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THE UGLY DUCK
ATTACKING THE STATE'S FORENSIC EVIDENCE: PRACTICAL TIPS ON REVIEWING AND CHALLENGING THE SBI'S TESTS, LAB REPORTS AND EXPERTS

LAW as of October 1, 2004:

N.C. General Statutes Sect. 15A – 902. Discovery procedure

903(a) Upon motion of the defendant, the court must order the State to:

(1) Make available to the defendant the complete files of all law enforcement and prosecutorial agencies involved in the investigation of the crimes committed or the prosecution of the defendant.

NOTE: Defense counsel should read the following cases decided prior to the enactment of the revised 903(a)(1): *State v. Cunningham; State v. Dunn; State v. Fair*, listed at the end of this document.

LABORATORY REPORTS ALONE ARE USELSS:

Defense attorneys sadly neglect investigating the bases and validity of what the State claims to be the results of tests and experiments conducted in its crime laboratories. The SBI laboratory report that is generally provided as pretrial discovery generally reports only the conclusion of the State's laboratory analyst about certain evidence, e.g. positive for cocaine; positive for the presence of blood; DNA match. This kind of laboratory report is useless.

It merely tells you what conclusion the State intends to offer at trial.

It does not tell you the basis for that conclusion.

It does not tell you anything about the procedures that the "forensic scientist"/technician used to reach the conclusion, generally denoted "protocols" and/or "procedures" or what procedures should have been used to reach valid conclusions.

It does not tell you what tests were performed or what data was obtained from those tests, or even if the testing procedure was reliable.

It does not tell you if the "forensic scientist"/technician was qualified or proficient in performing the test.

It does not tell you if the equipment used in the procedure was validated before use.

Defense attorneys must insist that all of this material be provided in pretrial discovery.

SCIENCE BACKGROUND NOT A REQUIREMENT:

Many defense attorneys do not have science backgrounds, and thus do not know what to ask for from the SBI laboratory. Attorneys, however, can learn this. It is not that hard. There is a wealth of information waiting to be discovered and digested, all for the asking. **Keep in mind that all laboratories have testing problems, and all tests have problems. They can include anything from contamination to incompetence. Also, keep in mind that most test results are subjective in nature. This entire area is fertile ground for attack.**

IMPORTANT TO REMEMBER: As testing procedures in the laboratory become more sensitive, proper collection and preservation of evidence is critical to obtaining reliable results, especially with DNA testing. In other words, the more sensitive the test, the more likely it is that one could be merely measuring contamination. Current DNA procedures can now detect nanogram levels (and less) of substance. (one nanogram is equal to 1 billionth of a gram) A sweet and low packet contains one gram. You can't see a nanogram.

PRESERVATION OF EVIDENCE:

The purpose of preservation is to eliminate the potential for contamination or destruction or evidence. Potential contamination of physical evidence can occur at the crime scene during collection, packaging, and transportation of the evidence to the laboratory, and during evidence analysis and storage. Therefore, all physical evidence, once documented and processed at the scene, must be packaged properly. Sealing the bags or containers of evidence is an essential element of the preservation of evidence and is vital to prevent contamination and destruction of

evidence. Preserving the evidence doesn't stop with the packaging. Some evidence requires sterile containers. Environmental conditions play a major role in the contamination of crime scene evidence. Evidence must be handled properly and stored in a temperature controlled environment. Sitting in a hot vehicle for extended periods of time can invalidate some analysis. Any items that may cross contaminate each other must be packaged separately. Blood evidence must never be exposed to excessive heat or humidity.

Wind, sun, rain, and snow, in addition to temperature play key roles in the destruction of evidence. To prevent contamination from the crime scene personnel's perspiration onto the packaging and then onto the evidence, personnel must handle the evidence wearing disposable gloves and they must change glove frequently.

Practice Tip: **Always make a motion to preserve the evidence and include**

for most testing, and in particular for DNA testing the following:

Preserve:

All documents regarding the transfer of evidence

All information regarding the packaging containers

All information regarding the quantity of the stained material

All handwritten and typed case notes related to the preparation and testing of the evidence submitted

All information regarding the testing procedures utilized in the sampling of the evidence

All information regarding how the DNA extract was handled

All information regarding the volume amount of the DNA extract

Pictures of the original evidence before any samples were taken

All information regarding the description of the evidence as submitted

All original data from DNA testing, including original test gels

All data regarding what standards were used and their concentration

All data regarding what controls were used and their concentration

All original results and copies

All data related to reagent blanks

All data regarding the interpretation of positive controls

All data regarding the interpretation of negative controls

All proficiency studies regarding the assigned technical person performing the tests.

All rough notes, handwritten, electronic or other recordings, regardless of whether such notes, writings, or recordings form the basis of a formal written report

CHAIN OF CUSTODY:

Chain of Custody, "COC", is a written record of all the evidence transfers from the crime scene to the possession of the court or clerk of court, laboratory etc. Proper chain of custody thoroughly documents the movement of the evidence, who had possession of the evidence, and when the evidence was in a person's possession.

Following are a few suggested cross examination questions for the clerk of court or evidence custodian regarding chain of custody when there wasn't a proper one maintained:

Are you familiar with the N.C. SBI crime lab procedures for maintaining the integrity of evidence? (see N.C. SBI Technical Procedures manual)

You have not been taught to secure items of evidence according to SBI crime lab procedures?

You have not been taught to store items of evidence according to SBI crime lab procedures?

You have not been taught to identify items of evidence according to SBI crime lab procedures?

You have not been taught to transfer items of evidence according to SBI crime lab procedures?

You did not document each item of evidence as it was received?

You did not document the type of container each item was in?

You are not familiar with what a proper chain of custody should include?

Your chain of custody does not include a description of each item and its container, right?

Your chain of custody did not describe the specific recovery location of the item, right?

Your chain of custody does not have the date and time the item was collected, right?

Your chain of custody does not document who collected the item of evidence, right?

Your chain of custody does not describe whether the container was sealed upon transfer to you or to another individual or agency, right?

Your chain of custody does not document who received the items, right?

Your chain of custody does not document the dates and times of any transfers of any of the items, right?

Your chain of custody does not document who delivered the items, right?

Your chain of custody does not document who viewed the items, or when they were viewed, right?

You are aware that there has been high humidity in the storage area, correct?

You have seen standing water on the floor where the evidence is stored, right?

You are aware that there was mold growth in the evidence room where there evidence was stored, are you not?

PROBABILITY OF CONTAMINATION - See *Pennington*, 327 N.C. 89, 393 S.E.2d 847 (1990)

REMEMBER THAT A PROPER CHAIN OF CUSTODY IS NECESSARY TO DEMONSTRATE THAT THE EVIDENCE WAS NOT CONTAMINATED IN A WAY TO ALTER THE INFORMATION THAT THE EVIDENCE ORIGINALLY CONTAINED.

PRACTICE TIP:

BE SURE THAT EVIDENCE SAMPLES ARE NOT ONLY CUT OUT OF THE PORTION OF THE ITEM WITH e.g. BLOODSTAIN: A NEGATIVE CONTROL AREA SHOULD ALSO BE CUT OUT. THAT IS THE WAY YOU KNOW YOU ARE NOT MEASURING CONTAMINATION.

CAUTION - BEWARE OF THIS:

Sometimes you will receive a report that will say, for example, **"positive for the presence of blood"**. At first glance you think that blood was actually found. However, you MUST look

further because the substance that tested "positive for the presence of blood" may not be blood at all.

Presumptive vs. Confirmatory Tests

1. PHENOLPHTHALIN PROCEDURES

a. Reagents:

Preparation of Stock Solution

Phenolphthalein	4 grams
Sodium Hydroxide pellets	40 grams
Zinc dust	20 grams
Distilled water	1000 ml
Absolute Ethyl Alcohol	Bring up to 1200 ml

Add each reagent of the stock solution to a 5000 ml round bottom refluxing flask. Attach the condensing column to the flask and turn on cold water to column. Heat the flask with an electric heating mantle. Reflux the solution for approximately three hours, until the solution is colorless. After allowing the solution to cool down; decant the liquid into a measured container and use absolute ethyl alcohol to bring the total volume to 1200 ml. Add enough zinc dust to cover the bottom of a dark bottle and pour the phenolphthalein solution into the bottle. Label, date the bottle and store it in the refrigerator at 4 degrees C. Phenolphthalin solution shelf life is 6 months.

An aliquot of phenolphthalein solution is kept at each analyst's bench. A fresh aliquot is prepared the first working day of each month.

Additional reagents needed for the test include:

Absolute Ethanol and 3 % Hydrogen Peroxide (prepared from stock 30 % solution of Hydrogen Peroxide)

b. Standards and controls:

Standards should include a known blood stain (positive control) and a known blood-free sample (negative control). These controls will be run prior to analysis and recorded in the laboratory notes.

c. Procedure:

To conduct this test, either rub the suspected stain with a folded piece of filter paper or a clean cotton swab. Add the following reagents in order; one drop of ethanol, one drop of phenolphthalein, and one drop of 3 % Hydrogen Peroxide onto the sample rubbing. A positive reaction is indicated by the development of a pink color within 5 seconds. Reactions occurring after 5 seconds, or before the addition of the hydrogen peroxide are inconclusive.

NOTE – Phenolphthalein is only a presumptive test for blood and can give reactions for substances other than blood. It is NOT a confirmation or identification of blood. The presumptive testing of suspected bloodstain will yield numerous false positives. That is, there are numerous substances other than blood that will give positive results with presumptive

blood test reagents. Some of these non-blood substances are: vegetable extracts (especially tomato, potato, cucumber, horseradish), some fruit extracts, some metallic substances, or any other peroxidase-like substances.

Practice tip: Always insist that a confirmatory test be provided or motion the court to exclude presumptive tests when no confirmation is available.

NOTE: DNA IS NOT A CONFIRMATORY TEST FOR BLOOD!!!!!!

No DNA test can tell you:

1. **Timing of DNA deposit**
2. **Identification of cell source**
3. **Circumstances of how the DNA was deposited**

Some Tests to Confirm Blood:

TAKAYAMA – crystal test to confirm. Stain plus chemical plus heat gives crystals under a microscope if blood is present.

OUCHTERLONY – test to confirm. A human-specific antibody reacts with human blood to precipitate in a plate and form a white line for a positive result.

WHAT'S AVAILABLE FROM THE SBI:

Current Manuals are available in hard copy and on disc from the SBI laboratory. The various departments have their own manuals. This list is just a sampling of what is available, but will certainly get you started.

Departments include:

Forensic Biology (formerly Molecular Genetics), Serology, Drug Chemistry, Latent Evidence, Firearms and Toolmark.

Request:

Protocols; policy and procedure manuals; technical procedures manual; quality assurance manuals and training manuals from each department.

PRACTICE TIP:

You will also want to request the **Crime Lab Directives**, which will give you a vast amount of information regarding the policies and procedures that the Director of the Lab or Assistant Director of the Lab puts forth. For example, in a recent capital case involving mishandled and inappropriately packaged evidence, counsel discovered **Crime Lab Directive**

No. 98-12 which instructed lab personnel not to put anything regarding inappropriate packaging or handling of evidence in the official lab report:

"due to inappropriate packaging/handling of…" are not appropriate to be placed in an official laboratory report. If, in the opinion of the analyst, information such as this needs to be communicated, a separate letter on Bureau letterhead (mailed in a separate envelope), that has been reviewed and approved by the Special Agent in charge, will then be directed to the appropriate parties.

It went on to say:

Informing submitting officers of our concerns regarding the inappropriate collection, packaging or submission of evidence is important to their future success as a law enforcement officer; however, such communication is not appropriate in the official laboratory report of analysis/examination.

AREAS FOR CROSS EXAMINATION:

Defense attorneys should be proficient in cross examining the laboratory personnel, and scientific experts in their education, training and experience, bias, lab problems, handling of specimens, use of standards and controls, integrity of samples, and recording methods, just to name a few. Attorneys must also learn about general laboratory information. For example: the lab should engage in **Validation Studies**[1] and also engage in **Proficiency Studies**. The validation process is designed to objectively quantify the reliability and relevance of a procedure. This includes identification of the advantages and weaknesses of a procedure before a decision maker will feel comfortable relying on the results from that procedure. When a procedure is defined as "validated", there is an implication that it is universally useful. Validation also includes the phrase "for its intended purpose". Thus, a procedure may be validated only for a specific use e.g. determining whether a blood sample came from a human or animal, but not for determining which human or animal it came from. When a new procedure is developed, the first

[1] Prior to initiation of e.g. new Body Fluid typing procedures, studies will be conducted by the SBI laboratory to ensure reproducibility and precision of the procedure as well as define and/or establish limitations to the procedure. The procedure will be tested using known samples and may include the following tests: Reproducibility; Sensitivity; Species study; Sample stability.

thing that is done is to determine if the result is reproducible. A determination also is made of whether the test is accurately measuring or predicting the desired effect. Intra and inter-laboratory reproducibility is an important component of test validation. Peer review is an integral part of the scientific validation process. Publication in a peer reviewed journal of an article that provides a detailed description of the test protocol used, and the results obtained, may provide sufficient evidence of the test's performance to support the results of the validation study. In addition, there must be a way to validate the laboratory's methods for ascertaining false positive rates, and to assure that contamination is not an issue in test results. Also, one must make sure the analysts/technicians are proficient in performing the tests. Ideally, labs should have external blind proficiency tests, i.e. a test that is obtained from a second agency. It is basic scientific method that all laboratory records must be kept in a way to permit valid independent scientific review of the test(s) performed. Further, protocols, validation and proficiency studies must be maintained by the laboratory for certification by the National Association of Crime Lab Directors. Since the SBI laboratory in North Carolina is so certified, they must retain this information. Therefore, in addition to the information related to your specific case, be sure to get the manuals listed above. Review all the information, and if you can't understand it, have your own expert explain it to you.

Selected Areas For Defense Voir Dire And Cross Examination

1. Education
   a) Determine the extent of the education of each analyst. Be very specific. Does the analyst have a background in analytical chemistry, organic chemistry, physical chemistry, pharmaceutical chemistry or biochemistry etc. Find out if the analyst has an advanced degree in science, or if he/she took special courses relevant to the analysis. Some analysts have not been educated in identifying controlled substances or other material. Many learn only a few techniques on the job. Weed out education and courses that are not relevant to the issue at hand. Examine the analyst regarding his/her teaching experience, academic ranking, honor programs, etc. Inquire as to whether the analyst has

authored relevant books, journals, written articles or lectured on the subject at hand.

2. Training and Experience
   a) Determine how long the analyst has worked on the job.
   b) Determine whether the analyst has had in-service training, review of work, or any verification of the particular skills involved in the specific techniques.
   c) Determine if the analyst has had any other training related to the identification of the substance they are identifying.
   d) Weed out irrelevant experience and do not allow the analyst to testify in areas outside the scope of the questioning.
   e) Find out how many substances the analyst has analyzed.
   f) Show that the analyst does not analyze all possible ways to identify the substances.
   g) Show that the analyst will testify about certain instrumental techniques, yet is not an expert in the instrumental techniques he/she is testifying about.
3. Bias
   a) Determine how many times the analyst has testified in court proceedings, or has prepared for court proceedings on behalf of the State.
   b) Determine if the analyst refused to speak with the defense attorney prior to the trial, or would only speak to the defense attorney in the presence of the prosecutor.
   c) Determine when and how often the analyst has received training on "how to testify" for the State. Ascertain if the training was given by police or other biased resources.
4. Lab Problems
   a) Establish that laboratory testing does not always run smoothly. Establish that false positives and false negatives are not unusual and that there are drawbacks to every test. For example, poppy seeds or codeine can sometimes test positive for heroin. Ibuprofen can sometimes test positive for marijuana. Results from electrophoresis can show extra bands and peaks that are from contamination. Wind, air conditioning, fluctuating temperatures in the lab, or within the machines, among many other things, can all lead to lab errors. Misrepresentations, or misinterpretation of the test results by the operator resulting from carelessness or lack of experience can also cause major problems. Standards and reagents that are used by more than one analyst have a high incidence of contamination.
5. Handling of Specimens
   a) Each sample must be collected separately into a chemically clean container (sterile is best), sealed and labeled with a name and ID number, date, place of collection, name of person who has collected the sample, and some indication of the examination required.

b) Laboratory counter tops must be maintained by frequent and thorough cleaning. Disposable paper can be used to cover counter tops for the particular tests, but cleaning is nevertheless essential.[2]
c) Gloves should be worn at all times and changed frequently.

6. Standards and Controls
   a) Analysts should carefully prepare standards and controls for all lab procedures. Labels should include content, concentration, and date prepared. Mislabeled or contaminated standards are useless.
   b) If standards are purchased from a manufacturer, the lab should verify the concentration and quality of materials.
   c) Find out how many analysts/chemists use the same standards.
   d) When appropriate, blanks should be used in order to determine a baseline, or if contamination if present.
7. Integrity of Samples
   a) Under no circumstances should the analyst use a portion of a sample and then return the portion (aliquot) to the original specimen.
   b) Care should be taken to label samples appropriately.
   c) Dates and times of assays should be recorded.
   d) Unusual conditions during a testing procedure should be reported.
8. Quantity and Diversity of Sample Information
   a) Determine the amount of the original sample, the amount analyzed, the amount remaining, and the amount of "other" materials mixed with the sample.
   b) Determine the number of tests run on each sample and whether or not the tests were performed in duplicate. Duplicates serve to back up the reported result.
9. Record the Details
   a) Each analyst should record the details of the samples received, their condition, and keep a full experimental record of the analyses. Attorneys should look at all original data, lab protocols, lab notes, and test results before attempting to examine or cross examine the analyst.
   b) Question extensively on where and how the samples were stored and who had access to the samples.
   c) Find out information regarding the internal chain of custody in order to determine if samples were co-mingled. Review chain of custody documentation.
   d) The lab should have available quality control and quality assurance records.
   e) The lab should have procedure manuals and lab protocols. The principle of each assay should be recorded, and directions for equipment calibration should be available.
   f) The lab should maintain manuals for all lab equipment.

[2] For DNA samples, only one item of evidence shall be analyzed at a time. Analyst should only have a single evidence container open on their work bench at a time. Benches and hoods should be cleaned with a 10 % bleach solution prior to use; and in between cases; and between processing items from the victim and suspect. Each analyst shall process an item of evidence over a piece of clean paper to catch fiber, hair or trace evidence which may be dislodged during analysis. *See* Molecular Genetics Section Technical Procedures Manual, Sections 1.2, 1.3 and 1.4.

g) Records should be kept when chemicals/reagents are received or made in the lab, and the expiration dates should be carefully documented and observed.

Note: Attorneys should always find out if an expert has relied on books, journals, lab protocols etc., for guidance in performing tests and identifying the results. If the expert has relied on particular books etc., make sure that the expert is able to give the title, author's name, degree etc. Attorneys should also question the expert about the drawbacks of each test performed, since every test and procedure has some. Finally, ask the expert what he/she did to counter the drawbacks of the tests performed.

ALL LABORATORY RECORDS SHOULD BE KEPT IN A WAY TO PERMIT A VALID SCIENTIFIC REVIEW OF THE DATA

10. General Laboratory Information
    a) The lab should engage in Validation Studies i.e. to determine if they are having general contamination problems, and/or to show that the techniques they are using are valid, and to validate that the lab itself can perform the tests properly.
    b) The lab should engage in Proficiency Studies, in order to validate their methods for ascertaining false positive rates. Ideally, labs should have external blind proficiency tests.
11. Glassware
    a) If a lab is not using disposable glassware, the glassware must either be cleaned in acid or autoclaved, and checked periodically for contamination. If disposable glassware is used, packaging must be carefully checked for breaks in the seal. Contamination is common when residue material is left behind on glassware. Some proteins stick to glassware, thus making the cleaning process more difficult. **Minute amounts of residue can change results dramatically.**
    b) Damaged glassware must always be discarded.
12. Equipment
    a) All lab equipment must be properly maintained. Find out who sets up laboratory equipment/machines. Find out who specifically calibrates the individual equipment/machines, who prepares the columns etc., and who is responsible for troubleshooting. Find out if all technicians/chemists are responsible for reading the equipment manuals. Find out when and who services the laboratory equipment. Find out when and for how long has the equipment been validated and how the validation was performed.
    b) Temperatures of dependent equipment should be checked and recorded daily.
    c) Balances (scales) should be serviced regularly, and cleaned and zeroed after each use.

d) Laboratory equipment should be calibrated and cleaned on a regular basis.

CHECK LIST OF ARGUMENTS TO ATTACK FINDINGS

There is no infallible system. Lab errors generally fall into the following categories:

a) human and technical errors
b) mislabeling
c) misrecordings
d) misrepresentations
e) case mix-ups
f) contaminations – bacterial contamination, and/or residue material in instruments and on glassware
g) various interpretive errors
h) false positives and false negatives
i) use of nonspecific test
j) inadequate qualifications of chemist
k) problems with instruments
l) problems with methods of analysis
m) faulty conclusions

NOTE: **For DNA analysis:**

All technical personnel who participate in DNA analysis must undergo two external proficiency tests per year. One test must be performed in the first six months of the calendar year and the second in the last six months of the calendar year. The interval between consecutive tests must be at least four months and not to exceed eight months. An external proficiency test provider must demonstrate compliance with the proficiency testing manufacturing guidelines established by the Technical Working Group on DNA Analysis Methods and American Society of Crime Laboratory Directors/Laboratory Accreditation Board.

Technical personnel must be externally proficiency tested on an annual basis in each DNA technology (RFLP, STR, mtDNA, PM/DQA1) to the full extent in which they perform casework examinations.

Definitions:

DNA: Deoxyribonucleic Acid. Often referred to as the "blueprint of life," DNA is the genetic material present in the nucleus of cells which is inherited half from each biological parent.

DQA1: A polymorphic gene in the Human Leukocyte Antigen (HLA) region of chromosome 6 that has been studied and analyzed for many purposes including paternity testing, transplantation biology, and human DNA identification testing.

RFLP: Restriction Fragment Length Polymorphism. A process used in DNA identification testing in which size (fragment length) differences at specific regions of the DNA are detected.

STR: Short Tandem Repeat(s). Small regions of the DNA that contain short segments repeated several times in tandem (side by side). Thirteen STR sequences have been selected for the Combined DNA Index System (CODIS).

CODIS: Combined DNA Index System. A collection of databases of DNA profiles obtained from evidence samples from unsolved crimes and from known individuals convicted of particular crimes. Contributions to this database are made through State crime laboratories and the data are maintained by the FBI.

PRACTICE TIP:

When the State supplies you with a lab report, you must aggressively seek and litigate your right to the rest of the information you will need to be able to deal with its claim of evidence based on science: the tests used, the results of the tests, the laboratory procedures, protocols, validation and proficiency studies. Style your motion and include some or all of the following:

ON BEHALF OF …… kindly provide the undersigned with access to and a copy of all the following:

1. *Scientific conclusions the State intends to offer at trial.*
2. *The basis for scientific conclusions.*
3. *The procedures used to reach the conclusions.*
4. *The tests performed and the data obtained from those tests.*
5. *Procedures the forensic biologist/chemist should have used to reach the conclusion, namely protocols for each scientific test.*
6. *Information regarding how the samples (evidence) were collected and handled.*
7. *Information regarding how the transfers of evidence was completed.*
8. *Laboratory receiving records documenting the date, time and condition of the evidence in question.*
9. *Information regarding storage location of the evidence.*
10. *Information regarding the procedures for sub-sampling and contamination control.*
11. *Copies of technical procedures in effect at the time the test was performed during sample screening and confirmation, including sample preparation, sample analysis, data reporting and instrument operation.*
12. *Proficiency results for each analyst and technician responsible for preparation or analysis of subject specimens, including: raw data and reported results, target values and acceptance ranges, performance scores, and all related correspondence.*
13. *Copies of traceability documentation for standards and reference materials used during analysis, including unique identifications, origins, dates of preparation and use, composition and concentration of prepared materials, certification or traceability records from suppliers, assigned shelf lives and storage conditions.*

14. *Sample preparation records, including dates and conditions of preparation, responsible analyst, procedural reference, purity, concentration and origins of solvents, reagents, and control materials prepared and used, samples processed concurrently, and extract volume.*
15. *Copies of bench notes, log books, and any other records pertaining to case samples or instruments; records documenting observations, notations, or measurements regarding case testing.*
16. *Instrument run logs with identification of all standards, reference materials, sample blanks, rinses, and controls analyzed during the day/shift with subject samples (as appropriate: run sequence, origins, times of analysis and aborted run sequences).*
17. *Instrument operating conditions and criteria for variables, including as appropriate: GC column, instrument file identification, tuning criteria, instrument performance check, initial calibration, continuing calibration checks, calibration verification.*
18. *Records of instrument maintenance status and activities for instruments used in subject testing, documenting routine as-needed maintenance activities in the weeks surrounding subject testing.*
19. *Raw data for the complete measurement sequence (opening and closing quality control included) that includes the subject samples. For GC-MS analysis, this would include: areas and retention times, injection volumes, dilution factors, chromatograms and mass spectra - as prepared and as determined values for all quality control samples.*
20. *A description of the library used for spectral matches for the purpose of qualitative identification of controlled substances, including source(s) and number of reference spectra.*
21. *A copy of records documenting computation of the laboratory's theoretical production yield, including the basis for the computation and the algorithm used, as appropriate.*
22. *Procedure(s) for operation and calibration checks of analytical balance used to weigh controlled substances.*
23. *Results of calibration checks and documentation of mass traceability for gravimetric determinations.*
24. *Results of contamination control surveys for trace level analytes relevant to test methods at the time of analysis, including sampling design and analytical procedures.*
25. *Records and results of internal review of subject data.*
26. *Method validation records documenting the laboratory's performance characteristics for qualitative identification and quantitative determinations of the known and unknown substances, to include data documenting specificity, accuracy, precision, linearity, and method detection limits.*
27. *Laboratory's Quality Manual in effect at the time the subject samples were tested as well as the laboratory's most recent Quality Manual (however named; the document that describes the laboratory's quality objects and policies).*
28. *Laboratory's technical or operational procedures in effect at the time the subject samples were tested (often termed Standard Operating Procedures, for analytical laboratory operations) as well as the laboratory's most recent technical or operational procedures for analytes detected in subject samples.*
29. *Laboratory's ASCLD-LAB application for accreditation, and most recent Annual Accreditation Review Report, as appropriate.*
30. *A statement of qualifications of each analyst and/or technician responsible for processing case samples to include all names, locations and jurisdictions of cases in which these personnel testified concerning the same substances found in the present case.*
31. *A copy of the laboratory's ASCLD-LAB on-site inspection report, as appropriate, as well as any reports of on-site inspections by any other testing laboratory audit organization.*

32. A copy of internal audit reports generated during the period subject samples were tested.
33. A list of capital instrumentation in the laboratory at the time subject testing was performed, including manufacturer, model number, and major accessories.
34. Data for the testing section: numbers of tests performed per month or per year, and the number of full time equivalent personnel in the testing section of the laboratory.
35. The Section Procedures Manual. The Section Training Manual.

(For DNA, request the Forensic Biology Section Manuals).

State v. Cunningham

In *State v. Cunningham*, 108 N.C. App. 185, 195, 423 S.E. 2d 802 (1992), the Court of Appeals construed Section 903(e) as "entitling a criminal defendant to pretrial discovery of not only conclusory laboratory reports, but also of any tests performed or procedures utilized……to reach such conclusion." That court looked to the cases and commentary construing Federal Rule 16 for guidance regarding its construction of Section 15A-903(e). The court noted that Federal Rule 16 had been construed to provide a criminal defendant with broad pretrial access to a wide array of medical, scientific and other materials obtained by or prepared for the prosecution:

> [b]ecause of the extraordinarily high probative value generally assigned by jurors to expert testimony, of the need for intensive trial preparation due to the difficulty involved in the cross-examination of expert witnesses, and of the inequality of investigative resources between prosecution and defense regarding evidence which must be analyzed in a laboratory….

Id, 108 N.C.App. at 194, 423 S.E2d at 807-808. Referring to the ABA Standards for Criminal Justice, the Court of Appeals delineated the scope of discovery under section 15A-903(e) to encompass the materials necessary to enable a defendant to determine that "the tests performed were appropriate and to become familiar with the test procedures." Id. (citing 2 A.B.A. Standards for Criminal Justice, Commentary to Standard 11-2.1(a)(iv)2d.ed.1980 & Supp. 1986).

State v. Robert Earl Dunn

After *State v. Cunningham*, there were few cases in North Carolina addressing the scope of material the State must provide under 15A-903(e) beyond the bare results of laboratory tests until *State of North Carolina v. Robert Earl Dunn*, 154 N.C. App. 1, 2003. In that case, an officer testified that he tested the suspected drug substance bought from the defendant with a "Marquis test system." When the substance tested negative for heroin, he sent the remaining portion to the State Bureau of Investigation lab for further testing. He then took the remaining substance to Lab Corp in Burlington, North Carolina, to be tested at the defendant's request. The forensic drug analyst for the SBI, testified that the substance from defendant tested negative for heroin twice, and positive for heroin twice. The chemist from Lab Corp testified that her analysis "showed it to be at least 90 percent or greater match for heroin." At the Court of Appeals, the defendant contended that the trial court erred "in failing to require the State to provide defendant discovery information pertaining to laboratory protocols, incidences of false positive results, quality control and quality assurance, and proficiency tests of the State Bureau of Investigation laboratory……." Pre-trial, the Defendant had filed a Motion for Discovery requesting documents from SBI agents who tested the substance from the defendant. He requested "access to and a copy of all case notes…describing, without limitation, the details of the samples received, and the condition thereof, as well as the full experimental records of the test(s) preformed." The Defendant

also asked for laboratory protocol documents, any reports documenting “false positives” in SBI laboratory results, and information about the credentials of the individuals who tested the substance on behalf of the State.

Defendant received a new trial.

STATE OF NORTH CAROLINA
v.
ROBERT EARL DUNN, Defendant **Later Citations**
NO. COA01-487
NORTH CAROLINA COURT OF APPEALS
Filed: November 19, 2002
Appeal by defendant from judgment entered 1 November 2000 by Judge Henry W. Hight, Jr. in Durham County Superior Court. Heard in the Court of Appeals 14 February 2002.
Attorney General Roy Cooper, by Assistant Attorney General John G. Barnwell, for the State.
Lisa Anderson Williams, for defendant-appellant.
HUDSON, Judge.
Defendant was convicted on 25 October 2000 of selling heroin, delivering heroin, and possessing heroin with the intent to sell and deliver it. He was sentenced to a minimum term of 168 months and a maximum term of 211 months. Defendant appeals his convictions.
The pertinent facts are as follows: Officer W.M. Evans, an investigator with the Durham Police Department, testified at defendant's trial that while he was working in the street crimes unit he participated in a drug bust on 30 April 1999. Officer Evans operated an unmarked "white panel van" equipped with audio and visual surveillance equipment on Elm and Hopkins Streets in Durham as part of an ongoing investigation regarding drug activity. On the evening at issue, Officer Evans pulled up to the corner, rolled down his window, and a man, later identified as the defendant, approached his window. Officer Evans asked defendant for a "bag of boy;" "[b]oy is a street term for heroin." Defendant told Officer Evans "[f]ollow me," then defendant "began to walk west on Hopkins Street." The officer followed him in the van and defendant walked behind the Greater Zion Wall Baptist Church on Hopkins Street. Defendant returned to the van and gave Officer Evans "a glassine bag with a red sun on it;" Officer Evans gave defendant twenty-five dollars in return. Officer Evans drove away, made notes of what happened, put the glassine bag in a plastic evidence bag, and described defendant to other police units in the area. He then returned to headquarters, reviewed the surveillance video, and was contacted by Investigator Mike Berendson, a Durham Police Officer familiar with local drug dealers and users, when defendant was apprehended.
Officer Evans testified that he tested the substance bought from defendant with a "Marquis test system." He explained that the Marquis test system is "an ampule [the police] have to test cocaine, marijuana, heroin, you know,

different things. You break the ampule open, it has a little solution in there. You would take a paper clip, stick i[t] into the bag of heroin, get a little bit of residue on there, stick it into the bag, and if it turns purple, it means it's tested positive for heroin." The substance at issue here tested negative and Officer Evans sent the remaining portion to the State Bureau of Investigation (the "SBI") lab for further testing. Officer Evans explained that one possible reason that the substance tested negative for heroin was that "[h]eroin on the street is only 30 to 35 percent [pure]" and that the other sixty-five to seventy percent of a bag of heroin sold on the street customarily is made up of manitol, a cutting agent. Manitol does not test positive in the Marquis test. After the SBI lab finished testing the substance in the glassine bag, Officer Evans picked up the remains of the substance and, pursuant to the court's instructions, took it to Lab Corp in Burlington, North Carolina, to be tested at the defendant's request. Officer Evans retrieved the remaining portion of the substance from Lab Corp and returned it to the property room at the police station in Durham, where it stayed until trial.

In response to questions concerning possible identity confusion between defendant and his brother, Officer Berendson testified that he was familiar with both brothers. He confirmed his identification of defendant as the person who sold a substance to Officer Evans. Other employees of the Durham Police Department also testified to establish the chain of custody for the substance recovered in the drug buy.

Special Agent Wendy Cook, forensic drug analyst for the SBI, testified that the substance purchased from defendant tested negative for heroin twice, and positive for heroin twice. Cook did not conduct all of the tests herself, but read the results as indicating that less than one-tenth of a gram of heroin was present in the sample. She explained that this procedure (reading tests performed by others) was standard procedure at the SBI laboratory. During voir dire, Agent Cook acknowledged that most of the documents requested by defendant as additional discovery existed and were available. The State did not provide these documents to defendant.

Over the objection of defendant, the State called Ms. Gail Ingold and Ms. Mitzi Walker to testify. Both were employed by Lab Corp in Burlington, which had been retained by the defendant to perform independent testing on the substance. Ms. Ingold testified to the chain of custody of the sample she received from Officer Evans. Ms. Walker, a chemist, testified that her analysis "showed it to be at least 90 percent or greater match for heroin."

The jury convicted defendant of selling heroin, delivering heroin, and possession of heroin with intent to sell or deliver it. After the verdict was entered, the same jury heard evidence and convicted defendant of the status of habitual felon pursuant to N.C. Gen. Stat. § 14-7.1 (1999). The court then sentenced defendant to a minimum of 168 months and a maximum of 211 months in prison. Defendant appealed.

In his first assignment of error, defendant contends that the trial court erred "in failing to require the State to provide [defendant] discovery information pertaining to laboratory protocols, incidences of false positive results, quality control and quality assurance, and proficiency tests of the State Bureau of Investigation laboratory when State Bureau of Investigation chemists tested

the substance that the State alleged to be heroin four times and only two of those tests returned a positive result for heroin." Defendant filed a Motion for Discovery on 28 March 2000 requesting documents from SBI agents who tested the substance bought from defendant. He requested "access to and a copy of all case notes . . . describing, without limitation, the details of the samples received, and the condition thereof, as well as the full experimental records of the test(s) performed." Defendant also asked for laboratory protocol documents, any reports documenting "false positives" in SBI laboratory results, and information about the credentials of the individuals who tested the substance on behalf of the State. Eleven pages of laboratory notes from the SBI are included in the record. The record contains no reports concerning false positives at the SBI laboratory, laboratory protocol documents, or credentials of the laboratory employees involved in this case, which apparently were not given to defendant.

> The defendant's right to discovery of exculpatory information stems from the Constitution. *See Brady v. Maryland*, 373 U.S. 83, 10 L.Ed. 2d 215 (1963). In *Brady*, the Court held that "suppression by the prosecution of evidence favorable to an accused upon request violates due process where the evidence is material either to guilt or to punishment, irrespective of the good faith or bad faith of the prosecution." *Brady v. Maryland*, 373 U.S. at 87, 10 L.Ed. 2d at 218. Therefore, a defendant is entitled to discovery from the prosecutor of all information within the scope of *Brady*. However, our courts have noted that, [w]ith the exception of evidence falling within the realm of the *Brady* rule, . . . there is no general right to discovery in criminal cases under the United States Constitution, thus a state does not violate the Due Process Clause of the Federal Constitution when it fails to grant pretrial disclosure of material relevant to defense preparation but not exculpatory.

State v. Cunningham, 108 N.C. App. 185, 195, 423 S.E.2d 802, 808 (1992). In North Carolina, the General Assembly has expanded the defendant's right to discovery through the enactment of N.C. Gen. Stat. § 15A-903. Subsection (e) provides that, "[u]pon motion of the defendant, the court must order the prosecutor to provide a copy of or to permit the defendant to inspect and copy or photograph results or reports of physical or mental examination or of tests, measurements or experiments made in connection with the case . . . ." N.C. Gen. Stat. 15A-903(e) (1999). Defendant contends that the discovery he sought before trial would have given him and his attorney the ability to understand the test results received from the SBI laboratory, would have helped explain why the substance tested negative in two of the four SBI tests, why the SBI laboratory technicians ruled out the negative tests, and how often the SBI laboratory returns false positives on similar substances. The trial court denied defendant's motion for additional discovery, and the State provided defendant with the eleven pages of tests and laboratory results which are included in the record.

Defendant relies upon *Cunningham* as authority for his argument that the trial court erred in refusing his request for the additional documents. In

Cunningham, the defendant received through discovery only an SBI laboratory report, which was "limited to a statement that the material analyzed contained cocaine, reveals only the ultimate result of the numerous tests performed . . . ." 108 N.C. App. at 196, 423 S.E.2d at 809. Explaining that this did not "enable defendant's counsel to determine what tests were performed and whether the testing was appropriate, or to become familiar with the test procedures," in *Cunningham*, the Court held that this additional information was discoverable under N.C. Gen. Stat. § 15A-903(e), and that the trial court erred. *See id*. There we explained that because of the extraordinarily high probative value generally assigned by jurors to expert testimony, of the need for intensive trial preparation due to the difficulty involved in the cross-examination of expert witnesses, and in the inequality of investigative resources between prosecution and defense regarding evidence which must be analyzed in a laboratory, federal Rule 16 has been construed to provide criminal defendants with broad pretrial access to a wide array of medical, scientific, and other materials obtained by or prepared for the prosecution *which are material to the preparation of the defense* or are intended for use by the government in its case in chief.
Id at 194, 423 S.E.2d 807-8. We concluded that there was no evidence the information sought was exculpatory, and that the error was harmless beyond a reasonable doubt in light of "overwhelming evidence of defendant's guilt." Since *Cunningham*, there have been few cases in North Carolina addressing the scope of material the State must provide under 15A-903(e) beyond the bare results of laboratory tests. *See State v. Bartlett*, 130 N.C. App. 79, 502 S.E.2d 53 (1998). In *Bartlett* we granted defendant a new trial, where the State refused to provide "alco-sensor" test results in response to a discovery request under N.C. Gen. Stat. 15A-903(e). "Admission of the alco-sensor test results was error because they were erroneously admitted as substantive evidence and the State violated the discovery rules." *Id*, 130 N.C. App. at 84. *Cf. State v. Brewington*, 352 N.C. 489, 532 S.E.2d 496 (2000), *cert. denied*, 531 U.S. 1165, 148 L.Ed.2d 992 (2001) (holding that polygraph results, which are subjective and unreliable, do not fall within the scope of statute providing for discovery of results or reports of tests, measurements or experiments made in connection with the case); *State v. East*, 345 N.C. 535, 481 S.E.2d 652 (1997), *cert. denied*, 522 U.S. 918, 139 L.Ed.2d 236 (1997) (holding that there is nothing in statute authorizing discovery by the state, N.C. Gen. Stat. 15A-905, which limits results or reports of physical and mental examinations of defendant to production of existing written reports). Because the cases are so sparse, we have expanded our research.
The Official Commentary to N.C. Gen. Stat. 15A-903 indicates that it was patterned after Federal Rule of Criminal Procedure 16. *See* N.C. Gen. Stat. 15A-903, Official Commentary; *see, also, State v. Brown*, 306 N.C. 151, 163, 293 S.E.2d 569, 578, *cert. denied*, 459 U.S. 1080, 74 L.Ed. 2d. 642 (1982). Although we are not bound by the lower federal courts, we look to cases interpreting Rule 16 for guidance in our interpretation of N.C. Gen. Stat. 15A-903. *Cf. Brewer v. Harris*, 279 N.C. 288, 292, 182 S.E.2d 345, 347 (1971), *affirmed*, 279 N.C. 288, 182 S.E.2d 345 (1971) (because federal rules are the source of the North Carolina Rules of Civil Procedure, we look to the

decisions of federal jurisdictions for guidance). We also examine cases from other states interpreting discovery statutes similar to our own.

In *United States v. Wilkerson*, the defendant asked for very similar information to what defendant sought here: (a) written records, notes and documentation pertaining to the chain of evidence and testing; (b) complete technical procedures, including description of the testing process, criteria for review of data, quality assurance, and standardization; (c) quality assurance programs; (d) internal quality assurance policies and procedures and (e) information regarding the occurrence or frequency of "false positive" results. *See United States v. Wilkerson*, 189 F.R.D 14, 15 (D.Mass. 1999). The prosecution agreed that it would turn over the materials sought in (c), (d) and (e). The court determined that while the working notes of the lab and some of the procedural data were protected as the internal "working papers of the examiner," a detailed summary of the tests was necessary to reveal the examiner's "opinions, the bases and the reasons for those opinions." *Id.* at 16; *see, also,* Fed. R. Crim. P. 16(a)(2) and 16(a)(1)(E). The court concluded that such a summary must include a description of the sample received, what the examiner did to ready the sample for the test(s), a description of the test(s)(i.e., how the test(s) work(s) to detect the drugs), what physically was done with the sample during the test(s), what physically occurred to the sample as a result of the test(s), what occurred which led the examiner to his or her conclusion that the substance was cocaine, any steps taken to review the test(s) results to insure accuracy, any other action with respect to the sample or the testing, and what the examiner did with the sample after examination.

Id. at 16-17. While the material ordered to be disclosed is very similar to that sought in the case at hand, the *Wilkerson* court based its decision upon Federal Rule of Criminal Procedure 16(a)(1)(E), a provision in the federal discovery rule which goes beyond N.C. Gen. Stat. § 15A-903.

In *United States v. Green*, the court ordered the government to "turn over to the defendants not only all scientific reports but also all findings, scientific or technical data upon which such reports are based." *United States v. Green*, 144 F.R.D. 631, 639 (W.D.N.Y. 1992). Unlike *Wilkerson*, the *Green* court based its holding on Rule 16(a)(1)(C) and 16(a)(1)(D), which are the same as the North Carolina statute. *See* Fed. R. Crim. P. 16; N.C. Gen. Stat. § 15A-903. Significantly, the court favored more extensive discovery because "it would appear to facilitate trial by enabling defense counsel to assess the correctness or sufficiency of the testing and to prepare to cross examine the government's experts and to present defense experts, if appropriate." *Id.*

> The trial court's assertion here that "any further information in regards to that, you can surely extract from them on cross examination," overlooks what the courts noted in both *Green* and *Cunningham*: allowing the discovery would enhance *preparation* for cross examination, and permit both sides to assess the strengths and weaknesses of this aspect of the evidence. In addition, we noted in *Cunningham* that lLike federal Rule 16(a)(1)(D), Section 15A-903(e) must be construed as entitling a criminal defendant to pretrial

> discovery of not only conclusory laboratory reports, but also any tests performed *or procedures utilized by chemists to reach such conclusions*. However, unlike under federal Rule 16(a)(1)(D), no requirement exists that such information be material to the preparation of the defense or intended for use by the State in its case in chief.

Id. at 194-95, 423 S.E.2d at 808 (emphasis added).

Thus, it is clear from *Cunningham* and *Bartlett* that this court has viewed the North Carolina rule broadly, an approach we are obligated to follow. Similarly, courts in other states have held that the State should provide more than the bare test results and reports to the defendant in discovery under similar rules. For example, in *State v. Paul*, the Missouri Court of Appeals held that the State could not use as evidence the results of a chemical breath analysis when it would not release to the defendant upon request 'full information' concerning the chemical test of defendant's breath. They particularly asked about the type of equipment used, whether and when it had been inspected for accuracy and the result thereof, the names and qualifications of persons making the chemical analysis, the time defendant had been observed by the testing personnel, and a description of the procedure used in testing for alcoholic content of the defendant's blood. *State v. Paul*, 437 S.W.2d 98, 101 (Mo.App. 1969) (superseded by statute that still required full information be given upon request but required a judicial determination of reasonableness, relevance and materiality before State's evidence could be suppressed. *See State v. Clark*, 723 S.W.2d 17 (Mo. App. E.D. 1986)). The Georgia Supreme Court held that "[t]he cross examiner must be able to examine the material that the expert relied upon to support her direct testimony; otherwise a thorough and sifting cross-examination of the expert's intelligence, memory, accuracy and veracity and of her scientific testing and opinion is not possible." *Eason v. State*, 396 S.E.2d 492, 494 (Ga. 1990) (although later overruled by statute, prior statute, upon which the decision was based, is like North Carolina statute). Thus we conclude that the trial court erred by refusing to require the State to provide the defendant the discovery he sought pursuant to N.C. Gen. Stat. 15A-903(e). However, in light of our resolution of the next issue, we need not determine whether this error alone would entitle defendant to a new trial.

In his second assignment of error, defendant contends that the trial court erred in admitting testimony concerning laboratory tests and results of Lab Corp, a testing facility retained by defendant to independently test the substance at issue. Defendant argues that he never intended to call Lab Corp or its representatives as witnesses at trial, and that pursuant to N.C. Gen. Stat. § 15A-905(b), the State would only have been able to inspect results, reports, or documents made in connection with defendant's case, "if the defendant intends to offer such evidence or tests or experiments made in connection with such evidence, as an exhibit or evidence in the case." Thus, defendant contends that, by calling the Lab Corp employees to testify, the State: (1) circumvented North Carolina's rules of discovery; (2) compelled defendant to supply evidence against himself; (3) violated the defendant's Sixth

Amendment right to effective assistance of counsel; and (4) violated the defense attorney's work product privilege. We agree that the State's actions violated the defendant's rights to effective assistance of counsel, and related work product privilege. As this is an issue of first impression in North Carolina, we have analyzed this issue in depth and in light of the decisions of other courts which have confronted the issue, and concluded that this result reflects the better-reasoned approach.

Defendant correctly points out that the report of Lab Corp is protected from discovery by the State under N.C. Gen. Stat. § 15A-906, which states that "[e]xcept as provided in G.S. 15A-905(b) this Article does not authorize the discovery or inspection of reports, memoranda, or other internal defense documents made by the defendant or his attorneys or agents in connection with the investigation or defense of the case . . . ." N.C. Gen. Stat. § 15A-906 (1999). The exception provided in the statute allows the State "to inspect and copy or photograph results or reports of physical or mental examinations or of tests . . . ,which were prepared by a witness *whom the defendant intends to call at the trial.*" N.C. Gen. Stat. § 15A-905(b)(1999) (emphasis added). If the defendant does not intend to call the witness at trial, the results and reports of tests performed by the witness are protected from pre-trial discovery.

Here, however, the State did not seek to obtain the report of Lab Corp in pre-trial discovery, but instead to present the testimony of Lab Corp employees at trial. Over the objection of the defendant, the trial court ruled:

> I'll allow Ms. Ingold to testify, and the other employees that you have from Lab Corp. However, they may not testify to any communication, conversation, or report generated by them and delivered to counsel for the defendant, any communication between them and counsel for the defendant, and anything that was said to them by counsel for the defendant. Their testimony will be limited to their procedures and the result of any testing which they did upon the substance which was contained in State's Exhibit 2, which was the % identified as the controlled substance.

The wording of the court's ruling and of the State's brief indicate that both believed that, while the report of Lab Corp's testing of the material was protected by N.C. Gen. Stat. 15A-905, the results of the testing were not. We disagree.

While N.C. Gen. Stat. 15A-905(b) is headed "Reports of Examinations and Tests," the clear wording of the statute itself is that the State may "inspect and copy or photograph *results or reports* of physical or mental examinations or of tests . . ., which the defendant intends to introduce in evidence at the trial or which were prepared *by a witness whom the defendant intends to call at the trial* . . . ." N.C. Gen. Stat. 15A-905(b) (1999) (emphasis added). Defendant did not intend to introduce results of Lab Corp's test, or to call the testers as witnesses; thus the results would not have been discoverable had the State asked for them.

However, the fact that the State could not have obtained the results through pre-trial discovery does not necessarily mean they may not be used at trial. In

State v. Hardy, the defense sought pre-trial disclosure of a transcribed interview of one of the state's witnesses. *See State v. Hardy*, 293 N.C. 105, 125, 235 S.E.2d 828, 840 (1977). The State refused, claiming that the material was protected by N.C. Gen. Stat. 15A-904, which "does not require the production of reports, memoranda, or other internal documents made by the prosecutor . . . or of statements made by witnesses or prospective witnesses of the State to anyone acting on behalf of the State." N.C. Gen. Stat. 15A-904(a) (2001). The *Hardy* Court agreed that the material was protected from pre-trial discovery, but held that "G.S. 15A-904(a) does not bar the discovery of prosecution witnesses' statements *at trial*." *Hardy*, 293 N.C. at 125, 235 S.E.2d at 840 (emphasis added). The Court went on to state:

> At trial the major concern is the "search for truth" as it is revealed through the presentation and development of all relevant facts. To insure that truth is ascertained and justice served, the judiciary must have the power to compel the disclosure of relevant facts, *not otherwise privileged*, within the framework of the rules of evidence. *Id.* (emphasis added).

Further, in *State v. Warren*, the North Carolina Supreme Court allowed the State to compel discovery of defendant's non-testifying expert's report for use in cross-examination of a testifying expert, stating "even when the statutes limit the trial court's authority to compel *pretrial* discovery, the court may retain inherent authority to compel discovery of the same documents at a later stage in the proceedings." *State v. Warren*, 347 N.C. 309, 325, 492 S.E.2d 609, 618 (1997), *cert. denied*, 523 U.S. 1109, 140 L.Ed.2d 818 (1998). However, this was done in the context of a capital sentencing hearing, "where the Rules of Evidence do not apply" and "the trial court must permit the State 'to present any competent evidence supporting the imposition of the death penalty.'" *Id.* at 325-26, 492 S.E.2d at 618. If the State is prevented from compelling a defense expert to testify at trial, this protection must stem from a different source than the discovery rules.

Here the issue arose because agents of the State, while in the process of delivering evidence to the defense expert for testing, served a subpoena on the expert. Under applicable discovery provisions, neither the State nor the defense are required to release the identities of non-testifying experts. *See* N.C. Gen. Stat. 15A-904, 905 (1999). Without knowing the expert's identity, the adverse party would obviously be unable to compel his testimony. However, in a case like this, where the court instructs officers to deliver to a defense expert physical evidence held by law enforcement to maintain its chain of custody, the defense necessarily reveals the identity of its expert. The court could, as an alternative, have ordered the evidence delivered to a neutral third party for delivery to the expert in order to protect both the chain of custody and the identity of defendant's expert.

In a similar case of first impression, the Appellate Court of Illinois held that a scientific report by a non-testifying consulting expert retained by the defendant was protected from disclosure to the state. *See People v. Spiezer*, 735 N.E.2d 1017 (Ill. App.3d 2000). The Court in *Spiezer* stated:

> [M]any jurisdictions have held that the reports prepared by nontestifying, consulting experts are protected from disclosure. What

> is unclear, however, is the proper framework for the analysis. Four distinct bases for such protection have emerged. . . : the fifth amendment privilege against self-incrimination, the sixth amendment right to effective assistance of counsel, the attorney-client privilege, and the work product doctrine.

Id. at 1020. As the defendant neither addressed the attorney-client privilege in his assignments of error nor argued it in his brief, we confine our analysis to the remaining three bases.

We first address the Fifth Amendment privilege against self-incrimination. Defendant argues that by compelling the testimony of experts that he retained, the State required him in effect to supply evidence against himself. We disagree. In *United States v. Nobles*, the United States Supreme Court held that "[t]he Fifth Amendment privilege against compulsory self-incrimination is an intimate and personal one . . . . [I]t adheres basically to the person, not to information that may incriminate him." *United States v. Nobles*, 422 U.S. 225, 233, 45 L.Ed.2d 141, 150-51 (1975). The Court concluded that allowing the disclosure to the prosecution of a report prepared by a defense investigator would not violate the defendant's Fifth Amendment privilege which, "being personal to the defendant, does not extend to the testimony or statements of third parties called as witnesses at trial." *Id.* at 234, 45 L.Ed.2d at 151. Although the *Nobles* Court considered the specific instance of the report of a third party who was also a testifying witness, the Court's ruling implies that the Fifth Amendment privilege would not extend to the statements of non-testifying third party consulting experts. We therefore hold that the defendant's privilege against self-incrimination does not bar the State from compelling testimony from a consulting expert retained by the defendant.

We next turn to the work-product doctrine, originally recognized by the United States Supreme Court in *Hickman v. Taylor*, where the Court stated:

> [i]t is essential that a lawyer work with a certain degree of privacy, free from unnecessary intrusion by opposing parties and their counsel. Proper preparation of a client's case demands that he assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference. That is the historical and the necessary way in which lawyers act within the framework of our system of jurisprudence to promote justice and to protect their clients' interest.

Hickman v. Taylor, 329 U.S. 495, 510-11, 91 L.Ed. 451, 462 (1947). The Court went on to establish that certain materials, prepared by the attorney in anticipation of litigation, were protected from discovery by a qualified privilege. *See id.* In *Nobles*, the Court extended the doctrine to "protect material prepared by agents for the attorney as well as those prepared by the attorney himself." *Nobles*, 422 U.S. at 238-39, 35 L.Ed.2d at 154; *see, also, Hardy*, 293 N.C. at 126, 235 S.E.2d at 841. The principles of *Hickman* were embodied in Rule 26(b)(3) of the Federal Rules of Civil Procedure. Similar

principles are codified in N.C. Gen. Stat. 15A-904 and N.C. Gen. Stat. 15A-906. Although the work product doctrine was created in the context of civil litigation, it applies in criminal cases as well. *See Hardy*, 293 N.C. at 126, 235 S.E.2d at 841. Moreover, although the statutory work product protections may be limited to pretrial discovery, the *Nobles* Court noted that "the concerns reflected in the work product doctrine do not disappear once trial has begun. Disclosure of an attorney's efforts at trial, as surely as disclosure during pretrial discovery, could disrupt the orderly development and presentation of his case." *Nobles*, 422 U.S. at 239, 45 L.Ed. 2d at 154. The *Nobles* Court did not define the scope of the work product doctrine's protection at trial, holding that the defendant had waived the doctrine's protection by presenting the defendant's consulting expert as a witness at trial.

In *United States v. Walker*, which is closely analogous, the court held that the government was barred by the work product doctrine from calling as witnesses ballistics experts retained by the defendant, but whom the defendant did not intend to call himself. *See United States v. Walker*, 910 F.Supp. 861 (N.D.N.Y 1995). The court noted that "exhaustive research has disclosed no criminal case in which a federal court has permitted the government to elicit testimony from a defendant's consultative expert concerning that expert's efforts or opinions undertaken or developed at the request of a defense attorney in preparation for a criminal trial." *Id.* at 864. While the court left open the possibility of the government obtaining the testimony of defense experts given "a showing of substantial need and undue hardship," as a general rule the court opposed the practice. *Id.* at 865. "Absent such an area of qualified privileged [sic] within which to prepare for trial a criminal defendant's preparation can only be crippled by the prospect of creating an unfavorable witness every time he attempts to obtain an unbiased assessment of the government's evidence by consulting an expert." *Id.* at 865. We note that the *Walker* court was concerned not only with the admission of the report of a defense expert, but also with the government's attempt to compel the expert to testify, as occurred here.

Similarly, the court in *Speizer* concluded that the work product doctrine was the proper framework within which to analyze the state's attempt to compel pretrial disclosure of the report of a non-testifying, consultative expert retained by the defendant. *See Speizer*, 735 N.E.2d at 1020. In its analysis, the court attempted to distinguish between the work product doctrine and the Sixth Amendment right to effective assistance of counsel. *See id.* at 1025. The court reasoned that the government "violates the right [to effective assistance of counsel] when it interferes in certain ways with the ability of counsel to make independent decisions about how to conduct the defense." *Id.* The work product doctrine, however, operates not only to "protect the reports and potential testimony of nontestifying, consulting experts" but also "to increase the information available to the trier of fact by encouraging the attorney to seek, on his own, information about the case that he could not obtain from his adversary through the discovery process." *Id.* at 1026-27. The court reasoned that the adversarial process of litigation requires a balance between the need of the defendant for confidentiality in developing trial

strategy and the need for the trier of fact to have access to the relevant facts of the case. *See id.* at 1026. Because the work product doctrine is a qualified privilege, not an absolute one, the State may defeat the privilege by showing a special need for the testimony of the defendant's consultative expert. *See id.* at 1026. The *Speizer* court concluded:

> It is precisely this need to strike a balance between competing interests at trial that precludes protecting the reports and potential testimony of a nontestifying, consulting expert on sixth amendment grounds. If the protection were embodied in constitutional form, it would not be amenable to change by rule, statute, or further case law development. Courts and legislatures should have reasonable freedom to develop new approaches to issues concerning discovery and testimonial privilege. We believe that such freedom would be unnecessarily impaired were our holding to turn on sixth amendment analysis.

Id. at 1027.

Several other courts, by contrast, have held that the Sixth Amendment right to effective assistance of counsel is the proper basis upon which to bar the state from attempting to compel the testimony of a non-testifying, consultative witness retained by the defendant.

For example, in *State v. Mingo*, the New Jersey Supreme Court confronted the issue when the state sought to compel the testimony of a handwriting expert retained by the defendant. *State v. Mingo*, 392 A.2d 590 (N.J. 1978). Initially, the court noted:

> The State had no justification for calling defendant's handwriting expert as its witness. If it considered the identity of the disputed note's author to be a critical part of its case, the State was fully capable of retaining its own expert. The better practice would have been for it to have done so, and thus avoid jeopardizing any conviction it might obtain.

Id. at 592. The court went on to analyze the defendant's right to effective assistance of counsel, and held that in order for a defense attorney to provide the guaranteed effective assistance:

It is essential that he be permitted full investigative latitude in developing a meritorious defense on his client's behalf. This latitude will be circumscribed if defense counsel must risk a potentially crippling revelation to the State of information discovered in the course of investigation which he chooses not to use at trial.

Id. at 592. The court cited *United States v. Alvarez* in support of the theory that "[t]he attorney must be free to make an informed judgment with respect to the best course for the defense without the inhibition of creating a potential government witness." *United States v. Alvarez*, 519 F.2d 1036, 1047 (3rd Cir. 1975). The Sixth Amendment right to effective assistance of counsel, therefore, encompasses the right of the defense attorney to formulate strategy and conduct the defense free from government interference. *See Speizer*, 235 N.E.2d at 1025. The *Mingo* Court went on to hold that even when the defense

waives its Sixth Amendment protection of the report of a consultative expert by announcing its intention to use the report at trial, it "does not waive its right to control the testimonial use of the expert; he remains unavailable to the State as a witness." *Mingo*, 392 A.2d at 595. When a defendant intends to present an expert witness at trial, the report of that expert becomes available to the State in pre-trial discovery. If the defense expert actually testifies at trial, the State may cross-examine. "However, should the defense elect not to present the expert as a witness after previously indicating to the contrary, the fact that his otherwise confidential reports have been disclosed to the prosecution does not entitle the State to call the expert as its witness over objection by the defense." *Id.* Similarly, in *State v. Williams*, the North Carolina Supreme Court held that a defendant was required to disclose to the State the report of an expert which it intended to call at trial, even though subsequently the defense did not call the expert or seek to introduce the report itself at trial. *State v. Williams*, 350 N.C. 1, 18, 510 S.E.2d 626, 638 (1999), *cert. denied*, 528 U.S. 880, 145 L.Ed.2d 162 (1999). The *Williams* Court did not confront the issue of whether the State could call the expert to testify if the defense did not do so.

The Supreme Court of Colorado has also ruled that a "trial court's decision to permit the prosecution to call the defense-retained expert in its case-in-chief absent waiver or compelling justification denied the defendant his constitutional right to effective assistance of counsel." *Hutchinson v. People*, 742 P.2d 875, 876 (Colo. 1987). The court reasoned that thorough preparation is essential to effective assistance of counsel. "Without knowledgeable trial preparation, defense counsel cannot reliably exercise legal judgment and, therefore, cannot render reasonably effective assistance to his client." *Hutchinson*, 742 P. 2d at 881. As part of that preparation, the defense counsel may need to consult experts to develop strategy for presentation or rebuttal of physical evidence.

In some instances, an expert may be needed as a defense witness to establish a defense or to rebut a case built upon the powerful investigative arsenal of the state. Consequently, it cannot be denied that a defense counsel's access to expert assistance is a crucial element in assuring a defendant's right to effective legal assistance, and ultimately, a fair trial.

Id. The *Hutchinson* Court held that if the prosecution were allowed, in effect, to co-opt the defendant's experts, "defense attorneys might be deterred from hiring experts lest they inadvertently create or substantially contribute to the prosecution's case against their clients." *Id.* at 882. Or they might be motivated to hire only those experts which they have reason to believe will lean their way. Neither outcome advances the search for the truth, and both impair the defendant's right to "effective" assistance of counsel.

Taking what we believe to be the most reasonable synthesis of these cases and principles, we conclude that the trial court erred when it allowed the State to compel testimony from employees of Lab Corp that defendant did not plan to call as witnesses. We believe that in so doing, the trial court infringed upon the defendant's Sixth Amendment right to effective assistance of counsel, and unnecessarily breached the work-product privilege.

However, where there is an alleged violation of the defendant's constitutional

rights, the State has the burden of showing that the error was "harmless beyond a reasonable doubt." *See* N.C. Gen. Stat. § 15A-1443 (2001). Having determined that the trial court's error has constitutional dimensions, under this standard we conclude that it requires a new trial.

In the absence of the defense expert's testimony, the State's evidence was inconclusive. Two of the four tests the State ran on the substance here produced negative results, while two were positive. One test, run twice, returned different results. On cross examination, the SBI witness was unable to account for the discrepancy. The witnesses at issue here, Ingold and Walker, Lab Corp employees, retained by defendant but who testified against him, provided the test results that could very well have tipped the balance in the State's favor. Given that the defense may have been hampered upon cross-examination by the denial of their discovery request, discussed earlier in this opinion, we cannot conclude that the trial court's error was harmless beyond a reasonable doubt. As such, we reverse the defendant's conviction and remand for a new trial.

Because the defendant's remaining issues may not arise in future trial, we decline to address them now.

New trial.

Judges MARTIN and CAMPBELL concur.

STATE OF NORTH CAROLINA v. WILBERT LESTER FAIR

NO. COA03-707

Filed: June 15, 2004

On writ of certiorari by defendant to review judgment entered 21 September 2000 by Judge J. Marlene Hyatt in Henderson County Superior Court. Heard in the Court of Appeals 4 March 2004.

Attorney General Roy Cooper, by Assistant Attorney General John F. Oates, Jr., for the State.

Appellate Defender Staples Hughes, by Assistant Appellate Defender Charlesena Elliott Walker, for defendant-appellant.

CALABRIA, Judge.

Wilbert Lester Fair ("defendant") seeks review of a judgment entered on jury verdicts finding him guilty of sale and delivery of cocaine and possession with intent to sell or deliver cocaine.(fn1) The court found his prior record level was level IV and sentenced him as a habitual felon to a term of 107 to 138 months' imprisonment in the North Carolina Department of Correction. Because we find prejudicial error, we conclude defendant is entitled to a new trial.

On 20 March 2000, the Hendersonville Police Department conducted an undercover narcotics investigation. As part of this investigation, Kimberly Shelton, working as an undercover agent, purchased two off-white rocks resembling crack cocaine from defendant for twenty dollars. The substance was sent to the State Bureau of Investigation ("SBI") for chemical analysis. Jay Pintacuda ("Pintacuda"), a chemical analyst employed by the SBI, determined the substance contained cocaine and weighed .07 grams. This determination was based on the performance of cobalt thiocyanate, infrared spectrographic, and gold chloride crystallography analyses. Pintacuda memorialized the tests he performed and the results of his testing in a laboratory report.

Prior to trial, the State properly notified defendant of its intention to introduce the SBI laboratory report into evidence without further authentication pursuant to N.C. Gen. Stat. § 90-95(g). Defendant filed a written motion for **discovery** on 12 September 2000 in which he (1) objected to the introduction of the State's laboratory report pursuant to N.C. Gen. Stat. § 90-95(g), (2) moved for a pretrial hearing to "evaluate the adequacy of the foundation of the opinions to be proffered by the State[,]" and (3) requested that the State disclose the following:

a. A concise and specific statement of each expert opinion the State intends to introduce;
b. The name, address and curriculum vita [sic] of each witness the State intends to qualify as an expert in order to present such opinion testimony;
c. The scientific or technical foundations of each opinion, including, but not limited to:
i. Citations to empirical studies supporting the opinion;
ii. Citations to articles or chapters in scientific treatises or journals supporting the opinion;

iii. Data collected by the . . . witness or those under his/her supervision, in connection with this case, including the data collections instruments used, the data collection **procedures**, and the statistical analysis applied to the data in forming the opinion to be proffered.

In response to the motion filed by defendant, the State provided defendant with a form entitled "Western Regional Lab Analysis Form," which listed the tests performed on the substance, the results of the tests, the analyst, and the analyst's conclusion that the substance contained a "cocaine base."

The trial court heard arguments on defendant's motion immediately before trial on 20 September 2000. The trial court allowed defendant to voir dire Pintacuda prior to his testimony. During voir dire, Pintacuda testified concerning the methodology of the tests performed, the relevant **protocols** and manuals governing the tests, and quality control measures. Following the voir dire, defendant moved that the State be required to provide him with copies of the quality control manual, accreditations manual, and DEA training manual. This motion was denied by the trial court.

In his appeal to this Court, defendant asserts in relevant part that the trial court erred in denying defendant's motion for further **discovery** from the State concerning the foundation of its expert's opinion as to the testing by the SBI laboratory to determine the nature of the substance submitted. Specifically, defendant contends he was entitled to receive **protocols**, **procedures**, and manuals concerning quality control, accreditation, and training under the rationale of State v. Cunningham, 108 N.C. App. 185, 423 S.E.2d 802 (1992) and State v. Dunn, 154 N.C. App. 1, 571 S.E.2d 650 (2002), disc. rev. denied, 356 N.C. 685, 578 S.E.2d 314 (2003).

Discovery by a defendant in a criminal case is governed by the provisions of N.C. Gen. Stat. § 15A-903 (2003). Subsection (e) deals with reports of examinations and tests and provides, in relevant part, as follows:

Upon motion of a defendant, the court must order the prosecutor to provide a copy of or to permit the defendant to inspect and copy or photograph results or reports of physical or mental examinations or of tests, measurements or experiments made in connection with the case, or copies thereof, within the possession, custody, or control of the State, the existence of which is known or by the exercise of due diligence may become known to the prosecutor.

With the exception of evidence falling under the rationale of Brady v. Maryland, 373 U.S. 83, 10 L. Ed. 2d 215 (1963), there is no general right of **discovery** in criminal cases under the United States Constitution. Cunningham, 108 N.C. App. at 195, 423 S.E.2d at 808.

North Carolina General Statutes § 15A-902(a) (2003) requires that **discovery** requests must be in writing and filed within the time periods specified in N.C. Gen. Stat. § 15A-902(d). Defendant's oral **discovery** requests made at the conclusion of the voir dire hearing, to the extent they were not embodied in his earlier written motion, did not comply with this statute and were properly denied by the trial court. However, defendant's written **discovery** motion did comply with this statute.

Under N.C. Gen. Stat. § 15A-903 as construed by this Court's decisions in Cunningham and Dunn, a defendant is entitled to more than just the naked results of the State's laboratory analysis. Under our present statutes and case law a defendant is entitled to the following **discovery**:

1. Results or reports of physical or mental examinations or of tests, measurements or experiments. N.C. Gen. Stat. § 15A-903(e).
2. Inspection, examination or testing of physical evidence by the defendant. Id.
3. Tests performed or **procedures** utilized by experts to reach their conclusions. Cunningham, 108 N.C. App. 185, 423 S.E.2d 802.
4. Laboratory protocol documents. Dunn, 154 N.C. App. 1, 571 S.E.2d 650.
5. Reports documenting "false positives" in the laboratory results. Id.
6. Credentials of individuals who tested the substance. Id.

The scope of **discovery** sought by defendant in this case goes far beyond that allowed under Cunningham and Dunn. Defendant asserts in his brief:

[The State] did not, however, provide him with the **discovery** he requested of information regarding the **procedures** used in the tests; the data derived from the tests or other materials pertinent to whether the techniques used have been tested; subjected to peer review and publication or submitted to the scrutiny of the scientific community. Nor did the State provide the requested **discovery** of the technique's known or potential rates of error and general acceptance in the scientific community.

Defendant thus seeks to expand **discovery** in criminal cases to include articles and publications which would cast doubt upon the scientific validity of the testing procedure and form the basis of a challenge to the procedure under the rationale of Daubert v. Merrell Dow, 509 U.S. 579, 125 L. Ed. 2d 469 (1993).

Defendant is entitled to discover the results of the tests and the manner in which the tests were performed. This information is necessary for the defendant to understand the testing procedure and to conduct an effective cross-examination of the State's expert witness. See Dunn, 154 N.C. App. at 6, 571 S.E.2d at 654. However, it is beyond the scope of N.C. Gen. Stat. § 15A-903's **discovery** provisions to require the State to provide defendant with information concerning peer review of the testing procedure, whether the procedure has been submitted to the scrutiny of the scientific community, or is generally accepted in the scientific community. It is further beyond the scope of permitted **discovery** to require the State to produce citations to empirical studies supporting the opinion, or citations to articles in scientific treatises or journals supporting the opinion. This is information that is not under the control of the State, and is generally available in the scientific community.

Thus, the trial court erred in not requiring the State to provide **discovery** of data collection **procedures** requested by the defendant. Such information falls under laboratory protocol documents held discoverable under Dunn, without which defendant could not effectively cross-examine the State's expert witness. This error requires a new trial. Defendant brought forward no argument concerning the failure of the State to provide a curriculum vitae of the State's expert or any statistical analysis; therefore, these matters are not before us.

New trial.

Judges McGEE and STEELMAN concur.

Footnotes

1. Our review of the judgment is pursuant to a petition for writ of certiorari granted by this Court on 28 January 2003.