Testimony of Michael DeGuglielmo – March 3, 1994

THE COURT: Call your next witness.

FOGELMAN: Uh - the man from Genetic Design.

(Price giggles)

THE COURT: I'm afraid to say it too.

(mumbling)

FOGELMAN: Your Honor, he will need to be sworn in before -

THE COURT: Alright. Come on around here. Do you swear to tell the truth, the whole truth and nothing but the truth in the matter now pending before the court so help you God?

DEGUGLIELMO: I do.

(mumbling)

FOGELMAN: Would you state your name and occupation for the jury?

DEGUGLIELMO: Yes sir. My name is Michael DeGuglielmo. That's D-e-g-u-g-l-i-e-l-m-o. I'm employed as the director of forensic analysis for Genetic Design.

FOGELMAN: And what is Genetic Design?

DEGUGLIELMO: Genetic Design is a genetic testing company that specializes in human identification. We do testing in primarily three areas. Uh - I am responsible for a forensic laboratory, which tests primarily criminal cases and some cases involving uh - parentage where there are deceased individuals. We also have a parentage testing laboratory, which does primarily parentage testing for Social Security for the agencies and also we do bone marrow tissue typing for transplants.

FOGELMAN: And what is your uh - education, background, training, and experience uh - to qualify you in this area?

DEGUGLIELMO: I have a Bachelor of Science degree in biology from Bob Jones University,

uh - postmatacloric studies in biology and chemistry from East Carolina University, a Master of Science degree in microbiology in genetics from North Carolina State University, uh - continuing graduating education from North Carolina State University and University of Virginia. Um - I have also, since completing school, uh - I've worked with the North Carolina State Bureau of Investigation in Raleigh, North Carolina. I was responsible for establishing the DNA testing laboratory with the state. And have that continuing education through the American Academy of Forensic Science and uh - numerous uh - local and regional affiliations of the academy as far as the workshops and seminars go.

FOGELMAN: Your Honor, we would submit the witness as an expert in this field.

PRICE: No objection.

FORD: No objection.

THE COURT: Alright. You may proceed.

FOGELMAN: In the course of your duties with Genetic Design, did you receive a number of items from either the Arkansas State Crime Laboratory or the West Memphis Police Department for analysis?

DEGUGLIELMO: Yes I have.

FOGELMAN: Among those items, uh - did you receive samples of the victims' blood which would be uh - James Michael Moore, Christopher Byers, uh - Steven Branch?

DEGUGLIELMO: Yes sir, I did.

FOGELMAN: And did you also recieve some uh - what were labeled by the Crime Lab, Mr. Channel, as Q-4 and Q-39 -- as possible tissue from some ligatures?

DEGUGLIELMO: Yes sir, we did.

FOGELMAN: And what tests if any were performed on those particular items - this possible tissue?

DEGUGLIELMO: Our laboratory does DNA testing specifically in criminal cases, and there are two basic types of DNA testing. Um - those two types of testing are decided between based upon the evidence in any given case and the amount of evidence that we actually have to work with. Uh - the first type is what is referred to as restriction fragment length polymorphisims or RFLP,

and that's the more conventional DNA testing that as things stand right now we would prefer to do in every case because we can gain more information from it. However, we require a certain amount of DNA in order to be able to do that test. And in this case these items in particular contain very, very small quantities of DNA, if any detectable DNA. Because of that, we used the second type of DNA testing with are called PCR analysis. It works where there are small minute amounts that we can work with, but unfortunately it is not quite as informative as the initial type. In this case we performed two separate PCR based tests to uh - try to differentiate between the various items of evidence.

FOGELMAN: Alright. And on - what were the results on the tests performed on the items uh - Q-4 an Q-39, the possible tissue from the ligatures?

DEGUGLIELMO: Those two items failed to reveal the presence of any detectable amounts of DNA. The first portion of the analysis is for us to remove the DNA from the items and to try to get an idea as far as how much is there that we have to work with. Um - the quantitation that we do is a rough approximation. It gives us a general idea, but in this particular case there was no detectable DNA there from those items.

FOGELMAN: Alright. No detectable DNA from this possible tissue?

DEGUGLIELMO: That's correct.

FOGELMAN: And what does that mean as a practical matter in laymens terms?

DEGUGLIELMO: Well, what that means is one of several things. First of all, it might not have been a human specimen. It might have been um - any number of things that you would find on items of evidence that are exposed to the environment, or it could have been human tissue that was either too small and degraded so that we were not able to obtain DNA from it. Unfortunately, any biological material when exposed to various conditions will start to decompose and degrade, and the DNA contained in it will decompose an degrade as well. And if that occurs, especially in very small specimens, sometimes it's not possible to detect anything that would have been there.

FOGELMAN: Now, did you also examine some cuttings submitted by Mr. Channel which were labeled as Q6, which for the jury purposes came from Exhibit 48, and Q-10 coming from Exhibit 45, some pants or jeans?

DEGUGLIELMO: Yes sir, we did.

FOGELMAN: And did you perform the same type of tests on those items that you did on the

possible tissue?

DEGUGLIELMO: Yes sir, we did.

FOGELMAN: And what was the results uh - of those tests?

DEGUGLIELMO: Well, those two particular items um - were submitted to us as what we would consider um - questioned stains. In evidentiary specimens when we're dealing with questioned stains, we uh - do a slightly different procedure because many times in cases those stains will contain a mixture of seminal material and other potential biological evidence so we do a differential extraction.

FOGELMAN: Alright, now what does that mean?

DEGUGLIELMO: The purpose of a differential extraction is to separate sperm cells from any other biological material that might be there.

FOGELMAN: For what type of thing would that be?

DEGUGLIELMO: Well, typically in - to give you the best example, in a typical sexual assault case, the evidence will most likely be an item of clothing or vaginal swabs from a female victim. Uh - he material contained there will be comprised of two things, epithelial cells from the victim and sperm cells from a potential perpetrator in the case. Our goal would be to separate those two types of cells, and that can be accomplished by taking advantage of certain physical properties of sperm cells that make them different from other cells. And in doing so it enables us to more accurately compare those specimens to the various people we are going to test down the road.

FOGELMAN: Ok. And you performed those tests on uh - the cuttings from the pants?

DEGUGLIELMO: Yes sir.

FOGELMAN: Alright. And what were the results of those tests?

DEGUGLIELMO: The results of that test showed that we did recover a small amount of human DNA from those two items. Particularly, when we do this, as I mentioned differential extraction, we separate them into sperm, and nonsperm components, and we in this test detected small amounts of DNA in the sperm or male component of the two specimens we were testing. It was what we would consider to be a marginal amount, meaning it was basically at the threshold of what we might be able to detect using the analysis, but it was definitely DNA that was there. From that we would proceed then with the remainder of the PCR based testing to try to get a type

from those particular specimens.

FOGELMAN: Were you able to do that in this case?

DEGUGLIELMO: Um - unfortunately, with those items, no sir. Um - blue jeans in particular contain, depending on the variety of brands, a number of sizings and different dyes that many times - and I shouldn't say many times - roughly half and half times will interfere with the enzymatic activity that is required to do the test and when that occurs and we are not able to remove that material from the blue jean that we've gotten the cutting from, what happens is that we are able to get no result from it. Even though the DNA is there, it becomes impossible for the - what we refer to as amplification to occur because the enzyme can't function in the presence of those inhibitors.

FOGELMAN: Alright. Now if I understand correctly, when you run these tests, you end up with two uh - I think you called 'em fractions, is that right?

DEGUGLIELMO: That's right.

FOGELMAN: Epithelial fraction -

DEGUGLIELMO: Yes sir.

FOGELMAN: - and the sperm fraction.

DEGUGLIELMO: Correct.

FOGELMAN: And when you ran the test in this case, did you find any DNA in the epithelial or nonmale fraction.

DEGUGLIELMO: None that I could detect.

FOGELMAN: Alright. And what did you find in the sperm fraction?

DEGUGLIELMO: Uh - what I found in the sperm fraction was a small amount of DNA. By a small amount, to be specific, uh - the threshold of limitation for this particular quantitation or measurement of how much DNA there is, is set at what is 50 picrograms of DNA. Now, to give you an idea, um - a picogram is part of a metric measurement, just like meters or kilometers or kilograms, and the best way to envision this is that the basic unit of measurement is a gram. That is approximately the size of a dime. When we're talking about DNA, we measure it in micrograms or nanograms or picograms. And a picogram is approximately one trillionth of a

gram. The threshold for detection in this test is 50 picograms, or fifty trillionths of a gram. It is an extremely small quantity, but you have to consider that that has to fit inside the individual cells in our body so it, by necessity, has to be small.

FOGELMAN: Now, based on those tests do you have an opinion of the - of the uh - source of DNA?

DEGUGLIELMO: Uh - yes, I would say that I have an opinion based upon the parameters involved in the extraction process. Uh - and that is most likely that the DNA that we were detecting did come fromuh - sperm cells, because it showed up in the portion of the analysis where we would expect DNA from sperm cells to show up.

FOGELMAN: Alright. Uh - now I also want to show you uh - what's shown as Defendant's Exhibit 6 - if you could look at that and in fact, I guess that's one of your boxes that it's in - is that right?

DEGUGLIELMO: Yes sir.

FOGELMAN: If you could, look at that and see if you can identify that.

DEGUGLIELMO: Yes sir, it's uh - knife.

FOGELMAN: Ok. Do you recognize uh - or did you or your lab run tests on that particular knife?

DEGUGLIELMO: I ran tests on material that we recovered from the knife that yes sir - looked like this knife that we packed in a box like that.

FOGELMAN: Ok. And um - when you - when the knife was received by your firm, uh - did you look at the substance before it was removed?

DEGUGLIELMO: Yes sir.

FOGELMAN: Alright. And in looking at the substance, uh - what did it look like?

DEGUGLIELMO: When we received the material on this particular knife, it was um - related to us that there was a small amount of what appeared to be blood um - that was dried or tissue in a crevice in the knife where the knife folds when it locks, and there was definitely a material there. I can not personally say it was blood or tissue or that it was um - dirt from actually looking at it.

FOGELMAN: Alright. But then you ran some - you took - somehow you removed the substance -

DEGUGLIELMO: That's correct.

FOGELMAN: - and then you ran some tests on it, is that correct?

DEGUGLIELMO: Yes sir.

FOGELMAN: And what were the results of those test?

DEGUGLIELMO: The results of the tests showed us that uh - there was DNA uh - present on the knife and that we were able to get a type, using a test called HLA DQ Alpha, from that particular specimen.

FOGELMAN: Alright. And now, on the DQ Alpha, that's - is that the most sensitive test that you run?

DEGUGLIELMO: Yes. When we are using PCR based testing, HLA DQ Alpha is the first PCR based test that we use and because it is more or less a threshold. It sets a sensitivity level for us as far as what we can detect.

FOGELMAN: And did you also make an attempt to run a test called D1S80?

DEGUGLIELMO: Yes sir.

FOGELMAN: Alright. And were you able to obtain a result when you ran that test?

DEGUGLIELMO: Not from the specimen from the knife.

FOGELMAN: Alright. And what was the DQ Alpha type on the blood from the knife?

DEGUGLIELMO: Uh - the DQ Alpha type was a 1.1,4.

FOGELMAN: Would that be - for the jury writing it down, would it be like 1.1 comma -

DEGUGLIELMO: - comma 4.

FOGELMAN: Ok. And did you also have uh - a blood sample from Melissa Byers?

DEGUGLIELMO: Yes sir.

FOGELMAN: Ryan Clark?

DEGUGLIELMO: Yes sir.

FOGELMAN: Uh - John Mark Byers?

DEGUGLIELMO: Yes sir.

FOGELMAN: Uh - James Michael Moore?

DEGUGLIELMO: Yes.

FOGELMAN: Christopher Byers?

DEGUGLIELMO: Yes sir.

FOGELMAN: And what was the uh - result of your test of DQ Alpha for John Mark Byers?

DEGUGLIELMO: Mr. Byers had the same type that was detected from the specimen from the knife.

FOGELMAN: Ok. And what was the DQ Alpha type for Christopher Byers?

DEGUGLIELMO: It was also the same type.

FOGELMAN: So the - as far as the DQ Alpha analysis, the blood on the knife and Christopher Byers' blood and John Mark Byers blood all had the same - is that correct?

DEGUGLIELMO: Yes sir, it is.

FOGELMAN: And that's just as far as the DQ Alpha type?

DEGUGLIELMO: Correct.

FOGELMAN: Can I have just a moment. Your Honor, I don't have any further questions at this time.

PRICE: Mr. DeGuglielmo, if you could turn to your July 13th, 1993 report.

DEGUGLIELMO: Yes sir.

PRICE: Ok. On the front of the report, on May the 24th 1993, you received approximately 10 items of evidence. Specifically, item number four - what is listed there?

DEGUGLIELMO: A blood sample from Damien W. Echols.

PRICE: Alright. And then on the second page, did you perform an HLA DQ Alpha test on the blood sample of Damien Wayne Echols?

DEGUGLIELMO: Yes.

PRICE: And what type of DNA did he have based upon that test?

DEGUGLIELMO: Uh - the DQ Alpha type for Mr. Echols was a 2,3.

PRICE: Ok. Now, the 2,3 that is or is that different than the 1.1,4 that you mentioned earlier?

DEGUGLIELMO: Yes sir, it is.

PRICE: Alright. Go back to the January 27th report.

DEGUGLIELMO: Ok.

PRICE: Was it on January 10th that you received the knife that you referred to a few moments ago?

DEGUGLIELMO: Yes sir.

PRICE: Alright. And the number - the numbers get real confusing, but I guess the number that was previously assigned to that, was that E-178?

DEGUGLIELMO: Yes sir.

PRICE: Alright. Ok. Was that a number that the Arkansas Crime Lab assigned to it before they sent it to you or was that - No, you received this knife directly from Gary Gitchell?

DEGUGLIELMO: Yes sir.

PRICE: Alright. Was that - the E-178, was that something that your lab assigned to it or was that something previously -

DEGUGLIELMO: No sir.

PRICE: Alright. If I could approach the witness. The knife that you referred to came out of this bag which has previously been marked for identification purposes as E-6. Is that correct?

DEGUGLIELMO: Yes sir.

PRICE: Alright. That's defendant's number E-6.

DEGUGLIELMO: Ok.

PRICE: And the knife that you looked at, that is the knife you testified on earlier in direct examination, that is the knife that you examined?

DEGUGLIELMO: Well, the box that we returned it in has been opened, so I am under the assumption that is was that same knife. It is like the one we packaged in that box.

PRICE: Alright.

FOGELMAN: We'll - Your Honor, we'll stipulate that is the same knife.

PRICE: Alright. And Mr. DeGuglielmo, you earlier testified that the small amount of what you thought was either blood or tissue was found on the hinge of the knife?

DEGUGLIELMO: Uh - the - when the blade is closed, there is a recessed portion of the knife back where the blade actually makes contact with the um - casing portion of the knife, and the portion that we removed was from that recessed part of the knife there where the two come together.

PRICE: Alright. So, did you find any substance that you tested on the blade portion of the knife?

DEGUGLIELMO: No sir.

PRICE: Ok. Alright now, when you test the items for the DNA testing, is the testing that you use specific for human or higher primates?

DEGUGLIELMO: Yeah - well - yeah - it's for both. It's generally accepted that it's specific for

humans. All the probes are actually specific to higher primates.

PRICE: Alright. But based on the test that you did, the um - item that you found on the knife would not have come from an animal, such as a deer?

DEGUGLIELMO: No sir.

PRICE: Alright. One moment, Your Honor. Alright, nothing further at this time, Your Honor.

FORD: Just one question. Mr. DeGuglielmo, the bottom line is you did not find one thing to connect Jason Baldwin to this homicide, did you?

DEGUGLIELMO: Um - if you don't mind, I have to - No sir, Mr. Baldwin's type was a 1.2,4.

FORD: The answer is no?

DEGUGLIELMO: That's correct.

FORD: That's all.

PRICE: I've got a couple of questions here, Judge. The first batch of tests that you did um - do you recall approximately how much the laboratory's fee was for doing those tests?

DEGUGLIELMO: Do you mean the actual testing?

PRICE: Wait, let me back up I guess. The - your lab charges a certain amount per each test that's done?

DEGUGLIELMO: Yes sir, that's correct.

PRICE: Alright. And do you recall if y'all had performed approximately 13 tests the initial time?

DEGUGLIELMO: Yes sir. On those 13 items that were recieved on May 24th and June 7th.

PRICE: Alright. Would the total bill of the lab at that time, would have been $4,550.00?

DEGUGLIELMO: Yes sir.

PRICE: Alright. And there were some other items that y'all were sent throughout the rest of the investigation, and was the bill for the remaining items approximately $3,800.00?

DEGUGLIELMO: Yes sir.

PRICE: And besides those amounts, obviously you charge for testifying in court?

DEGUGLIELMO: Yes sir.

PRICE: Alright. Nothing further, Your Honor.

FORD: And of all that $7,000.00 of reports, you found absolutely nothing to connect Jason Baldwin to this crime - did you?

DEGUGLIELMO: Uh - none of the things I tested matched Baldwin.

FORD: Ok, that's all. Thank You.

FOGELMAN: None of the things matched uh - other than the item on the knife matching both the victim, Chris Byers, and John Mark Byers uh - nothing matched anybody else's blood type that was submitted - other than uh -

(mumbling)

THE COURT: I think he's gonna change his mind.

FOGELMAN: Other than a tee shirt that is not involved in this case.

DEGUGLIELMO: Well - there - there were items, a couple of other items that did match other - other people's. Specifically 2 different shirts.

FOGELMAN: you referring to Q-52?

DEGUGLIELMO: Yes sir.

FOGELMAN: Um -

DEGUGLIELMO: And to Q-85.

FOGELMAN: Let me look at that, hang on just a minute. Ok, that is the tee shirt not involved in this particular case.

DEGUGLIELMO: Ok.

FOGELMAN: And on Q-52, uh - do you know whether the blood on that matched the person who's shirt it came from?

DEGUGLIELMO: I don't know who's shirt it was.

FOGELMAN: Ok.

DEGUGLIELMO: No sir.

FOGELMAN: But other than those things, nothing matched anybody?

DEGUGLIELMO: Up until the knife and the hair specimen -

FOGELMAN: Right.

DEGUGLIELMO: No sir, that's correct.

FOGELMAN: I don't have any further questions.

PRICE: None of the items that you tested matched Damien Echols?

DEGUGLIELMO: No sir.

PRICE: One moment, Your Honor. Ok, nothing further.

THE COURT: Alright, you're free to go. Thank you. Call your next witness.