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Director’s Welcome

The 2016-2017 academic year is over and the faculty and staff of the FIS Program mark another year of educating the next generation of forensic scientists and pushing the boundaries of what is known. The FIS Program was established in 2004 as a multidisciplinary bachelor of science program originally conceived by the faculty and administration of the IU School of Law, School of Liberal Arts, School of Public, and Environmental Affairs (SPEA) and School of Science. The Program is administratively housed within the School of Science. It was the first forensic science degree program in Indiana, consisting of a core of courses in the natural and physical sciences, law, criminal justice, and forensic science. The FIS Program was deliberately made to be as inclusive and flexible as possible; each student could select a concentration in chemistry, biology, computer forensics, psychology, criminal justice, environmental, and health science investigations, anthropology or geology. A Board of Visitors was also established, consisting of local forensic science laboratory directors, attorneys, judges, the CEOs of local private sector forensic science laboratories and law enforcement.

Between 2004 and 2007, the number of faculty in the FIS Program increased from one (Jay Siegel) to four (Jay Siegel, Gina Londino, Richard Li, and John Goodpaster). The FIS Program has also had a program coordinator/advisor since its inception. FIS now has five faculty (John Goodpaster, Nick Manicke, Christine Picard, Susan Walsh, and Gina Londino), an academic specialist (Donna Roskowski), and a program coordinator (Amy Maidi). Currently, the administrative homes of FIS faculty and staff are distributed between the Department of Biology and the Department of Chemistry and Chemical Biology.

In 2009, the FIS Program sought and gained accreditation for the B.S. degree from the Forensic Education Programs Accrediting Commission (FEPAC). We remain the only FEPAC accredited program in the State of Indiana. Accreditation necessitated some significant changes in the FIS curriculum as FEPAC curricular standards were specific to courses in the chemical, biological, and forensic sciences. Hence, the FIS students in the program at that time would not be able to get the required number of basic science credit hours if they pursued any of the concentrations except for chemistry and biology. Therefore, only biology and chemistry concentrations were retained.

Also in 2009, the FIS Program received approval to offer an M.S. degree in Forensic and Investigative Sciences (thesis or non-thesis). Concentrations in forensic chemistry, forensic biology, and forensic toxicology were established. The toxicology concentration has yet to be activated due to changes in the faculty at the IU School of Medicine.

The admission process for M.S. thesis applicants is highly selective, with only two applicants admitted per year. The non-thesis M.S. program has been configured so that it can be completed within twelve months with as many as fourteen students admitted per year. The FIS Program has applied for FEPAC accreditation of the M.S. degree with thesis in 2017. FEPAC has accepted that application and our inspection visit is scheduled for Fall 2017.
Important FIS Milestones

- Since its inception in 2004, the FIS B.S. Program has graduated 138 students.
- Since 2006, the total number of FIS credit hours taught in the School of Science has increased exponentially, doubling approximately every three years.
- Since its inception in 2009, the FIS M.S. Program has graduated twenty-two students.
- Between 2009 and 2016, research expenditures by FIS faculty exceeded $2.3 million.
- As of 2017, FIS M.S. students have co-authored 14 peer-reviewed publications, which have appeared in journals such as the *Human Genetics*, *Scientific Reports*, *BMC Genomics*, *Analyst*, *Journal of Forensic Sciences*, *Forensic Science International*, *Forensic Science International: Genetics*, *Forensic Chemistry*, *Analytical Chemistry*, *Analytical and Bioanalytical Chemistry*, and *Applied Spectroscopy*.
Research
My research program consists of a central theme ("Chemistry in the Public Interest") that leads to various projects dealing with chemical analysis and multi-variate statistical techniques, as shown below:

![Diagram of research program]

The projects related to explosives analysis are focused on law enforcement and defense applications. Our application of multivariate statistics to chemical data (chemometrics) allows for detailed analysis of several data types, including Raman spectra of controlled substances, which has clear law enforcement applications. Innovative analytical techniques such as TV-SPME and packed capillary GC improve the sensitivity, selectivity, and specificity of all chemical analyses and have broad impact. Brief descriptions of the active projects in my lab appear below.

**Explosives Analysis**

The major goals of an explosive investigation are to examine the remains of the device for its construction, identify the type of explosive used, and if possible, identify the bomb maker/handler. The ability to extract explosive residues from bomb debris is well established, but it is only recently that "touch DNA" from a bomb assembler has been successfully found post-blast. Furthermore, all explosives and DNA extractions do not occur in the field, but after transport to a laboratory.
In collaboration with Dr. Christine Picard, we have set the goal of developing a portable apparatus that can be used to extract post-blast debris in the field. Beginning with a commercially-available sampling device for microorganisms (Figure 2), we will alter the extraction buffer and include absorbents in the system. The aqueous portion will be screened for DNA and the absorbents will be recovered, extracted, and screened for organic explosives like RDX, TNT, and PETN.

![Figure 2: The liquid sampler is designed for porous surfaces and can recover both aqueous- and organic-soluble species.](image)

We have coupled a highly sensitive sample introduction developed in our laboratory (Total Vaporization Solid Phase Microextraction or TV-SPME) with gas chromatography-mass spectrometry (GC/MS). TV-SPME operates by heating and fully vaporizing a large organic extract and then using a SPME fiber, resulting in an order of magnitude increase in sensitivity. We will continue to apply this technique to the analysis of controlled substances. This project is currently funded by the National Institute of Justice.

*Packed Capillary GC*

Successful chromatographic separations depend upon the use of highly efficient columns. There are fundamental limits on the efficiency of a chromatographic column, however. A revolution occurred in gas chromatography when packed columns were replaced by open tubular capillary columns. In these columns, the inner diameter of the capillary ultimately determines its maximum efficiency. A similar revolution occurred in liquid chromatography when small particle (< 5 μm) stationary phases were introduced. In these columns, the particle size of the packing material ultimately determines its maximum efficiency. Thus, as shown in Figure 3, the current column technologies that are available fall into different regions of a graph of column diameter and maximum efficiency. It is our goal to produce capillary columns that offer extremely high efficiency by packing a conventional capillary with stationary phases whose particle size approaches 1 μm.

*The Goodpaster Lab*

Logan Hickey, John Goodpaster, and Zackery Roberson
Teaching
In Spring of 2016 I was on sabbatical leave, returning to teaching in Fall 2016. I taught my regular graduate class on the chemical analysis of alcohol and drugs (FIS 51100) as well as the first semester seminar for our graduate students (FIS 50500). In the summer of 2016, we debuted our class on forensic science laboratory management (FIS 59000). Although I coordinated the class, the key instructors were Carl Sobieralski and Mike Medler, who did a fantastic job of discussing their leadership roles and management principals. Lastly, in Spring 2017 I taught FIS 40400, which is the final class for our forensic chemistry students. This class focuses on the practical issues associated with a wide array of trace evidence types.

Service
My service commitments include being the Director of the FIS Program as well as several duties within my home department (the Department of Chemistry and Chemical Biology). For example, I am the chair of the Graduate Education Committee and we have been working to establish a concentration or “major” within our PhD for analytical chemists. I am also serving as the chair of a faculty search committee.
A Year from the Desk of Gina Londino...

Over the past year, I have been involved with incorporating new teaching methods in the classroom, various outreach opportunities, and service to the university through multiple groups. I continue to teach three courses during each semester, which include concepts in forensic science, forensic microscopy, and a first year seminar. I am also teaching advanced forensic microscopy for our graduate program. As a teacher, I am trying new teaching methods, adding new content in all of my courses, and updating assignments. I have also developed a new first year semester course with Amy Maidi just for our forensic science majors. I am also active in service to the university through a community of practice group and serving as chair of the IUPUI Faculty Council Distance Education Committee.

Course Development

This past fall I once again topped my enrollment number, teaching 300 students in our introductory forensic science course. This course continues to succeed in the general educational core set of classes for IUPUI. My course will be evaluated during the fall of 2017 as a core course for all IUPUI students to fit the Indiana academic standards.

In my second semester introductory courses (FIS 20600) I have been overhauling my method of teaching. At the end of last academic year, I applied for the Mosaic Fellowship Program at IUPUI. This program supports faculty’s use of newly renovated teaching classrooms and active learning teaching techniques. The Mosaic Fellowship started at IU Bloomington in the fall of 2015 and has continued at IUPUI. During this academic year, I have been participating with a cohort of other faculty learning how to incorporate the active method of teaching. This method of teaching has been a huge success in my class. Students have really enjoyed the active learning environment, and I have been able to introduce current issues in forensic science more. I have seen my student grow and become more efficient self-learners.

I am continuing to develop the advanced microscopy course for our graduate students. Since our non-thesis program has grown significantly in the past three years, I have had to consistently change the course depending on the number of students registered. This has been challenging but also a good experience for me as an educator.
Professional Development
I am continuing my involvement with the Academy of Forensic Sciences (AAFS). At the annual conference in New Orleans, I was able to see how the meeting was organized, group educational talks together, and network through the Academy. Now, I am officially the Program Chair for the General Section for the 2018 meeting. This will be a great opportunity for me to develop a special session on forensic education. I am planning to develop a workshop on education during the annual meeting which will focus on the three areas the AAFS President has stressed for her year’s theme; Research, Diversity, and Communication. I am very excited about this opportunity.

I am also continuing my involvement with the Council of Forensic Science Educators (COFSE). We are hoping to develop a journal for forensic education this year.

University Service
I am the Chair of a Community of Practice on Academic Integrity supported by Gateway to Graduation. Our group hosted a workshop in March on the status of the IUPUI Code of Conduct policy. We have been involved with revisions to the procedure. Our group has also been working with eLearning Design Services (eDS) to develop modules that will be assessable through Canvas on what academic integrity is at IUPUI to help students be aware of the code.

My service to the University and learning about faculty governance continues. I am the chair of the IFC Distance Education committee. During my time in this role, I have met many administrators involved with the new Office of Online Education. I am currently a liaison to the Online Lead group, working to organize the second annual Conference on Online Education in the fall.

Community Involvement
I am still deeply involved in outreach programs, and I advise the Forensic Science Club. A few events I was involved with this past year include the Wizard’s Academy at the Indiana Medical History Museum, ACS National Chemistry Week at the Indianapolis Children’s Museum, and the STEM Conference for Girls at Sycamore Academy.

The Forensic Science Club was granted money to attend the annual AAFS conference in New Orleans in February. We had a group of six undergraduate and two graduate students who attended the conference. This was a great learning experience for our students as well as representation of our university at the conference.
Beginnings and Endings with Amy Maidi

Beginnings
There were many beginnings this year. Orientation is always the start of a long and arduous journey. This year saw a record number of FIS students go through orientation—51! We had students from California and Mississippi—along with Illinois, Wisconsin, and Missouri. It was our largest number of out of state students as well. We wanted to ensure our students had a great beginning. Working with Prof. Londino, I helped teach the FIS freshmen seminar class this fall to a group of 28 new students. It was an excellent experience. While I was teaching these new students who were struggling to adjust to college life, I also taught the seniors in the capstone class. It was strange but satisfying to see new students begin as I looked out over a class of seniors who I could still envision at orientation. It was a rare gift to experience the college journey from both perspectives.

The FIS workshops continue to be a student favorite, and I love coordinating them. We have such amazing talent to share with the students! This year we offered:

- Introduction to Toxicology taught by Tina Rainey from the Indiana State Department of Toxicology.
- Crime Scene Investigation (CSI) taught by John Kelly who is retired from the Indiana State Police.
- The Basics of Firearms Examination taught by Tim Spears from the Indianapolis-Marion County Forensic Services Agency.
- Blood Spatter taught by Carl Sobieralski, Jr. from the Indiana State Police Laboratory.

NEW this year we offered:

- Serial Number Recovery and Range Determination taught by Tim Spears from the Indianapolis-Marion County Forensic Services Agency.
- Tissue Injury and Its Applications to Forensic and Investigative Science taught by Michael Yard of the Biology Department.

These new classes offered our students the opportunity to complete serial number recovery kits, witness a partial autopsy, meet with the coroner, visit the pathology lab, and learn about range determination.

I also participated in some new professional development opportunities this year. I went to Chicago for the reginal advising conference of NACADA. At the conference I was inspired to get more involved with presenting. I am pleased my first proposal to present at the all IU EDGE Conference was accepted. I will be presenting in two different session on May 24 to an audience of advisors from all the IU campuses around the state. I was also nominated for campus advisor of the year for the first time.
Endings
Each beginning brings with it an end. I have a few endings to celebrate this year as well. In July I will finish my term as JACADA (the professional advising association on campus) President, a role I have learned to love. I am proud to say our membership is stronger than ever with over 160 members. We also were able to establish a foundation account which will allow our organization to receive donations and have financial stability for the future. I will also be relinquishing my duties on the university wide OCSS Technical Committee and the Director’s of Advising Committee as well as the IUPUI Campus Advising Council. I am looking forward to filling those hours with more student initiatives.

Finally, I have to congratulate and say goodbye to the Class of 2017. As a group they have some truly amazing stories! I am going to miss them, but am so excited to hear about their next adventures!
What’s Happening With Nick Manicke?

The past year was an exciting one in terms of both teaching and research. I welcomed a new full-time graduate student into my lab: Christine Skaggs, a chemistry PhD student. She joined my existing cohort of two other chemistry PhD students, two forensic science masters students, one post-doctoral researcher, and four undergraduate researchers. We’ve had a productive year in the laboratory, and I was pleased to publish several papers, including one in the *Analyst* on detection of chemical warfare agents. I also taught FIS 40100 Forensic Chemistry I in the fall and FIS 51200, Forensic Chemistry II for graduate students, in the spring.

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 Rachel Potter’s MSFS thesis and also a recent submission to *Analytical Methods* with Rachel as first author. We anticipate another manuscript later this year on coupling this method to high resolution mass spectrometry.

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 cannabinoinds and bath salts. This project was selected for funding by the NIH as an R21 in February.

We are also collaborating with a Department of Defense laboratory to develop better methods to detect chemical and biological warfare agents. This project recently go renewed for a second year and the funding level was doubled. A manuscript was recently published in the *Analyst* describing the detection of chemical warfare agents in blood and urine.

In addition to forensics applications, we also work with some clinical chemistry applications. We are currently collaborating with a clinical laboratory at Stanford to develop new methods to perform quantitative analysis for Therapeutic Drug Monitoring.
Service
I served on the technical facilities committee and the chemistry department’s faculty search this year. I am also on the chemistry department’s Executive Committee

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 after a one year hiatus. I completely re-vamped the lab this year. Here are some of the analyses student carried out during that lab:

- Gunshot residue by SEM-EDX
- Quantitative analysis of drugs in blood by HPLC-MS/MS
- Classification of ignitable liquids from fire debris using GC-MS
- Fiber type identification by FTIR microscopy
- Paint analysis by XRF
Picard Lab Update

The Picard Lab has had a successful year! Likely the biggest news to come out of the lab was the publication of the characterization of the lab’s first blow fly genome (*Phormia regina*) in October 2016. This was the result of five years of hard work on PhD Student Anne Andere’s part, and has really started to make an impact for forensic entomologists. This genome will now enable us to study how biological processes, some agriculturally important, many forensically important, operate at its most basic level (the DNA level). This is our best genome so far, and will provide a framework for the rest of our genomic studies.

The Picard Lab also welcomed a new Masters of Forensic Science student Sarah Lewis. Sarah is a former undergraduate of ours, and is hard at work evaluating how genes that regulate development in blow flies changed as we experimentally pushed them to develop faster or slower. She is making excellent progress towards her thesis already, with a list of genes that have changed over time.

Charity Owings, PhD student, is also making great progress towards her dissertation, with her third year of field work underway towards understanding how the environment mediates blow fly population structure. We were funded through an RSFG award along with Bill Gilhooly in Earth Sciences to implement a multidisciplinary approach to discover what in the environment is maintaining blow flies. No one in our field has done work on this scale. Charity was also an invited speaker at the very prestigious International Congress of Entomology meeting, held only every four years, to present her work. Due to some health-related concerns, she also took the reigns over for me to present my blow fly genomics overview presentation (and did a great job I hear).

To end with the original, Gina Dembinski, who has been with me since I started at IUPUI, Gina is finishing her PhD. Gina has had an exciting albeit busy year. She has one manuscript currently under review that looked at how microbial DNA that is co-extracted with human DNA could impact forensic DNA profiles. Gina also worked with Carl Sobieralski to look at how many times the true number of contributors could be estimated by using theoretical mixtures of real individuals’ DNA profiles. And finally, Gina’s been busy analyzing her data of discovering new DNA markers of contributor age using a novel technique. Her PhD defense date is set for Friday, June 16!

Other than that news, the Picard Lab officially unofficially welcomed a new member to the group when Christine gave birth to a baby boy in April!
From the Desk of Donna Roskowski

I celebrated my 25th year in Forensic Science in 2016. It has now been just over eighteen months since I joined the IUPUI Forensic and Investigative Sciences team and I have discovered something new, different and challenging every semester.

**Teaching**

*FIS 10100 and FIS 10100 Introduction to Forensic Science*

This year I’ve made some minor changes to the FIS10100 lecture class, making minor adjustments to assignments, adding some new ones and finding some new and exciting cases to talk about. This class is taught during Fall and Spring semesters. I hope to teach it during summer semester in 2018 either as a lecture or an on-line course.

I have to admit, the FIS10101 laboratory class is still my favorite despite having my first lab fire and a near miss with one student not following directions with explosives. This class is taught in Spring, Summer and Fall semesters. I have four really enthusiastic TA’s that run these classes. Pictured below are the smiling faces of my graduate TA’s Mirna Ghemrawi (L), Hannah Bond (R), and some of our students that just happily swabbed toilets for urine samples.

Aside from reporting multiple instances of student academic misconduct, my biggest challenge has been adapting the FIS10101 laboratory class to accommodate a blind student. Initially, I wasn’t sure how I was going to accomplish this, but after a long talk with the student and conspiring with my TA’s, we gave it a go. This has required a lot of thinking outside the box and making tactile representations of various things to demonstrate basic concepts. It’s a long story, but suffice it to say that I am writing a paper on this and hope to present at forensic meetings and educational conferences at some point.
FIS 51101 Forensic Chemistry

During the fall 2016 semester, I taught the FIS 51101 Forensic Chemistry lab for the graduate chemistry students with Dr. Goodpaster. FIS 51101 is Forensic Chemistry and covered some statistics, Blood Alcohol Analysis and my personal favorite, Drug Analysis. It was a class of six students, and I am not sure if I learned more than they did! It was a great experience and I am looking forward to teaching it again in the fall of 2017.

FIS 59000 Research/Independent Study

FIS 59000 is a graduate level class that covers just about any extra topics that don’t have their own category. This spring, I have one graduate student working with me to make some revisions on my class lectures and most importantly, my exams. In addition to lecture and exam revisions, this student also has done some guest lecturing in the FIS10101 classes and will be conducting a forensic experience for a group of high school students on April 21.

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. This was an expensive year for us in that we needed a lot of supplies and small equipment for our increasing numbers of students. A big thank you to the Indiana State Department of Toxicology for donating headspace gas chromatograph (GC) and headspace autosampler for the lab, which are now operational.
A Good Year for the Walsh Lab

It has been a good year. I graduated my first MS biology student Charanya Muralidharan, who also won a departmental award for her thesis, and the lab has been productive with several publications this year with more to come. I also have my first forensic MS student, Wesli Kay Stubbs, getting ready to defend her thesis this summer. We welcomed two new students to the lab for the new year, Stephanie Farmer (biology MS) and Mirna Ghemrawi (forensic MS Fulbright Scholar). The lab has also welcomed a junior scientist to the mix as Krystal Breslin had a baby boy earlier this month. Our other baby, the genome:phenome database is growing well with >2600 individuals, and we have recently begun exciting GWAS studies in search of new genes for physical appearance on several traits.

Research
The lab is certainly full with

- one PhD student (Ryan Eller),
- four MS students (Krystal Breslin, Stephanie Farmer, Mirna Ghemrawi, and Wesli Kay Stubbs), and
- five undergraduate students (Seniors Noah Herrick, Katherine Haskell, and Bailey Wills: Junior Emma Fort; and Lydia Hawthorne, a freshman from the diversity DRSP program).

We have begun a solid collaboration with Mark Shriver of Penn State University and have written a substantial National Institute of Justice (NIJ) grant this year together that was submitted in February. We are also continuing our solid collaborations with Europe and Australia.

The graduate students have been very busy.

- Ryan has begun the search on facial morphology and quantitative color association and we hope for exciting results this coming summer.
- Wesli is finishing her research on hair pigmentation in owl monkeys and hair structure on humans using her microscopy skills.
- Charanya stayed on as a research technician in the lab and has just been accepted to the med school for her PhD, she is helping with generating preliminary data for an NSF career grant that I will submit to this summer on pigmentation of facial hair.
- Krystal has been very busy this year with generating results for our first cold case with Indiana State Police. We hope it will lead to more cases each year to really get this researcher-practitioner relationship going.
• Krystal and Charanya also got their first paper published from the lab in the journal Human Genetics where we announced our skin color prediction tool and they also have another paper collaboration paper expected on hair structure this summer.

• Krystal, Charanya and Ryan all went to ISHI (International Symposium on Human Identification) last September in Minnesota, and all their posters were received well by the research community.

This year we are focusing on moving to next generation sequencing with our MiSeq system, which should lead to much needed research on the capabilities of Massive Parallel Sequencing (MPS) on mixture analyses. My undergraduates have been wonderful additions to the lab and have really impressed me with the standard of undergraduate research in both the Biology department and Forensics program. Bailey shall join me to do her MS in forensics in the Fall of this 2017, with her research focusing on optimization on quantitative tools for the lab, as well as Noah (MS biology) who will work on the bioinformatics of skeletal remains – particularly the face, in collaboration with Forensic Anthropologist Dr. Jeremy Wilson from the IUPUI Department of Anthropology.

Publications and Talks

In terms of publications, the lab has published four papers this year with our collaborators in the Netherlands, Poland and Germany. These include the journals Human Genetics, Scientific Reports, and FSI genetics.

In July 2016, I gave a talk on predictive biometrics at the Gordon Research Conference on DNA analysis methods in New Hampshire and a workshop on DNA phenotyping in Minnesota in September 2016 at the ISHI conference. I also gave an invited talk at the NIJ research symposium in February of this year and this was a good chance to give NIJ updates on my research progress with their funding. I am hopeful they are pleased with my progress as it would be fantastic to be funded through them again for next year. On the local side of things, I gave a talk for the Medical and Molecular Genetics department of the med school towards the end of 2016 and I am now adjunct assistant professor at the department. This shall open up a few more doors, especially with regards PhD students interested in physical appearance from the IU Medical School and also professors with a research overlap.

Undergraduates in the Lab

[Images of Undergraduates]
A fun place to give a talk this year was at the Indiana Medical History Museum, it has such amazing history! It was a privilege to give a talk there. The lab aims to do more outreach this year, including talks at the museum during the summer.

**Teaching**

What a busy spring semester! Teaching two courses in one semester, although busy, is certainly a good idea as it leaves the rest of the year open to research. I have found this approach works well for my lab. Also teaching the large overlap of students in Forensic Genetics and Population Genetics at the same time really benefitted the students, as both topics bounce off each other. Concepts and methods could flow more for the students enabling them to really grasp both subjects, which I could certainly see on a daily basis in class and in their exams.

**Grants**

My student Ryan’s fellowship was extended for another year and I have recently submitted a new proposal to NIJ for the funding years 2018-2020. I also aim to submit a National Science Foundation (NSF) CAREER proposal this summer, and perhaps a Department of Defense (DOD) proposal later in the year.


Susan Walsh with L. Chaitanya, K. Breslin, C. Muralidharan, A. Bronikowska, E. Pospiech, J. Koller, L. Kovatsi, A. Wollstein, W. Branicki, F. Liu, M. Kayser. “Global skin color prediction from DNA”, Human Genetics (accepted).


Susan Walsh with L. Chaitanya, I.Z. Pajnič, J. Balazić, T. Zupanc, M. Kayser. “Bringing colour back after 70 years: Predicting eye and hair colour from skeletal remains of World War II victims using the HiRisPlex system”, Forensic Science International: Genetics, 2017, 48-57.

Christine Picard (Co-PI) and Greg Druschel, Pierre Andre-Jacinth, Lin Li, Dan Johnson, Jeremy Webber, Christine Picard, Igor Ogashawara, Nicolas Clercin, 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, 2017-2020, $374,211.

Christine Picard (Co-PI) and William Gilhooly, A combined molecular and biogeochemical approach to carrion abundance and diversity surveys, Research Support Funds Grant, $33,814.

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

John Goodpaster (PI) and Christine Picard (co-PI), Species and Age Determination of Blow Fly Pupae Based Upon Headspace Analysis, National Institute of Justice, 1/1/2014 - 12/31/2016, $197,491.

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, 1/1/2016 - 12/31/2017, $190,223.


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, NIJ, 1/1/2015-12/31/17, $1,123,404.

Susan Walsh (co-PI), An Investigation into the genetic basis of human facial morphology and its prediction from DNA, using a globally distributed panel of individuals from the US and Europe – Fellowship for my PhD student R. Eller, NIJ, 1/1/2016-12/31/2018, $113,364.

Nick Manicke (PI), Paper Spray Mass Spectrometry for Rapid Drug and Drug Metabolite Screening Directly from Postmortem Blood Samples, National Institute of Justice, 01/01/2015 - 06/30/2017, $273,826.

Nick Manicke (PI) and Dan Rusyniak (co-PI, IUSOM), Sensitive and Rapid Screening of Synthetic Drugs by Mass Spectrometry, National Institutes of Health, 02/5/2017 - 02/4/2019, $414,000.

Nick Manicke (PI), Applications Development and Substrate Research for PaperSpray Technology on the Thermo Mass Spectrometry Platforms, Thermo Scientific, 01/01/2016-01/01/2018, $85,000.

Nick Manicke (co-PI) and Trevor Glaros (PI, ECBC), Universal Ambient Ionization Source for the Detection of Chemical and Biological Agents, Department of Defense, 3/29/2016-2/28/2018, $276,400.
<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Faculty Advisor</th>
<th>Project</th>
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</thead>
<tbody>
<tr>
<td>Grace</td>
<td>Connolly</td>
<td>Dr. Nick Manicke</td>
<td>Development of Urine Drug Screening Methods</td>
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<tr>
<td>Courtney</td>
<td>Finnearty</td>
<td>Dr. George Sandusky</td>
<td>NASH and Aperio Positive Pixel Quantification for Type II Diabetes on FATZO Mouse Model</td>
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<tr>
<td>Mikaela</td>
<td>Greer</td>
<td>Dr. John Goodpaster</td>
<td>Monitoring the Degradation of TNT in water</td>
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<tr>
<td>Katherine</td>
<td>Haskell</td>
<td>Dr. Susan Walsh</td>
<td>Human Physical Appearances Phenotypes in the State of Indiana</td>
</tr>
<tr>
<td>Lydia</td>
<td>Hawthorne</td>
<td>Dr. Susan Walsh</td>
<td>Developing a Phenotypic Profile</td>
</tr>
<tr>
<td>Cody</td>
<td>Howell</td>
<td>Dr. George Sandusky</td>
<td>Traumatic Brain Injury Induced Aspiration Pneumonia</td>
</tr>
<tr>
<td>Max</td>
<td>Jacobsen</td>
<td>Dr. George Sandusky</td>
<td>Analysis of TOPO II and P53 by Immunohistochemistry and qPCR in Sarcoma Patients with ChemoFx® Assay to Determine Sensitivity Against Adriamycin and Etoposide</td>
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<td>Jeffrey</td>
<td>Kinkade</td>
<td>Dr. Nick Manicke</td>
<td>Investigation of New Substrates for Paper Spray MS</td>
</tr>
<tr>
<td>Kiyomi</td>
<td>Kukoyi</td>
<td>Dr. Horia I. Petrache</td>
<td>Interactions Between Glutamate and Phosphocholine Lipid Bilayers</td>
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<tr>
<td>Sarah</td>
<td>Lawrence</td>
<td>Dr. Nick Manicke</td>
<td>Mass Spectrometry of Body Fluids</td>
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<tr>
<td>Winyu</td>
<td>Sheriff</td>
<td>Dr. Nick Manicke</td>
<td>HPLC-MS Analysis of Blowfly Gut Contents</td>
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<tr>
<td>Fallon</td>
<td>Stinson</td>
<td>Dr. Randall Roper</td>
<td>The Genetic and Developmental Bases of Phenotypes Related to Trisomy 21 or Down Syndrome</td>
</tr>
<tr>
<td>Kristi</td>
<td>Vandervort</td>
<td>Dr. John Goodpaster</td>
<td>Drug Derivatives</td>
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<tr>
<td>Meredith</td>
<td>Weir</td>
<td>Dr. Kathy Marrs</td>
<td>Elementary Science Education</td>
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<tr>
<td>Bailey</td>
<td>Wills</td>
<td>Dr. Susan Walsh</td>
<td>Enhancing the Genome-Phenome Research Database</td>
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## Graduate Students Working on FIS Research

<table>
<thead>
<tr>
<th>First Name</th>
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<th>Faculty Advisor</th>
<th>Project</th>
<th>Program</th>
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</thead>
<tbody>
<tr>
<td>Gina</td>
<td>Dembinski</td>
<td>Dr. Christine Picard</td>
<td>Advancements in Forensic DNA-Based Identifications</td>
<td>Biology PhD</td>
</tr>
<tr>
<td>Charity</td>
<td>Owings</td>
<td>Dr. Christine Picard</td>
<td>Mediators of Fine-Scale Population Structure in the Black Blow Fly (<em>Phormia regina</em> Meigen)</td>
<td>Biology PhD</td>
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<tr>
<td>Anne</td>
<td>Andere</td>
<td>Dr. Christine Picard</td>
<td>A Comparative Genomics Study of Sex Chromosome Evolution in Blow Flies</td>
<td>Biology PhD</td>
</tr>
<tr>
<td>Sarah</td>
<td>Lewis</td>
<td>Dr. Christine Picard</td>
<td>The Genetic Contribution to Development Time Variation in <em>Cochliomyia macellaria</em></td>
<td>FIS Biology Thesis</td>
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<tr>
<td>Logan</td>
<td>Hickey</td>
<td>Dr. John Goodpaster</td>
<td>Automated Online Derivatization of Controlled Substances</td>
<td>FIS Chemistry Thesis</td>
</tr>
<tr>
<td>Zachary</td>
<td>Roberson</td>
<td>Dr. John Goodpaster</td>
<td>High Performance Gas Chromatography</td>
<td>Former FIS BS, Chemistry PhD</td>
</tr>
<tr>
<td>Charanya</td>
<td>Muralidharan</td>
<td>Dr. Susan Walsh</td>
<td>Elucidating the Mechanisms/ Interactions Involved in Differing Hair Color Follicles</td>
<td>Biology MS</td>
</tr>
<tr>
<td>Ryan</td>
<td>Eller</td>
<td>Dr. Susan Walsh</td>
<td>An Investigation into the Genetic Basis of Visible Human Traits and Their Prediction from DNA, Using a Globally Distributed Panel of Individuals from the US and Europe</td>
<td>Biology PhD</td>
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<tr>
<td>Stephanie</td>
<td>Farmer</td>
<td>Dr. Susan Walsh</td>
<td>Assessing the Functional Significance of Markers Associated with Human Pigmentation</td>
<td>Biology MS</td>
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<tr>
<td>Krystal</td>
<td>Breslin</td>
<td>Dr. Susan Walsh</td>
<td>Forensic DNA Phenotyping and Next Generation Sequencing</td>
<td>Biology MS</td>
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<tr>
<td>Wesli</td>
<td>Stubbs</td>
<td>Dr. Susan Walsh</td>
<td>Forensic Applications of Associating Human Scalp Hair Morphology and Pigmentation Analysis at the Microscopic and Molecular Level</td>
<td>FIS Biology Thesis</td>
</tr>
<tr>
<td>Mirna</td>
<td>Ghemrawi</td>
<td>Dr. Susan Walsh</td>
<td>Population Genetics of a Lebanese Population</td>
<td>FIS Biology Thesis/Fulbright Scholar</td>
</tr>
<tr>
<td>Josiah</td>
<td>McKenna</td>
<td>Dr. Nick Manicke</td>
<td>Detection of Chemical Warfare Agents</td>
<td>FIS Chemistry Thesis</td>
</tr>
<tr>
<td>Brandon</td>
<td>Bills</td>
<td>Dr. Nick Manicke</td>
<td>Investigation of New Substrates for Paper Spray MS</td>
<td>Chemistry PhD</td>
</tr>
<tr>
<td>Greta</td>
<td>Ren</td>
<td>Dr. Nick Manicke</td>
<td>Detection of Novel Psychoactive Substances</td>
<td>Chemistry PhD</td>
</tr>
<tr>
<td>Christine</td>
<td>Skaggs</td>
<td>Dr. Nick Manicke</td>
<td>Therapeutic Monitoring of Antifungals</td>
<td>Chemistry PhD</td>
</tr>
</tbody>
</table>
Logan Hickey (MS) and Mikaela Greer (BS) who work in Dr. John Goodpaster’s lab won top awards for their research poster at IUPUI Student Research Day.
FIS by the Numbers

Total FIS Students

FIS Undergraduate Students

FIS Graduate Students
Undergraduates’ Home
- California
- Illinois
- Michigan
- Minnesota
- Missouri
- Mississippi
- New Mexico
- Ohio
- Wisconsin
- Quatar

Graduates’ Home
- Illinois
- Michigan
- New Mexico
- Ohio
- South Carolina
- Tennessee
- Texas
- Wisconsin
- Lebanon
Majors and Intended Majors

University College Students Intending to Become FIS Majors

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<td>79</td>
<td>76</td>
<td>53</td>
<td>52</td>
<td>79</td>
<td>76</td>
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TOTAL STUDENTS PURSUING FIS BS AT IUPUI FALL 2016

- FIS Undergraduates (134)
- Pre-FIS Undergraduates in University College (76)
Undergraduate Profile

- Males: 27
- Females: 107

- Part Time: 13
- Full Time: 121

- Age Distribution:
  - Under 18: 4
  - 18 to 20: 71
  - 21 to 22: 29
  - 23 to 24: 9
  - 25 to 32: 6
  - 33 to 59: 5

- Class Status:
  - Senior: 55
  - Junior: 31
  - Sophomores: 27
  - Freshmen: 43
The year started off for Forensic Science Club with the School of Science Picnic in the Fall.

National Chemistry Week at the Indianapolis Children’s Museum was a perfect chance for the club members to teach kids about microscopy.

The club along with Prof. Londino helped make a magical Wizard’s Academy at the Indiana Medical History Museum.

Adopting a family in need at the holidays is a tradition each year that the members always look forward to.
In February, the Forensic Science Club attended the American Academy of Forensic Science meeting in New Orleans with financial support from the university. Attendance at this conference was a wonderful experience as it not only helped each of the students grow in knowledge within the field of forensics, but it also offered each one an exceptional opportunity to network. There were so many people from different disciplines. The university fair portion of the conference was especially helpful for the students to learn about forensic science graduate programs. Each student was able to freely roam and participate in the sessions and activities that peaked her particular interests, both due to curiosity and professional inclination. Students were encouraged to see as many sessions as possible and participate in all the free activities and receptions.
Skyler Keifer was a Project Seed student in Dr. John Goodpaster’s lab. He was studying Egyptian Blue, which is an ancient pigment which may have utility as a luminescent finger print powder. Skyler attends the Indiana Academy for Science, Mathematics, and Humanities in Muncie.

Donna Roskowski completed her first year as a faculty mentor/advisor for the Alpha Phi Omega Tau Omicron Fraternity on Campus. The chapter was struggling and only had 8 active members, no advisor, and they were desperate for an advisor/mentor. She is proud to announce the fall pledge drive was a huge success with 24 new pledges, and the group now has five advisors! Alpha Phi Omega is a co-ed service fraternity that was formed based on principles of the Boy Scouts of America.
Prof. Gina Londino participated in the Health and Science Innovations Camps held on the IUPUI campus for high school students. She challenged the students to determine the best mobile phase suitable for separating components in ink via Thin Layer Chromatography.

Prof. Gina Londino did a workshop with 80 girls at a private school in Indianapolis. Sycamore School hosted a conference for Middle School Girls on Careers in Science, Technology, Engineering and Math. The event was designed to heighten girls’ interest in scientific careers and help them select high school courses that will lead to success in college. The conference featured a series of small group workshops led by women whose professions include architecture, neuroscience, mechanical engineering, coding, veterinary medicine, and many more! This conference was open to young women from all over Indiana, not just the Indianapolis area; and over 400 girls attend. In addition to individual workshops for subject area, the conference also had special assemblies for the girls based on Diversity and Never Giving Up.
Max Jacobsen presented Analysis of TOPO II and P53 by Immunohistochemistry and qPCR in Sarcoma patients with ChemoFx® assay to determine sensitivity against Adriamycin and Etoposide at American Association for Cancer Research (AACR) annual meeting 2017 in Washington, DC.

Cody Howell presented Traumatic Brain Injury Induced Aspiration Pneumonia at the Experimental Biology Expo in Chicago.

Courtney Finnearty presented NASH and Aperio Positive Pixel Quantification for Type II Diabetes on Fatzo Mouse Model at the Undergraduate Research Conference hosted at Butler University.
Adrienne Kelley, Summer 2016
Indianapolis Marion County Forensic Services Agency

“I helped the department transfer over their chemical labeling system from the old SDS labels to the new Global Harmonized System.”

Sarah Lewis, Summer 2016
United States Army Criminal Investigative Laboratory

“I was working in the military forensic lab in Atlanta where I was hired on to design, run, and write up a document about a vacuum fuming chamber for latent prints. The objective was to see if the apparatus was of any use to the lab, and if it was, was it mission ready. Another project that I worked on with the section supervisor was a shoe impression study. We looked at several methods of making shoe impressions of known shoes and variables that may come into play. The finished work from that summer was presented at the International Association for Identification Conference in Cincinnati.

This experience gave me a better insight into the forensic world. I enjoyed the people, environment, and work immensely. When I graduate next year I hope to have a chance to apply for a position in US Army Criminal Investigation Laboratory so I can work there again.”

Alexis Tormohlen, Summer 2016

“I completed my internship with the Evansville Police Department; specifically, I was with the crime scene unit during my time there. It was a great opportunity to learn and see firsthand how crime scene work is completed and how the evidence is handled before it gets sent to the lab for examination. I was able to see how photographs were taken, how fingerprints are obtained, and how these can be run through the AFIS system.”

Tabitha Lannom, Summer 2016
IUPUI Upward Bound

“I spend the summer with students enrolled in the Upward Bound Summer Academy. Over the course of 8 weeks, I taught students the basic principles of Forensic Science as well as conducted experiments that demonstrated principles of blood spatter, chromatography, construction evidence, fingerprint analysis, and dental identifications. I was able to connect with the students on a peer to peer level and give them an opportunity to explore a career path that is seldom portrayed accurately in the media, and that they may not have been exposed to otherwise.”

Sarah Lewis, Summer 2016
United States Army Criminal Investigative Laboratory

“I was working in the military forensic lab in Atlanta where I was hired on to design, run, and write up a document about a vacuum fuming chamber for latent prints. The objective was to see if the apparatus was of any use to the lab, and if it was, was it mission ready. Another project that I worked on with the section supervisor was a shoe impression study. We looked at several methods of making shoe impressions of known shoes and variables that may come into play. The finished work from that summer was presented at the International Association for Identification Conference in Cincinnati.

This experience gave me a better insight into the forensic world. I enjoyed the people, environment, and work immensely. When I graduate next year I hope to have a chance to apply for a position in US Army Criminal Investigation Laboratory so I can work there again.”
Sally Jones, Summer 2016
Indiana State Police Indianapolis Regional Laboratory

“The internship started with a mixture of orientation to the biology floor and tours of the other departments within the lab building. This included firearms and tool marks, latent prints, questioned documents, chemistry and trace, evidence, and photography. I had a project while I was at the lab. I was to compile data for a presentation that looked at the new screening method in cases that included a sexual assault kit as evidence and compared the success rate between the two. I collected data from the cases in 2015 and 2016, about 200 from each year and prepared a presentation that I gave to the lab at the completion of the internship. In between entering data I was allowed to shadow a couple of the analysts when they were processing evidence from current cases. I learned about AP testing, ALS, extraction including differential and regular, and whether it was done with Maxwell or the robot. I learned about the chain of custody and how the flow is at their lab. I watched the process of entering CODIS eligible offenders into the database and how “hits” are handled. I was allowed to do mock AP testing, phenopthalein testing, Taka-yama testing, and a sperm search. I learned about profiles and how the analysts use the printout from the CE machine to determine how many people show up in a mixture and how to sort that out. I was allowed to go and witness court testimony during a trial by 4 different analysts. And another time I was able to go to a deposition in a court room and watch my mentor and Carl Sobiersalski testify. And I am sure there are at least a half dozen other things that I am forgetting, but the experience was priceless!”

Sally also presented her research finds at annual Midwestern Association of Forensic Scientists (MAFS) in October 2016.

Rachel Mannfeld, Summer 2017
Indiana State Police Indianapolis Regional Laboratory

“I will be continuing the work started by Sally Jones. The description of my project is: ‘Different types of crime scene evidence generate predictable types of evidence, and the relative quality and informational value of these can be evaluated for better analyses. Because of the nature of sexual assault evidence and the standardized manner of collection, it has been observed that some sample types are often better sources of interpretable foreign DNA profiles than others. By evaluating this information, the laboratory can focus sample analysis and direct collection processes to aid in future cases. Our typical autosomal STR analysis procedures have changed in the last few years to incorporate 1) new, more sensitive chemistries that include an increased amount of data, and 2) modified workflows, which affect which samples are processed (and how) to streamline the analytical process. Our most recent quantification validation (Quantifiler Trio) has made our DNA detection limit ~10X more sensitive than previously established. In addition, we have shifted our sample screening processes from a “serology-based” approach (sperm-searches) to a Y-DNA approach (human and male-specific quantification). The ultimate goal of this study is to evaluate cases analyzed by the new workflow changes to determine how these changes have impacted our ability to draw conclusions. Specifically, we would like to look at the sample types found within sexual assault cases to evaluate what evidence types most frequently result in useful, interpretable information. We would like to investigate how often a sample of a particular type is the only useful information within an analyzed sexual kit.’”
“This experience has been one of the best experiences I have ever had. I got to see firsthand what forensic analysts do on a day-to-day basis and get a real feel for what employment as a forensic scientist entails. I’ve also gained valuable knowledge that I could not have gotten anywhere else, such as reading case reports, evidence processing, viewing JusticeTrax LIMS, and the overall work flow of a functioning forensic laboratory. As part of the internship, I was asked to complete a research project, where I was given 160 case reports from evidence collection kits to data mine and present my findings to the biology section of the Indiana State Police Laboratory Division in Indianapolis. Finally, I was given the opportunity to follow a piece of biological evidence from start to finish, starting from the analyst receiving the sample, all the way to interpretation and analysis of the STR profile from an electropherogram. This experience gave me something that books could not and allowed me to gain valuable insight into the profession of forensic science.”

“I was a resource development assistant at Health and Science Innovations. I worked on research for writing grants and putting parts of grants together. I also was in charge of social media and attending meetings with other companies. This experience showed me how important scientific and persuasive writing truly is. Also, it helped me understand how to work effectively in an office with people with many different positions.”
Samantha Sparks, Spring 2017
The Children's Museum of Indianapolis

“I worked as a Science Program Intern during the Spring 2017 semester. My main project was developing a program to facilitate in the recently updated STEM-Lab area. I designed my program for preschool and above, as well as families focusing on the exploration and explanation of the five senses. I enjoyed being able to work with kids of all ages, as well as get them excited about STEM topics. Getting kids excited about science is so important to the future of STEM fields.”

Emma Fort, Spring 2017
The Children's Museum of Indianapolis

“Over the spring semester I was tasked with planning a new program for SciencePort in the Dow AgroScience area. Using my mentor's starting idea of something to do with medicine, I designed a program to teach children and their families more about different diagnostic tests used in medicine such as X-rays and genetic testing. The experience of working for the museum and getting to work in STEM education has impacted me greatly as I realized how much I love teaching in a setting like that at the museum, especially when that teaching involves science.”
Fallon Stinson, Summer 2017
Las Vegas Metropolitan Police Department (LVMPD) Forensics Laboratory

“This summer I will be interning at the LVMPD. I will specifically be working in the toxicology section of the lab. I will be working on a project regarding statistical analysis of drug cases over the last ten years in the area. I hope to explore other sections of the crime lab as well.”

Rebecca Yeh, Summer 2017
London School of Economics and Political Science Summer School Program

“I will be studying at the London School of Economics and Political Science (LSE) Summer School program co-sponsored by Indiana University. I will be taking two courses over the course of six weeks:

- Introduction to International Human Rights: Theory, Law
- Practice and Comparative Human Rights”

Courtney Finnearty, Summer 2017
IU School of Medicine: Department of Pathology and Laboratory Medicine

“Thanks to my connections with Dr. Sandusky, a forensic pathologist offered me an opportunity to travel and scribe during his forensic autopsy examinations, which ultimately inspired me to continue my education in medicine.

Working with Dr. Sandusky, collaborating researchers, and principle investigators (PIs) has expanded the vision for my future. Before this opportunity, I never imagined pursuing medicine as a career or having so many multidisciplinary paths to venture down after finishing my undergraduate career.”
Forensic & Investigative Sciences Awards

Outstanding Research Award
This award is given to an outstanding student who has demonstrated excellence in research with commitment and desire to advance the field of Forensic Science.
Grace Connolly, Forensic & Investigative Sciences, Chemistry

Academic Achievement Award
This award is given for outstanding academic achievement, including high GPA and challenging course enrollment.
Katherine Haskell, Forensic & Investigative Sciences, Biology

Student Leadership Award
This award is presented to a student who has demonstrated leadership and service in the Forensic and Investigative Sciences (FIS) Program and/or the FIS Club.
Adrienne Kelley, Forensic & Investigative Sciences, Chemistry

Charles (Chuck) Gould Memorial Scholarship
This scholarship is named for Charles (Chuck) Gould, who was an FIS graduate student and an analyst with the Indianapolis Marion County Forensic Services Agency (IMCFSA). Established by his family in his memory, this scholarship is given to the top second-year graduate student in the FIS program.
Josiah McKenna, Forensic & Investigative Sciences MS

Associate Faculty Award
The purpose of this award is to honor a member of the associate faculty for outstanding teaching within the Purdue University School of Science at Indianapolis. The outstanding teacher demonstrates superior ability to impart knowledge of chosen topics to students and to stimulate their desire to master these topics. The award recognizes that teaching extends beyond the classroom and includes activities such as mentoring and motivating of students either formally or informally.
Carl Sobieralski, Jr.
On her IUPUI Experience

“While IUPUI is rather large, I appreciate the smaller classroom settings that the School of Science has to offer, particularly in forensic science. The faculty of the Forensic Investigative Science program will provide you with resources and expand your network whether your passions are finding a career, continuing education, or research. With the support and encouragement of this department, I was honored as a Top 100 student during my junior year.”
Congratulations to the 2017 FIS Graduates!!!
Below is a sampling of places our undergraduate students have gotten employment:

- Agilent Technologies
- AIT Laboratories
- AIT Bioscience
- Anheuser Busch Brewery (Missouri)
- Axis Forensic Toxicology
- Belize National Forensic Science Service (Belize)
- Bismarck Crime Laboratory (North Dakota)
- BioStorage Technologies, Inc.
- Bode Cellmark Forensics (Virginia)
- Buchi Laboratory Equipment (North Carolina)
- Carrollton Police Department (Kentucky)
- City of Columbus Division of Police (Ohio)
- Colorcon
- Community Healthcare Systems
- Covance Laboratories
- Deaconess Health System
- Drug Enforcement Administration (DEA, Maryland)
- Dupage County Forensic Science Center (Illinois)
- Eli Lilly and Company
- 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 Toxicology
- Indianapolis-Marion County Forensic Services Agency
- IU Simon Cancer Center
- Lancaster Laboratories
- Marion County Coroner's Office
- Miami Valley Regional Crime Laboratory (Ohio)
- Mid America Clinical Laboratories
- Pepsico
- Polaris Laboratories
- Quintiles Laboratories
- Raabe Company (Wisconsin)
- 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)
- 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:

- Drexel University: Physician’s Assistant School
- George Washington University
- Indiana University Medical School
- Indiana University Law School
- 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 Tennessee: PhD in Chemistry
- Virginia Commonwealth University
Below is a sampling of places our graduate students have gotten employment.

- Aria Diagnostics
- Butler University
- Colorado Bureau of Investigation
- Denver State Police
- Eli Lilly and Company
- Ideal Innovations, Inc. (Afghanistan)
- Indiana State Department of Health
- Indiana State Police Forensic Laboratory
- Indiana State Department of Toxicology
- Microbac Laboratory Services
- Ocean Optics (Florida)
- State of Colorado Biology Laboratory
- Sun King Brewery
- Texas Department of Public Safety