

Midwest Forensics Resource Center Competitive Research Program FY 2011

Request for Proposals

Under sponsorship of the National Institute of Justice Program, the Midwest Forensics Resource Center (MFRC) is soliciting applications for research in areas related to forensic science and its application to publicly-funded crime laboratories.

Proposal Deadline: April 15, 2011

Awards will be used for new seed projects, to either deliver solutions to identified problems or to begin new areas of research for further investigation. We anticipate funding four (4) projects at a cost of about \$ 75,000 each, but the number and size of the awards will depend upon the number, size, and quality of the proposals received. The period of performance should be no longer than 12 months.

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I. General

A. MFRC Mission

The MFRC is dedicated to the development of practical and useful technology, instrumentation, processes, and methodology that will improve the state of practice of forensic science.

B. Research Goals

Given the complex and applied nature of forensic science, the MFRC provides development support for forensic science tools requiring proof-of-concept experimentation and tools proven in other fields that require experimentation to demonstrate feasibility for addressing specific forensic science needs.

C. Research Attributes

This Request for Proposals (RFP) promotes the use of sound research and development practices, solid research findings dissemination plans, and valid research implementation strategies to transfer research findings into the hands of stakeholders to pursue further research or into the hands of users to facilitate application of the developed tools.

D. Research Needs

Applicants interested in responding to this solicitation are encouraged to read and familiarize themselves with the National Institute of Justice brochure “Forensic Sciences: Review of Status and Needs”, and the National Academy of Science report “Strengthening Forensic Science in the United States: A Path Forward”. Both documents are available online at <http://www.ncjrs.org/pdffiles1/173412.pdf> and <http://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf>, respectively.

E. Research Areas

Proposals submitted in response to this solicitation are open to any projects in the general area of forensic science. The following topics are suggested research areas.

- **Forensic Evidence:** new or improved tools that can reveal additional or more discriminatory information about forensic evidence
- **Fire and Arson Evidence:** new or improved tools and technologies to aid in interpreting fire and arson scenes, including fire incident reconstruction, validation of pattern analysis, mathematical fire models, and ignition studies
- **Crime Scene Evidence:** innovations in detection, collection or preservation; tools for the implementation, integration, and extension of data; and tools that can model, simulate, or visualize crime scene activities or patterns
- **Biological Evidence:** new or improved tools and technologies that allow faster, less labor-intensive identification, collection, preservation, or analysis of DNA evidence; tools and technologies that aid in the detection, identification, preservation, and analysis of biological warfare agents
- **Statistical Evidence:** new or improved tools that can provide quantitative or statistical data to increase the relevance and importance of forensic comparisons; investigations evaluating or quantifying current forensic practices

- **Digital Evidence:** new or improved tools and technologies that facilitate digital evidence recovery, including data-carving tools, peer-to-peer investigative tools, comprehensive data acquisition and analysis tools, and imaging tools
- **Forensic Laboratory Analysis:** new or improved screening or presumptive testing methods; instrumentation and systematic methods for analysis of documents and handwriting, firearms and toolmarks, latent fingerprints, other latent marks or impressions, drug identification, blood chemistry, toxicology, and trace evidence

What will *not* be funded:

1. Provision of training or direct service
2. Proposals to primarily purchase equipment, materials, or supplies (your budget may include these items if necessary to conduct applied research)
3. Work funded under another specific solicitation
4. Proposals that do not contain a research component or do not respond to the specific goals of this solicitation.

F. Eligibility

Submitters from Publicly-Funded (Partner) Crime Laboratories: Proposals will be accepted from publicly-funded crime laboratories in the states of Idaho, Iowa, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, and Wisconsin. Collaborations among these crime laboratories are highly encouraged.

Submitters Internal to Ames Laboratory and Iowa State University (ISU): In the case of proposals submitted from Ames Laboratory and Iowa State University, the MFRC may serve as a local partner for oversight and assistance in disseminating and implementing the project tool or findings and will work to develop collaborations between internal investigators and MFRC partners. Collaborations with publicly- and privately-funded research facilities are encouraged, while collaborations with a publicly-funded crime laboratory are required.

Principal Investigators (PIs) from ISU may be from any unit on campus, but ISU PIs who receive MFRC seed funds and do not have a current Ames Laboratory affiliation will become Ames Laboratory Associates. If the seed project is successful and leads to further investigations (based on this research), Ames Laboratory and ISU PIs agree to submit major proposals to external funding sources through the Environmental and Protection Sciences Program of the Ames Laboratory.

Submitters External to Ames Laboratory and ISU: Proposals will be accepted from any university or research institution if the proposal: (1) is accompanied by a letter of support and intent from one of the partner crime laboratories, and (2) includes a significant degree of participation in the form of collaboration, oversight, or periodic consultation by crime laboratory personnel from one or more of the partner laboratories (see also Section II, Part G: Collaborative Arrangements and Leveraging).

The MFRC will serve as a resource for developing these partnerships prior to submission of the proposal. Prospective submitters are encouraged to contact the MFRC for assistance when developing collaborations with our partners.

II. Instructions for Preparation of Proposals

All proposals must contain the narrative information and forms described below.

Proposals that do not follow these guidelines will not be eligible for funding consideration. Please review these guidelines and your submission carefully to assure compliance, as no revisions or extensions will be considered for non-compliant proposals.

Proposals are to be submitted on standard 8½ x 11 inch paper with typing on one side of the paper only. Pages should have uniform one (1) inch margins, text must be double-spaced, and Times New Roman font, point size 12, must be employed. Figures and tables should be incorporated into the text. The maximum length of the proposal (Section II, Parts A-K) will be ten (10) pages. If longer, the proposal will be truncated after the tenth page with the project evaluation based on the information provided in the first ten pages. Appendices do not count toward the ten-page limit.

Required Content and Order of Proposal Narrative

Cover Page

The cover page must have the project title, principal investigator name(s) and affiliation(s), total funding request, and signatures of principal investigator(s) and their department chairs and/or unit directors.

For non-ISU / Ames Lab proposal submitters, the cover page must also list the name and contact information for the contract officer overseeing the research project. This information greatly accelerates the execution of the contract award.

A. Abstract

The Abstract serves as a succinct, stand-alone and accurate description of the work proposed. In 100 words or less, state the goal(s) of the proposed project, describe the proposed method or research design, instrumentation and data collection and analysis procedures, and expected research outcome or products. Also, if human subjects are involved, describe the subjects: including the number of participants, participant age, gender, and race/ethnicity.

B. Objectives

Clearly and concisely state the specific goals and objectives of the research project. Specify the way in which successful completion of the project will improve the practice of forensic science, particularly within the state and local crime laboratory community.

C. Procedures

Provide a detailed description of the proposed work in the sequence in which it will be carried out. This section, written as a statement of work (SOW) or a precise work plan, should include a discussion of the rationale behind the investigation, the technology, process, or method to be developed, hypotheses to be tested, and major challenges and results anticipated.

D. Background and Justification

Discuss the significance of the problem and explicitly state how the proposed project will support accomplishing the MFRC's mission which is to develop "practical and useful technology, instrumentation, process, and methodology that will improve the state of practice of forensic science." Discuss prior work and the current state of the art in the field. Describe how the proposed project contributes to significant advances in the field and why it is important to conduct the work now. Discuss the relationship between the proposed work and projects ongoing in the PI's laboratory, if applicable.

E. Bibliography

Include a review of relevant literature and identify references to appropriate presentations and publications in the narrative using bracketed numerals, e.g., [1]. Full citations should then be listed in sequential order at the end of this section in an acceptable journal format.

F. Facilities and Equipment

Include information on the experience of the applicant organization, its facilities, and resources. Describe all facilities, including laboratories, available for use during the requested period of support. Include an itemization of major instrumentation and non-expendable equipment that is available for use, either through the PI's organization or the research partner or collaborator.

G. Collaborative Arrangements and Leveraging

The MFRC strongly encourages researchers to seek guidance from or collaborate with forensic practitioners, law enforcement, and other public security organizations that may be stakeholders.

Collaboration and partnering can take various forms ranging from providing counsel and offering general advice to active participation in a specific piece of research. In the proposal, identify the partners or collaborators on the project (organization, address, point of contact, e-mail address, and telephone number), discuss the benefits of the proposed teaming arrangement, and fully define the role(s) of each entity involved.

In the case of complex research questions, describe plans for continued project funding beyond the 12 month project period.

H. Dissemination Plan

Dissemination is an intrinsic element of the research funded by the MFRC. Describe the plan of action to disseminate the research results to the forensic community. Venues that can be used to distribute research findings include websites, presentations or posters at local, regional, national and international public or professional meetings, publication in peer reviewed journals, magazines or professional newsletters, posting on an electronic or mass media (websites, podcast, videos, etc.), demonstrations at crime labs, continuing education courses, distance learning classes.

Realize that dissemination of research findings requires substantial resources, i.e. time and money. These must be built into the proposal budget as the MFRC does not pay for any costs associated with the dissemination of research findings after the project is completed.

I. Implementation Strategy

In the context of this solicitation, implementation is defined as the set of activities necessary to put into practice the developed product, process, or method. Describe in sufficient detail the strategy or approach taken to transfer the developed product, process, or method in an accessible and usable form from the research laboratory to the crime laboratory. Tools that can be used to achieve that goal include: workshops, training programs, manuals, SOPs, policies, beta-tests, feasibility studies, etc. If possible, identify the steps required for the recipient to use the item and produce results that positively impact the practice of forensic science in crime laboratories.

In the case of proof-of-concept studies, describe in sufficient detail the course of action taken to pursue further research, obtain funding, and ultimately to transfer the research findings into the hands of intended users and relevant stakeholders to facilitate application and use of the developed tools.

J. Benefit Statement

This statement provides documentation of how expected project outcome (process, methodology, technology, feasibility) improves or enhances the quality, efficiency or effectiveness of the crime laboratory. It should clearly state why the proposed work is important and significant to the body of knowledge or to the practice of forensic science.

K. Project Management

Managing tasks and deliverables constitute an important element of MFRC-funded research and development projects. Gantt charts enable researchers to plan, coordinate, and track research activities, and are often used to list research phases and to identify research-specific products and deliverables.

In the form of a Gantt chart, identify and briefly describe all project milestones and deliverables related to the proposed work. This excludes reporting requirements. The Gantt chart must focus on the phases and tasks of the project and not on pre-project planning activities.

Appendices (do not count toward 10-page limit)

1. Résumés

Résumés are to be included for all key personnel expected to work on the project, including principal investigators, senior associates, and other professional personnel, whether or not funds are sought for their support. Each résumé is limited to one (1) page and should provide detailed information about the background and experience of the individual, including a list of up to five recent and relevant publications.

2. Budget Worksheet (see attached form)

Provide a summary budget using the form provided at the end of this document. For each budget category, all direct costs (materials, supplies, travel, publication cost, page charges, computer cost, etc.) must be itemized. Applicants external to Ames Lab / ISU must also include all indirect costs and fees, i.e., cost categories to which an “overhead” cost is applied. To ensure compliance with NIJ’s accounting procedures and policies, the

MFRC may require award recipients to submit additional information in support of the budget.

3. Budget Narrative

A Budget narrative must be provided in support of the Budget Worksheet. The narrative must describe in plain-language the purpose for each item, service, or person listed on the Budget Worksheet. The same budget categories, headings, order, descriptors, and names must be used in both the Budget Worksheet and the Budget Narrative.

4. Current and Pending Support *(one page per PI)*

Provide a statement of all current and pending support for the proposed project and a description of support for all projects that involve the principal investigator(s) and the period of time and percent of time devoted to each project. If applicable, **indicate the status of any Intellectual Property (IP) related to this project (e.g., reports of invention, patents pending, patents held, etc).**

5. Letters

Proposals can be accompanied by a Letter of Support from stakeholder groups or organizations affected by the project. These letters are testimonials by qualified individuals saying they agree with the problem statement, understand your proposal, support what you want to accomplish, and are confident that you will accomplish the goals of the proposal. They add credibility to the proposal and the organization submitting the proposal.

If you collaborate or partner with other researchers or research organizations, you will need to include a Letter of Collaboration. These letters confirm the individual's or organization's commitment to participate in the project and state the intent of the contribution, the types and value of support, and the role of the individuals participating in the project. The MFRC strongly encourages researchers to seek guidance from or partner with appropriate publicly-funded crime laboratories. Such associations foster a better understanding of the issues and strengthen the scope of the proposed research plan.

Preliminary Research Data

If considered value-added, especially when seeking additional project funding, PIs are encouraged to include in the proposal preliminary findings or preliminary research data. Such information substantially strengthens the research plan and helps to establish the feasibility of the project. If included, data and/or findings should be brief or otherwise referenced.

Marking of Proprietary Information

Investigators who include in their proposals data that they do not want disclosed to the public for any purpose or used by the Government or Ames Laboratory, except for evaluation purposes shall:

1. Mark the title page with the following legend:
“This proposal includes data that shall not be disclosed outside the Government or Ames Laboratory and shall not be used or disclosed, in whole or in part, for any purpose other than to evaluate this proposal. If, however, the proposal is awarded funding as a result of, or in connection with, the submission of this data, the Government or Ames Laboratory

shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting research agreement, subcontract, or the Laboratory's M&O contract. This restriction does not limit the Government or Ames Laboratory's right to use information contained in this data if obtained from another source without restriction. The data subject to this restriction are contained on pages [insert page and line numbers or other indication of pages] of this proposal."

2. Mark each page of data you wish to restrict with the following legend: "Use or disclosure of data contained on this page is subject to the restriction on the title page of this proposal."

III. How to Apply

What to Submit:

Six (6) printed copies of the proposal, fully assembled and in the correct order are required. An electronic copy in Microsoft Word (on CD or ZIP disk) is also required.

When to Submit:

All proposals are due by 5 p.m. CST, April 15, 2011. Successful projects are expected to begin January 1, 2012.

Where to Submit:

The address for proposal submission is:

*MFRC Competitive Research Program
120 Spedding Hall
Ames Laboratory
Ames, IA 50011-3020*

IV. Proposal Review Process

With the goal of sustaining the quality and relevance of the work performed by the MFRC, a uniform procedure is adopted for evaluating and selecting projects.

A. Procedure

MFRC staff will screen submitted proposals for format, length, and completeness. The MFRC R&D Advisory Group will then evaluate the submitted proposals. This group is composed of forensic professionals from state and federal facilities as well as external experts. Reviewers external to Iowa State University will be required to enter into confidentiality agreements if confidential information is marked within the proposals. The evaluations from the R&D Advisory Group will guide the MFRC Executive Committee in determining the final selections.

B. Evaluation

- *Relevance to the Mission of the MFRC (25%)*

Reviewers will be asked to identify the relevance of the proposed research to the mission of the MFRC. The proposals should justify the work in sufficient detail to convince the reviewers that the proposed technology, instrumentation, process, and methodology will improve the state of practice of forensic science.

- *Technical Approach (35%)*

This section, presented as a work plan or statement of work, should be written in sufficient detail to permit the reviewers to judge the feasibility of conducting the proposed work and assess progress if continuation funds are requested. Hypotheses to be tested should be outlined, the research methodology should be summarized, anticipated results should be clearly identified, and major challenges should be briefly described and discussed.

- *Capabilities, Teaming, and Leveraging (15%)*

Inclusion of internal or external participants from MFRC partner organizations (crime laboratories in Idaho, Iowa, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, and Wisconsin) as co-investigators will be viewed favorably. It will also increase the chance that the newly developed or refined tool will find application and use in the forensic community. Active partner or collaborator participation in the project will be viewed favorably.

It should be noted that the established research and professional capabilities of respondents may be less significant to the evaluation of proposals than the successful application of those capabilities to a research topic in forensic science.

- *Dissemination and Implementation Strategy (25%)*

The purpose of the MFRC's research program is to impact forensic science practice and, in particular, to benefit crime laboratory operations. Reviewers will be asked to evaluate the strategy that describes how the research findings will be disseminated to forensic science researchers and practitioners, how the project results will be transferred in an accessible and useable form to the crime laboratories, and how they will be implemented in a timely manner at the crime laboratories. The use of sound technology transfer practices from the researcher to the intended user of the developed tool will be viewed favorably.

C. Schedule

The Advisory Committee will review proposals in May 2011. After discussion and consideration of Advisory Committee evaluations, and NIJ concurrence, MFRC administrators will notify applicants of their status on or about August 31, 2011. Awards will follow shortly thereafter with project start-up expected in January, 2012.

D. NEPA Requirement

The National Environmental Policy Act (NEPA) requires that all federally funded programs conduct an environmental impact analysis. To ensure compliance with all applicable and appropriate NEPA regulatory requirements, the MFRC may require award recipients to submit information in support of a NEPA assessment form to determine each project's impact on safety, human health, and the environment.

V. Resource Contact Information

General inquiries about this solicitation should be directed to Rudi Luyendijk. Rudi can be contacted by phone at (515) 294-2931 or by e-mail at rluyendi@ameslab.gov. He is also the contact if you are interested in pursuing research and development funding opportunities

through the MFRC. The MFRC is a resource for developing partnerships within the University and with the crime laboratories.

To view abstracts of work in progress, or to view final reports of completed projects, visit the research page of our website at www.mfrc.ameslab.gov/Research_projects.php

VI. Checklist

- A.** Does your proposal fit the mission of the MFRC?
- B.** Is the proposal accompanied by a letter of support from a stakeholder group?
- C.** Does the proposal include a letter of collaboration from a partner crime laboratory stating the intent of the contribution, oversight, or periodic consultation?
- D.** Is the proposal text on standard 8½ x 11 inch paper with typing on one side of the page only, is it double-spaced with uniform one (1) inch margins, and is the text Times New Roman font, 12-point size?
- E.** Are the figures and tables incorporated into the text?
- F.** Verify that the maximum length of the proposal (Section II, Parts A-J) does not exceed ten (10) pages.
- G.** Cover Page. Does the cover page show the project title, principal investigator name(s) and affiliation(s), total funding request, signature(s) of principal investigator(s) and their department chairs and/or unit directors, and (if applicable) the proprietary information legend?
- H.** Does the cover letter state the name and contact information of the contract officer (non-Ames Lab / ISU proposals)?
- I.** Section II, Part A. Abstract. Is the abstract 100 words or less?
- J.** Section II, Part B. Objectives. Are the objectives clearly stated and does the proposal have concise and complete statement(s) of the specific aims of the research project?
- K.** Section II, Part C. Procedures. Does the section include a precise work plan or statement of work (SOW), and hypotheses to be tested?
- L.** Section II, Part D. Background and Justification. Does the proposal discuss how the project supports accomplishing the mission of the MFRC? Does the proposal discuss the current state of the art in the field?
- M.** Section II, Part E. Bibliography. Does the proposal include a review of relevant literature and are references to publications identified using bracketed numerals, e.g., [1]?
- N.** Section II, Part F. Facilities and Equipment. Does the section include an itemization of major instrumentation and non-expendable equipment that is available for use?
- O.** Section II, Part G. Collaborative Arrangements and Leveraging. Does the section include organizational name, contact name, address, e-mail address, and telephone number of each collaborator and investigator involved?
- P.** If applicable, does the section describe funding plans beyond the project period?
- Q.** Section II, Part H. Dissemination Strategy. Does the section describe how research results or findings will be disseminated?
- R.** Section II, Part I. Implementation Strategy. Does the section describe how research results or findings will be implemented in a timely manner that is likely to impact the practice of forensic science in crime laboratories?

- S.** Section II, Part J. Does the section include a statement of project expected benefits to the forensic community?
- T.** Is a Gantt chart included illustrating and describing project specific milestones and deliverables?
- U.** Résumés. Is a one (1) page résumé available for each PI?
- V.** Budget. Does the appendix include a completed Budget Worksheet?
- W.** Budget. Does the appendix include the budget narrative supporting the Budget Worksheet?
- X.** Does the proposal include proprietary data or information that is well marked?
- Y.** Does the appendix include a one (1) page description of PI current and pending support, if applicable?
- Z.** Does the package include six (6) copies of the proposal and an electronic copy in Microsoft Word (on CD or ZIP disk)?