Changes are happening in the department! With our expanding faculty and research, we needed additional space and Deans Coleman and Baski came to the rescue! We are now a TWO FLOOR Department with two new offices and a Collaboration/Copier Room on the 3rd floor. All of the faculty can now be together in Harris Hall South, and Dr. Miller and Dr. Poklis have taken residence in the new offices. Our new Collaboration/Copier Room is already filled with activities! Dr. Dawson Cruz and Dr. Seashols, Dr. Ehrhardt and Dr. Peace hold weekly Research Lab meetings, and graduate students are learning together through work and study groups. The Forensic Science Student Club Board also now has a place for their meetings. Faculty meetings, speaker sessions and conference calls are able to take place in the department space—and general collaboration has increased and expanded. The new 1200sqft lab has just been completed and is going to serve multiple purposes. Our new faculty member, Dr. Baneshwar Singh, will be conducting his forensic entomology research; faculty members and students will have access to shared equipment and instruments used for a variety of research projects; and students will have research space for their Directed Research and Independent Study projects. The new spaces have been transformational for us in many regards!!

360° panoramic image generated with SceneVision software donated to the department by 3rdTech for FRSC instruction.
Department of Forensic Science Diploma Ceremony May, 2013

Undergraduates

Aaron M. Andrus
Antonio Jefferson Barros
Kaitlynn Marie Basile
Cierra Blackburn
Sarah M. Braunbeck
Rachel A. Brosius
Fiona Jenny Chau
Whitney Elise Cheek
Jessica Clor
Kiara Nicole Coger
Christopher Joseph Vincent D'Silva
Melanie Nicole Eckberg
Kristina Renee George
Victoria Camille Gonzalez
Crystal Raven Greene
Joanna Leigh Helfin
Jacob DeWayne Huffstickler
Tomson Nguyen Huynh
Adesewa Opeyemi John
Joanna Kim

Graduate Students

Anna K. Blevins
Brett Bromberg-Martin
Lucy Reyes Camarena
Lee Michael Dean
Erica J. Dolak
Jacob Easter
Omar I El Jordi
Paige Gardner
Jessica M. Haidcock
Colleen S. Kearney
William Tyler Lansden

Jennifer Le
Korbyn B. Lloyd
Dan Constantine Manalili
Leia K. Nasholts
Francy Scarlett Nogales
Joshua Hovanes Odajian
Obelii Matilda Owakhe
Arjun H. Patel
Tina Pho
Hannah R. Poirier
Joshua Rosenthal
Ashley Lauren Rush
Malvika Sharma
Samantha Ashley Spencer
Sherry Leigh Stephens
Erika Nicole Stith
James Luke Thomason
Nga To Tran
Benjamin Huynh Trinh
Sarah Trinh

Leadership and Service Awards

Academic Achievement
Graduates:
Erica J. Dolak
Omar I El Jordi
Hope E. Parker
Carlene Ratliff
Lauren Phillips
Taylor Bethany Shaw

Undergraduates:
Arjun H. Patel
Samantha Ashley Spencer

Outstanding Graduates
Erica J Dolak
Hope E. Parker

Outstanding Undergraduates
Melanie Nicole Eckberg
Nga To Tran

Black History in the Making
William Tyler Lansden

Emily R. Murphy Scholarship
Omar I El Jordi

Paul B. Ferrara Scholarship
Jessica M. Haidcock
Chair’s Corner  Michelle Peace

Greetings Alumni, Friends, and Students!

As you read this newsletter, I am sure you would agree with me that the theme of it is EXPANSION! I am so proud of the spirit in this Department. We work hard to build bridges, opportunities, relationships, and excellence; so, we have featured stories to illustrate our growth in these areas. You will find snapshots of student successes, expanding programs, space renovations, and enhanced student support. We have also featured 3 of the many community outreach activities in which we engage, and two alumni speak eloquently about their own personal and professional growth after VCU! If you are curious as to other news in the Department, then I encourage you to “like” us on Facebook (VCU Forensic Science), visit our Blog, and follow us on Twitter (@VCUFRSC).

As always, we are eager for FRSC Alumni to engage with us! You are now part of our foundation — and we are eager to work with you to find the best fit. We have so many opportunities—and we can suit your ability and interest to commit time and effort to the Department and to VCU! You can get some ideas through the newsletter and from Facebook — and then please call or email to learn more! You can reach me at 804-828-8420 or mrpeace@vcu.edu or through our general Departmental email at fos@vcu.edu.

Thanks for reading! Thanks for working hard to help our programs grow! Thanks for studying hard! Thanks for stopping by the Department when you’re in town! Thanks for mentoring our students! Thanks for supporting our scholarship funds that support student achievements! And, thanks for being a part of VCU’s Department of Forensic Science! GO RAMS!!

Physical Evidence Concentration

All of us take pride and pleasure in the fact that we are unique, but I’m afraid that when all is said and done the police are right: it all comes down to fingerprints. — David Sedaris

The start of the fall semester welcomes an exciting new addition to the Forensic Science curriculum. The Physical Evidence Concentration prepares students for graduate studies as well as for careers in the physical evidence specialties, not only within forensic laboratories, but also in the broader law enforcement laboratory facilities. The physical evidence concentration is designed for those students seeking careers in latent fingerprint examination, the analysis of impression evidence, as well as firearm and toolmark analyses and other specialties in which physical comparisons are made. The curriculum will require students to complete inorganic chemistry, quantitative analysis with lab, crime scene investigation, and several other electives. The two primary courses of the physical evidence concentration—Forensic Pattern Evidence and Forensic Firearms and Toolmarks—are now being taught by experienced FBI examiners. Although the program is not currently FEPAC accredited, it is under review, and we anticipate the announcement during the AAFS Annual Meeting.

We will keep you updated as to our progress!
Undergraduate Spotlight: Ahmad Fakhoury

I applied to VCU from Lebanon because it was one of the fully accredited programs by FEPAC. Ms. Jo was my first friend at VCU; she helped me a lot with all the paperwork, and made the credit-transfer experience from my previous university seamless. I consider myself so lucky to know Mr. Eric; he is my advisor, teacher, and most importantly, a friend to me. The Forensic Science Program at VCU is so diverse and it exposed me to many of the possible practices in that very large field, and it has given me a better insight on what I want to pursue as a prospective forensic scientist. One exciting fact about forensic science is that every case is different.

Microbial Forensics and Serology is what I am interested in. I have been doing independent studies with Dr. Ehrhardt for a couple of months and I’ve been learning a lot of essential laboratory techniques that would certainly enhance my research skills, and hopefully prepare me for graduate school. An example of Microbial Forensics is when scientists have to prove that spores, (which are forms of bacteria that can withstand very unfavorable conditions) isolated from a suspect’s home or laboratory, are in fact the spores introduced into envelopes and mailed. What we are trying to do at Dr. Ehrhardt’s lab is to find a signature for these spores that would link it back to the lab and specifically to the scientist who sporulated the bacteria in the first place.

Something that makes me a unique forensic science student is that I started drumming at the age of 18 and I am still hooked on this instrument. I am really passionate and adroit when it comes to drumming. It used to be my one and only stress reliever back in Lebanon. I played with many local Lebanese bands including an alternative rock band called “Plugged” which recorded “Trains.” It was a really great experience and made me look forward to more serious musical projects. Next, I joined “Roswell” where my band mates and I conducted a lot of practice sessions to make sure there was chemistry among us. One thing I learned in the band is that if there’s no chemistry, there’s no music. Roswell recorded their album, which was widely available in Lebanon. I played many gigs and concerts with them, and recorded the band’s first musical video clip “like no other.” (Video) which was pretty amazing and made a solid name for the band locally and regionally. The video clip opened an opportunity for Roswell to be part of something really beautiful, and that was the opening for the popular British band “Keane” in Beirut. It was really an unforgettable experience for my band mates and me. Keane’s drummer, Richard Hughes, gave me a full set of his drumheads and a signed snare drum head. I also got Tom Chaplin’s guitar pic; it was pretty amazing I would say. We were also going to open for the well-known Inah rock band “The Cranberries,” but the concert was unfortunately cancelled. I left Roswell to come here to VCU to pursue what I like, Forensic Science. But the band is still active with their projects mainly in Dubai. I really wish them the best of luck and I am really proud to be an ex-member of Roswell.

Graduate Spotlight Samantha Fleming & Kiersten LaPorte
Award winning graduate students

Emily R. Murphy Scholarship recipient: Samantha Fleming

“Go into the world and do well, but more importantly, go into the world and do good.” -Minor Myers

The Emily R. Murphy Scholarship was established to remember and honor a forensic science graduate student who excelled in academics, and had a passion for service. Emily was tragically killed in a car accident in late 2002, and this scholarship was founded to ensure that her ideals were always honored within VCU Forensic Science.

I am extremely honored to have been awarded this scholarship for 2013. I have always had a passion for volunteering; a passion I have been nurturing since elementary school and have continued into my adult life. I am very involved in my local church in Michigan, and I even returned this summer to ensure I didn’t break my 8 year volunteering streak at a children’s summer camp. During my undergraduate career, I participated in Alternative Breaks, a program that sends students across the country and around the world to perform community service and take part in service learning opportunities. I participated in 6 trips, ranging from hurricane relief in Biloxi, Mississippi to facilitating a 5th grade leadership camp in Reno, Nevada to learning about religious turmoil in Belfast, Northern Ireland. These experiences have greatly influenced my life, and upon moving to Richmond, I searched for opportunities to continue my volunteer work.

Though my schedule in graduate school is not as open as it was in undergrad with classes, studying, teaching, and research, I still think it is important to find time to give back to the community. I seized the opportunity to work with the Library of Virginia event that brought young writers to the VCU Forensic Science department to learn some common experiments and tests performed in this field. I also spoke at a Girl Scout event at the Science Museum about being a female scientist and careers in forensic science. On a more regular basis, I donate nonperishable food items to a local food bank because it amazes me how many people go without enough food each day, and even small donations every month help. My newest service opportunity is aiding a local animal shelter in walking rescue dogs every week. While walking dogs is a relatively simple task, it could be the highlight of that dog’s day.

As I work towards finishing my degree at VCU, I am grateful to know that not only will I receive an amazing education and a competitive edge in the workforce, I have also been able to continue my passion for service learning.

AFTE Scholarship recipient: Kiersten LaPorte

Each year the Association of Firearm and Tool Mark Examiners awards a scholarship to students seeking a career in Forensic Science. Kiersten LaPorte, a second year graduate student in the Master of Forensic Science Program, was one of the 2013 AFTE Scholarship recipients. Kiersten learned about the AFTE scholarship through a professor while assisting the undergraduate Firearm and Tool Mark course at VCU. She is extremely honored to have been chosen as one of the recipients and looks forward to continuing her education in the forensic science field. To view this year and past year AFTE scholarship recipients visit www.afte.org.
International Spotlight  Maria Jose Illescas, MS 2009

Last week I ran into friends who were walking their dog Neska along the Ria in Bilbao, and one of them says to me “Do you realize my dog knows more Basque words than you?” This will be my third year living in the Basque Country and my Basque vocabulary has yet to expand from the five words I know. I guess I settled after learning how to order coffee.

I came to VCU on a Fulbright Scholarship from Guatemala and graduated from the Forensic Science Graduate program in 2009. While at VCU I worked in the TDC’s laboratory (TDC is our fond reference to Tracey Dawson Cruz) on the ALS visualization and enhancement of touch DNA evidence. I decided to stick with research following her wise words of advice: that the love for research is an inherent trait, and that if you discover that you love it, you should pursue it. At first I thought it would be daunting and I was nervous about my decision, but I knew I could lean back on the abilities I acquired at the Dawson Cruz Lab. I’m currently pursuing a PhD in Forensic Analysis at the University of the Basque Country in Spain. Last year I was awarded a scholarship to complete my research in the private sector at Progenika Biopharma in Bilbao.

My thesis project is directed towards the analysis of next-generation sequencing data in order to create protocols and pipelines for the detection of sequence variants such as INDELs, SNPs, and CNVs for several homologous genes. In laymen’s terms, I’m working on the discovery of novel gene targets for human identification and forensic application. As glamorous as it may sound it mostly involves battling with file formats, scripting, and applying algorithms, then hitting the Enter key while sipping on cold coffee and hoping no warning or error messages will appear on the screen. The first few months I was sure that if Python were alive it would most likely give me the embrace of death out of mere frustration. During my free time I’m learning data mining and machine learning to enhance the performance of data analysis. But however tough it might get at times, I do get a lot of entertainment out of it and head home feeling fulfilled with my job. Every day offers new challenges, but I can always count on the academic experience I gained at VCU to overcome them.

Sport Spotlight  Jenna Rice, BS 2006

A typical day in the life of Jenna Rice:

At 6:30am my alarm goes off (sometimes I hit the snooze button a couple times, mornings don’t get easier!) and I start getting ready to head to my job as a Newborn Screening Scientist for the Commonwealth of Virginia. My job is located in the Biotech Park, between Jackson Ward and the MCV Campus, right in the heart of downtown Richmond. Monday through Friday, I test blood samples from hundreds of newborn babies born in the state of Virginia for genetic disorders such as cystic fibrosis, sickle cell disease, congenital adrenal hyperplasia, and hypothyroidism, as well as 20 different metabolic disorders. I use a variety of instrumentation, such as LC/MS/MS, HPLC, and robotic sampling/extraction platforms. While this isn’t exactly a Forensic Science job, a lot of my coursework in VCU’s Forensic Science program more than qualified me for entry level employment in a laboratory of another discipline. So far I have worked in three labs- the other two disciplines being toxicology (forensic urine drug testing) and chemistry/biology (chemical warfare agents testing). Once I had a year or so of experience working in the toxicology lab, it was pretty painless to transfer to my other jobs. The best part is I think I’ve finally found a type of testing in which I can see a future for myself, so moving around has been well worth it!

So let’s continue on with my day. When I leave the lab at 4pm I often head to a fitness facility to either get in some exercise, or to do what I really love- teach a group of students the ancient discipline of yoga (a holistic practice rooted in the teachings of Eastern Medicine with an emphasis on physical, mental and spiritual health). I practiced yoga myself for about 5 years at the Downtown YMCA, and that experience helped me figure out that I wanted to be a teacher myself. I wanted to directly feel my impact on people’s lives (which is something I wasn’t getting from the lab environment), and teaching yoga allows me to do just that. I did have to go through a lot of training and spend a pretty penny to get certified to teach yoga, but it has been well worth it. During the past two years, I have taught at various studios, fitness facilities, as well as private sessions at client’s homes (sometimes as many as 7 classes per week!), but currently you can find me once a week at Gold’s Gym in the Fan on Wednesday evenings from 6:30-7:30pm.

How did I make the transition from graduating from VCU seven years ago to what my life looks like now? Honestly, it’s just been a series of opportunities I’ve taken that have each helped me get to know myself a little bit better; that have each pointed me in a direction towards fulfillment; satisfaction and happiness in my life (which is the ultimate goal for us all, right?). Have I fulfilled that goal yet? Well, I feel that I have a good balance of work (I’m using my degree, yay!), fulfilling my passion (teaching yoga), enjoyment (socializing with friends and taking trips on the weekend), and self care (such as getting enough sleep, eating nutritious foods, and getting exercise a few times a week). In the end I don’t think I’ll ever stop looking for ways to improve upon my current situation, but at the same time I’m content with what I have made of myself so far.
Alumni Spotlight: Jarrod R. Champagne, MS, 2007

I initially looked at the VCU Masters of Science in Forensic Science (MSFS) program in 2003 and was impressed with what I saw. By the time I was ready to apply for admission, the program had begun to change but I remained impressed with the administrators, staff, and overall new direction. Though I had applied to another program besides VCU, I really wanted to a part of what was occurring in Richmond. VCU was the new program on the block and the individuals there were working to build something special. I just didn’t want to be a cog in the machine – I wanted to help build the machine. I was hungry and eager to learn and felt the staff at VCU shared the same vision. It appeared to be a perfect match. I entered the program in 2005 and graduated in 2007. Not only did I leave with a degree, but I left with friends for life, not only with my fellow students, but staff and administrators as well.

I’m proud of my class’s accomplishments at VCU. We worked to help build a better program and build on the foundations that had already been laid. I feel each class helps lay their own layer and pillar that makes the program great. To see the program become FEPAC accredited and nationally recognized makes me feel like a proud parent knowing I helped to build the growing legacy. I’m always proud to say I attended VCU and am honored to be recognized as an alumnus of the MSFS program.

After graduation, I continued to Fairfax Identity Laboratories in Richmond, at that time a division of Commonwealth Biotechnologies. I worked on a case working team that performed serological, STR, Y-STR, and mitochondrial DNA analysis on both state contract cases and private submissions. We worked on cases from all over the U.S. and foreign countries. I worked with some amazing people there and it was truly a memorable experience. In 2009, I realized my dream to move to the Federal Bureau of Investigation.

At the Bureau, I joined the Federal Convicted Offender Program, which later became the Federal DNA Database Unit. I work on a team that uploads profiles from Federal convicted offenders, arrestees, and detainees into the National DNA Index System. The profiles are then searched against forensic unknown specimens and unidentified human remains. Through associations between matching DNA profiles, we are able to provide investigative leads to agencies to advance criminal investigations and identify human remains.

My dream was to help others and give them a voice through scientific means where they wouldn’t be able to speak for themselves. Finding the truth is always paramount in mind, regardless of where it takes the case or investigative lead. I’m grateful for the opportunity VCU gave me in being a part of the program. I am proud of the program where it is going and thankful for all the wonderful people I’ve met through it that I now call friends. My hope is that the current and future students will find their journey and time at VCU as rewarding as I did.

Forensic Science Student Club Adventurous Ventures

On Saturday, October 5th; students of the Forensic Science Student Club got together for a Scavenger Hunt. Focused around all things forensic science, the five teams of students were given clues about various locations on campus and asked to take a photo when they arrived to that particular place. The clues had students going as far as the Siegel Center and Hollywood Cemetery, and then to other locations closer on campus, such as the library and the Forensic Science Department. Most questions and clues had the purpose of showing students, specifically new students, where many places and resources were on campus. There were also a number of questions focused on the department and where students needed to go for information, such as internships, advising, and other questions they might have about the department.

Rather than post clues around campus, students had clues sent to them through Facebook, where they used their phones to check and send answers. For each clue, the teams were asked to take a photo of the intended location or object and send it over Facebook messenger. Some clues had more than one photo attached to it, requiring participants to go to multiple places before they were able to get the next clue. According to participant, Leigh Incheck, “It was so fun getting out there and having to run all over campus for each clue”.

In the end three prizes were given out: First place (Christen Green, Leigh Incheck, Madison Hytinen), Best Team Name (Law and Order VCU: Rachel Closky, Falon LaRose, Bianca Tardio, Jahnavi Aithal), and Best Photo (Hana Bakdash, Caroline Perez, Maddie Centanni). The students enjoyed themselves and the club hopes to host another one next semester.

To get more information about what’s going on with the FSSC, visit the Facebook page at www.facebook.com/VCUFSSC, check out the bulletin board next to Harris Hall South, room 2021 or contact Kenner Forther at fortherkd@vcu.edu.
Community Engagement  

The Forensic Science Department is getting more involved with the community to provide our students the opportunity to practice what they’ve learned & give back to Richmond area community.

Discovery, Stephen Raso

The Mary & Francis Youth Center on the VCU Monroe Park campus offers a lot of after school and summer programs for the young students in the Richmond area. This past summer, the Forensic Science Department became involved in a summer program called “Discovery Camp”, a program for middle school students to be introduced to different areas of the arts and sciences. Discovery Camp offered a variety of week long classes and the Forensics Department held two week-long classes. One of the classes was a half day class that focused on hands-on laboratory experiments and forensic science principles, and the other was a full day class which partnered laboratory experiments with a mystery writing.

During the classes, the students were taught different disciplines within the broad field of forensic science. To begin the week, the students toured the department’s research labs while current graduate students briefly talked about the types of research they were working on. The Discovery students were introduced to some building block principles such as how to generally classify and identify objects and good note taking skills. As the week progressed, the students used those principles in laboratories involving fingerprint analysis, crime scene investigation, and forensic anthropology, hair analysis, soil analysis, and paint analysis. The students were able to learn how to examine different types of evidence, and also how to use the information they obtained in a practical sense.

As the week ended, they were walked through a full house mock crime scene, and they had to use what they learned throughout the week to understand the evidence and attempt to decipher what happened.

The students ranged from 6th to 8th grade, and they all appeared to enjoy and be interested in the activities. The highlights for the week were fingerprint dusting, crime scene walkthrough, and the tour of the labs. As a bonus, on the last day, the students were allowed to come up with their own crime scene scenario and had to present the information and evidence to the class. The teachers and class then tried to work through their mock crime situation to reconstruct the scene. Overall, the class was a big success and the students raved about the class throughout the week at their other Discovery classes.

For the second year, the Department of Forensic Science partnered with the Library of Virginia to present a hands-on workshop during the annual Virginia Literary Festival. On October 18, our teaching labs were used to explore investigative techniques used by forensic science professionals. This year 30 adult participants were engaged in rotating through six stations run by the department faculty, graduate & undergraduate students: Fingerprints, Soil, Blood Spatter, Sketching, Tool Marks, and Hair.

Following the Forensic Science labs, Lana Krumwiede, author of the new novel Freaking, taught mystery writing techniques to the budding scientists. Since Ms. Krumwiede completed the labs along with the other CSI Mystery Writers, she could incorporate the knowledge they gained in learning to structure a more accurate and realistic mystery story.

CSI Mystery Writers with the Library of Virginia

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Service Learning  

“At VCU, service-learning refers to an intentional teaching strategy that engages students in organized service activities and guided reflection. The service activities benefit the community and, in combination with reflection and other classroom-based learning activities, enhance the academic curriculum of participating students.”

For the Forensic Science department, service-learning translated into undergraduate students learning how to teach forensic science concepts and then sharing their knowledge with middle school students in the community. The department partnered with Communities in Schools Richmond, to participate in after-school programming at Martin Luther King, Jr., Thompson & Fairfield middle schools. Through hands-on activities and labs, approximately 40 students were exposed to forensic science in a fun yet scientific manner.

Throughout the semester, our forensic science students had to adapt the activities/labs to meet the needs and interests of the middle school students with whom they interacted. The hands-on activities help teach and develop skills that are needed in the field of Forensic Science as well as in Life Sciences, Biology, Physical Science and Math. Throughout the activities, students learned to collaborate with their peers to analyze data and ask questions to problem solve and identify potential solutions. Topics covered included: Observation, Sensory perception, Classification and Identification, Note taking, Sketching, Fingerprint, Soil, Paint chip, Blood stain, Toolmark and Hair Analysis and Facial recognition. One of the schools brought their students to VCU to tour the Forensic Science labs. The culminating lab involved a Mock Crime Scene in which students used what they learned during the semester to work through the process of potential solutions to the crime.

As one school coordinator noted, “They have delivered a very quality program and have seriously engaged their students!!!!”

As we come to the end of the semester, our students have found this course to be a challenging yet rewarding experience. They have achieved the mission of service-learning: to deepen their understanding of civic responsibility and enhance their capacity to act as locally responsive and globally aware citizens. In addition, they have strengthened their own understanding of forensic science and furthered their professional development by teaching others. In the words of another school coordinator, “we would LOVE to have this program again in the spring! This is just an awesome treat for our young people to participate in.”

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Undergraduate Research

The Department of Forensic Science is well known for its high level of graduate student research but the **opportunities have grown to include many of our undergraduate students**. They are working with our faculty in our new research labs, in the teaching labs, and in the DART room, a borrowed space from the Chemistry department.

**Kylie Alford**, Dr. Peace
“Characterization of Bath Salts”
Bath salts are drugs made of synthetic cathinones, along with other components. The drugs are hard to identify because they are always changing. Accu-TOF DART (Time of Flight, Direct Analysis in Real Time) and FTIR (Fourier Transform Infrared Spectroscopy) are used to analyze known standards which will be compared to bath salt samples to determine the sample components.

**Manan Amin**, Chemistry and Forensic Science labs, Eric Hazelrigg
“Database of Low Explosives using FTIR”
This project is building a database of Low explosives using FTIR which does not exist at VCU currently. Primarily low explosives like Smokeless Powder, Black Powder and Muzzle loading propellants, are being used.

**Kristin Asal**, Ehrhardt Forensic Microbiology Lab
“Analysis of Laboratory Grown Bacillus Spores Using Direct Analysis in Real Time-Mass Spectrometry (DART-MS): Rapid Taxonomic Identification and Forensic Attribution of Bacterial Threat Agents”
Kristin is trying to identify major biochemical compounds that make up a Bacillus spore DART-MA profile and to determine whether compounds detected by DART-MS originate from the spore surface or are intracellular.

**Darianne Cloudy**, Dawson Cruz Molecular Biology Lab
“Trace DNA extraction from Tiger Footprints”
This project is attempting to extract amplifiable DNA from footprints as an added genetic factor to noninvasive tracking methods used by Conservation Biologists in monitoring threatened and endangered species such as Bengal tigers.

**Ashley Coleman, Donald Jessup, Ahmad Fahkhoury and Cristina E. Stanciu**, Ehrhardt Forensic Microbiology Lab
“Intra-cellular vs. Extra-cellular Fatty Acid Methyl Ester (FAME) Analysis of Bacillus Spores”
This project focuses on the fatty acid composition of the exterior surface of Bacillus spores as it relates to the fatty acid composition of the membrane bilayer itself. Because fatty acids from the cell surface can be extracted non-destructively from the surface of the spore, it represents a potentially valuable target for forensic analysis during a biocrime investigation.

**Aryn McClain**, Dawson Cruz Molecular Biology Lab
“Optimized DNA extraction methods for obtaining STR-quality DNA from tape-lifted and backed latent fingerprints”
Fingerprints are commonly collected by dusting them with fingerprint powder, tape-lifting them, and adhering the tape-lifted print to a paper backing card. This method is great for visualization, but this project is determining if Aryn can extract the touch DNA that is sandwiched between the adhesive and paper surfaces.

**Kevin Martin**, Ehrhardt Forensic Microbiology Lab
“Characterization of Hydrophobic Compounds on Bacillus Spore Surface using GC/MS”
Kevin is looking at hydrophobic compounds on the B. cereus spore surface using an acetone supernatant extraction and analyzing it using Gas Chromatography/Mass Spectroscopy. He plans to use his findings to support current GC-FID and DART-MS analysis (also being researched under Dr. Ehrhardt) and develop a possible forensic signature.

**Christine Richmond**, Dr. Miller
“A Chemical reagent enhancement and 3D-laser technology.”
This project is determining if 3D-laser technology will register the fluorescent print during scanning. Reagents are used to enhance fingerprint detail and photographed with filters and ALS. The 3D laser is used to scan the enhanced print.

**Samantha Tiam Fook**, Ehrhardt Forensic Microbiology Lab
This project is assisting Dr. Ehrhardt's bio-safety level 2 lab in characterizing unique signatures among Bacillus spore cultures to create a profile listing signatures that would assist in identifying whether spore cultures were derived from a natural soil environment or in a lab.
New Faculty Baneshwar Singh, PhD

Education
Dr. Singh received BS and MS degrees with gold medals in life sciences from India. He then began his PhD study in biology at West Virginia University, where he conducted his dissertation research on molecular systematics of the Oestroidea (a fly superfamily that includes many large and common flies of forensic, medical, veterinary, and agricultural importance) under the supervision of Dr. Jeffrey D. Wells.

Professional Experience
At Virginia Commonwealth University, Dr. Singh serves as an assistant professor in the Department of Forensic Science, teaches forensic molecular biology courses to senior undergraduate and graduate students, and manages his forensic genomics research laboratory. Prior to the VCU appointment, he worked as a postdoctoral research associate in Drs. Jeffery Tomberlin and Aaron Tarone’s laboratories at Texas A&M University, College Station, and in Dr. Tawni Crippen’s laboratory at Southern Plain Agricultural Research Centre of the United States Department of Agriculture (USDA-SPARC), on a National Institute of Justice (NIJ) funded project on development of novel methods for estimation of a postmortem interval (PMI). Along with the postdoctoral research work, Dr. Singh conducted several forensic entomology workshops for law enforcement personnel, and also worked on several forensic entomology cases from Texas and other parts of the USA. During doctoral study, Dr. Singh worked as a laboratory manager for West Virginia University’s Genomics Core Facility, and taught several biology laboratory courses for undergraduate and graduate students.

Professional Accomplishments
Dr. Singh has received board certification for lectureship in life sciences from UGC, presented research at many national and international conferences, including invited presentations at the 60th annual meeting of the Entomological Society of America (ESA) in 2012. He also served as a judge for graduate student’s oral presentation competition at the 60th ESA meeting in 2012.

Research Interests
At VCU, Dr. Singh’s research will focus on development of standard operating procedures for recovery of human DNA from maggot gut contents, and metagenomics and metatranscriptomics of microbial populations associated with human cadavers for development of new forensic tools for determination of time since death. He also plans to study insects-microbe interactions, and its utility in improving precision in PMI estimation.

Department Grant Sarah Seashols, PhD

VCU Forensic MicroRNA Study Funded by National Institute of Justice

Interdisciplinary team looking at multiple applications of this research

Most people are familiar with DNA, the molecule found in our bodies that encodes the genetic instructions and is often referred to as one of the building blocks, or blueprint, of the body. And if you’ve watched a crime show, you know that DNA is an important part of forensic science that helps to identify suspects.

What is not so familiar are RNAs, which are working “copies” of DNA found in different cells, including bodily fluids. Also considered one of the building blocks of the body, RNA is typically found in a single-stranded form in cells whereas DNA is usually in a double-stranded form.

Cancer and forensic science researchers at Virginia Commonwealth University have joined together to look at microRNAs in a study supported by a two-year, $310,000 grant from the Office of Justice Programs, housed within the National Institute of Justice (NIJ). MicroRNAs are a recently discovered class of RNAs that play key roles in the regulation of gene expression.

The researchers are using deep sequencing to identify and characterize microRNAs in forensically important biological fluids. This molecular identification of body fluids represents a new technique that supplements DNA analysis in forensic cases.

“Identifying any bodily fluid at a molecular level would be highly advantageous for forensic evidence,” said Sarah Seashols, M.S., forensic molecular biology instructor in the VCU Department of Forensic Science and co-principal investigator on the NIJ study.

Also interested in identifying microRNAs is the study’s other co-principal investigator, Zendra Zehner, Ph.D., professor in the Department of Biochemistry and Molecular Biology at VCU Massey Cancer Center, who is hoping to find new biomarkers for prostate cancer through microRNAs.

“Approximately 1,600 microRNAs have been identified so far, and we suspect there are more that we hope to find through deep sequencing, a technique that converts microRNAs to cDNAs and then determines the sequence of every microRNA in the sample using classic DNA sequencing methods. It is a new and novel approach,” said Zehner. “In my research, I am looking at the diagnostic probabilities for prostate cancer by studying microRNAs to find an indicator of cancer. The goal is to develop a new and improved prostate cancer test by using appropriate bodily fluids to check for microRNAs denoting cancer. An easier test will mean better screening measures and the opportunity to find and start treating prostate cancer earlier, thus saving lives.”

The NIJ grant was highly competitive with only 11 grants awarded out of more than 90 applications from across the nation.

“I believe we attained this award due, in part, to the combination of Sarah and my strengths in forensic science and basic/cancer research,” said Zehner. “This study is a great illustration of the important interdisciplinary research and collaboration taking place at VCU.”
Meet Our Adjunct Faculty

Spotlight on: Anne Davis

Ann Davis officially retired from the Virginia Department of Forensic Science, Richmond, VA, in January of 2011 with over thirty years of service, but has been fortunate to be able to continue working in the Department as a part-time employee. This is exciting for 2 reasons—Ann can continue her affiliation with both the VA Department of Forensic Science and the VCU Department of Forensic Science, two organizations that have worked together for over 25 years to develop one of the, if not the, most comprehensive and progressive curriculums in forensic science education. Ann has been involved with the program and its growth for that entire time, first as a full-time graduate student from 1988 – 90, and then as adjunct faculty teaching the Firearm and Toolmark Identification Course intermittently over the years. She was honored in 2007 when she was awarded an Affiliate Faculty position for her service to the Department. Passionate best describes her commitment to the forensic sciences - about her teaching, her work as a training coordinator for the DFS firearm and toolmark discipline, the forensic sciences in general and about her support of the VCU program and the Paul B. Ferrara Scholarship in Forensic Science. Her hope is that she can, if even in a small way, promote excellence in the students pursuing the forensic sciences and afford opportunities to those who excel in the department. She loves being involved, even as a retiree. So many exciting developments are being made with respect to improvements in instrumentation for evaluating and interpreting evidence and new research, she is looking forward to the “tomorrows” in forensic science.

Bobby Bailey has over 30 years of experience in Fire Services which makes him exceptionally qualified for his position as Chief of the Fire Marshall’s Academy for the Virginia Department of Fire Programs, a position he has held since 2007. As the Chief, Bobby manages the Fire Marshall Academies across the state and is responsible for over 600 staff members and volunteers. This semester, Bobby is co-teaching FRSC 520, Forensic Fire Investigation, with his colleague Russ Chandler. Bobby’s motto is “Conceive the vision. Develop the plan. Implement all details.”

Jeremy Boone has a Bachelors degree in chemistry from West Virginia University. He worked for several years as a chemist before returning to school and receiving his Masters degree in forensic science from the University of Central Oklahoma. Upon graduation he worked for three and half years as a Criminalist in New York City for their Office of Chief Medical Examiner in the Forensic Biology section. He came to the Virginia Department of Forensic Science in July of 2010 as a Forensic Scientist in the Forensic Biology Section. He is teaching FRSZ 675 lab. He’s teaching to hopefully give insight into the workings of a forensics lab and some of the things students can expect upon entering the work field.

Monique Brillhart is teaching Forensic Pattern Evidence, FRSC-410 this semester. Monique is a Physical Scientist/Forensic Examiner for the FBI Laboratory Latent Print Operations Unit. She has been with the FBI in this capacity for over 9 years. Prior to her career with the FBI, Monique worked in the pharmaceutical industry developing influenza vaccines. Monique completed a Bachelor of Science in Biology with a minor in Criminalistics from York College of Pennsylvania in York, PA, and a Master of Science in Biotechnology with a concentration in Biodefense from The Johns Hopkins University in Baltimore, MD. When asked why she is teaching this class, she said, “The opportunity fell in front of me and I had to take it. I have always wanted to teach at a university and this gives me a chance to share my passion for my career.”

Dr. Charles M. Kelly is the Director of Fairfax Identity Laboratories. Initially located in northern Virginia, FIL relocated in 2005 to Richmond and became part of American International Biotechnology Services, Inc. in 2009. Dr. Kelley has taught a Forensic Molecular Biology lab to our undergraduates for the past three years. Dr. Kelly received his Bachelor or Science degree in Biological Sciences from Carnegie Mellon University and his Ph.D. from Purdue University. He received post doctoral training at the medical school at Case Western Reserve University and at Duke University. He then joined the biology faculty at the University of North Carolina’s Greensboro campus, where he remained for seven years. In 1990, he began his relationship testing career with Genetic Design, Inc., located at the time in Greensboro, and subsequently moved to Fairfax, VA in 1997. He has been with FIL ever since, with the exception of 2002, when he took a one-year sabbatical leave to assist with the identification of the remains of victims of the World Trade Center attacks.

Mary E. Maguire is an Assistant Federal Public Defender in the Eastern District of Virginia, Richmond Office. She received her B.A. in Political Science and Spanish from Middlebury College, Middlebury, Vermont. (1986). After a two year stint working for the California State Assembly she went on the Georgetown University Law Center where she was a Public Interest Law Scholar. She graduated with her J.D. in 1991. Mary has devoted the majority her legal career to public service as a public defender at the state a federal levels in California and Virginia. She has been an adjunct professor at the University of Richmond T.C. Williams School of law teaching trial skills to second years students since 2004, and welcomes the opportunity to provide an introduction to criminal law to forensic scientist with FRSC 375 this Fall. The course focuses on the Fourth and Fifth Amendments, the gathering of evidence, and how expert forensic testimony gets admitted in Court. These topics provide fertile ground for interesting discussions, and Mary welcomes the non-lawyer perspective.

Jami Taylor has a BS in Neuroscience with a minor in Biochemistry from the College of William and Mary and an MS in Forensic Science from Marshall University in West Virginia. From West Virginia, she trekked it to Miami, FL, where the Miami-Dade Police Department Forensic Services Bureau offered her a position to train as a Firearm and Toolmark Examiner. Never in a million years did she think she’d end up in this field, but she’s glad she did because there’s always something new and exciting to learn – a gun you haven’t seen or the satisfaction of a tough identification. Being a Firearm and Toolmark Examiner doesn’t mean you’re a “Gun Nut”, but rather I found the job to be one where she encountered many little puzzles every day. After a few years in Sunny South Florida with its beaches and amazing diving spots, she came back to Virginia to get a taste of the 4 seasons again and to be closer to family and friends. She’s now employed as a Firearm and Toolmark Examiner with the Virginia Dept of Forensic Science and teaching the FRSC 662 Firearm & Toolmark Identification Course. She loves teaching and training because it reinforces and expands my knowledge and understanding just as much as it does for the students and trainees.
On November 15th, 2013, the VCU Department of Forensic Science hosted an Open House for prospective graduate students and their families. Forty guests from six states came to learn about and tour the department and the Virginia Department of Forensic Science (VA-DFS). To start the day, the prospective students met with Dr. Doug Boudinot (Dean of Graduate Studies), Dr. Tracey Dawson Cruz (Forensic Science Graduate Director), and Dr. Michelle Peace (Forensic Science Interim Chair) to get a welcome from VCU. Additionally, Linda Jackson, the Director of VA-DFS, gave the students a greeting from Virginia's premiere state crime laboratory system. Then, the students wandered the halls of the department where they had the opportunity to meet with current graduate students, professors, and representatives from the Forensic Science Student Club, Financial Aid, Career Center, and Recreational Services. There were also approximately 20 research posters and their authors lining the walls to provide prospective students with the opportunity to learn about the Department’s aggressive graduate research programs. Many students took a break with faculty to enjoy a delicious meal, provided by the VCU Graduate School. In an afternoon formal session, Dr. Dawson Cruz led the prospective students and their families through a brief discussion about the graduate admissions process, the benefits of the VCU MS program, and details about the curriculum and research requirements. To end the day, current graduate students toured the prospective students around the department’s classrooms, laboratories, faculty research labs and critical areas of the Monroe Park campus. Finally, the prospective students traveled over to the VA-DFS Central laboratory to meet with current staff and alumni, as well as a taking a tour of the laboratory led by Jeff Ban, the VA-DFS Central Laboratory Director. Overall, the Open House exposed the prospective graduate students to the great opportunities available within the VCU Department of Forensic Science. The day was a huge success! The Department plans to offer this event annually, each fall, for prospective students and their families. Information about future events can be found on the Department’s website at www.has.vcu.edu/forensics.

A new addition for all declared Forensic Science Majors this fall is the FRSC Advising Organization on your Blackboard site! This site has even more information than the Advising Board in the Harris Hall South hallway.

On this page, you will use the ‘For Students’ tab to navigate through a wealth of information to find answers to frequently asked questions such as:

- Who is my advisor?
- What exactly are the Foreign Language Placement guidelines?
- When do I apply to graduate?
- What is the difference between an independent study and an internship?

Additional information on the page includes contact information for the Forensic Science Student Club, web links to Forensic Science organizations, employment resources (for while you’re here and after you graduate!), and contact information for all Departmental Faculty. Students are grouped by advisor on the Blackboard page, so by looking at the “My Groups” list on the left-hand side of the screen, you’ll be able to see who your advisor is.

The wizard behind the curtain running the Forensic Science Blackboard page is Lyndsay Durham. In addition to teaching FRSC 202: Crime and Science - a general education elective for non majors, she is also working to develop an advising program for Forensic Science undergraduates. While Ms. Durham predominantly meets with Freshmen and Sophomores, she also has 15-20 hours each week dedicated to “drop-in” advising. If you have a quick question, need some clarification, or just want to say hello, please visit Ms. Durham in Harris Hall South, Room 2008 or email her at durhams@vcu.edu.
We could not wait until the next issue to announce the great news that Sarah Seashols completed her dissertation this fall and was hooded during the December Commencement Ceremonies.

Join us in congratulating Dr. Seashols!