

NJIT Research Newsletter

Issue: ORD-GOA-2015-19

Recent Awards

Events and Announcements

Grant Opportunities

NJIT Research Newsletter includes *Grant Opportunity Alerts*, recent awards, and announcements of research related seminars, webinars and special events. The Newsletter is posted on the NJIT Research Website <http://www.njit.edu/research/>

Total Funding Available with Grant Opportunities in this Issue: More than \$400 million

Recent Research Grant and Contract Awards

Congratulations to faculty and staff on receiving research grant and contract awards! These awards were received in the last week.

PI: Wenda Cao and Phil Goode (Co-PI)

Department: Physics

Grant/Contract Project Title: Collaborative Research in Solar Physics between KASI, SNU, and BBSO

Funding Agency: KASI

Duration: 06/01/15-05/31/16

PI: Louis Lanzerotti and Andrew Gerrard (Co-PI)

Department: Physics

Grant/Contract Project Title: Extended Efforts for the Advanced Composition Explorer (ACE) Phase E - MO&DA for the ULEIS and EPAM Instruments

Funding Agency: NASA

Duration: 05/21/15-09/30/16

PI: James Lipuma and Bruce Bukiet

Department: Humanities and Mathematical Sciences

Grant/Contract Project Title: Common Core State Standards in NJ

Funding Agency: NJDOE

Duration: 05/18/15-10/31/15

PI: Cyril Muratov

Department: Mathematical Sciences

Grant/Contract Project Title: Deterministic and Stochastic Magnetization Dynamics in Thin Ferromagnetic Films and Devices

Funding Agency: NSF

Duration: 07/01/13-06/30/16

PI: Zhi Wei

Department: Computer Science

Grant/Contract Project Title: Cell Communication during Melanoma Development

Funding Agency: NIH

Duration: 04/04/13-03/31/16

Events and Announcements

Event: NSF Webinar: WATCH - Cybersecurity for the Internet of Everything (IoE)

Organized by: NSF Directorate for Computer & Information Science & Engineering

When: June 18, 2015; 12.00 Noon -1.00 PM

Speaker: Bret Hartman, VP and CTO, CISCO

Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=135298&org=CISE

Brief Description: The next wave of the Internet is disrupting everything and creating new ways to do business. The Internet of Everything (IoE) is changing our daily lives, from the way we provide healthcare to heating our homes to running our manufacturing facilities and other critical infrastructure. The changing nature of computing due to the Digital Economy and the IoE brings tremendous economic opportunity, coupled with tremendous security risk.

In today's world of IoE, cybersecurity is not just a top consideration, but one that is foundational to enabling people and organizations to gain greater value from IoE advancements. As more organizations adopt new business models related to mobility, cloud, and the IoE, their security operations, technologies and solutions must evolve to keep pace and adapt quickly to address these new and unforeseen risks.

Bret will discuss strategies for enabling organizations to implement security controls that offer effective protection for rapidly evolving environments and address security incidents—before, during and after an attack. As part of this discussion, he will outline examples of how these controls can create significant advantages in combatting sophisticated attacks.

To Join the Webinar: Webcast; Contact: Jeremy Epstein, (703) 292-8950, jepstein@nsf.gov

Event: ADVANCE IT and IT-Catalyst Pre-proposal Technical Assistance Webinars

When: June 17, 2015 1:00 PM - 2:30 PM; and June 23, 2015 3:00 PM - 4:30 PM

Brief Description: The ADVANCE program office will offer two webinars one on the ADVANCE Institutional Transformation track and one on the IT-Catalyst track in the [ADVANCE solicitation 14-573](#). Please review the solicitation before the webinar. There will be time for questions and answers during the webinars.

How to Join: ADVANCE Institutional Transformation (IT)

- June 17, 2015 1pm to 2:30pm EST
- Register at:
<https://nsf.webex.com/nsf/j.php?RGID=r714de34766f098efb8795cefe79a02f4>

ADVANCE IT-Catalyst

- June 23, 2015 3:00pm to 4:30pm EST

- Register at:

<https://nsf.webex.com/nsf/j.php?RGID=rcbe4443fd0379281a2b56695ec898848>

Note institutional eligibility limitations for IT-Catalyst in the solicitation: Institutions that qualify for Department of Education Title III and Title V status, non-profit community colleges, designated minority serving institutions, (e.g. Tribal Colleges and Universities, Historically Black Colleges and Universities, Hispanic-Serving Institutions, Native Hawaiian Serving Institutions, and Alaska Native Serving Institutions, Predominantly Black Institutions, Non-Tribal, Native American-Serving Institutions). The webinars will be recorded and posted on the [ADVANCE program website](#) about three weeks after these dates so you can review them if you are not available on these dates.

Announcement: New Format for Biographical Sketches for NIH Proposals

Notice Number: NOT-OD-15-032

Date: New Biographical Sketch Format Required for NIH and AHRQ Grant Applications Submitted for Due Dates on or After May 25, 2015

Website for More information: <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-032.html>

Brief Information: The revised forms and instructions are now available on the SF 424 (R&R) Forms and Applications page and adjustments have been made to improve their usability. Individual fellowships, R36 dissertation grants, and diversity supplements should use the Fellowship Application Biographical Sketch Format Page and related pre-doc and post-doc instructions and samples, while research grant applications, career development, training grant, and all other application types should use the general Biographical Sketch Format Page and instructions and sample.

The new format extends the page limit for the biosketch from four to five pages, and allows researchers to describe up to five of their most significant contributions to science, along with the historical background that framed their research. Investigators can outline the central findings of prior work and the influence of those findings on the investigator's field. Investigators involved in Team Science are provided the opportunity to describe their specific role(s) in the work. Each description can be accompanied by a listing of up to four relevant peer-reviewed publications or other non-publication research products, including audio or video products; patents; data and research materials; databases; educational aids or curricula; instruments or equipment; models; protocols; and software or netware that are relevant to the described contribution. In addition to the descriptions of specific contributions and documentation, researchers will be allowed to include a link to a full list of their published work as found in a publicly available digital database such as MyBibliography or SciENCv.

Tool to Help Build the New Biosketch: The Science Experts Network Curriculum Vitae (SciENCv), which serves as an interagency system designed to create biosketches for multiple federal agencies, will be updated by the end of December to support the new biosketch format and to address some issues found in testing. SciENCv pulls information from available resources making it easy to develop a repository of information that can be readily updated and modified to prepare future biosketches. A YouTube video provides instructions for using SciENCv.

Additional Information: Note that having a different biosketch format than other applications being reviewed in the same panel is not grounds for appeal. See FAQs for additional information on http://grants.nih.gov/grants/policy/faq_biosketches.htm

Grant Opportunity Alerts

Keywords and Areas Included in Funding Opportunity Alerts:

NSF (More than \$400 million in total available funding): Computer and Network Systems (CNS): Core Programs; Computing and Communication Foundations (CCF): Core Programs; Information and Intelligent Systems (IIS): Core Programs; Secure and Trustworthy Cyberspace (SaTC); Advancing Digitization of Biodiversity Collections (ADBC); Environment Sustainability; Dear Colleague Letter: FY 2016 Sustainable Chemistry, Engineering, and Materials (SusChEM) Funding Opportunity; Dear Colleague Letter: Enabling the Future of Making to Catalyze New Approaches in **STEM Learning and Innovation**; Dear Colleague Letter: SusChem

National Institute of Health: Clinical and Translational Science Award (CTSA) Network (U01), Transformative Research Award (R01)

US ARMY/DARPA/DoD: Spinal Cord Injury

Grant Opportunities

National Science Foundation

Grant Program: Computer and Network Systems (CNS): Core Programs

Agency: National Science Foundation NSF 15-572

RFP Website: <http://www.nsf.gov/pubs/2015/nsf15572/nsf15572.htm>

Brief Description: CISE's Division of Computer and Network Systems (CNS) supports research and education projects that develop new knowledge in two core programs: Computer Systems Research (CSR) program; and Networking Technology and Systems (NeTS) program.

Computer Systems Research (CSR)

Computers systems support a broad range of applications and technologies that seamlessly integrate with human users. While many key building blocks of computer systems are today commercial technologies, the challenge ahead is to envision new technologies, as well as to combine existing technologies, software, and sensing systems into the computer systems of the future that will span wearable computing, "smart dust," the Internet of Things (IoT), "Smart Cities," intelligent transportation systems, personalized healthcare, and beyond. Such computer systems will require new, innovative, and visionary approaches to hardware, wired and wireless communications, consideration of human-computer interactions, and new programming languages and compilers that are limited only by the imagination. They will need to be reliable in the presence of unreliable components, adaptive to changing environments, capable of supporting high-throughput applications and large-scale data storage and processing, and able to meet performance and energy objectives for applications ranging from very low-power embedded systems to large high-performance computing systems.

Furthermore, computer systems of the future will need to provide mechanisms for ensuring security and privacy.

The Computer Systems Research (CSR) program supports transformative scientific and engineering research leading to the development of the next generation of highly performant, heterogeneous, power-efficient, environmentally sustainable, and secure computer systems. The scope of the program includes embedded and multicore systems and accelerators; mobile and extensible distributed systems; cloud and data-intensive processing systems; and memory, storage, and file systems. The program seeks innovative research proposals that will advance the reliability, performance, power, security and privacy, scalability, and sustainability of computer systems.

CSR proposals should address problems that are appropriate to the CSR Core Area, to one of the current highlighted areas, or to the bridging area of networked systems. Note that proposals that address problems in the CSR highlighted areas are not targeted for special handling or funding -- they simply represent emerging areas or areas of current national interest.

In addition, as noted above, CNS invites proposals that bridge the research areas of CSR and NeTS. Some of the topics specified below in the CSR core program description, along with others, are in the realm of "networked systems," requiring innovations and expertise in both networking and computer systems. CNS welcomes proposals on these topics, which cross the CSR and NeTS core programs -- and PIs are encouraged to specify proposal titles that begin with "CSR: NeTS:" (see the Proposal Preparation Instructions for details). These proposals will be considered for co-review by the two CNS core programs as appropriate.

For this solicitation, there are three CSR highlighted areas: **Embedded and Real-time Systems (ERS), Cloud Computing (CC), and Extensible Distributed Systems (EDS).**

Networking Technology and Systems (NeTS)

Computer and communication networks need to be available anytime and anywhere, and be accessible from any device. Networks need to evolve over time to incorporate new technologies, support new classes of applications and services, and meet new requirements and challenges; networks need to scale and adapt to unforeseen events and uncertainties across multiple dimensions, including types of applications, size and topology, mobility patterns, and heterogeneity of devices and networking technologies. Networks need to be easily controllable and manageable, resource and energy efficient, and secure and resilient to failures and attacks. The Networking Technology and Systems (NeTS) program supports transformative research on fundamental scientific and technological advances in networking as well as systems research leading to the development of future-generation, high-performance networks and future Internet architectures.

A number of recent reports have highlighted research challenges and opportunities in networking technologies and systems (e.g., see the reports from the Workshops on Scaling Terabit Networks, <http://lightwave.ee.columbia.edu/files/STNFinalReport2014.pdf>, and Future Directions in Wireless Networking, <http://ecedha.org/docs/nsf-nets/final-report.pdf>). NeTS proposals should address problems that are appropriate to the NeTS Core Area, to one of the current Highlighted Areas, or to the bridging area of networked systems. Note that proposals that address problems in the NeTS highlighted areas are not targeted for special handling or funding -- they simply represent emerging areas or areas of current national interest.

In addition, as noted above, CNS invites proposals that bridge the research areas of CSR and NeTS. Some of the topics specified below in the NeTS core program description, along with others, are in the realm of "networked systems," requiring innovations and expertise in both networking and computer systems. CNS welcomes proposals on these topics, which cross the

CSR and NeTS core programs -- and PIs are encouraged to specify proposal titles that begin with "CSR: NeTS:" (see the Proposal Preparation Instructions for details). These proposals will be considered for co-review by the two CNS core programs as appropriate.

NeTS proposals are strongly encouraged to include validation plans that describe mechanisms to assess success of the proposed research efforts.

For this solicitation, there are six highlighted areas: **Meta-Networking Research, Network Management, Optical Networks, Protocols for Pervasive Wireless Networking, Support of Next-Generation Virtualized Networks, and Wireless Networking Architectures.**

Awards: Small Projects - up to \$500,000 total budget with durations up to three years;

Medium Projects - \$500,001 to \$1,200,000 total budget with durations up to four years; and

Large Projects - \$1,200,001 to \$3,000,000 total budget with durations up to five years.

It is anticipated that up to 150 awards will be made each year.

Anticipated Funding Amount: \$60,000,000

Letter of Intent: Not Required

Deadlines: Submission Window Date(s) (due by 5 p.m. proposer's local time):

September 10, 2015 - September 16, 2015

MEDIUM Projects

September 18, 2015 - September 24, 2015

LARGE Projects

November 04, 2015 - November 18, 2015

SMALL Projects

Contacts:

Mimi McClure, CSR Associate Program Director, (703) 292-8950, email: mmclure@nsf.gov

Amy Apon, CSR Program Director, (703) 292-8950, email: aapon@nsf.gov

Weisong Shi, CSR Program Director, (703) 292-8950, email: wshi@nsf.gov

Gurdip Singh, CSR Program Director, (703) 292-8950, email: gsingh@nsf.gov

Darleen L. Fisher, NeTS Program Director, (703) 292-8950, email: dlfisher@nsf.gov

Wenjing Lou, NeTS Program Director, (703) 292-8950, email: wlou@nsf.gov

Joseph B. Lyles, NeTS Program Director, (703) 292-8950, email: jlyles@nsf.gov

Thyagarajan Nandagopal, NeTS Program Director, (703) 292-8950, email: tnandago@nsf.gov

Grant Program: Computing and Communication Foundations (CCF): Core Programs

Agency: National Science Foundation: NSF 15-573

RFP Website: <http://www.nsf.gov/pubs/2015/nsf15573/nsf15573.htm>

Brief Description: CISE's Division of Computing and Communication Foundations (CCF) supports research and education projects that develop new knowledge in three core programs:

The Algorithmic Foundations (AF) program;

The Communications and Information Foundations (CIF) program; and

The Software and Hardware Foundations (SHF) program.

Algorithmic Foundations (AF)

The Algorithmic Foundations (AF) program supports potentially transformative research and education projects advancing design and analysis of algorithms and characterized by algorithmic thinking accompanied by rigorous analysis. Research on algorithms for problems that are central to computer science and engineering as well as new techniques for the rigorous analysis of algorithms are of interest. AF supports theoretical research that bounds the intrinsic difficulty of problems to determine the measures of complexity in formal models of

computation, classical or new. The goal is to understand the fundamental limits of resource-bounded computation and to obtain efficient solutions within those limits. Specifically, the time and space complexity of finding exact and approximate solutions in deterministic and randomized models of computation is a central concern of the program. Research on resources other than time and space, such as communication and energy, is also encouraged. In addition to the traditional, sequential computing paradigm, AF supports research on the design and analysis of novel algorithms in parallel and distributed models, in particular, in heterogeneous multi-core and many-core machines; the computational models and algorithms that capture essential aspects of computing over massive data sets; game theory and social networks; and alternative forms of computation and information processing, including quantum computing and biological models of computation.

The program supports research in algorithms needed in all areas, both within and outside computer science. Algorithmic research with applications in databases, machine learning, data mining, networks, communications, operating systems, languages, compilers, and machine abstractions is supported. New techniques for the design and analysis of algorithms in areas such as cryptography, computational geometry, computational biology, game theory, social networks and numerical, symbolic, and algebraic computing are appropriate for this program. Relevance to application areas is important and collaborations with researchers in those areas are encouraged. However, research funded by this program must advance the study of algorithms.

Research on parallelism and scalability that promises to lead to a new era of parallel computing is now supported through a separate program, eXploiting Parallelism and Scalability (XPS; see http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504842). XPS is particularly interested in “clean-slate” approaches that re-evaluate and possibly re-design the traditional hardware and software stack.

Research that incorporates significant activity in both theory and practice is now supported through a separate program, Algorithms in the Field (AitF): see http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505125). AitF is particularly interested in developing and supporting collaboration between theory researchers and those in more applied areas.

More information on topics appropriate for the Algorithmic Foundations program is available at: http://www.nsf.gov/cise/ccf/af_pgm12.jsp

Communications and Information Foundations (CIF)

The Communications and Information Foundations (CIF) program supports potentially transformative research that addresses the theoretical underpinnings and current and future enabling technologies for information acquisition, transmission, and processing in communications and information processing systems. As a result, CIF research and education projects strengthen the intellectual foundations of communications and information theory and signal processing in a variety of types of networks such as sensor networks, wireless and multimedia networks, biological networks, and networks of quantum devices. Research outcomes are expected to lead to more secure and reliable communications and advanced mathematical capabilities that are applicable throughout science and engineering.

The program supports basic research in wireless communications, information theory and coding. Included in the CIF program is the reliable transmission of information, in both analog and digital form, in the presence of a variety of channel impairments (noise, multipath, eavesdroppers, interference, etc.). A number of channel architectures are of interest, including multiple-input multiple-output (MIMO) channels, feedback channels, optical channels, quantum channels, and biological channels. CIF has a strong interest in the theoretical performance limits for various communication systems architectures and in the presence of

various channel impairments. Also of interest are performance metrics and tradeoffs. An important example is the tradeoff between error probability and latency resulting from coding/decoding algorithms, diversity techniques, interference management, and other types of signal processing.

The CIF program also supports fundamental research in networking including network information theory, network coding, and cross-layer research at the lower layers. The CIF research program in networking focuses on the MAC layer and below and emphasizes research in which the physical-layer attributes play an important role in overall network design and performance such as the impact of physical-layer characteristics on higher network layers. CIF supports research at the intersection of communications and information theory, signal processing, and networking. Examples include sensor networks with applications to environmental monitoring, civil infrastructure monitoring, data communications system monitoring, and power grid monitoring. A further example is network tomography, which involves detecting and classifying spatially distributed anomalies within complex large-scale systems from multiple monitoring (sensor) sites.

In addition to the contemporary signal processing topics that have enabled the IT revolution, there is growing interest within the CIF program in new paradigms that enlarge the scope of signal and information processing from the domain of the linear to the realm of the nonlinear - from linear algebra to algebra, from Euclidean to curved spaces, from uniform to highly non-uniform time and space sampling, to signal processing on graphs. Research that will develop efficient power aware and hardware-friendly algorithms and research on signal/information processing algorithms for the new network science of distributed, decentralized, and cooperative algorithms that avoid global communications is encouraged. The exploration of new approaches to manage massive datasets, such as compressive sampling/sensing, also promises advances in the field.

The CIF program is particularly interested in the application of signal/information processing in complex systems. Some examples of exciting applications are monitoring the Nation's critical infrastructures, signal processing in biological systems, and biomedical signal and image processing. These and other emerging application domains pose new constraints and challenges, leading to the reexamination of old questions and assumptions.

More information on topics appropriate for this program is available at: <http://www.nsf.gov/cise/ccf/cif/pgm12.jsp>

Software and Hardware Foundations (SHF)

All fields of science and engineering - and society at large - depend on fundamental advances in scientific foundations and engineering methods for computer hardware and software. The SHF program supports research and education projects on the design, verification, operation, utilization, and evaluation of computer hardware and software through novel approaches, robust theories, high-leverage tools, and lasting principles. Such advances may offer formal methods, languages, logics, novel software and/or hardware artifacts, or algorithms to enable new or enhanced functionality, verification, usability, and scale. Proposals should clearly describe a plan for evaluating the research.

The SHF program supports all aspects of the science and engineering of software, seeking transformative ideas that reformulate the relationships between requirements, design and evolution of software, and software-intensive systems. SHF supports research projects focusing on program analysis and synthesis, compositionality, verifiability and adaptability of software, as well as research on software analysis and testing techniques for all stages of the software life cycle. SHF also seeks research to increase the automation of software engineering capabilities to attain significant advances in quality and sustainability of software, which may require new

representations and processes. Empirical research that increases understanding of software and software creation is also in scope.

SHF supports fundamental research on formal and semi-formal methods for the specification, development and verification of software and hardware systems. This includes, but is not limited to, abstraction, compositional, refinement-based, and probabilistic methods for the modeling and validation of systems involving discrete and continuous behavior. SHF seeks proposals that enhance the applicability, usability, and efficiency of techniques such as abstract interpretation, model checking, theorem proving, automated decision procedures, and constraint solving. Research topics involving the semantics, logics, verification, and analysis of concurrent systems are in scope. SHF supports foundations, algorithms, and tools for software and hardware synthesis.

SHF supports the entire range of programming languages research, from foundations to design to implementation. Fundamental research in both science and engineering of programming languages is highly encouraged. Topics of interest include, but are not limited to, language semantics and type theory, design and implementation of advanced languages and language features, compilers and runtime systems for advanced languages, program analysis and optimization, design and implementation of domain-specific languages, and implementation issues related to locality, synchronization and communication. Research in programming languages and models that go beyond mainstream practice, such as concurrent, functional, logic programming and probabilistic languages, are particularly encouraged. Foundational research that exposes novel synergies between programming languages and other areas of computing is also encouraged.

SHF seeks proposals that address foundational issues in computer architecture and the key challenges in computer hardware and systems design, including, but not limited to, performance, energy efficiency, reliability, scalability, concurrency, and heterogeneity. The program supports fundamental and transformative research in processors, interconnects, memory and storage architectures. SHF seeks research that takes holistic and cross-layer approaches to fully harness the promises and address the challenges of new and emerging substrate technologies and materials as well as considering emerging trends in application environments including computation-intensive, data-intensive, and I/O-intensive applications. SHF supports foundational research in high-performance computing that is aware of, driven by, and inspired by applications, as well as heterogeneity-aware and architecture-aware. SHF does not support research in domain applications. SHF seeks novel research on enabling technologies and tools to balance and optimize performance goals including scalability, power, productivity, repeatability, reliability, and validity.

More information on topics appropriate for the Software and Hardware Foundations program is available at: http://www.nsf.gov/cise/ccf/shf_pgm12.jsp

Awards: Small Projects - up to \$500,000 total budget with durations up to three years; Medium Projects - \$500,001 to \$1,200,000 total budget with durations up to four years; and Large Projects - \$1,200,001 to \$3,000,000 total budget with durations up to five years.

It is anticipated that up to 170-200 awards will be made each year.

Anticipated Funding Amount: \$100,000,000

Letter of Intent: Not Required

Deadlines: Submission Window Date(s) (due by 5 p.m. proposer's local time):

September 10, 2015 - September 16, 2015

MEDIUM Projects

September 18, 2015 - September 24, 2015

LARGE Projects

November 04, 2015 - November 18, 2015

SMALL Projects

Contacts:

John H. Cozzens, Point of Contact, Communications and Information Foundations (CIF), (703) 292-8910, email: jcozzens@nsf.gov

Almadena Y. Chtchelkanova, Point of Contact, Software and Hardware Foundations (SHF), (703) 292-8910, email: achtchel@nsf.gov

Tracy Kimbrel, Point of Contact, Algorithmic Foundations (AF), (703) 292-8910, email: tkimbrel@nsf.gov

Grant Program: Information and Intelligent Systems (IIS): Core Programs

Agency: NSF 15-574

RFP Website: <http://www.nsf.gov/pubs/2015/nsf15574/nsf15574.htm>

Brief Description: CISE's Division of Information and Intelligent Systems (IIS) supports research and education projects that develop new knowledge in three core programs:

The Cyber-Human Systems (CHS) program;

The Information Integration and Informatics (III) program; and

The Robust Intelligence (RI) program.

Cyber-Human Systems (CHS)

In a world abundant with computers and blanketed by networks, computing plays a central role in how humans work, learn and live, and provides new modes of communication that transcend traditional geographical and cultural boundaries. As a result, computing technologies and human lives and societies constantly co-evolve, transforming each other in the process. Cyber-Human Systems (CHS) research explores potentially transformative and disruptive ideas, novel theories and technological innovations in computer and information science that accelerate both the creation and our understanding of the complex and increasingly coupled relationships between humans and computing with the broad goal of advancing human capabilities: perceptual and cognitive, physical and virtual, social and societal.

Advancement can take many forms. CHS research addresses diverse computing platforms, including traditional computers, handheld and mobile devices, robots and wearables, and potentially even person-embedded sensors and computers. It develops systems that interact with users through varied and possibly multiple modalities such as innovative computer displays, haptic, audio and brain-machine interfaces, and new interaction techniques that until implemented could only be imagined as science fiction. Proposed projects may work at scales ranging from an individual device with a single user, to networked information systems supporting collaborating groups, to socially intelligent computing, to large, evolving, heterogeneous socio-technical systems supported by pervasive networking, and to systems that merge physical and virtual for both places and people.

CHS research applies knowledge of computing and communications together with theoretical and practical understanding of behavioral, social and design sciences to better develop diverse kinds of systems, such as:

- systems that amplify individual human capabilities through a device or environment that empowers them to improve their performance, achieve their goals, improve well-being and enhance creative expression while assuring that the computer is no longer a distraction or an obstacle.

- systems that enrich the abilities, lives and self-sufficiency of people with disabilities, including people with temporary or situational disabilities.
- systems that enhance virtual collaborations, to enable and improve scientific, engineering and education production and innovation.
- systems that augment people and computers' ability to work together, to distribute and assimilate information and knowledge as required, to solve previously intractable problems, to do things collectively that neither could do separately.
- systems that use computing to advance society's cohesiveness, innovativeness, security and sustainability.

More information on topics of interest to the CHS program is available at: http://www.nsf.gov/cise/iis/chs_pgm13.jsp

Information Integration and Informatics (III)

Technological advances have resulted in accelerating increases in size, diversity, and complexity of data in virtually all aspects of human endeavor. Our ability to gather data of all types greatly outstrips our cognitive capacity to use it, while scientific, technical, and societal advances are increasingly dependent on new insights, theories, and tools to exploit data effectively for timely delivery of relevant and accurate information and for knowledge discovery. The Information Integration and Informatics (III) program supports research to realize the full transformative potential of data, information and knowledge in this increasingly digital and interconnected world.

III funded projects may address data of unprecedented scale, complexity, and rate of acquisition, as well as issues of heterogeneity and complexity with innovative approaches and deep insights. Projects may support the diverse functionalities and processing needs for data, information and knowledge from disparate and uncoordinated sources, or cope with the changing landscape of computing platforms at scales ranging from small mobile devices to potentially global-scale cloud and networked computing resources. Successful proposals should demonstrate effectiveness in dimensions such as scalability, interactivity, or scientific, technological or societal impact.

III funded projects should address contemporary applications of societal importance through advances in information integration and informatics. Projects may deal with one or more facets of the full knowledge lifecycle, which include acquisition, storage and preservation, use and re-use of data, information, and knowledge for decision-making and action. Ultimately, the deep scientific insights and advanced technologies resulting from III-funded projects will transform the functions and uses of data, information and knowledge in society. More information on topics of interest to the III program is available at: http://www.nsf.gov/cise/iis/iii_pgm12.jsp

Robust Intelligence (RI)

The Robust Intelligence (RI) program encompasses all aspects of the computational understanding and modeling of intelligence in complex, realistic contexts. In contrast to systems that use limited reasoning strategies or address problems in narrow unchanging contexts, robust intelligence may be characterized by flexibility, resourcefulness, creativity, real-time responsiveness and long-term reflection, use of a variety of modeling or reasoning approaches, ability to learn and adapt performance at a level of intelligence seen in humans and animals, and awareness of and competence in larger natural, built, and social contexts. The RI program advances and integrates the research traditions of artificial intelligence, computer vision, human language research, robotics, machine learning, computational neuroscience, cognitive science, and related areas.

Researchers across all areas of RI are addressing progressively richer environments, larger-scale data and more diverse computing platforms, and more sophisticated computational and

statistical approaches, looking to nature in many cases to model cognitive and computational processes. Interactions across traditional disciplines are also of increasing importance. For example, speech and dialogue research seeks to understand the cognitive psychological underpinnings of conversation that contribute to the robustness of human speech perception and intention understanding. Computer vision is exploring approaches developed in language processing to represent the semantic information in images and video in ways useful for mining, navigation, and robotic interaction, and working with ideas developed in computer graphics and physics-based modeling to understand and depict collections of images. Language and vision can be used together in a complimentary way to enhance understanding, for instance, of an image with use of text that discusses or describes it. A cognitive architecture may bridge sophisticated planning and problem solving modules with perception and action modules, perhaps accounting for certain human or animal behaviors and the ways in which they are learned and applied in new contexts. Multi-agent systems may need to tackle planning and learning as well as coordination in novel environments. Robotic systems need to understand and interact with humans in unfamiliar, unstructured, and dynamic environments. Computational understanding of neurons, networks, and the brain increasingly draws on computer vision, robotics, and machine learning, and provides insights into the neural coding, representations, and learning underlying intelligent behavior in nature.

These examples are meant to convey the general goals of RI, not to limit its scope. The program supports projects that will advance the frontiers of all RI research areas, as well as those that integrate different aspects of these fields. We especially encourage a synergistic integration of these fields for Large proposals.

More information on topics of interest to the RI program is available at: http://www.nsf.gov/cise/iis/ri_pgm12.jsp

Awards: Small Projects - up to \$500,000 total budget with durations up to three years; Medium Projects - \$500,001 to \$1,200,000 total budget with durations up to four years; and Large Projects - \$1,200,001 to \$3,000,000 total budget with durations up to five years.

It is anticipated that up to 150-200 awards will be made each year.

Anticipated Funding Amount: \$100,000,000

Letter of Intent: Not Required

Deadlines: Submission Window Date(s) (due by 5 p.m. proposer's local time):

September 10, 2015 - September 16, 2015

MEDIUM Projects

September 18, 2015 - September 24, 2015

LARGE Projects

November 04, 2015 - November 18, 2015

SMALL Projects

Contacts:

William S. Bainbridge, Point of Contact, Cyber-Human Systems (CHS), (703) 292-8930, email: wbainbri@nsf.gov

Ephraim P. Glinert, Point of Contact, Cyber-Human Systems (CHS), (703) 292-8930, email: eglinert@nsf.gov

Tatiana Korelsky, Point of Contact, Robust Intelligence (RI), (703) 292-8930, email: tkorelsk@nsf.gov

Sylvia Spengler, Point of Contact, Information Integration and Informatics (III), (703) 292-8930, email: sspengle@nsf.gov

Kenneth Whang, Point of Contact, Robust Intelligence (RI), (703) 292-8930, email: kwhang@nsf.gov

Jie Yang, Point of Contact, Robust Intelligence (RI), (703) 292-8930, email: jyang@nsf.gov

Maria Zemankova, Point of Contact, Information Integration and Informatics (III), (703) 292-8930, email: mzemanko@nsf.gov

Grant Program: Secure and Trustworthy Cyberspace (SaTC)

Agency: National Science Foundation: NSF 15-575

RFP Website: <http://www.nsf.gov/pubs/2015/nsf15575/nsf15575.htm>

Brief Description: Cybersecurity is one of the most important challenges confronting society in the information age. No one -- whether government, business, or individual -- is exempt from the ravages of malicious cyber acts upon imperfect technologies. Cybersecurity, broadly defined, concerns the protection of the information infrastructure as well as the protection of the content and discourse space, long the domain of the social, behavioral and economic sciences, the critical infrastructures that made modern society possible, and the Internet of Things (IoT) that will remake these critical infrastructures. Cyberspace is a vast domain for interaction, offering many actors and their agents the ability to affect and influence at scales large and small. Posing cyber conflict solely in terms of classic attackers and defenders does not fully capture the diversity and subtlety of the motivations, incentives, ethics, asymmetries, and strategies of the constituent actors and players in cyberspace. The intelligent adversary, whether human or software, learns, evolves, and co-evolves to exploit, disrupt, and overpower existing protection mechanisms. Addressing this challenge requires a coordinated multi-disciplinary approach, contributing to the body of knowledge about cybersecurity in the respective disciplines, and leading to practical, usable, deployable technologies. It also requires education and outreach activities that are focused on developing the next generation of scientists in computational and data science approaches to cybersecurity.

The Secure and Trustworthy Cyberspace (SaTC) program welcomes proposals that address cybersecurity from:

- a Trustworthy Computing Systems (TWC) perspective and/or a Social, Behavioral and Economic Sciences (SBE) perspective;
- the Secure, Trustworthy, Assured, and Resilient Semiconductors and Systems (STARSS) perspective; or
- the Transition to Practice (TTP) perspective.

Awards: Small Projects - up to \$500,000 total budget with durations up to three years;

Medium Projects - \$500,001 to \$1,200,000 total budget with durations up to four years; and

Large Projects - \$1,200,001 to \$3,000,000 total budget with durations up to five years.

It is anticipated that up to 85 awards will be made each year.

Anticipated Funding Amount: \$68,000,000

Letter of Intent: Not Required

Deadlines: Submission Window Date(s) (due by 5 p.m. proposer's local time):

September 10, 2015 - September 16, 2015

MEDIUM Projects

September 18, 2015 - September 24, 2015

LARGE Projects

November 04, 2015 - November 18, 2015

SMALL Projects

Contacts:

Jeremy Epstein, Program Director, CISE/CNS, (703) 292-8338, email: jepstein@nsf.gov

Nina Amla, Program Director, CISE/CCF, (703) 292-8910, email: namla@nsf.gov

Christopher Clifton, Program Director, CISE/IIS, (703) 292-8930, email:cclifton@nsf.gov
Sol Greenspan, Program Director, CISE/CCF, (703) 292-8910, email:sgreensp@nsf.gov
Wenjing Lou, Program Director, CISE/CNS, (703) 292-8950, email:wlou@nsf.gov
Anita Nikolich, Program Director, CISE/ACI, (703) 292-8970, email:anikolic@nsf.gov

Grant Program: Advancing Digitization of Biodiversity Collections (ADBC)

Agency: National Science Foundation: NSF 15-576

RFP Website: <http://www.nsf.gov/pubs/2015/nsf15576/nsf15576.htm>

Brief Description: This program seeks to enhance and expand the national resource of digital data documenting existing vouchered biological and paleontological collections and to advance scientific knowledge by improving access to digitized information (including images) residing in vouchered scientific collections across the United States. The information associated with various collections of organisms, such as geographic, paleogeographic and stratigraphic distribution, environmental habitat data, phenology, information about associated organisms, collector field notes, and tissues and molecular data extracted from the specimens, is a rich resource providing the baseline from which to further biodiversity research and provide critical information about existing gaps in our knowledge of life on earth. The national resource is structured at three levels: a central coordinating organization, a series of thematic networks based on an important research theme, and the physical collections. The national resource builds upon a sizable existing national investment in curation of the physical objects in scientific collections and contributes vitally to scientific research and technology interests in the United States. It will become an invaluable tool in understanding contemporary biological issues and challenges.

Awards: 4-12 awards; Anticipated Funding Amount: \$10,000,000

Letter of Intent: Not Required

Deadlines: October 9, 2015

Contacts:

Anne M. Maglia, Program Director, telephone: (703) 292-8470, email: biodigit@nsf.gov
H. Richard Lane, Program Director, telephone: 703-292-4730, email: biodigit@nsf.gov
Roland P. Roberts, telephone: (703) 292-8470, email: biodigit@nsf.gov

Grant Program: Environmental Sustainability

Agency: National Science Foundation: PD 14-7643

RFP Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027

Brief Description: The goal of the Environmental Sustainability program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions.

There are four principal general research areas that are supported:

Industrial Ecology: Topics of interest in Industrial Ecology include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Innovations in industrial ecology are encouraged.

Green Engineering: Research is encouraged to advance the sustainability of manufacturing processes, green buildings, and infrastructure. Many programs in the Engineering Directorate support research in environmentally benign manufacturing or chemical processes. The Environmental Sustainability program supports research that would affect more than one chemical or manufacturing process or that takes a systems or holistic approach to green engineering for infrastructure or green buildings. Improvements in distribution and collection systems that will advance smart growth strategies and ameliorate effects of growth are research areas that are supported by Environmental Sustainability. Innovations in management of storm water, recycling and reuse of drinking water, and other green engineering techniques to support sustainability may also be fruitful areas for research. NOTE: Water treatment proposals are to be submitted to the CBET Environmental Engineering program (1440), NOT the Environmental Sustainability program (7643).

Ecological Engineering: Topics should focus on the engineering aspects of restoring ecological function to natural systems. Engineering research in enhancement of natural capital to foster sustainable development is encouraged.

Earth Systems Engineering: Earth Systems Engineering considers aspects of large scale engineering research that involve mitigation of greenhouse gas emissions, adaptation to climate change, and other global scale concerns.

All proposed research should be driven by engineering principles, and be presented explicitly in an environmental sustainability context. Proposals should include involvement in engineering research of at least one graduate student, as well as undergraduates. Incorporation of aspects of social, behavioral, and economic sciences is welcomed. Innovative proposals outside the scope of the four core areas mentioned above may be considered. However, prior to submission, it is recommended that the PI contact the Program Director to avoid the possibility of the proposal being returned without review.

Faculty Early Career Development (CAREER) program proposals are strongly encouraged. Award duration is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the CAREER URL here for more information.

Proposals for Conferences, Workshops, and Supplements: PIs are strongly encouraged to discuss their requests with the Program Director before submission of the proposal.

Grants for Rapid Response Research (RAPID) and Early-concept Grants for Exploratory Research (EAGER) are also considered when appropriate. Please note that proposals of these types must be discussed with the program director before submission. Further details are available in the Proposal and Award Policies and Procedures Guide (PAPPG) download found here. Grant Opportunities for Academic Liaison with Industry (GOALI) proposals that integrate fundamental research with translational results and are consistent with the application areas of interest to each program are also encouraged. Please note that GOALI proposals must be submitted during the annual unsolicited proposal window for each program. More information on GOALI can be found at

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504699&SBTR=SolicAG

Awards: Various

Letter of Intent: Not Required

Deadlines: October 1-20, 2015

Grant Program: Adva Thermal Transport Processes

Agency: National Science Foundation: PD 14-1406

RFP Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13367

Brief Description: The Thermal Transport Processes (TTP) program supports engineering research aimed at gaining a basic understanding of the thermal transport phenomena and processes that are driven by thermal gradients and manipulating of these processes to achieve engineering goals. Of specific interest is research that explores active and passive control of the dynamics of thermal processes, and simulations and experiments that bridge and model information across multiple scales. Application areas of interest include:

- Cooling and heating of components, devices and equipment.
- Thermal transport processes in: energy conversion & storage; power generation; physiologic systems; and propulsion.

Priority is given to insightful investigations of fundamental problems with clearly defined economic, environmental and societal impacts.

Note that proposals that focus primarily on the following issues are NOT of interest to the TTP program:

- Designing materials and their thermal properties
- Thermal transport in materials synthesis and/or processing; these proposals should be directed to the Materials Engineering and Processing (MEP) program in ENG/CMMI or the Division of Materials Research (DMR) in the Mathematical and Physical Sciences (MPS) Directorate.
- Mass transport or system design-oriented efforts.

Innovative proposals outside of these specific interest areas can be considered. However, prior to submission, it is recommended that the PI contact the Program Director to avoid the possibility of the proposal being returned without review.

Proposals at the interface of computational/mathematical sciences and thermal transport are encouraged, but should be submitted to the Computational and Data-Enabled Science & Engineering (CDS&E) Program. Proposals that deal with the development and characterization of low cost, sustainable and scalable-manufactured materials with improved thermal properties are encouraged and should add "SusCHEM:" in front of the title of the proposal. The duration of unsolicited awards is generally one to three years. The typical award size is around \$100,000 per year. Proposals requesting a substantially higher amount than this, without prior consultation and approval from the Program Director, will be returned without review.

Faculty Early Career Development (CAREER) program proposals are strongly encouraged. Award duration is five years. The submission deadline for Engineering CAREER proposals is in July every year. Please see the CAREER URL here for more information.

Proposals for Conferences, Workshops, and Supplements: PIs are strongly encouraged to discuss their requests with the Program Director before submission of the proposal.

Grants for Rapid Response Research (RAPID) and Early-concept Grants for Exploratory Research (EAGER) are also considered when appropriate. Please note that proposals of these types must be discussed with the program director before submission. Further details are available in the Proposal and Award Policies and Procedures Guide (PAPPG) download found here. Grant Opportunities for Academic Liaison with Industry (GOALI) proposals that integrate fundamental research with translational results and are consistent with the application areas of interest to each program are also encouraged. Please note that GOALI proposals must be submitted during the annual unsolicited proposal window for each program. More information on GOALI can be found at

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504699&SBTR=SolicAG

Awards: Various

Letter of Intent: Not Required

Deadlines: October 1-20, 2015

Grant Program: Dear Colleague Letter: Enabling the Future of Making to Catalyze New Approaches in STEM Learning and Innovation

Agency: National Science Foundation: NSF 15-086

RFP Website:

http://www.nsf.gov/pubs/2015/nsf15086/nsf15086.jsp?WT.mc_id=USNSF_25&WT.mc_ev=click

Brief Description: Building on NSF's early investments in Making, the purpose of this Dear Colleague Letter (DCL) is to encourage EAGER proposals to conduct exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches that advance the frontier of knowledge with respect to STEM learning and design thinking. Specifically, NSF challenges and encourages the community to submit innovative proposals for fundamental research or the integration of research and education that:

- Elucidate the processes and potential benefits of learning, e.g. design thinking, in the Maker context;
- Leverage Making to develop and test its role in improving the effectiveness of formal and informal learning pathways for increasing retention and broadening participation in STEM for students and faculty;
- Explore new ideas and models of formal and informal STEM learning by leveraging existing knowledge in Making;
- Investigate and test effectiveness of new approaches to design and innovation enabled by Maker spaces and practices;
- Enable new tools and knowledge for design and prototyping across all disciplines that can significantly increase Making capabilities; and
- Further the understanding of innovation processes from prototypes through their transition to products that have greater societal and economic impact through enhanced marketability and large-scale market adoption.

The EAGER proposals must transcend typical approaches supported by NSF core research programs, and be considered “high-risk, high-payoff,” for example, in the sense that it involves radically different approaches, applies new expertise, or engages novel disciplinary or interdisciplinary perspectives.

Awards: Standard Grants

Letter of Intent: Not Required

Deadlines: December 17, 2015

Contacts:

Gül Kremer (gkremer@nsf.gov), Directorate for Education and Human Resources (EHR)

Amy Chan-Hilton (achanhil@nsf.gov), Directorate for Engineering (ENG)

David Corman (dcorman@nsf.gov), Directorate for Computer & Information Science & Engineering (CISE)

Grant Program: Dear Colleague Letter: FY 2016 Sustainable Chemistry, Engineering, and Materials (SusChEM) Funding Opportunity

Agency: National Science Foundation: NSF 15-085

RFP Website:

http://www.nsf.gov/pubs/2015/nsf15085/nsf15085.jsp?WT.mc_id=USNSF_25&WT.mc_ev=click

Brief Description: In FY 2016, the participating divisions are Chemistry (CHE); Chemical, Bioengineering, Environmental, and Transport Systems (CBET); Materials Research (DMR); Earth Sciences (EAR); and the Materials Engineering and Processing program in the Division of Civil, Mechanical and Manufacturing Innovation (CMMI).

Examples of fundamental research topics of interest in SusChEM include the replacement of rare, expensive, and/or toxic chemicals/materials with earth-abundant, inexpensive, and benign chemicals/materials; recycling of chemicals/materials that cannot be replaced; development of non-petroleum based sources of important raw materials; chemicals/materials for food and/or water sustainability; the elimination of waste products and enhancement in efficiencies of chemical reactions and processes; discovery of new separation science that will facilitate recycling and production of valuable chemicals/materials; and development and characterization of low cost, sustainable and scalable-manufactured materials with improved properties. Within these general guidelines, CHE, CBET, and DMR have no specific priorities and restrictions. However, proposals to DMR must be focused on fundamental materials research aspects. DMR discourages the submission of more than one proposal (SusChEM proposals included) from the same Principal Investigator during the same submission window. For CMMI, only proposals addressing sustainable materials processing are welcome. Of interest are processes with reduced use of toxic components, such as solvents, carbon emissions, and pollutants; processes under ambient conditions, as opposed to extreme temperatures, pressures or other harsh conditions; and increased conservation of natural resources, such as water, raw material, and energy. SusChEM proposals to CMMI must be submitted to the Materials Engineering and Processing program. EAR welcomes projects concerning fundamental geoscience related (but not limited) to the following: environmental remediation; environmental impacts of resource use; the geochemistry of critical elements, including phosphorus, rare earths, and precious metals; sustainable agriculture, including soil geochemistry.

Proposals in response to this initiative should be submitted to the existing program of interest in the participating divisions within the existing submission window (deadline) of the program. The proposal title must begin with 'SusChEM:'. Other than the proposal title, the cover page should be prepared as a regular unsolicited proposal submission to the program. Principal Investigators must explicitly address how their project conceptually advances sustainability in the fundamental research topics of interest in SusChEM in the project description section of the proposal.

Proposals are welcome from either multiple or single investigators. Interdisciplinary proposals that involve principal investigators traditionally supported by the different participating divisions are strongly encouraged. Such proposals should be submitted to the most relevant program in one division while identifying possible co-review programs in the other divisions (by listing the appropriate NSF units on the cover page). Proposals may be submitted in combination with other solicitations. For example, if there are strong collaborations with industry, the Grant Opportunities for Academic Liaison with Industry (GOALI) solicitation can be used in conjunction with this effort. Similarly, proposals may be submitted in combination with the CAREER or the Research in Undergraduate Institutions (RUI) solicitation. These proposals should be submitted to the appropriate solicitation and add SusChEM to the title (For

example, CAREER: SusChEM: Name of your proposal). Other mechanisms such as EAGER may also be appropriate, but principal investigators are urged to check with the cognizant program officers for additional guidance. For general questions about SusChEM, email the listed representative in the most closely relevant division.¹

To see examples of awards made under the SusChEM initiative, visit the NSF Award Abstracts Database (<http://nsf.gov/awardsearch/>), and enter 'SusChEM' in the 'Search Award for:' dialogue field. Alternatively, please visit the webpages of the disciplinary programs of interest in the participating divisions. Under each program, find the link to recent awards made in that program and look for those that contain 'SusChEM' in the proposal title.

SusChEM is a program under the umbrella of the NSF-wide Science, Engineering and Education for Sustainability (SEES) initiative.² SEES seeks to advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and sustainable human well-being. There are many programs within the SEES initiative, all of which aim to address the need for a sustainable world through support for interdisciplinary research and education.

Contacts:

Fleming Crim, Assistant Director, Directorate for Mathematical & Physical Sciences
Pramod Khargoneker, Assistant Director, Directorate for Engineering
Roger Wakimoto, Assistant Director, Directorate for Geosciences

National Institutes of Health

Grant Program: Clinical and Translational Science Award (CTSA) Network - Trial Innovation Centers (TICs) (U24)

Agency: National Institutes of Health RFA-TR-15-002

RFP Website: <http://grants.nih.gov/grants/guide/rfa-files/RFA-TR-15-002.html>

Brief Description: The purpose of this funding opportunity announcement (FOA) is to invite applications to establish Trial Innovation Centers (TICs) for the Clinical and Translational Science Award (CTSA) program. The TICs will be lead centers of an innovative expert network that will accelerate the implementation of multi-site studies by the CTSA Network. National Institutes of Health (NIH) supported studies are the focus of this initiative; however, the capacity created might also be of interest and useful for trials conducted by other federal agencies, as well as by the private and non-profit sectors.

The TICs will transform the CTSA network's ability to implement multi-site studies by adding innovative network capacity to the existing strength at the CTSA Hubs. The TICs will not be specific to one disease, but have the capacity to identify and coordinate a cadre of specialist investigators from across the CTSA network to implement studies efficiently in response to a broad range of disease specific opportunities. Select TICs, however, will have particular expertise to conduct multi-site studies with special populations, such as pediatric or geriatric subjects.

The primary objective of the TICs and the integration of CTSA Hubs into a network is to develop, demonstrate and disseminate innovative ways to increase the quality and efficiency of multi-site clinical research. The TICs will provide support for a broad range of CTSA Network multi-site clinical studies: trials across the human life span; trials for diagnostic testing or development of therapeutics, such as drugs, biologics, and devices, as well as behavioral

interventions, added to and compared with standard approaches. This might include studies intended to be used in pursuit of regulatory (FDA) approval, precision medicine studies or observational cohort studies. The TICs are intended to expedite large, multi-site clinical studies such as trials or complex observational and comparative effectiveness studies, so that the terms “study” and “trial” are used interchangeably in this FOA.

The TICs will provide an innovative infrastructure that at a minimum establishes reliance IRB agreements to allow for the designation of their IRB as the single IRB of record for a given trial, and standing Master Clinical Trial Agreements (MCTAs) to facilitate contractual agreements and clinical site financial support. To accomplish this, the TIC will execute standing IRB Authorization Agreements (IAAs) and MCTAs with each CTSA Hub and its partners in the network, as well as with ad hoc sites should they be needed in a given study due to special expertise or access to patient populations. As their name implies, TICs will be also be encouraged to explore innovative approaches aimed at streamlining trial implementation, promoting high quality multi-site trials, or dissemination of successful advances in process and approach.

Translational science is the field of investigation focused on understanding the scientific and operational principles underlying each step of the translational process. As such, the TICs are expected to support research by effectively fostering collaboration, implementing standardization, demonstrating and disseminating innovation, tracking performance and developing best practices for future CTSA network clinical trials. Following TIC funding, each CTSA Hub will be invited to identify TIC liaisons. The TICs and TIC liaisons will jointly develop a set of Standard Operating Procedures (SOPs) and implement Information Technology (IT) solutions to harmonize processes and provide user-friendly TIC access for the participating Hubs so that multi-site trials may be better implemented. The TICs will provide the leadership of a given multi-site study with innovative resources for efficient trial completion, and to ensure high quality operations and oversight of research projects.

Awards: Up to \$2.4 million; \$12 million available in FY2016

Letter of Intent: August 15, 2015

Deadline: September 15, 2015, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date. Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: NIH Transformative Research Awards (R01)

Agency: National Institutes of Health RFA-RM-15-005

RFP Website: <http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-15-005.html>

Brief Description: The goal of the NIH Transformative Research Awards initiative is to provide support for collaborative investigative teams or individual scientists who propose transformative research projects, which, if successful, would have a major impact in a broad area of biomedical or behavioral research. To be considered transformative, projects must have the potential to create or overturn fundamental scientific paradigms through the use of novel approaches, to transform the way research is conducted through the development of novel tools or technologies, or to lead to major improvements in health through the development of highly innovative therapies, diagnostic tools, or preventive strategies. Consistent with this focus, applications supported under the Transformative Research Awards initiative will reflect ideas substantially different from mainstream concepts.

Several key features of this FOA have been designed to emphasize to applicants and peer reviewers that these applications are very different from conventional, investigator-initiated

research awards. The application format, through its page limitations for sub-topics and requirements for explicitly addressing specific issues, focuses attention on the importance of the problem, the novelty of the hypothesis and/or the proposed methodology, and the magnitude of the potential impact rather than on experimental details. Reviewers will be instructed to emphasize significance and innovation in their evaluations, and these criteria will be the primary basis for funding decisions. These features are intended to steer applicants and reviewers, at each step of the process, toward the goal of this initiative, which is to solicit and fund unusually bold and potentially transformative research.

Projects in any area of NIH interest, including basic, clinical, translational and behavioral studies, are encouraged and will be considered responsive to this FOA. Though technical and conceptual risks are expected in highly innovative projects, clinical research also must address potential risk to human subjects. Clinical researchers are encouraged to submit applications as long as rigorous assessment of participant risk/benefit ratios compellingly indicates the ratio to be in favor of the potential benefit. Many of the advances in public health have been achieved through clinical trials, which necessarily involve some risk to participating human subjects. NIH acknowledges the presence of such risk and has established a set of clinical research ethics principles that provides guidance regarding the risk/benefit ratio in clinical research. Applicants proposing clinical research should contact Program staff at the appropriate NIH Institute or Center (IC) to ensure that their applications conform to IC-specific policies for clinical research.

Awards: Application budget is not limited. \$15 million available for the program

Letter of Intent: September 9, 2015

Deadline: October 9, 2015, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

DoD/ DARPA/ US Army Medical Research Acquisition Activity (USAMRAA)

Grant Program: Spinal Cord Injury Research Program

Agency: Department of Defense Dept. of the Army -- USAMRAAW81XWH-14-SCIRP-IIRA

RFP Website: <http://cdmrp.army.mil/funding/scirp.shtml> ;

<http://cdmrp.army.mil/funding/pdf/15scirpreftable.pdf>

Brief Description: The SCIRP Investigator-Initiated Research Award is intended to support studies that have the potential to make an important contribution to SCI research, patient care, and/or quality of life. The FY15 SCIRP encourages applications that specifically address one or more of the following areas: 1. Pre-hospital, en route care, and early hospital management of SCI 2. Development, validation, and timing of promising interventions to address consequences of SCI and to improve recovery, including, but not limited to: • Bladder, bowel, and autonomic dysfunction • Cardiometabolic dysfunction • Neuropathic pain and sensory dysfunction • Pressure ulcers • Respiratory dysfunction • Sexual dysfunction 3. Identification and validation of best practices in SCI care including but not limited to: • Critical care interventions • Interventions for musculoskeletal health • Rehabilitation interventions • Surgical interventions • Psychosocial and behavioral interventions in military/Veteran populations Important aspects of this award mechanism include: • Impact: Applications should articulate both the short- and long-term impact of the proposed research. Projects should address an FY15 Area of

Encouragement or other research areas relevant to SCI. • **Military Relevance:** Projects should impact spinal cord injured military Service members, Veterans, and/or their family members, as well as their caregivers. All applications must specifically and clearly address the military relevance of the proposed research project. Collaboration with military researchers and clinicians is encouraged. • **Preliminary Data:** Observations that drive a research idea may be derived from laboratory discovery, population-based studies, a clinician's first-hand knowledge of patients, or anecdotal data. Applications must include preliminary and/or published data that is relevant to SCI and the proposed research project. Investigator-Initiated Research Award applications may focus on any phase of research from basic through translational, including preclinical studies in animal models or human subjects, as well as correlative studies associated with an existing clinical trial. Clinical trials are not allowed under this funding opportunity.

Awards: Up to \$500,000 for up to 3 years

Letter of Intent: Pre-Proposal required: July 13, 2015; Submit Pre-application through <http://cdmrp.army.mil/funding/scirp.shtml>

Full Proposal Due Date: October 14, 2015, 4:00 p.m.
