
7 duplications, that there were not the remains of more than
8 one person in any one package.

9 Q. Can you tell us approximately how big the -- the
10 second time you went, were you dealing mostly with bone
11 fragments?

12 A. Yes, primarily.

13 Q. Can you tell us the range of size that these bone
14 fragments would be?

15 A. Well, there were a considerable number of large
16 pieces, too. So, you had everything from torsos -- but I
17 think the vast majority were very small, quarter size, some
18 smaller fragments of bone only.

19 Q. And you were able to identify where those bones
20 went in the body based on your training and your experience?

21 A. That's right, most of them.

22 Q. And after y'all were -- in that project were you
23 able to make additional identifications of victims of 9-11?

24 A. Yes, that's still on going but I know of at least
25 eight new identifications, meaning these were people that

1 were not previously identified. All of the identifications
2 have been made by DNA and I think that process so far has
3 resulted in at least eight additional.

4 Q. Okay. Can you tell the jury if you are a member of
5 any professional organizations?

6 A. Yes. I am a member of the American Academy of
7 Forensic Sciences. I am also part of a lot of different
8 scientific working groups, steering committees, things like
9 that. I am a board member of the Scientific Working Group
10 for Disaster Victim Identification. The acronym is SWGDVI.
11 There's a series of these SWGs, scientific working groups.
12 I'm also a member, advisory member of the Scientific Working
13 Group for Forensic Anthropology. I am a -- an advisory
14 committee member for the Fatality Management Interagency
15 Steering Committee, and just a few others.

16 Q. Are you published?

17 A. Yes.

18 Q. Can you tell the jury about some of your
19 publications?

20 A. Most recently -- we've got several submitted but
21 the one that's been published most recently is a book. I'm
22 a coauthor on a book documenting fractures in child abuse
23 cases, bone fractures in child abuse cases. I also have
24 articles -- I have one pertaining to experiences with DNA
25 identification and different elements coming from the World

1 Trade Center. I have a couple of articles about -- having
2 to do with cut mark analysis on skeletal remains.

3 Q. Are you deemed an expert in your field?

4 A. Yes.

5 Q. Now, you stated that you are a forensic
6 anthropologist at the Institute of Forensic Sciences; is
7 that correct?

8 A. That's correct.

9 Q. Can you tell the jury what exactly a forensic
10 anthropologist is?

11 A. Sure. There's the convoluted scientific definition
12 of forensic anthropologist, which is that we are -- a
13 forensic anthropologist is a person who applies the methods
14 and theory behind biological anthropology to legal cases.
15 What that means is that a forensic anthropologist is
16 somebody who has a very detailed knowledge of the anatomy
17 and biology of the human skeleton and takes that knowledge
18 and applies it to forensic cases.

19 Q. And can you tell the jury a little bit about what
20 your job duties are as a forensic anthropologist with the
21 Harris County Institute of Forensic Sciences?

22 A. Sure. We do -- our role -- there are three of us
23 and our role in this -- as forensic anthropologists is at
24 the -- at the beginning of investigations is we often
25 respond to scenes. Any scene that involves the exposure of

1 bones, so we're talking fire scenes but also cases where you
2 have skeletonized remains or fragmentary remains, we'll
3 respond to those scenes and do recoveries and we use
4 standard archeological techniques to do those but we also do
5 a lot of consultation at autopsy where we will recover
6 individual skeletal elements to do trauma analysis, cut mark
7 analysis, blunt force trauma analysis, things like that.

8 Q. So, is it fair to say you work with law
9 enforcement, you work with the medical examiner and other
10 entities in order to apply the biological anatomy that you
11 find to whatever forensic context it's presented in?

12 A. Yes.

13 Q. Okay. I want to turn your attention to June of
14 2010. In June of 2010, were you called out to a scene?

15 A. Yes.

16 Q. Do you recall what the location of that scene was?

17 A. It was the North Loop 610 feeder road at, I
18 believe, the Hardy Street intersection.

19 Q. Okay. And you were employed as a forensic
20 anthropologist with the Harris County Institute of Forensic
21 Sciences at that time?

22 A. That's correct.

23 MS. FULLER: Your Honor, may I approach the
24 witness?

25 THE COURT: You may.

1 Q. (BY MS. FULLER) I'm going to show you what has
2 been marked as State's Exhibit 105, 106 and 107. Would you
3 take a look at those, please? Do you recognize these
4 photographs?

5 A. I do.

6 Q. And what are these photographs?

7 A. These are scene photographs, ML10-1866.

8 Q. Okay. That's the case that you responded to out at
9 the 610 feeder and Hardy?

10 A. That's right.

11 Q. Is it a fair and accurate -- do each of these
12 pictures fairly and accurately depict the scene as you
13 recall it?

14 A. Yes.

15 MS. FULLER: Your Honor, at this time State
16 moves to admit State's Exhibit 105, 106, 107, tenders to
17 defense counsel for inspection.

18 MR. CORNELIUS: No objection.

19 THE COURT: 105 through 107 will be admitted.

20 MS. FULLER: Thank you, Your Honor.
21 Permission to publish?

22 THE COURT: You may.

23 Q. (BY MS. FULLER) I'm going to show you -- excuse
24 me -- State's Exhibit 105. What are we looking at here?

25 A. That's an overview picture of the scene.

1 Q. Is this approximately what you remember when you
2 arrived on the scene?

3 A. Yes.

4 Q. Were there about that many people there when you
5 arrived?

6 A. Yes.

7 Q. Okay. Tell me first what you do when you get to
8 the scene.

9 A. We have a very standard protocol that we follow for
10 these kind of scenes and what you're seeing --

11 Q. Let me stop you there.

12 A. Sure.

13 Q. Before we go into what you did on the scene, let's
14 talk about -- you mentioned a standard archeological
15 procedure; is that correct?

16 A. Right.

17 Q. Tell us what that is.

18 A. That applies more to the survey and excavation and
19 recovery. Is that what you're asking?

20 Q. Well, let's talk about what is -- when you get on
21 the scene, what are the standard procedures that you follow
22 that you have been trained to do and that you employ?

23 A. For actual recovery or, I mean, because I can start
24 with when we get there and talk to the officer and all that.

25 Q. Let's start at the beginning.

1 A. Okay. Yeah, first thing we'll do is our
2 investigator who accompanies me will go and make contact
3 with whatever officer's in charge. While they're doing
4 that, we'll generally take photographs at the scene, like
5 you'll see here, survey photographs, so we have context,
6 know where things are.

7 Once we've done that, we'll go to the actual
8 scene itself, identify where we think the core of remains
9 are. In this case they were marked by flags already by the
10 police. And then what we'll do is devise a search
11 technique. There's several. On this one we elected to do a
12 standard straight-line search where we employed myself,
13 another anthropologist who was there on the scene with me,
14 our investigator and a couple of officers who made a
15 straight survey through the scene at regular intervals and
16 what we do is flag each set of remains that we find, bones
17 that we find as we pass through and leave those flags there,
18 the idea being that we'll go back, map them in before we
19 move them and then what we'll do is to -- in this case what
20 we did was as we recover each element, each bone, we laid it
21 out on a body bag that we had at the scene.

22 The reason we do that is to give us some idea
23 of how much of that particular skeleton we have present
24 because it gives us an idea of what's still missing. Once
25 we've recovered -- once we've done that, we go back, recover

1 those elements and we'll go to some portion of the scene in
2 this -- generally where the core of the scene was. This
3 scene was -- the core of the scene was indicated by what we
4 call a primary site of decomposition. It's a darkly stained
5 area where the body did most of the decomposition process.
6 We go back to that area and some area beyond that and take
7 that area all the way to the ground surface, to make sure --
8 remove all the leaf clutter, all the vegetation, to make
9 sure that we are back down to the original surface. And the
10 reason we do that is to make sure that we recover all the
11 small elements -- all of the elements that we can find at
12 the scene. After we do that, we take that inventory, we bag
13 those remains and our decedent transport service transports
14 them back to the Institute of Forensic Sciences.

15 Q. Okay. Let's back up a little bit and talk about
16 what you just said in terms of this case. I'm going to show
17 you what is marked as State's Exhibit 40. When you arrived
18 on the scene, is this approximately what you saw?

19 A. Yes.

20 Q. And can you describe what it is that we're looking
21 at here from your perspective?

22 A. Sure. In the distance where there's that cluster
23 of flags, there's some clothing as well as the -- that
24 primary site of decomposition, the dark stained area. In
25 the foreground there is a femur fragment there. It's a long

1 bone from your upper leg. And then in between there, where
2 there's another cluster of flags, there's another bone in
3 that, which I can't identify from right here.

4 Q. Okay. So, you make it out to the scene and you
5 identify the primary scene, primary cluster of bones.

6 A. Right.

7 Q. You stated next that you and a group of other
8 people did a straight-line survey.

9 A. That's right.

10 Q. Can you tell me -- do you recall about how many
11 people there were that did that straight-line survey with
12 you?

13 A. I can tell you that there was myself, another
14 anthropologist, our forensic investigator and at least one
15 other police officer, one police officer.

16 Q. Okay. Now, generally in cases like this, the
17 police officer, who's not with the Medical Examiner's Office
18 or the Institute of Forensic Sciences, would that officer
19 generally be the crime scene unit officer?

20 A. Yes.

21 Q. Okay. And are you in charge now of instructing
22 everybody how you're going to proceed in the straight-line
23 survey?

24 A. Yes.

25 Q. At any time are you concerned with people stepping

1 on -- I believe you call them elements, but stepping on the
2 bones?

3 A. During that search?

4 Q. Yes.

5 A. No.

6 Q. Why is that?

7 A. It depends which part you're talking about. When
8 we're talking about that darkly stained area, that primary
9 site of decomposition, I focused on that part; so, I was the
10 one that passed near that spot. The rest of the area, what
11 we do is move very slowly and you mark things as you go and
12 there's a lot of, you know, talking back and forth and
13 having people come over and say, Is this something? There's
14 a lot of -- especially when it comes to -- if you
15 incorporate people who are not anthropologists, there's a
16 lot of elements they may not immediately recognize as bone
17 or not. We'll go over there and make sure it is or is not.
18 It's a very methodical, very slow process.

19 Q. Okay. And so you stayed by the primary cluster of
20 bones; is that correct?

21 A. Yes, that's right.

22 Q. I'm going to show you State's Exhibit 77. Can you
23 make that out?

24 A. Yes. What you see there is there was actually two
25 clusters of bones. What you saw earlier with the three sets

1 of flags, that was actually what we considered one primary
2 cluster. That was where the bulk of the remains were. This
3 one nearest -- in the foreground on this photograph, it's
4 actually where, I believe, the femur was found and another
5 long bone some distance away.

6 Q. Okay. Were there any other bones to your -- that
7 you recall that were scattered that far out where you found
8 those two bones?

9 A. No.

10 Q. Okay. Is it fair to say that most of the bones
11 were recovered up at the primary site?

12 A. Yes.

13 Q. I want to show you State's Exhibit 51. What are we
14 looking at here?

15 A. You've got a -- at the top of the picture you've
16 got a skull and mandible. The skull is actually upside
17 down. And the mandible, you can see the teeth, that
18 arched-shaped item at the top of the picture. It's -- the
19 skull is adjacent to a sacrum, which is the tailbone, which
20 is immediately beneath it, there's a series of ribs there
21 and some vertebrae and there's a humerus on the upper left
22 side of the picture, which is the upper arm bone.

23 Q. I'm going to show you State's Exhibit 49. And what
24 I want to talk about is what you see here in addition to the
25 bones. So, I mean, we can see the bones that you just

1 described and some others but what else do you see in this
2 picture?

3 A. What draws my attention -- obviously there's
4 clothing -- but what draws my attention as an anthropologist
5 is the darkly stained area to the left side of the
6 photograph. That's the primary site of decomposition.

7 Q. Can you tell us what causes that darkly stained
8 area?

9 A. Sure. It's interaction of the soft tissues of a
10 decomposing body with the vegetation beneath it. So, what
11 it means is as the body is decomposing, as insects are
12 degrading the tissues, a lot of it will liquefy and it will
13 actually -- obviously it's going -- because of gravity it's
14 going to move down in the ground and the soil and vegetation
15 and discolors it in that way.

16 Q. When you see a picture like you see in State's
17 Exhibit 49, when you look at that burn area or that area of
18 decomposition, does that give you any indication of a time
19 frame of how long that body has been there?

20 A. What it tells me is that is a remnant of
21 decomposition. And what it tells me is that it hasn't --
22 that, you know -- the postmortem interval, which is the
23 period of time between someone's death and the time of
24 recovery, is a very -- it's a field in and of itself.
25 There's a lot of study dedicated to that and there's a lot

1 of variation in that period. What this tells me is that it
2 has not been a prolonged period. We're not talking years
3 between the time of death and the time of recovery. This is
4 a relatively short amount of time because there is still
5 some -- there's still a pretty significant indication that
6 decomposition has taken place in that location.

7 Q. Okay. Now, eventually will the vegetation grow
8 back in those burn areas?

9 A. Yes. It's not burned, just to be clear. It's
10 stained.

11 Q. Stained. So, in that stained area, eventually
12 vegetation will grow back. It's not -- nothing will
13 prohibit anything from growing there anymore?

14 A. No, in fact, sometimes as you get -- one of the
15 later stages is this -- in some instances, the vegetation
16 will grow better in that location.

17 Q. Okay. Now, you mentioned at some point you lay
18 everything out. State's Exhibit 89. Is that what you were
19 talking about?

20 A. That's correct.

21 Q. And when you -- can you tell us at what point you
22 got to this where you're laying the body out?

23 A. This is essentially after the recovery was
24 complete. That's when we take that photograph. It's an --
25 it's a scene inventory photograph. That's what that is.

1 So, we've already recovered everything at this point.

2 Q. Okay. And you've laid it out. At this point do
3 you notice anything that's missing or do you go back to the
4 scene to look or are you done with your search?

5 A. This does not direct the way we approach the scene.
6 We approach the scene the same way every time. So, we
7 select an area based on what we see at the scene and we
8 search that area. We don't -- and this is essentially what
9 we got. So, we want to be as systematic as we can. We
10 don't want to let the inventory sort of drive the way we do
11 it. So, this is essentially just an inventory of what we
12 recovered.

13 Q. Let me show you State's Exhibit 106. What are we
14 looking at in 106?

15 A. That is a fragment of the left tibia.

16 Q. Now, there's a flag by the left tibia and it
17 appears that "left tibia" is written on that flag. Do you
18 recall who would write that on the flag?

19 A. That's my handwriting.

20 Q. Okay. Going to also show you State's Exhibit 107.
21 What are we looking at here?

22 A. Now, that is the photograph of the -- of that
23 prime -- of the area -- it's not just the primary site.
24 It's the area beyond that that we actually took to the
25 ground. What you see here is a much cleaner area of here;

1 the very darkly stained area at the top of the photograph is
2 that primary site of decomposition. The surrounding areas
3 where you see vegetation has been moved away. That's what
4 we do as the last part of our search to make sure that we
5 recover as many of the small elements as we can.

6 Q. Do you recall approximately how big of an area this
7 was that you cleared and took down to the ground?

8 A. Unfortunately I don't have a number for that. I
9 couldn't --

10 Q. Can you estimate in your head? I mean, are you
11 talking -- just an estimation?

12 A. Yeah, I would say it's probably 20 feet square.

13 Q. Okay. What are we looking at in State's Exhibit
14 73?

15 A. That is me actually -- what we're doing here is
16 that clearing phase. So, we've already done the basic line
17 survey, we've gone back to focus on that primary site and
18 we're clearing the vegetation over. So, the person on --
19 that you see on the right working is another anthropologist
20 from our office.

21 Q. What's her name?

22 A. Deborrah, Dr. Deborrah Pinto.

23 Q. Now, you've cleared the vegetation. Can you tell
24 the jury, how thick was the vegetation in that area?

25 A. It's -- we live in an area where you can get pretty

1 dense vegetation. So I would put this sort of in the
2 middle. It wasn't particularly dense. There was a lot of,
3 you know, thorny, viny-type stuff but it was not
4 particularly dense vegetation.

5 Q. And how far down into the ground do you go? Do you
6 just go to the surface of the dirt or do you actually dig
7 into the dirt?

8 A. No, we just go to what we think is the original
9 ground, the ground surface that that body was deposited
10 onto.

11 Q. Okay. Now, when you cleared this area in State's
12 Exhibit 73, did you locate any bones in that area?

13 A. Yes.

14 Q. What did you locate?

15 A. A single tooth and I know the body of the hyoid.

16 Q. Okay. Who found the body of the hyoid?

17 A. Me.

18 Q. And you said that it was just the body of the
19 hyoid; is that correct?

20 A. That's correct.

21 MS. FULLER: May I approach the witness?

22 THE COURT: You may.

23 Q. (BY MS. FULLER) Let me show you State's Exhibit
24 125. Do you recognize that picture?

25 A. I do.

1 Q. What is that a picture of?

2 A. It's a picture of a hyoid bone.

3 Q. Okay. Is that a complete hyoid bone?

4 A. It is.

5 Q. Okay. Is this a photograph of the hyoid bone that
6 you recovered out there on the scene?

7 A. No.

8 Q. So, is this an example of what a full hyoid bone
9 looks like?

10 A. Yes.

11 Q. And is this a fair and accurate picture of a hyoid
12 bone?

13 A. It is.

14 Q. And would this aid the jury in understanding what
15 the hyoid bone looks like in its full condition -- state?

16 A. Yes.

17 MS. FULLER: Your Honor, at this time, State
18 moves to admit for demonstrative purposes only State's
19 Exhibit 125 and tenders to defense counsel for inspection.

20 MR. CORNELIUS: No objection.

21 THE COURT: 125 will be admitted for
22 demonstrative purposes only.

23 MS. FULLER: Yes, Your Honor. May I publish?

24 THE COURT: You may.

25 Q. (BY MS. FULLER) Approximately how big is the hyoid

1 bone, understanding that it can vary between people?

2 A. Yeah. It's not -- it's very small. It's a very
3 small bone. So, I would say between those two what are
4 called horns there, it may be an inch total.

5 Q. Okay. I want you to walk us through what we're
6 seeing here. Do you like it that way or would you like me
7 to turn it the other way?

8 A. You can flip it over.

9 Q. Okay. You can touch your screen to the side there.

10 A. Okay. So, the hyoid is, at birth, it's three
11 pieces. And when I refer to the body of the hyoid, it's
12 this piece in the middle here. And then you have -- you got
13 two horns, what they're called, the superior horns of the
14 hyoid, and what you -- as you -- as people age, there's a
15 tendency for those -- the horns to fuse to the body. That
16 is a variable process. It happens at different ages. It
17 also can be bilateral or unilateral, meaning it can happen
18 on both sides or one side and all of that is within normal
19 variations.

20 So, what this example shows is that the left
21 horn is fused, as you can see right here, there's no gap
22 between the horn and the body, but the right side is not
23 fused and that, again, that's a normal variant. There's
24 been a lot of research focused on that and there's really
25 been no definitive answer as to why some people have

1 different variation in the fusion of that body.

2 Q. Okay. So, in this picture of State's Exhibit 125,
3 which is not the hyoid bone that you recovered, but in this
4 picture, this area right here is -- is not attached; is that
5 correct?

6 A. That's right.

7 Q. When you say "not fused." Okay.

8 Now, is it possible also that in an adult,
9 that the horns might not fuse at all?

10 A. Yes.

11 Q. Okay. So, like you said, it's a variable between
12 people?

13 A. Right.

14 Q. Okay. Can you show us -- I'm going to clear this
15 and using this State's Exhibit 125 as an example, can you
16 mark off the areas on this photograph to demonstrate what it
17 is that you found out there on the scene in this case?

18 A. Sure. It's the body. So, it's essentially the
19 portion of this bone that's between those arrows.

20 Q. Okay. So, between here and approximately here,
21 this is what you found in between my two fingers?

22 A. That's correct.

23 Q. Okay. Now, can you tell the jury where the hyoid
24 bone is located in the body?

25 A. Sure. It's up very high beneath -- it's part of

1 your pharynx apparatus. It's up very high beneath your --
2 behind your mandible. You can't feel it. It's actually
3 pretty far up in there.

4 Q. And does it anchor to anything? How does it anchor
5 to anything?

6 A. Ligaments, muscles. It's not articulated with
7 other bones.

8 Q. When you say "articulated," what does that mean?

9 A. It does not make any contact with any other bones.

10 Q. What is the purpose of the hyoid?

11 A. It is essentially a bony anchor for part of the --
12 it allows for swallowing -- it facilitates a lot of the
13 stuff that goes on in the throat. It's just a bony anchor
14 for those muscles.

15 Q. Okay. So, the muscles that would be near the
16 esophagus and the trachea?

17 A. That's right.

18 Q. Okay. And what do you use your trachea for?

19 A. Well, you've got the esophagus and trachea:
20 Trachea is for breathing; esophagus is for passing through
21 food.

22 Q. You're out on the scene, you've cleared the area,
23 you found the hyoid bone. What do you do next at the scene?

24 A. Once we've done the whole recovery?

25 Q. Yes. Is there anything else that happened after

1 recovering everything and laying everything out on the body
2 bag?

3 A. Just making sure everything's labeled and that it's
4 transported. We release it to our decedent transport
5 service.

6 Q. When you say "everything is labeled," what do you
7 mean? What are you labeling?

8 A. We do not label individual bones. We just make
9 sure that -- there were -- we did bag, I believe, some of it
10 in clusters because we thought it might be useful. So,
11 there would be individual bags within the larger body bag
12 and those would be labeled.

13 Q. Okay. So, the bags of the remains gets transported
14 back to the office. Once it gets into -- once it gets
15 there, what happens next?

16 A. The investigator and myself do -- we go in and do
17 what's called check-in. So, we go in and a photograph is
18 taken. It's logged in so that we know the time that it
19 arrived. It is weighed in the same way that all decedents
20 are. And then it's essentially on the office's inventory
21 until the next morning when it's assigned to one of the
22 pathologists.

23 Q. Okay. So, it's assigned to a pathologist the next
24 day. What do they do the next day?

25 A. It varies. In this case because it's completely

1 skeletal, what she'll do is -- in this case it was
2 Dr. Pinneri, laid out those remains and did essentially an
3 inventory and then asked for an anthropology consult.

4 Q. Okay. I am going to show you -- show you what has
5 been marked as State's Exhibit 109. Is this yours or
6 Dr. Pinneri's laying out?

7 A. It's Dr. Pinneri.

8 Q. Okay. And State's Exhibit 110, also --

9 A. It's also Dr. Pinneri.

10 Q. Okay. So, she's at this point laid out and she
11 asks for a consult.

12 A. That's correct.

13 Q. Do you come into the suite that she's working in
14 and do the consult right there or do you have a different
15 location within the same building that you would go to?

16 A. We often do go actually at autopsy to do the
17 inventory along with the pathologist.

18 Q. Okay. In this case what did you do?

19 A. I don't recall.

20 Q. Okay.

21 MS. FULLER: May I approach the witness?

22 THE COURT: You may.

23 Q. (BY MS. FULLER) I'm going to show you what has
24 been marked as State's Exhibits -- State's Exhibit 112
25 through 122. Can you take a look at those?

1 A. Sure.

2 Q. Do you recognize these photographs?

3 A. I do.

4 Q. What are they photographs of?

5 A. Those are anthropology photographs of this case.

6 Q. Okay. And so when were these taken?

7 A. These were taken after we've cleaned up the remains
8 and these are taken in our laboratory.

9 Q. Okay. So, at the point that these were taken, tell
10 me when in conjunction to when Dr. Pinneri did her initial
11 examination.

12 A. I believe it would have been two days after.

13 Q. Okay. Are they a fair and accurate copy of the
14 remains in this case and what you did with them in the -- in
15 your lab?

16 A. Yes.

17 MS. FULLER: Your Honor, at this time State
18 moves to admit State's Exhibits 112 through 122 into
19 evidence and tenders to defense counsel for inspection.

20 MR. CORNELIUS: No objection.

21 THE COURT: And 112 through 123 --

22 MS. FULLER: 122.

23 THE COURT: I'm sorry. -- 122 will be
24 admitted.

25 MS. FULLER: Permission to publish, Your

1 Honor?

2 *THE COURT:* You may.

3 Q. (BY MS. FULLER) Okay. So, you said two days after
4 Dr. Pinneri -- actually, let me back up. Two days after
5 Dr. Pinneri does her initial exam -- I'm going to show you
6 State's Exhibit 122. What are we looking at here?

7 A. You're looking at the inventory -- one of the
8 inventory photographs of the remains extending from the top
9 of the -- from the skull to the lumbar spine, which is the
10 bones -- the vertebrae, the lower vertebrae and it also
11 includes about the first half of the left femur.

12 Q. Okay. These bones look a little different from the
13 ones that we see in State's Exhibit 111. Have you done
14 anything to them in between -- what do you do with them when
15 you get them?

16 A. With this particular case we just used water to
17 wash them off.

18 Q. Okay. So, you cleaned off all the bones?

19 A. Yes.

20 Q. Is there anything else that you did to the bones?

21 A. Huh-uh, these were not processed in any way other
22 than by water.

23 Q. Okay. So, you wash all of them off and do you lay
24 them out in anatomical order?

25 A. Right, correct.

1 Q. Can you point to the jury where the hyoid bone is
2 in this picture?

3 A. Sure. It's the bone nearest that, the small bone
4 to the left of that arrow.

5 Q. Okay. And above that is another bunch of bones.
6 What are we looking at there?

7 A. Those are fragments of bones that were difficult to
8 identify, some of which we could identify as a rib but we
9 didn't know which side, some of which we could identify as
10 metacarpal but we couldn't identify which side and it's
11 common for us to put them in a location like that.

12 Q. Okay. And in this case approximately how big is
13 this hyoid bone in this picture? Or do you recall if -- how
14 much -- how big it was?

15 A. You mean relative to the others or -- I mean,
16 that's a very small bone and it's only a portion of it. I
17 mean, it's just the hyoid body.

18 Q. Okay. I'm going to show you State's Exhibit 113.
19 What are we looking at here?

20 A. That's the next in the series of inventory photos
21 that we took. So, it begins at the right side of the
22 photograph with the scapula, which are your shoulder blades,
23 the humerus on both sides, which is your upper arm bones,
24 lower arm bones, ribs, vertebrae, the bones, the paired
25 bones in the middle of the photograph are your hip bones,

1 the sacrum, tailbone's in the middle, you have the right and
2 left femurs, which are the upper leg bones, and then you see
3 the tibia and fibula on the left, which are your shin bones,
4 and then on the right you see a portion of the right tibia.

5 Q. Okay. Now, after you've laid them out, do you do
6 any other further examination of the bones?

7 A. Yeah, we look very closely at all of the -- every
8 surface of every bone, both macroscopically and
9 microscopically, meaning grossly looking at the bone itself
10 and viewing all of them under a microscope.

11 Q. Okay. Can you tell us -- let's first of all talk
12 about the quality of the bone. What was the quality of the
13 bone in these remains?

14 A. It's good.

15 Q. And when you say good quality, what does that mean?

16 A. It just means that they are not -- they've not been
17 exposed to the elements for a prolonged period, they're not
18 dried out, they still retain a greasy quality, they're
19 heavy. It also means we don't have a high degree of
20 osteoporosis or bone loss, bone density, things like that.

21 Q. You said they're not dried out, that they're still
22 a little greasy. What does that mean?

23 A. It just means that they have -- this in conjunction
24 with the fact that that primary site of decomposition was
25 there, means they underwent decomposition in the fairly

1 recent past, have not been out exposed to the elements for a
2 very long time.

3 Q. Okay. Now, that being said, if you know that
4 there's -- that -- knowing where she's found, can you give
5 an estimation of how long these bones still had soft tissue
6 surrounding them?

7 A. Again, that speaks to the postmortem interval,
8 which, again is the amount -- the amount of time between the
9 death of a person and their recovery. That, again, is
10 highly variable, depending on a lot of things, climate,
11 exposure to scavengers, exposure to insects, temperature
12 itself, but in this case, given that there's still a primary
13 site of decomposition and that the bones are skeletonized
14 like this, I would have to say -- I mean, it's really very
15 difficult. I would -- I think our estimate is that it was
16 appropriate with the time that this particular person was
17 missing but it's just a very difficult thing to estimate.
18 It's not -- some portion of it, though, would have had
19 flesh -- the remains would have been fleshed, so.

20 Q. Okay. So, if she's out there from May 15th until
21 June 25th for a substantial portion of that time, these
22 bones are protected by muscles and by flesh, by skin, by
23 soft tissue.

24 A. Yes.

25 Q. Okay. When you looked at her bone -- when each

1 bone was examined, what did you notice about the remains in
2 this case?

3 A. We noted a lot of damage to the remains.

4 Q. And what kind of damage are you talking about?

5 A. Well, we noted a lot of postmortem scavenging
6 damage. We also noted a lot of damage that we put in the
7 perimortem/postmortem category, perimortem being at or
8 around the time of death, postmortem being after death. And
9 the reason that the -- a lot of this damage was put into
10 that category is because there's nothing about those
11 fractures, that damage that we can use to interpret whether
12 or not it was associated with the perimortem period or the
13 postmortem period.

14 Q. Okay. Let's talk about those periods. First
15 period is antemortem; is that right?

16 A. That's right.

17 Q. What does antemortem mean?

18 A. It means that, if you're talking about a fracture,
19 it means that it occurred before that person's death.

20 Q. And can you tell if some fracture occurred
21 antemortem?

22 A. The term antemortem from an anthropological
23 standpoint implies or means we have some indication whatever
24 damage we're seeing, fracture or otherwise, has begun the
25 healing process, so there has to be some indication on that

1 fracture, if we're talking about a fracture, that is -- has
2 begun the healing process. That's because the person has to
3 be alive to heal.

4 Q. Okay. And you could clarify that photograph as
5 antemortem because you could see the healing process had
6 begun before the person died?

7 A. Correct.

8 Q. What is perimortem?

9 A. Perimortem means at or around the time of death.
10 That interval is a little different for anthropologists
11 because we have no -- we don't have soft tissue to aid us.
12 So, what it means for us is any time you have a fracture
13 that has not healed but is in viable bone, meaning that the
14 bone is still of good quality, you're not talking about
15 obvious postmortem damage like you would in, say, an
16 archeological site where you've got remains that are
17 crumbling, that's obvious postmortem damage. When you have
18 viable bone that would respond the way a living bone would,
19 that's what we call perimortem, meaning that we can't --
20 that's at or near the time of death.

21 Q. Okay. And can you explain to the jury what
22 postmortem means?

23 A. Postmortem is -- what it means is that has happened
24 after death. So, there's got to be some indication that
25 whatever process that resulted in that fracture, that damage

1 we know took place after death.

2 Q. Okay. I want to show you what has been marked as
3 State's Exhibit 114. What are we looking at here?

4 A. You're looking at the right scapula, which is a
5 shoulder blade bone, and the clavicle, which is your
6 collarbone, right side also.

7 Q. What do you notice about these bones?

8 A. There is postmortem scavenging damage on that,
9 particularly on the bottom part of that scapula, the
10 shoulder blade.

11 Q. Can you show us what you're talking about?

12 A. I can try.

13 Q. I think you can draw on there as well if you --

14 A. Okay. The area within that oblong circle is where
15 there's definitive evidence that it is postmortem damage.

16 Q. Okay. And what is -- in this case what is that
17 definitive evidence?

18 A. What you see there is those two circular defects
19 that are within that, you see -- it's kind of hard to see
20 but there's two circular defects. Those are classic for
21 what you see with canid scavenging, dogs, other small
22 animals. You can get that also with raccoons but this is a
23 little big for that but this is definitive postmortem
24 damage.

25 Q. Okay. You can say it's definitive postmortem

1 damage because you see the puncture in the bone that's
2 caused by some type of animal.

3 A. That's right.

4 Q. Now, if you didn't have that puncture mark and you
5 just had a fracture, would you be able to classify it as
6 being postmortem or perimortem?

7 A. No, it would be in the peri/postmortem category.

8 Q. Okay. You couldn't definitively say it's
9 postmortem because you don't have evidence of it, for
10 instance, being scavenged?

11 A. Right.

12 Q. Okay. I want to show you what has been admitted as
13 State's Exhibit 115. What do we see there?

14 A. That's a close-up of that same area of the shoulder
15 blade and you can see -- let's see if I can -- you can see
16 those -- in fact, they're paired -- they'll oftentimes show
17 up in pairs where you'll see both canines -- both canine
18 teeth have punctured the bone at the same time and so you're
19 seeing those defects in the bone right there.

20 Q. Okay. State's Exhibit 116. What do we see there?

21 A. You have the opposite clavicle on the left, which
22 is your collarbone, and then you have the body of the
23 sternum, which is your breastbone.

24 Q. Do you notice any peri or postmortem damage in
25 these photographs?

1 A. There's clearly damage. I don't remember what we
2 put in our notes as far as whether those particular bones
3 had -- it requires the use of a microscope sometimes to look
4 at for indications that it's definitive scavenging damage
5 but a lot of the elements were definitive postmortem
6 scavenging damage.

7 Q. Okay. State's Exhibit 117.

8 A. This is a series of left ribs and what you see near
9 the center of the photograph, that the defect to the left of
10 that arrow is another canine mark. So, that's definitive
11 postmortem damage.

12 Q. Okay.

13 A. I should mention -- not with regard to that picture
14 specifically but there are other indications, not just those
15 puncture marks. There are also what's called scoring and
16 furrows; so, there's classes of definitive postmortem
17 defects.

18 Q. And what does scoring and furrows mean?

19 A. Scoring is the term that we use to describe when a
20 tooth actually drags along the bone and leaves marks.
21 Furrows are in the cross section when you actually see marks
22 from the teeth leaving marks in the cross section.

23 Q. Okay. So, you don't need just puncture marks. If
24 you see any type of, if I may, scraping or --

25 A. Yeah, scoring.

1 Q. Okay.

2 A. And that's present on a lot of those, particularly
3 the long bones of this case.

4 Q. Okay. Show you State's Exhibit 118. What are we
5 looking at here?

6 A. This is a photograph of the paired pelvic bones.
7 These are called innominates. So, what you're looking at
8 there are what are called the acetabulum. Those are the two
9 locations for -- where the ball of your femur, your upper
10 leg bone fits in there and that's where your hip
11 articulates. The bone in the middle there is the sacrum.
12 That's your tailbone. That's actually three bones. They
13 all articulate or they all meet together in the back.

14 Q. Do you notice anything on these bones in terms of
15 damage?

16 A. There's more. I do know that there was some
17 postmortem but I think there's also some described as
18 peri/postmortem on these.

19 Q. State's Exhibit 119.

20 A. That is anterior or front to back view of the skull
21 and mandible.

22 Q. Okay. What did you notice, if anything, about the
23 skull?

24 A. In terms of damage or in terms of --

25 Q. Let's talk about damage first. What did you notice

1 in terms of damage?

2 A. There was very little, which is typical.

3 Q. Okay. Is there a reason why that's typical?

4 A. It is -- in the literature it is surmised that
5 there's generally little damage postmortem from scavenging,
6 at least, to the skull because it's -- it's difficult to --
7 for animals to chew on, essentially. And usually when you
8 do have damage, it's limited to the thin bones of the orbits
9 or the cheekbones, the zygomaticus.

10 Q. When you say "the skull," are you talking about the
11 entire head or just the top portion of it?

12 A. Well, the skull generally. So, the whole thing.
13 It's less frequently scavenged than are other bones.

14 Q. Okay. You said that the hyoid bone is actually
15 located pretty far up in your -- did you say mandible?

16 A. Well, it's beneath that -- behind the mandible.
17 So, it's directly behind that bone.

18 Q. Okay. So, it's behind the mandible, which is your
19 lower jaw?

20 A. Right.

21 Q. Is it deemed to be part of the skull or not because
22 it's not articulated to the skull?

23 A. Right. No, it's not considered part of the skull.

24 Q. Okay. And again you said that typically the skull
25 is not scavenged?

1 A. It's less frequently scavenged and when it is
2 scavenged, you see the primary indications of that are on
3 the facial bones.

4 Q. Okay.

5 A. At least with canines. When you start talking
6 about rodents and things like that, they oftentimes go for
7 the skull.

8 Q. Okay. State's Exhibit 120, what do we see here?

9 A. This is a superior or top-to-bottom view of the
10 dentition of the mandible, the lower jaw. So, you're
11 looking at the chewing surface of those teeth.

12 Q. Was the jaw recovered with those teeth in place?

13 A. I guess. I think there was one tooth recovered
14 that was not in situ, and I don't -- I can't recall which
15 tooth that was.

16 Q. Okay.

17 A. But by the time that photograph was taken, we would
18 have put it back in its socket.

19 Q. Okay. State's Exhibit 121?

20 A. This is, again, a front-to-back view of the maxilla
21 and mandible. Maxilla is your upper jaw; mandible is your
22 lower jaw.

23 Q. From an anthropology perspective, can you tell
24 whether or not somebody lost a tooth prior to -- prior to
25 dying or the tooth fell out after dying?

1 A. You can.

2 Q. How can you do that?

3 A. What we're looking for is called -- it's part of
4 the healing process. What we're looking for is called
5 reabsorption. Reabsorption is the term we use to describe
6 the bone of the jaw, really any bone, but it's primarily
7 used with the bones of the face and it refers to
8 reabsorption or a remodeling of the bone in response to the
9 loss of that tooth. So, it begins to round. So, that's
10 what you're seeing in this area here. You see that the
11 tooth has been lost and the bone has started to respond, to
12 grow over itself and ultimately there will be no indication
13 that a tooth was there at all.

14 Q. Okay. Can you tell from your investigation of --
15 in this picture whether or not those two front teeth were
16 missing antemortem or postmortem?

17 A. Yeah. The ones that were there, I was pointing,
18 the anterior dentition is missing antemortem.

19 Q. Okay. Now, I want to turn your attention to
20 State's Exhibit 122. What are we looking at in 122?

21 A. That is a microscope picture of the hyoid bone --
22 the hyoid body at its point of articulation where the
23 left -- I believe it's the left -- hyoid -- the greater horn
24 would have articulated.

25 Q. Okay. So, this is the complainant, Linda

1 Hartsough's, hyoid bone in this case; is that right?

2 A. That's correct.

3 Q. When you looked at her hyoid bone under the
4 microscope, tell us what you found when you did your
5 examination.

6 A. There was a very small fracture of the -- on the
7 surface of the body where it articulates or would have
8 articulated with the left greater horn.

9 Q. Okay. Could you tell whether or not the right horn
10 had ever fused to that body?

11 A. It had not.

12 Q. Okay. And how did you know that?

13 A. It had a -- the surface was rounded. There was no
14 bony indication that those two bones -- that the horn and
15 the body had ever been in direct contact with one another.

16 Q. Okay. And when you were out on the scene, were you
17 able to recover that right horn?

18 A. No. Neither horn.

19 Q. I'm sorry?

20 A. Neither horn.

21 Q. Neither horn. Okay. Now, you -- I'm going to use
22 State's Exhibit 125 to help illustrate this. You're saying
23 that the right horn, which would be this horn; is that
24 correct?

25 A. Yes.

1 Q. In the complainant had never fused to the body of
2 the hyoid?

3 A. Correct.

4 Q. And can you draw a line where you found the
5 fracture on the left side?

6 A. Sure. Well, I'll do it on the right side of this
7 photograph.

8 Q. Okay.

9 A. It would have been -- it's not exactly putting a
10 line where I'm putting a finger but it's immediately to the
11 left of that on the body itself.

12 Q. Okay. So, in our complainant it was reversed.

13 A. Reversed, correct.

14 Q. This side was not fused?

15 A. Right, and that's where the fracture was.

16 Q. This side was. And so, when you examined it under
17 the microscope, you're seeing a fracture right here?

18 A. Right.

19 Q. Okay. Are fractures of the hyoid bone consistent
20 with strangulation cases, to your knowledge?

21 A. They are associated with it.

22 Q. Okay. It can be a result of strangulation?

23 A. Yes.

24 Q. I want to turn your attention -- did you --
25 actually, let me back up.

1 MS. FULLER: May I approach the evidence?

2 THE COURT: You may.

3 MS. FULLER: Thank you.

4 Q. (BY MS. FULLER) Did you bring your report with you
5 that you prepared in this case?

6 A. Yes.

7 Q. Okay. I am going to show you what has been marked
8 as State's Exhibit 123, which, I believe, is part of your
9 forensic report. When was this taken? When was this chart
10 created?

11 A. On the 30th of June of 2010.

12 Q. Okay. But at what point are you at in your
13 examination of the remains?

14 A. This is -- essentially what we do is clean the
15 remains, put them in anatomical position, you know, and take
16 those photographs and then what we do, we go through and
17 document all the injuries, all of the damage, all of that
18 stuff on this set of notes.

19 Q. Okay. I want to go back to the hyoid bone quickly.
20 You noticed the fracture on the hyoid bone. Did you notice
21 any other damage to the hyoid bone?

22 A. No.

23 Q. Did you notice any scavenger activity?

24 A. There was no definitive indication that that damage
25 we noticed or any other was scavenger related.

1 Q. Okay. So, unlike some of the other bones that had
2 the puncture marks and the --

3 A. Scoring.

4 Q. -- and the scoring, the scraping of the teeth on
5 the bone, you didn't notice any of that on the hyoid bone?

6 A. That's correct.

7 Q. So, are you able to rule whether or not it was a
8 peri or postmortem fracture?

9 A. No.

10 Q. Okay. Some of these other bones that you have
11 listed on here -- and I'm going to try to blow this up a
12 little bit. Some of these bones you can see, like, right
13 here, it says "postmortem fracture." And then above it, it
14 says "fracture." And first of all, the blackened areas, are
15 those bones that you have or bones that are missing?

16 A. Those are either bones or pieces of bones that are
17 missing.

18 Q. Missing.

19 A. Yeah.

20 Q. So, the portion of the bone that you have is this
21 white portion right in here?

22 A. That's right.

23 Q. And at one end of this, you just list "fracture."

24 A. Correct.

25 Q. And at the end, you list "postmortem fracture."

1 A. Uh-huh.

2 Q. Is that correct?

3 A. Yes.

4 Q. Why the difference between the two?

5 A. These notes are the source of all the information
6 that goes into the report. So, this is a documentation of
7 all of what we saw on that. So, there is a distinction
8 between fracture and postmortem fractures. What fracture
9 means is that it's fractured but we don't know if it's peri
10 or postmortem. When it says "postmortem," that means there
11 is some definitive indication it happened in the postmortem
12 period, meaning that there was scoring, puncture marks,
13 furrows, things like that.

14 Q. Okay. So, if you list it as postmortem fracture,
15 that means that there is definite scavenging activity
16 associated with that fracture?

17 A. Right.

18 Q. If you just list it as fracture, that means you
19 have no idea when that fractured because you don't have
20 evidence of any postmortem activity on that part of the
21 bone.

22 A. Right. We know that it's either peri or post
23 because there's no healing; but other than that, we can't
24 say anything.

25 Q. Okay. And you have that on -- that distinction

1 throughout the entire skeleton; is that correct?

2 A. That's correct.

3 Q. For instance, on an ankle or one of these bones
4 you've got postmortem loss and puncture marks but on the
5 other side you just have fractures on either.

6 A. That's correct.

7 Q. And is that because, for instance, on this bone
8 there's no evidence of teeth marks or scoring or anything to
9 indicate that there was scavenging activity?

10 A. That's correct.

11 Q. Now, is it your job to -- let me back up.

12 Since you can't list some of these things as
13 being postmortem, there's no way that you can definitively
14 rule out that the other things listed as fractures on here
15 were not caused at or near the time of death; is that
16 correct?

17 A. That's correct.

18 Q. Okay. So, for instance, if you see a fracture in
19 the arm or a fracture up here in the shoulder bone, or
20 fractures down here in the leg and the -- towards the ankle,
21 you can't rule out that those weren't caused by some sort of
22 trauma at the time of death.

23 A. Right. Can't rule that out.

24 Q. Okay. Now, you can't rule that out. Is it -- is
25 it your job to determine how those bones came to be

1 fractured?

2 A. No. Our report is part of the autopsy report. We
3 describe what we see, we describe how -- we describe the
4 mechanics of the fracture of a particular fracture, we'll
5 describe the way in which it broke. We don't interpret it.
6 We don't add anything in terms of, you know, how injury
7 occurred. That's not -- that's for the pathology to take
8 all of the evidence and put it all together.

9 Q. Okay. So, we could sit here all day and come up
10 with scenarios about how things might have occurred --

11 A. Uh-huh.

12 Q. -- on the fractures because there's no postmortem
13 evidence. But it's not your job to come up with those
14 conclusions; is that correct?

15 A. That's correct.

16 Q. Okay. Now, after you -- what other type of testing
17 would you do when you have remains like this?

18 A. What we do -- any -- just to be clear, any skeletal
19 case that's like this, we're going to go through the same
20 sets of procedures regardless of the circumstances. So,
21 we're going to do a full trauma analysis, which is what we
22 did on this. But we also develop what's called a biological
23 profile.

24 Q. Okay. Let's talk about the biological profile for
25 a few minutes.

1 A. Sure.

2 Q. At the point that you -- you just said in every
3 skeletal case you're going to do the biological profile; is
4 that correct?

5 A. It depends what's requested of -- we often do, as I
6 mentioned earlier, we'll do trauma analysis of individual
7 elements that we recovered at autopsy. It depends what the
8 pathologist asks for. If they say, I want a trauma analysis
9 of this setting of the right femur, that's what we do. If
10 they say, I want a skeletal analysis, we have an SOP that
11 says you do a biological profile and trauma analysis.

12 Q. What were you requested to do in this case?

13 A. A full skeletal examination.

14 Q. To include the biological profile?

15 A. And trauma analysis.

16 Q. Okay. Have we covered everything on the trauma
17 analysis?

18 A. Yes.

19 Q. Okay. Now, moving on to the biological profile,
20 what makes up the biological profile?

21 A. Well, it's a series of methods that we use to
22 determine things that would allow -- that could narrow the
23 possible number of identities that this person could be. In
24 other words, you have a decedent and you have essentially an
25 infinite number of missing persons, you're trying to figure

1 out who it is, what you want to do is narrow -- limit the
2 number of people that it could be by determining from the
3 skeleton certain things about that individual based on that
4 skeleton. So, we're talking ancestry or racial variation,
5 sex, age, stature, things of that nature.

6 Q. Okay. Are these methods that are used and used
7 regularly in your profession?

8 A. Yes.

9 Q. And they're accepted by the experts in your
10 profession?

11 A. Yes.

12 Q. Is it a formula that you use? Can you tell us a
13 little bit about what you get and how you process that data?

14 A. Well, there is -- there are nonmetric and metric
15 traits. Nonmetric are things that you look at and your
16 score is yes or no. They're binary data, meaning they're
17 either present or not. There are also metric traits that we
18 do, meaning that we take measurements from different
19 landmarks, particularly on the skull, and we actually then
20 measure the long bones as well and so, those things are
21 input into a variety of different either discriminative
22 functions or regression analyses, things like that.

23 Q. And are those -- do you have computer programs to
24 assist you in processing that data?

25 A. Some of them we do and some of them don't require

1 that.

2 Q. Okay. Let's talk about ancestry or what we would
3 refer to as race.

4 A. Uh-huh.

5 Q. How do you determine ancestry in a case like this?

6 A. The primary ancestral traits in the skeleton are
7 found on the skull. There's not much in the way of
8 ancestral variation on the rest of the skeleton and there
9 are, like I said, metric and nonmetric indicators of that
10 and of course there's no distinction or definitive
11 distinction between one racial category and another; so,
12 this is all continuous variables so that you have -- when
13 you get an estimate of race, you're not able to say it is;
14 you're making an estimate and you attach a probability to
15 that. So, the primary tool for evaluating or for estimating
16 race from the skull is we take a series of 23 measurements
17 or some number of those, depending on which ones are
18 available, and we enter them into a discriminate function
19 software program that then generates an estimate. It will
20 take those continuous variables; in other words, a
21 measurement, puts it into a discriminate function and it
22 puts it into one category or another. It's always going to
23 put it into a category but the important part is that it
24 also gives you statistics that tells you how typical it is
25 of that category and how likely it is to belong to that

1 category.

2 Q. Okay. In this case, in 10-1866, did you do a test
3 for ancestry?

4 A. We did.

5 Q. And can you tell us what the results were?

6 A. It came -- white is what it said.

7 Q. And what was the probability or the statistic?

8 A. They were very strongly in support of that. I can
9 look in my notes. The posterior probability was .844 and
10 the typicality was a .129. Those are both strong
11 indications that it fit strongly in that category.

12 Q. Okay. Let's talk about sex. How would you
13 estimate sex?

14 A. Sex, the best indicator of sex is the pelvic bones
15 and that is that those -- the pelvic bones of females are
16 adapted for childbirth. So, because of that, the dimensions
17 are different. Most of the methods that are used for sex
18 estimation from the pelvis are nonmetric, meaning you
19 don't -- we still take measurements but they're not
20 necessary to determine sex. There is one method that's sort
21 of standard in the field. It's called the Phenice method
22 that looks at three traits of the pubic bone and each of
23 those is very strongly in support of the female estimation.

24 Q. Okay. And in this case what did you find the
25 probability of the sex to be?

1 A. It does not generate -- our methods do not generate
2 probabilities for that.

3 Q. Okay. Does it just tell you one way or another?

4 A. Yes. There are probabilities in the research
5 papers. We don't generate them. So, in other words, the
6 paper that the -- the Phenice method says it's based on
7 population and it says that that method, when applied
8 correctly, is correct in excess of 90 percent of the time.

9 Q. Okay. And what did you deem these remains to be in
10 terms of sex?

11 A. Female.

12 Q. Let's talk about age. How do you estimate age?

13 A. Age is -- it depends. When you're talking about
14 kids, you're looking at developmental stuff. We're not
15 talking about that. We're talking about an adult; so,
16 you're looking at degenerative changes. Age ranges in
17 adults, because of that, the degenerative changes are not as
18 predictable as are developmental changes. So, the age
19 ranges are wider but you're looking at -- there are certain
20 parts of the skeleton that degenerate in a more predictable
21 way than others. Those include the pubic symphysis, which
22 are the location where your two pelvic bones come together
23 in the front of your body. In this case those were not
24 present. Those had been lost postmortem but we -- but
25 that's another method that's based on what's called the

1 external end of the fourth rib or fifth rib and the external
2 end is the part of the front of your body where they come to
3 meet -- the cartilage that's between your sternum and your
4 rib, that -- there are several methods that are based on the
5 degeneration of that. There's certain things about the way
6 that bone degrades that are predictable and so we did that.
7 And in this case we also had suture closure. Sutures are
8 the joints between your skull bones. They close and fuse
9 and obliterate at a predictable rate and so, we ended up
10 with this case using the suture closure and the rib method
11 in conjunction with one another.

12 Q. Okay. And for age, do you come up with a
13 probability or do you just come up with a range?

14 A. Just come up with a range.

15 Q. And what was the range that you came up with after
16 doing the calculations for the remains in this case?

17 A. 40 to 60 years.

18 Q. 40 to 60 years.

19 A. Yeah.

20 Q. Now, the next thing that you tested, I believe you
21 said, was stature?

22 A. Yes.

23 Q. And what is stature?

24 A. Stature is your actual living height and so, what
25 you're talking about, when you're talking about a skeletal

1 case, you have to estimate your overall living height from
2 individual elements of the skeleton. Obviously there are
3 methods that use a combination of the combined lengths of
4 all the bones that are the weight-bearing bones of your body
5 but we don't have all the elements to do that in this case
6 so there are methods that use -- that extrapolate from
7 measurements of individual bones to the stature of the
8 person.

9 Q. Okay. And in this case what did you find the
10 stature to be?

11 A. Between 57 and 62 inches, which is --

12 Q. And can you say that in feet?

13 A. Yeah, that's, like, four-five and five-two, I
14 think. Very short.

15 Q. Okay. Are there any other -- let me back up. So,
16 from your forensic investigation, you found that this person
17 was a white female, 40 to 60 years old, who was about --
18 around five feet typically on average.

19 A. Right.

20 Q. If an identification has already been made on the
21 remains, would you still have gone through the process of
22 doing the estimation for ancestry, sex, age and stature?

23 A. Yes, yes.

24 Q. Why is that?

25 A. We do it at the request of the pathologist,

1 regardless of the circumstances. So, we go through the same
2 process whether the person's been identified or not.

3 Q. Okay. Once you find out that an identification has
4 been made, would you compare the identification that was
5 made, that person's age, sex, ancestry, stature to the
6 calculations you came up with?

7 A. Certainly we will compare it but we won't change
8 what we have in our report.

9 Q. In this case did you find that the identifications
10 that were made through the dental comparison and your
11 methods of determining those factors were, in fact, similar
12 or the same?

13 A. Yes.

14 MS. FULLER: May I approach the witness?

15 THE COURT: You may.

16 Q. (BY MS. FULLER) I'm going to show you what's
17 already been admitted as State's Exhibit 123. Does that
18 look familiar to you? You can flip through there.

19 A. Okay. Yes, that's familiar.

20 Q. Okay. What is that?

21 A. It's the autopsy report with our report attached to
22 the back of it.

23 Q. Okay. So, the beginning of it is a report prepared
24 by who?

25 A. Dr. Pinneri.

1 Q. Dr. Pinneri. And then in the back is the forensic
2 anthropology report?

3 A. Right, with our notes, bench notes attached.

4 Q. Okay. And all of these pages basically represent
5 your portion of the examination that you did?

6 A. The anthropology portion, yes.

7 Q. Okay. And I want to talk about the estimation of
8 age there. There was some things crossed out there. What
9 did it initially say and then what was it changed to?

10 A. Well, any time we do these notes, it's a record of
11 everything we do. So, even if we change our minds or
12 something during the process, it's still recorded -- this is
13 a reflection of the fact that this analysis was done -- we
14 had a forensic anthropology fellow, whose photograph you saw
15 at that scene, in conjunction with myself and she compiled
16 these -- the initial age range and I felt like it needed to
17 be adjusted. So, that's a reflection of that.

18 Q. Okay. So, she initially put it at what?

19 A. 45 to 65.

20 Q. And you changed to?

21 A. From 40 to 60.

22 Q. 40 to 60. So, just a change in five years in
23 either direction?

24 A. That's right. Because there's some overlap. The
25 different methods give us ranges and we've got to reconcile

1 the different ranges with one another. I felt like it
2 needed to be adjusted.

3 Q. Okay. Were there any other areas when you were
4 estimating race, age, sex, stature, that you went back and
5 made any corrections or adjustments to?

6 A. No.

7 Q. Okay. With these sheets back here on State's
8 Exhibit 123, these are just a record of the data that you
9 used to compile and come to the conclusions that you did.

10 A. That's right.

11 Q. Okay. Can you tell if somebody has undergone
12 trauma by looking at their skeleton? For instance, can you
13 tell if somebody's been shot by looking at their skeleton?

14 A. Yeah, yes.

15 Q. And what would you look for to come to that
16 conclusion that somebody had been shot?

17 A. By shooting in particular?

18 Q. Yes.

19 A. Yeah. It leaves -- bullet impacts leave pretty
20 distinct characteristics on bone. So, in a skull, for
21 example, you see what's called beveling. As the bullet
22 passes through the bone for -- it leaves -- it punches out a
23 piece of the bone on the opposite side from where it hit.
24 That tells you that it came from one direction to the other.
25 So, it's pretty distinct.

1 Q. What if somebody was stabbed? Could you see that
2 in their skeleton?

3 A. If it hits bone, yes.

4 Q. And how would you be able to differentiate a stab
5 mark from, say, a puncture mark from an animal?

6 A. The cross section of the mark is going to be
7 significant, the -- larger in a scavenger than it would be
8 in a stab wound.

9 Q. Okay. Now, did you find any evidence of trauma,
10 such as a stabbing or the shooting on the remains of Linda
11 Hartsough?

12 A. No.

13 MS. FULLER: Pass the witness.

14 THE COURT: Ladies and gentlemen, why don't we
15 take our morning break. We'll be in recess until 20 till,
16 please.

17 (Jury not present.)

18 (Recess.)

19 (Jury present.)

20 THE COURT: Be seated, please. And
21 Mr. Cornelius, you may proceed.

22 **CROSS-EXAMINATION**

23 Q. (BY MR. CORNELIUS) Dr. Wiersema, I'm Skip
24 Cornelius. We've met before.

25 A. Yes.

1 Q. In fact, we've talked about this case before,
2 correct?

3 A. Yes.

4 Q. Did you ever tell anybody from the Medical
5 Examiner's Office or the police department or the DA's
6 Office that you as a doctor in anthropology believed that
7 the hyoid bone was broken at the time of death?

8 A. No.

9 Q. You've never said that to anyone, have you?

10 A. No.

11 Q. Because you don't know.

12 A. Right.

13 Q. And have you ever said to anyone that it couldn't
14 have been broken or fractured by an animal or by scavenger
15 activity?

16 A. No.

17 Q. Because, again, you don't know?

18 A. That's correct.

19 Q. It could have been broken by animal activity.

20 A. That's right.

21 Q. Okay.

22 MR. CORNELIUS: May I use the screen, Judge?

23 THE COURT: Sure.

24 Q. (BY MR. CORNELIUS) Do you remember where this area
25 was that you did your work on this case?

1 A. I do.

2 Q. Do you recognize what I'm putting on the screen?

3 *THE COURT REPORTER:* That's not admitted.

4 *THE COURT:* Wait a second. Hang on. Carrie
5 says that's not -- what number is that?

6 *MR. CORNELIUS:* 104.

7 *MS. FULLER:* That's not in evidence.

8 *THE COURT:* It's not in evidence.

9 *MR. CORNELIUS:* Is there another map I can
10 use?

11 *THE COURT:* There is a map and it's 3, I
12 think.

13 *MR. CORNELIUS:* I'm going to offer 104.

14 *THE COURT:* Or 129.

15 *MR. CORNELIUS:* Do you have an objection to
16 104?

17 *MS. FULLER:* No.

18 *THE COURT:* 104 will be admitted.

19 *MR. CORNELIUS:* We'll just offer it as a
20 State's exhibit, State's 104. Is that okay? I can put my
21 own number on it. Is that okay?

22 *MS. FULLER:* That's fine.

23 *THE COURT:* So, State's Exhibit 104, offered
24 by the defense, is admitted, just so the record's clear.

25 Q. (*BY MR. CORNELIUS*) Can you see that -- can I

1 approach the screen over here, Judge?

2 THE COURT: Sure.

3 Q. (BY MR. CORNELIUS) You can look at whatever you're
4 more comfortable looking at. You can see this is kind of a
5 spaghetti exchange here between 610, the Loop, and the Hardy
6 Toll Road, Hardy Road and the Hardy Toll Road.

7 A. Right.

8 Q. And this scene was somehow in a field or in a
9 wooded area that is part of all this spaghetti exchange,
10 correct?

11 A. That's correct.

12 Q. This area here, because of all these bridges or
13 overpasses and freeways, that area underneath all that stuff
14 is uninhabited; you can't have houses over there, right?

15 A. I don't know that personally. There were no
16 houses.

17 Q. Okay. And it was kind of a wooded area.

18 A. (Nods head affirmatively.)

19 Q. Correct?

20 A. Yes.

21 Q. And by that I mean it wasn't just one little area
22 that had a few trees and shrubs where these bones were
23 found. It was a big wooded area all under this overpass
24 area, correct?

25 A. Correct.

1 Q. This has been introduced as State's 22. I don't
2 know if you can recognize or orient yourself to this picture
3 but is that consistent with one of the views you would have
4 had out there?

5 A. Yeah. I have not seen that photograph but it is
6 consistent with it.

7 Q. This is State's 13, different view, but is that
8 consistent with what you saw out there?

9 A. Yes.

10 Q. State's 20, is that consistent with what you saw
11 out there?

12 A. Yes.

13 Q. State's 105.

14 A. Yes.

15 Q. It's a pretty substantially wooded area, correct?

16 A. That's correct.

17 Q. Pardon me. The term "forensic," that means legal?

18 A. Yes.

19 Q. So, if somebody is a forensic anthropologist, you
20 do your work to be used in court.

21 A. Right.

22 Q. Somebody who's a forensic dentist does his work to
23 be used in court, right?

24 A. That's correct.

25 Q. Both jobs imply testifying before juries or judges,

1 correct?

2 A. Right.

3 Q. Okay. Now, I want to talk to you quickly about the
4 gross findings that y'all had concerning sex, age, race and
5 stature.

6 A. Okay.

7 Q. Let me see if -- do you have your report?

8 A. Uh-huh.

9 Q. Do you need it?

10 A. Depends on the question.

11 Q. Okay. I bet you're going to need it.

12 We'll start with sex. As I read the report,
13 and I don't read -- you mentioned -- when you said 90
14 percent or 90 -- some 90-and-numbers percent, what did that
15 mean earlier in your testimony?

16 A. With regard to sex?

17 Q. Yeah.

18 A. Let's see. Can you read to me what I said? Is
19 that or is that not possible?

20 I think what I meant is that when you're
21 talking about sex, you're not -- our estimate is not going
22 to say 90 percent but that the method is based on a
23 population of people whose sex is documented and in there
24 this method was accurate in excess of 90 percent of the
25 time.

1 Q. The method is correct in excess of 90 percent of
2 the time?

3 A. That's right.

4 Q. So, if the jury were to take from that testimony
5 that y'all were -- if you had to put a number on it,
6 90 percent certain this was a female, is that what you're
7 saying?

8 A. Yes.

9 Q. Okay. So, we've got 90 percent that this person
10 was a female. And then when we go to the age, one doctor --
11 is she a PhD?

12 A. Dr. Pinto, yes.

13 Q. -- put a range of 40 to 60 and you put a range of
14 45 to 65 and they're both reflected in your report.

15 A. Right.

16 Q. So, a 20-year span as to the age of the person,
17 right?

18 A. If you -- yes.

19 Q. Well, don't just agree with me.

20 A. Oh, yes, you're correct.

21 Q. If I'm wrong, tell me I'm wrong.

22 A. No, I was making sure I understood the question.

23 Q. A person could be, in your opinion, as young as 45
24 and as old as 65.

25 A. 40 to 60 is what we settled on; so, yes.

1 Q. Okay. I thought you changed it from -- you changed
2 it down?

3 A. Yes.

4 Q. Okay. I'm sorry. I misquoted you. So, we're
5 90 percent certain it's a female and we can -- the age can
6 be somewhere between 40 and 60, right?

7 A. Yes.

8 Q. Now, the race or ancestry. What is this
9 probability of a thousand, typically 0.727? It sounds like
10 72.7 percent in your report.

11 A. The typicality is a measure of how typical that
12 skull is of the bones within that population. The authors
13 of that program say that a typicality probability of greater
14 than .5 is very strong.

15 Q. Okay. I don't do this so I don't know. .5 is
16 50 percent, right?

17 A. It's -- yes, essentially.

18 Q. Okay. I don't follow you. I mean, what does the
19 72 percent mean?

20 A. You mean what is that -- that is -- it is typical
21 of -- it is -- it's hard to explain. It is typical of --
22 let me see if I can explain it with -- there's a graphic in
23 the notes. Might be easier. All I can tell you, that
24 number, if it's in excess of .5, is considered strongly in
25 support of that particular classification.

1 Q. Okay. So, if it's -- if this number is greater
2 than .5, then it's strongly in support of the fact that this
3 is a Caucasian?

4 A. Correct.

5 Q. So, we're -- so, it sounds like that your formula
6 produces a 72.7 percent believability that the person's
7 Caucasian. Am I not --

8 A. It's just a measure of the typicality, just a
9 measure of how well those fit. So, in other words, that
10 program's going to put it in one category. The typicality
11 is not a direct measurement of the likelihood. It's a
12 measurement of how typical the variations those measurements
13 account for is of the other skulls in that.

14 Q. And if the typicality is more than .5, or
15 50 percent, that's a strong belief that the person's
16 Caucasian?

17 A. Right.

18 Q. And then in terms of height or stature, your
19 estimate is 57 inches to 62 inches?

20 A. Yes.

21 Q. A five-inch variation, and was difficult to do
22 because you didn't have all the bones?

23 A. Right. And the reason this range is -- this plus
24 the age are wide is because that accounts for the 95
25 percentile of variation. So, you've got an estimate, it

1 gives you a mean number that it's likely to be and it just
2 gives you -- just to err on the side of caution, it gives
3 you the 95th percentile.

4 Q. Okay. So, if there was a legitimate question about
5 who this particular woman was, then what you would be able
6 to add to answering that question is there's about a
7 90 percent certainty it was female.

8 A. That's right.

9 Q. There's about a age range from 40 to 60 and there's
10 about 72.7 percent of -- what's the word? Typicality,
11 whatever that means.

12 A. The posterior probability is the more -- is the
13 more -- that's -- posterior probability is an estimate of
14 whether it fits in there. Typicality is a measure of
15 whether it's consistent with. So, you have to look at both.
16 The fact that the posterior probability is 1 is very strong.
17 There's just some of the features in there that don't --

18 Q. And --

19 A. Go ahead.

20 Q. And what's said here. You said -- you actually
21 said strong statistical support.

22 A. That's correct.

23 Q. Not very strong but strong statistical support that
24 this is a Caucasian.

25 A. That's correct.

1 Q. Right? And then the height range is within five
2 inches, somewhere, in your opinion, between 57 inches and
3 62, right?

4 A. That's right.

5 Q. Well, that eliminates some people but it's a long
6 ways from the identification of a body, isn't it?

7 A. Right.

8 Q. Okay. The teeth. You have a couple sections in
9 here that you did on the teeth.

10 A. Uh-huh.

11 Q. Correct?

12 A. Yes.

13 Q. And on page 6 of 11, you know where that is?

14 A. In the report or in the --

15 Q. In your report?

16 A. Yeah.

17 Q. Okay.

18 A. You're talking about the notes now. Okay.

19 Q. You list in there which teeth were present and
20 which teeth were missing, correct?

21 A. That's correct.

22 Q. And you did that yourself?

23 A. The handwriting was Dr. Pinto's but I was standing
24 right there when she did it, supervising.

25 Q. How many teeth were present?

1 A. I believe she had 14 present. So, it's 32 minus
2 14.

3 Q. The 14 present, does that include the one that was
4 found?

5 A. Uh-huh.

6 Q. Okay. And I'm not trying to split hairs but how do
7 you know that was her tooth? You just assuming it was?

8 A. Well, it did fit back in the socket, which is a
9 good indication that it's hers.

10 Q. That's your basis for believing it's her tooth
11 because it fit in the socket and it was found close --

12 A. That's right, and it was found with --

13 Q. Okay. The overgrowth or undergrowth or just the
14 growth in general of the vegetation there, had it grown in
15 places over these various bones?

16 A. Yes, it had.

17 Q. The people that got there before you did,
18 particularly the crime scene investigator, did you meet her?

19 A. I did.

20 Q. Okay. Did you note that she was measuring the
21 distance from a given point to where the bones were found?

22 A. I know that -- yes.

23 Q. So that there would be a record -- have you ever
24 seen her report?

25 A. I have not.

1 Q. Would it surprise you that she has a report
2 measuring the distance from where each of these bones were
3 found from a given spot?

4 A. No, because we participated in the collection of
5 those data.

6 Q. And so, her -- she's already testified and I can't
7 tell you her testimony, but would it surprise you if she's
8 able to tell the jury the distance north and south or east
9 and west as to the rate -- as to the area that the bones
10 were found in?

11 A. No, that was -- we do that on purpose.

12 Q. Okay. Now, what is your opinion, as an
13 anthropologist, as to why the bones were spread out so far?

14 A. I would attribute most of that scavenging movement
15 of those bones by -- in the postmortem period.

16 Q. Like there was a femur or maybe several long bones
17 found a distance away from the main cluster.

18 A. That's right.

19 Q. They didn't just get blown over there. They're
20 pretty heavy, right?

21 A. Yes.

22 Q. So, in your opinion, you think an animal probably
23 was eating what flesh was left on those bones?

24 A. (Nods head affirmatively.)

25 Q. You have to answer out loud.

1 A. Okay. Yes.

2 Q. And moved the bones?

3 A. Yes.

4 Q. Maybe get away from some other animals: This is
5 mine; I'm going to eat it.

6 A. I can't tell you why but I can tell you that's
7 probably what happened.

8 Q. Okay. Do the animals sometimes eat the bones
9 themselves?

10 A. Yes.

11 Q. Would that be the small bones or the big bones?

12 A. I can tell you that we -- the -- that the small
13 bones are often not recovered and a lot of -- what it says
14 in the literature is that's presumed because they're
15 consumed.

16 Q. Okay. The growth -- you said it wasn't -- I've
17 forgotten how you've phrased it, but it wasn't a huge amount
18 of growth but the vegetation there, some of it covered the
19 bones; is that true?

20 A. Yeah, there was some very immature vegetation that
21 covered the bones.

22 Q. And that would help to hold those bones in place
23 and help y'all be able to find them, right? I mean, the
24 wind wouldn't blow them away or water wash them away as
25 readily if they were covered by vegetation.

1 A. Right.

2 Q. You know that the crime scene unit and probably all
3 the police officers that were out there --

4 MR. CORNELIUS: May I use the equipment again,
5 Judge?

6 THE COURT: Sure.

7 Q. (BY MR. CORNELIUS) -- are trained not to disturb
8 the evidence, not to step on things that might be evidence,
9 right?

10 A. Right.

11 Q. And yet somebody has to walk to put all these
12 little flags out, right?

13 A. Right.

14 Q. I mean, somebody actually walked over there -- all
15 this area here to put those flags there, correct?

16 A. Right.

17 Q. And y'all looked under a 20-by-20 roughly, you
18 said, area that you excavated -- I'll call it excavation; I
19 don't know if that's what it is -- skinned it to see if you
20 found anything, correct?

21 A. We surveyed a greater area than that but then --
22 you're right, the area we went down to the ground was about
23 that size.

24 Q. Is that area shown -- I know this picture was taken
25 before you did it. Is that shown on this picture here?

1 A. The area that we did that is shown.

2 Q. Where is that? Can you draw a circle around it?

3 A. I mean, it's pretty much from edge to edge of this
4 photograph.

5 Q. All right. You don't have to do it then. Pretty
6 much the whole photograph?

7 A. Yeah. Well, not quite but a significant portion of
8 it.

9 Q. And the hyoid bone, where was it found?

10 A. In that -- in the -- within that primary site, that
11 darkly stained area.

12 Q. Which is pretty much this whole photograph?

13 A. No. It's that kind of darkly stained area there,
14 that's the primary site.

15 Q. Oh, okay. What else was found there? Do you
16 remember?

17 A. A single tooth.

18 Q. Just a tooth?

19 A. There was -- I mean, there are bones -- when -- it
20 depends which part you're talking about. As part of that
21 process after we did the recovery, we found within that area
22 a single tooth and the hyoid body. But there were other --
23 when we did the basic survey, we found other elements in
24 that area.

25 Q. Okay. Why are they not marked with flags if that's

1 the area you're talking about?

2 A. I think they are. I think they're probably on the
3 edge of it right there.

4 Q. Maybe I do want you to draw -- draw me a circle, if
5 you can -- I misunderstood you. I thought you meant this
6 whole area was excavated.

7 A. It was.

8 Q. Oh, but this is where you think the hyoid bone was
9 found, closer to here?

10 A. It is. That's correct.

11 Q. Okay. And along with that was a tooth found there.

12 A. Right.

13 Q. So, something had to move that hyoid bone from
14 where it had been to that area, right? Because the --
15 nothing else was there.

16 A. Well, the darkly stained area is that primary site.
17 That's where most of the decomposition took place.

18 Q. Uh-huh.

19 A. The bones that you're seeing, some of them are
20 actually moved from that, which means after a significant
21 amount of decomposition has taken place they were moved at
22 least that far. The hyoid itself was found within that
23 darkly stained area. That's that primary site.

24 Q. Okay. And you looked closely everywhere to see if
25 you could find the other two parts of the hyoid bone?

1 A. That's right.

2 Q. And you never found them?

3 A. (Shakes head negatively.)

4 Q. At the time that you found that bone, did you know
5 that was going to be important?

6 A. I knew what it was. I didn't -- I mean --

7 Q. And did you -- of course you obviously knew it had
8 horns.

9 A. Correct.

10 Q. And you were looking for them.

11 A. Yes.

12 Q. Are they kind of tiny, soft bones?

13 A. No, they're not. They're tiny but they're not
14 soft.

15 Q. So, they wouldn't just dissipate and dissolve,
16 right?

17 A. Right.

18 Q. So, something moved them. You know they were there
19 at one point, right?

20 A. That's correct.

21 Q. Something moved them, correct?

22 A. Yes.

23 Q. What about animals? The animals that were in here,
24 scavenger animals, whatever kind they were, they wouldn't
25 have been concerned with whether they stepped on bones or

1 walked where they walked, right?

2 A. Right.

3 Q. So, could an animal have broken it just by stepping
4 on it, the hyoid bone?

5 A. The body of the hyoid?

6 Q. Uh-huh.

7 A. You know, what I can tell you is there's a
8 fracture. I can't tell you anything about where it came
9 from.

10 Q. So, you can't tell this jury that that couldn't
11 happen?

12 A. Right.

13 Q. Now, from your investigation, I think the
14 prosecutor was trying to get you as close as she could to
15 predict, like, the time of death, you know, from what you
16 see out here and you were -- I think your response was it
17 was consistent with what was reported in this. Okay. What
18 does that mean? Can you be more specific than that?

19 A. I can tell you that that, again, is a highly
20 variable -- in fact, we -- we do not focus heavily on
21 establishing a postmortem interval. In this case the degree
22 of scavenging that was present on the bones and the fact
23 there was that primary site of decomposition and the fact
24 the bones were still of good quality is consistent with them
25 having gone from a fleshed body to this degree of

1 skeletonization in that period of time.

2 Q. And what is that period of time?

3 A. The period of time between when she went missing
4 and was --

5 Q. What is that? How long is that?

6 A. About a month and ten days.

7 Q. Okay. Now, is it also consistent with one month?

8 A. It can be, yes.

9 Q. Is it consistent with two months?

10 A. Sure.

11 Q. So, what is the range? What would be the range?

12 A. That's what I mean. It's a -- it can -- there's a
13 field in and of itself that focuses on this and they have
14 not narrowed -- they have not been able to narrow that
15 range.

16 Q. Okay. Well --

17 A. We can tell you -- essentially what our postmortem
18 interval implies is it has not been there for years, for a
19 prolonged period.

20 Q. Okay. Could it be there for one year?

21 A. I would think that is very unlikely.

22 Q. Half a year?

23 A. Yes.

24 Q. Okay. So, do you think that's -- I'm not tying you
25 down. You know, I'm not going to have an expert come in

1 here and say you're wrong about that. I'm just going to
2 take your word for it.

3 A. Okay.

4 Q. Do you think that's kind of an outside -- just
5 based on your experience and everything you saw, that's kind
6 of the outside length of time the body could have been
7 decomposing there?

8 A. I do.

9 Q. About six months?

10 A. That's right.

11 Q. What's the closest? Could it have happened between
12 two weeks?

13 A. It can, yes. There are research that shows -- in
14 pigs, experimental research that shows bodies can go to this
15 condition in a matter of days.

16 Q. Days?

17 A. Five days.

18 Q. So, the least amount of time that we could have
19 gotten this kind of decomposition would be how many days?

20 A. I would say one week.

21 Q. One week. Seven days?

22 A. That's right.

23 Q. So, to tell the jury that it's consistent with the
24 reported time in this case is true but it's also consistent
25 with seven days, eight days, nine days, ten days all the way

1 up to six months, right?

2 A. That's correct.

3 Q. I'm going to put this up. It's just exactly --
4 it's a copy of the one you made, isn't it?

5 A. Yes, it is.

6 Q. You have a copy of this in your notes.

7 A. Uh-huh.

8 Q. What do you call this?

9 A. It's a skeletal diagram, part of our bench notes.

10 Q. Skeletal diagram?

11 A. Yes.

12 Q. I've tried to mark in yellow the areas where you
13 have -- or somebody has put fractures.

14 MR. CORNELIUS: May I approach the board up
15 there, Judge?

16 THE COURT: You may.

17 Q. (BY MR. CORNELIUS) Who did this diagram?

18 A. It's Dr. Deborrah Pinto.

19 Q. Did you assist?

20 A. I did.

21 Q. Down at the bottom of that diagram in yellow, what
22 does that say?

23 A. All fractures are consistent with perimortem and/or
24 postmortem trauma. Neither can be ruled out.

25 Q. What does that mean?

1 A. It means that there is nothing about any of the
2 fractures that we can say -- that we can place it either
3 definitively in the perimortem -- well, there is -- some can
4 be postmortem. What I'm saying is there is none of them we
5 can say are perimortem fractures. That's what --

6 Q. Let me give you mine and you tell me if I'm right.
7 I think here you're only talking about the fractures that
8 don't also say that -- that already say that they're
9 postmortem. I mean, because some of them you -- I didn't
10 mark the ones, all of them that say postmortem, you know, or
11 that have the --

12 A. Right.

13 Q. They're clearly postmortem.

14 A. Right.

15 Q. So, I think this is referring -- what do I know?
16 I'm just telling you -- see if I'm right. This is referring
17 to the fractures that aren't clearly postmortem, the ones
18 that are left that aren't clearly postmortem. You can't say
19 whether they happened at the time of death or after death,
20 right?

21 A. Right.

22 Q. And that applies to the hyoid bone.

23 A. Correct.

24 Q. Okay. Now, some questions about this. Why is this
25 not a fracture? I mean, this is missing, right? The black

1 means it's missing, correct?

2 A. (Nods head affirmatively.)

3 Q. Correct? You have to answer out loud.

4 A. That's correct.

5 Q. I mean, this part down here, I mean, why is that
6 not considered a fracture? I mean, right along here. Why
7 wouldn't that be a fracture?

8 A. There are -- I don't have an answer for that right
9 now but it implies to me there is -- for some -- there is
10 some other reason that it's not there. Doesn't have to be a
11 fracture. It could have been --

12 Q. Well, if it was just eaten --

13 A. No, then it would be considered a postmortem
14 fracture.

15 Q. Okay. But it would be considered a fracture?

16 A. Yes.

17 Q. Okay. All right. Well, does this mean that just
18 this part of the bone was found?

19 A. That's correct.

20 Q. And the rest of it is missing and in all likelihood
21 an animal ate it?

22 A. I don't know about that but I can tell you that
23 it's missing.

24 Q. Okay.

25 A. Based on that diagram.

1 Q. Okay. Are these, these black parts, these tips
2 here, I'll call them, is that bone? We're talking about
3 bone, right? Not cartilage or something?

4 A. Right.

5 Q. It's bone?

6 A. Right.

7 Q. And -- okay. See, like, over here it says this
8 part's missing and it shows this is a fracture.

9 A. Correct.

10 Q. Do you think maybe it just didn't -- is that
11 obvious, just that left off?

12 A. I think so. I think so.

13 Q. All right. Let's start up here. What is that?
14 The collarbone?

15 A. That's a first rib on the right side.

16 Q. It's a what?

17 A. First rib. Oh, that is a collarbone, yes.

18 Q. Clavicle, which is the collarbone, right?

19 A. That's right.

20 Q. Now, what does this say under there? I can't read
21 it.

22 A. Says fracture --

23 Q. Postmortem?

24 A. Fracture posterior means it's on the back side.

25 Q. On the back side.

1 A. Yeah.

2 Q. So, that's a fracture that you don't see any
3 evidence of animal activity; so, you can't tell if that
4 happened after death, before death or at the time of death?

5 A. I would say we can't say if it's perimortem or
6 post, right.

7 Q. Is that differently than what I said?

8 A. You included before. I mean, usually if there's
9 something that we would ever consider before death, it
10 implies healing of some sort. So, we've already taken that
11 out of the conversation.

12 Q. Okay. I got you. So, this person that's
13 represented by this diagram up here could have had their
14 collarbone broken in a fight at the time of their death.

15 A. Yes.

16 Q. All right. This break right here, is that
17 radius -- what is that?

18 A. Yes. That's the radius.

19 Q. So, it's a forearm bone?

20 A. That's correct.

21 Q. Couldn't tell if there's any animal activity on
22 this bone?

23 A. Right.

24 Q. That could have been done -- could have had their
25 arm broken at the time of their death, correct?

1 A. That's right.

2 Q. Over here, this part of the bone that was found on
3 the other, is that the ulna?

4 A. Yes.

5 Q. This fractured piece of a bone is part of this ulna
6 and you can't tell if that happened at the time of death,
7 right?

8 A. Right.

9 Q. Or later.

10 A. That's correct.

11 Q. And I won't belabor it but there are many parts of
12 this that you can't tell whether it happened at the time of
13 death or not.

14 A. That's correct.

15 Q. Now, the reason I'm asking that question is if
16 you're trying -- if somebody's trying to determine the cause
17 of death, if you get your leg broken, somebody breaks your
18 leg with, let's say a baseball bat, that can kill you, can
19 sever the femoral artery and kill you, right?

20 A. That's not something I would speak to. I describe
21 a bone fracture. That would be for Dr. Pinneri.

22 Q. Okay. So, you're not looking at this to try to
23 determine if somebody was strangled or not?

24 A. No.

25 Q. And you didn't tell Dr. Pinneri that you thought

1 this person was strangled?

2 A. No.

3 Q. How far was the skull from the darkened area?

4 A. It was in very close -- in the very close vicinity
5 of it.

6 Q. Okay. Let me get another picture. I'm going to
7 talk to you about the hyoid bone right now.

8 Now, I think you've said that this little bone
9 up here is a part of the body of the hyoid bone, right?

10 A. That's correct.

11 Q. Okay. We've tried to illustrate the size but could
12 you draw on this blank piece of paper about the size of that
13 so the jury can see? We don't have the hyoid bone, right?

14 A. Right.

15 Q. All that's been introduced is this picture, 122, of
16 a part of this piece right here.

17 A. Right.

18 Q. Could you draw it for me, as best you can?

19 A. (Witness complies.)

20 Q. Thank you.

21 MR. CORNELIUS: I'll offer it. I'm sorry.

22 Offer it as Defense No. 1. You just saw him draw it.

23 THE COURT: Any objection?

24 MS. FULLER: No objection from the State, Your
25 Honor.

1 THE COURT: Defense 1 is admitted.

2 MR. CORNELIUS: I know I'm not supposed to
3 show it to the jury before it's offered. I apologize.

4 Q. (BY MR. CORNELIUS) So, now the jury's seeing the
5 actual size of the bone or as close as you can estimate it,
6 that was recovered -- well, they've not exactly seen it
7 because it's blown up. Let me do it the old-fashioned way.
8 Talking about a bone this big, in your opinion, right?

9 A. That's right.

10 Q. This whole case depends on this bone right here, or
11 piece of a bone, right?

12 A. Right.

13 Q. That's the size?

14 A. Uh-huh.

15 Q. Does this thing kind of go like this? Does it kind
16 of go in like that?

17 A. It does. It's actually oriented kind of like this.

18 Q. Okay. So, if we're looking at it -- is that the
19 best way to look at it or turn it --

20 A. That's the best way. You're actually looking at
21 the back of it; so, that scalloped piece in the middle of
22 the body, that's the posterior side of the back side of the
23 bone.

24 Q. And this picture, which is into evidence as State's
25 125, is not the actual hyoid bone and it's -- I guess it

1 came out of a book.

2 A. Actually that's one of our other cases.

3 Q. One of your other cases.

4 A. Uh-huh.

5 Q. Okay. And in the -- in this case, the horn that's
6 not articulated or attached to the hyoid is actually on this
7 side?

8 A. That's correct.

9 Q. Now, is this the left side as we look at it?

10 A. That's right.

11 Q. Okay. So, it's just easier if we pretend this is
12 it because there's no real difference between the two sides,
13 right?

14 A. No.

15 Q. So, what happens is this part is never found and
16 you don't believe it was ever attached?

17 A. It was never fused to the body, correct.

18 Q. But it was there, right?

19 A. She would have had one of those, yes.

20 Q. So, something happened to this horn.

21 A. Right.

22 Q. And the area between here and here would be in
23 distance an inch, two inches? What?

24 A. An inch.

25 Q. An inch. So, we're dealing with a piece about this

1 size? What's left?

2 A. Right.

3 Q. Less than an inch?

4 A. Yeah. Somewhere -- it depends on variation.

5 Somebody her size, probably three-quarters of an inch.

6 Q. Three-quarters of an inch. And there's a crack
7 over here. This part has been removed from this part and is
8 gone and there's a crack right through here.

9 A. Correct.

10 Q. And that could easily have happened by an animal,
11 correct?

12 A. Yes.

13 Q. Now, what is attached to this hyoid bone here? Did
14 you say muscles and ligaments and stuff?

15 A. That's right.

16 Q. Animals like to eat muscles and ligaments, don't
17 they?

18 A. That's correct.

19 Q. And so if this was attached, still attached in the
20 neck up there and some animal is up there in the neck and
21 gets this part of it and jerks it with their teeth and
22 breaks it across, we won't have any bites in this part
23 because that's not the part the animal was biting on, right?

24 A. All I can say, that if -- that there were no --
25 there was no indication on that bone that there was

1 postmortem scavenging damage.

2 Q. But we don't have this part of the bone, which is
3 gone --

4 A. Right.

5 Q. -- which every likelihood that an animal got, to
6 say whether there's marks on that bone because we don't have
7 that bone, right?

8 A. We don't have that bone, correct.

9 MR. CORNELIUS: Could I have a moment, Judge?

10 THE COURT: Sure.

11 MR. CORNELIUS: Pass the witness.

12 THE COURT: Ms. Fuller?

13 MS. FULLER: Nothing further, Your Honor.

14 THE COURT: May this witness be excused?

15 MS. FULLER: Yes, Your Honor.

16 MR. CORNELIUS: Yes, Your Honor.

17 THE COURT: Is that okay, Mr. Cornelius? On
18 call, of course?

19 MR. CORNELIUS: She may be excused. He may be
20 excused. Sorry.

21 THE COURT: Thank you. You're free to go.
22 Please don't discuss your testimony with any of the other
23 witnesses because the Rule has been invoked.

24 THE WITNESS: All right. Thank you.

25 THE COURT: Thanks so much.