



OCT. 05

NIJ

Solicitation for Concept Papers

Forensic DNA Research and Development

Notice:

You *must* submit your application electronically using Grants.gov.

Go to <http://www.ojp.usdoj.gov/nij/funding/howto.htm> for application instructions. For Grants.gov technical support, call 1-800-518-4726.

Catalog of Federal Domestic Assistance (CFDA) Number: 16.560

CFDA Title: National Institute of Justice Research, Evaluation, and Development Project Grants

Deadline:

November 17, 2005

**Extended to
November 25, 2005**

8 p.m. eastern time

SL 000717

U.S. Department of Justice
Office of Justice Programs
810 Seventh Street N.W.
Washington, DC 20531

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Forensic DNA Research and Development

I. Introduction

The National Institute of Justice (NIJ) is the research, development, and evaluation agency of the U.S. Department of Justice and a component of the Office of Justice Programs (OJP). NIJ provides objective, independent, evidence-based knowledge and tools to enhance the administration of justice and public safety. NIJ supports research that can provide knowledge and tools to guide policy and practice.

With this solicitation, NIJ seeks proposals for research and development to enhance the forensic uses of DNA technology. This solicitation focuses on technologies that result in faster, more robust, more informative, less costly, and/or less labor-intensive identification, collection, preservation, and/or analysis of DNA evidence collected from crime scenes. Priority will be given to proposals focusing on the following:

1. Software tools for mixture interpretation of DNA data from casework samples.
2. Physical separation of the components of a mixture.
3. Automated sperm searches.
4. Body fluid/cell type identification.
5. Preliminary genetic determination of probative evidentiary samples.
6. Identification and/or characterization of genetic marker systems that have the potential to reveal additional or more powerful information about the source of biological evidence.
7. Improved tools for examining aged, degraded, limited, damaged, or otherwise compromised DNA evidence.

Due date: The due date for this concept paper is **November 17, 2005**. Extensions to the deadlines are generally not granted.

Page limit: The concept paper must not exceed 10 double spaced pages, including charts, figures, and appendixes. A short abstract must be included within the 10 pages. (The program narrative section of full proposals, for applicants who will be invited to submit them, are usually limited to 25–30 pages.)

Reasons for rejection: NIJ may reject applications that are incomplete, do not respond to the scope of the solicitation, do not comply with format requirements, or are submitted after the deadline. No additions to the original submission are allowed.

How to apply: Detailed instructions for using Grants.gov to apply are available at <http://www.ojp.usdoj.gov/nij/funding/howto.htm>. For Grants.gov technical support, call 1-800-518-4726.

II. Concept Paper Topics

Forensic DNA analysis has played a crucial role in the investigation and resolution of thousands of violent crimes since the late 1980s. Currently, short tandem repeats (STRs) are the most widely used markers for forensic DNA testing. Because of their high discriminatory power, good resolution of alleles, and the ability to rapidly process samples using multiplexed polymerase chain reaction (PCR), 13 STRs have been chosen as the core loci upon which the FBI's National DNA Index System (NDIS) has been built.

In recent years, other genetic polymorphisms, such as those found in the mitochondrial DNA (mtDNA) genome and the Y chromosome, have been shown to provide effective results that can augment traditional STR data. MtDNA analysis is especially useful for cases involving extremely degraded or limited biological residues, such as skeletal remains or shed hairs. Y chromosome markers can be beneficial in resolving sexual assault cases, particularly those with multiple male contributors. Single nucleotide polymorphisms, now known to be abundant throughout the nuclear genome, may become important genetic markers for the forensic scientist in the future. The emerging discipline of proteomics may include forensic applications that have not yet been explored. An increased understanding of these and other systems with potential forensic utility will advance the field.

The demand for tools and technologies in all areas of forensic science, including DNA testing, far exceeds the current capabilities of the field. The forensic DNA community would therefore greatly benefit from technical tools and innovations—**particularly those amenable to automated and high-throughput processes**—that can be appropriately validated, quality controlled, quality assured, and implemented for forensic use.

Applicants to this solicitation must demonstrate an appreciation of and general familiarity with the technologies currently used for analyzing DNA evidence. They should have an understanding of issues such as chain of custody, courtroom admissibility, degraded or limited DNA, and mixtures of DNA from multiple tissues or individuals. Applicants should also demonstrate an appreciation of the costs to implement and maintain the proposed technology, as well the training that will be required. NIJ **strongly** encourages researchers to seek guidance from, or partner with, appropriate State or local crime laboratories. Such associations foster a greater understanding of

the issues unique to the field of forensic DNA and may strengthen the scope of the proposed research plan.

Suggested Areas of Research

NIJ is interested in tools and technologies that will allow faster, more robust, more informative, less costly, and/or less labor-intensive identification, collection, preservation, and/or analysis of DNA evidence collected from a crime scene.

Priority will be given to proposals addressing the following requirements:

Software tools for mixture interpretation of DNA data from casework samples. The software should perform quantitative interpretation of DNA data from mixtures from two or more sources, have the ability to calculate ratios on multiple-component mixtures, and perform analyses on partial DNA profiles and degraded DNA evidentiary samples.

Physical separation of cells (e.g., sperm cells from female epithelial cells, epithelial cells from different sources) or other components (e.g., PCR products) in mixtures from two or more individuals or sources. A method that can physically separate and ideally quantitate various components of a mixture would benefit the overall DNA analysis method. The separation method must be successful on typical forensic samples (limited in yield, etc.) and must not reduce the efficiency of downstream DNA profiling methods.

Automated sperm searches. Identification of sperm in sexual assault evidence can be labor-intensive and time consuming, especially when sperm are greatly outnumbered by female epithelial cells. Automated methods for detecting and locating sperm in DNA evidence would greatly expedite DNA casework analysis. Methods should require minimal operator input and should not decrease the efficiency of downstream DNA profiling methods.

Body fluid/cell type identification and characterization. Biological evidence is frequently a combination of various cell types/body fluids (e.g., sperm/semens, vaginal epithelial cells/vaginal fluid, oral epithelial cells/saliva). A confirmatory method for determining the source of the components present in the biological evidence would benefit the overall DNA analysis process. The method should require minimum sample consumption.

Preliminary genetic determination of probative evidentiary samples. In many instances, numerous biological samples are collected as crime scene evidence. A screening method based, for example, on the analysis of a subset of genetic markers, could help crime lab analysts focus the full analysis on the most probative samples. This would in turn reduce the time currently spent on interpretation and reporting of samples that are non-probative. The method should be amenable to automation and require minimal sample consumption.

Identification and/or characterization of genetic markers that have the potential to reveal additional or more powerful information about the source of biological evidence. An example would be genetic markers that have the potential to provide forensically useful information about physical characteristics (i.e., phenotype) of the DNA contributor.

Improved tools for examining aged, degraded, limited, damaged, or otherwise compromised DNA evidence. These tools can determine the condition of the DNA in order to assist crime lab analysts in selecting the appropriate DNA profiling approach (e.g., traditional STRs vs. mini-STRs vs. mitochondrial DNA) and/or result in overall improvements in the success rate of the analysis of compromised DNA evidence.

III. General Requirements and Guidance

NIJ is asking you to submit a concept paper that captures the essence of a full proposal. The main difference between a concept paper and a proposal is that concept papers are much shorter and do not contain detailed budgets.

Your concept paper should state the problem under investigation (including goals and objectives of the proposed project) and the relevance of the project to public policy, practice, or theory. The narrative program section should state the research question and objectives and explain how the work will contribute to knowledge and practice. It should describe in sufficient detail the research methods and analytic strategy.

While the concept paper should not include a detailed budget or management plan, the program narrative should include a staffing plan and an estimate of the funding required, summarized by task, and a general timeframe for completion of those tasks and the project as a whole.

Peer reviewers will evaluate each concept paper and based on their recommendations, NIJ will invite authors of selected concept papers to submit full applications.

The format for your concept paper is as follows:

1. Abstract of no more than 400 words.

2. Program narrative.

- a. Research question or problem.
- b. Research goals and objectives.
- c. Research design and methods.
- d. Implications for policy and practice.
- e. Dissemination strategy.
- f. Description of estimated costs.
- g. Staffing plan.
- h. Timeline.

3. Tables, figures, charts, and appendixes, if applicable.

- A. Submit applications online:** Paper applications are not accepted. Applications must be submitted online at Grants.gov. See <http://www.ojp.usdoj.gov/nij/funding/howto.htm> for application instructions.

- B. Relevance of the project for policy and practice:** Higher quality concept papers clearly explain the practical implications of the project. They connect technical expertise with policy and practice. To ensure that the project has strong relevance for policy and practice, some researchers and technologists collaborate with practitioners and policymakers. You may include letters showing support from practitioners, but they carry less weight than clear evidence that you understand why policymakers and practitioners would benefit from your work and how they would use it. While a partnership may affect State or local activities, it should also have broader implications for others across the country.

- C. Cofunding:** A grant made by NIJ under this solicitation may account for up to 100 percent of the total cost of the project. You must indicate whether you believe it is feasible for you to contribute cash, facilities, or services as non-Federal support for the project. Your concept paper should identify generally any such contributions that you propose to make. If you are asked to submit a full proposal, your proposed budget should indicate in detail which items, if any, will be supported with non-Federal contributions.

- D. Number of grants to be awarded:** NIJ's grant award process is highly competitive. The number of awards to be made is subject to the availability of funds and the number and quality of applications received.

- E. When awards will be made:** All applicants, whether they are accepted or rejected, will be notified. The review and approval process for concept papers takes about 8 weeks. The review and approval process for full proposals takes about 6 months. You should not propose to begin work until at least 8 months after the concept paper deadline on the cover of this solicitation. Also, you should not expect to receive notification of a decision for at least 8

months after that date. Lists of awards are updated regularly on NIJ's Web site at <http://www.ojp.usdoj.gov/nij/funding.htm>.

- F. Financial capability questionnaire:** Any applicant that is a nongovernmental entity and has not previously received an award from OJP will be required to complete and submit a financial capability questionnaire before any award is made.
- G. An environmental assessment may be required:** All awards are subject to the National Environmental Policy Act (NEPA). To ensure NEPA compliance, NIJ may require some award recipients to submit additional information.
- H. Protection of confidentiality:** Federal regulations require applicants for NIJ funding to outline specific procedures for protecting private information about individuals as part of the Privacy Certificate submitted with the application package. For additional information, see "Guidelines: How to Submit Applications," at <http://www.ojp.usdoj.gov/nij/funding.htm#gnya>.
- I. A DUNS number is required:** The Office of Management and Budget requires that all businesses and nonprofit applicants for Federal funds include a DUNS (Data Universal Numeric System) number in their application for a new award or renewal of an award. Applications without a DUNS number are incomplete. A DUNS number is a unique nine-digit sequence recognized as the universal standard for identifying and keeping track of entities receiving Federal funds. The identifier is used for tracking purposes and to validate address and point of contact information. NIJ will use the DUNS number throughout the grant life cycle. Obtaining a DUNS number is a free, one-time activity. Obtain one by calling 1-866-705-5711 or by applying online at <http://www.dunandbradstreet.com>. Individuals are exempt from this requirement.
- J. Funds cannot be used to lobby:** Under the Anti-Lobbying Act (18 U.S.C. § 1913), grantees generally may not use funds to support the enactment, repeal, or modification of any law, regulation, or policy at any level of government. For additional information on rules and regulations, see OJP's Financial Guide at <http://www.ojp.usdoj.gov/FinGuide>.
- K. What will *not* be funded:**
1. Provision of training or direct service.
 2. Proposals primarily to purchase equipment, materials, or supplies. (Your budget may include these items if they are necessary to conduct applied research, development, demonstration, evaluation, or analysis, but NIJ does not fund proposals that are primarily to purchase equipment.)
 3. Work that will be funded under another specific solicitation.

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4. Proposals that do not involve a suitable treatment of a technology, such as the conduct of applied research, development, analysis, evaluation, or the demonstration of one or more technologies.
 5. Projects focusing on non-human DNA.
 6. Proposals that do not contain a research and/or development component or are otherwise non-responsive to the general goals of this solicitation.

L. Cost of proposed work: Total funding for this solicitation and number of awards will depend on the availability of funds and the quality of applications. All awards are subject to the availability of appropriated funds. If appropriate, NIJ recommends that applicants divide the project into discrete phases, stages, or tasks so that NIJ can consider making an award for a specific portion of the work. Typically, NIJ awards grants of \$500,000 and below.

M. Information technology standards compliance: As appropriate, all equipment and software developed under grants or agreements awarded pursuant to this solicitation must be compliant with U.S. Department of Justice Information Technology interface standards, including the National Criminal Intelligence Sharing Plan (see http://it.ojp.gov/documents/National_Criminal_Intelligence_Sharing_Plan.pdf), Global Justice XML Data Model (see <http://it.ojp.gov/jxdlm/>), and the Law Enforcement Information Sharing Plan (LEISP). A list of additional standards can be found at the OJP Standards Clearinghouse (<http://it.ojp.gov/jsr/intro/intro03.html>).

N. Funding to faith-based and community organizations: Consistent with President George W. Bush's Executive Order 13279, dated December 12, 2002, and 28 C.F.R. Part 38, it is OJP policy that faith-based and community organizations that statutorily qualify as eligible applicants under OJP programs are invited and encouraged to apply for assistance awards to fund eligible grant activities. Faith-based and community organizations will be considered on the same basis as any other eligible applicants and, if they receive an award, will be treated on an equal basis with all other grantees in the administration of such awards. No eligible applicant or grantee will be discriminated for or against on the basis of its religious character or affiliation, religious name, or the religious composition of its board of directors or persons working in the organization. Faith-based organizations receiving OJP awards retain their independence and do not lose or have to modify their religious identity (e.g., removing religious symbols) to receive assistance awards. OJP grant funds, however, may not be used to fund any inherently religious activity, such as prayer or worship. Inherently religious activity is permissible, although it cannot occur during an activity funded with OJP grant funds; religious activity must be separate in time or place from the OJP-funded program. Further, participation in such activity by individuals receiving services must be voluntary. Programs funded by OJP are not permitted to discriminate in the provision of services on the basis of a beneficiary's religion.

O. Call for assistance:

For technical guidance about applying through Grants.gov, call Grants.gov Technical Support at 1-800-518-4726. For questions about this solicitation, the research being solicited, or other NIJ funding opportunities, see the NIJ Web site at <http://www.ojp.usdoj.gov/nij> or contact NIJ at 202-305-7807.

IV. Selection Criteria

NIJ is firmly committed to the competitive process in awarding grants. All concept papers and proposals are subjected to independent peer-review panel evaluations. External peer-review panelists consider both technical and programmatic merits. Panelists are selected based on their expertise in subject areas pertinent to the proposals.

Peer-review panelists will evaluate concept papers using the criteria listed below. Following this assessment, NIJ will then invite selected applicants to submit full proposals. Full proposals will also be peer reviewed. NIJ staff then make recommendations to the NIJ Director. The Director makes final award decisions.

Successful applicants must demonstrate the following:

A. Understanding of the problem and its importance.

Inclusion of appropriate scientific and legal citations to demonstrate awareness of the problem and the potential contribution of the proposed research to the forensic DNA community.

B. Quality and technical merit.

1. Awareness of the state of current research or technology.
2. Soundness of methodology and analytic and technical approach.
3. Feasibility of proposed project and awareness of pitfalls.
4. Innovation and creativity (when appropriate).

C. Impact of the proposed project.

1. Potential for significant advances in scientific or technical understanding of the problem.
2. Potential for significant advances in the field.
3. Relevance for improving the policy and practice of criminal justice and related agencies and improving public safety, security, and quality of life.
4. Affordability and cost-effectiveness of proposed end products, when applicable (e.g., purchase price and maintenance costs for a new technology or cost of training to use the technology).

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5. Perceived potential for commercialization and/or implementation of a new technology (when applicable).

D. Capabilities, demonstrated productivity, and experience of applicants.

1. Qualifications and experience of proposed staff.
2. Demonstrated ability of proposed staff and organization to manage the effort.
3. Adequacy of the plan to manage the project, including how various tasks are subdivided and resources are used.
4. Successful past performance on NIJ grants and contracts (when applicable).

E. Budget.

1. Total cost of the project relative to the perceived benefit.
2. Appropriateness of the budget relative to the level of effort.
3. Use of existing resources to conserve costs.

F. Dissemination strategy.

1. Well-defined plan for the grant recipient to disseminate results to appropriate audiences, including researchers, practitioners, and policymakers.
2. Suggestions for print and electronic products NIJ might develop for practitioners and policymakers.

V. Requirements for Successful Applicants

If you are invited to submit a proposal and your proposal is funded, you will be required to submit several reports and other materials as follows:

- A. Final report:** The final report should be a comprehensive overview of the project and should include a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy. It must contain an abstract of no more than 400 words and an executive summary of no more than 2,500 words.

A draft of the final report, abstract, and executive summary must be submitted 90 days before the end date of the grant. The draft final report will be peer reviewed upon submission. The reviews will be forwarded to the principal investigator with suggestions for revisions. The final report, abstract, and executive summary then must be submitted by the end date of the grant. The abstract, executive summary, and final report must be submitted in both paper and electronic formats.

For evaluation studies, the final report should include a section on measuring program performance. This section should outline the measures used to evaluate program

effectiveness, modifications made to those measures as a result of the evaluation, and recommendations regarding these and other potential performance measures for similar programs. (This information will be particularly valuable to NIJ and other Federal program agencies in implementing performance measures for federally funded criminal justice programs.)

B. Interim reports: Grantees must submit quarterly financial reports, semi-annual progress reports, a final progress report, and, if applicable, an annual audit report in accordance with the Office of Management and Budget Circular A-133. Future awards and fund drawdowns may be withheld if reports are delinquent. Post-award reporting requirements are described in “Guidelines: How to Submit Applications,” available at <http://www.ojp.usdoj.gov/nij/funding.htm#gsya>.

C. Materials concerning protection of confidential information and human subjects: Recipients of NIJ research funds must comply with Federal regulations concerning the protection of private information about individuals. Recipients also must comply with Federal regulations concerning protection of human subjects. In general, all research involving human subjects that is conducted or supported by NIJ funds must be reviewed and approved by an Institutional Review Board before Federal funds are expended for that research. NIJ may also ask grant recipients for additional information related to privacy and human subjects testing.

Additional general information regarding NIJ’s requirements for privacy and protection of human subjects appears in “Guidelines: How to Submit Applications,” available at <http://www.ojp.usdoj.gov/nij/funding.htm#gsya>. Additional information about NIJ’s requirements can be found at <http://www.ojp.usdoj.gov/nij/funding/humansubjects/index.html>.

D. Electronic data: Some grant recipients will be required to submit electronic data and supporting documentation, such as a codebook or dictionary, capable of being re-analyzed and used by other researchers. The materials must be submitted by the end date of the grant. Grant applicants should ensure that the proposed timeline and budget accommodate these requirements.

E. Performance Measures: To assist OJP in fulfilling its responsibilities under the Government Performance and Results Act (GPRA), P.L. 103-62, applicants who receive funding under this solicitation must provide data that measures the results of the work. This data will also contribute to achieving NIJ’s overall research, development, and evaluation mission. NIJ expects research to be accurate, objective, relevant, and useful. Performance measures for this solicitation are as follows:

Objective	Performance Measures	Data Grantee Provides
<p>Develop appropriately validated, quality controlled, and quality assured tools or technologies that can enhance the forensic uses of DNA technology.</p>	<ol style="list-style-type: none"> 1. Relevance to the needs of the field as measured by whether the grantee's substantive scope did not deviate from the funded proposal or any subsequent agency modifications to the scope. 2. Quality of the research as assessed by peer reviewers. 3. Quality of management as measured by whether significant interim project milestones were achieved, final deadlines were met, and costs remained within approved limits. 	<ol style="list-style-type: none"> 1. A final report providing a comprehensive overview of the project and a detailed description of the project design, data, and methods; a full presentation of scientific findings; and a thorough discussion of the implications of the project findings for criminal justice practice and policy. 2. Quarterly financial reports, semi-annual progress reports, and a final progress report.

Tips for Submitting Your Application

1. Begin the application process early—especially if you have never used the Grants.gov Web site. NIJ will not accept applications received after the deadline listed on the cover. To start the process, go to <http://www.grants.gov>.
2. Go to <http://www.ojp.usdoj.gov/nij/funding/howto.htm> for detailed application instructions.
3. Although your proposal may budget for the purchase of equipment if the equipment is necessary to conduct the project, NIJ will not fund applications that are primarily to purchase equipment, materials, or supplies.
4. Call for help:
 - For technical guidance about Grants.gov, call 1-800-518-4726.
 - For questions about this solicitation, the research being solicited, or other NIJ funding opportunities, contact NIJ at 202-305-7807.

View or print a copy of this document from the NIJ Web site (<http://www.ojp.usdoj.gov/nij/funding.htm>) or request one by calling NCJRS at 1-800-851-3420 or e-mailing askncjrs@ncjrs.org.

The National Institute of Justice is the research, development, and evaluation agency of the U.S. Department of Justice. NIJ's mission is to advance scientific research, development, and evaluation to enhance the administration of justice and public safety.

NIJ is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.