REPORT OF THE FINAL PANEL

BOARD OF REGENTS SUPPORT FUND
RESEARCH COMPETITIVENESS SUBPROGRAM
FY 2013-14

BACKGROUND INFORMATION

One hundred twelve research proposals requesting a total of $6,427,105 in first-year funds were submitted for funding consideration in fiscal year (FY) 2013-14 to the Research Competitiveness Subprogram (RCS) of the Board of Regents Support Fund (BoRSF) R & D Program. Seven disciplines were eligible, including biological sciences I, biological sciences II, chemistry, computer and information sciences, earth and environmental sciences, engineering "B" (i.e., industrial, materials, and other), and health and medical sciences.

THE REVIEW PROCESS

To conduct as thorough, objective, and expert a review as possible on such a large number of applications within the Board's monetary constraints and time frame, a three-phase review process was adopted.

Phase I: In-Depth Mail Review

During mid- to late November 2013, the Board of Regents' Sponsored Programs staff solicited the assistance of two hundred twenty-four reviewers to accomplish Phase I of the review process. Each proposal was subjected to in-depth mail reviews for scientific and technical merit by two out-of-state professionals possessing expertise in the specific field of the proposal under review. Reviewers also evaluated the principal investigator's potential for achieving national competitiveness in the proposed research area, as well as the PI's and the institution's existing capabilities to implement the project. These evaluations were available for each subject-area panel.

Phase II: In-Depth Review by Subject-Area Panel

In Phase II of the review process the one hundred twelve proposals were assigned to seven subject-area panels, for funding consideration in FY 2013-14. Two biological sciences panels were used because a large number of proposals were submitted in this subject area. The biological sciences I subject-area panel reviewed proposals related (but not limited) to human biology, cell/molecular biology, virology, and immunology; biological sciences II proposals were related (but not limited) to ecology, pharmacognosy, microbiology, genetics and natural biology. Each panel was composed of two to four out-of-state professionals with broad expertise in the disciplines represented by the proposals, as well as familiarity with the goals and tenets of an EPSCoR-type program.[1] Using the criteria set forth in the FY 2013-14 R & D Request for Proposals (RFP), panel members worked individually and then collaboratively by telephone and email to decide which proposals in their subject area met all four eligibility requirements (i.e., the applicant and the proposal fit the EPSCoR mold; the proposal contained a significant research component; the proposal had the potential to make fundamental [basic] research contributions; and the research topic fit one of the seven eligible disciplines as defined in the RFP). In this second phase of the review process, each

[1]RCS is modeled after the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR). NSF EPSCoR programs currently exist in 31 states, the Virgin Islands, Puerto Rico, and Guam.

subject-area panel member acted as "primary discussant" for an assigned portion of the proposals and completed an in-depth consensus critique form for each of his/her assigned proposals after discussing its relative merits and shortcomings with the other panel members. Through a telephone conference, the subject-area panel members jointly ranked the proposals in the order in which they believed that the proposals should be funded. The panel carefully scrutinized the budgets of those proposals ranked high enough to merit serious consideration for funding and recommended modifications where appropriate.

Phase III: Final Panel Review and Interdigitation of Recommended Proposals

In Phase III of the review process a final panel (hereafter referred to as the "Panel"), composed of three senior out-of-state professionals whose expertise spans the eligible disciplines and who possess comprehensive experience with EPSCoR-type programs, convened during March 14 and 15, 2014, in Baton Rouge, Louisiana, in the offices of the Board of Regents to discuss and compare the various groups of top-ranked proposals and, ultimately, to interdigitate the rankings of the various proposals across the subject areas. None of these individuals was associated with any other phase of the review process.

The three principal criteria used by the Panel in making its funding recommendations were as follows: (1) the appropriateness of the applicant to this program; (2) the scientific and technical merit of the proposed research, utilizing national standards of excellence; and (3) the proposal's identification of barriers to the principal investigator's national competitiveness and presentation of a convincing plan for overcoming such barriers. Additional factors considered by the Panel included the current national pool of funds available for the type of research being proposed, the appropriateness of the budget request, and the relevance of the proposed research to the State of Louisiana. Forty-five proposals were discussed at length during this two-day meeting.

The Panel was informed that approximately $720,000 had been budgeted to fund the first year of work of the RCS projects. Utilizing the criteria described previously, the Panel recommended twenty-two proposals, totaling $1,059,279 in first-year funds, which it strongly believed were worthy of support and placed them in the "Priority One" category in **Appendix A**. The first seven proposals in Appendix A are ranked "1" (i.e., first). In the Panel's opinion, these proposals are of nearly equal merit, and the order in which these proposals are listed is arbitrary. Proposals ranked eight through twenty-two are listed in descending order of merit for funding.

Note: Funds anticipated to be available will currently support Priority One proposals ranked 1-14. However, should additional funds become available the RCS will fund as many additional Priority One proposals as possible.

The budgets for each of the twenty-two proposals rated as Priority One were scrutinized closely and, in most cases, adjusted downward to reflect the minimum amount of funds necessary to accomplish the proposed research. The Panel emphasizes, however, that in no case was a budget reduced to the point where the scientist or engineer could not accomplish the research proposed in the application.

Several other highly meritorious proposals considered at the final panel meeting but, for a variety of reasons, not recommended for funding, are listed in **Appendix B**. The fact that a proposal considered by the Panel was not recommended for funding should not, in itself, be interpreted to mean that the application fell just below the cutoff for funding. Each applicant whose proposal is listed in Appendix B should closely review the reviewers' comments (see Appendix F) before making the decision to resubmit a proposal to this program.

Appendix C lists those proposals that were ranked Priority Two by the subject-area panels but not recommended for funding by the final panel. In general, the proposals listed in **Appendix C** were considered scientifically sound, but possessed one or more problems that precluded a recommendation for funding, such as poor or unconvincing identification of barriers to national competitiveness; a scope of work either too broad or poorly defined; and/or research proposed in an area in which federal dollars are not currently expended.

The Panel observed that several other proposals, although not recommended for funding by the Panel, deserve notice. **Appendix D** lists proposals that were considered meritorious (Priority Three) by the subject-area panels, but which were not rated highly enough to be included in the Priority Two list. Applicants whose projects are listed in **Appendices C and D** are encouraged to pay particular attention to the reviewers' comments and, if appropriate, revise their applications and resubmit them when their research topics are again eligible.

Appendix E gives comments and funding stipulations for each of the twenty-two proposals highly recommended for funding.

Appendix F provides specific comments made by the consultants applicable to those proposals listed in Appendix B, as mentioned above.

Appendix G lists the out-of-state experts who served as full members of the final and subject-area panels.

Appendix H summarizes all proposals submitted for funding consideration to the RCS and provides the following information for each proposal: proposal number, title, discipline, institution, principal investigator, and BoRSF funds requested.

FINAL PANEL COMMENTS AND RECOMMENDATIONS

The Research Competitiveness Subprogram of the Board of Regents Support Fund is designed to help those researchers in Louisiana who have strong potential to become nationally competitive for research funding from federal granting agencies. The Panel compliments the Board of Regents and the State of Louisiana on the establishment of such a quality program. It is the consensus of the Panel that this program has helped to establish a number of principal investigators who, in turn, have been able to support graduate students in their scientific and engineering studies through outside funding. It should be noted that through beneficial comments provided in each level of review, the process itself enhances the possibilities of success for proposals originating from researchers within the State of Louisiana who submit applications to a wide variety of funding sources. Moreover, the out-of-state scientists who reviewed and provided constructive criticism of this year's proposals are made aware of the scientific and engineering endeavors taking place in Louisiana and are impressed with the State's attempts to improve the research climate for its scientists and engineers through this program.

To the Applicants:

1. Barriers to Competitiveness. Despite the repeated emphasis placed on this criterion in the RFP, some applicants continue to ignore this program requirement. This year, as in past years, a number of applicants failed to present an argument indicating how a Board of Regents Support Fund award would help to address the applicant's barriers to national competitiveness. In several proposals it appeared that the principal investigator was already nationally competitive and had significant external competitive funding. For other proposals, the barriers to national competitiveness were so great that funding the proposal would not overcome these barriers within the time limits of the program (i.e., three years). The ratings of those proposals not in compliance with program guidelines were lowered accordingly.

2. Profile of Applicant. The Panel scrutinized each applicant's past funding levels and took into consideration the principal investigator's research productivity, particularly in the past three to five years. In some instances, proposals were submitted by nationally competitive faculty who had recently lost funding, but who gave no indication that they faced barriers to competitiveness that needed addressing. As stipulated in the RFP, junior researchers at the threshold of becoming competitive were given priority over senior researchers who are changing fields.

   In some cases, proposals ranked highly by reviewers during Phases I and II contained no information about the applicant or lacked a history of funding. In such cases, reviewers cannot sufficiently evaluate the applicant's profile for eligibility. Therefore, the Panel could not recommend these proposals for funding.

3. Format, Syntax, and Appearance of Application. In several cases, research ideas suffered greatly because the proposals were not well written. From the finished products presented to the Panel (i.e., the proposals), it also appears that some investigators did not sufficiently appreciate the competitive nature of the RCS. Applicants should be made aware that typically no more than twenty-five percent of the proposals submitted to this program will be funded with the money available, and that every year the number of excellent proposals far exceeds the funds available. Applications containing numerous spelling and typographical errors were viewed more critically than other applications, because an evident lack of care went into their preparation.

4. Requests for Equipment. As stated in the RFP, the R & D program is not an equipment grants program. Equipment may be requested only in the context of the particular research initiative proposed. It is the applicant's responsibility to justify the uniqueness of the equipment and/or software requested under the aegis of this program. With respect to computing equipment and software, it is the firm belief of the Panel that items such as personal computers, laptops, and standard word processing and data crunching software packages should be provided to faculty by their institutions. Board of Regents Support Fund money should be used only to support the acquisition of special peripherals and software that are specific to and justified by the proposed research.

5. Proposal Submission History. In several cases the Panel found it very helpful to have a detailed record tracking the submission of the proposal to other funding agencies. Also, as indicated in the RFP, if the project had been reviewed previously by another granting agency, it greatly enhanced the current proposal's chances of obtaining RCS funding if copies of these reviews were included, along with an explanation of any revisions that were made in the current application and a further explanation of how RCS support would help to overcome the problems identified by federal and/or other reviewers.

6. Funds Requested for Travel and Release Time. The Panel noted that requests for travel support and faculty release time frequently were poorly justified and itemized. Such requests should be carefully justified and detailed in future proposals.

7. Requests for Post-Doctoral Researchers and Graduate Research Assistants. The subject-area panels noted that some proposals requested funds for post-doctoral researchers instead of graduate assistants, but did not provide an adequate explanation or justification of the need for the more expensive post-doctoral researchers. Because BoRSF funds are quite limited, the Panel recommends that principal investigators request funding for less costly graduate assistants unless a compelling need for assistance from one or more post-doctoral researchers can be demonstrated.

8. General Comments.

a) The Panel agreed that, at a minimum, a successful proposal must contain the following:

(1) A precisely identified research problem or statement of a research hypothesis;

(2) A section describing the importance of solving the research problem;

(3) Evidence that the identified research problem is new and unresolved;

(4) A section describing the precise research methodology to be used;

(5) A section detailing expected results and future contributions;

(6) A discussion of the state and/or national implications of this research and identification of prospective future funding sources; and

(7) An assessment of the barriers that prevent the principal investigator from competing successfully for federal funding. This assessment should incorporate items 1-6 in a manner that will convince the reviewers that BoRSF support for up to three years will enable the PI to secure federal R & D dollars for the PI’s research endeavors.

b) Applicants whose proposals have been declined two or more times are encouraged to seek assistance in proposal/grant writing from a mentor or an established, nationally competitive investigator in the same field, perhaps at a nearby institution.

c) Applicants whose proposals were submitted and declined for the first time this year should look to the reviewer comments for guidance in strengthening future proposals.

d) Inexperienced principal investigators are helped by workshops on the preparation of research proposals. It would be beneficial if the institutions developed mentor programs, in which competitive scientists assisted these investigators in the preparation of good proposals. Mentors could also review the proposals prepared by junior investigators and suggest ways to strengthen these proposals. The Panel continues to be impressed by a marked improvement in the quality of proposals submitted by faculty from undergraduate teaching-oriented public and private institutions.

e) A number of top-ranked proposals were submitted by scientists who are clearly already nationally competitive. The Panel believes that it is inappropriate to use limited RCS resources to support such scientists, even if these PIs are marginally changing research directions. It should also be noted that some highly ranked proposals were submitted by scientists who had already received three years of BoRSF R & D support. In those cases where three years of previous BoRSF R & D support did not enable the PI to become nationally competitive, the Panel found it difficult to recommend or justify additional support when so many other equally worthy applicants had yet to receive BoRSF R & D funds. In the Panel's view, three years of BoRSF R & D support should enable a scientist to become nationally competitive, if the research area is capable of attracting support from national funding agencies. All proposals recommended for funding by the Panel are believed to have strong potential for overcoming the barriers that have prevented the submitting scientists from achieving national competitiveness.

To the Board of Regents:

1. Limitations on Salary Requests and Requests for Post-Doctoral Researchers. The Panel strongly believes that the investigators funded through the RCS should be involved actively (i.e., play a "hands-on" role) in their research. For this reason, some requests for post-doctoral researchers were declined when budgets were reviewed. In most cases the Panel recommended Board funding for only one month's summer salary for principal investigators. The Panel believes that the institutions should be strongly encouraged to provide release time to their investigators. The institutional provision of release time provides tangible evidence to reviewers and the Board that the institution is committed to the research endeavors of its investigators and frees up Board funds that would otherwise be committed to salary support, thereby helping to ensure that the maximum number of excellent projects will be funded.

2. Limitations on Overall Funding Requests. In no year of the RCS's operation have the funds available sufficed to fund all proposals worthy of support. The Panel must cut proposal budgets significantly each year to ensure that the maximum possible number of worthy projects is funded. Therefore, the Panel strongly recommends that the Board maintain the existing overall cap on the amount of funds that may be requested ($200,000 over a three-year period).

APPENDIX A

RCS PROPOSALS HIGHLY RECOMMENDED FOR FUNDING (PRIORITY ONE)

Rank	Proposal No.	Institution	Recommended BoRSF 1st Year Funds	Recommended BoRSF 2nd Year Funds	Recommended BoRSF 3rd Year Funds
1	081A	TUHSC	$45,000	$45,000	$45,000
1	078A	Tulane	$53,018	$46,810	$46,810
1	010A	LSU-BR	$57,709	$51,709	$49,709
1	020A	LSU-BR	$64,000	$49,318	$49,318
1	076A	Tulane	$63,851	$46,351	$46,351
1	024A	LSU-BR	$47,250	$41,250	$41,250
1	077A	Tulane	$56,307	$56,307	$43,504
8	019A	LSU-BR	$43,713	$43,713	$43,713
9	094A	ULL	$39,340	$38,340	$38,340
10	023A	LSU-BR	$51,831	$49,331	$47,488
11	044A	LA-Tech	$53,523	$49,273	$49,273
12	083A	TUHSC	$26,074	$26,074	$ -----
13	018A	LSU-BR	$43,714	$43,714	$43,714
14*	088A	ULL	$39,695	$29,695	$ 5,439
15	059A	Pennington	$51,213	$51,213	$46,213
16	013A	LSU-BR	$34,743	$34,743	$34,743
17	047A	LA-Tech	$56,120	$48,369	$46,869
18	002A	LA College	$29,237	$18,816	$18,816
19	021A	LSU-BR	$57,291	$57,291	$57,291
20	106A	UNO	$48,198	$48,198	$48,198

***Note: Availability of funds for those proposals below the line is uncertain at this time.**

APPENDIX A (continued)

RCS PROPOSALS HIGHLY RECOMMENDED FOR FUNDING (PRIORITY ONE)

21	050A	LA-Tech	$39,256	$39,256	$39,256
22	090A	ULL	$58,196	$38,075	$16,579
	TOTALS		**$1,059,279**	**$ 952,846**	**$ 857,874**

APPENDIX B

MERITORIOUS PROPOSALS RANKED PRIORITY ONE BY THE SUBJECT-AREA PANELS AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING (12)

027A 031A 033A 036A 037A 038A 041A 058A 060A 073A 075A 079A

***Note*:** These proposals are not listed in rank order of merit. The Panel's comments on these proposals are provided in Appendix F. Mail and subject-area panel reviews for each proposal will also be provided to the applicants in July 2014.

APPENDIX C

**MERITORIOUS PROPOSALS RANKED PRIORITY TWO
BY THE SUBJECT-AREA PANELS AND CONSIDERED BY THE FINAL PANEL
BUT NOT RECOMMENDED FOR FUNDING (28)**

007A	040A	095A
012A	042A	096A
016A	043A	098A
017A	049A	105A
022A	051A	107A
025A	054A	109A
030A	056A	111A
032A	070A	112A
034A	084A	----
035A	092A	----

***Note*:** These proposals are not listed in rank order of merit. The mail and subject-area panel reviews for each proposal will be provided to the applicants in July 2014.

APPENDIX D

**PROPOSALS RANKED PRIORITY THREE OR DECLARED INELIGIBLE (*)
BY THE SUBJECT-AREA PANELS AND NOT RECOMMENDED FOR FUNDING (50)**

001A	048A	074A	108A
003A	052A	080A	110A
004A	053A	082A	-----
005A	055A	085A	-----
006A	057A	086A	-----
008A	061A	087A	-----
009A	062A	089A	-----
011A	063A	091A	-----
014A	064A	093A	-----
015A	065A	097A	-----
026A	066A	099A	-----
*028A	067A	100A	-----
029A	068A	101A	-----
039A	069A	102A	-----
045A	071A	103A	-----
046A	072A	104A	-----

***Note*:** These proposals are not listed in rank order of merit. The mail and subject-area panel reviews for each proposal will be provided to the applicants in July 2014.

APPENDIX E

COMMENTS AND FUNDING STIPULATIONS ON PROPOSALS HIGHLY RECOMMENDED FOR FUNDING (PRIORITY ONE)

General Comments and Stipulations

This section provides comments and stipulations set forth as conditions of funding for the twenty-two proposals highly recommended for awards by the Panel. The Panel would again like to emphasize that it considered the first seven proposals to be of relatively equal merit and, therefore, the order in which they have been listed is arbitrary. Proposals ranked eight through twenty-two are listed in descending order of merit for funding.

In some instances the Panel deleted funds for research associates and post-doctoral researchers. The Panel believes that the principal investigators themselves should conduct a significant portion of the proposed research and that BoRSF funds should first support graduate students who will benefit from scientific and/or engineering training.

The Panel strongly recommends that **prior to funding each proposal recommended for an award, the Board of Regents ascertain whether the principal investigator has obtained significant research support from another external funding source, such as a major foundation or federal granting agency.** Several scientists have proposals pending before such agencies or foundations. The Panel believes that some of these scientists are so close to achieving national competitiveness for research funding that they are likely to receive these requested funds. **In cases where a principal investigator obtains a commitment of significant external funding prior to receipt of an RCS award, the RCS award should be vacated and the funds thereby released should be used to support other deserving projects in the RCS or other R & D subprogram(s) of the Board of Regents Support Fund. Any principal investigator who receives notice of external funding after an award is contracted will be expected immediately to report the notice of external funds in accordance with Section X of the RCS grant contract.**

Although the Panel reduced the budgets of most projects recommended for funding, the Panel did not reduce any budget to such an extent that achievement of a project's goals or execution of its work plan would be impaired. Therefore, **no reductions in the scope of work plans of projects recommended for funding should be allowed.** If the work plan submitted for a project does not correspond in scope to that of the original proposal, the award should be vacated and funds thereby made available should be used to fund other worthy projects in the RCS or other R & D subprogram(s) of the Board of Regents Support Fund.

The types and amounts of institutional match pledged in a proposal played a significant role in determining whether that proposal was recommended for funding. **Therefore, unless specifically stated in the funding stipulations of a project recommended for funding, no reductions in the types or amount of institutional match pledged in the original proposal should be permitted.** If the types or amounts of institutional match for a project recommended for funding are reduced, unless such reductions are specifically authorized by the funding stipulations for that grant, the award should be vacated and funds thereby made available should be used to fund other worthy projects in the RCS or other R & D subprogram(s) of the Board of Regents Support Fund.

Appendix E (continued):

PROPOSAL: 081A-14 **RANK: 1**

TITLE: Impact of Hypoglycemia and Insulin on Hypoxia-Reoxygenation Injury in Brain Microvascular Endothelial Cells: Role of Calcium Microdomains

INSTITUTION: Tulane University Health Sciences Center

PRINCIPAL INVESTIGATOR: Prasad Katakam, Ph.D.

COMMENTS: Hypoglycemia and high therapeutic insulin have been implicated in the adverse cardiovascular outcomes in the clinical trials targeting aggressive glucose lowering in diabetic patients. However, vascular actions of insulin or hypoglycemia following hypoxia-reoxygenation (H-R) have never been studied. The PI's pilot studies in brain microvascular endothelial cells (ECs) observed that H-R induces uncoupling of endothelial nitric oxide synthase (eNOS) when eNOS catalyzes reactive oxygen species (ROS) formation instead of nitric oxide (NO). Importantly, eNOS uncoupling perpetuated ROS-induced ROS generation in mitochondria to amplify the cellular injury to H-R and eNOS inhibition improved the cell survival. Calcium microdomains between ER and mitochondria, tethered together by mitofusin 2 (MFN2), facilitate interorganelle communication. The PI found that NOS uncoupling correlated with MFN2 levels and ER stress markers during H-R, indicating that mitochondria-ER proximity is detrimental to cell survival. Furthermore, insulin improved EC viability following H-R when accompanied by normoglycemia and hyperglycemia, but hypoglycemia abolished the insulin-afforded protection. Interestingly, insulin-afforded protection was accompanied by reduction in the levels of uncoupled eNOS, MFN2, and ER-stress markers. The PI hypothesizes that insulin when accompanied by hypoglycemia promotes enhanced NOS uncoupling and increased ER-mitochondrial calcium flux leading to exaggerated H-R injury to ECs. Specific aims are: 1. To determine the impact of insulin treatment under various glucose conditions during H-R on endothelial ER-mitochondrial calcium dynamics, ROS generation from uncoupled NOS and mitochondria, and mitochondrial bioenergetics; and 2. To determine the impact of disrupting eNOS uncoupling (NOS-inhibition and tetrahydrobiopterin-supplementation) and EC-mitochondrial communication (siRNA knockdown of MFN2) on the effects of insulin-hypoglycemia combination.

It is recommended that the project be funded at the level requested, i.e., $45,000 for year one, $45,000 for year two and $45,000 for year three.

Year 1: $45,000 **Year 2: $45,000** **Year 3: $45,000**

The institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 078A-14 **RANK: 1**

TITLE: Toward Crystal Engineering from First Principles

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Noa Marom, Ph.D.

COMMENTS: Molecular crystals are important for applications, such as non-linear optics, hydrogen storage, gas separation, solar cells, and especially pharmaceuticals. Crystal engineering is a bottom-up approach to designing molecular crystals with tailored properties. Computational crystal engineering from first principles is appealing because it enables conducting an unbiased exploration of the chemical compound space, based on fundamental theories for molecular interactions, potentially leading to truly innovative materials. The great challenge in engineering molecular crystals stems from the complexity of dispersion interactions, which often lead to polymorphism, i.e., several possible crystal structures for a given molecule. Energy differences below 0.1 kcal/mol between polymorphs require an accuracy that can only be achieved by fully quantum mechanical simulations. The accuracy of density functional theory (DFT) is often limited due to poor description of dispersion interactions. Making crystal engineering from first principles a reality requires (i) sufficiently accurate and efficient electronic structure methods, and (ii) algorithms capable of intelligently exploring the configuration space to find molecular crystals with the desired properties. The goal of the proposed research is to address these challenges.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, and limited travel support of $1,500 for a year one budget of $53,018. Budgets of $46,810 are recommended for year two and year three.

The PI has (1) pending proposal:

- ACS-PRF – entitled “Computational Design of Catalysts and Inhibitors” in the amount of $110,000 for the period 7/1/2014 – 8/31/2016.

Should the PI receive funding for the pending proposal, he/she should be considered nationally competitive and the requested funds from the BoRSF program should not be awarded.

Year 1: $53,018 **Year 2: $46,810** **Year 3: $46,810**

The institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 010A-14 **RANK: 1**

TITLE: Research on Performance Optimization and System Integration of Cloud Storage in Mobile Computing

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Feng Chen, Ph.D.

COMMENTS: Mobile computing devices, such as phones, tablets, and ultrabooks, heavily rely on flash memory storage for their stringent mobility and performance requirements. However, a critical constraint of flash memory storage is its excessively *high price* and *small capacity*. Recently, cloud storage (e.g., Dropbox, Amazon S3) has emerged as a new distributed storage model and could fundamentally address this issue. Besides extremely low cost, cloud storage also provides several particularly attractive enterprise-level features, such as high elasticity, high reliability, and large and almost infinitely expandable capacity. The PI proposes to leverage cloud storage as a main storage backend to build a low-cost high-capacity storage for mobile computing systems. Integrating cloud storage into the current mobile storage hierarchy demands extensive studies to address various research issues. The PI plans to carry out preparatory research on analyzing and building a performance model for cloud storage, automatically identifying critical data for local caching, and developing a cloud storage-aware data management scheme. This proposed research will lay a solid foundation for reaching the ultimate goal of seamlessly fusing flash memory and cloud storage together and enabling a new generation of mobile storage systems with unlimited capacity at low cost. Board of Regents funds can help the PI as a first-year junior faculty member initiate this research effort, collect preliminary results, and prepare nationally competitive proposals for securing funding support from NSF and other federal agencies.

It is recommended that the proposed budget be reduced to provide limited travel support of $1,500 and limited supplies charges of $8,000 for a year one budget of $57,709. Budgets of $51,709 and $49,709 are recommended for years two and three, respectively.

Year 1: $57,709 **Year 2: $51,709** **Year 3: $49,709**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 020A-14 **RANK: 1**

TITLE: Measuring Crustal Deformation in Yellowstone Caldera in Response to Natural Forcing from Yellowstone Lake Seiche Waves to Monitor Subsurface Magma and Assess Volcanic Hazard

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Karen Luttrell, Ph.D.

COMMENTS: The Yellowstone Plateau Volcanic Field is an active volcanic region that includes the highly visited Yellowstone National Park. In the central Yellowstone Caldera, magma is present at mid-crustal depth, but questions remain about how shallow is the top of the magma reservoir and how molten is the magma at these depths. Understanding this system is crucial to the estimation of regional volcanic hazard and to the interpretation of signs of volcanic unrest. A recent pilot study demonstrated that magma depth and melt fraction could be estimated by examining the crustal deformation field induced by the water mass movement of resonant seiche waves in Yellowstone Lake, especially as recorded on the network of highly sensitive borehole strainmeters throughout the caldera. Building upon those findings, this study will deploy instruments in Yellowstone Lake to record the ongoing summer seiches. This data will then be analyzed and interpreted along with the associated crustal deformation signals recorded on geophysical instruments throughout the caldera to assess the depth and melt fraction of the magma reservoir. Particularly, the PI's observations and analysis will leverage the commitment of the NSF EarthScope Program to operate and maintain the borehole strainmeter network in Yellowstone.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, and limited supplies charges of $15,882 for a year one budget of $64,000. A budget of $49,318 is recommended for year two. A similar budget of $49,318 is recommended for year three that deletes "other expenses" charges of $2,000.

Year 1: $64,000 **Year 2: $49,318** **Year 3: $49,318**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 076A-14 **RANK: 1**

TITLE: Low-Loss Optical Nanoantennas for Solar Energy Applications

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Matthew Escarra, Ph.D.

COMMENTS: The conventional approach to achieving very high efficiency (>30%) in photovoltaic energy conversion requires integrating multiple materials with varying bandgap into a single epitaxially grown multi-junction cell. This approach has resulted in solar module efficiency as high as 35.9%, but it is limited by current-matching and lattice-matching constraints to 3-5 subcells. However, by splitting the solar spectrum into discrete bands and focusing those bands electrically and optically in parallel subcells, modules are enabled incorporating 6-15 unique absorber materials. Such a spectrum splitting photovoltaic may achieve module efficiency in the 40-55% range. A very efficient spectrum splitting optical element is critical to developing such high efficiency photovoltaics. In this project, it is proposed to design and prototype a spectrum splitting optical element composed of an array of low-loss nanoantennas. Similar to microwave antennas, nanoscale antennas can shape the wavefront of incoming optical frequencies. In particular, this project seeks to develop nanoantennas composed of low-loss dielectric materials, such as TiO2, that resonantly interact with incoming light. Antenna elements will be designed, with both analytical and numerical methods, to provide arbitrary phase shift with constant scattering amplitude. These elements will be incorporated into a spectrum splitting metasurface designed to separate incoming white light into discrete bands directed onto appropriate subcells. These meta-surfaces will iteratively be fabricated and characterized to validate the design approach and achieve a spectrum splitting optical element with >85% optical efficiency, which will be tested with at least two subcells. Alternate applications will also be considered.

It is recommended that the proposed budget be reduced to provide limited travel support of $1,500 for a year one budget of $63,851. Budgets of $46,351 are recommended for year two and year three.

The PI has (2) pending proposals:

- NSF – entitled “A 2D Future: From Fundamentals to Functional Devices” in the amount of $1,998,916 for the period 7/2014 – 6/2018.

- DOE ARPA-E entitled “Dual Solid-State Solar Converter with Combined Receiver/Storage” in the amount of $1,268,008 for the period 3/2014 – 2/2017.

Should the PI receive funding for either of the pending proposals, he/she should be considered nationally competitive and the requested funds from the BoRSF program should not be awarded.

Year 1: $63,851 **Year 2: $46,351** **Year 3: $46,351**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 024A-14 **RANK: 1**

TITLE: A Microbial High Throughput Culturing Laboratory at LSU

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: James Thrash, Ph.D.

COMMENTS: The great plate count anomaly is a familiar conundrum in microbiology. The fact that the majority of microorganisms observed under a microscope are not readily cultivated has created significant challenges to understanding their roles in natural environments. The development of "omics" techniques has greatly expanded the ability to probe the identity, genomic content, and gene expression of microbes without the need for cultivation. Nevertheless, many hypotheses gleaned from these techniques remain untested without experimental enquiry of cultivated isolates, and many of the most abundant microorganisms, particularly in marine systems, remain uncultured. Dependence on other organisms, slow replication, sustained dormancy, and unknown nutrient requirements are among the many factors that complicate cultivation attempts, but regardless of these issues, successful isolation of microorganisms is a numbers game. Modern high-throughput culturing techniques have significantly improved the ability to isolate microorganisms that were previously elusive and of significant importance in marine systems. The PI seek to establish a high-throughput culturing laboratory (HTCL) and culture collection at LSU, focused initially on isolation of microorganisms from Louisiana's coastal aquatic environments. The primary benefits of the HTCL will be a substantial increase in the diversity of microorganisms available for experimentation and genomics, and a culture collection of strains relevant to the Gulf coast capable of being mined for novel enzymes of potential importance to industry. The proposed research will increase the PI's competitiveness for funding to study coastal marine microbiology and broaden the range of eligibility.

It is recommended that the proposed budget be reduced to provide limited travel support of $1,500 for a year one budget of $47,250. Budgets of $41,250 are recommended for year two and year three that delete "printing/publication" charges of $1,500.

Year 1: $47,250 **Year 2: $41,250** **Year 3: $41,250**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 077A-14 **RANK: 1**

TITLE: Major Histocompatibility Complex, Mate choice and Dispersal Decisions in Wild Cebus capucinus: Implications for Sexual Selection in Male Dispersed Social Animals

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Katharine Jack, Ph.D.

COMMENTS: The major histocompatibility complex (MHC) is a diverse set of highly polymorphic genes associated with immune and non-immune functions, including a role in behavior and mate choice. Data from all major vertebrate taxa support MHC-dependent mate choice, though most studies focus solely on female choice. The objective of this study is to examine the role of the MHC in male mating and dispersal decisions in wild white-faced capuchin monkeys (*Cebus capucinus*) in Santa Rosa National Park, Costa Rica. White-faced capuchins reside in multi-male, multi-female groups characterized by female philopatry and frequent male dispersal, a residency pattern that limits female mate choice. Capuchins are non-seasonal breeders that engage in non-conceptive copulations and, although all group males copulate, alpha males sire the majority of group offspring. While earlier studies found that females preferentially mate with alpha males during ovulation and subordinate males during gestation/lactation, females do not "choose" the males that join their groups. Rather, dispersing male capuchins select which groups they will join, usually forcibly, after several months of "visiting" and interacting with neighboring groups. Male mate choice has been a topic largely ignored in evolutionary biology as male mating selectivity goes against traditional selectionist thinking. However, in species like white-faced capuchins where groups are small and group membership opportunities are limited, mate choice via MHC detection may play a key role in male dispersal and mating decisions. The results of this study have the potential to transform our understanding of sexual selection in other male-dispersed species.

The PI should note that Support Fund money requested for successive years of a research project should not increase. It is recommended that the proposed budget be revised to delete the UCLA subcontract (25% indirect cost for personnel salary) for a year one budget of $56,307. A similar budget of $56,307 is recommended for year two. A budget of $43,504 is recommended for year three.

Year 1: $56,307 **Year 2: $56,307** **Year 3: $43,504**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 019A-14 **RANK: 8**

TITLE: Ultrafast Nonlinear Excited State Dynamics: From Atomistic Understanding to Controlled Transformations

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Kenneth Lopata, Ph.D.

COMMENTS: The physical mechanisms underlying strong-field and multi-photon/nonlinear dynamics in molecules, and the breakdown and transformation of materials under strong fields, are poorly understood in spite of their broad scientific and engineering importance. Despite much recent progress, many theoretical challenges face the field of ultrafast chemical dynamics. A theoretical understanding of these processes is crucial to further developments in the burgeoning field of ultrafast time-resolved spectroscopy, not only for interpreting experiments, but also for motivating new directions as the drive towards faster time resolutions continues. To tackle these theoretical and computational challenges, time-dependent density functional theory techniques will be developed which integrate real-time propagation of the electronic density, non-adiabatic nuclear dynamics, and multi-scale quantum/classical embedding for capturing long-range interactions. Predictive, first-principles, real-time simulations of this kind will offer the ability to directly visualize chemical dynamics and strong-field materials dynamics at their natural length and time scales. This will open new venues for interpreting time-resolved experiments on large molecules and materials, elucidating the molecular origin of materials breakdown, and harnessing near-field light for controlled transformations.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, deletion of support for the post-doc, and limited travel support of $1,500 for a year one budget of $43,713. Similar budgets of $43,713 are recommended for year two and year three.

Year 1: $43,713 **Year 2: $43,713** **Year 3: $43,713**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 094A-14 **RANK: 9**

TITLE: Computational Development of the Fast Multipole - Boundary Element Method for Modeling Three Dimensional Geodynamic Problems

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Gabriele Morra, Ph.D.

COMMENTS: The goal of this project is to assess the challenges associated with setting up a Fast Multi-pole - Boundary Element Method software with the goal of modeling a diverse spectrum of geodynamic problems such as Earth's mantle convection, evolution of mantle plumes, evolution of convergent and divergent plate tectonic margins (i.e., subduction and ridge spreading), the initiation and propagation of tsunami waves and the rise of bubbly gas in volcanic conduits. Upon completion of the project, the PI intends to submit a proposal to the National Science Foundation for a project that employs the results of this RCS research to (1) advance the PI's ability to model the interplay of regional and global plate tectonics, (2) set up a model able to simulate the complex evolution of gas in a volcanic conduit, and (3) model the initiation and development of tsunami waves. With the proposed work, the PI will strengthen his research focus on geodynamics (the long-term earth evolution) applying his knowledge and experience on investigating problems of surface tectonics (mega-thrust and tsunamis) and deep earth interior (mantle convection). The project is in direct response to the increased attention to environmental problems in Louisiana, the United States of America, and globally. This area of research is also in line with the academic appointment of the PI (70% in physics and 30% in geosciences) and with the Earth Physics direction converging towards the newly created School of Geosciences at UL Lafayette.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, limited undergraduate student and travel support of $2,000 and $1,500, respectively, and printing and equipment charges deleted for a year one budget of $39,340. Budgets of $38,340 are recommended for year two and year three.

Year 1: $39,340 **Year 2: $38,340** **Year 3: $38,340**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 023A-14 **RANK: 10**

TITLE: High-Throughput Optical Measurement Platform for Mechanical Characterization of a Single Adherent Cell

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Kidong Park, Ph.D.

COMMENTS: The objective of this research is to develop a novel platform for high-throughput opto-mechanical measurement of a cell's stiffness on a single cell level. Based on a vibrating substrate and laser interferometry, the proposed technique will non-invasively characterize the mechanical properties of a single adherent cell in its physiological condition without labeling. The target adherent cells will be cultured on the substrate and the stiffness of individual cells will be extracted from the height oscillation, induced by the vibration of the substrate. Laser interferometry will be used to optically measure the height oscillation of each cell, which is inversely proportional to its stiffness. The intellectual merits of the proposed approach include 1) enabling non-invasive mechanical characterization of a single adherent cell without detachment, 2) increasing measurement throughput by orders of magnitude, 3) enabling repeated measurements of a same cell over time to capture temporal dynamics, and 4) being able to be incorporated into a multi-modal platform which can simultaneously characterize mass, stiffness, and fluorescent reporters.

It is recommended that the proposed budget be reduced to provide limited supplies charges of $7,000 for a year one budget of $51,831. Budgets of $49,331 and $47,488 are recommended for year two and three, respectively.

Year 1: $51,831 **Year 2: $49,331** **Year 3: $47,488**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 044A-14 **RANK: 11**

TITLE: Development of a Highly Reliable Boron-Doped Ultrananocrystalline Diamond Microsensor for Chronic Monitoring of Neurochemicals

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATOR: Prabhu Arumugam, Ph.D.

COMMENTS: The proposed research will focus on advancing neurochemical monitoring with micro-electrodes, an approach that combines temporal-spatial resolution for assessing brain activity. Abnormal neurochemical signaling underlies schizophrenia, Parkinson's Disease, traumatic brain injury and drug addiction. The direct health costs due to these neural disorders are estimated at nearly $*150 billion annually*. The current gold standard microelectrode is the carbon-fiber microelectrode, which affords a detection limit of ~15 nM in the brain. Unfortunately, the increased sensitivity is at the expense of reduced response time and increased surface fouling. Carbon nanomaterials have spurred renewed interest in investigating new electrode material technology. Among them, the boron-doped diamond possesses excellent chemical, electrochemical and bio-stability. In spite of its many advantages, micro-fabrication processes used to create microelectrodes alter its electrochemical properties, which affects detection sensitivity. Moreover, its surface stability under realistic micro-environments (e.g. biofluids) is not well-understood. The research goal is to develop a boron-doped ultrananocrystalline diamond microsensor for sustained and continuous neurochemical recording (up to 2 months), by (1) developing a fundamental understanding of the changes to the diamond electrode's properties in biofluids and (2) engineering new strategies to mitigate surface fouling. The proposed study will use microdisk and microwire electrode geometries and techniques such as Flow Injection Analysis, Cyclic Voltammetry and Impedance Spectroscopy. The PI will thereby develop (1) an independent research program in a new direction, and (2) national competitiveness in the emerging area of advanced neuroscience interrogative tools.

It should be noted that the PI lists a pending LBRN/INBRE proposal entitled “Transforming Traumatic Brain Injury Detection Technologies through Innovative Diamond Microarray Biosensors” in the amount of $159,978 for the period of January 2014 thru April 2015. ***Therefore, prior to funding the PI must provide BoR assurance that the RCS project does not potentially overlap with the LBRN/INBRE project, if funded. In the event that overlap exists between the two projects, the PI must identify those areas and the RCS year one, year two, and year three awards should be adjusted to reflect this change.**

It is recommended that the project be funded in year one at the level requested, i.e., $53,523. Budgets of $49,273 are recommended for year two and three.

***Year 1: $53,523** ***Year 2: $49,273** ***Year 3: $49,273**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 083A-14 **RANK: 12**

TITLE: Cathelicidin/LL37 Levels in Ethanol Exposed Human Bronchial Epithelial Cells

INSTITUTION: Tulane University Health Sciences Center

PRINCIPAL INVESTIGATOR: Michael McCaskil, Ph.D.

COMMENTS: Chronic ethanol over-consumption has been shown to disrupt the function of several essential vitamins including vitamin D. Vitamin D is required for antimicrobial peptide LL-37 production in the lung and presence of LL-37 has been directly correlated with respiratory function and health. LL-37 has broad spectrum activity, and is effective *in vivo* and *in vitro* in attenuating respiratory infection rates. Based on preliminary data and other published work, the PI hypothesizes that the metabolism of ethanol decreases lung antimicrobial levels via the dys-regulation of pulmonary vitamin D. It is the PI's belief that the observed preliminary ethanol-mediated modulation of 1,25(OH)2D3, quantified from Human Bronchial Epithelial Cell (HBEC) homogenate, may only partially explain the statistically significant reductions in 1,25(OH)2D3 quantified from Bronchial Alveolar Lavage Fluid (BALF) and lung tissue in mice and observed in humans who chronically over-consume alcohol. Other pulmonary cells such as alveolar epithelial cells may also be responsible for the observed dramatic ethanol-mediated reduction in BALF 1,25(OH)2D3. Additionally weaknesses in characterizing whole animal pulmonary LL-37 responses to ethanol and 25(OH)2D3 can be mollified by developing a humanized, transgenic, VDRE-responsive cathelicidin mouse bronchial epithelial cell model. To ameliorate the aforementioned gaps in knowledge, the PI proposes to characterize bronchial and alveolar epithelial cell vitamin D-dependent LL-37 response to physiologically relevant levels of ethanol and DADS in addition to developing a stable murine epithelial cell line which produces a vitamin D-dependent cathelicidin/LL-37 response.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, deletion of equipment charges, and limited travel and supplies charges of $1,500 and $12,000, respectively, for a year one budget of $26,074. A similar budget of $26,074 is recommended for year two.

Year 1: $26,074 **Year 2: $26,074**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 018A-14 **RANK: 13**

TITLE: Modeling Chemical Reactivity in Complex Materials

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Revati Kumar, Ph.D.

COMMENTS: A two-pronged approach to the problem of modeling chemical reactions accurately is proposed, with specific application to energy storage systems and catalytic materials. Although long length and time scales are still inaccessible from *ab initio* simulations, benchmark calculations on relevant sub-systems are feasible. These *ab initio* based computations will shed light on the relevant reaction pathways in the sub-system of interest. Using the insight gained from the above studies, reactive force-fields will be constructed to model the system at significantly longer length and time scales, thereby throwing light on the mechanism and the factors which govern these types of reactions. These computational techniques will be applied to the following:

1. Metal-organic frameworks (MOFs) are a class of ultra-microporous crystalline materials consisting of metal ions that are connected by organic "linkers". These complex systems are highly amenable to act as catalytic centers in reactions, but there is little fundamental understanding of how to optimally design better catalytic systems; and
2. Li-air battery technology is a promising candidate in the rechargeable battery sector because of the substantially higher theoretical energy density compared to conventional Li-ion batteries. Understanding the degradation process in the electrolyte, a major problem that results in loss of rechargeability, is a key step towards the optimization of these systems. Experimental investigations on these complex heterogeneous environments can be extremely difficult to interpret and the computational studies proposed in this project, in conjunction with experiments, seek to improve the design of these new generation batteries.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, deletion of support for the post-doc, and limited travel support of $1,500 for a year one budget of $43,714. Similar budgets of $43,714 are recommended for year two and year three.

The PI has (1) pending proposal:

- NSF – entitled "Development and Testing of Computational Tools for the Prediction and Understanding of Gas-Liquid Nucleation" in the amount of $509,936 for the period 6/2014 – 5/2017.

Should the PI receive funding for the pending proposal, he/she should be considered nationally competitive and the requested funds from the BoRSF program should not be awarded.

Year 1: $43,714 **Year 2: $43,714** **Year 3: $43,714**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 088A-14 **RANK: 14**

TITLE: Achieving Realistic Testbeds for Mobile Grid Computing Experiments

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Paul Darby, Ph.D.

COMMENTS: The PI's research into Mobile Grid (MoG) computing has the potential for a global impact, delivering a powerful and beneficial computing paradigm that traditional computing cannot provide. With the MoG, mobile wireless computing devices (in the broadest sense), e.g., smartphones, vehicular computers, smart walkie-talkies, and even collaborative munitions (e.g., cruise missiles with onboard computers), can be coordinated through the MoG's software, called middleware, so as to collaborate in ad hoc collectives on real time or nearly real time computational tasks, now critically needed in the mobile wireless environment. This PI's MoG niche capabilities are now of interest to NSF, DOD, NASA, environmental scientists, and industry. MoG to many is still highly novel. Mobile devices have only now gained sufficient capacity and breadth to make it feasible. The PI proposes: 1) to develop meaningful test-beds for actual use cases in the wireless mobile environment, so as to achieve convincing platform(s) for basic research experimentation; and 2) to conduct a broad array of realistic in-situation use case experiments, meaningful to federal agencies. With data from realistic experiments and increased publication, the PI's likelihood of federal funding would be greatly increased.

It is recommended that the proposed budget be reduced to provide limited undergraduate student support of $2,000 for a year one budget of $39,695. Budgets of $29,695 and $5,439 are recommended for year two and year three, respectively.

Year 1: $39,695 **Year 2: $29,695** **Year 3: $5,439**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 059A-14 **RANK: 15**

TITLE: Epigenetic Regulation of PPARgamma Function by Acetylation

INSTITUTION: Pennington Biomedical Research Center

PRINCIPAL INVESTIGATOR: Zhanguo Gao, Ph.D.

COMMENTS: TZD-derived medicines are powerful insulin sensitizers by activation of PPARγ. Unfortunately, their applications in the treatment of type 2 diabetes (T2DM) have been restricted or completely suspended in many countries because of their severe side effects. Although all of the TZD-based drugs activate PPARγ, their side effects are different, suggesting that the side effects are not due to PPARγ activation. In this case, a demand for a new generation of PPARγ activators is obvious. The PI suggests that PPARγ acetylation is a mechanism for PPARγ activation. The PI hypothesizes that acetylation of PPARγ is likely a new and ligand-independent mechanism for PPARγ activation. The HDAC3 inhibitor may be a new PPARγ activator that enhances insulin sensitivity by inducing PPARγ acetylation. This idea is derived from observation in which the PPARγ protein was modified by acetylation, which subsequently induced the transcriptional activity of PPARγ in the absence of a ligand. The acetylation up-regulated lipid accumulation and glucose uptake in adipocytes. It also promoted adipocyte differentiation and induced adiponectin expression. These possibilities will be tested via the following specific aims: Aim 1. Identify the lysine residues required for PPARγ acetylation and activation in biochemical study; Aim 2. Determine that inhibition of HDAC3 by gene inactivation may enhance PPARγ acetylation and activation in genetic study; and Aim 3. Test the prediction that the HDAC3 inhibitor is a new PPARγ activator in pharmacological study. The results will constitute preliminary data and publications to address NIH reviewers' concerns for re-submission of an RO1 proposal.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, for a year one budget of $51,213. A similar budget of $51,213 is recommended for year two. A budget of $46,213 is recommended for year three.

Year 1: $51,213 **Year 2: $51,213** **Year 3: $46,213**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 013A-14 **RANK: 16**

TITLE: Understanding Bilingual Language Development in Typically Developing Children Improves Accurate Diagnosis of Language Impairment

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Todd Gibson, Ph.D.

COMMENTS: By 2020 as many as 72 million individuals in the USA will speak a language other than English at home. Inaccurate identification of language impairment (LI) in this population has serious consequences for Louisiana. When LI goes unidentified, children are likely to develop literacy and academic difficulties that are strongly associated with many societal ills. When LI is misdiagnosed as present, the result is the misallocation of speech therapy resources at a real cost to the state. Currently, the diagnosis of bilingual children with LI lacks theoretical support because of insufficient understanding of the cognitive-linguistic processes that underlie typical bilingual language development. In fact, the 2012-2016 strategic plan for the National Institute of Deafness and Communication Disorders (NIDCD) lists the normal acquisition of language as a priority area of research. Until typical bilingual language development is better understood, interpretation of bilingual children's language behaviors will be limited, increasing the likelihood of the misdiagnosis of LI. The proposed research seeks to fill voids in the pediatric literature and gain a better understanding of typical bilingual language development. Developing bilingual children in preschool and kindergarten will be recruited to test for the effects of learning two languages on:

- processes underlying word recognition;
- processes underlying word production; and
- processes underlying learning new words.

These studies will contribute to evidence-based diagnosis of bilingual children with LI. Both Louisiana's children and the field of speech-language pathology will benefit. Results will provide important feasibility data to increase significantly the likelihood of funding from the NIDCD.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, limited travel support of $1,500, and deletion of consultant and printing charges for a year one budget of $34,743. Similar budgets of $34,743 are recommended for year two and year three.

Year 1: $34,743 **Year 2: $34,743** **Year 3: $34,743**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 047A-14 **RANK: 17**

TITLE: Novel Materials for Enhanced Thermal Management of Flexible Electronics

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATOR: Arden Moore, Ph.D.

COMMENTS: Flexible electronics have been hailed as one of the most exciting, applications-intensive, and potentially transforming fields of research today, with uses in visual displays, photovoltaics, medical imaging, and wearable sensors. Significant research has been focused with great success on fabricating flexible circuit elements from such advanced materials as polysilicon, graphene, ultrathin MoS2, and carbon nanotubes. However, relatively little work has been focused on the substrate materials upon which flexible electronics are built, especially in the area of their ability to cope with the heat generated by their native device elements. Most materials commonly used as substrates for flexible electronics, such as polyimide or PDMS, have very low thermal conductivity on the order of 0.1 W/mK, as opposed to that of traditional rigid electronic substrates such as silicon, with a thermal conductivity of around 150 W/mK. This means that electronic devices built upon flexible polymers are limited to very low device power densities in order to avoid overheating or thermal damage. In this work, new, fundamental research into the synthesis and properties of high thermal conductivity polymer nanofibers will be performed and subsequently leveraged to create advanced, scalable composite substrates with enhanced thermal conductivity over that of today's state-of-the-art. If successful, this would open up a new realm of applications for higher power flexible electronic devices.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, for a year one budget of $56,120. A budget of $48,369 is recommended for year two that provides limited travel support of $1,500. A budget of $46,869 is recommended for year three.

Year 1: $56,120 **Year 2: $48,369** **Year 3: $46,869**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 002A-14 **RANK: 18**

TITLE: Mixed-Valence Zwitterions: A Solution for Unwanted Counterion Effects on Molecular Electronic Devices

INSTITUTION: Louisiana College

PRINCIPAL INVESTIGATOR: Yuhui Lu, Ph.D.

COMMENTS: There is great interest in mixed-valence complexes as potential candidates for promising molecular electronic devices. However, most mixed-valence complexes are positively charged cations or negatively charged anions, and thus require corresponding counterions to maintain charge neutrality. These neighboring counterions inevitably disturb the local electric field and are thus detrimental to information storage and transport. The PI proposes neutral mixed-valence complexes which are free of unwanted counterion effects. The objective of this research is to explore the feasibility of using charge-neutral, zwitterionic mixed-valence complexes as candidates for molecular electronic devices. A number of proposed zwitterionic mixed-valence complexes will be investigated using state-of-the-art *ab initio* methodologies. The PI will examine the interaction between a series of (car)boranes as built-in counterions and various organic and organometallic redox centers. The goal is to understand the "self-doping" mechanism that generates mobile charges, which can be used for information storage and transport. The PI will also study the effect of intramolecular counterions on the charge localization and transfer. The PI will collaborate with synthetic chemists and fabrication engineers to pursue molecular electronic devices free of detrimental counterion effects. A group of undergraduate students will be involved in this project and gain research experience in nanoscience and nanotechnology.

It is recommended that the proposed budget be reduced to provide one month summer salary including fringe benefits for the PI, and limited travel support of $1,500 for a year one budget of $29,237. Budgets of $18,816 are recommended for year two and year three.

Year 1: $29,237 **Year 2: $18,816** **Year 3: $18,816**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 021A-14 **RANK: 19**

TITLE: Development of a High Throughput Microfluidic Assay to Evaluate Deubiquitinating Enzyme Activity in Single Cells

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Adam Melvin, Ph.D.

COMMENTS: Protein ubiquitination, a reversible post-translational modification, is an essential step in the recognition and ultimate degradation of misfolded or damaged proteins. This tightly regulated process requires a complex cascade of enzymes to conjugate ubiquitin to a protein and a specific class of enzymes, called deubiquitinating enzymes (DUBs), to remove it. Recently, it has become clear that the deregulation of DUB activity is a hallmark of cancer. As a result, there exists a substantial interest in the generation of new therapeutics that target DUB activity in cancer cells. However, while the screening platforms have demonstrated limited success in identifying potential drug candidates, current methodology is only capable of cell-free, test-tube-based reactions. Further, as single cell isolation techniques have improved, it has become apparent that analysis of single cells, in a high throughput manner, provides a more accurate representation of enzymatic activity compared to analysis of bulk cell lysates. In this project, the PI will develop a high throughput screening platform that is capable of evaluating DUB activity in single, intact cells. The PI will develop a small library of fluorescent peptide-based reporters capable of measuring DUB activity. These reporters will be cell permeable, resistant to intracellular peptidases, and specific to DUBs. A high throughput droplet-based microfluidic platform will be developed capable of encapsulating individual cells with the DUB reporter. This project will demonstrate the feasibility of using small peptide reporters as read-outs for enzymatic activity and provide the preliminary data needed to increase the national competitiveness of the PI's work in federal grant proposals focused on new assays screening chemotherapeutics.

It is recommended that the proposed budget be reduced to provide limited travel support of $1,500 and supplies charges of $10,000 for a year one budget of $57,291. Similar budgets of $57,291 are recommended for year two and year three.

Year 1: $57,291 **Year 2: $57,291** **Year 3: $57,291**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 106A-14 **RANK: 20**

TITLE: Investigating the Function and Signaling Mechanisms of G-Protein Editor Metallochaperones – Determining the MeaB and Vitamin B12 - Dependent Methylmalonyl-CoA Mutase Complex for Biomedical, Green Chemistry and Energy Applications

INSTITUTION: University of New Orleans

PRINCIPAL INVESTIGATOR: Dhruva Chakravorty, Ph.D.

COMMENTS: The long-term goal of this study is to provide a biophysical basis to sequence-based methods that are used to study protein-protein interactions. G-proteins are nucleotide-binding enzymes that catalyze the hydrolysis of guanosine-5'-triphosphate (GTP) to guanosine-5'-diphosphate and function as molecular switches. The reaction rate is accelerated when the G-protein forms a complex with its GTPase activating protein (GAP). GTPases continue to be of medical interest and have recently found relevance in bio-energy and green-chemistry applications. As such these proteins provide a means to understand protein-protein interactions in large protein complexes. Using computational methods this investigation will provide mechanistic insights into the GTPase catalyzed reaction in human CblA, its bacterial ortholog *Methylobacterium extorquens* MeaB and other members of the G3E phosphate-loop family of metallochaperones. MeaB and CblA are involved in the protection, assembly and re-activation of the coenzyme B12-dependent methylmalonyl-CoA mutase that catalyzes an isomerization reaction involving C-C bond cleavage. The proposed research will (a) investigate the GTPase reaction mechanism and identify the root determinants modulating the reaction rate in the GTPase•GAP complex using quantum mechanical calculations, (b) provide structural insight into the nature of the GTPase•GAP interface, (c) explain the impact of mutations on the GTPase reaction, and (d) elucidate the role of conformational dynamics and functional protein ensembles in the mechanism of GTPase•GAP complex formation. The proposed research will lead to new classical and polarizable metal ions force fields that will be used to design Co-based metal-organic frameworks that will catalyze mutase-like isomerization reactions.

It should be noted that the PI has a pending ITRS proposal entitled "Investigating the Mechanisms of Proteases to Develop a Method that Predicts Proteolytic Peptide Stability" in the amount of $246,614 for the period of June 1, 2014 thru May 31, 2017. ***Therefore, prior to funding the PI must provide BoR assurance that the RCS project does not potentially overlap with the ITRS project, if funded. In the event that overlap exists between the two projects, the PI must identify those areas.**

It is recommended that the proposed budget be reduced to provide limited travel and undergraduate student support of $1,500 and $2,000, respectively, for a year one budget of $48,198. Similar budgets of $48,198 are recommended for year two and year three.

The PI has (1) pending proposal:

- NIH – entitled "METH vs MOLLY: Probing Differences in Multi-Targeted Psychostimulant Reward" in the amount of $48,000/year for the period 10/1/2014 through 9/30/2018.

Should the PI receive funding for the pending proposal, he/she should be considered nationally competitive and the requested funds from the BoRSF program should not be awarded.

Year 1: $48,198 **Year 2: $48,198** **Year 3: $48,198**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 050A-14 **RANK: 21**

TITLE: Automated abstraction of serial colonoscopy results from EMR text

INSTITUTION: Louisiana Tech University

PRINCIPAL INVESTIGATOR: Eric Sherer, Ph.D.

COMMENTS: The PI is an expert in mathematical modeling and has developed a preliminary model of colorectal cancer development. But the data necessary for this model is only available in colonoscopy and pathology procedure report free text. Because of the large number of colonoscopy results required to fully power the analyses, the identification of an automated method for accurate abstraction of detailed colonoscopy results from free text in the electronic medical record is proposed. Automated methods for the abstraction of data from free text (lexicon, Bayesian, artificial neural network, and single-value decomposition approaches) will be calibrated using detailed colonoscopy and pathology procedure report text previously extracted from 13 Veterans Affairs Medical Centers. The automated abstraction techniques will be tested against a validation cohort to identify the methodologic approach that addresses the scientific challenge of automated abstraction of detailed colonoscopy data. The validated method will then be applied to the extracted text of all colonoscopies. Successful completion of the proposed work will enable the PI to achieve national competitiveness in the area of the effective and efficient use of colonoscopy for preventing colorectal cancer. This work on cost-effective healthcare delivery is timely given the rapidly growing population of patients receiving follow-up colonoscopies and the national concern about healthcare costs and outcomes. In addition to the healthcare engineering potential of this project, the development of a method to collect data from this source will be a transformative contribution in the use of free text in electronic medical records for research purposes.

It is recommended that the proposed budget be reduced to provide limited travel of $1,500 for a year one budget of $39,256. Similar budgets of $39,256 are recommended for year two and year three.

The PI has (1) pending proposal:

- NSF – entitled “Genetic Algorithms for Pharmacokinetic Model Building” in the amount of $244,893 for the period 9/1/2014 – 8/31/2018.

Should the PI receive funding for the pending proposal, he/she should be considered nationally competitive and the requested funds from the BoRSF program should not be awarded.

Year 1: $39,256 **Year 2: $39,256** **Year 3: $39,256**

The Institutional match pledged in the proposal should be maintained in full.

Appendix E (continued):

PROPOSAL: 090A-14 **RANK: 22**

TITLE: Investigating Fluid-Rock Interaction During Extensional Continental Tectonics

INSTITUTION: University of Louisiana at Lafayette

PRINCIPAL INVESTIGATOR: Raphael Gottardi, Ph.D.

COMMENTS: During extension that accompanies orogenic collapse, the cool brittle upper crust is separated from the hot lower crust by a detachment zone that localizes deformation, thermal exchange, and fluid flow. Extensive brittle faulting in the upper crust leads to significant increases in permeability and porosity, thus enhancing fluid circulation at the crustal scale, while most deformation mechanisms in the lower crust have the opposite effect. Hence, the brittle-ductile transition where detachment zones develop is also associated with a sharp permeability barrier between a high permeability, meteoric fluid-rich upper crust, and a low permeability, magmatic fluid-rich lower crust. This permeability contrast has the potential to generate significant hydrothermal convective flow in the crust for the duration of activity of the detachment. Based on stable isotopes (oxygen and hydrogen), recent studies have revealed the presence of surface-derived fluids during deformation from different detachment zones from the North American Cordillera. Most of these analyses are based on bulk mineral separates. Although they reveal the presence of meteoric fluids in metamorphic minerals, the mechanisms of isotopic exchange between fluids and minerals in the deforming rock have yet to be understood. This proposal offers a multiscale approach to this problem. Patterns of faulting, fracturation, and veining will be characterized in field areas where both meteoric and magmatic fluid signatures have been found, while new high-resolution in-situ oxygen isotope techniques will push the boundary of oxygen isotope analysis of minerals to the micron scale.

It is recommended that the proposed budget be reduced to provide support of $14,400 for one GRA, limited travel support of $4,000, and limited equipment and other expense charges of $20,000 and $3,000 respectively, for a year one budget of $58,196. A budget of $38,075 is recommended for year two. In year three, it is recommended that the project be funded at the level requested, i.e., $16,579.

Year 1: $58,196 **Year 2: $38,075** **Year 3: $16,579**

The Institutional match pledged in the proposal should be maintained in full.

APPENDIX F

COMMENTS ON PROPOSALS RANKED PRIORITY ONE BY THE SUBJECT-AREA PANELS AND CONSIDERED BY THE FINAL PANEL BUT NOT RECOMMENDED FOR FUNDING

PROPOSAL: 027A-14

TITLE: Sediment Transport Processes Controlling Delta Growth in Receiving Basins of Sediment Diversions for Coastal Restoration

INSTITUTION: Louisiana State University and A & M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Kehui Xu, Ph.D.

COMMENTS: One of the restoration tools suggested in Louisiana's Comprehensive Master Plan is the diversion of sediment-laden water from the Mississippi and Atchafalaya Rivers to receiving basins to build new land. Understanding the dynamics near crevasses and the mechanisms controlling the growth of deltas is key to the success of future diversions. Relatively few studies have evaluated sediment dynamics in Louisiana estuaries, making modeling predictions difficult. To help address this knowledge gap, and to develop the understanding that can be applied to future large diversions, the PI proposes to study sedimentary processes in a growing receiving bay with: 1) observations of sediment concentration and velocity profiles in a crevasse, 2) collections of basin sediment dynamic data using instrumented tripods, and 3) collections of geophysical and sediment data.

Although the proposal is of high quality, it did not rank high enough in comparison with other Earth and Environmental Sciences proposals to warrant funding. It was not placed in the "Priority I" category by the Final Panel because there is not enough money, even if additional funds become available, to fund more than the twenty-two (22) proposals listed therein.

Appendix F (continued):

PROPOSAL: 031A-14

TITLE: Adverse Cardiac Effects of Ethanol Abuse

INSTITUTION: Louisiana State University Health Sciences Center - New Orleans

PRINCIPAL INVESTIGATOR: Jason Gardner, Ph.D.

COMMENTS: While chronic alcohol abuse alone causes alcoholic cardiomyopathy (AC), clinical evidence indicates that alcohol also exacerbates cardiac dysfunction due to infarction, hypertension or pressure overload. Clinically, AC is characterized by reduced ejection fraction and extensive cardiac fibrosis, yet the mechanisms responsible are not known. Ethanol (EtOH) induces oxidative stress in animal and cellular models. Nicotinamide Adenine Dinucleotide Phosphate (NADPH) oxidases (NOX)-2 and -4 are the primary sources of cardiac oxidant stress. The PI's preliminary studies indicate that cardiac oxidative stress and NOX expression are significantly elevated in rats chronically exposed to EtOH. When fibroblasts are activated, they transform into myofibroblasts and produce excess collagen, a process mediated by NOXs. Using isolated cardiac fibroblasts, the PI's research found that EtOH caused oxidative stress, and increased expression of collagen and α-smooth muscle actin, a myofibroblast marker.

Dr. Gardner is a past recipient of RCS grant LEQSF(2009-12)-RD-A-10 for his project entitled "Mechanism of Cardiac Damage from Inhaled Particulate Matter" for the period 7/1/2009 – 6/30/2012 and an American Heart Association grant entitled "Role of Lysyl Oxidase in Heart Failure" in the amount of $150,000 for the period 7/1/2011 – 6/30/2013. For this reason his project was not recommended for RCS funding.

PROPOSAL: 033A-14

TITLE: Role of Central Amygdala Projections in Stress-Induced Alcohol Drinking

INSTITUTION: Louisiana State University Health Sciences Center - New Orleans

PRINCIPAL INVESTIGATOR: Nicholas Gilpin, Ph.D.

COMMENTS: Alcohol dependence is responsible annually for more than 2.5 million deaths worldwide and 60 million life years lost. The financial cost of alcohol use disorders is estimated to approach $200 billion annually in the United States. In Louisiana (LA), the percentage of individuals with alcohol use disorders is similar to national incidence rates (~10% of the population), and recent estimates place the annual economic cost of alcoholism in LA at $3 billion.

Dr. Gilpin currently holds an NIH grant entitled "Post-Traumatic Stress Disorder and Alcohol Dependence" in the amount of $735,014 for the period 5/1/2010 – 6/30/2014. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

Appendix F (continued):

PROPOSAL: 036A-14

TITLE: Alcohol-Induced Alterations in Muscle Satellite Cell Microenvironment Contribute to AIDS Muscle Wasting

INSTITUTION: Louisiana State University Health Sciences Center - New Orleans

PRINCIPAL INVESTIGATOR: Liz Simon, Ph.D.

COMMENTS: Among the multi-systemic pathophysiological mechanisms that modulate disease progression in Human Immuno Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS), muscle wasting adversely affects survival in people living with HIV/AIDS. Studies using a non-human primate model of simian immunodeficiency virus (SIV) infection have demonstrated that chronic binge alcohol (CBA) consumption accentuates muscle wasting in AIDS.

Dr. Simon is listed as an Assistant Professor of Research in the Department of Physiology which is not considered a permanent position with long-term institutional interest. For this reason RCS funding is not recommended.

PROPOSAL: 037A-14

TITLE: ACE2 in the Central Regulation of Metabolism

INSTITUTION: Louisiana State University Health Sciences Center - New Orleans

PRINCIPAL INVESTIGATOR: Huijing Xia, Ph.D.

COMMENTS: Alteration in the brain's renin-angiotensin system (RAS) activity plays a critical role in the modulation of metabolic function and energy homeostasis. Angiotensin Coverting Enzyme 2 (ACE2), degrades Ang-II into Ang-(1-7) and tends to compensate for RAS over-activity. In addition, *in vitro*, ACE2 has been shown to hydrolyze apelin, a peptide present in the brain and involved in the regulation of glucose, energy and fluid homeostasis. Therefore, ACE2 could modulate energy and glucose homeostasis through modification of Ang-II and apelin levels. The PI's preliminary observations in ACE2 transgenic mice suggest that ACE2 gain/loss of function alters brain apelin levels and is associated with dramatic changes in body weight, glucose homeostasis and energy balance.

Dr. Xia is listed as an Instructor in the Department of Pharmacology & Experimental Therapeutics which is not considered a permanent position with long-term institutional interest. For this reason RCS funding is not recommended.

Appendix F (continued):

PROPOSAL: 038A-14

TITLE: Roles of the Human Cytomegalovirus Protein Kinase UL97 in Viral Gene Expression

INSTITUTION: Louisiana State University Health Sciences Center - Shreveport

PRINCIPAL INVESTIGATOR: Jeremy Kamil, Ph.D

COMMENTS: Human cytomegalovirus (HCMV) is a significant cause of human disease. Current antiviral drugs to combat HCMV are limited by unacceptable toxicity and antiviral drug resistance. A better understanding of HCMV replication is needed to develop and optimally exploit new antiviral drugs. The PI is a well-trained virologist who is in an environment with a strong tradition of excellence in virology and support for junior investigators.

Dr. Kamil currently holds an American Heart Association grant entitled "Roles of the Human Cytomegalovirus Protein Kinase UL97 in Viral Replication" in the amount of $165,000 for the period 7/1/2012 – 6/30/2014. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

PROPOSAL: 041A-14

TITLE: Neuroprotective Mechanism of Light Alcohol Consumption in Ischemic Stroke

INSTITUTION: Louisiana State University Health Sciences Center - Shreveport

PRINCIPAL INVESTIGATOR: Hong Sun, Ph.D.

COMMENTS: Stroke is a leading cause of death and permanent disability. Alcohol is one of most commonly used chemical substances. Chronic alcohol consumption has dual effects on both incidence and prognosis of ischemic stroke. The proposed research seeks to determine the mechanism underlying the neuroprotective effect of light alcohol consumption (LAC) on transient focal cerebral ischemia. In recent studies, the neuroprotective effect of LAC appeared to relate to an increased nuclear peroxisome proliferator-activated receptor gamma (PPARγ).

Dr. Sun is a past recipient of an American Heart Association grant entitled "Cerebral Vasoreactivity and Ischemia during Chronic Alcohol Consumption" in the amount of $260,000 for the period 7/1/2006 – 6/30/2010. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

Appendix F (continued):

PROPOSAL: 058A-14

TITLE: The Ubiquitin Ligase Siah2 Regulates Obesity-Induced Adipose Tissue Inflammation

INSTITUTION: Pennington Biomedical Research Center

PRINCIPAL INVESTIGATOR: Elizabeth Floyd, Ph.D.

COMMENTS: Obesity is a major public health problem due to obesity-related chronic diseases such as insulin resistance and type 2 diabetes (T2DM). The Centers for Disease Control and Prevention report that almost 35% of the adult population in Louisiana is obese and 10% of adult Louisianans have T2DM, posing a major public health problem for Louisiana. Dysregulation of lipid storage in adipose tissue, leading to chronic, low-grade inflammation in adipose tissue and lipid accumulation in non-adipose tissues, is central to developing obesity-related insulin resistance and T2DM. Although the link between obesity, inflammation and insulin resistance is well established in animal models and humans, the factors controlling obesity-induced inflammation are not fully understood.

Dr. Floyd is a past recipient of an American Diabetes Association grant entitled "Regulation of PPARgamma Activity by the Ubiquitin System" in the amount of $321,912 for the period 7/1/2010 – 6/30/2013 and an NIH grant entitled "Regulation of PPARgamma in Adipocytes by Siah2" in the amount of $300,000 for the period 7/1/2010 – 6/30/2012 in addition to other considerable funding. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

PROPOSAL: 060A-14

TITLE: CNS Mechanisms of Glucose Detection: Role of the Type 2 Glucose Transporter [GLUT2] in Hypoglycemic Counterregulation

INSTITUTION: Pennington Biomedical Research Center

PRINCIPAL INVESTIGATOR: David McDougal, Ph.D.

COMMENTS: Following the detection of hypoglycemia by the central nervous system (CNS), a series of physiological countermeasures are triggered which return serum glucose to euglycemic levels. This vital homeostatic response frequently becomes dysfunctional in both type 1 and type 2 diabetics. This dysfunction is thought to be caused by maladaptive changes in the brain cells which detect hypoglycemia. Progress towards rectifying this dysfunction in diabetic patients is severely hindered by a lack of knowledge regarding the exact molecular mechanism(s) underlying the detection of hypoglycemia by these brain cells.

Dr. McDougal is listed as an Assistant Professor of Research in Neurobiology of Metabolic Dysfunction which is not considered a permanent position with long-term institutional interest. For this reason RCS funding is not recommended.

Appendix F (continued):

PROPOSAL: 073A-14

TITLE: Nitrogen Functionalized Carbon Nanostructures as New Catalysts for Fuel Cells and Lithium-Air Batteries

INSTITUTION: Southern University and A&M College - Baton Rouge

PRINCIPAL INVESTIGATOR: Guang-Lin Zhao, Ph.D.

COMMENTS: Identifying new catalysts to replace precious metal (platinum) catalysts is a major target in the current research for fuel cells, Li-air batteries, and other energy technologies. The objective of this research is using first-principles DFT calculations to complement and guide experimental investigations for the development of new catalysts for new energy technologies. The experimental studies will not only check the predictions from first-principles computations, but will also provide new directions for further computations and for in-depth understanding of the reaction mechanisms. Their integrated research strength will enable the researchers to design new catalysts and to identify optimal operating conditions for maximizing catalytic performance.

Dr. Zhao currently holds an Air Force Office of Scientific Research grant entitled "Studies of Electromagnetic Wave Absorption Properties of Carbon Nanotubes Composites" in the amount of $350,000 for the period 12/1/2011 – 5/31/2014. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

PROPOSAL: 075A-14

TITLE: Relationships between CREB Signaling and Behavior Across the Lifespan

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Paul Colombo, Ph.D.

COMMENTS: The normal decline in cognitive ability that occurs during aging is more pervasive than Alzheimer's-related declines, is nearly as insidious, and begins much earlier. Environmental conditions, including forms of mental and physical activity, reportedly prevent, and in some cases reverse, structural and functional changes that occur as the brain ages. Although environmental conditions are known to strongly influence brain aging, what is not known is the extent to which different types of mental and physical activity, and the duration of activity, influence proteins necessary for the formation and maintenance of memory.

Dr. Colombo is a past recipient of an NSF grant entitled "Mechanisms of Interactions Among Memory Systems of the Mammalian Brain" in the amount of $300,000 for the period 5/2009 – 4/2013 and an NSF CAREER award for his project entitled "Roles of Hippocampal/Neostriatal Systems in Multiple Forms of Memory" in the amount of $560,000 for the period 3/2002 – 2/2008. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

Appendix F (continued):

PROPOSAL: 079A-14

TITLE: CD4+ T-cell Epitope Prediction Using Antigen Structure

INSTITUTION: Tulane University

PRINCIPAL INVESTIGATOR: Ramgopal Mettu, Ph.D.

COMMENTS: The major histocompatibility complex (MHC) molecules play a critical role in initiating immune response because they present antigen peptides on the cell surface for recognition by T-cells. The MHC class II pathway processes and presents peptides from extracellular pathogens such as bacteria. Upon presentation, MHC class II molecules signal to CD4+ T-cells which provide numerous protective functions as part of the adaptive immune response, including cytokine-mediated and contact-mediated signals to B cells, CD8+ T-cells, and innate-immune cells.

Dr. Mettu is a past recipient of an NSF CAREER award for his project entitled “Algorithms for Experimental Structural Biology” in the amount of $518,888 for the period 1/2007 – 1/2014. For this reason the PI is considered nationally competitive and therefore ineligible for RCS funding.

APPENDIX G

OUT-OF-STATE EXPERTS WHO SERVED AS FINAL AND FULL SUBJECT-AREA PANELISTS

FINAL PANEL

James R. Durig, Ph.D., Chair
Professor, Department of Chemistry and Geosciences
University of Missouri at Kansas City
Former Chair and Project Director, South Carolina EPSCoR Program

J. Michael Rigsbee, Ph.D.
Professor, Department of Materials Science and Engineering
North Carolina State University

Richard Vulliet, Ph.D., D.V.M.
Professor, Laboratory of Veterinary Cytotherapeutics
Department of Veterinary Molecular Biosciences
University of California at Davis

Appendix G (continued):

Subject-Area Panels

BIOLOGICAL SCIENCES I (Human Biology, Immunology, Virology and Microbiology)

Alan Kaplan, Ph.D., Chair
Professor and Chair
Department of Microbiology, Immunology, and Molecular Genetics
University of Kentucky College of Medicine

Subbarao Bondada, Ph.D.
Professor
Department of Microbiology, Immunology and Molecular Genetics
University of Kentucky College of Medicine

BIOLOGICAL SCIENCES II (Natural Sciences, Ecology, Microbiology, Genetics)

Steven N. Francoeur, Ph.D., Chair
Professor
Department of Biology
Eastern Michigan University

Rosemary Knapp, Ph.D.
Associate Professor
Department of Biology
University of Oklahoma

Robert F. Diegelmann, Ph.D.
Professor
Department of Biochemistry & Molecular Biophysics
Medical College of Virginia

Shahid S. Siddiqui, Ph.D.
Associate Professor
Department of Medicine
University of Chicago

CHEMISTRY

Burtron Davis, Ph.D., Chair
Professor and Interim Director
Center for Applied Energy Research
University of Kentucky

Mario L. Occelli, Ph.D.
President
MLO Consulting

Appendix G (continued):

COMPUTER & INFORMATION SCIENCES

Sartaj Sahni, Ph.D., Chair
Distinguished Professor
Department of Computer & Information Sciences and Engineering
University of Florida

Oscar H. Ibarra, Ph.D.
Professor
Department of Computer Science
University of California at Santa Barbara

EARTH & ENVIRONMENTAL SCIENCES

Charles J. Wurrey, Ph.D., Chair
Associate Dean, College of Arts and Sciences
Professor, Department of Chemistry
University of Missouri at Kansas City
Consultant, U.S. Environmental Protection Agency

Donn S. Gorsline, Ph.D.
W. and D. Zinsmeyer Professor Emeritus of Marine Sciences
Department of Earth Sciences
University of Southern California

Appendix G (continued):

ENGINEERING B

Michael E. Prudich, Ph.D., Chair
Professor and Chair, Department of Chemical Engineering
Ohio University

William A. Hyman, Sc.D.
Professor of Bioengineering
Biomedical Engineering Program
Texas A & M University

Raul G. Longoria, Ph.D.
Associate Professor
Department of Mechanical Engineering
University of Texas at Austin

James R. Wilson, Ph.D.
Professor and Head
Department of Industrial Engineering
North Carolina State University

HEALTH & MEDICAL SCIENCES

Gerald Sonnenfeld, Ph.D., Chair
Vice President for Research
Clemson University

Terrence Deak, Ph.D.
Associate Director
Center for Developmental and Behavioral Neuroscience
State University of New York at Binghamton (SUNY at Binghamton)

Eric Prossnitz, Ph.D.
Associate Professor
Department of Cell Biology and Physiology
University of New Mexico Health Science Center

APPENDIX H

RESEARCH COMPETITIVENESS SUBPROGRAM
FY 2013-14
SUMMARY OF PROPOSALS

112	**TOTAL PROPOSALS**	
13	BS I	Biological Sciences I
24	BS II	Biological Sciences II
18	CHEM	Chemistry
13	C/IS	Computer and Information Sciences
10	EAR	Earth and Environmental Sciences
16	ENG B	Engineering B
18	H/M	Health and Medical Sciences

TOTAL FIRST-YEAR FUNDS REQUESTED: $6,427,105

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
001A-14	Dr. Bernard Singleton	Earth/Environmental Sciences	Dillard University	New Request	Assessing Biomarkers and Toxicity of the British Petroleum Oil-Spill Weathering in the Air and Water at Impacted Louisiana Shorelines	$69,491.00	$53,705.00	$53,705.00	$176,901.00	No
002A-14	Prof. Yuhui Lu	Chemistry	Louisiana College	New Request	Mixed-valence zwitterions: a solution for unwanted counterion effects on molecular electronic devices	$41,640.00	$31,219.00	$31,219.00	$104,078.00	No
003A-14	Dr. Niranjan Baisakh	Biological Sciences II	Louisiana State University Agricultural Center	New Request	Understanding the genetics of Puccinia melanocephala-sugarcane interaction for identification of genes towards development of novel molecular markers for resistance to brown rust disease	$57,460.00	$45,460.00	$36,500.00	$139,420.00	No
004A-14	Dr. Julien Beuzelin	Biological Sciences II	Louisiana State University Agricultural Center	New Request	Population Structure of Invasive and Established Stem Borers in Louisiana Rice and Sugarcane	$66,000.00	$53,650.00	$0.00	$119,650.00	No
005A-14	Prof. Jeffrey Davis	Biological Sciences II	Louisiana State University Agricultural Center	New Request	Developing microsatellite markers for analysis of Chrysodeixis includens population genetic structure	$51,357.00	$47,097.00	$41,417.00	$139,871.00	No
006A-14	Dr. Kristen Healy	Biological Sciences I	Louisiana State University Agricultural Center	New Request	Assessing the risk of emerging vector-borne disease pathogens transmitted by peridomestic container inhabiting mosquitoes	$50,675.00	$30,875.00	$7,500.00	$89,050.00	No
007A-14	Dr. Claudia Husseneder	Biological Sciences II	Louisiana State University Agricultural Center	New Request	Horse fly [Tabanidae] populations and their food web as indicators of the effects of environmental stress on coastal marsh health	$65,843.00	$65,483.00	$0.00	$131,326.00	No
008A-14	Prof. Aly Mousaad Aly	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana State University and A & M College - Baton Rouge	New Request	Hurricane Hazards Mitigation for a Sustainable Built Environment	$46,084.00	$45,084.00	$44,584.00	$135,752.00	No
009A-14	Prof. Gerald Baumgartner	Computer and Information Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Social Media Network Data Mining for Optimizing Interagency Collaboration	$66,389.00	$55,736.00	$44,123.00	$166,248.00	No
010A-14	Dr. Feng Chen	Computer and Information Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Research on Performance Optimization and System Integration of Cloud Storage in Mobile Computing	$61,209.00	$55,138.00	$53,641.00	$169,988.00	No
011A-14	Dr. Henrique / H Cheng	Biological Sciences II	Louisiana State University and A & M College - Baton Rouge	New Request	Anti-diabetic effect of Peganum harmala (harmal; Syrian rue) seed extract	$33,711.00	$30,711.00	$0.00	$64,422.00	No
012A-14	Dr. Geoffrey Coalson	Health and Medical Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Examining speech planning differences: A foundation for stuttering intervention	$56,006.00	$53,889.00	$49,176.00	$159,071.00	No
013A-14	Dr. Todd Gibson	Health and Medical Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Understanding Bilingual Language Development in Typically Developing Children Improves Accurate Diagnosis of Language Impairment	$50,404.00	$48,955.00	$48,955.00	$148,314.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
014A-14	Prof. Louis Haber	Chemistry	Louisiana State University and A & M College - Baton Rouge	New Request	Ultrafast Nonlinear Spectroscopy of Plasmonic Nanoparticles and Nanomaterials	$60,859.00	$53,680.00	$46,503.00	$161,042.00	No
015A-14	Dr. Boryung Ju	Computer and Information Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Understanding the distributed scientific collaboration and knowledge sharing	$67,441.00	$61,701.00	$63,049.00	$192,191.00	No
016A-14	Prof. Jongwon Jung	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana State University and A & M College - Baton Rouge	New Request	Nanoscale Brine Films Thickness and Wettability Alteration of Minerals: Implication on geological CO2 sequestration	$50,500.00	$49,800.00	$48,700.00	$149,000.00	No
017A-14	Prof. Rendy Kartika	Chemistry	Louisiana State University and A & M College - Baton Rouge	New Request	Synthetic Utility of Alkoxycarbonylpyridinium Ion Intermediates	$66,666.00	$66,666.00	$66,666.00	$199,998.00	No
018A-14	Dr. Revati Kumar	Chemistry	Louisiana State University and A & M College - Baton Rouge	New Request	Modeling Chemical Reactivity in Complex Materials	$57,939.00	$54,631.00	$50,205.00	$162,775.00	No
019A-14	Prof. Kenneth Lopata	Chemistry	Louisiana State University and A & M College - Baton Rouge	New Request	Ultrafast Nonlinear Excited State Dynamics: From Atomistic Understanding to Controlled Transformations	$55,063.00	$49,888.00	$44,713.00	$149,664.00	No
020A-14	Dr. Karen Luttrell	Earth/Environmental Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Measuring crustal deformation in Yellowstone Caldera in response to natural forcing from Yellowstone Lake seiche waves to monitor subsurface magma and assess volcanic hazard	$81,534.00	$56,025.00	$51,318.00	$188,877.00	No
021A-14	Prof. Adam Melvin	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana State University and A & M College - Baton Rouge	New Request	Development of a high throughput microfluidic assay to evaluate deubiquitnating enzyme activity in single cells	$66,791.00	$66,291.00	$65,791.00	$198,873.00	No
022A-14	Prof. Xuelian Meng	Earth/Environmental Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	The Fate of Sand Berms on Coastal Barrier Islands	$55,794.00	$54,994.00	$53,994.00	$164,782.00	No
023A-14	Prof. Kidong Park	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana State University and A & M College - Baton Rouge	New Request	High-throughput optical measurement platform for mechanical characterization of a single adherent cell	$55,931.00	$49,893.00	$48,422.00	$154,246.00	No
024A-14	Prof. James Thrash	Biological Sciences I	Louisiana State University and A & M College - Baton Rouge	New Request	A Microbial High Throughput Culturing Laboratory at LSU	$47,750.00	$47,250.00	$43,250.00	$138,250.00	No
025A-14	Dr. Jill Trepanier	Earth/Environmental Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Estimating the combined risk of hurricane wind and storm surge along the U.S. Gulf Coast	$39,050.00	$42,050.00	$25,175.00	$106,275.00	No
026A-14	Dr. Arend Van Gemmert	Health and Medical Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	An exploratory study on the effects of treatments for Parkinson's disease on the control and coordination of fine movements	$69,113.00	$62,488.00	$50,510.00	$182,111.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
027A-14	Dr. Kehui Xu	Earth/Environmental Sciences	Louisiana State University and A & M College - Baton Rouge	New Request	Sediment transport processes controlling delta growth in receiving basins of sediment diversions for coastal restoration	$57,785.00	$51,437.00	$51,105.00	$160,327.00	No
028A-14	Dr. R. Cork	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	Establishment of a framework for an online repository of comparative embryology images	$49,142.00	$49,142.00	$49,142.00	$147,426.00	No
029A-14	Dr. Deidre Devier	Health and Medical Sciences	Louisiana State University Health Sciences Center - New Orleans	New Request	Targeted CSF microRNA analysis in Multiple Sclerosis associated cognitive decline	$58,994.00	$58,539.00	$54,361.00	$171,894.00	No
030A-14	Dr. Hamilton Farris	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	Determining the role of descending neural modulation in sound segregation	$52,406.00	$52,406.00	$51,406.00	$156,218.00	No
031A-14	Dr. Jason Gardner	Health and Medical Sciences	Louisiana State University Health Sciences Center - New Orleans	New Request	Adverse cardiac effects of ethanol abuse	$60,000.00	$60,000.00	$60,000.00	$180,000.00	No
032A-14	Dr. Gloria Giarratano	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	Vaginal microbiota phylotypes during pregnancy in a high risk population	$106,876.00	$92,552.00	$0.00	$199,428.00	No
033A-14	Dr. Nicholas Gilpin	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	Role of Central Amygdala Projections in Stress-Induced Alcohol Drinking	$60,000.00	$60,000.00	$60,000.00	$180,000.00	No
034A-14	Dr. Carol Mason	Health and Medical Sciences	Louisiana State University Health Sciences Center - New Orleans	New Request	Impact of Ethanol on the Immune Profile of TB-Infected DCs	$62,840.00	$64,073.00	$65,344.00	$192,257.00	No
035A-14	Dr. Zhiqiang Qin	Biological Sciences I	Louisiana State University Health Sciences Center - New Orleans	New Request	Roles of glycoprotein Emmprin in virus oncogenesis	$62,387.00	$64,868.00	$68,255.00	$195,510.00	No
036A-14	Dr. Liz Simon	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	Alcohol-induced alterations in muscle satellite cell microenvironment contribute to AIDS muscle wasting	$66,000.00	$65,000.00	$63,000.00	$194,000.00	No
037A-14	Dr. Huijing Xia	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	New Request	ACE2 in the central regulation of metabolism	$70,000.00	$65,000.00	$65,000.00	$200,000.00	No
038A-14	Dr. Jeremy Kamil	Biological Sciences I	Louisiana State University Health Sciences Center Shreveport	New Request	Roles of the Human Cytomegalovirus Protein Kinase UL97 in Viral Gene Expression	$65,000.00	$65,000.00	$65,000.00	$195,000.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
039A-14	Dr. Andrew Marino	Health and Medical Sciences	Louisiana State University Health Sciences Center Shreveport	New Request	Sleep Related Biomarkers and Depression	$68,500.00	$61,500.00	$60,500.00	$190,500.00	No
040A-14	Dr. MANIKANDAN PANCHATCHARAM	Biological Sciences I	Louisiana State University Health Sciences Center Shreveport	New Request	Functional validation of PPAP2B as a novel risk for coronary artery disease	$50,000.00	$50,000.00	$50,000.00	$150,000.00	No
041A-14	Dr. Hong Sun	Biological Sciences II	Louisiana State University Health Sciences Center Shreveport	New Request	Neuroprotective mechanism of light alcohol consumption in ischemic stroke	$50,100.00	$54,700.00	$52,700.00	$157,500.00	No
042A-14	Dr. Amy Erickson	Biological Sciences II	Louisiana State University in Shreveport	New Request	Ecological function of mangrove natural products	$99,980.00	$70,140.00	$29,375.00	$199,495.00	No
043A-14	Dr. William Yu	Chemistry	Louisiana State University in Shreveport	New Request	Surface Plasmon Enhanced Nanocluster's Fluorescence	$36,500.00	$36,500.00	$36,500.00	$109,500.00	No
044A-14	Dr. Prabhu Arumugam	Health and Medical Sciences	Louisiana Tech University	New Request	Development of a Highly Reliable Boron-doped Ultrananocrystalline Diamond Microsensor for Chronic Monitoring of Neurochemicals	$53,523.00	$49,924.00	$50,600.00	$154,047.00	No
045A-14	Dr. Mary Caldorera-Moore	Biological Sciences I	Louisiana Tech University	New Request	Degradable Micro- and Nano-Patterned Biofilms for Localized Delivery of Therapeutic Agents after Tumor Resection	$72,369.00	$51,998.00	$49,988.00	$174,355.00	No
046A-14	Dr. Pei Liu	Health and Medical Sciences	Louisiana Tech University	New Request	Everyone Matters! Development of comprehensive coordinated food safety and personal hygiene education programs for Louisiana high schools	$50,599.00	$66,335.00	$54,602.00	$171,536.00	No
047A-14	Prof. Arden Moore	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana Tech University	New Request	Novel Materials for Enhanced Thermal Management of Flexible Electronics	$58,102.00	$52,065.00	$51,309.00	$161,476.00	No
048A-14	Dr. Jamie Newman	Biological Sciences I	Louisiana Tech University	New Request	High-Throughput Screen to Identify Role of Natural Compounds in Development	$88,954.00	$60,273.00	$0.00	$149,227.00	No
049A-14	Dr. Julie Rutledge	Biological Sciences II	Louisiana Tech University	New Request	Promoting Health Among Children	$101,468.00	$57,335.00	$41,103.00	$199,906.00	No
050A-14	Dr. Eric Sherer	Computer and Information Sciences	Louisiana Tech University	New Request	Automated abstraction of serial colonoscopy results from EMR text	$39,756.00	$40,366.00	$63,501.00	$143,623.00	No
051A-14	Dr. Shabnam Siddiqui	Engineering B [Industrial, Materials, Mechanical, etc.]	Louisiana Tech University	New Request	Understanding the mechanism of energy storage in carbon nanomaterial based supercapacitors	$55,118.00	$40,083.00	$41,605.00	$136,806.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
052A-14	Dr. Sanjay Tewari	Earth/Environmental Sciences	Louisiana Tech University	New Request	Removal of bromide and other impurities from hydraulic fracturing waste/produced water with capacitive deionization and carbon aerogel	$52,258.00	$45,867.00	$46,001.00	$144,126.00	No
053A-14	Dr. Clifton Stephenson	Chemistry	Loyola University New Orleans	New Request	Synthesis of axial chiral xanthene derivatives and analysis of their efficacy as enantiomeric molecular probes	$44,704.00	$40,634.00	$25,599.00	$110,937.00	No
054A-14	Dr. Christos Douvris	Chemistry	McNeese State University	New Request	Synthesis Of Electrophilic Late Transition Metal Complexes Supported With Boron Based Weakly Coordinating Anions And Use On Strong Bond Activation And Energy-Related Catalysis	$52,250.00	$50,250.00	$45,250.00	$147,750.00	No
055A-14	Prof. Raj Boopathy	Earth/Environmental Sciences	Nicholls State University	New Request	Mechanism of Crude Oil Degradation in BP Oil Spill Impacted Wetland Sediments under Anaerobic Conditions	$47,000.00	$47,000.00	$47,000.00	$141,000.00	No
056A-14	Dr. M. Darnell	Biological Sciences II	Nicholls State University	New Request	Phenotypic plasticity in reproductive effort and maternal investment in a commercially harvested crustacean.	$44,090.00	$46,229.00	$48,681.00	$139,000.00	No
057A-14	Dr. Michelle Thiaville	Biological Sciences I	Nicholls State University	New Request	Characterization of the Human PEG3 Protein and its Interacting Protein Partners	$54,620.00	$49,620.00	$51,620.00	$155,860.00	No
058A-14	Dr. Elizabeth Floyd	Health and Medical Sciences	Pennington Biomedical Research Center	New Request	The ubiquitin ligase Siah2 regulates obesity-induced adipose tissue inflammation.	$45,000.00	$45,000.00	$45,000.00	$135,000.00	No
059A-14	Dr. Zhanguo Gao	Biological Sciences I	Pennington Biomedical Research Center	New Request	Epigenetic Regulation of PPARgamma Function by Acetylation	$60,183.00	$60,183.00	$55,183.00	$175,549.00	No
060A-14	Dr. David McDougal	Biological Sciences II	Pennington Biomedical Research Center	New Request	CNS mechanisms of glucose detection: role of the type 2 glucose transporter [GLUT2] in hypoglycemic counterregulation	$49,716.00	$61,739.00	$46,721.00	$158,176.00	No
061A-14	Prof. Zhong Wang	Biological Sciences I	Pennington Biomedical Research Center	New Request	Comparing the effects of two Artemisia species extracts on preserving pancreatic β-cell function/mass in diabetic [db/db] mice and INS-1 islet cells	$57,450.00	$51,150.00	$0.00	$108,600.00	No
062A-14	Dr. John Burris	Computer and Information Sciences	Southeastern Louisiana University	New Request	Designing High-Performance Computing Applications With a Global State	$39,200.00	$33,100.00	$33,100.00	$105,400.00	No
063A-14	Dr. Jean Fotie	Chemistry	Southeastern Louisiana University	New Request	Investigation of silver(I)-catalyzed direct ortho-C-H functionalization of arylamines under mild conditions	$29,249.00	$29,249.00	$29,249.00	$87,747.00	No
064A-14	Dr. Jacqueline Guendouzi	Health and Medical Sciences	Southeastern Louisiana University	New Request	The influence of psycho-social styles and temperament on reported communication satisfaction and speaker accommodation in the context of dementia	$80,249.00	$35,368.00	$0.00	$115,617.00	No
065A-14	Dr. Junkun Ma	Engineering B [Industrial, Materials, Mechanical, etc.]	Southeastern Louisiana University	New Request	Modeling and Simulation of Microwave Assisted Spark Plasma Sintering	$34,700.00	$31,700.00	$0.00	$66,400.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
066A-14	Dr. Rana Mitra	Engineering B [Industrial, Materials, Mechanical, etc.]	Southeastern Louisiana University	New Request	Solidification Processing and Material Properties Characterization in Thin Strip Casting of Aluminum Alloys	$57,426.00	$40,037.00	$0.00	$97,463.00	No
067A-14	Dr. Mohammad Saadeh	Engineering B [Industrial, Materials, Mechanical, etc.]	Southeastern Louisiana University	New Request	Assessment of Tactile Sensing in Refreshable Displays for the Blind and Visually Impaired	$65,804.00	$58,229.00	$58,229.00	$182,262.00	No
068A-14	Dr. Phillip Voegel	Chemistry	Southeastern Louisiana University	New Request	Synthesis and Characterization of Metal Imidazolylporphyrazine Catalysts	$39,555.00	$34,617.00	$33,539.00	$107,711.00	No
069A-14	Dr. GHANASHYAM JOSHI	Engineering B [Industrial, Materials, Mechanical, etc.]	Southern University and A&M College - Baton Rouge	New Request	Fracture Toughness Assessment of Ceramic Matrix Composites	$67,000.00	$67,000.00	$66,000.00	$200,000.00	No
070A-14	Dr. Aloyce Kaliba	Health and Medical Sciences	Southern University and A&M College - Baton Rouge	New Request	CAUSES OF AND SOLUTIONS TO OBESITY AND DIABETES SYNDEMIC IN LOUISIANA	$25,704.00	$23,567.00	$23,639.00	$72,910.00	No
071A-14	Dr. Md Salam	Computer and Information Sciences	Southern University and A&M College - Baton Rouge	New Request	Advancing Trustworthiness and Reliability in Distributed Sensor Networks	$56,908.00	$54,908.00	$53,908.00	$165,724.00	No
072A-14	Dr. Zhengmao Ye	Computer and Information Sciences	Southern University and A&M College - Baton Rouge	New Request	Optimal Data and Information Aggregation and Adaptive Topology Control for Wireless Ad Hoc and Sensor Networks	$53,736.00	$53,736.00	$53,736.00	$161,208.00	No
073A-14	Prof. Guang-Lin Zhao	Chemistry	Southern University and A&M College - Baton Rouge	New Request	Nitrogen Functionalized Carbon Nanostructures as New Catalysts for Fuel Cells and Lithium-Air Batteries	$63,800.00	$68,000.00	$68,000.00	$199,800.00	No
074A-14	Dr. Muhammed Miah	Computer and Information Sciences	Southern University at New Orleans	New Request	Novel Data Mining and Information Retrieval Methods for Maximal Reverse Selection Queries	$39,779.00	$39,779.00	$0.00	$79,558.00	No
075A-14	Prof. Paul Colombo	Biological Sciences II	Tulane University	New Request	Relationships between CREB signaling and behavior across the lifespan	$55,000.00	$50,000.00	$45,000.00	$150,000.00	No
076A-14	Prof. Matthew Escarra	Engineering B [Industrial, Materials, Mechanical, etc.]	Tulane University	New Request	Low-loss optical nanoantennas for solar energy applications	$64,551.00	$47,743.00	$49,174.00	$161,468.00	No
077A-14	Dr. Katharine Jack	Biological Sciences II	Tulane University	New Request	Major histocompatibility complex, mate choice and dispersal decisions in wild Cebus capucinus. Implications for sexual selection in male dispersed social animals	$57,655.00	$67,513.00	$45,263.00	$170,431.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
078A-14	Dr. Noa Marom	Chemistry	Tulane University	New Request	Toward Crystal Engineering from First Principles	$69,327.00	$63,888.00	$64,679.00	$197,894.00	No
079A-14	Prof. Ramgopal Mettu	Computer and Information Sciences	Tulane University	New Request	CD4+ T-cell Epitope Prediction Using Antigen Structure	$66,858.00	$65,531.00	$59,624.00	$192,013.00	No
080A-14	Dr. Geetha Bansal	Biological Sciences I	Tulane University Health Sciences Center	New Request	Understanding Basic Mechanisms Regulating Natural Immunity in Malaria Infection	$66,666.00	$66,667.00	$66,666.00	$199,999.00	No
081A-14	Dr. Prasad Katakam	Biological Sciences II	Tulane University Health Sciences Center	New Request	Impact of hypoglycemia and insulin on hypoxia-reoxygenation injury in brain microvascular endothelial cells: Role of calcium microdomains	$45,000.00	$45,000.00	$45,000.00	$135,000.00	No
082A-14	Prof. Jean-Pyo Lee	Biological Sciences II	Tulane University Health Sciences Center	New Request	Effect of Stem Cells on Ischemic-Reperfusion Cerebral Injury	$54,798.00	$55,011.00	$55,230.00	$165,039.00	No
083A-14	Dr. Michael McCaskil	Biological Sciences II	Tulane University Health Sciences Center	New Request	Cathelicidin/LL37 levels in ethanol exposed human bronchial epithelial cells	$51,080.00	$49,689.00	$0.00	$100,769.00	No
084A-14	Dr. Catherine Taylor	Health and Medical Sciences	Tulane University Health Sciences Center	New Request	No Hitting Zones: A Hospital-Based Approach to Child Physical Abuse Prevention	$48,917.00	$49,654.00	$50,413.00	$148,984.00	No
085A-14	Dr. He Wang	Health and Medical Sciences	Tulane University Health Sciences Center	New Request	The Role of Autophagy Induced byTitanium Dioxide Particles and Arsenic in Survival and Differentiation of Human Mesenchymal Stem Cells	$67,793.00	$61,995.00	$0.00	$129,788.00	No
086A-14	Dr. Mark Wilson	Health and Medical Sciences	Tulane University Health Sciences Center	New Request	Determination of Chemical Specific Mutation Spectrum in Spleen Derived Murine T-cells Integrated Into the Pig-a Gene Mutation Assay	$37,461.00	$0.00	$0.00	$37,461.00	No
087A-14	Dr. David Bellar	Health and Medical Sciences	University of Louisiana at Lafayette	New Request	Investigation of the Relationship of the Point of Equivalence of Change [PEC] to Metabolic Syndrome and to the Prescription of Aerobic Exercise Intensity to Promote Health Related Fitness	$50,854.00	$42,988.00	$20,640.00	$114,482.00	No
088A-14	Dr. Paul Darby	Computer and Information Sciences	University of Louisiana at Lafayette	New Request	Achieving Realistic Testbeds for Mobile Grid Computing Experiments	$55,195.00	$45,195.00	$20,939.00	$121,329.00	No
089A-14	Dr. Greggory Davis	Health and Medical Sciences	University of Louisiana at Lafayette	New Request	The role of acute aerobic exercise intensity on changes in markers of metabolic dysfunction in diabetic offspring and insulin resistant populations	$41,596.00	$39,396.00	$37,196.00	$118,188.00	No
090A-14	Dr. Raphael Gottardi	Earth/Environmental Sciences	University of Louisiana at Lafayette	New Request	Investigating Fluid-Rock Interaction during Extensional Continental Tectonics	$101,948.00	$76,738.00	$16,579.00	$195,265.00	No
091A-14	Dr. Hsiu-Yueh Hsu	Health and Medical Sciences	University of Louisiana at Lafayette	New Request	Evidence-based patient care with the detection of behavioral risk factors	$53,128.00	$59,859.00	$33,783.00	$146,770.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
092A-14	Dr. Ahmed Khattab	Engineering B [Industrial, Materials, Mechanical, etc.]	University of Louisiana at Lafayette	New Request	PIEZOELECTRIC CERAMIC FOR POWER HARVESTING: PROCESS DEVELOPMENT AND CHARACTERIZATION	$75,790.00	$61,791.00	$62,278.00	$199,859.00	No
093A-14	Prof. Salah Massoud	Chemistry	University of Louisiana at Lafayette	New Request	Synergistic Effect in the DNA Cleavage Promoted by Dinuclear Copper[II] and Zinc [II] Complexes Based Phenolic Binucleating Ligands	$62,694.00	$49,273.00	$48,428.00	$160,395.00	No
094A-14	Dr. Gabriele Morra	Computer and Information Sciences	University of Louisiana at Lafayette	New Request	Computational Development of the Fast Multipole - Boundary Element Method for Modeling Three Dimensional Geodynamic Problems	$73,668.00	$53,335.00	$53,335.00	$180,338.00	No
095A-14	Dr. Saeed Salehi	Engineering B [Industrial, Materials, Mechanical, etc.]	University of Louisiana at Lafayette	New Request	A comprehensive study of wellbore integrity in Louisiana Shale Plays: Implications for Environmental Concerns	$51,020.00	$59,206.00	$59,206.00	$169,432.00	No
096A-14	Prof. Karen Smith	Biological Sciences II	University of Louisiana at Lafayette	New Request	Translational profiling of messenger RNA in GABAegic inhibitory interneurons	$52,070.00	$51,103.00	$50,059.00	$153,232.00	No
097A-14	Dr. Radhey Srivastava	Chemistry	University of Louisiana at Lafayette	New Request	Metal-catalyzed Deoxygenation of Biomass-derived Feedstocks:Deoxydehydration of sugars and Sugar Alcohols	$100,455.00	$96,455.00	$0.00	$196,910.00	No
098A-14	Dr. Ramalingam Subramaniam	Earth/Environmental Sciences	University of Louisiana at Lafayette	New Request	Biological isolation and characterization of chitin from waste materials towards biodiesel production	$61,864.00	$61,038.00	$59,739.00	$182,641.00	No
099A-14	Dr. Charles Taylor	Engineering B [Industrial, Materials, Mechanical, etc.]	University of Louisiana at Lafayette	New Request	Simulation of critical cardiovascular events and conditions to assess medical device safety: An advanced testing solution delivered by state-of-the-art physical modeling and novel hardware.	$51,938.00	$44,000.00	$36,000.00	$131,938.00	No
100A-14	Dr. Mehmet Tozal	Computer and Information Sciences	University of Louisiana at Lafayette	New Request	NTmaps: Internet Topology and Route Mapping	$66,052.00	$56,528.00	$57,123.00	$179,703.00	No
101A-14	Dr. Joshua Vaughan	Engineering B [Industrial, Materials, Mechanical, etc.]	University of Louisiana at Lafayette	New Request	Improving Energy Efficiency through Concurrent Design Methodologies	$47,429.00	$62,512.00	$58,399.00	$168,340.00	No
102A-14	Dr. Wesley Williams	Engineering B [Industrial, Materials, Mechanical, etc.]	University of Louisiana at Lafayette	New Request	WindFoiler [Wind tunnel Facility for Oil Experimental Research]: a laboratory scale off-shore oil release experimental characterization facility	$40,371.00	$47,286.00	$43,369.00	$131,026.00	No
103A-14	Dr. Dinesh Babu	Biological Sciences II	University of Louisiana at Monroe	New Request	Once initiated, what causes the expansion of toxic liver injury?	$59,659.00	$62,659.00	$66,159.00	$188,477.00	No

Proposals Submitted to theResearch and Development Program - RCS
for the FY 2013-14 Review Cycle

Proposal #	PI Name	Discipline	Institution	Proposal Request	Project Title	Amount Requested				Confidential Info
						Year 1	Year 2	Year 3	Total	
104A-14	Dr. Irfan Ahmed	Computer and Information Sciences	University of New Orleans	New Request	Automatic Live Malware Forensic Analysis in a Cloud-computing Environment	$46,280.00	$46,280.00	$46,280.00	$138,840.00	No
105A-14	Dr. Charles Bell	Biological Sciences II	University of New Orleans	New Request	Evolving Patagonia: Historical Biogeography & Phylogeography of a unique landscape	$36,534.00	$35,534.00	$33,534.00	$105,602.00	No
106A-14	Prof. Dhruva Chakravorty	Chemistry	University of New Orleans	New Request	Investigating the Function and Signaling Mechanisms of G-Protein Editor Metallochaperones - Determining the MeaB and Vitamin B12 - dependent Methylmalonyl-CoA Mutase Complex for Biomedical, Green Chemistry and Energy Applications	$62,199.00	$62,199.00	$62,199.00	$186,597.00	No
107A-14	Dr. Malay Ghose Hajra	Earth/Environmental Sciences	University of New Orleans	New Request	Field and laboratory evaluation of Thermal properties of soil and Thermo-Mechanical behavior of Geothermal Energy Piles as a renewable energy source	$38,750.00	$38,500.00	$36,250.00	$113,500.00	No
108A-14	Dr. Ian Davenport	Biological Sciences I	Xavier University	New Request	Evolution, Structure and Function of Follicle Cell Processes, in the Evolution of Viviparity in the Chondrichthyan fishes [sharks, skates, rays and chimaeras].	$30,229.00	$30,865.00	$31,521.00	$92,615.00	No
109A-14	Dr. Stassi DiMaggio	Chemistry	Xavier University	New Request	Linearly Synthesized Monodisperse Nanomaterials	$59,546.00	$63,759.00	$64,003.00	$187,308.00	No
110A-14	Dr. Anup KUndu	Biological Sciences I	Xavier University	New Request	Formulation of a targeted nanoparticle system for the treatment of breast cancer	$50,000.00	$50,000.00	$75,000.00	$175,000.00	No
111A-14	Dr. Florastina Payton-Stewart	Chemistry	Xavier University	New Request	Design, Synthesis and Biochemical Evaluation of Isoquinoline Alkaloids as Anticancer Agents for Triple Negative Breast Cancer	$65,000.00	$65,963.00	$69,037.00	$200,000.00	No
112A-14	Dr. Jayalakshmi Sridhar	Chemistry	Xavier University	New Request	Inhibition of the Cell Cycle Regulating Kinases: Structure Based Drug Design and Development	$60,250.00	$64,683.00	$66,154.00	$191,087.00	No

Total Number of Proposals submitted	112
Total Funds Requested for First Year	$6,427,105.00
Total Funds Requested for Second Year	$5,888,393.00
Total Funds Requested for Third Year	$4,822,226.00
Total Funds Requested	$17,137,724.00