This past January, the Forensic Science Department teamed up with the Forensic Science Student Club to deliver an energetic effort in the weeklong festivities of VCU Homecoming. With a Breaking Bad theme, it was not surprising to see faculty members roam the halls sporting the infamous Heisenberg hat and sunglasses while whispering about RV rentals.

The club chose to take part in the annual window decorating of the Student Commons and, for the first time, entered the department door-decorating contest. The Heisen-Rodney design competed against other doors in various departments and in the end took home the third place title.

For the rest of the week, students from both the undergraduate and graduate domains joined forces in planning and preparing the decorations for the parade. On the big day, the department quickly became a fan favorite as our very own Jessie Pinkman (Matt Goldstein) and Walter White (Steve Raso) lookalikes pushed a large barrel of "methylamine" down Broad Street behind the Forensic Science banner. They were followed by DEA agents and forensic scientists passing out blue rock candy from labeled evidence bags along with resources about help for drug addiction and the 2013-2014 edition of the Department’s keychains.

Following the parade and a quick change of clothes, everyone met up at the men’s homecoming basketball game decked out in black and gold where forensic rowdology was appropriately represented in a group photo with Chris "Pav" Crowley.

Everyone knows how challenging the forensic science program is but we showed our spirit and creativity during this year’s Homecoming Festivities!
### Undergraduate Students

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mohamed Al Hasani</td>
<td>Kenner Delano Fortner III</td>
<td>Kyle Alan-Rapp Mason</td>
<td>Allison M. Shye</td>
</tr>
<tr>
<td>Kylie Alford</td>
<td>Tina Ghasri</td>
<td>Aryn Mae McClain</td>
<td>Turquoise Iyana Simmons</td>
</tr>
<tr>
<td>Scott Banning</td>
<td>Christen Lauren Heltzel</td>
<td>Jaclynn I McKay</td>
<td>Matthew Spencer</td>
</tr>
<tr>
<td>Ashley Maria Coleman</td>
<td>Ava L. Hendricks</td>
<td>DiJahné Keaire McPherson</td>
<td>Chanel Monet Stafford</td>
</tr>
<tr>
<td>Tanicea D. Dennis</td>
<td>Donald Jessup</td>
<td>Helina Mesfun</td>
<td>Vivian E. Stahl</td>
</tr>
<tr>
<td>Chelsea Derr</td>
<td>Sonia Sharai Mihan Johnson</td>
<td>John F. Nackerman</td>
<td>Ranya Tuleen Tahhan</td>
</tr>
<tr>
<td>Ashley Edwards</td>
<td>Samantha Dawn Jones</td>
<td>Spencer Analechukwu Nwokogu</td>
<td>Akia Uzal Talibert</td>
</tr>
<tr>
<td>Brittany E. Escobar</td>
<td>Tiffany Rene Layne</td>
<td>Sarah Perry</td>
<td>Samantha Tiam Fook</td>
</tr>
<tr>
<td>Omar Halim Ezzeddine</td>
<td>Daniel Loo</td>
<td>Anna Melinda Reinerton</td>
<td>Hanna Vossler</td>
</tr>
<tr>
<td>Ahmad Fakhoury</td>
<td>Christian A. Luna</td>
<td>Brittany Rogaliner</td>
<td>Ericka Wineland</td>
</tr>
<tr>
<td>Arsiema Fessehazion</td>
<td>Kevin Michael Martin</td>
<td>Aria Rowshan</td>
<td>Hiyab Goitom Yohannes</td>
</tr>
</tbody>
</table>

### Graduate Students

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariana Albornoz</td>
<td>Samantha Fleming</td>
<td>Ye Jin Kwon</td>
<td>Olivia JoLeigh Orr</td>
</tr>
<tr>
<td>Deborah J. Clay</td>
<td>Matthew C. Goldstein</td>
<td>Ashley Lancaster</td>
<td>Stephen Raso</td>
</tr>
<tr>
<td>Jordan Oldham Cox</td>
<td>Christina Renee Hayes</td>
<td>Elizabeth Anne Lapatovich</td>
<td>Mikaela Hamilton Romanelli</td>
</tr>
<tr>
<td>Emily A. Dreibelbis</td>
<td>Nooli Hong</td>
<td>Kiersten Elizabeth LaPorte</td>
<td>Alicia M. Zimmermann</td>
</tr>
<tr>
<td>Charlotte Marie Engel</td>
<td>Kaitlyn M. Knapp</td>
<td>Danielle Amanda Mackowsky</td>
<td></td>
</tr>
</tbody>
</table>

### Leadership and Service Awards

#### Graduates
- Jordan Oldham Cox
- Matthew C. Goldstein
- Kiersten Elizabeth LaPorte
- Danielle Amanda Mackowsky
- Stephen Raso
- Mikaela Hamilton Romanelli

#### Undergraduates
- Kylie Alford
- Kenner Delano Fortner, III
- Samantha Dawn Jones
- Aryn Mae McClain

### Academic Achievement Awards

#### Graduates
- Deborah J. Clay
- Jordan Oldham Cox
- Charlotte Marie Engel

#### Undergraduates
- Matthew C. Goldstein
- Kaitlyn M. Knapp

### Outstanding Graduating Students

#### Graduate
- Danielle Amanda Mackowsky

#### Undergraduate
- Aryn Mae McClain

### Black History in the Making
- Christina Renee Hayes

### Emily R. Murphy Scholarship
- Samantha Fleming

### Paul B. Ferrara Scholarship
- Deborah J. Clay
The graduating class of 2014 is pleased to announce the beginning of a new departmental tradition: Class Gifts! Our class has set up the Class of 2014 Fund to raise money for projects around the department. Our class has worked tirelessly to propel the department’s presence forward within the VCU community as well as the City of Richmond. Now all we need is a 24/7 visual presence! The main focus of our fund is to purchase a new sign that will announce the Forensic Science Department’s presence loud and proud. But, we need your help!

Class of 2014 Fund

How you can help:
Please consider donating $20.14 or any other amount (please add 14 cents to the end so that we know it’s for the class gift).

Thank you!
from the VCU Forensic Science Class of 2014

June Update
About $500 has been raised so far!!
You can help the class reach their goal faster!!

A plaque will also be placed on the side of the building identifying the 2014 Class Gift!
Transformation of FRSC Graduates

Matt Goldstein, BS ’12, MS ’14
Six years is a long time, especially to someone who is only 23 years old. That’s how long I have been at VCU and now I will try to do the impossible and summarize it in a few paragraphs!

I came to VCU for the FEPAC accreditation but stayed for the forensic science faculty. During my six years here, I have had the pleasure of interacting with some pretty special faculty members. Especially in graduate school, I had the privilege to get to know many of them on a personal level. I can honestly say that without these people, I would not be where I am today (starting my first forensic job in the NYC OCME!). Though I owe a lot to every faculty member, I want to call out a few in particular. A very special shout out to Dr. Tracey Dawson Cruz, who has been my mentor and close friend the last two and half years. Without her, my writing and lab skills wouldn’t be where they are today, but neither would my maturity or work ethic. Dr. Peace taught me all about instrumentation and more importantly, how to work with all types of people. Sarah Seashols, my undergraduate advisor and friend, really put me on the path to success. Dr. Miller introduced me to someone from the NYC lab, which has paid obvious dividends. Finally, Jo Murphy has always had time to let me sit in her office and talk to her about just about anything. So a big thank you to everyone in this department.

My story at VCU wouldn’t be complete without mentioning the basketball team. I have been lucky enough to see the evolution of this basketball program, from an average team to a Top 25 A10 favorite. VCU made the Final Four back in 2011, and I can honestly say that was one of my most exciting times as a VCU student. The campus and the city itself were abuzz for three weeks and it really put this program on the map. Since then, I have been able to share my passion (some say obsession) with both my undergraduate and graduate school friends, which is an awesome feeling.

There you have it, my six years at VCU: the forensic science department faculty and staff and VCU basketball.

Christina Hayes, BS ’12, MS ’14
A program so nice, I attended it twice! That’s right. I started an article with a cliché, but it’s true. I’ve attended the VCU Forensic Science Bachelor’s AND Master’s program these past six years. That’s kind of a long time but both programs, which are FEPAC accredited, are unique in their design with a ton of hands-on experience. Since 2008 when I started, the department has grown tremendously. I’ve seen it acquire additional top-of-the-line faculty, new and improved lab space, and greater recognition and acknowledgement from the College of Humanities and Sciences.

As a freshman I made it through the “are you sure you want to do forensic science and not criminal justice with CSI concentration?” speech along with brief attempts at forensic chemistry instead of forensic biology, because as everyone knows, ain’t nobody got time for calculus. Well, some people do, just not me. But that’s what’s great about the programs here and the access to multiple tracks and wise mentors. After having my daughter and successfully completing the Bachelor’s program, with honors, I had to be wholly convinced to even apply to graduate school. Dr. Tracey Dawson Cruz aided in removing any doubt in attending the graduate program and also served as my advisor during my last 2 years at VCU. Along with Tracey, I had the pleasure of having Dr. Sarah Seashols as an undergraduate advisor and Graduate Research mentor. Dr. Seashols was quite possibly, the best and most realistic person to work with and she also gave me the opportunity to present our team’s research work nationally, which I will never forget. So as far as mentors go, I pretty much won.

The department as a whole is filled with great faculty; with Dr. Peace’s contagious, walking-just-a-rolling-billboard energy, all the way around to Dr. Ehrhardt’s multiple “this isn’t statistically significant” statements. I’ve learned a lot from everyone along the spectrum and I actually know that I have been given the keys to start a successful forensic science career. Now all I need is the job…PEACE.

Daniel Loo BS ’14
My experience at VCU has allowed me to open myself up more to the wonderful people in the community and the Forensic Science Department. The people I have befriended and professors with whom I have gotten acquainted, helped me greatly to feel comfortable and adapt to a new setting. I was happy to have had a great support system and relationships with the people I met at VCU. After long years of education, I am glad to know that there are people at VCU that care about the experience of one another and are willing to help however they can.

Kylie Alford BS ’14
For most of my time here at VCU, I wasn’t challenged much in the way of academics. That changed this past year when I took most of my Forensic Science courses. With most every other class, I felt that everything I did followed the theme of “here’s the answer and here’s how to get to it.” The Forensic Science is the exact opposite of that. While everyone here is willing to help, they aren’t going to walk you through it, whatever ‘it’ might be. I can’t count how many times in Forensic Chemistry we had to deviate from the plan because something didn’t go right. We always attempted to ask for help, but mostly we were left to our own devices. As frustrating as that could be at times, it was also very rewarding because I actually learned from the process. I guess what I’m trying to say is - the Forensic Science Department allowed me to be more independent academically, and actually use what I have learned in various applications. That combined with my independent study experience made me really appreciate what hard work is and how rewarding it can be.

Kenner Fortner BS ’14
One of the biggest principles I learned from the department of forensic science at VCU was a sense of community. By the end of my undergraduate career, I realized just how much one person’s part can affect the greater whole. The forensic department taught me how important a working environment is and just how fun that environment can be when everyone really cares. It was through different projects that I was able to explore not only my own leadership but also develop a genuine passion for what I was there for. Post-graduation, I feel like I’ve left a more passionate person with a deeper love for forensic science. Today, I consider myself someone who’s equally empowered to set my goals high and make a real difference in the community.
Greetings Alumni, Friends, and Students!

Every semester for the 4.5 years I have served as the Interim Chair for the Department of Forensic Science, I have said, "Wow, I don't know how we'll top that last semester!" Yet, somehow we do! We have had more student research, more conference presentations, more community engagement, more faculty collaborations, more alumni engagement, more fun, and more opportunities to "Make It Real" and represent VCU. In this edition, you will see the evidence. The philosophy of Locard's Exchange Principle, that every contact leaves a trace, holds true for both the world of forensic science AND in this Department's relationship building.

In 4.5 years, we have added and renovated 3 research labs, added two new tenure-eligible faculty members and one full time advising faculty, and established a new scholarship. We have acquired about $750,000 in new equipment and instrumentation and another $1 million dollars' worth in donated goods. We have fortified relationships with established collaborators and nurtured new ones. We have been able to celebrate more than 95% placement of our graduate students into forensic science positions within 9 months of graduation, and about 50% our undergrads (that we've heard from!!) are moving on to graduate and professional school programs. We have helped elderly community members during "The Big Event". Chelsea has maintained a high GPA during both her undergraduate and graduate years. She has been named as a lead author on 2 papers, one of which is in press and the other will be coming this spring. These papers have been widely received and have gained national media attention.

So, let's take a moment to celebrate!! And, a moment is all I'm going to give you right now, because we have several major new announcements!! They will be with regards to the new Chair, more new space, and another new scholarship!! So, stay tuned for those that will be coming on Facebook, Twitter, and our blog...and, of course, the next newsletter!! Go Rams!!

Departmental Awards

Dr. Paul B. Ferrara Scholarship in Forensic Science is awarded to a second year graduate student based on academic achievement, significant research or service contributions to the field of forensic science and leadership experience or potential. The 2013-2014 recipient is Deborah Clay

As a graduate student at VCU, Deborah has had the opportunity to immerse herself in the field of forensic science, and more specifically forensic toxicology. Under the mentorship of a distinguished forensic toxicologist, Dr. Alphonse Poklis, and his colleagues she has had the opportunity to make her own contributions to the field through research of a new class of hallucinogenic designer drugs. Due to an influx of overdoses in the Richmond area as well as nationwide from 25-NBOMe use, the team was interested in developing a technique to detect these drugs in human biological samples. The goal of Deborah’s project was to develop a method to detect nine different compounds of the 25-NBOMe class of designer drugs in urine. It is crucial to stay in line with or ahead of the ever evolving designer drug market, so the ability to detect these drugs in human biological samples is imperative. In October, the DEA released a Federal Register to temporarily schedule three of the 25- NBOMes due to the risk of public health and pattern of abuse associated with the drugs. These three designer drugs are included in the developed assay, thus a method to detect and quantify these compounds already exists just as forensic scientists are acquiring the need for it. In addition to the contributions Deborah made with this project, she was also involved in a study that may prove to be forensically important in the future if ZCZ-011 is developed into a pharmaceutical preparation or is clandestinely manufactured like many other research chemicals and becomes hazardous to public health.

Emily R. Murphy Scholarship is awarded to a first year graduate student based on academic achievement, recent university and/or community service and leadership experience or potential. The 2014 recipient is Chelsea Calloway

By demonstrating her leadership, community service and academic skills, Chelsea was chosen as the recipient of the Emily R. Murphy scholarship. She serves as an instructor in Biology Department and goes above and beyond to ensure that all of her students work effectively toward a common goal. While attending Virginia Tech, she participated in fund raising for the March of Dimes and helped elderly community members during "The Big Event". Chelsea has maintained a high GPA during both her undergraduate and graduate studies. She plans to continue her contributions to both forensic science and the community by working in an urban location where she can help reduce the backlog of DNA cases and encourage the involvement of African Americans into the field of Forensic Biology.

Chair’s Corner Michelle Peace

Greetings Alumni, Friends, and Students!

Every semester for the 4.5 years I have served as the Interim Chair for the Department of Forensic Science, I have said, "Wow, I don't know how we'll top that last semester!" Yet, somehow we do! We have had more student research, more conference presentations, more community engagement, more faculty collaborations, more alumni engagement, more fun, and more opportunities to "Make It Real" and represent VCU. In this edition, you will see the evidence. The philosophy of Locard's Exchange Principle, that every contact leaves a trace, holds true for both the world of forensic science AND in this Department's relationship building.

In 4.5 years, we have added and renovated 3 research labs, added two new tenure-eligible faculty members and one full time advising faculty, and established a new scholarship. We have acquired about $750,000 in new equipment and instrumentation and another $1 million dollars' worth in donated goods. We have fortified relationships with established collaborators and nurtured new ones. We have been able to celebrate more than 95% placement of our graduate students into forensic science positions within 9 months of graduation, and about 50% our undergrads (that we've heard from!!) are moving on to graduate and professional schools and getting jobs in labs (forensic science and other). And, we dressed up like "Breaking Bad" and rolled a 50 gallon barrel down Broad Street during the 2nd Annual Homecoming Parade and had a sold out room for the annual Forensic Science Student Club Fundraiser, the Murder Mystery Dinner Theater.

So, let's take a moment to celebrate!! And, a moment is all I'm going to give you right now, because we have several major new announcements!! They will be with regards to the new Chair, more new space, and another new scholarship!! So, stay tuned for those that will be coming on Facebook, Twitter, and our blog...and, of course, the next newsletter!! Go Rams!!
Undergraduate Spotlight Toni Harris

Toni is a senior, working toward graduating with a double major in Forensic Science and Criminal Justice with concentrations in Physical Evidence and Forensic Crime Scene Investigation as well as a minor in Chemistry. Her goal is to work her way through the police department to become a Crime Scene Investigator and ultimately to have a career in the federal system. To help attain this goal, she has an internship with Richmond City’s Summer Basic Jailor Academy.

As part of the 71st class at the academy, Toni spends eight hours per day, Monday through Friday, with the eleven other VCU students who are her classmates this summer. The academy consists of physical training, lectures and discussion of topics such as stress management, ethics, interpersonal communication skills, rules and regulations and civil and criminal law, and code of Virginia as well as actual time in the Richmond City Jail to practice the skills she is learning. Toni has had the opportunity to learn defensive tactics as well as baton training at the Richmond City Police Department training facility. This will help her gain and maintain control of the jail residents following the guidelines of the use of force continuum. After several more weeks which will include driving and firearms training, Toni will graduate from the academy on July 24 with a certification from the Virginia Department of Criminal Justice Services. Upon graduation Toni will have the opportunity of possible part time employment in Richmond City Justice Center under the leadership of Sheriff C.T. Woody, Jr. as a Deputy Sheriff. Congratulations to Toni on continuing to work toward her goal!

Graduate Spotlight Cherrelle Duggar & Kelsey Winters

The Department of Forensic Science collaborates with forensic science practitioners from more than 65 agencies world-wide for the advancement of forensic science through basic and applied research. Below are two graduate students building strong relationships and advancing the community.

Cherrelle Duggar

I am currently working on a research project with the Toxicology unit of the Baltimore Office of the Chief Medical Examiner in Baltimore, Maryland. Lead toxicologist, Dr. Rebecca Jufier-Phipps, and her team of assistant toxicologists are assisting me in developing and validating a new method for the analysis of prescription anti-epileptic drug Lamictal™ (Lamotrigine) using GC-MS. This collaboration is beneficial because I not only gain the research experience and exposure to GC-MS instrumentation, but being here at the Baltimore OCME gives me the opportunity to get a firsthand view of the day to day routines of the forensic toxicologists. I have been able to shadow a few of the assistant toxicologists while performing ELISA assays, headspace analysis for alcohols, SPE opiate assays, acid/base/neutral drug screens, qualitative and quantitative drug assays, handling body fluids and specimens received after autopsies, and I have learned so much more about GC-MS data analysis. I really like how this experience is able to combine what I’ve like to conduct extensive research relevant to this field while also showing me the professional side to this type of career.

HPLC is viewed as the technique of choice for the analysis of Lamotrigine and there isn’t much flexibility in terms of choices of analytical techniques or sample preparation procedures. This project aims to introduce GC-MS as a competitive alternative to HPLC for the analysis of Lamotrigine. Sample preparation currently performed by the OCME for GC-MS analysis of Lamotrigine yields chromatographic and analytical data that would benefit by exploring modifications that will result in a more robust method. The goal is for our new method to provide analytical data that yields better precision, accuracy, peak efficiency, minimized baseline noise, reproducibility of retention times and ion fragmentation, compared to the previously used standard operating procedure for Lamotrigine analysis.

Kelsey Winters

This summer I am conducting my directed research at the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) Forensic Science Laboratory in Maryland under the mentorship of Michelle Evans. My research is focused on determining the fuel type of various brands and types of artificial fire logs, and learning the effects of burning and mold growth on the chemical composition of the fire logs. This work is important because fire logs are suspected of being used to initiate fires in certain arson cases. Also, if samples are not stored properly, the samples may exhibit mold growth which can lead to microbial degradation of the fuel. Therefore, it is important for fire debris analysts to understand the effects that both burning and mold growth have on the analysis of the fire logs.

Working at the ATF has been a great experience. It has given me the chance to see what it is like to be in a real forensic laboratory. I was also given the opportunity to shadow ATF employees in each section of the laboratory, allowing me to learn about many of the different areas of forensic science. This has been helpful in narrowing my focus on specific areas that I find most interesting. Being here has also allowed me to make some great professional connections that will be beneficial in the future. At the end of this internship, the goal is to present our work at forensic conferences, such as the American Academy of Forensic Science Annual Meeting, and to have this research published.
Military Spotlight Lateisha Tiller, MS ’11

I graduated from the VCU Forensic Science Graduate program in May 2011, a year after I had originally planned. See, I first started in Fall ’08 while battling breast cancer. The treatment proved too much for me to handle while trying to TA for the department and attend classes. The wonderful faculty, told me to go home, get better, and my place and my scholarship would be waiting for me next year. I knew, from that point, that VCU was a family and I made the best decision ever to attend this program.

I came back the following year and picked up right where I had left off. I was a TA for graduate and undergraduate classes for almost every professor in the department. The experience that I learned from that alone put me steps well ahead of my peers. The tools I learned with scheduling and time management, the interaction with the students and professors, the precision and pre-planning needed to setup for lab courses, and management of the other TA’s schedules are all skills that I’m sure prepared me to lead in the workforce.

Two weeks after graduation, I was on my way to Atlanta to start work at the United States Army Criminal Investigation Lab. It was definitely all of the tools provided to me at VCU that allowed me to land a job so quickly after graduation and a great job too. I excelled in the training; my lab skills were already in place because VCU was so hands on. The scientific background, the methodologies, the history, and the workflow presented to me were things I had just spent two years learning and soaking in with Dr. Dawson Cruz and Dr. Seashols. Just nine months after being hired, I was a practicing DNA examiner and was on my way to Afghanistan to identify terrorists on the battlefield. In my first year I was named the Lead DNA Examiner of a team of 5, all of whom had significantly more experience than me. It was the leadership and teaching skills that I had developed while being a TA that I subconsciously displayed to my superiors that made them feel that even though I was the least experienced person I would make the best leader of the team.

VCU not only provides the tools needed to excel but they also give the support, love, and confidence to go out and do so. It’s without a doubt that I can say the VCU forensic science family helped me to become the professional I am today.

Sport Spotlight Sharon Zeller, MS ’15

I have always been a distance runner and I was determined to keep training even while attending grad school. Some of my workouts require me to carve out 3-hour chunks in my day and eat obscene amounts of food. At first I thought I was being irresponsible to continue training at such a high level, but I soon realized that running was one of my few escapes from the stresses of grad school.

Through continuing my running, I was able to connect with other students and faculty who also enjoyed this pursuit. Running quickly gave me a wide range of friends even though I was new to Richmond.

At the Ukrops Monument Avenue 10K, a contingent of FRSC grad students got together to compete in the race. I was so encouraged by the friends around me and ended up competing well that day, reaching a new personal record of 36:35. It was fast enough for me to place 6th in the female division out of thousands of runners, and 1st on a local level. I will of course continue to train, and share my love of running while completing my last year as a Forensic Science graduate student with a bang!
Alumni Spotlight  Rachel Bishop Fielden, M.D. BS ’10

At the age of 13, I already knew I wanted to become a forensic pathologist. Four years ago, I took a big step closer to that goal when I graduated from Virginia Commonwealth University with my Bachelor of Science in Forensic Science. A few short months later, I began studying to become a doctor at the VCU School of Medicine. At that time, I did not realize the extent to which my undergraduate years at VCU would benefit me during medical school and beyond.

During my time in the Department of Forensic Science, I was exposed to topics that I will continue to see throughout my professional career, such as testifying in court (a topic never even discussed in medical school). The wide variety of classes, ranging from crime scene investigation to criminal law to DNA analysis, allowed me the opportunity to understand all the facets of forensic science and have a better appreciation for the field as a whole. Instead of merely memorizing the theories of biology and chemistry, I was given the opportunity to get my hands dirty and work with real-life applications of science. After all, there’s nothing quite like being able to say I analyzed my own DNA in college.

It did not take me long to begin to see how my forensic science training would help me in medical school. First of all, I had already been desensitized to gore and blood—after all, it’s hard to be bothered by someone else’s blood when you’ve studied your own. My time in the department also gave me a leg up when it came to documentation. I had already learned how to take detailed notes of my observations and how to turn those notes into efficient reports, skills I first learned in crime scene classes and serology labs—scratching out mistakes instead of erasing them or covering them up was already second nature.

Perhaps the best benefit of all came this past winter, during the residency application process. My degree in Forensic Science was brought up at several of my interviews at various programs. Many of the physicians interviewing me had never even heard of degrees in forensic science and were amazed to hear about the courses I had taken. I truly believe that my degree as well as the anecdotes I could share about my classes helped differentiate me from other applicants.

Most importantly, the department’s faculty, courses, and student club fostered my love for VCU. I am incredibly proud to continue my tenure as a Ram as I start my pathology residency this summer at the VCU Medical Center. Of all the laboratories and offices I’ll work in over the next four years, I look forward to rotating through the morgue downtown and working with the medical examiners, not as the student I was in Dr. Whaley’s class all those years ago, but as a future colleague. No matter what rotation I am on, I will proudly represent the VCU Department of Forensic Science.

Forensic Science Student Club

After an exciting year of scavenger hunts, morgue tours, shooting range trips, and the club favorite, Murder Mystery Dinner Theater, the Forensic Science Student Club will be back in the fall for even more activities! Plan on seeing more social events, especially in the fall, to welcome back old and new members to the club. The FSSC would also like to welcome new treasurer Mariah Khan, who joined the board spring of 2014 as well as new undergraduate board member Madison Hytinen and secretary Christen Green, who were elected into position at the end of the spring semester and will start their new positions in the fall. Stay tuned on blackboard for updates and information about upcoming events! Any questions can be directed towards any member of the board.

President: Haley Mulder (mulderha@vcu.edu)
Vice President: Leigh Incheck (inchecklm@vcu.edu)
Secretary: Christen Green (greencv@vcu.edu)
Treasurer: Mariah Khan (khammn@vcu.edu)

Undergraduate Board Member: Madison Hytinen (hytinenme@vcu.edu)
Undergraduate Board Member: Bianca Spaulding (spauldingbi@vcu.edu)
Undergraduate Board Member: Reyne Spychalski (spychalkirm@vcu.edu)
Graduate Board Member: Lori McLean-May (mcleanll@vcu.edu)

Visit us at facebook
Undergraduates in the Labs

For all of our graduate students, Directed Research is required. As our department has grown, we now have research opportunities increasingly available to our undergraduate students. They are learning to use the instruments in a setting outside of the teaching labs by performing research. Dr. Dawson Cruz had two undergraduates working in her lab during the spring semester. Darianne Cloudy worked on obtaining “contact” or “touch” DNA from tiger paw prints from Bengal tigers. Aryn McClain researched the viability of DNA left in latent fingerprints that have been collected on paper backing cards and archived from old cases. Additional research in the Molecular Biology research lab involved DNA Collection Methods and microRNA extraction. Ava Hendricks and Tiffany Layne were mentored by Dr. Seashols as they explored these areas. Dr. Ehrhardt’s lab was once again filled with student researchers during the spring. Along with his graduate students, Kali Abramathie, Eduardo Bustamante, Ashley Coleman, Ashley Cooley, Ahmad Fakhoury, Sarah Ingram, Donald Jessup and Travis Spain explored soil cultures of Bacillus anthracis, hydrophobic properties of Bacillus cereus, and fluorescently-labeled antibodies as potential means to differentiate individual contributors in epithelial cell mixtures. Our newest lab was up and running in the spring semester under the leadership of Dr. Singh. Akia Talbert performed a survey of blow flies in the Richmond area and Briana Taylor explored Optimization of Ion-Torrent Genetic Analyzer for Amplicon Sequencing. Although the DART (Direct Analysis in Real Time) room is not technically in a Forensic Science lab, the DART is an instrument that belongs to the Forensic Science department. Kylie Alford worked with Dr. Peace to research bath salts using the DART. Many of these students are preparing manuscript submissions to a variety of journals.

Undergraduate research has slowed during the summer but they are still learning in the Forensic Biology and Trace Chemistry Research Lab and the Entomology Research Lab. Travis Spain, Ashley Cooley, Sarah Ingram and Eduardo Bustamante are continuing research on environmentally-derived pathogens and the immunological properties of epithelial cell mixtures. Along with graduate students, Brandon Coffrin, Briana Taylor and Cynthia Maria Rodriguez (NIH Bridges to the Baccalaureate student) are learning molecular techniques in Singh laboratory.

Bugs in Forensic Science

We currently have two blowfly colonies; one Calliphora vicina and the other, Lucilia sericata; both of which are native to Richmond, Virginia. We are growing these colonies because the blowfly lifecycle is very predictable; so if maggots are found on a dead body then forensic entomologists can use the larvae present and determine how long the body has been dead – the postmortem interval.

Maintaining these colonies, flies and maggots, is a daily task, but in order to do research it is a necessity. The past couple months of fly colony maintenance has been character building. It has instilled patience, understanding, tolerance, and perseverance in Dr. Singh as he tries to teach us how to get flies to lay eggs so we can nurture our maggots into healthy adults.

Though flies seem like simple creatures, the complexity of the blowfly anatomy cannot be appreciated until viewed with a stereomicroscope. Here their alien-like mouthpieces, metallic bodies, and tens and tens of bristles no longer seem to belong to a creepy blowfly, but to a fascinating creature whose beauty, for lack of a better word, becomes visible. These morphological features can then be used to identify the species of fly.

Unknown to us, before entering Dr. Singh’s lab, is that maggots do not begin to digest their host tissue immediately, so they store it in their crops. One of the research topics in the lab is to extract that DNA and get a human STR profile. This is definitely easier said than done since maggots need to be dissected and crops need to be removed. Though difficult, the research is important because if there is a body that is moved to a location other than the place of death, maggots, with the DNA still in their crop, could be key in determining who the person was.

Future research will involve drugging pigs with oxycodone and determining the effect of the drug on the developmental time of a particular species of fly. If oxycodone affects the growth, by either delaying or enhancing the growth of the larvae, the postmortem interval determined would be incorrect and could possibly affect the police investigation. Along with larvae, microbes on a decomposing body can be used to estimate postmortem interval; this will also be investigated with the pig experiment.

Overall, the research we’re doing is exciting and cutting edge and despite the dreams, the maggots (our babies!) are starting to look a little cute.

Dr. Chris Ehrhardt’s Grants

In January 2014 we started an NJJ funded project titled, “DNA Profiling of Complex Biological Mixtures using HLA Antibody Probes and Fluorescence Activated Cell Sorting”. Our goal is to develop a new technique whereby cells from different contributors in a forensic mixture can be physically separated based on their immunocellular properties. Once individual cell populations are separated, single-source DNA profiles may be obtained representing each contributor precluding the need for complex interpretation procedures which may increase the probative value of many times of mixture evidence commonly encountered in caseworking laboratories.

This project represents an exciting multidisciplinary collaboration between the Department of Forensic Science and the VCU-Medical Campus, specifically the Flow Cytometry and the Microscopy Core Facilities. There are five students contributing to the project who have the opportunity to learn a variety of analytical techniques including high throughput cell sorting, confocal microscopy, and transmission electron microscopy. Each student is currently preparing poster and oral presentations from this work for upcoming forensic science conferences (Promega, 2014, AAFS, 2015).

This summer, my lab has also started a VCU-funded project titled, “Forensic Signatures of Environmental Pathogens”. One of the outstanding problems facing the biodefense and forensic science communities is distinguishing bacteria that naturally occur in the environment from pathogens that have been illicitly produced in the laboratory to commit an act of bioterrorism. To address this issue we are investigating the chemical properties of bacterial pathogens that have been cultured in soil matrices as well as organisms that have been grown in conventional laboratory medium formulations. Our goal is to identify a series of chemical markers that are unique to each growth environment that may constitute a forensic signature for pathogen source. Students working on this project have had the opportunity to learn pathogen culturing techniques as well as high resolution microscopic techniques such as Atomic Force Microscopy and Scanning Electron Microscopy.
American Academy of Forensic Science Presentations

Once again, VCU brought a large contingent to the AAFS Conference where many presented as well as met alumni and friends of the department at our department reception. Below is a list of our presentations.

“Forensic Microbiology: Where Do We Begin?” Baneshwar Singh

“An Analysis of microRNA Variation and Stability in Forensically Relevant Body Fluids.” Samantha Fleming, Ariana Albomoz, Donald Jessup, Elizabeth A Lapatovich, Christopher Ehrhardt

“Optimized Methods for Isolation of microRNAs From Forensically Relevant Body Fluids.” Samantha Fleming, Ariana Albomoz, Christina Hayes, Sarah Seashols

“Forensic Entomology and Biology” Baneshwar Singh—Moderator

“Toward a Forensic Microdevice on a Rotation-Driven Platform and Integration of a ‘Pinwheel’ Quantification Module.” Jordan Cox, Tracey Dawson Cruz, Teresa Sikes

“Just How Filthy Are Maggots? Bacteria Associated With the Blow Fly Sister Species Lucilia Sericata and Lucilia cuprina (Diptera: Calliphoridae).” Baneshwar Singh

“An Initial Assessment of the Structure and Function of the Postmortem Human Microbiome: Forensic Applications.” Baneshwar Singh

“Utility of Bacteria Associated with Human Cadavers in Estimation of Postmortem Interval (PMI).” Baneshwar Singh

“Swine as a Model for Decomposition: A Comparison of Postmortem Microbial Communities.” Baneshwar Singh

“Chemical Profiling of Trichloroisocyanuric Acid (TCCA) Based Explosives for the Forensic Attribution of Precursor Materials.” Alicia Zimmermann, Christopher Ehrhardt

“Raman Spectroscopy as a Tool to Measure Laboratory Production Processes of Bacillus Cereus Spores.” Jessica Goss

“Chemical Profiling of Forensically Relevant Bacterial Threat Agents with Direct Analysis in Real Time-Mass Spectrometry (DART-MS) and Fatty Acid Methyl Ester (FAME) Analysis.” Mikaela Romanelli, Elizabeth Lapatovich, Cristina Stanciu, Kristin Asal, Donald Jessup, Christopher Ehrhardt

“Single Cell Characterization of Bacillus Spores: Novel Forensic Signatures for Biothreat Agents.” Jessica Goss*, Cristina Stanciu, Christopher Ehrhardt

“Analysis of Thirteen Designer Drugs Using GCMS, UV-Vis, and FTIR.” Amanda Mohs*
Beyond the Classroom

Intramural Sports

During the daytime, graduate students in the VCU Forensic Science Department can often be found in the lab working on their directed research projects or studying in the collaboration space. But when the sun sets the lab coats come off and we take off to the Cary Street Gym and put on our game faces. Twenty-two first and second year graduate students were active participants in the VCU Recreational Sports intramural sports league. This year the team IVNVI—“Four-N-Six”—played in seven different leagues making this our most active year yet.

IVNVI began the year strong with flag football. The first year students did not know what they were getting themselves into when they were immediately welcomed into the program with a tough practice led by Steve Raso and Jordan Cox. Despite all of the football drills, they stuck with us and we ended up having a fun season getting to know the new graduate class. With the support of the faculty, staff, and other students as well as pep talks from Coach Olivia, IVNVI was able to make it to the playoffs.

With the success of the first season on our mind IVNVI jumped right into street hockey. As the defending champions, IVNVI worked hard to stay on top and uphold their title. The season was filled with overtime shoot-outs but IVNVI was not going to let anything tear them away from that victory cup. With the assistance of our secret weapon, Dr. Miller, IVNVI was able to regain their place as the VCU street hockey champions!

IVNVI continued playing in multiple leagues throughout the winter season, including women’s volleyball, kickball, basketball, a flag football tournament, and finishing up the year strong with dodgeball. The team was led by Matt Goldstein. Despite some tough battles and a down to the wire final game, IVNVI was able to pull out the win and add another championship season to the list and t-shirt to their closet—“Victory Is Mine!”

After another wildly successful year IVNVI is eager for their new recruits (read: incoming first year graduate students) to arrive this August and to suit up for their first game of the 2014-2015 season. The recent graduating class is going to miss playing with this team but they’ll be cheering along from afar. GO IVNVI!

On May 5, the first annual VCU Forensic Science vs. Chemistry bake-off was held! Two celebrity judges, Dr. James Mays, Associate Dean for Undergraduate Academic Affairs, and Mr. Chris “Pav” Crowley, VCU Super Fan and Associate Professor of Forensic Rowdiology, decided the winners in four categories: cakes/pies, bars, cookies and muffin tin creations. The Forensic Science and Chemistry departments were fighting for the Golden Spatula, a special trophy created for the bake-off by Ms. Lyndsay Durham, Undergraduate Advisor and Instructor. Overall, the Forensic Science Department was victorious! With over 25 entries from undergraduates, graduate students and faculty members, the forensic science department won three out of four of the judged categories. Amanda Mohs, a first year graduate student, won the judges’ overall best baked good with her Strawberry Pie while Liz Lapatovich won the coveted People’s Choice Award with her state fair award winning Key Lime Pie.

All spectators made a donation to the Class of 2014 Fund in order to sample the delicious treats baked. Overall, the bake-off was hugely successful and Forensic Science has every intention of repeating as victors in 2015. Thank you to all who baked, sampled, and supported the event!
This summer, Department Advisor Lyndsay Durham was accepted to participate in the Online Course Development Initiative (OCDI) through VCU’s Center for Teaching Excellence. Ms. Durham also presented at a National Academic Advising Association (NACADA) Conference in Ramapo, NJ.

At the NACADA Conference, Ms. Durham talked about how advising in Forensic Science involves course selection and sequencing, but that it’s also critical for students to interact with faculty members and develop mentoring relationships as they begin to think about their career and future plans. She talked about the evolution of advising in the department from paper forms and record keeping to the DegreeWorks, the Blackboard Organization, the new Advising Page and ImageNow. Did you know she has a personal blog where she talks about all this stuff? It’s at rampages.us/durhamls.

This fall, you’ll notice that VCU Forensic Science Advising looks a little different... You’ll still have your faculty advisor and will come to us for advising (yes - you need to see your advisor!), but instead of the Organization on Blackboard, visit rampages.us/VCU4n6Advise and you’ll see what Ms. Durham was up to at OCDI. All the information you need is online - from forms and information about registration to a list of what those Advanced Credit Electives are, it’s all available at rampages.us/VCU4n6Advise.

Advising

Josh Kruger is the supervisor of the Trace Evidence Section at the Virginia Department of Forensic Science (DFS), Central Laboratory in Richmond, VA. Josh has been with DFS for almost thirteen years and before that he was with the South African Police Force Forensic Science Laboratory for 12 years. During the mid ’90s Josh visited the McCrone Research Institute in Chicago, IL taking a polarized light microscopy (PLM) class from Dr. Walter McCrone as well as a Photomicrography class from John Delly. This experience ignited an intense interest in microscopy in Josh’s life. During the next few years Josh’s interest in microscopes and microscopy grew into a passion that has shaped his career in a big way.

In 2001 Josh and his family moved to the USA after he got a job offer from DFS. It was not long before Josh got connected with VCU’s Forensic Science Department and started teaching as an adjunct instructor. For a few years Josh taught one or two microscopy lectures each year as part of the Forensic Science Graduate program. He also taught in the undergrad program, teaching classes in paint analysis, hair analysis and glass analysis. In 2006 Josh was asked to start teaching a three credit Forensic Microscopy (FRSC 673) and a two credit Forensic Microscopy Lab (FRSZ 673L) class. He has been teaching these two classes ever since. Josh loves microscopy and he loves teaching about microscopy.

“One of the most exciting things about teaching as an adjunct instructor” Josh says, “Is when a former student becomes a colleague”. “I have had this privilege a few times, and it thrills me.”

What is the most likely thing you will hear Josh say if you should ever stick your head into one of his lectures? It will probably be his favorite saying (or “truth” according to him) ... “Microscopy is FUN!”

Bobby Bailey has over 30 years in Fire Service and is currently the Chief of the Virginia Fire Marshal Academy. He is a goal-oriented individual with strong leadership capabilities and has the ability to direct complex projects from concept to fully operational status. He is using these strengths to co-teach the Graduate Forensic Fire Investigation class

Jacob Easter is a graduate of the VCU forensic science department with both his BS & MS degrees. He is currently a Forensic Scientist II in the Controlled Substance Section at the Virginia Department of Forensic Science. Jake co-taught for the first time in the spring, teaching Advanced Drug Analysis to our graduate students.

Elizabeth Hanes taught the undergraduate Forensic Evidence, Law and Criminal Procedures course in the spring. She comes to VCU while working as an Assistant Federal Public Defender in the Eastern District of Virginia. Elizabeth earned her JD from the University of Richmond, her MA in International Economics from Johns Hopkins University and her BA in Economics and International Studies from the University of Richmond. In addition to teaching at VCU, Elizabeth teaches a course at the University of Richmond School of Law.
Be watching for the next newsletter for some exciting news in the Department. We will be making announcements on Facebook and Twitter—and will have full stories in Focus on Forensics.

We'll also have stories on “Forensic Rowdiology” and how YOU can get involved.