DIVISION OF
Forensic Sciences

The Division of Forensic Sciences (DOFS) provides scientific support to criminal justice agencies, enabling them to detect, apprehend and prosecute criminals by utilizing accurate, useful and timely laboratory analysis and testimony. Except for limited services provided by local and federal laboratories, DOFS crime laboratories are the only forensic services available to the criminal justice community of Georgia.

Regional Crime Labs

- Central Regional Lab, Macon
- Northeast Regional Lab, Cleveland
- Coastal Regional Lab, Savannah
- Eastern Regional Lab, Augusta
- Headquarters Lab, Decatur
- Northwest Regional Lab, Summerville
- Southwest Regional Lab, Moultrie
- Western Regional Lab, Columbus

BACKLOG

FY'06 began with DOFS battling a backlog that continued to grow. Resources had been put into the DOFS budget the previous year; however, new scientists take a year to train and will not be fully functional until January 2006. The backlog peaked in January at nearly 34,000 and slowly began to drop as new business practices and personnel resources began to take effect. The governor and the legislature appropriated $3 million in the FY'05 amended budget for the crime laboratory system to outsource cases to private laboratories.

DOFS undertook this project with three goals in mind:

- Minimize the effect on the customer
- Maintain the quality of the results
- Eliminate as much of the backlog as possible

Nearly 8,000 services were outsourced contributing significantly to the reduction of the backlog. By the end of FY'06, the backlog was reduced to what is considered a normal level. Because of the nature of some cases, there will always be a percentage that will require more than 30 days to work. The laboratory completed its strategic planning document and is set to move forward in FY'07.

Command Staff

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FY'06: DOFS Cases Worked

Forensic Biology	3,030
CODIS Database	22,068
Chemistry	37,863
Firearms	5,451
Latent Prints	1,137
Questioned Documents	476
Toxicology	21,842
Trace Evidence	444
Medical Examiner	4,316
Total	**96,627**

LABORATORY
Services

DOFS provides scientific support to the criminal justice system in Georgia. Using the most recent technologies and highly-sophisticated equipment, lab scientists and technicians in specialized disciplines collect, analyze and interpret all aspects of physical evidence for law enforcement and prosecutors through the state. They also offer expert testimony on their findings.

FIREARM & TOOLMARK

The Firearms Section compares bullets and cartridge cases to the firearms from which they were fired; utilizes the National Integrated Ballistic Identification Network (NIBIN); determines muzzle to target distance; raises serial numbers; checks for the presence of gunshot residue; and compares tool marks to suspected tools. The Firearm Section ended FY'06 with 5,573 requests for service and 5,451 services completed. The firearms backlog stands at 331 cases.

During the year, the backlog of cases increased but not as much as predicted due to the extra efforts of the

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scientists. The backlog has been caused by scientist departures. At present all submissions statewide are being submitted to the Headquarter's Laboratory. In FY'07, three scientists will complete training and join our Central, Coastal and Western Regional Laboratories. It is anticipated that these additions will have a positive effect on the firearms backlog.

Gunshot Residue (GSR) continues to work cases as they are received, and at the end of the fiscal year, only five cases were more than 30 days old.

The previous backlog of 5,840 samples awaiting image entry in the National Integrated Ballistic Identification Network (NIBIN) was eliminated by December 2005. An additional 6,337 incoming samples were added to the computer database. Cases are being worked as received and this trend is expected to continue.

IMPLIED CONSENT

Implied Consent provides training in the operation of the Intoxilyzer 5000 for the chemical testing of drivers suspected of being under the influence of alcohol. The section administers the quality control and assurance programs for Georgia's breath alcohol testing program.

In FY'06, 36 Intoxilyzer basic certification classes were held at the Georgia Public Safety Training Center (GPSTC), training 1,023 law enforcement personnel with 212 different agencies. Among these agencies are the Georgia State Patrol, the Department of Natural Resources, and the federally-funded Police Corp. Thirty-six Intoxilyzer 5000 recertification classes were conducted at seven regional training centers throughout FY'06. Approximately 1,057 operators from 282 different agencies received recertification.

Overall, Georgia has approximately 8,800 certified Intoxilyzer 5000 operators to administer tests to persons arrested for driving under the influence (DUI) of alcohol, operating a boat under the influence of alcohol (BUI), and other alcohol-related offenses. Georgia police agencies purchased approximately 35 new Intoxilyzer 5000 instruments during FY'06, bringing the number of certified instruments in the state to 505. Currently, 516 agencies actively participate in the GBI Implied Consent breath alcohol testing program.

Crime Lab Disciplines

Drug Identification

Analyzes and identifies suspected narcotics and other controlled substances as well as paints and accelerants.

Forensic Biology/DNA

Detects, identifies, and individualizes biological fluids. The section also maintains a computerized database called CODIS, (COmbined DNA Index System) that stores the DNA profiles of convicted sexual offenders and felons in Georgia. Evidence from all types of cases can be searched on the database to see if matches can be found and suspects identified.

Pathology

Performs autopsies to determine cause and manner of death in criminal and coroner cases.

Toxicology Section

Isolates and identifies drugs and poisons in human tissues.

QUESTIONED DOCUMENTS FORENSIC PHOTOGRAPHY

Questioned Documents and Forensic Photography were both original units of the Georgia State Crime Lab established by Dr. Herman Jones in 1952. As the term implies, questioned documents involves the examination and comparison of disputed documents to include handwriting analysis. The field has been referred to as a pure forensic science since it originally evolved out of the judiciaries request for assistance in the determination and detection of signature forgery. The discipline has become a broad forensic field to include the non-destructive analysis of inks, machine impression examinations, and the analysis of disputed or questioned documents when authenticity is challenged or disputed.

From its inception, Forensic Photography has supported the other laboratory sections with the documentation, preservation and enhancement of physical evidence. The mission of the photo unit took a radical departure in 2001 when it became fully digital. Photo lab personnel currently apply digital techniques to the enhancement of physical evidence, such as footwear, tire impressions, and latent fingerprint impressions. Forensic Photography prepares demonstrative court exhibits for laboratory personnel. Additionally, the unit records and enhances video images captured on surveillance cameras recording vehicles and individuals captured during the commission of crimes.

The section released a total of 476 requests for services during FY'06. Of the 269 questioned document requests, 99 percent were released within 30 days. Ninety-six percent of the remaining 207 photographic requests were released within 30 days.

TOXICOLOGY

The Toxicology Section provides analysis of biological materials for alcohol, drug, and poison content. These samples may originate from either the state's Implied Consent Law or the Post-mortem Death Investigation Act. The section's toxicologists also assist during trials and hearings by providing professional, expert testimony, statewide.

In FY'06, the section completed 21,842 services and received 21,836 requests. Backlogs in this section amounted to 357 cases, down from the 514 cases in FY'05. The decrease in backlog was due in part to approximately 1,450 post-mortem cases outsourced during this time. Five new scientists and two new lab technicians have been hired and are in the process of being trained.

The section has moved

Crime Lab Disciplines

Firearms Identification

Compares bullets and cartridge cases to the firearms from which they were fired; utilizes the National Integrated Ballistics Identification Network (NIBIN), monitored by the Bureau of Alcohol, Tobacco and Firearms (ATF).

Latent Prints

Collects, preserves, identifies, and compares fingerprints from crime scenes and physical evidence utilizing the Automated Fingerprint Identification System (AFIS).

Trace Evidence

Examines evidence, including fibers, hairs, glass, shoe and tire impressions, and other forms of trace evidence, assisting in determining if a suspect was present at a crime scene.

forward with the casework implementation of new Liquid Chromatography-Mass Spectrometer-Mass Spectrometry (LC-MS-MS) instrumentation. During the fiscal year, two additional LC-MS-MS instruments were purchased for the headquarters' section. Both have been validated and implemented into post-mortem casework for the entire state. Screening and quantitation of more than 100 drugs are being performed on a routine basis. Investigation is continuing in developing procedures by LC/MS/MS for cases involving motorists of drive under the influence of drugs. Toxicology also increased the scope of testing in certain cases. Violent and/or natural death cases are now being screened for additional abused drugs. The testing was implemented due to customer requests, increased usage, and legislative regulations.

TRACE EVIDENCE

Trace Evidence provides identifications, comparisons and analysis of hair, fibers, paint, plastic, glass, footwear, tire impressions, fractured materials, and other miscellaneous unknown materials in violent crimes and burglaries. Analysis of evidence can provide important investigative leads, allowing police officers to identify potential suspects.

During FY'06, 465 requests were made for Trace Evidence services and 444 of those were completed. The fiscal year closed with a backlog of 101 cases, down from 105 the year before. (Backlog is defined as cases not complete within 30 days of request.)

Two scientists in training are scheduled to begin supervised casework in July/August of 2006. The new examiners will ensure the continued reduction in the number of backlogged Trace Evidence requests.

The Trace Evidence Section outsourced 40 paint and plastic cases to a private laboratory which helped keep the paint backlog in check during the training of a new examiner.

In order to better serve the needs of our law enforcement customers, the microscopic comparison of hair was reinstated as a service that had been previously scaled back.

Crime Lab Disciplines

Questioned Documents

Using a variety of techniques, the service examines and compares documents for possible forgery. It also determines if a suspect is linked to documents key to an investigation.

Forensic Photography

Processes and prints crime scene photographs.

Implied Consent

Administers the state's breath alcohol testing program and provides training on the use of breath alcohol testing instruments.

LATENT PRINTS

The Latent Prints Section of the crime lab collects, preserves, identifies, and compares fingerprints from crime scenes and physical evidence.

The section underwent several major changes during the fiscal year. A new section manager was appointed in October 2005. Two new examiners completed their training and began independent casework. The section now has three full-time examiners and one lab technician. Despite these major changes in FY'06, the section processed 1,137 requests with an on-time rate of 95 percent in less than 30 days.

The unit utilizes Georgia's Automated Fingerprint Identification System (AFIS) to compare latent prints from crime scenes to known fingerprints of persons who have been arrested in Georgia. The system also interfaces with the International Automated Fingerprint Identification System (IAFIS), the Federal Bureau of Investigation's (FBI) database of criminal fingerprints. The databases allow the section to identify possible suspects previously unknown to investigators. AFIS/IAFIS aided the section in making 123 identifications.

As an example of how an AFIS hit can benefit an investigation, in March of 2005, a suspect was linked to a burglary case through identification via AFIS. He was arrested and later was linked to three other burglaries in the same area.

The section has obtained a new, state-of-the-art digital capturing station. The equipment enables examiners to analyze and compare latent prints that previously would have been of no value for comparison.

CHEMISTRY/DRUG IDENTIFICATION

The Chemistry Section receives and analyzes evidence that is suspected to contain illegal drugs as outlined by the Georgia Controlled Substances Act. In addition, the section analyzes fire debris in suspected arson cases. In FY'06, the Chemistry Section received 33,025 requests for drug identification. The discipline completed and released 37,863 requests within the same time period, with an on-time report release rate of 79 percent within 30 days. The Chemistry staff performed testing in 383 fire debris requests in FY'06 as compared to last year's total of 360 requests.

FY'06: Meth submissions

2002	4,529
2003	5,211
2004	6,938
2005	8,508
2006	10,560

Note: Statistics are based on a fiscal year calendar (July 1-June 30).

By the end of FY'06, testing of drug cases was current. This was due in part to an innovative outsource testing of 2,547 drug cases from the Northwestern Regional Laboratory. The outsourcing project, in conjunction with testing at the Headquarters lab and the training of additional staff allowed the system to eliminate drug cases awaiting testing by the end of FY'06. A new status was created for drug cases not routinely tested by the section. The cases are received and moved into a pending status until chemists are notified that there is need for analysis. Currently, the laboratory has 17,724 cases in the pending status.

Methamphetamine submissions continued to grow in FY'06 for the seventh consecutive year. A total of 10,560 reports were issued with positive methamphetamine results, a 24 percent increase over FY'05 reported cases. The Advanced Clandestine Laboratory Training program, sponsored by the section, continued into FY'06. The training provided instruction in

the following areas: site safety assessment, child endangerment, mitigation and shutdown, the use of safety instrumentation, and recognition and collection of evidence. This specialized training enabled GBI agents and agents employed by the Multi-Jurisdictional Task Forces to safely address the growing epidemic of methamphetamine clandestine laboratories. The classes were presented in five, one-week classes at the Georgia Public Safety Training Center.

During FY'06, the staff members of the Chemistry discipline trained 329 police officers in the Advanced Marijuana Identification Course (Certified Examiner Course). The two-day class provides officers, who successfully complete the training, with the ability to test leafy material for the presence of marijuana and present their findings in court. This training has allowed leafy material to be tested by certified law enforcement staff across the state, facilitating a quicker adjudication of cases.

Research into new innovated testing mythology continued in FY'06 with the acquisition of a Liquid Chromatography-Mass Spectrometer-Mass Spectrometry (LC-MS-MS) instrumentation. Research is underway for the possible use of this instrumentation for the testing of drugs that are currently difficult to isolate and identify.

FORENSIC BIOLOGY/DNA

The Forensic Biology Section analyzes evidence for the presence of biological fluids such as semen, saliva, and blood. Once identified, a DNA profile is developed and compared against known profiles. The Forensic Biology Section also maintains the state's Combined DNA Index System (CODIS), a database of DNA profiles from convicted offenders and probative samples from crime scenes. Unknown profiles can be searched both at the state level and at the national level. FY'06 brought many changes to Forensic Biology. New equipment purchased via National Institute of Justice DNA grants was validated and put into use. This included robotics for DNA casework, quantitation, and convicted offender DNA testing. New operations were implemented to allow for high-throughput testing of rape kits as well. The "offender" backlog (request for testing at least 30 days old) was eradicated in October 2005.

Renovations of four lab areas were completed to compensate for 16 new staff members. Unfortunately, seven veteran employees resigned during the year, five of which were experienced DNA scientists. As a result, the loss impacted the section's ability to decrease the DNA "casework" backlog.

Casework requests reached 7,638 and offender DNA requests were 19,384.

FY'06: CODIS Totals

Total samples	117,191
Unsolved cases matched to offenders	471
Out-of-state cases matched to Georgia offenders	123
Out-of-state offenders matched to Georgia cases	74

SAFETY, HEALTH & Environmental Compliance

The Safety Office ensures GBI employees have a safe work environment and that employees follow basic safety rules. In addition, the office is responsible for the safe operation of the incinerator, hazardous waste disposal, and maintaining all safety equipment.

During FY'06, the online Material Safety Data Sheet (MSDS) service was put into place. All employees have access to this information, including agents who are involved with processing crime scenes and agents who respond to clandestine laboratory sites.

Accidents and injuries remain a concern. Incidents reported to Environmental Compliance during FY'06 include:

- Four falls
- Three lifting injuries
- One repetitive motion injury
- Four chemical exposures injuries
- Two other events
- Nine lacerations (Four of the cuts involved blood-borne pathogens).

Throughout the year, safety audits were used to identify risks and potential hazards. Audits were performed monthly, semi-annually and annually. The inspections help ensure that the GBI is in compliance with federal and state safety regulations. The Safety, Health and Environmental Compliance program will continue to emphasize accident prevention and training to ensure a safe workplace.

INFORMATION Management

During Fiscal Year 2006 several significant improvements were realized in the area of information management.

The laboratory information management system (LIMS) installed high speed data-lines, allowing for improved communications and transfer of case information between sites.

Imaging workstations also were upgraded to use standard ("off the shelf"), high-quality digital cameras. The new cameras provided enhanced features and reduced the costs of ownership and maintenance. The cameras cost 30 percent less than the previous proprietary cameras.

LIMS also focused on internal process automation. For Forensic Biology, a program was developed to cross-reference hits made by the Combined DNA Index System (CODIS) with DOFS' system data. Prior to the enhancement, it took three days to perform the task. Now, it only takes three hours.

The submission of casework to Forensic Biology by the Georgia Department of Corrections (DOC) also has been automated. The agency can now electronically submit casework on convicted offenders, resulting in a 70 percent improvement in case entry.

MEDICAL EXAMINER
Operations

During the fiscal year, the Medical Examiner's (ME) Office completed major renovations to its policy and procedure manuals. With revisions to its manuals and the successful completion of internal audits at the headquarters office and each regional ME program, the section applied to the National Association of Medical Examiners to become the first accredited statewide medical examiner's system,

In addition, staff from the Medical Examiner's Office aided the state of Mississippi after Hurricane Katrina, establishing a command center and recovering the bodies of 22 victims.

The ME Section also designed and developed Path Assist, a casework program that allows information on reported deaths to be retained and analyzed, aiding in the tracking of trends.

The ME Section performs postmortem examinations for 154 of the 159 counties in Georgia.

During FY'06 the Medical Examiner's Office statewide:

- Completed 2,461 full autopsies
- Completed 151 external examinations
- Completed 358 limited dissections
- Provided 1,346 consultations
- A total of 4,316 deaths reported
- The section also, assumes the role of coroner for Clayton County. Throughout the year, 692 death certificates were issued for Clayton County.

There are ME's offices located at Headquarters, Savannah, Moultrie, Macon, Augusta, and Summerville crime laboratories.

QUALITY
Systems

The Division of Forensic Sciences continues to maintain a comprehensive quality assurance system that allows the laboratory to meet all of the requirements of two accrediting bodies. DOFS is accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) Legacy and ISO/IEC 17025. In FY'06 quality procedures were revised as needed in order to bring them into alignment with new ISO/IEC 17025 standards.

All laboratories within the system were involved in on-site ISO 17025 assessments during the year. As a result of assessments performed by FQS-I, all previously accredited laboratories were reaccredited and the Northeastern Regional Laboratory achieved its first accreditation. Plans were underway at the end of the fiscal year for the Northeastern Regional Laboratory to apply for its first ASCLD/LAB Legacy accreditation.

In addition to the external audits carried out by FQS-I, internal quality audits were conducted at each laboratory. During FY'06 audit checklists were devised in order to focus the internal auditors' attention on critical quality areas.