INNOVATE
EDUCATE
ENGAGE
DEVELOP
COMMUNICATE

IUPUI
SCHOOL OF SCIENCE
Forensic & Investigative Sciences Program
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From the Director...

As the Spring 2018 semester ends, I am happy to report that the Forensic and Investigative Sciences (FIS) Program continues to excel at educating the next generation of forensic scientists, carrying out innovative research in forensic science and developing our faculty and staff in their professional careers.

FIS is excited to announce our MS Thesis program has been awarded full-accreditation by Forensic Education Programs Accrediting Commission (FEPAC). This follows the recommendations of our external review in Fall 2016 as an essential next step in the growth of our program. Our accreditation lasts five years. We hope this will also increase our visibility and recruitment efforts at the graduate level.

Typically, our annual reports do not have a specific theme, but this year we will place an emphasis on the role FIS plays within the school and how FIS contributes to the strategic plan of the IUPUI School of Science.

The school has identified the following strategic objectives:

**INNOVATE**: We will strengthen our position as leaders in life and health sciences, in computational and mathematical approaches and in STEM education and service. We will be internationally recognized leaders in generating new scientific and mathematical knowledge, including in basic research, applied research, teaching and service.

**EDUCATE**: We will enhance our position as leaders in undergraduate STEM education where students gain real-world experience as scientists and leaders. Our undergraduate and graduate programs will be internationally recognized for students who have a deep appreciation of their areas of study, substantially expand the School’s research abilities, are optimally prepared to shape its future and have the needed expertise for our state and nation.

**ENGAGE**: We will provide educational and research programs that best serve our community. We will facilitate relationships and beneficial partnerships with members of the community.

**DEVELOP**: We will nurture the development of faculty and staff to ensure the highest quality education experiences for our students and to generate meaningful and impactful research. We will employ the highest quality staff and faculty to ensure that we improve our ability to recruit, educate and retain students, perform the best research, secure funding and operate efficiently.

**COMMUNICATE**: We seek to accurately communicate who we are to the local and broader communities, to increase discourse among ourselves and to disseminate our research and teaching advances. Enhanced communication will support all aspects of the plan objectives by improving understanding and awareness about our research and educational programs; strengthening our ability to recruit the best students, staff and faculty; bolstering our ability to garner collaborators and grant support for our research; and facilitating partnerships in all aspects of our mission.

Throughout the report you will see these areas highlighted in the work we did this year. We are proud to be part of the IUPUI School of Science and the ambitious goals we have set as a science community!
**TEACHING**

I taught FIS 51100 Chemical Analysis of Alcohol and Drugs in Fall 2017. I have taught this class ever since arriving at IUPUI and it remains popular amongst chemistry graduate students as well as FIS graduate students.

I also coordinated our first ever seminar program. We were pleased to have several external speakers join us, including:

- **Kevin Shanks (AXIS Forensic Toxicology)** Not Your Father’s Heroin: Forensic Toxicology in the Age of Fentanyl and Fentalogs
- **Carl Sobieralski (Indiana State Police)** Probabilistic Genotyping with a Fully Continuous Model
- **David Zauner (retired from Indianapolis Marion County Forensic Services Agency)** Certainty or Probability: Expressing Friction Ridge Comparison Conclusions
- **Gregory Smith (Indianapolis Museum of Art)** Art Forgeries Revealed Through Chemistry

This Spring, I taught FIS 59700 Laboratory Project Design in a new, in-person format. This required class for MS (non-thesis) FIS students provides them the opportunity to design a research project in forensic science, write a full research proposal on that topic and defend their ideas in an oral presentation. I was very impressed with the creativity and critical thinking exhibited by the students. We (FIS) plan to keep this course as an in-person experience moving forward.

I also taught FIS 40400 Forensic Chemistry II this spring, which is a favorite of mine as I have the chance to teach our graduating seniors. They work hard in our in-depth discussion of various forms of trace evidence together with a lab section where they must complete a mock case and mock trial.

Finally, I was honored to receive a Trustee’s Teaching Award this year after being nominated by the Department of Chemistry and Chemical Biology. This award is given to faculty who display excellence in teaching, particularly at the undergraduate level.

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**Goodpaster Group**: (back row): Ashur Rael, John Goodpaster, Logan Hickey, Zack Roberson, (front row) Jackie Ruchti, Courtney Cruse, Kymeri Davis, Mikeala Greer, Christina Martin.
My research group is currently working on two main projects:

**Analysis of Controlled Substances:** We began work on a new project in 2015 that is concerned with the analysis of drugs of abuse. We developed an automated method for extracting and separating these compounds from mixtures using a robotic autosampler and gas chromatography/mass spectrometry. Logan Hickey has now finished his MS based upon this work. Kymeri Davis will be continuing this project by developing ways to analyze drug exhibits with essentially no sample preparation. This will include dry powders such as methamphetamine and liquid samples that are normally impossible to analyze via GC (e.g., such as alcoholic beverages and human biofluids).

**TV-SPME extracted ion chromatogram of GHB-TMS$_2$ (MW 248 g/mol) and GBL (m/g 86 g/mol) in a 2.4 μL sample of rum spiked with GHB.**
The next phase of this project is to explore a novel type of instrumentation called gas chromatography/vacuum UV spectroscopy. It holds great promise for discriminating between the multitudes of synthetic drugs that now exist. This work will be a major part of the PhD dissertation for Zack Roberson.

Analysis of Explosives: We are also interested in exploring how VUV can benefit the field of explosives analysis. This will be particularly important in the analysis of explosives such as ethylene glycol dinitrate (EGDN), nitroglycerin (NG) and pentaerythritol tetranitrate (PETN), which are effectively indistinguishable by all other analytical methods. This work will be completed by Courtney Cruse (Chemistry PhD). Jackie Ruchti (FIS MS) will be working on a project concerned with detecting explosives as a part of the routine DNA extraction process. This will allow evidence to be screened for both DNA and explosives residue simultaneously.

In collaboration with Dr. Victoria Schmalhofer from the Center for Earth and Environmental Science, the Goodpaster group explored volatile compounds emitted by the yellow sac spider. We then captured a wolf spider in the lab and repeated the process.
What’s Happening with Nick Manicke

The past year was an exciting one in terms of both teaching and research. I welcomed two new full-time graduate students into my lab: Sarah Tockstein, an FIS MS Student, and Charley Sexton, a chemistry PhD student. They joined my existing cohort of three other chemistry PhD students and one post-doctoral researcher and three undergraduate researchers. I was very proud of Rachel Potter and Josiah McKenna, two FIS MS students under my supervision who successfully defended their theses last year. We’ve had a productive year in the laboratory and I was pleased to publish several papers, including a paper in the Journal of Analytical Toxicology on a new rapid drug screening method. I also taught FIS 40100 Forensic Chemistry I in the fall and FIS 51200 Forensic Chemistry II for graduate students in the spring.

Manicke Research Group. Left to right: Rachel Potter (graduated with MSFS), Veronica Carvalho (visiting PhD student from Brazil), Chengsen Zhang (post-doc, now a chemistry with Firestone Building Products in Fishers), Sarah Tockstein (MSFS student), Brandon Bills (chemistry PhD student), Greta Jakstonyte Ren (chemistry PhD), Bill Wichert (post-doc, holding my dog Molly), Christine Skaggs (Chemistry PhD student), me and Charley Sexton (chemistry PhD student).
**Research**

My research program focuses on bioanalytical and forensic chemistry, with a particular focus on the development of novel mass spectrometry related technologies.

Several students in the group are developing new techniques for forensic and clinical toxicology. In one project, we are developing a rapid mass spectrometry-based method to screen for over 150 illicit drugs with an eye toward postmortem forensic toxicology. This work has formed the basis for two MSFS theses and peer-reviewed publications in Analytical Methods and Journal of Analytical Toxicology with IUPUI forensic science masters students as the first authors.

In another project, we are working with the medical director of the Indiana Poison Control Center to develop methods to screen for emerging designer drugs such as synthetic cannabinoids and bath salts. This project has been widely reported on in the local media and was also featured by ACS Press at the spring 2018 national ACS meeting in New Orleans.

We are also collaborating with a Department of Defense (DOD) laboratory to develop better methods to detect chemical and biological warfare agents. Together, we published an article in the Analyst last year, and it ended up being the most accessed research article of 2017 in the Analyst.

**Service**

I served on several committees for the Department of Chemistry and Chemical Biology, including the technical facilities committee, the graduate student recruitment committee and the Executive Committee (an elected appointment). I also did outreach events to some high school STEM clubs at Lawrence Central and Lawrence North. I talked to the students about forensic science, and we did a fingerprinting activity in which students used powder and ninhydrin chemistry to enhance latent prints.
Teaching

This past year I taught FIS 40100/40101 Forensic Chemistry I in the spring and FIS 51200/51201 Forensic Chemistry II in the spring. FIS 40100 is the first of our two-semester forensic chemistry sequence required for our forensic chemistry undergraduate students. It dealt with the important chemistries and instrumental techniques for analyzing drugs and forensic toxicology. I also taught FIS 51200, which is our graduate level course on instrumental analysis of trace evidence. The course is cross-listed as a graduate course for chemistry students; several graduate students in chemistry enrolled in the course in addition to forensic science majors. I also ran the FIS 51201 lab, which gives our masters students a great chance to work independently on various instruments to analyze trace evidence. Students analyzed gunshot residue using SEM-EDX, performed quantitative analysis of drugs in blood by HPLC-MS/MS, used GC-MS to classify ignitable liquids from fire debris and analyzed fibers using identification FTIR microscopy.

Chemistry and FIS graduate students getting a tour at the Indianapolis Museum of Art (IMA) thanks to Greg Smith, FIS Board of Visitor member and IMA Senior Conservation Scientist
Over the past year, I have been involved with maintaining my teaching responsibilities, working closely with eLearning Designs and giving workshops, seminars and presentations at multiple locations. I continue to teach three courses during each semester, which include Concepts in Forensic Science 1 and 2, Forensic Microscopy at both the undergraduate and graduate level and Windows on Science a first year seminar course, as well as teaching online during both summer sessions. As an instructor, I am continually changing contents within all of my courses and updating assignments. I have been participating in service to the university through a community of practice group and a distance education committee as well as serving the forensic science community as program chair of the general section of AAFS.

Course Development

This past fall, once again I had the most students I have ever had at IUPUI. Just in one course (FIS 20500) I had 292 students registered. This is great for our program, as our credit hours continue to grow. I also was certified as a Quality Matters Reviewer and was a subject matter expert reviewer for a high school forensic science course. I plan to have my online classes go through the QM process in the future.

I continue to use technology in the classroom in FIS 20500. Indiana University agreed to a contract with Top Hat last summer, which is a response system that students use in class to engage in learning. This was an easy transition, as support from Top Hat was great. I also completed General Education Core review of this course during the fall semester. The course passed the review process which means this course will continue to be a general education core course for all students at IUPUI.

Prof. Londino-Smolar is serving the forensic science community as program chair of the general section of the American Academy of Forensic Sciences (AAFS).

The second semester forensic science course continues to be popular also a general education core course and will be reviewed spring 2019. I have been focusing on the design of my online section and enrolled in an Online Bootcamp course this spring through the Center for Teaching and Learning. This has been a great experience and I have learned how to engage students more in an online environment. I also had a graduate student working with me on this development.

My microscopy courses continue to evolve. This year I had a graduate student teaching assistant assigned to the graduate level microscopy course. This has been a great addition to the course and has allowed me to lecture outside of the laboratory. I am also in the process of formally separating the lecture and laboratory portion of both the microscopy courses. This will cause the course numbers to change; however, overall it is best to align these courses the same as the other courses in the program. Our graduate program has also decided to highly recommend the undergraduate microscopy lecture for non-thesis track graduate students. Last fall was the first time this will implemented, and I had 12 graduate students enrolled in the course. I am anxious to see how these students succeed in the graduate microscopy course.
During the fall of 2016, Amy and I developed a freshman seminar course specifically for forensic science majors directly admitted into the FIS program. This past fall we (Amy and I) decided to also have a summer bridge for directly admitted FIS students. This cohort of students meets for two weeks, all day before classes start in the fall and then continue to meet through the fall semester. During these two weeks, we had some amazing experiences. We rode the Indy Go bus system, visited the Marion County Courthouse and Forensic Laboratory and visited the Indiana State Museum, just to name a few activities.

**Professional Development**

I developed a workshop, which was accepted, with the president of COFSE and the director of FEPAC on active learning in forensic science education for the 2018 AAFS annual meeting in Seattle. This was a great success. The full day workshop had 80 attendees and included hour long presentations from various speakers sharing their active learning techniques used in specifically forensic science education courses.

This past February I completed my two-year term as the Program Chair of the General Section of the AAFS. This included reviewing all abstracts for orals, posters, workshops and breakfast seminars submitted for the 2018 annual meeting. I also built the schedule for the General Section 2-day program of all oral and poster presentations. I will continue to serve as the program chair through the Baltimore meeting in 2019. I am still serving my three-year term as the treasurer for the Council of Forensic Science Educators (COFSE).

I have continued to chair the IFC Distance Education Committee and Community of Practice on Academic Integrity. These roles gave me the opportunity to work with eLearning Designs (eDS), a group within UITS, to develop a Canvas site for students to learn about the importance of academic integrity at IUPUI. This has been a great success and since the launch of the site in November 2018 over 600 students have joined the site and three other IU groups are adapting the site for their campus or program. I have also been disseminating our work to multiple groups international, nationally and locally. I had the opportunity to present and attend at two international conference on academic integrity in Sydney, Australia and Richmond, Virginia. I have also been asked to speak on this topic at a variety of groups on campus, including The Big Wahooie (Gateway Retreat), Community of Practice seminar, Faculty Council and School of Science Chair’s Council. I will continue to do this work which now is focusing on a faculty and teaching-assistant based module.
Community Involvement

I continue to participate in outreach through our community. I have participated in multiple science nights at local elementary schools and large-scale events such as National Chemistry Week and Conner Prairie STEM event.

Future Position

As we start the new academic year, I will be starting a new position as a faculty fellow with eLearning Designs and UITS. I will be consulting with instructional designers from a faculty perspective on online learning tools, course development and technology used in education. I am very excited about this opportunity in my career. I will continue to teach at 50% for the FIS program as well as work with UITS.

Dr. John Goodpaster and I paddling during the annual IUPUI Regatta race. While we did not win, we all had a great time!

I am so proud to continue the legacy established by my friend and mentor Jay Siegel of teaching FIS 20500 Forensic Science Concepts I. This is Alexis Bloom along with me and Maggie Wilke, Jay’s widow, during the award ceremony where we awarded the first Jay A. Siegel Award to the top FIS 20500 student, Alexis.
Picard Lab Update

The Picard Lab has had a successful year! First, I completed the promotion and tenure process and have been awarded a promotion to Associate Professor with tenure! Secondly, I was appointed the Associate Director of the Forensic & Investigative Sciences Program. My main job duties are to run the Master’s Program – everything from communicating with existing students and advising them on coursework to recruitment of new students.

The lab has graduated its first PhD student, Gina Dembinski, who is off to bigger and better things. Currently, the lab is made up of four graduate students, two Biology PhD students, Anne Andere and Charity Owings and two Masters students, Sarah Lewis, a Forensic Science MS student and Ioanna Koltsidou, a Biology MS student. Sarah is due to graduate this August, while the remaining three next year. The lab will be welcoming a new Forensic Science MS student in the fall, Laura Doll.

Research

Research continues to gain excitement in the lab. The lab has published 6 manuscripts ranging from the determination of maximum number of alleles in theoretical mixtures to the detection of feces in fly stomachs (a collaboration with Nick Manicke!). Small grants have been funded that includes some genomic DNA sequencing of some South African maggots, to some work on the population genetics of insects used as food and feed. This included hosting an international meeting and symposium for these important discussions. Most recently, the Picard Lab (along with Manicke, Gilhooly and Banerjee) were funded by an Indiana University Collaborative Research Grant, which will allow for the collection of blow flies in Yellowstone National Park and the Smokey Mountains National Park, all in the name of generating a model of vertebrate animal diversity and abundance. There could be worse places to do field work!

Teaching

Due to the birth of my son Jeremy, teaching was limited to guest lectures as needed this past year. Although, I am embarking on new teaching assignments starting the 2018 academic year. I will be co-teaching FIS 50500 Current Issues in Forensic Science with John Goodpaster, teaching FIS 52100 Forensic Biology and then teaching FIS 59700 Design of a Research Project in Spring 2019. Although I will not be out in front of the undergraduate students anymore, I hope to continue to guest lecture.

Congratulations to Dr. Christine Picard for being awarded tenure as an associate professor!
My….how time flies in the Walsh Lab!

Students

It has been a good year. I graduated my first FIS student, Wesli Stubbs, in June 2017. Wesli is now employed as a forensic scientist in Texas which is great! I also graduated another MS Biology student - Krystal Breslin in Dec 2017. Krystal now works for the government, which is very exciting as its good to have someone in there that understands our research and the benefits of using it for current casework. Krystal also won the Biology Outstanding Research Award for her thesis and has several co-author publications from her work. Even though she has left the lab now, she is going to be first author on one last paper for work from her thesis that will hopefully come out this year.

I convinced two more students who were doing capstone in my lab to stay on after their bachelor's degrees (Noah Herrick Bio MS, Bailey Wills, FIS MS). Noah recently was awarded an internal Research Support Funds Grant (RSFG) for $35,000 on his work with facial tissue thickness to help with facial morphology prediction and a federal grant application planned for the end of this year.

My FIS MS Fulbright Scholar Mima Ghemrawi is set to graduate this summer. Mima has been great. She even performed a collection in Lebanon for the database (and perhaps will do another this summer!), went to Washington DC to do a week’s work with our collaborators there – Pete Vallone. That work is expected to be published this year also. She also presented her phenotyping work of a Lebanese population at a conference in Dubai in May where she received excellent feedback. Finally, she will begin a PhD with a future collaborator Dr. Bruce McCord at Florida International University in August.

Stephanie Farmer my other Bio MS student is finishing up her thesis and is due to finish this December. She is exploring an Irish population with surname information for any Viking heritage links to their name. This is an interesting and challenging topic as it focuses on Y-chromosome haplogroups and their origin with a combination of Irish history, both areas that I am still learning quite a bit about. Stephanie shall travel to Poland in 2 weeks to present this work and will meet all the head researchers of this area at this Haploid marker conference. I am hoping that we will receive some good feedback on the results with an aim of publishing it later this year.
Lastly, Ryan my PhD student is finishing up several analyses on pigmentation currently and will travel to Penn State University during the summer to speak with collaborators there (Prof. Shriver) on a large face GWAS they are currently performing. Ryan has generated all the data (imputed to >13 million SNPs) from our individuals (>3k individuals) and this shall be used for a large Meta-Analysis based on smaller modules of the face using principal components analyses. A prelim to this project has recently been published in Nature Genetics this Feb, so we hope to aim for a big impact journal for this work also. Ryan is due to finish next summer so it will be all hands on deck writing up all the great work he has done and getting the publications out!

The lab has also welcomed a junior scientist to the mix as Mack arrived last August. I have yet to take his swab and perform some pigmentation tests and he needs to step up his game and come into work more! Our other baby, the genome:phenome database is growing well, with >3000 individuals collected within Indiana and >1000 outside of Indiana (Brazil, Lebanon, Ireland).

In total, this year the lab had one PhD student, five MS and six undergraduate students from FIS and Biology.

**Research**

The lab has begun many new collaborations within IUPUI, with Computer Science (Prof. Shiaofen Fang), Anthropology (Dr. Jeremy Wilson) and Informatics (Dr. Sarath Janga). Through these new collaborations, each one will involve an external funding application to DOD and National Science Foundation (NSF) respectively. The lab is quite full, with everyone working away on their own projects. For my bioinformatics folks, Ryan is working with collaborators in Penn State University and Australia, for his research on facial morphology and iris coloration. Noah is working with the IU school of Dentistry (Prof. Katherine Kula), Anthropology (Dr. Jeremy Wilson) and Computer Science (Dr. Shiaofen Fang) to understand face tissue thickness. In terms of the wet lab, Mirna is finishing the first draft of her paper 'Exploring the genetics of a Lebanese population', where she has looked at pigmentation markers - model prediction performances for the population, Autosomal and Y STRs and other population genetics measures. To complete her work she will soon generate MtDNA sequencing data. I hope to have this written up before she leaves for grad school in June. Stephanie is finishing her Y-chromosome work on an Irish population and will write this for her thesis and as a paper draft before she finishes at the end of the year. Bailey has generated RNAseq data and with collaboration with Dr. Janga, anal-
yses has been performed which we are in the middle of going through. She has also generated methylated sequencing samples and together this is prelim data for an NSF proposal this summer. She is also finishing up some last items for Krystal with Stephanie, so that eye, hair and skin color assay can now be sequencing rather than a single base extension assay. This will help us move the technology over to the benchtop sequencer in the lab and may make things easier for forensic practitioners in the future. The undergrad students were busy working on optimizing FTA card extraction, which they took on themselves and was nice to see.

**Publications and Talks**

We were lucky enough to finish our skin color (x2) and hair structure (x1) with one on the way in review) research papers with our collaborators in the Netherlands and Poland and have more to come later in the year.

In April last year, I went to American Association of Physical Anthropologists – an anthropology conference for a skin pigmentation symposium so got to meet all pigmentation researchers, which was great. I also gave an online webinar for National Institute of Justice’s (NIJ) forensic technology center of excellence in October. This seminar was broadcast online live. In December I gave an invited talk at my former university in Cork, Ireland and caught up with collaborators there. For the rest of this year, I will be discussion leader at the Gordon Research Conference on DNA analysis methods in Maine in June and will do a workshop on DNA phenotyping here in Indianapolis in September at the MAFS conference. Lastly, I just gave an invited talk at a crime scene investigator (ICSIA) conference this month in Nashville. The lab continues to do more outreach each year to make the public more aware of our research. I have also sent students to Florida (Ryan poster presentation), Dubai – UAE (Mima talk), Washington, DC (Mima-speak with collaborators), Poland (Stephanie talk) and Austin, TX (Noah – speak with collaborators) to represent and promote our research to colleagues in the field.

**Teaching**

What a busy spring semester in more ways than one….but got through it! Taught both Forensic Genetics and Population Genetics in the same semester which benefits the students as both topics bounce off each other. However, I am very much looking forward to splitting population genetics next year into separate graduate and undergraduate sections so the graduate students can do more bioinformatics with some data!

**Grants**

My student Ryan’s fellowship extended his NIJ for another (and final) year and I re-submitted a proposal to NIJ for the funding years 2019-2021, I hope with the constructive criticism I received from last year that it might be more successful in this application. I also aim to submit an NSF and DOD grant this summer with Dr. Janga and another DOD grant later in the year with Prof. Shriver.
It has now been just over two years since I joined the IUPUI Forensic and Investigative Sciences team and I continue to have new challenges every semester. There are many days when I suspect that I am learning as much or more than my students.

**Teaching**

**FIS10100 and FIS10101 Introduction to Forensic Science**

I continue to add and make some improvement to the way we run this course. I have utilized the quiz function in Canvas a lot and added practice quizzes as study guides for the exams for both classes. This has helped establish and maintain grading consistency throughout the sections and made it a lot easier to grade assignments! Both classes are taught during Fall and Spring semesters. I hope for a successful run as I will be teaching FIS10100 during summer semester in 2018 as an on-line course and FIS10101 will run as a short course as well. I also hope to be able to run FIS10100 on-line as a short course in the fall of 2018.

I have to admit, the FIS10101 laboratory class is still probably my favorite class, although FIS 51101 is a bunch of fun as well. I am proud to report that we had no fires or near misses this year, although I am banning red fingerprint powder from the lab (I think there is still some in the cracks in the floor). This class is taught in Spring, Summer and Fall semesters. I have four really enthusiastic TA’s that run these classes. Pictured are the smiling faces of my graduate TA’s Mirna Ghemrawi (graduating), Baily Wills and Jackie Ruchti. Adrienne Kelley (graduating) is not pictured but is my other amazing TA.

Students seem to like this class a lot and the reviews have been pretty good. I was even nominated as someone’s favorite professor and was acknowledged at half time of the February 10, 2018 IUPUI Women’s basketball game against Cleveland State. It was a neat experience, and I got to meet Jazzy, the Jaguar.
FIS 51101 Forensic Chemistry

I taught the FIS 51101 Forensic Chemistry lab for the second time during fall 2017. It was a class of seven students. This class covers some toxicology, statistics and drug analysis. I’ve based many of the labs on the same training materials I used during my training and tenure at the Indiana State Police Laboratory. I’ve added an Ultra-violet Spectrophotometry lab, which made the schedule a bit tight. I added a couple of demonstrations that the student really liked, as these were timely as it coincided nicely with Dr. Goodpaster’s lectures and enhanced the students understanding of the material. I really enjoy this small class and interaction with the students.

Campus Involvement

As part of my job, I am the Safety Officer and sit on the Campus Chemical Hygiene Committee. I am proud to report that the FIS Program laboratories continue to receive glowing inspection reports! It shows that we all know and follow the rules and are vigilant in our laboratory operations.

I continue to function as the program purchaser, as well as keep track of the lab drug, supply and chemical inventories. I now program our SELB laboratory locks as well. This was another expensive year for us in that our enrollments were up again, and we needed a lot of supplies and small equipment for our increasing numbers of students.

I am completing my second year as a faculty mentor/advisor for the Alpha Phi Omega Tau Omicron Fraternity. Alpha Phi Omega is a co-ed service fraternity that was formed based on principles of the Boy Scouts of America. They are a fun and energetic group. I look forward to working with them on and off campus. Starting in the 2018-2019 school year, I will be the Advisory Chair for the group.
An Engaging Year with Amy Maidi

It truly has been an engaging year!

**Teaching**

This year I was in the classroom with over half our students (77) in the two freshmen seminars and senior capstone class. This was an amazing opportunity to interact and get to know the FIS students.

**Bridge:** This two week, before classes start, experience for new freshmen was one of the best experiences I have had at IUPUI. To have the chance to be with students for eight whole days provided a richness and understanding I could never get by simply having a meeting. It was wonderful to see the bonding that occurred with the students and the friendships they created.

Some student quotes about Bridge and their first year:

“I think Summer Bridge helped a lot. It was nice being able to know what campus is like ahead of time. It was also nice to be able to meet people and make friends before classes.”

“My first year of college was great thanks to summer bridge and all the new experiences from that. I made a lot of new friends that I'm sure will last the rest of college and I can't wait for the next three years.”

**Freshmen Seminar:** The freshmen seminar is a traditional first year class which runs 12-weeks. However, Prof. Londino-Smolar and I used this as a vehicle to create a cohort. FIS students have a very difficult time finding each other in large lecture classes. As a result, some students struggled their first year identifying with the program and finding friends in their major. We combined the classes often and had the students complete a forensic science project in mixed groups.

Here is what a few students had to say on their evaluation:

“It was very nice to meet all the other freshmen forensics majors so that I was able to make connections with them and feel more connected to the FIS program. I was able to see familiar faces in many of my classes, which also helped me in my transition to IUPUI.”

“This class has provided meaningful relationships with my fellow FIS majors, and has also been beneficial in the way that it has introduced and prepared me for the program.”
Capstone: It is always a pleasure teaching the graduating seniors. The students completed some very impressive resumes which have gotten many of them interviews along with interesting research posters. I am so sad to see them leave, but so proud to see them graduate. Of the graduating seniors who started as first time freshmen at IUPUI, 78% graduated in four years and 94% graduated in five years! A few highlights from students in this class:

- Cody Howell is going to IU Medical School.
- Tabitha Lannom is going to IU Higher Education and School Administration Master’s Program.
- Rebecca Yeh is going to University of Illinois College of Law, and was accepted to FIVE law schools.
- Samantha Guinn and Case Jacobus are both going into the FIS MS Program.

Professional Development

I am so fortunate to have incredible support for my professional development. I have grown so much in my time with the FIS Program because of that commitment. I have had some exciting opportunities this year.

- I was pleased to be selected for the first time to present at the NACADA (the international advising association) Region V Conference. This Midwest region, which includes part of Canada, is the largest and most attended regional conference in NACADA. I presented on the differences between counseling and advising.
- I was also chosen to present at the 2018 JACADA (the IUPUI professional advising organization) Professional Development Conference on self care.
- As the Co-Chair of the JACADA Campus Affairs I planned and facilitated three sessions at professional development day to explore best practices with advising technology on campus.
- I applied and was accepted to be part of 12 advisors on campus pursuing certification in success coaching. This is a year-long commitment which will really benefit our most at-risk students. I will be coaching 10-20 students for the whole academic year.
- In conjunction with Department of Undergraduate Education, the Campus Affairs committee put forward a Welcoming Campus Grant application. The fund is designed to support collaborative, sustainable projects proposed by IUPUI faculty, staff, and students that help make IUPUI a destination campus that supports the highest levels of achievement across campus, a principle aim of the IUPUI Welcoming Campus Initiative. We were fortunate to be one of 22 projects funded out of 48 completed applications.
New Patents Submitted

Nicholas Manicke, Zhang, C. "Device and Methods for Protein and Peptide Detection by Mass Spectrometry" (Submitted: January 2018).


FIS Faculty Publications

John Goodpaster with D. Bors. "Chemical analysis of racing fuels using total vaporization and gas chromatography mass spectrometry (GC/MS)." Royal Society of Chemistry (RSC), vol 8, issue 19, pp. 3899-3902.


Carl Sobieralski Jr., Christine Picard with G. Dembinski. “Estimation of the number of contributors of theoretical mixture profiles based on allele counting: Does increasing the number of loci increase success rate of estimates?,” Forensic Science International: Genetics, 2018, vol 33, pp. 24-32.


FS Funding


John Goodpaster (PI), "Automated Derivatization and Identification of Controlled Substances via Total Vaporization Solid Phase Microextraction (TV-SPME) and Gas Chromatography/Mass Spectrometry (GC/MS)," National Institute of Justice, $190,223 (January 1, 2016 - August 31, 2018).


John Goodpaster (PI), "Chemical Analysis of Automotive Samples," National Hot Rod Association, $8,678 (August 1, 2016 - August 1, 2017).

Gina Londino-Smolar, "Hot Stage System for Thermal Microscopic Analysis," School of Science Technology Fee Grant, $14,490 (May 1, 2017).


Christine Picard (PI), G. Druschel, L. Li, P.A. Jacinthe, I. Ogashawara, D. Johnson, "Taste and Odor compounds in Eagle Creek Reservoir: Developing spatial and temporal tools for early identification of antecedent conditions and problem microbial blooms," Citizens Energy, $374,211.00 (May 1, 2017 - April 30, 2020).
Christine Picard (PI), "BSF Genomics Consortium," Vice Chancellor for Research Indiana University International Research Development Fund, $7,286.00 (December 1, 2017 - November 30, 2018).


Christine Picard (PI), W. Gilhooly, "MURI: a paired geochemical and molecular study of anoxygenic photosynthesis in modern lake sediments," IUPUI Center for Research and Learning, $2,000 (June 1, 2017 - August 1, 2017).


Christine Picard (PI), "Genomics Workstation for the non-computer scientist," School of Science Technology Fee Grant, $20,000 (2018).

Christine Picard (PI), "Work with Beta Hatch (total 30% IDC) to pay for AFLP analysis and RADsequencing," Beta Hatch, $11,098.47 (2018).

Christine Picard (PI), "Resequencing of Lucilia cuprina larvae to understand adaptive evolution of parasitism," Indiana Clinical and Translational Sciences Institute, $9,934 (2018).

Susan Walsh (PI). "Improving the prediction of human quantitative pigmentation traits such as eye, hair and skin color using a worldwide representation panel of US and European individuals." National Institute of Justice, $1,123,404 (January 1, 2015-June 1, 2018).


Presentations


**John Goodpaster**, Invited Lecture, “Chemical Markers of Age, Health, and Metabolism in Biological Samples,” Seminar, St. Olaf College, Northfield, MN (March 1, 2018).


**Gina Londino**, Wendeln, K., Contributed, “Creating a Culture of Change in Academic Integrity at an Urban University,” Conference, International Center for Academic Integrity, International Center for Academic Integrity, Omni, Richmond, VA (March 2, 2018).


**Christine Picard**, Invited Lecture, “Population genetics of the mealworm – is everyone using the same strain?” Insects as Food and Feed: How to save the planet and get your protein too Symposium, Indianapolis, IN (March 22, 2018).

**Amy Maidi**, Contributed, “Crossing the Border: Differences Between Advisors and Counselors in the Crisis Zone,” NACADA Region V Conference, Columbus, OH (April 13, 2018).

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Faculty Advisor</th>
<th>Project</th>
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<tbody>
<tr>
<td>Emma Fort</td>
<td>Dr. Susan Walsh</td>
<td>Optimization of body fluid extraction from FTA card</td>
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<tr>
<td>Sarah Alexander</td>
<td>Dr. Susan Walsh</td>
<td>Phenotyping photography and database update</td>
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<tr>
<td>Clarissa Hartman</td>
<td>Dr. Susan Walsh</td>
<td>Optimization of body fluid extraction from FTA card</td>
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<td>Morgan Howard</td>
<td>Dr. Susan Walsh</td>
<td>Ear lobe genome wide association analyses</td>
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<td>Lydia Hawthorne</td>
<td>Dr. Susan Walsh</td>
<td>Assisting genome-phenome collection</td>
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<tr>
<td>Christina Martin</td>
<td>Dr. John Goodpaster</td>
<td>Simultaneous identification of explosives and biological evidence</td>
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<td>Mikeala Greer</td>
<td>Dr. John Goodpaster</td>
<td>Automated derivatization of controlled substances</td>
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<td>Cory Hagemier</td>
<td>Dr. Nick Manicke</td>
<td>LC-MS/MS Analysis of Blow Fly Guts</td>
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<tr>
<td>Samantha Sparks</td>
<td>Dr. Kathy Marrs</td>
<td>STEM Education in the Elementary and Preschool Classroom</td>
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<tr>
<td>Case Jacobus</td>
<td>Prof. Michael Yard</td>
<td>Factors Affecting Human Tissue Decomposition and their Applications to Forensic Science</td>
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<tr>
<td>Callista Maguire</td>
<td>Dr. George Sandusky</td>
<td>Pathology and Immunohistochemistry</td>
</tr>
<tr>
<td>Cody Howell</td>
<td>Dr. George Sandusky</td>
<td>Quantitative Image Analysis of Traumatic Brain Injury Induced Aspiration Pneumonia Treatment</td>
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<tr>
<td>Max Jacobsen</td>
<td>Dr. George Sandusky</td>
<td>Glutamine Synthetase (GLUL) and Glutaminase (GLS) Immunohistochemistry in Breast Cancer in Tissue Microarrays with Quantitative Image Analysis</td>
</tr>
<tr>
<td>Lakota Black</td>
<td>Dr. Frederique Deiss</td>
<td>Electrochemical paper-based devices for the quantification of potassium ions</td>
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<tr>
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<td>Logan</td>
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<td>Jackie</td>
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<td>Zack</td>
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<td>Dr. John Goodpaster</td>
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<td>Courtney</td>
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<td>Dr. John Goodpaster</td>
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<td>Mary</td>
<td>Huffine</td>
<td>Dr. Christine Picard</td>
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<tr>
<td>Sarah</td>
<td>(Tockstein)</td>
<td>Dr. Nick Manicke</td>
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FIS by the Numbers

FIS Undergraduate Students

FIS Graduate Students
The FIS Program is reaching the world through its students.

FIS students are from . . .

- California ➔ New Mexico
- Illinois ➔ Ohio
- Lebanon ➔ Oklahoma
- Michigan ➔ Pennsylvania
- Minnesota ➔ Quatar
- Mississippi ➔ Wisconsin
- Missouri
In Focus: Graduate Students Mima Ghemrawi, Logan Hickey and Angelyn Hercules

Mima Ghemrawi

Forensics and Criminology was always my childhood dream. IUPUI with the help of the Fulbright Scholarship was a perfect fit for my goal. The curriculum at IUPUI is a combination of both theoretical and hands-on experience. The strong research focus in the program was a key point for me when I was choosing a graduate school. In addition, the collaboration with locals and experts in the crime field such as the Indiana State Police makes the program even more intriguing.

Logan Hickey

I chose graduate school at IUPUI because of Purdue University’s reputation for excellence, the comprehensive curriculum of the FIS MS program which covers both the scientific and legal aspects of forensic science, and the support that was offered through a teaching assistantship. I have had many academic accomplishments to be proud of during my time here at IUPUI but my favorite is the research that I have done here that will help to advance the forensic analysis of controlled substances.

Angelyn Hercules

I chose to attend graduate school at IUPUI due to the innovative hands-on approach that this school uses to effectively explore the forensic science field. The combination of mock trials and cases with traditional classroom lectures equips one with a strong science foundation and the ability to apply that foundation in the real world.
Calli Maguire

**Summer 2018, Dr. George Sandusky Research Group**

I have learned biology in such a way that classes could never reach by working in Dr. George Sandusky’s lab. I have gotten to experience so much in the medical field with writing grants and analyzing data. I will stay with this research position until I graduate college because there is so much knowledge to be gained. It has impacted me in multiple ways. I had never experienced a research atmosphere before and that was very valuable. It takes a lot of patience that class cannot teach you, the answers are not always there. I’m impacted by the real impact I am making. A great deal of the research projects we analyze in my lab are given to us by PIs. Other researchers need slides analyzed or help choosing an antibody for a specific tissue. Many of those projects are cancer related, and I have a sense of purpose as we produce useful results.

Cory Hagemier

**Summer 2018, Indiana State Police Crime Laboratory**

I am a Junior at IUPUI double majoring in Chemistry and Forensic Science with Math and Biology Minors. I am currently working an internship at the Indiana State Police Crime Laboratory for the 2018 Spring Semester and will continue through part of the summer. I am identifying which fentanyl analogs are controlled under the new emergency structure scheduling and adding them to a synthetic database by creating their structures on ChemSketch and color coding different functional groups on each fentanyl variation. Currently, we have identified approximately 125 compounds that are now controlled.
Katherine Klamer
Summer 2018, Eli Lilly and Company and Eskenazi Hospital

Through the Eskenazi Health Initiative for Empowerment and Economic Independence I will be interning at Eli Lilly and Company. I will be doing two projects: an oncology project that connects me with toxicologists, helping to prepare Lilly’s annual July cancer fundraising walk. I will also be working on my job skills with presenters at Eskenazi Hospital.

Hailey Stacy
Summer 2018, Will County Coroner’s Office

This summer I will be interning at the Will County Coroner’s Office in Illinois. I will get to work alongside the coroner during autopsies and learn about the relationship between the Coroner’s Office and law enforcement. I hope to gain a greater understanding of the medical aspect of forensic science through this experience.

Angelyn Hercules
Spring 2018, Marion County Coroner’s Office

My internship with the Marion County Coroner’s Office started on January 9 2018 and ended on April 27. I was hired on as a part time office assistant the week before the internship ended. I completed several different rotations through each department in the office beginning with front office. My duties consisted of interacting with decedents families, law enforcement, office visitors, and releasing decedents property. The next rotation was with the deputies to assist with scene investigations. My final rotation was in pathology where I assisted pathologist and autopsy technicians with examinations. Overall the internship was extremely educational and eye opening. It brought great value to my educational foundation and enhanced my ability to effectively navigate difficult situations.
Samantha Sparks

Summer 2017, Tennessee Bureau of Investigation

I worked with the Tennessee Bureau of Investigation last summer as part of the field agent rotation. I assisted in training, undercover work, forensic investigations and fraud investigations. It was valuable to see both the behind the scenes and field work that goes into an investigation.

Rachel Mannfeld

Summer 2017, Indiana State Police Crime Laboratory, Sexual Assault Kit Sample Type Analysis

I had three projects that I worked on. The first project was analyzing sample types from sexual assault kits analyzed by the newly implemented workflow changes. I went through data from over 100 cases, collecting data on the effectiveness of the various sample types. This project was interesting, because it was fascinating to see that some sample types consistently worked better than others and that my findings could have an impact on what is collected from sexual assault victims.

My second project was similar to the first. It was basically the same process, but I was looking at sexual assault kits analyzed by an alternate protocol that the lab implements in certain scenarios. The findings from this project was also extremely interesting because it revealed that the protocol was, indeed, working. I prepared my findings from the first two projects into a presentation which I gave to the biology department of the lab at the end of my internship.

The third project I completed was combing through the evidence analyzed from a rape/murder cold case. I went through reports and notes from over 30 years ago, describing what the evidence was analyzed for, how much was left, how much DNA was found on it, and whether it developed a profile. I compiled this information so the scientists could then decide what evidence to later go back and analyze and what evidence isn’t very useful.

Overall, the internship was extremely rewarding. I have a much better idea of what it is like to work in a forensic laboratory. Without physically being there, I don’t think I ever would have known exactly what it’s like. I was able to visit the other forensic disciplines in the lab, which was really interesting to see. I was able to make connections that will benefit me in the future as well.
Life Health Sciences Internship (LHSI)

Gabriela and Madeline were selected out of an extremely competitive pool to work in a research lab then produce and present a poster on the research through the LHSI Program.

GABRIELA OVALLE

INTERN MAJOR
Forensic Science

MENTOR NAME
Dr. Sandusky

MENTOR DEPARTMENT
Pathology

Glutamine Synthetase (GLUL) and Glutaminase GLS Immunohistochemistry in Breast Cancer in Tissue Microarrays with Quantitative Image Analysis

Today, breast cancer is one of the most common cancer in women. Approximately 1 out of 8 women in the United States will develop invasive breast cancer over the course of their lifetime. Breast cancer has a greater potential of being cured if diagnosed in earlier stages. New biomarkers are needed to predict patient outcomes/survival and which treatments are selected for the patient’s disease. New tailored treatments based on biomarker assessment by immunohistochemistry are commonly used in translational research. Tissue microarrays (TMAs) are being used for immunohistochemistry and allow for analysis of multiple patients at once. In this study 6 TMAs containing approximately 100 cores each were stained with the glutamine synthetase and glutaminase (GLUL and GLS) antibodies. Immunostainings with the antibodies (DAKO) were performed using the DAKO-flex immunostaining platform system. The whole TMA slides were digitally imaged using the Aperio Digital Imaging System. The created SVS digital images were quantified using the Aperio positive pixel algorithm (TMA2Lab) image analysis software and the other was QuPath.

Comparison of the two software methodologies were similar. Aperio calculated a 97% positivity for GLUL and 93% for GLS. QuPath calculated a 93% for GLUL and 92% for GLS. The correlation coefficient was 0.7669 for the GLS antibody and 0.7788 for the GLUL antibody when comparing positivity of the two software. In conclusion, both image analysis software were consist with both clinical antibodies.
The New FIS Cohort in Bridge and First Year Seminar

Indiana State Museum  Lunch at the City Market  In the Judge’s Chambers

The Bridge and first year seminar classes combined. Here they are getting to know each other in some wacky ways!

2017 Bridge Class ready to start Fall
**FIS Community Involvement**

FIS faculty and students are deeply engaged with Indiana, the STEM community and the world. They offer their time and knowledge to every level of learner.

**Insects as Food and Feed Symposium**

**March 2018**

**Symposium Schedule**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Christine Picard (Department of Biology, IUPUI)</td>
<td>Welcome</td>
</tr>
<tr>
<td>9:05</td>
<td>Tom Turpin (Entomology Department, Purdue University, West Lafayette, IN)</td>
<td>Entomophagy: why not eat insects?</td>
</tr>
<tr>
<td>9:20</td>
<td>Devon Bunt (Entomology Department, Louisiana State University, Baton Rouge, LA)</td>
<td>A 100 year review of black soldier fly: prospects for the future</td>
</tr>
<tr>
<td>9:35</td>
<td>Christoph Sandrock (Department of Livestock Sciences, Research Institute of Organic Agriculture, FBL, Frick, Switzerland)</td>
<td>Effects of feeding substrate on greenhouse gas emissions during black soldier fly larval development.</td>
</tr>
<tr>
<td>9:50</td>
<td>Sherah VanLaerhoven (Department of Biology, University of Windsor, Windsor, Canada)</td>
<td>BSF production in temperate environments.</td>
</tr>
<tr>
<td>10:05</td>
<td>Jennifer Pechal (Department of Entomology, Michigan State University)</td>
<td>Developing alternative sources of protein in the developing world.</td>
</tr>
<tr>
<td>10:20</td>
<td>Andrea Liceaga (Department of Food Science, Purdue University, West Lafayette, IN)</td>
<td>How can we move beyond the ‘icky bugs’ concept and use insects as a source of protein in Western cultures.</td>
</tr>
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</table>

**BREAK (10:35-11:00)**

Session moderator: Anne Andere (IUPUI)

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Yongsheng Huang (Institute of Plant Physiology &amp; Ecology, Shanghai Institute for Biological Sciences, SIBS, Shanghai, China)</td>
<td>Genome sequence of Black soldier fly and its gut microbiome.</td>
</tr>
<tr>
<td>11:15</td>
<td>Clint Rhode (Department of Genetics, Stellenbosch University, Cape Town, South Africa)</td>
<td>Genetic consequences of mass rearing Black soldier flies: Implications for sustainable breeding and production.</td>
</tr>
<tr>
<td>11:30</td>
<td>Christine Picard (Department of Biology, IUPUI, Indianapolis, IN)</td>
<td>Population genetics of the mealworm – is everyone using the same strain?</td>
</tr>
<tr>
<td>11:45</td>
<td>Jonathan Cammack (Department of Entomology, Texas A&amp;M University, College Station, TX)</td>
<td>The nature of nutrition.</td>
</tr>
<tr>
<td>12:00</td>
<td>Joffrey Tumba (Entomology Department, Texas A&amp;M University, College Station, TX)</td>
<td>Current &amp; future prospects of insects as food and feed.</td>
</tr>
<tr>
<td>12:15</td>
<td>Christine Picard (IUPUI)</td>
<td>Closing Remarks</td>
</tr>
</tbody>
</table>

Dr. Christine Picard hosted a day-long symposium on the IUPUI campus focused on insects as food and feed with presenters from all around the world.
High school Project SEED student Vicky Pai and Dr. John Goodpaster at the Project SEED poster. She also presented at Summer 2017 IUPUI Research Day.

Vicky made the serendipitous discovery that her method could work on solids and beverages leading to a significant change in approach for the Goodpaster Research Group. This allows samples to be run without time-consuming preparation.

As a result, Vicky will be a contributing author on an upcoming manuscript.

Prof. Donna Roskowski presented to elementary students at Reagan Elementary in Brownsburg. They hosted a four day long STEM Camp on Forensic Science. The kids loved it!

Dr. Nick Manicke taught students in STEM Club events at Lawrence Central and Lawrence North high schools.
Prof. Londino-Smolar and the Forensic Science Club engaged in education and support of elementary science initiatives in the community this year. They provided hands-on experiences for students at three different elementary schools.
The Forensic Science Club had a wonderful year this 2017-2018 academic year. We started the year with a great turnout at the Involvement Expo and call-out meeting. The club had some fun towards the start of the year by participating in Battleships and Regatta...while we didn't place very high, we got wet and had a good time. The fall semester saw lots of guest speakers for the club, as well as many outreach events. We attended the Girl Scouts Slumber at the Speedway and the National Chemistry Week event at the Children's Museum of Indianapolis - both were great fun! Spring semester saw more guest speakers, lots of hands-on activities and many elementary school outreach events. We wrapped up the year with the annual murder mystery dinner. CLUE was the theme, and everyone had a wonderful time!
When I first met Jay, I knew him by reputation alone. He then became my graduate advisor, my mentor, my colleague and my good friend. His effect on me personally and professionally was immeasurable. — John Goodpaster, FIS Director

Jay was the ultimate cheerleader for forensic science, for women in science and for me. Jay really made me believe that I could do this job, and that I could do it successfully. — Christine Picard, FIS Faculty

Jay and I had a relationship that grew over the years. When we first met in 2004, he was my advisor and teacher of analytical chemistry and introduced me to the wonderful world of forensic science and teaching. He pushed for me to apply to be a lecturer in the School of Science for Chemistry and Forensic Science, then became my mentor in 2006 and helped me become a great teacher and student advocate. In 2012, Jay and I worked side by side teaching a forensic microscopy workshop at Penn State University, in that moment I became a colleague with Jay. However, throughout our relationship Jay has always been my friend. Someone that I could talk with about life, science and my career. He is the reason that I am where I am today and he molded my career in forensic science, teaching and even online education. — Gina Londino-Smolar, FIS Faculty

Dr. Siegel was a great professor, teacher, mentor! He will be greatly missed! — Dee Ann Turner, former FIS student

Jay not only built something great in the FIS Program, he changed so many student lives. He believed in them and helped them see what no one else did. — Amy Maidi, FIS Program Coordinator

This Fall Jay Siegel, founding director of the FIS Program, passed away. He will be profoundly missed by all who knew him. Our program and students owe him an incredible debt of gratitude for all he did and the amazing person he was.

I can’t say enough about Jay. I met Jay in 1987 as an undergraduate student at Michigan State University. I was hooked on forensics from the day he stepped into my Criminal Justice class and invited everyone to come check out the lab. I was the only one that showed up that day. As a student I struggled. I got a C on his first exam, and I actually went to him and apologized. Jay apparently saw a lot of potential in me and kicked my butt when I needed it. He pushed me to be better and believed in me when I didn’t believe in myself. A large part of who and what I am today is due to him. Jay and I were in intermittent contact since I graduated in 1991. My last conversations with Jay were about two weeks before he passed away, and I took that opportunity to tell him how much I appreciated all his years of support, encouragement and everything he’s done for me. — Donna Roskowski, FIS Faculty

Jay made quite an impact on everyone who had the pleasure of interacting with him and has left a legacy. He will be greatly missed. — Megan Carrison, former FIS student

He was an amazing man, director and professor! We talked occasionally even after I graduated. I know he will be missed. — Crystal Adams, former FIS student
The Inaugural Jay A. Siegel Award

Upon the passing of Jay Siegel, the FIS Program wanted to find ways to honor Jay’s life and contributions to the IUPUI FIS Program and the field of Forensic Science. He lived an extraordinary life that made an impact in so many ways. Many leaders in the field of forensic science read his books and were mentored by him. Those who knew him best understood the first forensic science class (FIS 20500 Concepts in Forensic Science I) was his favorite class to teach. We developed an award to honor him and his beloved class. This award is given to the top student in FIS 20500. This year’s winner was Alexis Bloom. We were thrilled to have his widow, Maggie Wilke, come to the awards ceremony to present.
Awards for FIS Students and Faculty

Clarissa Hartman, Hawryluk Family Scholarship

Logan Hickey, Charles (Chuck) Gould Memorial Scholarship

Madeline Murphy, William H. and Elizabeth M. Reid Rise Scholarship

Rachel Mannfeld, FIS Academic Achievement Award

Emma Fort, FIS Student Leadership Award

Gina Londino-Smolar and John Goodpaster, Trustees Teaching Award

Robert Johnson, FIS Outstanding Research Award

DEVELOP:
“...Nurture the development of faculty and staff to ensure the highest quality education experiences for our students...”
Cody was a Top 100 student this year by being deeply involved in learning and the community. He was a medical volunteer in Chengdu, China in Summer 2016, a mentor for three years with K.I.D.S. Inc., a volunteer at the Indiana History Museum and a Life Health Sciences Intern. Cody has worked in Dr. George Sandusky’s lab for three years resulting in multiple presentations and publications. He plans to start medical school this fall.

Courtney was a Top 100 student for a second year and won the William M. Platter Medallion which honors graduates who have excelled in their commitment to the community. She volunteered at the Indiana Medical History Museum, went on all four alternative spring break trips to assist with housing, homelessness and food insecurity in different states, was assistant coordinator/planner for the alternative spring break to New Orleans, served as President of Tau Omicron and served as an orientation leader for new freshmen. She also is a co-author on three submitted manuscripts and has been doing research with Dr. George Sandusky for three years.
FIS Grads and Alumni at Ignite!

All the Grads

Graduation 2018
Below is a sampling of places our undergraduate students have gotten employment:

- Agilent Technologies
- AIT Laboratories
- AIT Bioscience
- Anheuser Busch Brewery (Missouri)
- AstraZeneca
- Axis Forensic Toxicology
- Belize National Forensic Science Service (Belize)
- Bismarck Crime Laboratory (North Dakota)
- BioStorage Technologies, Inc.
- Bode Cellmark Forensics (Virginia)
- Brooks Life Sciences
- Buchi Laboratory Equipment (North Carolina)
- Carrollton Police Department (Kentucky)
- City of Columbus Division of Police (Ohio)
- Clarksville Community School Corporation (Kentucky)
- Colorcon
- Community Healthcare Systems
- Covance Laboratories
- Deaconess Health System
- Drug Enforcement Administration (DEA, Maryland)
- Dupage County Forensic Science Center (Illinois)
- Eli Lilly and Company
- Federal Bureau of Investigation (FBI, DC)
- Florida Department of Law Enforcement (Florida)
- Fort Wayne Police Department
- Heritage Crystal Clean
- Indian River Crime Lab (Florida)
- Indiana Blood Center
- Indiana State Department of Toxicology
- Indiana State Police Forensic Laboratory
- Indianapolis-Marion County Forensic Services Agency
- Intertek PSI
- Inworks (Colorado)
- IU Simon Cancer Center
- IU School of Medicine
- Lancaster Laboratories
- Lonza (Maryland)
- Marion County Coroner's Office
- Medical & Molecular Genetic (MMGE)
- Miami Valley Regional Crime Laboratory (Ohio)
- Mid America Clinical Laboratories
- Mira Vista Diagnostics
- Pepsico
- Perry Township Schools
- Polaris Laboratories
- Quintiles Laboratories
- Raabe Company (Wisconsin)
- Raybourn Group International
- Roche Diagnostics
- Sacramento County District Attorney's Office (California)
- Southern Illinois University Edwardsville
- St. Charles County Sheriff's Department (Missouri)
- St. Vincent Health
- Strand Analytical Laboratories
- Texas Department of Public Safety (Texas)
- Thermo Fisher Scientific
- United States Drug Testing Laboratory (Illinois)
- United Water
- University of Miami Miller School of Medicine (Florida)
- Van Nuys Medical Science Center
Below is a sampling of places our undergraduate students have or are attending graduate school.

- Cornell University: Physician’s Assistant School
- Drexel University: Physician’s Assistant School
- George Washington University
- Indiana University Medical School
- Indiana University Law School
- Indiana University Higher Education and Student Affairs Program
- IUPUI: MS in Forensic Science
- IUPUI: PhD in Chemistry
- Marion University School of Osteopathy
- Michigan State University
- University of Colorado Denver: PhD in Biology
- University of Indianapolis: STEM Teaching Program
- University of Illinois College of Law
- University of Florida
- University of Tennessee: PhD in Chemistry
- Virginia Commonwealth University

Below is a sampling of places our graduate students have gotten employment.

- Allegheny County (Pennsylvania)
- Aria Diagnostics
- Bexar County Criminal Investigation Laboratory
- Butler University
- Colorado Bureau of Investigation
- Covance
- Denver State Police
- Dow AgroSciences
- Eli Lilly and Company
- Garden of Life (Florida)
- Henry Ford Health Systems
- Ideal Innovations, Inc. (Afghanistan)
- Indiana State Department of Health
- Indiana State Police Forensic Laboratory
- Indiana State Department of Toxicology
- Microbac Laboratory Services
- Nebraska State Patrol
- Ocean Optics (Florida)
- South Texas College of Law
- State of Colorado Biology Laboratory
- Sun King Brewery
- Texas Department of Public Safety