



**NATIONAL CENTER
FOR FORENSIC SCIENCE**

T W E N T Y Y E A R S



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NCFS PRIMARY GOAL IN 1997

"Develop a unique forensic laboratory facility staffed and equipped to provide technical assistance to the forensic and law enforcement communities in the areas of fire and explosion debris."

MISSION STATEMENT IN 2017

"Provide relevant and responsive forensic science research and operational support to the criminal justice community."

NATIONAL CENTER FOR FORENSIC SCIENCE

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A MESSAGE FROM THE DIRECTOR OF THE *National Center for Forensic Science*

March 17, 2017 marked the 20th anniversary of the National Center for Forensic Science at the University of Central Florida. While celebrating this milestone of research and service in the forensic sciences and education, we remember our past and look to our future. This document helps tell the story of NCFS, which is one of partnerships, industry-leading research and training future leaders in forensic science.

The NCFS initially focused on the research needs of the forensic community in the areas of arson and explosives investigations. The choice of these focus areas was strongly influenced by the bombings of the World Trade Center in 1993 and the Murrah Federal Building in 1995, and results from a survey of UCF graduates working in forensic laboratories. The Technical and Scientific Working Groups in Fire and Explosion were formed in partnership with the NCFS and remain important stakeholders.

The first DNA-based conviction in the U.S. had occurred 10 years prior to the founding of NCFS in the Orange County, Florida Circuit Court. The importance of DNA as an emerging forensic technique was clear. Since the first conviction in our back yard, the forensic science field has come to depend heavily on DNA. The NCFS is at the forefront of forensic DNA and RNA research, with a strong focus on developing and transferring new methods to the forensic community.

With the explosive growth in of handheld devices and internet access, crime has taken on an increasingly digital component. The NCFS played an important role in establishing the Digital and Multimedia Sciences section of the American Academy of Forensic Sciences. Through our focus on digital evidence, NCFS developed important partnerships with the UCF Police Department, U.S. Secret Service, Orange County Sheriffs' Office and Federal Bureau of Investigation. Through the years, our faculty have also mentored numerous doctoral, graduate, and undergraduate research students. Nearly all of these students are working in forensic science laboratories, teaching forensic science or have gone on to earn other professional or advanced degrees.

Today, research at NCFS continues to focus on physical and biological evidence. Areas of study include explosives, fire debris, anthropological evidence, glass, lubricants from sexual assaults and both DNA and RNA evidence applied to many types of crimes. Our work informs and supports the forensic community through our publications, presentations and open-access databases.

Michael Sigman, Ph.D.

Director of the National Center for Forensic Science



CURRENT
Faculty & Staff Members



JACK BALLANTYNE, Ph.D.
Assistant Director for Research
NCFS Professor- Chemistry

The development of novel Y chromosome genetic markers, the assessment and in vitro repair of DNA damage, tissue source identification by RNA expression profiling, the determination of individual physical characteristics by DNA typing and 'smart' single cell or low copy number analysis are important aspects of Dr. Ballantyne's research.



MATTHIEU BAUDELET, Ph.D.
Assistant Professor- Chemistry/NCFS

Focuses on the application of laser-based spectroscopy for forensic analysis: atomic spectroscopy with laser ablation techniques (LIBS and LA-ICP-MS) as well as molecular with Raman spectroscopy. A large part of his research also focuses on the quantification of interferences in spectroscopic signals.



CANDICE BRIDGE, Ph.D.
Assistant Professor- Chemistry/NCFS

The development of direct analysis in real time (DART) high resolution mass spectrometry techniques for the analysis of sexual assault lubricants and toxicology applications form the basis for Dr. Bridge's research. Dr. Bridge's research is influenced by five years of experience at the Defense Forensic Science Center.



ANDRES CAMPIGLIA, Ph.D.
Secondary Joint Appointment
NCFS, Professor- Chemistry

The development of novel analytical approaches based on luminescence spectroscopies applied to forensic and environmental analyses. The study of fiber evidence and the influence of environmental and anthropogenic factors on value of the evidence constitutes an important part of Dr. Campiglia's research.



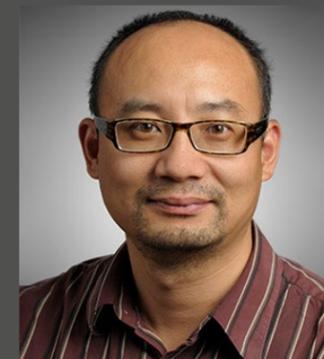
MARK MARIC, Ph.D.
Postdoctoral Associate

Dr. Maric is a post-doctoral associate with the National Center of Forensic Science in conjunction with the Department of Chemistry at the University of Central Florida. His main research interest involves the use of multivariate statistics to interpret data obtained from forensic trace evidence. His research at NCFS is performed under the mentoring collaboration with Candice Bridge.



MAURO MARTINEZ, Ph.D.
Postdoctoral Associate

Dr. Martinez's research specialization is in the area of spectroscopy. Laser ablation assisted mass spectrometry and optical emission spectroscopies applied to forensic problems are his main research interests. His research at NCFS is performed under the mentoring collaboration with Professor Baudelet.



LIQIANG NI, Ph.D.
Secondary Joint Appointment
NCFS, Associate Professor- Statistics

Dr. Ni's research interests are in multivariate analysis, dimension reduction, regression analysis, data mining and bioinformatics. He has researched and reported on applications of nonparametric permutation methods in forensic science.



ERIKA REMLEY, M.S.
NCFS Training

Ms. Remley worked on the DNA databank in forensic biology and in the latent prints section of the Virginia Department of Forensic Science until 2004. She was also named a fellow of the Virginia Institute of Forensic Science and Medicine in the field of impressions. In 2013, she came to NCFS to help revitalize online training.



ERIN HANSON, Ph.D.
Research Assistant
Professor- Biological Evidence

Dr. Hanson's research is performed in collaboration with Dr. Ballantyne and focuses on body fluid identification by RNA expression profiling, improved recovery of male DNA in extended interval post coital samples, and characterization and analysis of trace biological evidence ("touch DNA").



MARK JOHNSON, Ph.D.
Secondary Joint Appointment
NCFS, Professor- Statistics

Florida Commission on Hurricane Loss Projection Methodology, statistician and professional team leader; related hurricane research with Watson Technical Consulting and Kinetic Analysis Corporation Agency for Health Care Administration.



DMITRY KOLPASHCHIKOV, Ph.D.
Secondary Joint Appointment
NCFS, Associate Professor- Chemistry

Multicomponent sensors for nucleic acid analysis, Binary reagents for DNA polymerase inactivation, DNA logic circuits constitute the basis of Dr. Kolpashchikov's research.



ARLENE LOPEZ-WALTON
Office Assistant

Ms. Walton joined the NCFS in 2008. Some of her previous positions include administrative secretary and substitute teacher for Orange County Public Schools. She has helped host 2 CSI Camps for the NCFS.



JOHN SCHULTZ, Ph.D.
Secondary Joint Appointment
NCFS, Associate Professor- Biological Anthropology

Research interests include forensic anthropology, taphonomy, and ground-penetrating radar methods for forensic and archaeological contexts. Dr. Schultz also works with local law enforcement agencies on the search, recovery and identification of human skeletal remains. Coauthor of "Forensic Recovery of Human Remains: Archaeological Approaches", CRC Press, 2005.



MICHAEL SIGMAN, Ph.D.
Director - NCFS
Professor - Chemistry

The analysis of explosives and fire debris using hyphenated chromatographic separation and mass spectral detection methods comprise an important part of Professor Sigman's research. Complex pattern recognition by statistical learning methods for forensic data interpretation and reporting constitute more theoretical aspects of the research.



JUDITH STOUT
Assistant Director of Research
Programs and Services

Ms. Stout joined NCFS in 2000 to oversee state budget and contracts and grant finances at the Center.



MARY WILLIAMS, M.S.
Coordinator of Research Programs
& Services

Since 2000, Ms. Williams has developed and administered explosives and ignitable liquids databases at NCFS. Her main area of research is in fire debris analysis, a field in which she has several publications and is widely regarded as a leading authority.

FROM THE *Beginning*



The National Center for Forensic Science was formed in support of an industrial need as expressed in the results of a 1994 survey of UCF forensic science graduates working in crime laboratories. The survey identified a need for more research and training in the areas of fire and explosion debris analysis. The survey results came to the attention of Representative Bill McCollum, of Florida's 8th Congressional District. With congressional support from McCollum and administrative support from UCF Chemistry Department Professor Glenn Cunningham, NCFS was established under the leadership of its first director, Professor Bill McGee (left photo, far left). On March 17, 1997, President John Hitt signed authorization (right photo, first from left) for federal government payment of \$300,000 to plan UCF's first national laboratory. The grant officially made NCFS one of six national centers as part of the National Law Enforcement and Corrections Technology Center system. The NCFS became the nation's only research facility devoted exclusively to combating the threats of arson and bombings. Also present at the signing were Jeremy Travis (right photo, center), director of the National Institute of Justice, U.S. Department of Justice, and McCollum (right photo, first from right). Continued operation of NCFS was assured with appropriation of recurring state of Florida funding in April of 1998. The first order of business for the new center was hosting a

forensic science National Needs Symposium in late 1997, which resulted in a national needs survey of forensic laboratories. The survey revealed that an ignitable liquid reference collection and associated database were the most important needs in the fire debris analysis community. In August 1999, members of the Technical Working Group for Fire and Explosions declared an interest in partnering with NCFS to meet this need. The repository of ignitable liquids and the database were developed and maintained by NCFS. The Ignitable Liquid Reference Collection Committee, a standing committee made up of TWGFEX members, was established to give oversight to the database and repository, and to insure that the resource remained relevant to forensic casework. After 20 years, this international resource continues to grow. Mary Williams is a permanent member of the ILRCC which gives continuity to its operations and ensures the integrity of the repository.

In 1998, UCF Department of Chemistry Professor Jack Ballantyne was appointed as the associate director for research at NCFS. Ballantyne brought a career in law enforcement and forensic DNA analysis to the job. His resume included a prominent role in the high profile identification of victims of the 1996 crash of TWA 800. Forensic biochemistry focused on the analysis of DNA became one of the pillars of NCFS research and an important first step in diversifying the center's research portfolio.



Carrie Whitcomb was hired as the second director of NCFS in 1999 and she remained as director until 2012. Under the direction of Whitcomb, Professors Phillip Craiger and Mark Pollitt, both hired in 2004, NCFS made significant contributions to the development of digital evidence as a forensic discipline and establishing the Digital and Multimedia Sciences section of the American Academy of Forensic Sciences. Whitcomb was also instrumental in establishing the Digital Evidence M.S. degree in the College of Engineering and Computer Science at UCF. Digital evidence became the third research focus area of NCFS and remained as such until 2010.

UCF Department of Chemistry visiting Professor Jehuda Yinon, a world renowned explosives analyst, joined NCFS in 2000 from the Wiseman Institute in Israel. Yinon served as visiting professor and assistant director for research in physical sciences until 2004. His expertise in explosives analysis made a valuable contribution to NCFS as he led the center's early research efforts in non-biological physical evidence. He was joined in his research efforts by Professor Michael Sigman, hired in 2002. Sigman came to NCFS and the UCF Chemistry Department from the Oak Ridge National Laboratory.

Construction on a new home for NCFS was started in 2000 and completed in the summer of 2001. The Center for Public Safety, Forensic Science and Security building on Research Parkway has remained the center's home. In April 2001, the Florida Board of Regents provided planning funds which led to establishing the UCF Center for Forensic Science, a State of Florida Type II Research Center. There are two other forensic-focused Type II Research Centers in Florida, the W.R. Maples Center for Forensic Medicine at the University of Florida, and the International Forensic Research Institute at Florida International University.

Following the loss of digital forensics faculty and the retirement of Whitcomb in 2012, NCFS has been focused on hiring new faculty and expanding our research portfolio. The latest hires, Professor Candice Bridge and Professor Matthieu Baudelet, came to NCFS in 2014 and 2015 respectively. Bridge brings to the position her expertise in mass spectrometry and experience at the US Army Criminal Investigation Laboratory. Baudelet's expertise is in physics, optics and laser spectroscopy. These two young faculty allow NCFS to more capably address current and future needs of the forensic community.

Throughout the years...

NATIONAL CENTER FOR FORENSIC SCIENCE

1994

Survey of UCF forensic science alumni to discuss the future of the program.

1997

March 17, 1997

Signing ceremony for \$300K planning grant for NCFS, held at UCF with Jeremy Travis (Director of NIJ), Congressman Bill McCollum, and UCF President John Hitt.

1997-2000

Bill McGee is the first Director of the NCFS.

1997

National Needs Symposium identifies problems in the collection and analysis of fire and explosion debris. NCFS charged with forming a technical working group to serve the needs of fire and explosion professionals.

1998

April 1998

State of Florida continuous funding approved.

August 1998

Hosted the first organizational meeting of laboratory analysts for starting the Technical Working Group for Fire and Explosion.

1999

February 1999

Hosted the first organizational meeting of fire and explosion scene analysts as part of TWGFEX.

August 1999

Hosted the first joint meeting of TWGFEX laboratory and scene analysts.

October 1999

Published "Eyewitness Evidence: A Guide for Law Enforcement."

November 1999

Published "Death Investigation: A guide for Scene Investigators."

December 1999

Forensic Needs Assessment meeting to develop a focused strategy to leverage the resources of the forensic science profession.

1999-2012

Carrie Whitcomb appointed second director of the NCFS.

2000

January 2000

Published "Crime Scene Investigation" guide for law enforcement.

January 2000

Hosted meeting of the Scientific Working Group for Digital Evidence.

June 2000

Published "Fire and Arson Scene Evidence: A Guide for Public Safety Personnel."

June 2000

Published "A guide for Explosion and Bombing Scene Investigation."

2001

June 2001

Hosted the first annual TWGFEX Symposium titled "Fire and Explosion Debris and Scene Investigation: Linking the Scene, Laboratory and Courtroom."

April 2001

NCFS established as a FL Type II Research Center.

2002-2006

Hosted annual TWGFEX

Symposia (selected topics):

- 2002 "House Fires to Homeland Security"
- 2004 "Objectivity – Avoiding Bias"
- 2005 "Partners in Homeland Security"
- 2006 "The Integration of Local, State & Federal Resources for Response to Terrorist Incidents"

2007

Substrates Database was developed in 2007 and made public in 2010.

2009

Smokeless Powers Database was developed in 2009 and made public in 2011.

Hosted seventh annual TWGFEX Symposium.

New professional development courses in fire debris and explosives analysis created under NIJ funding.

2012

2012-2013

Jack Ballantyne served as interim director.

2013

Michael Sigman appointed director.

FUTURE INITIATIVES

- Increasing the number of faculty.
- Expanding the research funding portfolio.
- Building new partnerships, both within UCF and with the forensic community.





INTERNATIONAL *Databases*

Databases play an important role in forensic casework by providing reference data for comparison to case samples. As forensic science becomes more solidly founded in statistical statements reflecting the strength of evidence, databases will play an increasingly important role in supporting the statistical models used for evidence evaluation. The databases described here were developed by the NCFS in partnership with forensic analysts throughout the world.

ILRC

The Ignitable Liquids Reference Collection was developed in collaboration with the ILRC Committee of the Technical Working Group for Fire and Explosions. The ILRC is a compilation of reference materials used by forensic analysts to conduct fire debris analysis. The ILRC consists of a comprehensive set of ignitable liquids and accompanying characterization data used in the analysis of fire debris samples in accordance with the American Society for Testing and Materials E-1618 standard test methods.

INTERNATIONAL DATABASE OF IGNITABLE LIQUIDS

The International Database of Ignitable Liquids is a compilation of reference ignitable liquid information, characterization data, and gas chromatography – mass spectrometry data for use by forensic analysts to conduct fire debris analysis. The database was developed in collaboration with the Fire and Explosions Investigation working group of the European Network of Forensic Science Institutes. This database is intended to be an international fire debris community resource.

SUBSTRATE DATABASE

The Substrate Database was developed in collaboration with the ILRC Committee of the Technical Working Group for Fire and Explosions. The Substrate Database is a compilation of characterization data from materials which may produce interfering products in fire debris. The Substrate Database is a tool designed to assist forensic analysts conducting fire debris analysis.

U.S. Y-STR DATABASE

The Y-STR Database provides tools for laboratories to obtain Y-STR haplotype frequencies needed to calculate matching or paternity probabilities with confidence intervals. Other features include the ability to simultaneously upload multiple haplotypes for searches directly from Genotyper® and GeneMapper® text files, the ability to include or exclude sampled populations, and a report-style printout of the results. Samples are divided into five forensically relevant ancestries: African American, Asian, Caucasian, Hispanic, and Native American.

SMOKELESS POWDER DATABASE

The Smokeless Powders Database was developed in collaboration with the Explosives Committee of the Scientific Working Group for Fire and Explosions. The database is a regularly updated reference collection of information and data on powders obtained from various sources. It is designed to assist the forensic explosives analyst in characterizing, classifying, and comparing smokeless powder samples based on their physical and chemical properties. Each database record contains a photomicrograph of the powder, source information, physical characteristics as well as GC-MS and FTIR data identifying the chemical components.

THERMAL PROPERTIES DATABASE

The purpose of the Thermal Properties Database is to provide a central location to describe the burning characteristics of common household/office items. Having this information in a central location will facilitate sharing data and knowledge with the rest of the fire research and engineering community, thus reducing the time needed to search for information

SPOTLIGHTS IN *NCFS News*

The NCFS mission to provide relevant and responsive forensic science research and operational support to the criminal justice community often puts our faculty in the spotlight. Whether developing new ways to investigate sexual assaults, assisting European forensic scientists in building databases or supporting the local criminal justice system, NCFS faculty are working to improve the world through better forensic science.



DART FOR FAST FORENSICS

Direct analysis in real time – mass spectrometry, or DART-MS is an instrument that can analyze or screen any unknown gas, liquid or solid sample within 5 to 10 seconds. DART can rapidly analyze a variety of samples, including narcotics, fingerprint residues, explosives, inks, and lubricants. Nine years since its inception, the instrument's implementation is still relatively new to the forensic science field.

NCFS [in 2016] hosted DART Day, which consisted of lectures from guest speakers, presentations of research conducted by Bridge and her students, as well as hands on demos that demonstrated the user friendliness of the instrument.

EU ARSON INVESTIGATORS GET HELP

Databases play an important role in identifying ignitable liquid residues from fire debris samples in potential arson cases. Ignitable liquids that are commercially available in Europe may be compositionally different than liquids in the United States, making our databases of ignitable liquids data less than ideal for forensic scientists in other countries. In order to address this deficiency in the forensic science community, the NCFS initiated an International Database of Ignitable Liquids. Our first partner in this effort is the Fire and Explosions Investigation working group of the European Network of Forensic Science Institutes. The database is hosted, maintained and managed by the NCFS.



ANTHROPOLOGIST ASSISTS MEDICAL EXAMINER

Professor John Schultz from the Department of Anthropology at UCF holds a joint appointment at the NCFS and his expertise is often requested in cases involving the recovery of skeletonized remains. These cases can often be gruesome and sometimes high profile. Schultz played a significant role in recovering the remains of Caylee Anthony and providing expert testimony in the highly publicized trial in June of 2011. He also consulted on the recovery of remains thought to be Peruvian bones from a Winter Garden, FL, construction site in 2012. More recently, his expertise was sought internationally when he was asked to consult on the recovery of human remains from the Red House restoration site in Trinidad and Tobago.

GRANT TO AID SEXUAL ASSAULT INVESTIGATIONS

Candice Bridge, Ph.D., a professor at the University of Central Florida, was awarded a \$324,000 grant from the National Institute of Justice [in 2016] to develop new forensic science techniques to aid in sexual assault investigations. Bridge was one of the first people with a forensic Ph.D. in the country, and the first black woman to teach chemistry at Howard University and the University of Central Florida. She was voted "Professor of the Year" in the Howard Chemistry Department in her first year and was selected as one of "Ebony" magazine's "30 Under 30 Leaders."

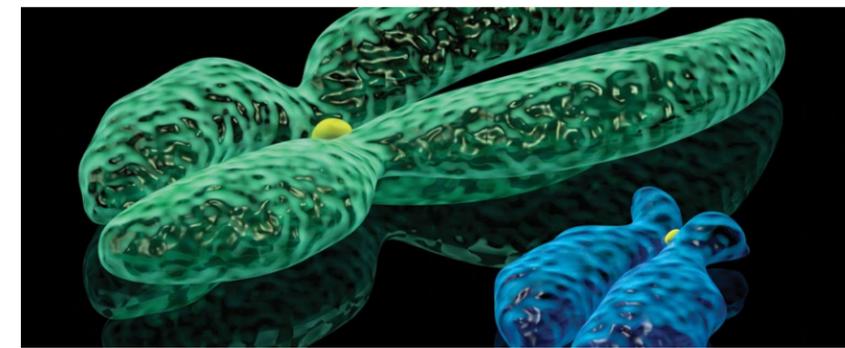
Bridge will be working with instrumentation currently only available to the FBI and a limited number of federal and state forensic laboratories to investigate ways to identify rapists by means other than DNA evidence. Bridge works alongside her research group of 11 students that investigate lubricants used in sexual assaults in addition to research in the areas of drugs, toxicology, and gunshot residue.



DEVELOPING *Research*

Through the years, research at NCFS has primarily focused on biological and physical evidence. Our faculty and students have made significant discoveries and helped to introduce new disciplines within the forensic sciences and related fields. A true measure of the maturity of a discipline is when other fields of research start leveraging your discoveries for their own benefit. Our research has had a maturing effect on forensic science.

Biological evidence research at NCFS has helped to establish the discipline of ribonucleic acid profiling within forensic biology. Profiling of RNA involves the determination of a set of ribonucleic acids that are expressed in a sample. Technological advances allow the acid sequences to be rapidly determined in parallel. Professors Ballantyne and Hanson helped to pioneer the forensic use of this method for body fluid identification. Their investigations into short tandem repeat markers of deoxyribonucleic acids (DNA) in the Y chromosome have significantly extended the post-coital interval



in which data can be collected on male rape perpetrators. This area of research has influenced a national policy change on the collection of forensic evidence from rape victims and led to the development of the U.S. National population database for Y chromosome analysis.



Pattern evidence is in need of stronger statistical and scientific underpinnings. Research to measure the frequency of occurrence of handwriting and hand-printing characteristics performed at NCFS has played a critical role in providing that support. UCF Statistics Professor Mark Johnson, Tom Vastrick (a certified document examiner) and their colleagues performed the research. The study took population samplings of handwriting and hand printing and assessed how many

times each of the predetermined characteristics was found in the samples. Results of the study support a quantitative assessment of extrinsic and intrinsic effects in handwriting and hand printing. Most significantly, this research strengthened the statistical basis for handwriting comparisons, following the recognition that the discipline of forensic document examination was facing increasing judicial scrutiny under *Daubert v. Merrell Dow Pharmaceuticals*.



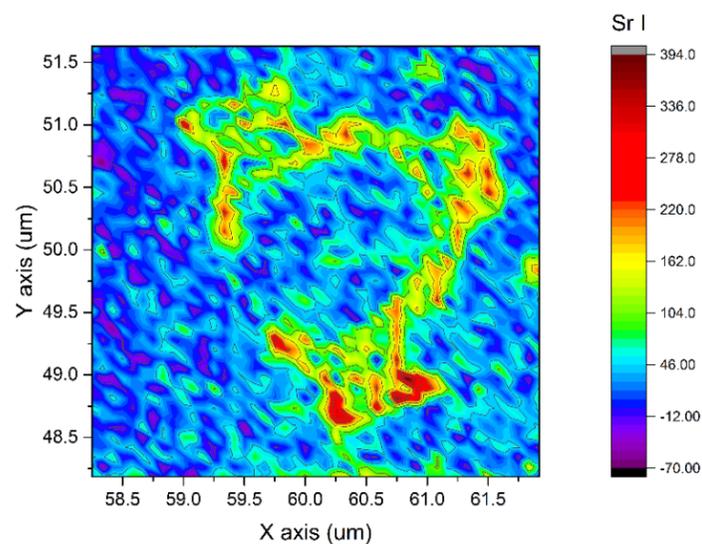
When deoxyribonucleic acid evidence is not available in a sexual assault case, other physical evidence may be available to the forensic scientist. Professor Bridge's pioneering research in the use of real time high resolution mass spectrometry for the analysis of sexual assault lubricants is of great interest to the forensic and law enforcement communities. Direct analysis in real time is a relatively new analytical tool that professor Bridge is exploiting in search of additional forensic applications.

Ever wonder what could happen from the time a crime occurs to when the scene is discovered and secured by law enforcement? A recent forensic archaeology project of UCF Department of Anthropology Professor John Schultz and graduate student Alex Mitchell studied the effects of vulture scavenging on unsecured crime scenes in Central Florida. Since different types of animals will scavenge human bodies that are dumped within outdoor environments, it is essential to understand how the various scavengers contribute to consumption, disarticulation, and dispersal of bodies. The research was conducted with pig carcasses and scavenging activities were documented

using game cameras, geographical information systems and detailed notes generated from regular visits to the research site. The primary avian species recorded scavenging the remains included black (Coragyps atratus) and turkey (Cathartes aura) vultures, while a couple of bald eagles (Haliaeetus leucocephalus) contributed minimally to the skeletal dispersal. The research provided incredibly valuable insight into the potential dynamics of an unsecured death scene in Central Florida.

Research at NCFS has also focused on the application of analytical tools, such as mass spectrometry and atomic or molecular emission spectroscopies, to the analysis of many types of physical evidence. A tightly focused laser pulse can produce particles one billionth of a meter in diameter for forensic analysis. Professor Baudelet's research extracts atomic mass and optical emission data from nanometer particles for the analysis of glass, bone, and hair evidence. Determining the distribution of masses and structure in a mixture of molecules can provide the forensic scientist with valuable information about the evidence.

The image at the left shows a map of Strontium in a bird vertebra.



Research by professor Sigman and Williams has assisted forensic fire debris and explosion analysts in classifying and identifying the components of extremely complex mixtures. They developed databases for forensic investigative purposes and demonstrated how the forensic analyst can use databases to understand and report the value of complex evidence as a probabilistic assertion instead of making categorical statements.





BUILDING & FOSTERING
Partnerships

From left to right:

- Co Van Ledden Hulsebosch Centrum - Amsterdam Center for Forensic Science and Medicine
- European Network of Forensic Science Institutes
- University of Central Florida Police
- District Nine Public Defenders Office
- United States Secret Service
- International Forensic Research Institute - Florida International University



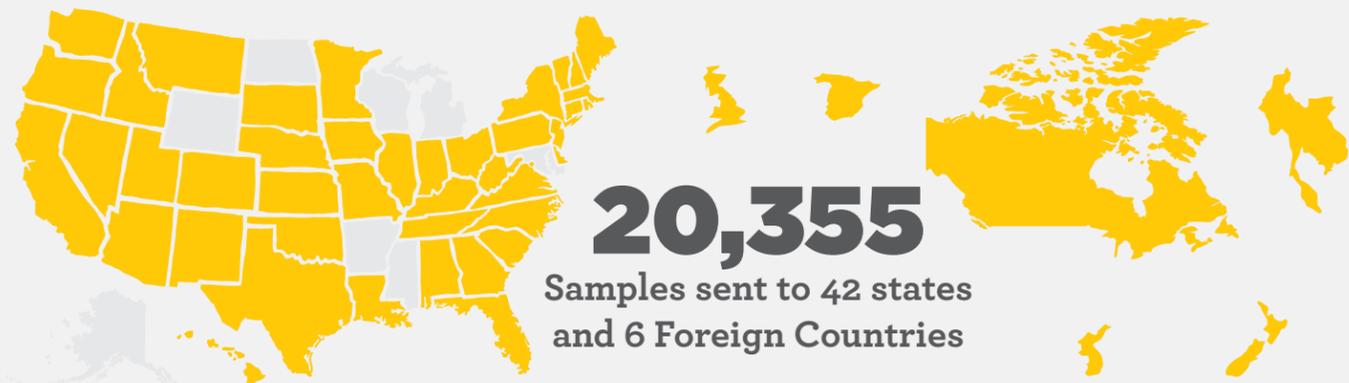
When UCF officially became “America’s Partnership University” in 2013, the branding move was a perfect match for the traditional culture and practice of NCFS. NCFS was formed in 1997 to provide support for the forensic fire debris and explosives analysis communities through research and partnerships. The Technical and Scientific Working Groups for Fire and Explosion were the first partnerships between NCFS and forensic scientists throughout the United States, with participation by colleagues from Canada, Australia, and Europe. The activities of TWGFEX and SWGFEX have diminished as efforts of forensic science reform by the National Institute of Science and Technology have increased; however, the need remains strong for the databases developed through partnership with SWGFEX. In 2015, NCFS embarked on a new database development project involving forensic scientists from approximately 20 European nations through a partnership with the European Network of Forensic Institutes’ Technical Working Group for Fire and Explosions.

NCFS has also built partnerships with forensic organizations to facilitate the development of digital evidence as a discipline in the forensic sciences. A partnership with the Federal Bureau of Investigation in

2002 allowed NCFS and the FBI to train law enforcement personnel on the use of cybercrime investigation software. In the same year, NCFS entered into a partnership with the Seminole County Sheriff’s Office to provide Central Florida parents with the knowledge and skills required to protect their children as they accessed the internet. In 2005, a partnership with the UCF Police Department established the Florida Law Enforcement Electronic Evidence Team Laboratory at NCFS. The agreement established cooperation between the academic and law enforcement communities in computer forensics, network intrusion and cyber-terrorism. A computer forensics research, training and casework laboratory was established at NCFS in partnership with the United States Secret Service, also in 2005. Subsequent partnerships in digital forensics were formed with the United States Postal Inspection Service and the Federal Law Enforcement Training Center. Some of these partnerships have served their purpose and expired as designed and some remain in effect today.

In our first 20 years, NCFS has established partnerships, cooperative research and development agreements, and memoranda of understanding/agreements with more than 20 state, local, and federal organizations.

Ignitable Liquids
REFERENCE MATERIALS

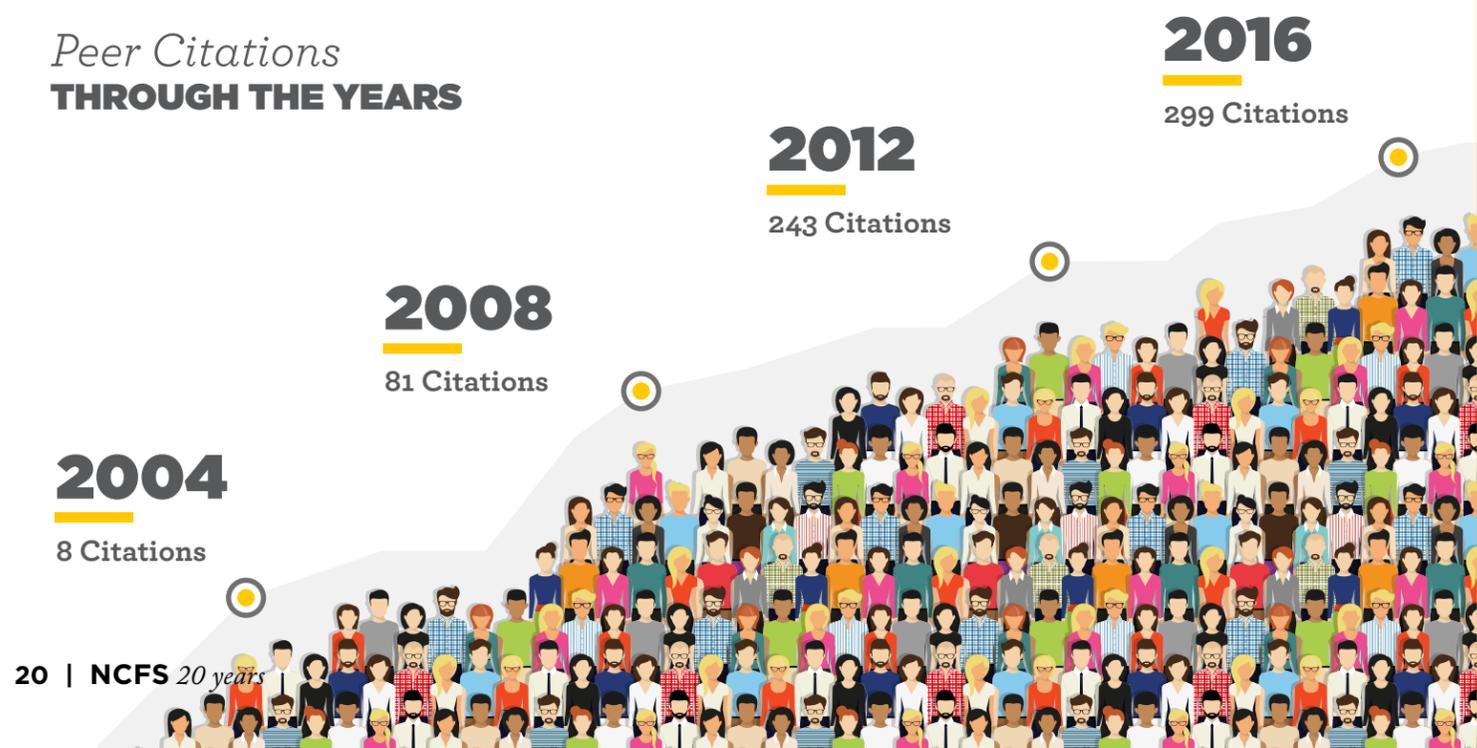


\$18 Million
TOTAL C & G AWARDS
(WITH CREDIT SPLITS)

Total number of students mentored



Peer Citations
THROUGH THE YEARS



FUTURE OF THE

National Center for Forensic Science

In 2009, the National Academy of Sciences issued a report entitled "Strengthening Forensic Science in America: A Path Forward." The NAS report identified needs for standardization in terminology and practice across the discipline and the need for a paradigm shift to a more statistically-based evaluation and presentation of evidence in many forensic disciplines. Following the NAS report, the National Institute for Standards and Technology was given a leading role in coordinating forensic science reform in the United States, resulting in the formation of the Organization of Scientific Area Committees and the Forensic Standards Board. Five of our faculty and staff members are serving on the OSAC or in advisory

roles. Through our participation in OSAC, NCFS has a significant opportunity to influence the future of forensic science. At the same time, the future of NCFS will be shaped by the changing needs of forensic science. It is clear to the academician that the forensic community will not achieve the needed paradigm shift on their own, and it is obvious to the nonacademic forensic practitioner that academic solutions are not always practical. Partnerships between academic and operational laboratories provide the best path forward for forensic science and NCFS. Our mission statement embraces partnership in service of the Criminal Justice Community and provides a future direction for our research.

NCFS MISSION:
"Provide relevant and responsive forensic science research and operational support to the Criminal Justice Community."

Dr. Jehuda Yinon

Professor Jehuda Yinon, Ph.D. was recognized throughout the world as a leader in the field of explosives analysis. His life's work benefited the scientific and forensic communities around the world and had a significant impact in the fight against terrorism. From 2000 until 2004, Professor Yinon served as visiting professor and assistant director for research in physical sciences at NCFS. His stay at NCFS resulted in 10 peer-reviewed publications focusing primarily on the analysis of organic secondary high explosives and explosive oxidizers. Professor Yinon called upon his extensive network of contacts from throughout the world to obtain samples of explosives manufactured in different countries in an attempt to identify the origins of the samples based on their chemical impurities. While in-residence at NCFS, he also published several papers focused on developing technologies for the detection of explosives, methods for detection of hidden explosives and methods of tracking terrorists through improved analytical methods. At the time he left NCFS, professor Yinon had become actively involved in the analysis of fiber dyes for forensic purposes. In 2004, professor Yinon returned to Israel, where he remained with his family until his death on May 19, 2008.



Dr. William McGee

Professor William McGee created the undergraduate program for forensic science within the UCF Chemistry Department in 1974 and NCFS in 1997. Professor McGee served as the founding director of NCFS. "...I have sat in my office for 20 years, talking to former students about the need, thinking about doing this..." McGee said in an interview with the Orlando Sentinel in 1997. McGee contacted former U.S. Representative Bill McCollum about the concept of a national center for forensic science and the idea fit in with the National Institute of Justice's focus on improving forensic science. As the founder of the forensic science major, UCF faculty and staff remembered McGee for his determination to build a rigorous, science-based curriculum. He built the four-month internship requirement for every student into the curriculum. He believed that it was important that the students have hands-on experience before they graduated. He was incredibly devoted to his students and often encouraged them to write papers and present at the Southern Association of Forensic Science meetings. Professor McGee moved to California in 2002 where he remained with his wife Patricia until his death on March 14, 2016. McGee will be remembered as a man with vision and the tenacity to make his visions a reality.

