

1 THE COURT: Ms. Thomas, hold on one second.
2 You may proceed.

3 EDWINA POPEK,
4 having been first duly sworn, testified as follows:

5 DIRECT EXAMINATION

6 BY MS. THOMAS:

7 Q. Will you state your name for the jury and the
8 record, please?

9 A. Edwina Popek.

10 Q. Ma'am, what do you do for a living?

11 A. I'm a pathologist.

12 Q. Any particular kind of specialty?

13 A. I'm a pediatric pathologist at Texas Children's
14 Hospital.

15 Q. What does a pediatric pathologist actually do?

16 A. Well, a pathologist studies disease. And the
17 pediatric pathologist studies disease from the time of
18 conception until 18 years of life. And by disease, I
19 mean, we study laboratory tests. If you have your
20 appendix taken out, I'm the person who is going to look
21 at your appendix. If you have some other type of
22 surgery, I'm the person who's going to look at that
23 tissue to make a diagnosis; and I also perform
24 autopsies.

25 Q. Is there a difference between clinical

1 pathology and anatomic pathology?

2 A. The clinical pathology is the laboratory
3 component. On your yearly physical, they go have you
4 get blood drawn, and that goes to the clinical lab. The
5 anatomic pathology is the side where I work, which is
6 looking at the tissue samples.

7 Q. Would you give us the benefit of your
8 educational background and training and experience for
9 your profession?

10 A. How far back do you want me to go?

11 (Laughter.)

12 Q. How about college?

13 A. College, I went to University Missouri, Kansas
14 City, Kansas City, Missouri and got a BS in biology. I
15 then went to a year of training to become a medical
16 technologist where I actually worked in the laboratory
17 and did that clinical part of pathology. I then went to
18 medical school at The University of Health Sciences
19 College of Osteopathic Medicine in Kansas City,
20 Missouri. After graduation there, I joined the Army and
21 spent one year in El Paso doing an internship in
22 pathology, then moved to San Francisco, where I
23 completed my residency in pathology at Letterman Army
24 Medical Center. Then the Army sent me out to do
25 practice in general pathology for two years at Fort

1 Campbell Kentucky, and then I went for a two-year
2 specialty training in pediatric pathology at the
3 Children's Hospital in Denver, Colorado. After that, I
4 went to Washington D.C., where I was chairman of
5 pathology, pediatric pathology at the Armed Forces
6 Institute of Pathology. In 1993, I left the Army after
7 12 years and joined Baylor College of Medicine and Texas
8 Children's Hospital.

9 Q. Dr. Popek, at the request of the Harris County
10 Medical Examiner's Office, do you find yourself often
11 consulting with them on particular cases?

12 A. I'm considered a consultant for the Harris
13 County Medical Examiner's Office and have been since I
14 got here in 1993. They bring to me about ten cases a
15 month to review. In fact, I reviewed three cases for
16 them yesterday.

17 Q. And do you know a Dr. Albert Chu?

18 A. Yes, he's one of the associate medical
19 examiners.

20 Q. And do you recall having been asked by him to
21 consult with him on tissues relating to a child by the
22 name of Betsabeth Sandoval?

23 A. Yes, I did.

24 Q. What were you asked to do?

25 A. Well, as I'm asked to do in all the cases, to

1 look at the tissues and notice any abnormalities. And
2 oftentimes it comes down to me establishing with them a
3 cause of death.

4 Q. Were you given a case file report to use and
5 some pathology slides?

6 A. They bring with them to my office everything
7 from the case, the case file, the photographs and the
8 pathology slides so that we can review everything that
9 they have on the case; and we sit down at a microscope
10 and look at the pathology slides together.

11 Q. So, in this particular case were you asked to
12 focus on just one particular type of tissue or all the
13 tissues that are sampled at autopsy?

14 A. I look at everything that they have that's
15 available. I don't just look at one thing. I don't
16 just look at lab results. I don't just look at their
17 pictures or police reports, I look at everything that
18 they have available.

19 Q. And so what tissue sections are provided to you
20 from all the tissues in a given autopsy?

21 A. Well, they are very conscientious down at the
22 Medical Examiner's Office; and they sample all the
23 tissues. So, they have samples from the heart, the
24 lungs, the kidneys, the liver, the adrenal glands, the
25 intestinal tract to the brain, all the tissues are

1 looked at microscopically.

2 Q. And with respect to the tissues from Betsabeth
3 Sandoval's autopsy, did you look at all those tissues?

4 A. Yes, I did.

5 Q. Did you find anything worth, I guess, a second
6 look when you did that?

7 A. Well, the most interesting thing about the case
8 was kind of the lack of pathology, initially; and it was
9 then when I looked at the lung slides that I recognized
10 that there was an abnormality.

11 Q. Okay. So, the heart, the brain, all those
12 other tissues, were those unremarkable in your point of
13 view?

14 A. Those organs were unremarkable, yes.

15 Q. So, getting to those lung tissues, how many
16 samples of lung tissue did you have to work with?

17 A. Well, the lung has five lobes. There are three
18 lobes on the right and two lobes on the left, and they
19 take a section from each of those lobes to look at
20 microscopically.

21 Q. How do you exam the tissue?

22 A. Well, the tissue is taken at the autopsy. It's
23 fixed in formula, and then put in what we call paraffin
24 blocks. This is actually like paraffin that you get
25 from a candle in a way and the tissue is processed into

1 that paraffin so that we can cut very thin sections of
2 it four microns thick, thinner than your hair, so that
3 we can see through the tissue. It's put onto
4 transparent glass slides and stained with a routine
5 stain that we refer to as hematoxic eosin. That's the
6 standard stain that we use for all of our tissues to
7 begin with. And then we can go on from that making
8 additional sections and additional special stains, but
9 that's what I initially looked at.

10 Q. Upon examination of the lung tissue belonging
11 to Betsabeth Sandoval, did you notice anything unusual?

12 A. Well, the unusual finding was that there were
13 spaces within the lung that should have had blood within
14 them that did not have blood in them.

15 MS. THOMAS: May I approach the witness?

16 THE COURT: You may.

17 Q. (BY MS. THOMAS) Doctor, I'll ask you to just
18 look for me at State's Exhibit 2 -- 212, 211 and 213.
19 Do those all look familiar to you?

20 A. Yes, they're photographs that I took from the
21 slides.

22 Q. Related to the case of Betsabeth Sandoval?

23 A. That's correct.

24 Q. And then someone enlarged those, obviously,
25 right?

1 A. Yes.

2 MS. THOMAS: I'll offer into evidence
3 State's 211, 212 and 213, tender for any objection?

4 (State's Exhibit Nos. 211 through 213
5 offered.)

6 MR. GONZALEZ: No objections.

7 THE COURT: State's Exhibits 211 through
8 213 are admitted without objection.

9 (State's Exhibit Nos. 211 through 213
10 admitted.)

11 Q. (BY MS. THOMAS) Let's look at 212 first. Is
12 this what you would call a low power or high power?

13 A. That's a relatively low power picture of the
14 lungs seeing the general architecture and structure of
15 the lung.

16 Q. So, is that on a slide actually?

17 A. Yes, that's on a slide. The spaces that we're
18 seeing here are actually seeing through that transparent
19 slide.

20 Q. Explain to us how the lungs work?

21 A. Well, the lungs are kind of like a tree. The
22 trunk of the tree is your trachea, that's where the air
23 goes down and then the trachea branches smaller and
24 smaller and smaller until you reach the leaves of the
25 tree, which are the alveolar spaces. And it's in those

1 alveolar spaces where oxygen exchanges with the blood
2 stream within the portions of the lung. So, it's just
3 like the air around the leaves in the tree, here we have
4 air in the spaces and blood flowing through small
5 portions of the lung where oxygen is exchanged that you
6 breathe in and then that oxygenated blood is then
7 distributed to the body.

8 Q. So, here we have a slide pertaining to
9 Betsabeth Sandoval's lung. Doctor, is there something
10 wrong with this picture?

11 A. Well, at this power it's difficult to see
12 because this is a low power. This is one of those
13 airways where the air is coming in, it looks normal.
14 The air spaces where oxygen is going to be and then the
15 small red dots here are where blood is going to exchange
16 oxygen. But then we start seeing big spaces that aren't
17 the alveolar space where there's nothing, they're just
18 empty. And these spaces should be filled with blood,
19 and they're not. So, something has to be in there that
20 isn't blood and what that is we have to determine by
21 doing additional studies.

22 Q. And what additionally did you do actually in
23 this case?

24 A. In this case I had Dr. Chu send over to me a
25 new sample of lung that he had in what we call a stock

1 bottle. And anytime an autopsy is performed, we put in
2 tissue for original sections and then we hold some in a
3 stock jar just in case we need to do something special.
4 And with that tissue, I, my laboratory at Texas
5 Children's Hospital, we performed special studies
6 looking to see what was in those air, in those spaces
7 that were empty.

8 Q. So, in this child, for example, did you see any
9 developmental abnormalities or any pneumonia or anything
10 like that?

11 A. No, there was no pneumonia, no developmental
12 abnormalities. The lungs were perfectly normal
13 developed, and there was no infection.

14 Q. So, is it fair to say that whatever it is that
15 you saw of interest had nothing to do with those kinds
16 of issues?

17 A. That's correct.

18 Q. I'm holding here State's Exhibit 211. Is this
19 actually a zoomed-in version of the last exhibit we were
20 looking at?

21 A. Yes, this is a high-powered picture; and it
22 shows a closer up of those empty spaces. These spaces
23 are all where there should be something and they're
24 empty, but they're being held open. They're not
25 collapsed. So something is in here holding these spaces

1 that I don't see on this particular preparation of the
2 tissue. So, I need to do additional studies to figure
3 out what is in these spaces that is preventing blood
4 from flowing there so that oxygen can get into the blood
5 that should be in these spaces.

6 Q. So, what's the next step in terms of trying to
7 determine what is blocking those spaces?

8 A. Well, with the type of preparation we do for
9 these tissue, we put the tissue through a lot of
10 different chemicals, and one of those chemical is saline
11 and saline takes out all the fats, all the lipid
12 materials within the tissue. So, when we see empty
13 spaces like this, oftentimes fat is in there. And I
14 wanted to determine if, in fact, these spaces contain
15 fat; and fat should not be in the lung.

16 Q. And so by virtue of staining the tissue, are
17 you able to -- using a certain kind of stain, are you
18 able to make any further findings?

19 A. Yes, we took the reserve tissue from the stock
20 bottle and because it had already been fixed in
21 formalin, we set the tissue in a solution overnight to
22 remove that formalin and then we do a frozen section.
23 We actually freeze the tissue because now it has no
24 chemicals in it; and we make another very small, thin
25 section of the tissue that we can now stain to see if

1 fat is present in the spaces because the fat has not
2 been removed by the chemicals. And that stain is called
3 an Oil Red O. And that stains lipid material. It would
4 stain lipid material from anywhere. And here I'm
5 looking for it where it shouldn't be in the vessels
6 within the lung.

7 Q. State's Exhibit 213, is this a stained version
8 of the lung tissue we're talking about?

9 A. Yes, this is the frozen section tissue from the
10 lung and that's why it has different color, and it's
11 stained with the Oil Red O, and fat is going to stain
12 red. So, now we see all those spaces that were
13 originally empty on the routine stain, now are full of
14 fat. And that's what is keeping the vessels open and
15 preventing blood from getting into the lung.

16 Q. Now, you said we have five lobes; is that
17 right?

18 A. Correct.

19 Q. Were you given tissue pertaining to all five
20 lobes of Betsabeth Sandoval?

21 A. I only looked at the routine stains on the five
22 lobes. This was from an additional section of tissue.
23 I did not perform this special stain on all five lobes,
24 but the routine stains showed the same thing. I only
25 performed it on one.

1 Q. Okay. So based on your professional opinion is
2 this blockage, fat blockage, going on in all five lobes
3 of Betsabeth Sandoval?

4 A. Absolutely.

5 Q. So, Doctor, can you explain to us how this
6 happens in real life that a person will have fat emboli
7 lodged in the lung like we see here?

8 A. Well, you used a term that I didn't use, and
9 that's emboli. That means that something has traveled
10 from some place that it originally was and moved into
11 the lungs. So, we usually think of, I'm sure all of you
12 have heard or had a relative who had a pulmonary emboli
13 that had a clot in their leg or a clot somewhere in
14 their pelvis and that blood clot moved to their lungs.

15 Well, that happens relatively frequently
16 and sometimes we can actually see different kinds of
17 tissue that move from parts of the body, one kind is
18 bone marrow emboli. If you fracture your thigh bone,
19 there's lots of bone marrow in that tissue. And if the
20 fractures in that bone marrow becomes disseminated
21 within the vasculature, that can go to the lung. These
22 are not bone marrow emboli, they're only fat emboli.
23 And fat is in a lot of places in our bodies. Some of us
24 have more than others. But the fat is basically the
25 subcutaneous tissue. It's under all your skin, on your

1 back, on your thighs, every place you have fat. And
2 with that fat injury, you can get that fat embolized
3 from the location of the trauma into the lungs.

4 Q. So, since we only have fat without marrow
5 lodged in the lungs in this particular case, does that
6 suggest to you that there has been significant injury to
7 an area of her body that had subcutaneous fat on it?

8 A. Absolutely.

9 Q. How does the fat get into the lung tissue? Can
10 that happen when it separates, the fat itself separates
11 from the muscle tissue?

12 A. It can happen through significant blunt trauma.
13 If you get a bruise when you hit yourself hitting,
14 knocking into a door, you get a bruise. There's
15 bleeding into that subcutaneous tissue. And if that
16 injury is severe enough, the fat within that
17 subcutaneous tissue could then be dislodged and get into
18 those broken blood vessels that cause that bruise and
19 migrate into the lung.

20 Q. So, normal knocking around, I got a bruise here
21 and there, I'm not going to drop dead?

22 A. No, ma'am, thank goodness you're not.

23 Q. Okay. Is it fair to say it takes a significant
24 injury to cause what we see here?

25 A. It takes a significant injury, and it takes a

1 significant amount of fat within the lung to result in
2 death.

3 Q. Does there need to be an, I guess, a broken
4 blood vessel, I mean, that's what a bruise is basically?

5 A. That's right. And if there is, the injury to
6 the fat tissue, it becomes mobilized and through those
7 broken blood vessels in the area of the injury, those
8 veins within the tissue, and it's the veins that are
9 then going to take that embolized material back to the
10 heart and then the heart ends up pumping and
11 disseminating it out to the lung.

12 Q. Have you heard, I guess, in the world of Dr.
13 Chu, have you ever heard him use the term "avulsion of
14 tissue"?

15 A. Yes.

16 Q. What does that mean?

17 A. Avulsion means that it's separated. It's split
18 off. You can have an avulsion if you've had a really
19 bad cut on your hand and the skin has been sloughed off,
20 that can be avulsion. You can avulse deeper tissues
21 from the underlying muscle. It just means it's
22 separation.

23 Q. So, that fat has to be, I guess, broken away
24 and small enough so that it can actually enter the
25 bloodstream?

1 A. Correct.

2 Q. Would you say in this particular case that this
3 victim had few or very many fat emboli in her lung?

4 A. Many.

5 Q. Now, in this case can you also tell us whether
6 or not there was any time for there to be any healing
7 response to these emboli being in her lungs?

8 A. Not within the lung. And if you -- emboli is
9 foreign material into the lung and a blood clot or fat
10 would be considered a foreign body in the lung, it's not
11 supposed to be there. If it was small enough and few
12 enough and enough time had gone by, the body would try
13 to clean it up and would form inflammation around it in
14 order to get it out of that space where it's not
15 supposed to be. There were no changes of healing or the
16 body's process of clearing out the fat material from the
17 lungs.

18 Q. So, you saw no evidence of healing response
19 here in her lungs?

20 A. That's correct.

21 Q. So, would that suggest to you that whatever --
22 her body didn't have time to heal itself or to begin the
23 healing process before she died?

24 A. That's correct.

25 (Alarm sounding.)

1 THE COURT: I don't generally react because
2 this happens multiple times.

3 We'll hear one more in just a few minutes.

4 All right. See what you can get in.

5 (Alarm sounding.)

6 Q. (BY MS. THOMAS) So, Dr. Popek, do you see any
7 inflammatory healing response at all in her lung tissue?

8 A. No, none whatsoever.

9 Q. What would that tell us, if anything, about how
10 long the fat emboli was there prior to her death?

11 A. Very shortly before her death.

12 Q. Like within?

13 A. Minutes to possibly hours.

14 Q. And based on the amount of fat that would be in
15 all five lobes, would you be able to tell us whether or
16 not the onset of death was sudden in this case?

17 A. It could be sudden or it could be somewhat
18 prolonged in the sense that oftentimes this would occur
19 as one sudden flurry of emboli to the lung and then the
20 death would be very acute. It's possible that there
21 were a few emboli and then possibly some more; and
22 during that period of re-embolization during a short
23 period of time, there might be a prodrome of shortness
24 of breath, gasping for breath. Some people who have
25 pulmonary emboli express a sense of doom before they

1 will collapse and die suddenly.

2 Q. And that's from people who actually survive
3 this; is that right?

4 A. Correct.

5 Q. And so based on what you see in this case, is
6 that, in your opinion, what the Complainant in this case
7 experienced?

8 MR. GONZALEZ: Objection, calls for
9 speculation.

10 THE COURT: Sustained.

11 Q. (BY MS. THOMAS) Would you say that that
12 process you just described is similar to suffocating,
13 something we all can kind of understand?

14 A. Yes, suffocation generally we think of as
15 having our airflow cut off. Suffocation by putting your
16 hand around your neck or something over your face, but,
17 in fact, this would be a suffocation because the blood
18 did not have oxygen in it. She would be able to breathe
19 in, there would be no restriction to being able to
20 breathe, but the air would get into the lung but no
21 oxygen could get into that blood. And so then she would
22 begin to experience a sense of hypoxia, of I'm
23 suffocating, I need oxygen, but she would still be able
24 to breathe, and that's why gasping would be one of the
25 symptoms that she might have.

1 Q. Let me ask you a hypothetical. Let's say we
2 have a person who is experiencing trauma over and over
3 and over in the same places on his or her body over a
4 long period of time, let's just say a year. Can even a
5 nonacute injury piled on top of an old injury cause or
6 contribute a cause to death, a cause of death like this
7 case?

8 A. Well, there would have to be substantial injury
9 recently in order for it to cause this kind of
10 embolization. But an area that has been traumatized
11 once is much easier to traumatize again. I'm sure, you
12 know, you-all experienced an injury someplace and you
13 just keep knocking that someplace over and over again
14 and it's so much easier to reinjure that same area
15 because it's in the healing process. But in order for
16 this to occur and result in death, this would have to
17 have been a recent injury, but it could be on top of
18 many, many other older injuries.

19 Q. Bottom line, there had to have been yet one
20 acute injury near the time of death?

21 A. That's correct.

22 Q. May I show you an item, I don't know that
23 you've seen before, just for your opinion. This is
24 State's Exhibit No. 201, and it appears to be a piece of
25 a wooden stick or handle. Is this type of object, in

1 your opinion, the type of object that could or is
2 capable of causing the kinds of injury that might
3 precipitate fat emboli in the lungs?

4 A. Yes, in fact, a smaller object like that would
5 cause more localized trauma than say something big that
6 would distribute over a larger area that you're going to
7 get more and deeper injury with this kind of object.

8 Q. Thank you.

9 MS. THOMAS: I'll pass the witness.

10 THE COURT: Thank you, Ms. Thomas.

11 Mr. Gonzalez.

12 MR. GONZALEZ: I'll pass the witness, Your
13 Honor.

14 THE COURT: All right. May Dr. Popek be
15 excused?

16 MS. THOMAS: No objection.

17 MR. GONZALEZ: No objection.

18 THE COURT: Thank you, Doctor. You are
19 excused.

20 THE WITNESS: Thank you.

21 THE COURT: Are you all okay?

22 Call your next witness, please.

23 MS. THOMAS: Judge, I'd like to put on the
24 agreed Stipulation of Evidence relating to that diagram.
25 I'll try to be as efficient as possible. May I present

1 that?

2 THE COURT: All right. For the record,
3 will you state the number of the exhibit?

4 MS. THOMAS: I'll offer State's
5 Exhibit 240, which is an agreed Stipulation of Evidence.
6 (State's Exhibit No. 240 offered.)

7 MR. GONZALEZ: I've seen it, Your Honor.
8 I've signed it. No objection.

9 THE COURT: All parties have agreed to the
10 stipulation, and it has been approved by the Court.

11 (State's Exhibit No. 240 admitted.)

12 MS. THOMAS: We have agreed in the form of
13 a written stipulation. It's signed by the Defendant, by
14 myself and Mr. Gonzalez and the Judge. What it is, it
15 embodies the DNA lab results so that we don't have to
16 call those folks one by one to describe those. And it's
17 going counterclockwise on this diagram, the dark stain
18 in the living room, which is Item 1, is not blood, that
19 is negative for blood.

20 The stain in the living room, which there's
21 another one on the pictures that you didn't see, another
22 reddish stain, it was negative for blood as well. It's
23 in the picture.

24 The damp light blue cloth on the breakfast
25 table, negative for blood. Blue sleep pants in the

1 room, Item 10 on the diagram, negative for biological
2 evidence. Possible blood, dry bloodstain on the master
3 bedroom wall. We had a series of little dried
4 bloodstains, all this blood came back to that of the
5 Defendant, Elida Herrera. Let's see, with the exception
6 of -- and then the blue shirt recovered on the master
7 bed partially wet, no visible blood detected, therefore,
8 no DNA analysis.

9 The piece of wood, the broken stick, no
10 biological evidence, presumptive for blood, negative.
11 The baby oil on the master was not tested but was
12 submitted for other purposes, which we'll get to.

13 Blood droplet on the floor of the master
14 bedroom, No. 7, is the Complainant's, Betsabeth
15 Sandoval's blood.

16 There were four napkins collected from the
17 trash can in the bathroom of the master bathroom, I
18 think it's 8, yes, all four napkins contained the blood
19 of Betsabeth Sandoval; Elida Herrera, Eric Herrera and
20 Maciel Sandoval are excluded.

21 Child's Disney pantie recovered wet from
22 the master bathtub drain, this is negative for blood.

23 The small shirt with flowers recovered from
24 the laundry basket, it's Item 11 on this diagram in the
25 hall, and it's 189 in evidence, the complaining

1 witness's blood, Betsabeth Sandoval, is on that.

2 The dark small, extra small short-sleeved
3 child's Faded Glory T-shirt and black, red and white
4 shorts both recovered wet from a bottom basket; there
5 was no visible blood, therefore, no testing.

6 Possible bloodstain on the walls
7 continuing, I think there's No. 6, that's going to be
8 Elida Herrera-Garcia, "C," "D," all Elida Herrera, "G,"
9 "E." And then the four napkins collected from the
10 inside hall bathroom trash can, which is that one, Item
11 No. 3 on the diagram, there were four napkins collected.
12 Two contained the blood of the Complainant, Betsabeth
13 Sandoval. One tested positive for blood indicating a
14 mixture of the Complainant, Betsabeth Sandoval, as the
15 major contributor of that blood mixture; and Elida
16 Herrera cannot be eliminated as the minor. The napkins
17 being a used sanitary napkin pad, which tested positive
18 for blood, again, a mixture Elida Herrera-Garcia being
19 the major contributor and no conclusions as to whether
20 or not Betsabeth is the minor.

21 In the bags, and this is also in the
22 stipulation, anything that you see that has a circle on
23 it or a cutout was done at the lab pursuant to the
24 testing that you just heard about. And then the
25 cuttings themselves were put in paper bags and put in

1 there with that, so that's what you have.

2 Now, there were certain items recovered
3 from the autopsy, which we've stipulated to. They
4 performed, you know, a test on Betsabeth; and vaginal
5 swabs and rectal swabs were negative for semen or any
6 other foreign substance and no lubricants or anything of
7 that nature. We did recover a pair of pants and a pair
8 of underpants from the autopsy, and those were
9 transferred and those are here with us, which will be
10 forthcoming into evidence. And that's all I have on
11 that.

12 Judge, we call Richard Rodriguez.

13 THE COURT: All right.

14 THE BAILIFF: Previously sworn in.

15 THE COURT: Right.

16 Ms. Thomas, you may proceed.

17 **RICHARD RODRIGUEZ,**

18 having been first duly sworn, testified as follows:

19 **DIRECT EXAMINATION**

20 BY MS. THOMAS:

21 Q. Hello, would you please state your name for the
22 jury?

23 A. Sergeant Richard Rodriguez.

24 Q. Where do you work, sir?

25 A. HPD homicide or Houston Police Department