

NIJ's Forensic Science Research & Development Programs

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National Commission on Forensic Science
January 11, 2017



NIJ

Disclaimer

- Any opinions or points of view expressed are those of the presenter and do not necessarily reflect the official position or policies of the U.S. Department of Justice.



“... the scientific paper is a marker on the way to scientific progress, not itself a destination. Scrutiny of papers is therefore to be welcomed, if only to check that the signposts are pointing in the correct direction. New knowledge arrives constantly to correct and displace the old. It is a messy process, full of acrimonious discussions and painful realizations, but necessary. Errors must be rooted out.”¹

1. Critics' choice: Post-publication scrutiny of papers is essential for science — but it should be done politely, December 2016, Volume 540, Nature, p.7.



NIH

NIJ's Office of Investigative and Forensic Science

- The lead federal agency for forensic science research and development as well as the administration of programs to improve laboratory efficiency, reduce backlogs, and provide technical assistance.

The screenshot shows the NIJ website's funding awards page. The header includes the NIJ logo and the tagline "STRENGTHEN SCIENCE. ADVANCE JUSTICE." Navigation links include "ABOUT NIJ", "WHAT'S NEW", and "ALL TOPICS". The main navigation menu features "NIJ HOME PAGE", "FUNDING & AWARDS", "EVENTS", "PUBLICATIONS & MULTIMEDIA", and "TRAINING". The current page is titled "Awards Related to: Forensics AND Research and Development" and displays the following statistics:

- Number of Awards: 722**
- Total Amount Awarded: \$284,333,003**

Below the statistics, there is a search and filter section with a "Show 25 entries" dropdown and a "Filter:" input field. Navigation arrows for "Previous" and "Next" are also present. At the bottom, a table header is visible with the following columns: Award Title, Awardee, Award Number, Amount, State, Status, and Fiscal Year.



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<https://www.nij.gov/funding/awards/pages/awards-list.aspx?tags=and%3aForensics%2cResearch%20and%20Development>

Vision of the Office of Investigative & Forensic Sciences
Justice through sound science, scientists, and forensic practice.

RESEARCH
VALIDITY AND

efficiency and reduce backlogs. OIFS' mission is to improve the quality and practice of forensic science through innovative solutions that support research and development

Mission of the Forensic Science R&D Program

Advance forensic science by supporting research and innovation to protect the public and ensure justice for all.

provide needed training in new technologies.



DOJ Issues Scientific and Research Integrity Policy

DOJ Scientific and Research Integrity Policy

**U.S. DEPARTMENT OF JUSTICE
SCIENTIFIC AND RESEARCH INTEGRITY POLICY¹**

*If the law has made you a witness,
remain a man of science.
You have no victim to avenge,
no guilty or innocent person to convict or save
— you must bear testimony within
the limits of science.²*

I. INTRODUCTION

The Department of Justice (Department or DOJ) is the Nation's litigator and, as such, is responsible for the fair and efficient administration of justice in both criminal and civil matters. Department personnel – including officials, attorneys, law enforcement agents and employees engaged in scientific disciplines – are entrusted with awesome responsibilities and, in executing DOJ's mission and their respective roles, must pursue, rely upon and present evidence that is well-founded in fact and veracity. This is particularly critical in the scientific arena, where the credibility of the evidence often relies upon the integrity of its handlers, examiners, experts and presenters. Investigations and prosecutions based in whole or in part upon forensic science must be based upon sound science – from the crime scene to the courtroom to post-conviction reviews and each step along the way. When science informs criminal investigations and prosecutions or forms the basis for the Department's litigation position in a civil matter, it is vital that the information relied upon be credible.

In addition to serving as the lead federal law enforcement agency and the People's representative in federal court, the Department is the custodian of pretrial detainees and convicted felons incarcerated in federal prisons. Detention and rehabilitation strategies and policies must flow from valid social science studies.

<http://www.justice.gov/open/doj-scientific-integrity-policy.pdf>



NIJ

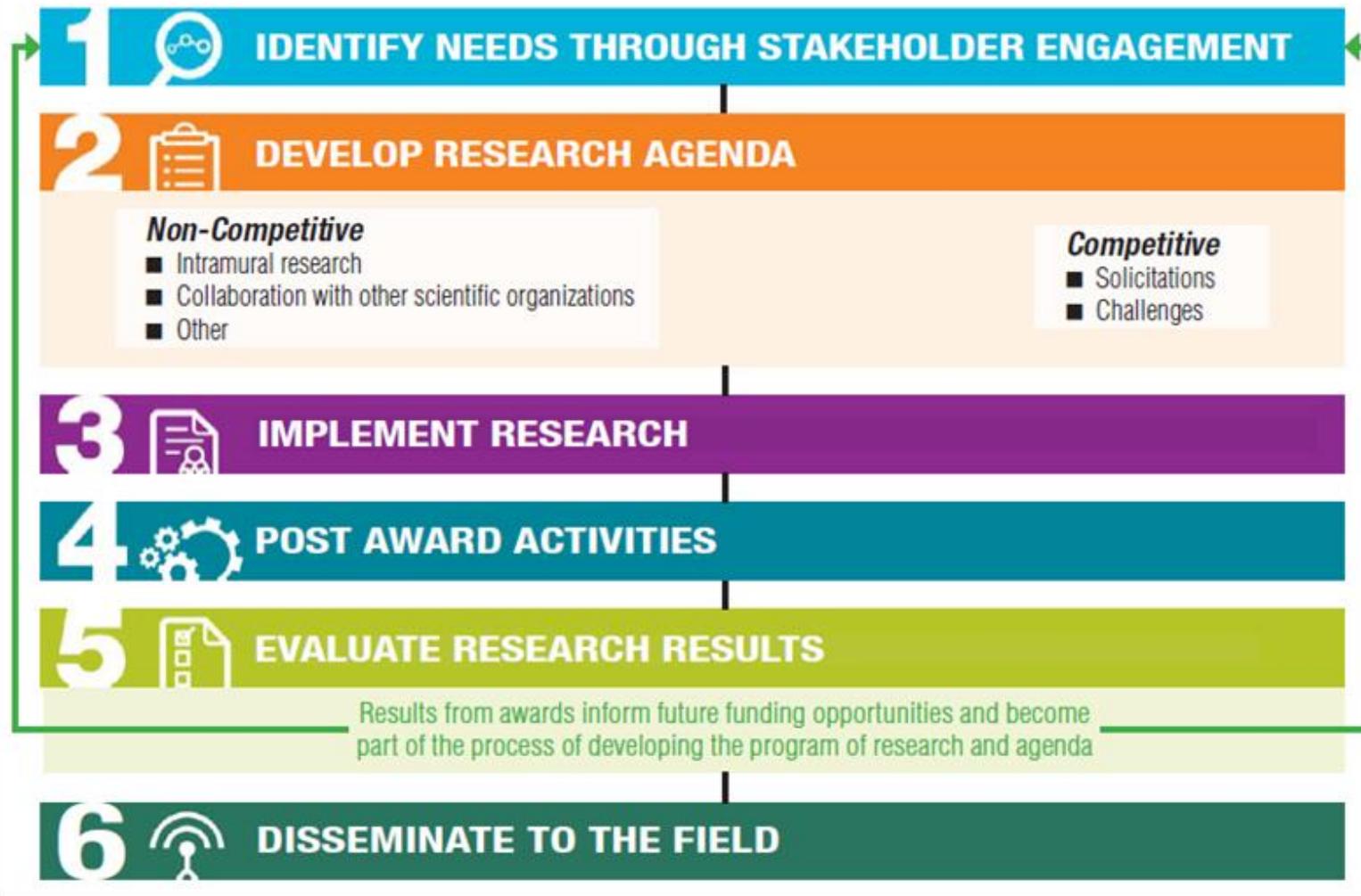
DOJ Asserts NIJ Independence

“Across-the-board culture of scientific, technological and research validity, reliability, accuracy, objectivity and integrity”

“Director of the National Institute of Justice shall have final authority over all grants”

“NIJ retains control over the timing and content of research reports”

NIJ's Research and Development Process



NIJ

<http://www.nij.gov/Documents/nij-research-and-development-process-high-level.pdf>

Forensic Science R&D Program

U.S. Department of Justice
Office of Justice Programs
National Institute of Justice

OMB No. 1125-0187
Approval Expires 12/31/2016

The [U.S. Department of Justice \(DOJ\)](#), [Office of Justice Programs \(OJP\)](#), [National Institute of Justice \(NIJ\)](#) is seeking applications for funding of basic or applied research and development in forensic science for criminal justice purposes. This program furthers the Department's mission by sponsoring research to provide objective, independent, evidence-based knowledge to meet the challenges of criminal justice, particularly at the state and local levels. The Forensic Science Technology Working Group (TWG) assists in identifying and prioritizing operational needs and requirements of the field. The forensic science needs discussed at the FY 2015 TWG meeting may be found on [NIJ.gov](#) and are intended to facilitate program development.

Research and Development in Forensic Science for Criminal Justice Purposes

Applications Due: February 28, 2017

Eligibility

In general, NIJ is authorized to make grants to, or enter into contracts or cooperative agreements with, states (including territories), units of local government, federally recognized Indian tribal governments that perform law enforcement functions (as determined by the Secretary of the Interior), nonprofit and for-profit organizations (including tribal nonprofit organizations), institutions of higher education (including tribal institutions of higher education), and certain qualified individuals. Federal agencies are eligible to apply. Applications made to a federal agency will be made as an interagency reimbursable agreement. Non-federal organizations must agree to forgo any profit or management fee. Foreign governmental organizations, and foreign colleges and universities are not eligible to apply.

U.S. Department of Justice
Office of Justice Programs
National Institute of Justice



NATIONAL INSTITUTE OF JUSTICE FORENSIC SCIENCE R&D GRANTS

In Fiscal Year 2017, NIJ plans to solicit proposals under the **Research and Development in Forensic Science for Criminal Justice Purposes** program for basic or applied research and development projects that will:

- Increase the body of knowledge to guide and inform forensic science policy and practice; or
- Result in the production of useful materials, devices, systems, or methods that have the potential for forensic application.

Goals

Proposals should address at least one of the following goals:

- **Fundamental/Basic Research Goal:** Improve the understanding of the accuracy, reliability, and measurement validity of forensic science disciplines.
- **Applied Research Goal:** Increase knowledge or understanding necessary to guide criminal justice police and practice related to the forensic sciences.
- **Development Goal:** Produce new materials, devices, systems, or methods that have the potential for forensic application for criminal justice purposes.

New Investigator Opportunities

NIJ is interested in funding scientists new to forensic science research. Proposals for which the principal investigator and any co-investigator(s) qualify under these categories may be given special consideration in award decisions:

- **Junior Faculty:** Non-tenured faculty, typically Assistant Professor or equivalent, who have not received prior NIJ research funding.
- **Senior Faculty:** Established researchers, typically tenured faculty or equivalent, who have not been funded by NIJ in the past 10 years.

Needs of the Community

For more information on what research and technology and forensic practitioners would benefit from, read NIJ's Forensic Science Technology Working Group operational requirements on [NIJ.gov](#), keywords "forensic operational needs."

Deadline: February 28, 2017

Begin the application process early by registering with [Grants.gov](#). All applications are due before midnight on February 28, 2017. Read the solicitation at <http://nij.gov/funding/Documents/solicitations/NIJ-2017-11080.pdf>.

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NIJ.GOV
November 2016

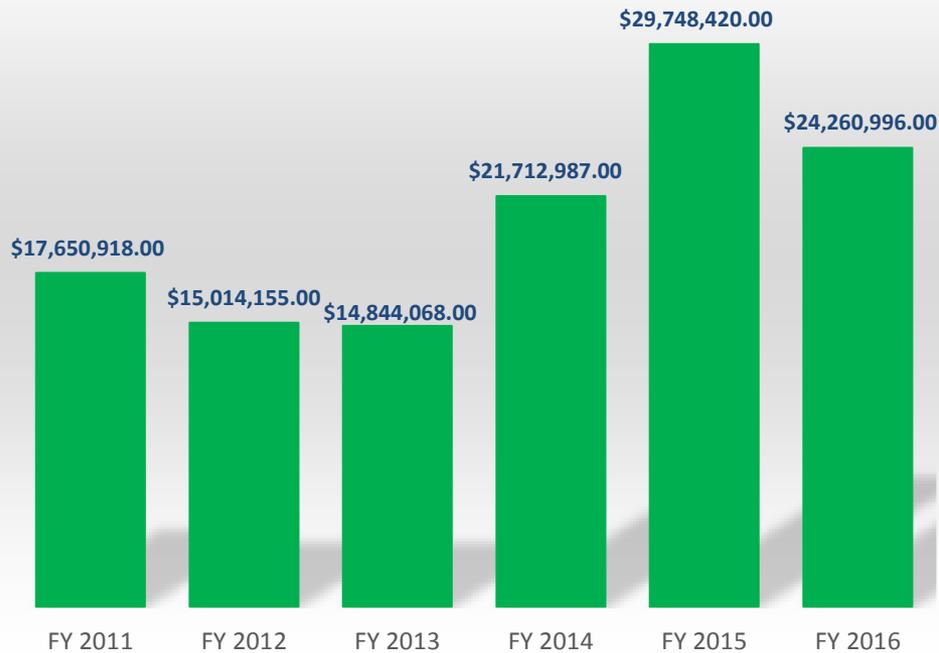


NIJ

<https://nij.gov/funding/Documents/solicitations/NIJ-2017-11080.pdf>

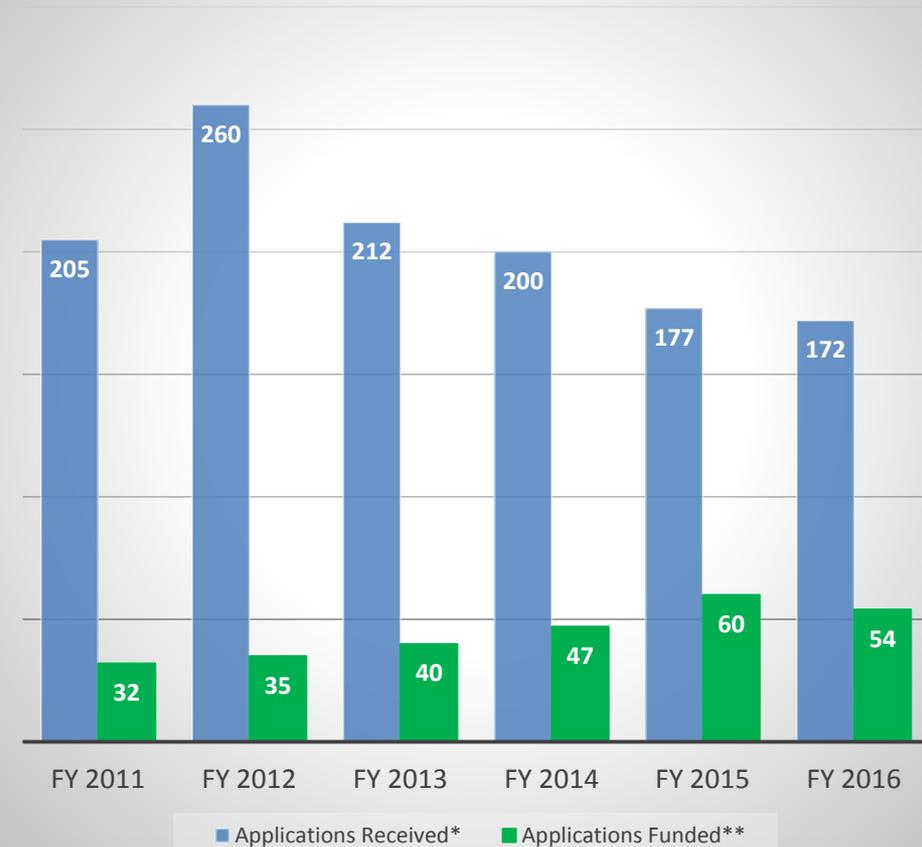
Forensic Science R&D: FY2011 to FY2016

Forensic Science R&D Funding Levels



Average Award Size: \$445K

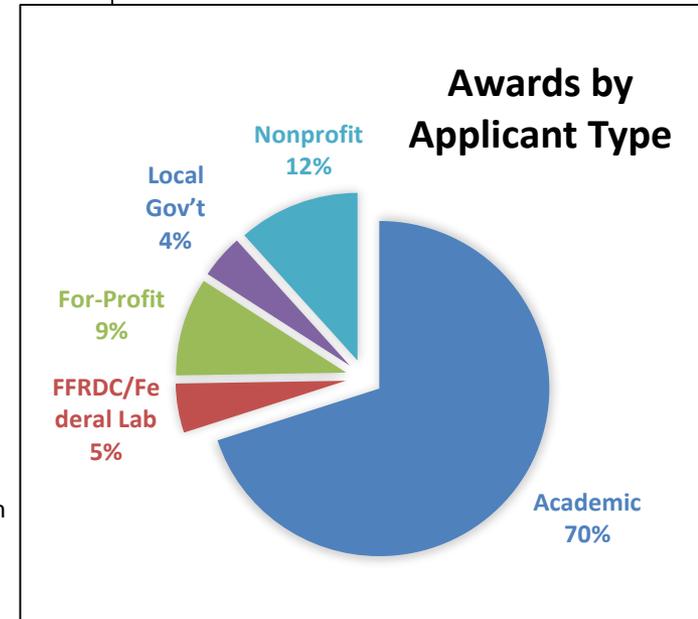
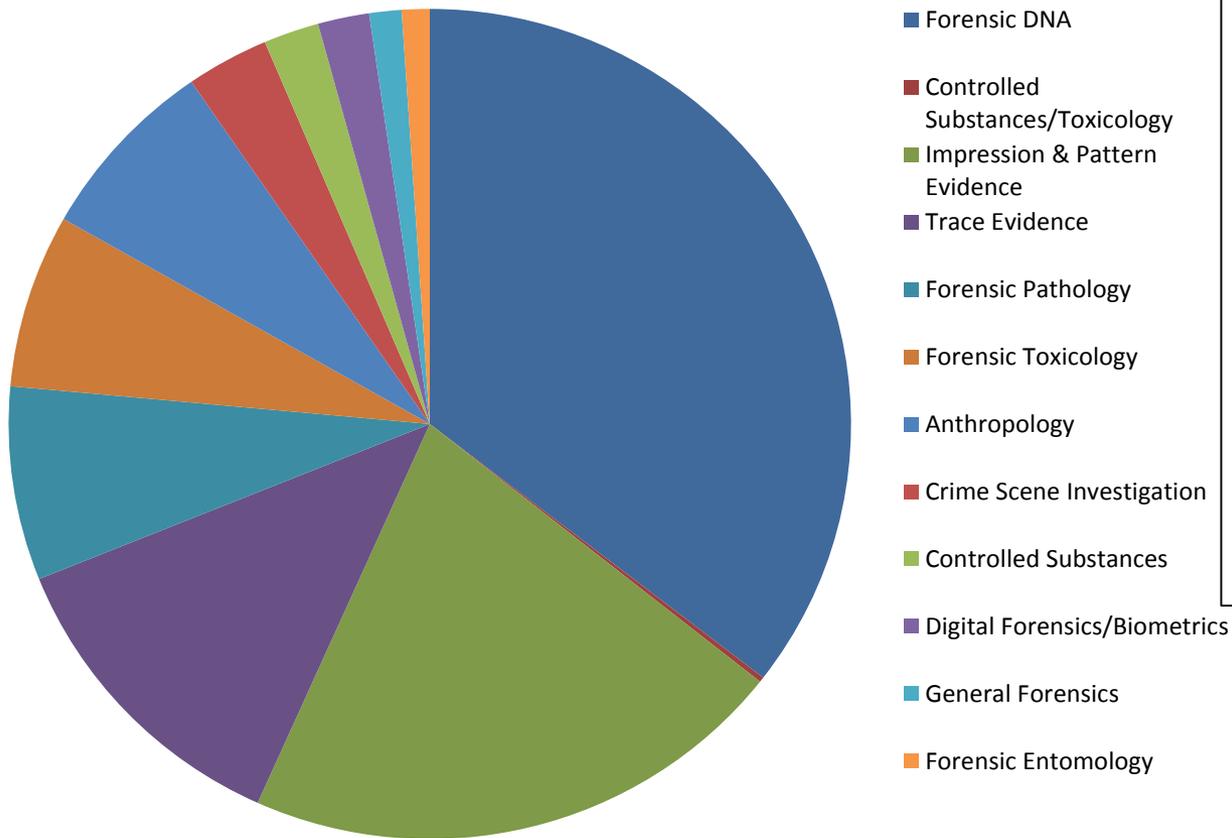
Forensic Science R&D Funding Rates



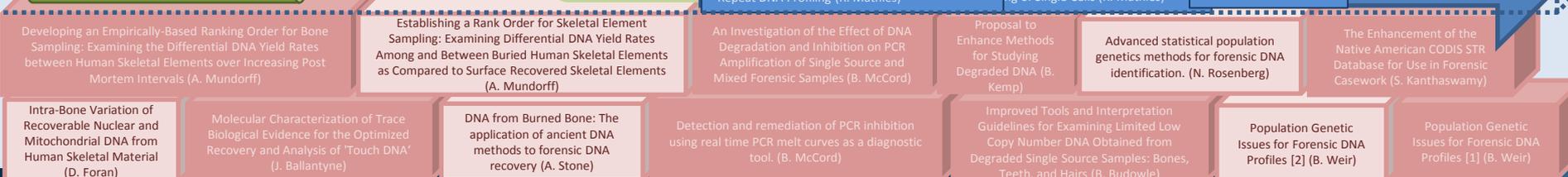
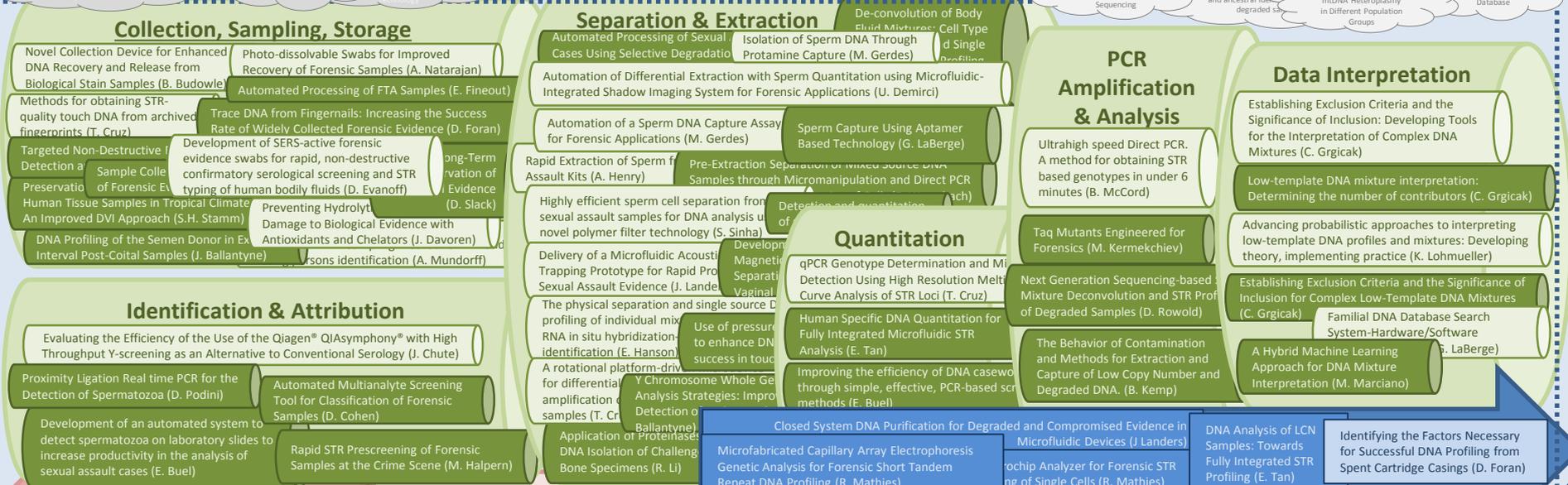
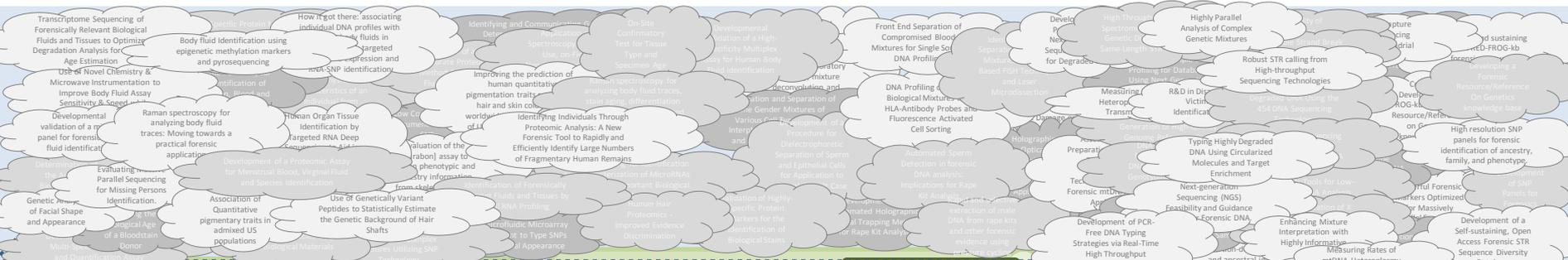
Average Funding Rate 22.8%

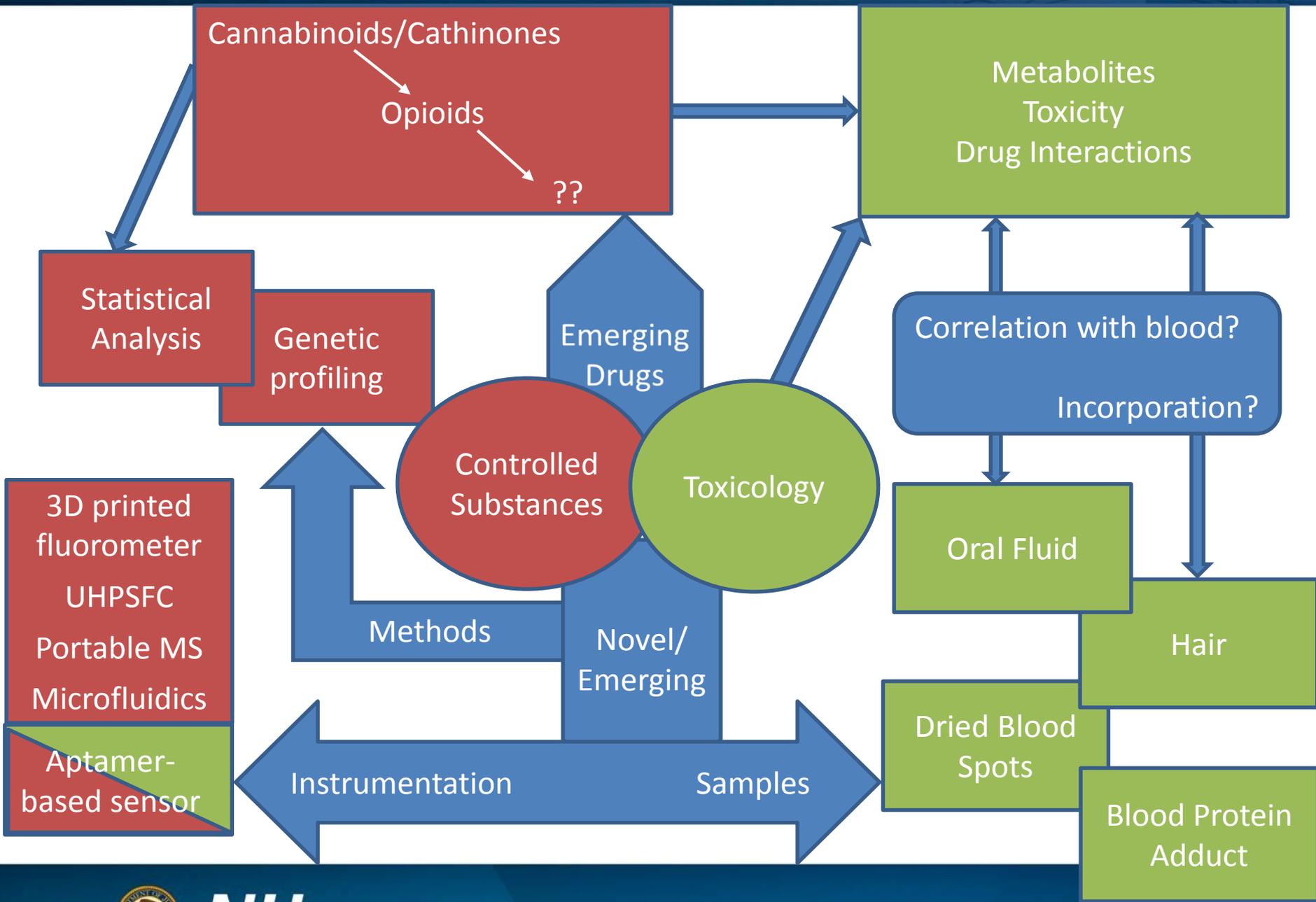
Forensic Science R&D Grant Recipients

**Distribution of Forensic Science R&D Funding by Discipline
2009-2016**



Forensic Biology and DNA R&D







The [U.S. Department of Justice](#) (DOJ), [Office of Justice Programs](#) (OJP), [National Institute of Justice](#) (NIJ) is seeking applications for research and evaluation studies to produce practical knowledge that has the potential to improve the examination and interpretation of physical evidence in forensic science laboratories. This program furthers the Department's mission by sponsoring research to provide objective, independent, evidence-based knowledge and tools to meet the challenges of criminal justice, particularly at the State and local levels.

Research and Evaluation for the Testing and Interpretation of Physical Evidence in Publicly Funded Forensic Laboratories Eligibility

Eligible applicants are limited to States (including territories) and units of local government (including federally recognized Indian tribal governments as determined by the Secretary of the Interior). Applicants are limited to publicly funded forensic science laboratories that are currently accredited by an independent accrediting or certifying forensic science organization. Publicly funded forensic science laboratories include State, regional, county, municipal, and tribal agencies. This solicitation excludes federal agencies.

Postdoctoral Fellowship

To allow for the addition of this work to existing casework demands, and to foster collaboration between emerging forensic science researchers and forensic science laboratories, NIJ strongly encourages applicants to consider funding a postdoctoral fellowship through this award at their facility. This research model will encourage new research scientists to pursue careers in forensic science, allow the laboratory to benefit from the fellow's research skills as they work on the proposed project, and decrease the amount of time which the forensic scientist must take away from their own casework to work on the proposed project.

A key component for a successful postdoctoral research experience is a robust mentorship program to prepare the researcher for future career activities. NIJ strongly encourages that laboratories submit a postdoctoral mentorship plan that describes the activities that will assist the fellow with career placement. Examples of postdoctoral mentoring activities can be found at the National Science Foundation

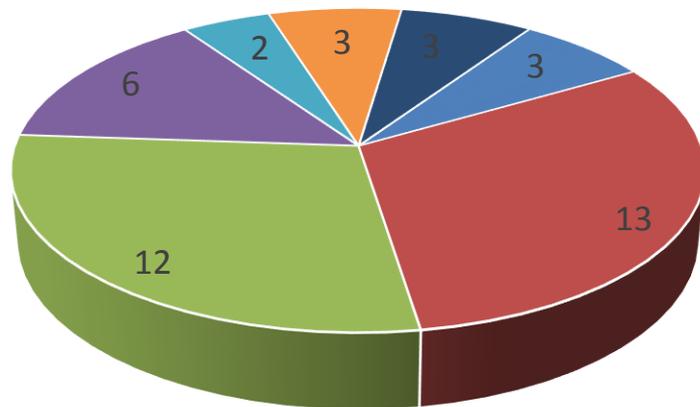
(www.nsf.gov/pubs/policydocs/pappguide/nsf15001/index.jsp?org=EF) and the American Association for the Advancement of Science (myidp.sciencecareers.org/).



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Research and Evaluation for the Testing and Interpretation of Physical Evidence in Publicly Funded Forensic Laboratories

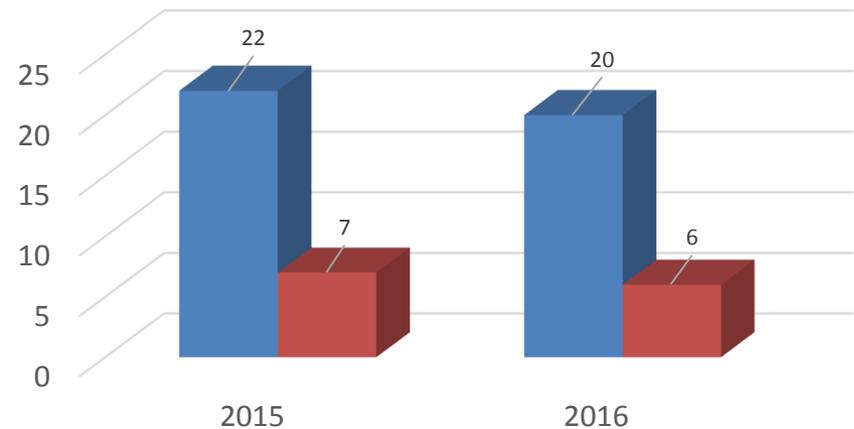
FY15 & FY16 Applications by Discipline



- Anthropology
- DNA
- Controlled Substances/Toxicology
- Impression and Pattern Evidence
- Multi-Discipline
- Pathology

Research the process, not necessarily the underlying science of the testing

Public Lab R&E Funding Rates



NIJ

<http://nij.gov/funding/Documents/solicitations> - To be posted soon



NATIONAL INSTITUTE OF JUSTICE GRADUATE FELLOWSHIP

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS



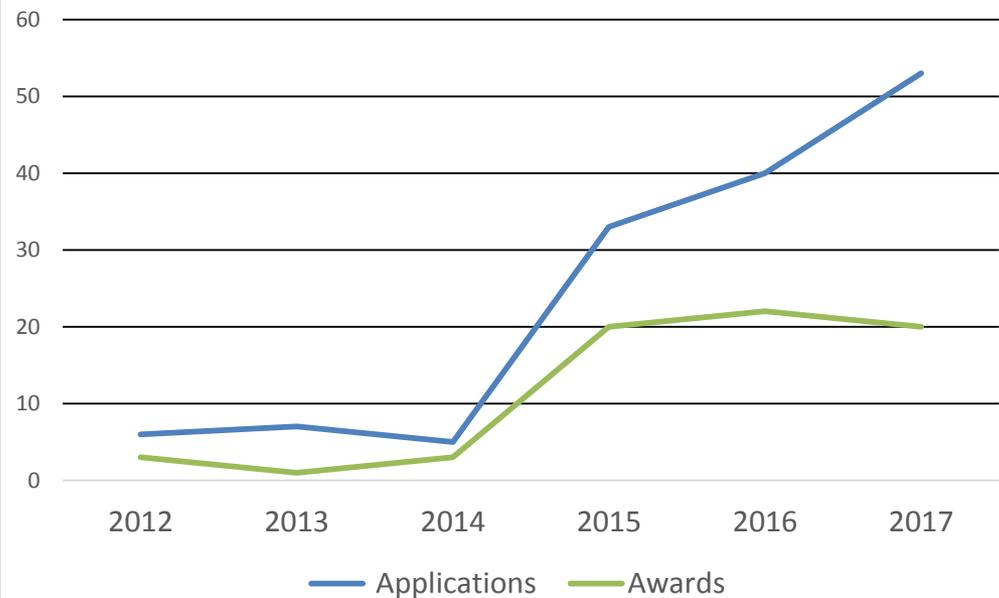
• Benefits

- \$35,000 / yr. stipend
- \$15,000 / yr. expenses
- Up to 3 years

Recommendation #10 of the 2009 NAS report:

“To attract students in the physical and life sciences to pursue graduate studies in multidisciplinary fields critical to forensic science...”

GRF-STEM Funding Rates



*2017 Estimated Number of Awards is 20



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Collaboration with Federal Agencies



NIST/NIJ Working Groups

NIST and the National Institute of Justice have convened multi-disciplinary working groups to take on specific challenges that impact the forensic science community. These technical working groups typically include experts from the forensic science community and other relevant fields. These groups study an issue over a period of time and often publish recommendations and guidelines as a result of their work. Find information on specific efforts through the links below.

- **Technical Working Group on Biological Evidence Preservation:** The Technical Working on Biological Evidence Preservation is charged to create best practices and guidance to ensure the integrity, prevent the loss, and reduce the premature destruction of biological evidence after collection through post-conviction proceedings. Biological evidence refers to samples of biological material – hair, tissue, bones, teeth, blood, semen, or other bodily fluids – or evidence items containing biological material.
- **Latent Print AFIS Interoperability Working Group:** As part of a National Institute of Justice (NIJ)/NIST effort to address the lack of AFIS interoperability, OLES convened the Latent Print AFIS Interoperability Working Group. The mission of this Working Group is to improve latent print AFIS interoperability by developing a clear understanding of the issues and challenges at hand and to identify collaborative ways to actively address this national problem.
- **Expert Working Group on Human Factors in Latent Print Analysis:** This Working Group assessed the effects of human factors on forensic latent print analysis and recommended ways to reduce the likelihood and consequences of human error at various stages in the interpretation of latent print evidence. In February 2012, we published *Latent Print Examination and Human Factors: Improving the Practice through a Systems Approach*.
- **Update from the Working Group on Presenting Forensic Science Evidence Using Quantitative and Qualitative Terms:** NIST has partnered with the Pennsylvania State University to establish a working group that will propose generally applicable best practices for reporting relevant statistical information about forensic evidence (e.g., quantitative measurements, expressions of uncertainty or error probabilities in measurements or conclusions, and validation studies). To meet its charge, the working group will review studies related to the presentation of statistical information to lay individuals that have been published in forensic, legal, social science, and statistical literature. The group will also review how forensic-science evidence and other types of expert or scientific evidence (e.g., medical evidence) have been presented in court in the United States (and in the similar legal system in the United Kingdom).



National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230



NSF 14-066

Dear Colleague Letter - IUCRCs in Areas Relevant to the Forensic Sciences

May 7, 2014

Dear Colleagues,

The National Science Foundation (NSF) and the National Institute of Justice (NIJ) have partnered as co-sponsors to welcome proposals for establishment of Industry/University Cooperative Research Centers (IUCRCs; see NSF 13-594; http://www.nsf.gov/publications/pub_summ.jsp?org=ENG&ods_key=nsf13594) in areas relevant to the forensic sciences. With permission from the Principal Investigator (PI), NIJ will share in evaluation of forensics-related IUCRC proposals, and may co-sponsor successful proposals.

We envision this mechanism as a means to convene experts with knowledge of the needs and challenges of forensics, vendors and developers of state-of-the-art tools, and academic researchers at the frontiers of disciplines with applicability to the forensic sciences, to address the broad challenges outlined in a recent Foundation-wide "Dear Colleague Letter" (NSF 13-120; <http://www.nsf.gov/pubs/2013/nsf13120/nsf13120.jsp>). This letter supplements the earlier one, which remains in effect. Current IUCRCs seeing potential forensics-related links to their research agendas may wish to discuss those with their cognizant NSF program officer.

The IUCRC program develops long-term partnerships among industry, academia, and government. The centers are catalyzed by a small investment from NSF; their research is primarily funded by center members, with NSF playing a supporting role in the development and evolution of the center. These sponsorship roles can be shared by NSF and NIJ for forensics-relevant IUCRCs, providing additional valuable perspective.

Industrial and other institutions, including local, state, and Federal agencies and private philanthropic foundations, may be members of IUCRCs. Each center is established to conduct pre-competitive research (i.e., research for which members agree *a priori* to share outcomes) that is of interest to both the members and the center faculty. An IUCRC contributes to the nation's research infrastructure base and enhances the intellectual capacity of the engineering and science workforce through the integration of research and education. As appropriate, an IUCRC can use international collaborations to advance these goals within the global context. Various spin-offs, including proprietary research collaborations, leverage center portfolios.



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FY 2016 Federal Partnerships

- NIJ Awarded NIST \$902,363 for a Forensic Firearms Research Database and Firearms Imaging Metrological Standards
- NIJ Awarded FBI \$1.5M for the development of National Footwear Database
- NIJ Awarded DoD - Defense Forensic Science Center (DFSC) over \$1.0M in the past three years

Acknowledgements

- Gregory Dutton
- Danielle McLeod-Henning
- Minh Nguyen
- Frances Scott



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