

BOARD OF REGENTS SUPPORT FUND

**REVIEW OF COMPETITIVE PROPOSALS SUBMITTED FOR
FUNDING CONSIDERATION IN THE
RESEARCH COMPETITIVENESS SUBPROGRAM (RCS)**

FY 2022-23 COMPETITION

March 2023

REPORT OF THE FINAL PANEL
BOARD OF REGENTS SUPPORT FUND RESEARCH & DEVELOPMENT PROGRAM
RESEARCH COMPETITIVENESS SUBPROGRAM (RCS)
FY 2022-23

BACKGROUND INFORMATION

Ninety-nine (99) proposals requesting a total of \$5,298,569 in first-year funds were submitted for funding consideration in fiscal year (FY) 2022-23 to the Research Competitiveness Subprogram (RCS) of the Board of Regents Support Fund (BoRSF). Nine (9) disciplines were eligible, including Agricultural Sciences, Biological Sciences I, Biological Sciences II, Computer & Information Sciences, Earth & Environmental Sciences, Engineering A, Mathematics, Physics & Astronomy, and Social Sciences.

THE REVIEW PROCESS

The ninety-nine (99) proposals submitted were reviewed by discipline-based panels. The chairs of each review panel represented their discipline on the final panel and submitted written reports with priority rankings of highly recommended proposals to the final panel chair, Dr. Virginia Ayres of the Department of Electrical & Computer Engineering at Michigan State University.

After careful consideration of all panel reports during March of 2023, the final panel chair highly recommended twenty-seven (27) proposals be funded for a total of \$1,249,059 in first-year funds based on monies projected to be available. Of the twenty-seven (27) proposals recommended, twenty-three (23) are traditional multi-year projects and four (4) are one-year projects. A total of \$3,290,555 was recommended over three years.

Table I of this report contains the rank-order list of all proposals highly recommended for funding. Proposals are divided by discipline and listed in the rank order provided by each discipline-based panel. Table II lists in priority rank order the proposals to be funded if additional funds become available. These proposals are not separated by discipline, but in a unified rank order. Table III lists the final panel chair and contributing consultants comprising the nine (9) discipline-based review panels. These are followed by a compilation of written comments submitted by the discipline-based review panels for each of the highly recommended proposals. Attachment A contains the scoring rubric used by panel members, and Attachment B provides a list of all proposals submitted to RCS in FY 2022-23.

Due to limited funds available and the large number of high-quality projects, funding recommendations in each project year were limited to a maximum of \$53,000. Specific stipulations for budget items not recommended for funding must be accommodated by awarded projects. No reductions may be made to graduate student support in accordance with the BoRSF's constitutional

mission to support the recruitment of superior graduate students. All other reductions may be made at the discretion of the Principal Investigator.

This report contains assessments only of Priority I proposals recommended for funding. All proposals not recommended for funding (i.e., any proposal not listed in Table I) will receive debriefing material summarizing reviewer assessments of the project in July 2023, to assist applicants in development of submissions to RCS and other grant programs. These materials will be distributed via the PI LOGAN account used to submit the original proposal.

Research Competitiveness Subprogram (RCS)
Table I: Proposals Highly Recommended For Funding

Agricultural Sciences

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	005A-23	LSU-AG	Jeb Fields	\$41,300	\$18,500	\$10,000
2	003A-23	LSU-AG	Maria Bampasidou	\$53,000	\$53,000	\$46,372
				\$94,300	\$71,500	\$56,372

Biological Sciences I

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	099A-23	UNO	Cheng Shi	\$53,000	\$53,000	\$53,000
2	047A-23	LSUHSC-NO	Ben Kelly	\$50,000	\$50,000	\$50,000
3	008A-23	LSU-AG	Constantine Simintiras	\$53,000	\$53,000	\$53,000
4	042A-23	LSU A&M	Anastasios Vourekas	\$53,000	\$50,000	\$42,255
				\$209,000	\$206,000	\$198,255

Biological Sciences II

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	040A-23	LSU A&M	Jiaqi Tan	\$53,000	\$53,000	\$37,200
2	029A-23	LSU A&M	Karen Maruska	\$20,000		
3	085A-23	ULL	Emily Kane	\$53,000	\$53,000	\$53,000
4	041A-23	LSU A&M	Gregory Thom	\$53,000	\$53,000	
5	034A-23	LSU A&M	Olalekan Ogundele	\$20,000		
				\$199,000	\$159,000	\$90,200

Computer & Information Sciences

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	084A-23	ULL	Aminul Islam	\$53,000	\$50,295	\$46,056
2	073A-23	Tulane	Mahir Bilen Can	\$53,000	\$53,000	
				\$106,000	\$103,295	\$46,056

Earth & Environmental Sciences

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	086A-23	ULL	David Oppo	\$39,384	\$33,301	\$31,250
2	069A-23	Nicholls	Jonathan Willis	\$38,700	\$39,959	\$39,052
3	021A-23	LSU A&M	Achim Herrmann	\$12,675		
				\$90,759	\$73,260	\$70,302

Engineering A

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	011A-23	LSU A&M	Yaxin An	\$53,000	\$53,000	\$50,000
2	056A-23	LaTech	M Shafiqur Rahman	\$53,000	\$53,000	\$53,000
3	017A-23	LSU A&M	Kofi Christie	\$53,000	\$53,000	\$53,000
4	098A-23	UNO	Elnaz Safapour	\$53,000	\$53,000	\$53,000
5	023A-23	LSU A&M	Amirhosein Jafari	\$53,000	\$53,000	\$53,000
				\$265,000	\$265,000	\$262,000

Mathematics I

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	053A-23	LaTech	Nathan Green	\$53,000	\$53,000	\$42,109
2	077A-23	Tulane	Xiang Ji	\$53,000	\$53,000	\$53,000
				\$106,000	\$106,000	\$95,109

Physics & Astronomy

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	012A-23	LSU A&M	Xiaojian Bai	\$53,000	\$53,000	\$53,000
2	010A-23	LSU A&M	Ivan Agullo	\$53,000	\$53,000	
				\$106,000	\$106,000	\$53,000

Social Sciences

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
1	038A-23	LSU A&M	Kevin Smiley	\$20,000		
2	016A-23	LSU A&M	Kellie Brisini	\$53,000	\$53,000	\$27,147
				\$73,000	\$53,000	\$27,147

RCS Total Recommended Funds				1st Year	2nd Year	3rd Year
				\$1,249,059	\$1,143,055	\$898,441

Research Competitiveness Subprogram (RCS)

Table II: Proposals Recommended if Additional Funds Become Available

Rank	Proposal #	Institution	PI	1st-Year Recommendation	2nd-Year Recommendation	3rd-Year Recommendation
28	013A-23	LSU A&M	Sviatoslav Baranets	\$53,000	\$53,000	\$52,224
29	020A-23	LSU A&M	Ipsita Gupta	\$53,000	\$53,000	\$53,000
30	080A-23	LSU A&M	Kalinna Mincheva	\$53,000	\$32,333	\$30,295
31	006A-23	LSU-AG	Lewis Gaston	\$43,500	\$41,500	\$21,750
32	019A-23	LSU A&M	Rebeca de Jesus Crespo	\$48,980	\$40,115	\$35,681
				\$251,480	\$187,615	\$192,950

Table III
FY 2022-23 RCS Panelists

2022-23 Research Competitiveness Subprogram		
Name	School	Discipline
Final Panel		
Virginia M. Ayres	Michigan State University	Physics/Engineering
Biological Sciences I		
Rakesh Patel, chair	University of Alabama at Birmingham	Pathology, Molecular
Maitreyi Das	Boston College	Cell/Molecular/Genetics
Biological Sciences II		
Katharine Lewis, chair	Syracuse University	Neuroscience, Zoology
Sean P. Mullen	Boston University	Ecology, Evolutionary
Computer & Information Sciences		
Kai Zheng, chair	University of California Irvine	Informatics
Yu Chen	Binghamton University	Computer Engineering
Earth & Environmental Sciences		
Alexis Sitchler, chair	Colorado School of Mines	Geochemistry
Yasin Elshorbany	University of South Florida	Atmospheric Chemistry
Johan Gottgens	University of Toledo	Environmental Science
Agricultural Sciences		
Eugene Kelly, chair	Colorado State University	Soil & Crop Sciences
S. Alan Walters	Southern Illinois University	Vegetable Science
Engineering A		
Nasim Uddin, chair	University of Alabama at Birmingham	Civil Engineering
Rebecca Ong	Michigan Technological University	Chemical
Stephen Bayne	Texas Tech University	Electrical
Mathematics		
Brett Wick, chair	Washington University in St. Louis	Complex Analysis
Michael Zieve	University of Michigan	Algebraic Geometry
Physics		
Bhaskar Dutta, chair	Texas A&M University	High Energy Physics
Hui Deng	University of Michigan	Condensed Matter
Social Sciences		
Matthew Brashears, chair	University of South Carolina	Sociology
Thomas Holtgraves	Ball State University	Social Psychology

**Research Competitiveness Subprogram
FY 2022-23 Competitive Cycle**

**Agricultural Sciences
Priority Ranking of Proposals Highly Recommended for Funding**

Rank	1 (Agricultural Sciences)
Proposal #	005A-23
Institution	Louisiana State University Agricultural Center
PI	Jeb Fields
Title	Improving Root Growth, Resource Efficiency, and Crop Productivity with Soilless Substrate Stratification
Requested	\$69,800 (Y1: \$41,300; Y2: \$18,500; Y3: \$10,000)
Recommended	\$69,800 (Y1: \$41,300; Y2: \$18,500; Y3: \$10,000)

The PI seeks to assist Louisiana growers with more efficient and cost-effective production strategies through soilless substrate research. This proposal fills a critical gap in controlled environmental agriculture research. The goals are straightforward and technically sound. It is a reasonable request that is low cost but will have high returns if successful. The research is likely to garner external dollars from the horticultural community and industries and aligns closely with the USDA's urban agriculture initiatives. Full funding is recommended.

Rank	2 (Agricultural Sciences)
Proposal #	003A-23
Institution	Louisiana State University Agricultural Center
PI	Maria Bampasidou
Title	Farm Labor Supply and Demand Adapting to Labor Market Shocks
Requested	\$165,903 (Y1: \$62,971; Y2: \$56,560; Y3: \$46,372)
Recommended	\$152,372 (Y1: \$53,000; Y2: \$53,000; Y3: \$46,372)

The PI seeks funds to study the effects of immigration policy on agricultural labor markets. Farm labor is a critical area of research both regionally and nationally. The proposal is well organized and strongly argued. It highlights the deficiencies and knowledge gaps in our understanding of farm labor and how it is impacted by markets. The proposed research should yield important new discoveries regarding the effects of markets and policy on the availability of farm labor. The results of this project should position the investigator to secure additional research support from the USDA. Given funding constraints in the RCS program, partial funding of \$53,000 is recommended in years one and two, with full funding in year three. Reductions to graduate student support are not allowable. Further reductions may be made at the discretion of the PI.

Biological Sciences I
Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Biological Sciences I)
Proposal #	099A-23
Institution	University of New Orleans
PI	Cheng Shi
Title	Regulation of Somatic Aging and Lipid Metabolism by the Hyperactive Germline
Requested	\$195,779 (Y1: \$66,766; Y2: \$64,255; Y3: \$64,758)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The PI proposes to investigate how Hedgehog signaling regulates lipid metabolism and somatic aging. The proposal is well written and based on strong preliminary data. A detailed plan is provided for making the team competitive for federal funding, with barriers to success and plans to overcome them identified. The PI has already published high-impact papers in Hedgehog signaling and somatic aging, so is experienced in this line of investigation. The environment at the University of New Orleans is conducive for the proposed studies. The project has the potential to generate novel concepts in our understanding of somatic aging. There is a strong chance that the proposed studies can be developed into extramural support applications to both NIH and NSF. The proposed budget appears to be somewhat high and available dollars in RCS are constrained, so reduced funding of \$53,000 in all three years is recommended. No reductions may be made to graduate student support, though further reductions may be made at the discretion of the PI.

Rank	2 (Biological Sciences I)
Proposal #	047A-23
Institution	Louisiana State University Health Sciences Center - New Orleans
PI	Ben Kelly
Title	Regulation of Cytochrome C Oxidase Subunit Expression in Leishmania
Requested	\$150,000 (Y1: \$50,000; Y2: \$50,000; Y3: \$50,000)
Recommended	\$150,000 (Y1: \$50,000; Y2: \$50,000; Y3: \$50,000)

This project will investigate the regulation of Cytochrome C oxidase in Leishmania. The barriers to federal funding have been appropriately identified and the PI plans to address directly NIH reviewer comments and cited weaknesses related to a previously submitted proposal. This approach is logical and will strengthen the three aims of the planned R01 application. The PI has sufficient resources and facilities to complete this project if supported by RCS, as well as a promising track record. A large body of preliminary data has been generated to support the hypotheses, premise and rationale related to the aims of the project. If successful, the proposed studies will identify potential targets for therapy and diagnosis of Leishmaniasis, with strong potential to obtain NIH or NSF funding to continue this research. An additional strength of this project is the inclusion of collaborators with expertise in ubiquitin biology. Full funding is recommended.

Rank	3 (Biological Sciences I)
Proposal #	008A-23
Institution	Louisiana State University Agricultural Center
PI	Constantine Simintiras
Title	The Mechanisms of Uterine Gland Formation and Behavior in Health and Disease
Requested	\$199,898 (Y1: \$59,150; Y2: \$87,449; Y3: \$53,299)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

In this project, the PI plans to investigate the molecular details of uterine gland formation and related disorders. The outcomes will include preliminary data and publications, the lack of which creates barriers to federal competitiveness. The necessary institutional resources and facilities are identified. The PI is an expert in reproductive biology and has a proven scholarship record, publishing 19 papers, nine as first author. The potential for the PI to establish an independent and funded laboratory is high. Early pregnancy loss is a significant problem and research addressing underlying mechanisms has a strong prospect for funding via NIH-NICHD. Using a 3D organoid model to determine mechanisms of adenogenesis and uterine luminal fluid (ULF) formation is innovative and will increase competitiveness. The project goals and objectives are complementary, feasible, and have a strong likelihood for advancing the field. The proposal is ambitious and the potential impact of the proposed studies is high. The addition of collaborators who could help with human tissue studies would strengthen this and subsequent applications. Other areas for addition include a discussion of and studies regarding the similarity/dissimilarity (pros vs. cons) of the in vitro 3D model compared to the situation in vivo. While an in vitro 3D organoid model is exciting, addressing potential concerns of in vivo relevance is important, especially when thinking about future extramural grant applications. Reduced funding of \$53,000 in each year is recommended. No reductions may be made to graduate student support, though other reductions may be made at the discretion of the PI.

Rank	4 (Biological Sciences I)
Proposal #	042A-23
Institution	Louisiana State University and A&M College
PI	Anastasios Vourekas
Title	tRNA Fragments as Guides of mRNA Regulation by RNase P
Requested	\$147,255 (Y1: \$55,000; Y2: \$50,000; Y3: \$42,255)
Recommended	\$145,255 (Y1: \$53,000; Y2: \$50,000; Y3: \$42,255)

In this project the PI will investigate mRNA regulation by RNase P. This is a focused application designed to generate key preliminary data, which, together with current data, will form the basis of an extramural R01 application. The barriers to competitiveness are well described and have been identified based on feedback from mentors. The PI has been productive, publishing high-impact papers in the field. The institution has the necessary resources and facilities required for the research. The project is significant and if successful will further knowledge of tRNA biology and understanding of the basic science of gene regulation. This research plan is well described. The aims follow the logic of the preliminary data, which are strong and support feasibility of the hypothesis. Intentional efforts addressing scientific rigor are also proposed. Areas in which the proposal could be improved include defining the

significance and importance of the research proposed. This will be particularly important when applying for federal funding and competing with applications that have made a strong case for research significance. The budget is somewhat high, so partial funding of \$53,000 is recommended in year one, with full funding recommended in subsequent years. The budget reduction may be made at the PI's discretion.

Biological Sciences II
Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Biological Sciences II)
Proposal #	040A-23
Institution	Louisiana State University and A&M College
PI	Jiaqi Tan
Title	Investigation of the Ecological Impacts of Nanomaterial Stress on Species Interactions in Freshwater Ecosystems
Requested	\$158,846 (Y1: \$62,167; Y2: \$59,479; Y3: \$37,200)
Recommended	\$143,200 (Y1: \$53,000; Y2: \$53,000; Y3: \$37,200)

This study will examine environmental nanomaterials in freshwater ecosystems. The PI identifies barriers to competitiveness and presents a clear plan for overcoming them. There is a high likelihood of new discoveries and contributions to basic science through the research proposed. The data generated are likely to make the project competitive for federal funding. The experiments are well described, and the study system is remarkably well suited to the proposed manipulations. The goals are clear. The budget is somewhat high, so partial funding of \$53,000 is recommended in years one and two, and full funding in year three. Funding may not be reduced for graduate student support, though other reductions may be made at the discretion of the PI.

Rank	2 (Biological Sciences II)
Proposal #	029A-23
Institution	Louisiana State University and A&M College
PI	Karen Maruska
Title	Hormone-Mediated Muscle Plasticity to Facilitate Extreme Parental Care in a Mouthbrooding Cichlid Fish
Requested	\$20,000
Recommended	\$20,000

This project will use Diffusible Iodine-based Contrast-enhanced Computed Tomography (DiceCT) to study the reproductive cycle in maternal mouthbrooding cichlid fish. This one-year award will enable a new research focus for the applicant and establish a new technique in their lab. The proposed project is well developed, logical, clear, and feasible. The PI has previously held an NSF grant in a different research area and does not currently have funding. There is a strong chance of obtaining new NSF support with the data generated through this project. Full funding is recommended.

Rank	3 (Biological Sciences II)
Proposal #	085A-23
Institution	University of Louisiana at Lafayette
PI	Emily Kane
Title	Sculpting Sculpins: Form and Function of Pectoral Fin Specialization in Intertidal Fishes
Requested	\$190,363 (Y1: \$67,519; Y2: \$64,752; Y3: \$58,092)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The PI proposes a study of the pectoral fin structure of fish in multiple habitats. The applicant has already submitted an NSF proposal, and this RCS project would enable them to address reviewer feedback. This is an interesting interdisciplinary, integrative project with clear aims. It has the potential to become a premier example of niche partitioning, competitive exclusion, and life-history evolution. Gathering additional preliminary data is likely to make the project highly competitive for NSF funding. Costs could be reduced by paying the graduate student at the local departmental funding rate rather than the NSF GRF rate (potentially saving up to \$6,000 a year). Considerable travel funds are requested. The grant should provide for fewer people to attend conferences and instead redirect released travel funds to a second field season, to mitigate the risks of not obtaining sufficient data from one field season. The budget is high given the limitations on this program, and partial funding of \$53,000 is recommended in all three years, with reductions to be made at the discretion of the PI.

Rank	4 (Biological Sciences II)
Proposal #	041A-23
Institution	Louisiana State University and A&M College
PI	Gregory Thom
Title	The Genomic Architecture Behind the Obligatory Army-Ant Following Behaviour in Birds
Requested	\$151,807 (Y1: \$88,697; Y2: \$63,110; Y3: \$0)
Recommended	\$145,255 (Y1: \$53,000; Y2: \$53,000; Y3: \$0)

This proposal aims to study the adaptive mechanism allowing species interactions. This is a very interesting project with a high likelihood of generating new discoveries and fundamental advances. The proposal is well written with a strong articulation of the big-picture importance of the proposed research and the associated broader impacts. This project should be fundable by NSF if the PI is able to gather preliminary data as proposed and write a somewhat less ambitious proposal. The requested budget is extremely high, so partial funding of \$53,000 is recommended in years one and two. No reductions may be made to graduate student support, though further reductions may be made at the discretion of the PI.

Rank	5 (Biological Sciences II)
Proposal #	034A-23
Institution	Louisiana State University and A&M College
PI	Olalekan Ogundele
Title	Decoding Hypertension in the Hypothalamus-Brainstem Circuit
Requested	\$20,000
Recommended	\$20,000

The PI proposes research that will increase the understanding of neural control of systemic cardiovascular function and neural response to systemic cardiovascular changes in hypertensive states. This one-year proposal would enable the applicant to use a cutting-edge research method in which they are already proficient to address a new area of research, and should position them well for federal support. Full funding is recommended.

Computer and Information Sciences
Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Computer and Information Sciences)
Proposal #	084A-23
Institution	University of Louisiana at Lafayette
PI	Aminul Islam
Title	Improving the Training Time and Learning Capacity of a Deep Learning Model
Requested	\$153,134 (Y1: \$56,783; Y2: \$50,295; Y3: \$46,056)
Recommended	\$149,351 (Y1: \$53,000; Y2: \$50,295; Y3: \$46,056)

The proposed research seeks to improve deep learning (DL) training efficiency by estimating the learning capacity of DL models. This is a timely and important topic, as DL models often require enormous amounts of training data and there is no universal standard to measure when adequate training is achieved (i.e., when adding more training data would only introduce marginal performance improvements). If the project is successful, it will have a significant impact on the field of artificial intelligence/machine learning by reducing training effort without sacrificing model performance. Federal funding agencies such as NSF and DoD have active portfolios supporting research in this area. The barriers to competitiveness and plan to overcome them are clearly articulated, including improving collaboration opportunities, experience in managing multi-year grants, and support of graduate students. Developing a guideline/procedure/algorithm for determining the learning capability of DL models for a specific set of use scenarios is extremely valuable. Many other research teams in the nation are pursuing this topic, given its importance. The PI is encouraged to thoroughly study ongoing cutting-edge research, particularly those projects supported by NSF, DoD, DoE, NIH, etc., to improve competitiveness and ensure contributions are unique. Due to limited funds available, partial funding of \$53,000 is recommended in year one with full funding in years two and three.

Rank	2 (Computer and Information Sciences)
Proposal #	073A-23
Institution	Tulane University
PI	Mahir Bilen Can
Title	Applications of Representation Theory to Quantum Error Correction
Requested	\$187,417 (Y1: \$96,240; Y2: \$91,177; Y3: \$0)
Recommended	\$106,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$0)

The proposed work will produce quantum error correcting codes on the equivariant embeddings of algebraic groups. The end product can be used to reduce errors in quantum computing, which in turn would have significant implications in the application of quantum computing in cryptography and cybersecurity. This research topic matches well with Quantum Leap, one of NSF's ten big ideas, which aims at "preparing future scientists to implement the discoveries of the next quantum revolution into technologies that will benefit the average consumer." The proposal presents a reasonable plan to overcome existing barriers to achieve national competitiveness. Ultimately, the PI intends to use this work to create chips that decode the error-correcting codes and to establish a Quantum Information Science Institute. The PI is well prepared and possesses necessary knowledge and skills to conduct the proposed work. The budget is extremely high and should be substantially reduced. The panel deemed the use of \$10,000 to purchase laptops for the PI and students, as well as the organization of an international conference, to be problematic uses of these funds and funding is disallowed for these items. Partial funding of \$53,000 is recommended in years one and two. No reductions may be made for graduate student support, with other reductions to be made at the discretion of the PI.

Earth and Environmental Sciences
Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Earth and Environmental Sciences)
Proposal #	086A-23
Institution	University of Louisiana at Lafayette
PI	Davide Oppo
Title	Advanced Time-Lapse Seismic Characterization of a Methane Hydrate-Bearing System
Requested	\$103,935 (Y1: \$39,384; Y2: \$33,301; Y3: \$31,250)
Recommended	\$103,935 (Y1: \$39,384; Y2: \$33,301; Y3: \$31,250)

The PI seeks funds to perform seismic analysis in the Woolsey Mound system (Gulf of Mexico). The proposal is well-written with clear objectives, implementation plan, and tasks. The PI identified major barriers, including a lack of reliable data and the need to build a collaborative network, and has put in place a plan to address them throughout the project duration. If the results from this study can be extended into global implications of methane behavior in the oceans, this study has the potential to make the PI very competitive for future grants. Full funding is recommended.

Rank	2 (Earth and Environmental Sciences)
Proposal #	069A-23
Institution	Nicholls State University
PI	Jonathan Willis
Title	Quantifying the Contribution of Dwarf Palmetto [Sabal minor] to Carbon Sequestration in Louisiana Bottomland Hardwood Habitats
Requested	\$117,711 (Y1: \$38,700; Y2: \$39,959; Y3: \$39,052)
Recommended	\$117,711 (Y1: \$38,700; Y2: \$39,959; Y3: \$39,052)

The PI seeks to support research to address knowledge gaps regarding Sabal minor carbon cycling to better inform carbon sequestration strategies. This is a well-conceived proposal with a clear plan to help the PI develop a needed skill set to increase competitiveness in national-level funding programs. Barriers to competitiveness, including the lack of a research “brand”, are adequately identified, with a plan to demonstrate productivity in that specialty via RCS funding to increase prospects for federal research funding. The panel notes that the budget, particularly the PI summer salary request of only one week each year, was conservative for the scope of the work, and suggests that the PI consider rebudgeting to provide additional salary support. The panel also recommends that the PI push the research beyond observation into clear experimental design that supports testing the research hypotheses. This will increase the quantitative nature of the work and its impact. Full funding is recommended.

Rank	3 (Earth and Environmental Sciences)
Proposal #	021A-23
Institution	Louisiana State University and A&M College
PI	Achim Herrmann
Title	Hafnium Isotopes of Detrital Zircons
Requested	\$12,675
Recommended	\$12,675

The proposed research project seeks to build the PI’s competence in advanced isotope systems that are currently not available in their lab. The shift in focus to laser ablation-based methods is necessary for the PI because the outdated infrastructure of the institution’s facilities will not allow further work in the current research field. It is highly likely that the proposed analyses will generate preliminary data needed to enhance future federal proposals. The PI is using a world-class laboratory for the analyses, deploying appropriate methods. The proposal highlighted some potential issues with the PI’s lack of lab space at the home institution, but the panel notes that these issues are outside the scope of the proposal review process. It is sufficient for the PI to state that the lab space is not available. Full funding is recommended.

Engineering A
Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Engineering A)
Proposal #	011A-23
Institution	Louisiana State University and A&M College
PI	Yaxin An
Title	Computational Investigation of Nanoparticles for Targeted Drug Delivery
Requested	\$159,000 (Y1: \$55,000; Y2: \$54,000; Y3: \$50,000)
Recommended	\$156,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$50,000)

This proposed project will study the translocation of lipid and/or polymer nanoparticles and build a computational platform. The research is related to cancer treatment and highly relevant to multiple funding agencies, particularly NIH. The work builds on the PI's background in simulations and machine learning, expands into simulation of new complex materials (nanoparticles and cell membranes), and begins to establish collaborations with experimentalists. The project is compelling, well justified, and technically sound. Preliminary data that would be generated would likely contribute toward success in obtaining federal research funding. The applicant identifies valid barriers to success, including a lack of experience with simulating nanoparticles and cell membranes and a lack of adequate data storage capability. RCS funding would help to overcome these barriers by providing the missing simulation experience and funding multiple SSD cards to use for data storage. The general approach is sound and is very likely to uncover fundamental mechanisms for drug delivery to cancer cells via endocytosis. The proposed simulations are important as they would provide insights that would be challenging to gain through experimentation. Given funding constraints in RCS, partial funding of \$53,000 is recommended in years one and two, and full funding in year three.

Rank	2 (Engineering A)
Proposal #	056A-23
Institution	Louisiana Tech University
PI	M Shafiqur Rahman
Title	Conformal Additive Friction-Stir Deposition Process for Multi-Scale Structural and Repair Applications
Requested	\$169,754 (Y1: \$55,671; Y2: \$56,408; Y3: \$57,675)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The PI proposes to look at small-scale AFSD (additive friction stir deposition), which is an additive manufacturing process for metals. The technical approach appears solid, and the importance and novelty of the project are well described. The project combines experimental work with computational simulations on temperature distribution and material deposition. The PI identifies three main barriers to competitiveness: 1) the need for preliminary data given the limited existing experimental research on the proposed process; 2) a lack of collaboration with data scientists/machine learning experts; and 3) a lack of funding to purchase heavy equipment. The plan to overcome these barriers primarily addresses the need for preliminary data and mentions engaging with collaborators. As described, the research is likely to lead

to federal support as it is relevant to multiple agencies and is likely to generate fundamental insights and develop new technology. Given funding constraints in RCS, partial funding of \$53,000 is recommended for all three years.

Rank	3 (Engineering A)
Proposal #	017A-23
Institution	Louisiana State University and A&M College
PI	Kofi Christie
Title	Investigation of Inorganic Fouling in Membrane-Based Water Purification
Requested	\$195,000 (Y1: \$75,000; Y2: \$65,000; Y3: \$55,000)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The proposed research is focused on understanding fundamental mechanisms that drive crystal nucleation on desalination membranes. The topic is of relevance to NSF, DOE, USGS, and the US Department of the Interior. The proposed work is compelling, well justified, and in an important research area. The main barriers cited in the proposal are lack of preliminary data and the need for funding to recruit postdoctoral researchers. The proposal would be stronger if the specific preliminary data needed were identified and a discussion included of how securing additional data relates to future funding. The work plan will generate useful preliminary data to draft research proposals. The proposed work is likely to generate fundamental data on governing mechanisms on methods to reduce crystal nucleation and will address this topic from multiple angles. The work has the potential to be relevant to other membrane applications besides desalination. The funding requested is high given the funding demands in RCS, so partial funding of \$53,000 is recommended in all three years. No funding may be reduced for graduate student support, though other reductions may be made at the discretion of the PI.

Rank	4 (Engineering A)
Proposal #	098A-23
Institution	University of New Orleans
PI	Elnaz Safapour
Title	Improving Adaptability and Resiliency of Rural Communities: Development of an ANP-Based Decision Support System for Post-Hurricane Recovery Activities
Requested	\$163,310 (Y1: \$53,585; Y2: \$54,429; Y3: \$55,296)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The proposed project aims to improve the adaptability and resiliency of rural communities that may be affected by hurricanes. This work is likely to have a positive impact on this research field as well as on society in general, and on the Gulf Coast in particular. The proposal is technically sound. The authors identified the following areas as barriers to funding: a lack of resources to recruit graduate students and establish a research group; lack of a history of funded grants; lack of preliminary data; and lack of funding to travel to conferences and NSF workshops. With RCS support, the project team plans to directly address these barriers by recruiting graduate students, establishing a productive research group, acquiring preliminary data, applying for federal grants, publishing results, and attending professional events. This project's strong team and realistic timeline are key to its high likelihood of success. The

budget should be slightly reduced to accommodate RCS budget constraints. The panel recommends partial funding of \$53,000 in all three years.

Rank	5 (Engineering A)
Proposal #	023A-23
Institution	Louisiana State University and A&M College
PI	Amirhosein Jafari
Title	Developing a Smart Occupant-Centric Energy Management System for Office Buildings
Requested	\$174,668 (Y1: \$62,806; Y2: \$56,556; Y3: \$55,306)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

This project seeks to develop an Occupant-Centric Energy Management System (OCEMS) able to sustain energy reduction in operation of commercial buildings while maintaining appropriate comfort levels for occupants. This project has a technically sound approach and a strong publication plan. As a result, it will very likely contribute to basic science. Valid barriers to federal competitiveness are clearly identified, including the lack of preliminary data and proof of concepts as well as a lack of project management experience. The plan to overcome the barriers includes targeting regional and federal funding opportunities, improving visibility of research work, developing strategies to perform outreach activities, and establishing an energy-smart office lab. The proposal has a strong likelihood of success because of the team expertise, past research, and facilities, but the budget is somewhat high given RCS funding constraints. Partial funding of \$53,000 is recommended in each year, with no reductions to graduate student support and all others taken at the PI's discretion.

Mathematics Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Mathematics)
Proposal #	053A-23
Institution	Louisiana Tech University
PI	Nathan Green
Title	Multiple Zeta Values in Function Fields using a Motivic Framework
Requested	\$153,103 (Y1: \$54,938; Y2: \$56,056; Y3: \$42,109)
Recommended	\$148,109 (Y1: \$53,000; Y2: \$53,000; Y3: \$42,109)

This proposed research will study the transcendence of function field multiple zeta values. The mathematics outlined are of high quality and there is a clear research plan and strong PI track record. Plans for outreach to the broader community are provided, which is an additional positive. Potential barriers to federal funding are identified and a clear plan to overcome them is provided. The proposal is strong and coherent, providing convincing evidence for the likelihood of success. Given the funding constraints of RCS, partial funding of \$53,000 is recommended in years one and two, with full funding in year three.

Rank	2 (Mathematics)
Proposal #	077A-23
Institution	Tulane University
PI	Xiang Ji
Title	Molecular Epidemiology through Scalable Statistical Phylogenetic Modelling
Requested	\$199,867 (Y1: \$65,744; Y2: \$66,614; Y3: \$67,509)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

The proposed study will research the development of Bayesian statistical algorithms and software to study rapidly evolving pathogens. Potential barriers to federal funding were identified. A plan to overcome the barriers is presented, though the timeline for achieving competitiveness for extramural funding lacks details. The proposal is otherwise well written and tells a compelling story of the importance of the research. The project has a strong likelihood of success. The budget is somewhat high given the constraints on RCS support. Partial funding of \$53,000 in all three years is recommended, with reductions to be taken at the PI's discretion.

**Physics and Astronomy
Priority Ranking of Proposals Highly Recommended for Funding**

Rank	1 (Physics and Astronomy)
Proposal #	012A-23
Institution	Louisiana State University and A&M College
PI	Xiaojian Bai
Title	Probing, Modeling and Tuning Hybridized Quasi-particles in Quantum Magnets
Requested	\$180,070 (Y1: \$63,010; Y2: \$59,530; Y3: \$57,530)
Recommended	\$159,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$53,000)

This research project seeks to develop a fundamental understanding of hybridized quasi-particles resulting from coupling. The PI is very qualified, given their status as a junior faculty member just starting their career, and has excellent institutional support. Barriers to federal competitiveness are identified and a reasonable plan to overcome them is presented. The PI proposes a comprehensive approach to grow the material, perform in-house characterization, perform neutron scattering at Oakridge, and study the physics through both numerical and theoretical tools, which is a strength. The proposed work is technically sound with a high likelihood of achieving interesting and potentially impactful results within the field of basic research on magnet materials and magnetic phenomena, as well as in broader condensed matter physics. The proposal could have been improved by discussing the broader context of the proposed work, such as the current state of the field beyond the specific crystals the PI studies, and comparison with similar efforts in terms of novelty of the approaches and the PI's competitiveness. The budget is somewhat high given funding constraints in RCS, and partial funding of \$53,000 is recommended in all three years. Reductions may be determined by the PI.

Rank	2 (Physics and Astronomy)
Proposal #	010A-23
Institution	Louisiana State University and A&M College
PI	Ivan Agullo
Title	Global Time Distribution via Satellite Constellations Using Entangled Photons
Requested	\$125,786 (Y1: \$62,993; Y2: \$62,793; Y3: \$0)
Recommended	\$106,000 (Y1: \$53,000; Y2: \$53,000; Y3: \$0)

The proposed project will study clock synchronization based on entangled photon distribution by a network of orbiting satellites. This is a new focus area for the PI, and the barriers to federal competitiveness are identified. The work plan includes establishing graduate student support and obtaining preliminary results on route to publications. The proposal is well supported by analysis and comparison with the current state of the field, and feasibility analysis of the proposed method. The project plan is well thought out and detailed and could generate results of substantial interest and impact to quantum technology. The funding prospects in the general area are excellent. Partial funding of \$53,000 is recommended in years one and two.

Social Sciences Priority Ranking of Proposals Highly Recommended for Funding

Rank	1 (Social Sciences)
Proposal #	038A-23
Institution	Louisiana State University and A&M College
PI	Kevin Smiley
Title	Understanding Governance Challenges from Climate Change and Extreme Weather Events in South Louisiana
Requested	\$20,000
Recommended	\$20,000

The PI proposes a mixed methodological, multidisciplinary research project that takes a fresh approach to the study of climate change and flooding. This is a new and interesting line of research for the PI. The project design will allow the PI to develop useful contacts for future efforts, which in turn will substantially increase the PI's ability to secure funding and overcome the identified barriers to competitiveness. The PI has a strong publication and funding record, which increases confidence in the success of the proposed work as well as the potential to translate the project results into additional federal grants. Moreover, the PI identifies appropriate federal grant opportunities in agencies that are likely to be interested in funding this work. Full funding is recommended.

Rank	2 (Social Sciences)
Proposal #	016A-23
Institution	Louisiana State University and A&M College
PI	Kellie Brisini
Title	Linking Relationship Parameters, Partner Communication, and Mental Health during Major Life Transitions
Requested	\$189,559 (Y1: \$81,767; Y2: \$80,645; Y3: \$27,147)
Recommended	\$133,147 (Y1: \$53,000; Y2: \$53,000; Y3: \$27,147)

This multidisciplinary project will study communication strategies of married family caregivers. The PI identifies barriers to competitiveness and presents a solid plan to address them, responding to reviewer criticism from an unfunded NSF proposal. The proposed work will validate the research procedures needed for subsequent funding and will support the PI in working with a more senior colleague who can mentor them to improve subsequent grant proposals. The PI is relatively early in their career but has an active research agenda and has published in a number of quality outlets. The PI has dedicated research facilities and some matching funds are available. The project is ambitious, but the proposed sample size appears adequate. The research is not likely to be transformative (which is a basic NSF criterion) but includes a strong applied component with societal benefits and has the potential to increase our knowledge in the area. Ultimately, this is a reasonable proposal from a talented researcher that will help overcome several barriers to competitiveness and is well aligned with the goals of RCS. The budgets for the first two years are very high given the demands on RCS. Partial funding of \$53,000 is recommended in years one and two, with full funding in year three. No reductions may be made to graduate student support, though all other reductions may be made at the discretion of the PI.

ATTACHMENT A

SUBJECT-AREA PANEL PROPOSAL EVALUATION FORM

2-3 YEAR RCS PROJECT DURATION

BOARD OF REGENTS SUPPORT FUND RESEARCH COMPETITIVENESS SUBPROGRAM (RCS)

A. EXISTING CAPACITY/CAPABILITIES TO IMPLEMENT PROJECT (25 points) _____

How effectively are the following items addressed?

- Identification and substantiation of barriers to competitiveness
- Adequacy of institutional capabilities as base for building competitiveness
- Training, past performance, and potential of investigators

COMMENTS:

B. SCIENTIFIC MERIT (40 points)

How effectively are the following items addressed?

- Technical soundness
- Likelihood of new discoveries or fundamental advances within field
- Impact on progress in this or other fields
- Contribution to basic science
- Utility or relevance of research to improved technology or society

COMMENTS:

C. POTENTIAL FOR COMPETITIVENESS (25 points) _____

How effective is the plan to overcome existing barriers? How likely is it that the project will result in competitive status for Federal support? What are the funding prospects for this area of research by Federal agencies?

COMMENTS:

D. APPROPRIATENESS OF BUDGET (10 points) _____

Was the budget reasonable for scope of work to be performed, appropriate for personnel costs, and appropriate for equipment/supply costs?

COMMENTS:

Total Score (out of 100): _____

OVERALL RATING OF PROPOSAL

POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
_____	_____	_____	_____	_____

Funding Recommendation:

Year One _____

Year Two _____

Year Three _____

Funding Stipulations:

**RCS One-Year Funding for New Research Component
Proposal Evaluation Form for **TENURED** Applicants**

Criteria	Points
1. Does the proposed research project appear to be technically and scientifically sound? Does the proposed research indicate a significant shift in the applicant's research focus? (50 points)	_____
2. Do the proposed research and supporting materials provide convincing evidence of the potential to attract federal funding in the near term? (40 points)	_____
3. Are the budget, timeline, and infrastructure reasonable? (10 points)	_____
4. Total Score (of a possible 100 points)	_____

COMMENTS:

**RCS One-Year Funding for New Research Component
Proposal Evaluation Form for **TENURE-TRACK** Applicants**

Criteria

Points

1. Does the proposed research project appear to be technically and scientifically sound?
Will the proposed research significantly enhance the applicant's research focus,
substantially advance the exploration of new ideas, and/or enable the applicant to
become proficient in utilizing cutting-edge techniques? (50 points)

2. Do the proposed research and supporting materials provide convincing evidence of
the potential to attract federal funding in the near term? (40 points)

3. Are the budget, timeline, and infrastructure reasonable? (10 points)

4. Total Score (of a possible 100 points)

COMMENTS:

ATTACHMENT B

Proposals Submitted to the Research and Development Program - Research Competitiveness Subprogram (RCS)
FY 2022-23 Review Cycle

Proposal #	PI Name	Category	Institution	Duration	Project Title	Amount Requested			
						Year 1	Year 2	Year 3	Total
001A-23	Prof. Haeyeon Yang	Physics/Astronomy	Grambling State University	3 Years	Study of the interaction of laser plasma with laser pulses	\$56,912	\$52,208	\$52,108	\$161,228
002A-23	Dr. Damon Abdi	Earth/Environmental Sciences	Louisiana State University Agricultural Center	3 Years	Optimizing Green Infrastructure for Urban Runoff Water Retention, Remediation, and Recycling	\$50,000	\$35,000	\$20,000	\$105,000
003A-23	Dr. Maria Bampasidou	Agricultural Sciences	Louisiana State University Agricultural Center	3 Years	Farm labor supply and demand adapting to labor market shocks.	\$62,971	\$56,560	\$46,372	\$165,903
004A-23	Dr. Jeffrey Beasley	Agricultural Sciences	Louisiana State University Agricultural Center	2 Years	Evaluating LIDAR technology as a tool for inspecting levees in Louisiana	\$56,138	\$53,188	\$0	\$109,326
005A-23	Dr. Jeb Fields	Agricultural Sciences	Louisiana State University Agricultural Center	3 Years	Improving Root Growth, Resource Efficiency, and Crop Productivity with Soilless Substrate Stratification	\$41,300	\$18,500	\$10,000	\$69,800
006A-23	Dr. Lewis Gaston	Agricultural Sciences	Louisiana State University Agricultural Center	3 Years	Degradation and Recovery of Louisiana Coastal Plain Forest Soils	\$43,500	\$41,500	\$21,750	\$106,750
007A-23	Dr. Anurag Mandalika	Agricultural Sciences	Louisiana State University Agricultural Center	3 Years	Real-time Monitoring of Masecuete Crystals for Determination of Non-Sucrose Contamination in Sugarcane Juices	\$80,343	\$44,223	\$44,223	\$168,789
008A-23	Dr. Constantine Simintiras	Biological Sciences I	Louisiana State University Agricultural Center	3 Years	The mechanisms of uterine gland formation and behavior in health and disease	\$59,150	\$87,449	\$53,299	\$199,898
009A-23	Dr. Xi Zhang	Agricultural Sciences	Louisiana State University Agricultural Center	3 Years	How do conservation agriculture induced changes in soil physical environment drive variations in biogeochemical cycling and crop production in the Mid-South U.S.?	\$56,400	\$51,000	\$51,000	\$158,400
010A-23	Dr. Ivan Agullo	Physics/Astronomy	Louisiana State University and A & M College	2 Years	Global time distribution via satellite constellations using entangled photons	\$62,993	\$62,793	\$0	\$125,786
011A-23	Dr. Yaxin An	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Computational Investigation of Nanoparticles for Targeted Drug Delivery	\$55,000	\$54,000	\$50,000	\$159,000
012A-23	Dr. Xiaojian Bai	Physics/Astronomy	Louisiana State University and A & M College	3 Years	Probing, Modeling and Tuning Hybridized Quasi-particles in Quantum Magnets	\$63,010	\$59,530	\$57,530	\$180,070
013A-23	Dr. Sviatoslav Baranets	Physics/Astronomy	Louisiana State University and A & M College	3 Years	Design and Characterization of Narrow-Bandgap Heteroanionic Oxypnictide Semiconducting Materials for Thermoelectric Applications	\$66,150	\$55,356	\$52,224	\$173,730
014A-23	Dr. Arup Bhattacharya	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Data-Driven Predictive Modeling for Occupant-Centric and Energy Efficient Ventilation Design	\$62,826	\$52,275	\$46,625	\$161,726
015A-23	Prof. Aaron Bivins	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Dissemination of Antibiotic Resistance in Aquatic Environments via the Plastisphere	\$67,952	\$55,977	\$54,978	\$178,907
016A-23	Dr. Kellie Brisini	Social Sciences	Louisiana State University and A & M College	3 Years	Linking Relationship Parameters, Partner Communication, and Mental Health during Major Life Transitions	\$81,767	\$80,645	\$27,147	\$189,559
017A-23	Prof. Kofi Christie	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Investigation of Inorganic Fouling in Membrane-Based Water Purification	\$75,000	\$65,000	\$55,000	\$195,000
018A-23	Dr. Brittany Cook	Social Sciences	Louisiana State University and A & M College	3 Years	The politics of wheat, seeds, food sovereignty, and changing climates in Jordan	\$42,126	\$39,350	\$35,140	\$116,616
019A-23	Dr. Rebeca de Jesus Crespo	Earth/Environmental Sciences	Louisiana State University and A & M College	3 Years	The epidemiological significance of spatio-temporal segregation patterns of mosquito vectors in New Orleans, Louisiana	\$48,980	\$40,115	\$35,681	\$124,776
020A-23	Dr. Ipsita Gupta	Earth/Environmental Sciences	Louisiana State University and A & M College	3 Years	Microbially Mediated Hydrogen-Brine-Cement-Rock Interactions for Environmentally Safe Subsurface Hydrogen Storage	\$68,660	\$67,660	\$63,660	\$199,980
021A-23	Dr. Achim Herrmann	Earth/Environmental Sciences	Louisiana State University and A & M College	1 Year	Hafnium isotopes of detrital zircons	\$12,675	\$0	\$0	\$12,675
022A-23	Dr. Huanping Huang	Earth/Environmental Sciences	Louisiana State University and A & M College	3 Years	Examining the decay of landfalling hurricanes in the northern Gulf of Mexico	\$73,989	\$67,089	\$57,100	\$198,178
023A-23	Dr. Amirhosein Jafari	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Developing A Smart Occupant-Centric Energy Management System for Office Buildings	\$62,806	\$56,556	\$55,306	\$174,668
024A-23	Dr. Soo Jeong Jo	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	1 Year	Evaluation of Building-Integrated Photovoltaics [BIPV] Systems for Residential Buildings in a Hot and Humid Climate	\$19,975	\$0	\$0	\$19,975
025A-23	Dr. Yong-ha Kim	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Post-Inhalation Behavior of Radioactive Particles in Human Respiratory Systems	\$51,881	\$51,771	\$47,846	\$151,498
026A-23	Prof. Gene Kopp	Mathematics	Louisiana State University and A & M College	3 Years	Modular cocycles and quantum designs	\$44,000	\$40,000	\$27,000	\$111,000
027A-23	Prof. Kisung Lee	Computer and Information Sciences	Louisiana State University and A & M College	1 Year	A comparative study on sentiment analysis for online social media analytics	\$20,000	\$0	\$0	\$20,000

Proposals Submitted to the Research and Development Program - Research Competitiveness Subprogram (RCS)
FY 2022-23 Review Cycle

Proposal #	PI Name	Category	Institution	Duration	Project Title	Amount Requested			
						Year 1	Year 2	Year 3	Total
028A-23	Dr. Chuanlan Liu	Social Sciences	Louisiana State University and A & M College	1 Year	Promoting Industrial Hemp Economy: Exploring the Market for Hemp Fiber Textiles and Clothing	\$19,999	\$0	\$0	\$19,999
029A-23	Dr. Karen Maruska	Biological Sciences II	Louisiana State University and A & M College	1 Year	Hormone-mediated muscle plasticity to facilitate extreme parental care in a mouthbrooding cichlid fish	\$20,000	\$0	\$0	\$20,000
030A-23	Dr. Nicholas Mason	Biological Sciences II	Louisiana State University and A & M College	3 Years	Systematics of Andean Sky-islands: Comparative Phylogeography, Integrative Taxonomy, and Rapid Inventories of Polylepis Avifauna	\$58,946	\$50,099	\$45,675	\$154,720
031A-23	Dr. Xiangyu Meng	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Developing Eco-Driving Algorithms for Connected and Autonomous Vehicles Using Reinforcement Learning Approaches	\$61,705	\$60,705	\$59,705	\$182,115
032A-23	Dr. Bijoyaa Mohapatra	Biological Sciences II	Louisiana State University and A & M College	2 Years	Designing and testing a structured intervention program to promote social engagement and participation during group storytelling in individuals with aphasia: Feasibility, acceptability, and preliminary outcomes	\$61,406	\$60,806	\$0	\$122,212
033A-23	Prof. Prosper Ngabonziza	Physics/Astronomy	Louisiana State University and A & M College	3 Years	Quantum Transport and Magnetotransport Properties of Epitaxial $\text{Sr}_{n+1}\text{RnO}_{3n+1}$ Thin Films and Heterostructures	\$70,000	\$61,000	\$59,000	\$190,000
034A-23	Dr. Olalekan Ogundele	Biological Sciences II	Louisiana State University and A & M College	1 Year	Decoding hypertension in the hypothalamus-brainstem circuit	\$20,000	\$0	\$0	\$20,000
035A-23	Dr. Olufemi Olorode	Earth/Environmental Sciences	Louisiana State University and A & M College	3 Years	A Study of the Multiscale Coupled Physical Mechanisms of Induced Seismicity	\$56,623	\$53,436	\$46,436	\$156,495
036A-23	Prof. Igor Schneider	Biological Sciences I	Louisiana State University and A & M College	3 Years	The role of mTOR signaling in appendage regeneration	\$78,824	\$58,824	\$48,824	\$186,472
037A-23	Prof. Patricia Schneider	Biological Sciences I	Louisiana State University and A & M College	3 Years	Molecular basis of eye remodeling in the four-eyed fish <i>Anableps anableps</i>	\$83,824	\$68,824	\$44,411	\$197,059
038A-23	Dr. Kevin Smiley	Social Sciences	Louisiana State University and A & M College	1 Year	Understanding Governance Challenges from Climate Change and Extreme Weather Events in South Louisiana	\$20,000	\$0	\$0	\$20,000
039A-23	Prof. Yen-Fang Su	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana State University and A & M College	3 Years	Development of 3D printable low carbon high durability cementitious materials for sustainable, resilience and eco-friendly coastal structures	\$64,251	\$62,951	\$58,251	\$185,453
040A-23	Dr. Jiaqi Tan	Biological Sciences II	Louisiana State University and A & M College	3 Years	Investigation of the ecological impacts of nanomaterial stress on species interactions in freshwater ecosystems	\$62,167	\$59,479	\$37,200	\$158,846
041A-23	Prof. Gregory Thom	Biological Sciences II	Louisiana State University and A & M College	2 Years	The genomic architecture behind the obligatory army-ant following behaviour in birds	\$88,697	\$63,110	\$0	\$151,807
042A-23	Dr. Anastasios Vourekas	Biological Sciences I	Louisiana State University and A & M College	3 Years	tRNA fragments as guides of mRNA regulation by RNase P	\$55,000	\$50,000	\$42,255	\$147,255
043A-23	Prof. Clifton Wagner	Physics/Astronomy	Louisiana State University and A & M College	3 Years	Phosphane and Silane Tethered Borazines as Precursors for Hexagonal Boron Nitride Derivatives	\$70,800	\$69,200	\$60,000	\$200,000
044A-23	Prof. Justin Wilson	Physics/Astronomy	Louisiana State University and A & M College	3 Years	Active Feedback to Control Dynamic Quantum Phases	\$51,561	\$50,130	\$49,230	\$150,921
045A-23	Dr. Shaomian Yao	Biological Sciences I	Louisiana State University and A & M College	1 Year	Molecular basis of loss of osteogenic differentiation capability in human bone marrow stem cells at in vitro expansion	\$20,000	\$0	\$0	\$20,000
046A-23	Dr. Fan Zhang	Biological Sciences I	Louisiana State University and A & M College	3 Years	Mutually beneficial impact of microbiome in reproductive physiology of <i>Caenorhabditis elegans</i>	\$56,625	\$51,625	\$45,625	\$153,875
047A-23	Dr. Ben Kelly	Biological Sciences I	Louisiana State University Health Sciences Center - New Orleans	3 Years	Regulation of cytochrome c oxidase subunit expression in Leishmania	\$50,000	\$50,000	\$50,000	\$150,000
048A-23	Dr. XiaoChing Li	Biological Sciences II	Louisiana State University Health Sciences Center - New Orleans	3 Years	Roles of MeCP2 in Vocal Communication	\$50,259	\$50,259	\$50,259	\$150,777
049A-23	Dr. Krista Rodgers	Biological Sciences II	Louisiana State University Health Sciences Center Shreveport	3 Years	Investigation of Age-Dependent BDNF-TrkB Signaling in Neuronal Repair and Functional Recovery Following Cerebral Ischemia	\$50,000	\$50,000	\$50,000	\$150,000
050A-23	Dr. Amy Erickson	Earth/Environmental Sciences	Louisiana State University in Shreveport	3 Years	Controlling the invasive water fern <i>Salvinia molesta</i> by allelopathic effects of common aquatic plants	\$64,245	\$63,725	\$58,620	\$186,590
051A-23	Prof. Yun Chen	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	Surfactant-driven Micro-scale Droplet Motion for the Manipulation of Biological Objects	\$56,921	\$56,658	\$55,425	\$169,004
052A-23	Dr. William Glisson	Computer and Information Sciences	Louisiana Tech University	3 Years	Virtual & Mixed Reality Research	\$78,956	\$60,366	\$60,366	\$199,688
053A-23	Dr. Nathan Green	Mathematics	Louisiana Tech University	3 Years	Multiple Zeta Values in Function Fields using a Motivic Framework	\$54,938	\$56,056	\$42,109	\$153,103
054A-23	Dr. Xiyuan Liu	Mathematics	Louisiana Tech University	3 Years	A neural network pruning approach using conditional random fields	\$55,733	\$55,021	\$44,171	\$154,925

Proposals Submitted to the Research and Development Program - Research Competitiveness Subprogram (RCS)
FY 2022-23 Review Cycle

Proposal #	PI Name	Category	Institution	Duration	Project Title	Amount Requested			
						Year 1	Year 2	Year 3	Total
055A-23	Dr. Gergana Nestorova	Biological Sciences I	Louisiana Tech University	1 Year	Protein engineering of mesenchymal stem cells-derived exosomes as a novel therapy for reducing A β in Alzheimer's disease and related tauopathies	\$16,300	\$0	\$0	\$16,300
056A-23	Dr. M Shafiqur Rahman	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	Conformal Additive Friction-Stir Deposition Process for Multi-Scale Structural and Repair Applications	\$55,671	\$56,408	\$57,675	\$169,754
057A-23	Dr. Hadi Salehi	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	Post-disaster Recovery of Civil Infrastructure Systems Under Extreme Events	\$51,421	\$50,158	\$50,925	\$152,504
058A-23	Dr. Roya Solhmirzaei	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	3D-Printable Ultra High Performance Concrete for Resilient and Sustainable Infrastructure	\$64,421	\$51,158	\$51,925	\$167,504
059A-23	Dr. Tonya Vandenbrink	Social Sciences	Louisiana Tech University	1 Year	The Influence of Executive Function & Divided Attention on Children's Eyewitness Memory	\$13,180	\$0	\$0	\$13,180
060A-23	Dr. Lingxiao Wang	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	Vision and Olfaction Based Wildfire Monitoring System using Unmanned Aerial Vehicles	\$53,711	\$38,711	\$38,711	\$131,133
061A-23	Prof. Yang Xiao	Engineering A [Chemical, Civil, Electrical, etc.]	Louisiana Tech University	3 Years	Advancing Catalytic Activation of Alkanes over Two-Dimensional Materials	\$66,158	\$64,871	\$65,611	\$196,640
062A-23	Dr. Jamileh Beik Mohammadi	Physics/Astronomy	Loyola University New Orleans	3 Years	Investigating magnetic energy landscape in ferromagnetic/non-ferromagnetic multilayers	\$59,517	\$37,668	\$28,523	\$125,708
063A-23	Dr. Amrita Datta	Biological Sciences I	Loyola University New Orleans	3 Years	Role of Protocadherins in Metastatic Breast Cancer	\$47,986	\$51,361	\$47,986	\$147,333
064A-23	Dr. Sarah Baker	Biological Sciences II	McNeese State University	2 Years	Ecology of the Diamondback Terrapin	\$45,700	\$27,596	\$0	\$73,296
065A-23	Dr. Katherine Galloway	Biological Sciences II	Nicholls State University	3 Years	Shell morphology as a tool to investigate phenotypic variations within and among invasive apple snail populations in southern Louisiana	\$26,819	\$42,930	\$42,930	\$112,679
066A-23	Dr. Himanshu Rajee	Biological Sciences I	Nicholls State University	3 Years	Elucidating the Effect of Aging on the Expression of Retroelement Based Drosophila Telomeres.	\$49,456	\$49,756	\$49,756	\$148,968
067A-23	Dr. Esra Tekdal Yilmaz	Engineering A [Chemical, Civil, Electrical, etc.]	Nicholls State University	3 Years	Detection of Algal Bloom: A spatial approach using combination of satellite and UAV based remote sensing	\$50,303	\$49,053	\$49,053	\$148,409
068A-23	Dr. Himanshu Verma	Physics/Astronomy	Nicholls State University	3 Years	Structural, compositional, and magnetic properties of multi-walled carbon nanotubes and barium ferrite hybrid	\$40,000	\$20,000	\$20,000	\$80,000
069A-23	Dr. Jonathan Willis	Earth/Environmental Sciences	Nicholls State University	3 Years	Quantifying the contribution of dwarf palmetto [Sabal minor] to carbon sequestration in Louisiana bottomland hardwood habitats	\$38,700	\$39,959	\$39,052	\$117,711
070A-23	Dr. James Cho	Biological Sciences I	Southeastern Louisiana University	3 Years	Thin Layer Coating Techniques with Genetically Engineered M13 Bacteriophage for Long-term Anti-Freezing Storages of Desired Biological Samples	\$43,700	\$44,528	\$45,389	\$133,617
071A-23	Dr. Ephraim Massawe	Biological Sciences II	Southeastern Louisiana University	3 Years	Effects of Long-Term (Prolonged) Storage on Respirator Performance Against Viruses and Other Biological Aerosols	\$47,853	\$37,728	\$37,004	\$122,585
072A-23	Prof. DONGKEUN LEE	Engineering A [Chemical, Civil, Electrical, etc.]	Southern University and A&M College - Baton Rouge	3 Years	Development of essential models for reinforced concrete walls strengthened with polyurea elastomer subject to impact force	\$50,123	\$49,913	\$49,729	\$149,765
073A-23	Prof. Mahir Bilen Can	Computer and Information Sciences	Tulane University	2 Years	Applications of Representation Theory to Quantum Error Correction	\$96,240	\$91,177	\$0	\$187,417
074A-23	Dr. Benjamin Deen	Biological Sciences II	Tulane University	3 Years	Probing the functional organization of the anterior temporal lobe with precision fMRI	\$59,071	\$54,150	\$56,301	\$169,522
075A-23	Prof. Allison Emmerson	Social Sciences	Tulane University	3 Years	Excavating Sub-elite Pompeii	\$58,734	\$56,278	\$56,278	\$171,290
076A-23	Prof. Ryan Glasser	Physics/Astronomy	Tulane University	3 Years	Optimizing optical neural networks with machine learning	\$58,409	\$58,409	\$58,409	\$175,227
077A-23	Dr. Xiang Ji	Mathematics	Tulane University	3 Years	Molecular epidemiology through scalable statistical phylogenetic modelling	\$65,744	\$66,614	\$67,509	\$199,867
078A-23	Dr. Xin Jiang	Social Sciences	Tulane University	2 Years	Understanding cyberhate toward Asian Americans during COVID-19 pandemic and its relationship with hate crime	\$49,836	\$49,836	\$0	\$99,672
079A-23	Dr. Laura McKinney	Social Sciences	Tulane University	3 Years	The mental health effects of climate change	\$41,877	\$41,877	\$25,970	\$109,724
080A-23	Dr. Kalina Mincheva	Mathematics	Tulane University	3 Years	Tropical adic spaces	\$133,385	\$32,333	\$30,295	\$196,013
081A-23	Dr. Qiuyang Zhang	Biological Sciences I	Tulane University Health Sciences Center	3 Years	The Role of USP26 in Prostate Cancer	\$68,592	\$68,020	\$63,387	\$199,999
082A-23	Dr. Tanvir Faisal	Biological Sciences II	University of Louisiana at Lafayette	3 Years	Sexual dimorphism of articular cartilage degraded with selected MMPs	\$56,476	\$54,959	\$53,841	\$165,276
083A-23	Dr. Farzad Ferdowsi	Engineering A [Chemical, Civil, Electrical, etc.]	University of Louisiana at Lafayette	3 Years	AI-Enabled Approach To Enhance Utility-Scale Solar-Grid Integration And Coordination	\$73,359	\$63,621	\$58,975	\$195,955

Proposals Submitted to the Research and Development Program - Research Competitiveness Subprogram (RCS)
FY 2022-23 Review Cycle

Proposal #	PI Name	Category	Institution	Duration	Project Title	Amount Requested			
						Year 1	Year 2	Year 3	Total
084A-23	Dr. Aminul Islam	Computer and Information Sciences	University of Louisiana at Lafayette	3 Years	Improving the Training Time and Learning Capacity of a Deep Learning Model	\$56,783	\$50,295	\$46,056	\$153,134
085A-23	Dr. Emily Kane	Biological Sciences II	University of Louisiana at Lafayette	3 Years	Sculpting sculpins: form and function of pectoral fin specialization in intertidal fishes	\$67,519	\$64,752	\$58,092	\$190,363
086A-23	Dr. Davide Oppo	Earth/Environmental Sciences	University of Louisiana at Lafayette	3 Years	Advanced time-lapse seismic characterization of a methane hydrate-bearing system	\$39,384	\$33,301	\$31,250	\$103,935
087A-23	Dr. Andi Petculescu	Physics/Astronomy	University of Louisiana at Lafayette	1 Year	Acoustic Characteristics of the Martian Atmosphere Obtained from the Mars2020 Mission	\$20,000	\$0	\$0	\$20,000
088A-23	Dr. Ismatara Reena	Biological Sciences II	University of Louisiana at Lafayette	3 Years	Increase Educators [K-12] Mental Health Literacy to Attain Health Equity	\$53,253	\$47,924	\$47,244	\$148,421
089A-23	Dr. Haley Barnett	Biological Sciences I	University of Louisiana at Monroe	3 Years	Investigating the Influence of Extracellular Cues on Stem Cell Fate Utilizing Hydrogel Biomaterial Scaffolds	\$51,646	\$49,646	\$47,646	\$148,938
090A-23	Dr. Blake Farman	Mathematics	University of Louisiana at Monroe	3 Years	Fourier-Mukai Partners in Noncommutative Algebraic Geometry	\$47,793	\$54,993	\$39,255	\$142,041
091A-23	Dr. Tyler Fricker	Earth/Environmental Sciences	University of Louisiana at Monroe	2 Years	Measuring and Mapping Urban Extreme Temperatures in Northeast Louisiana	\$30,813	\$31,960	\$0	\$62,773
092A-23	Dr. Matthew Overturf	Biological Sciences II	University of Louisiana at Monroe	1 Year	Transcriptomic and Steroid Biosynthetic Changes following Synthetic Progesterin Exposure in Fathead Minnows	\$19,500	\$0	\$0	
093A-23	Dr. Charles Bell	Biological Sciences II	University of New Orleans	3 Years	Does relatedness or distribution determine fungal endophyte communities in the annual plant genus <i>Leptosiphon</i> ?	\$55,289	\$72,115	\$55,659	
094A-23	Dr. Yaojie Li	Social Sciences	University of New Orleans	1 Year	Information Technology for Strategic Competition and Emergency Preparedness: An Empirical Inquiry into New Orleans Independent Hotel Businesses	\$20,000	\$0	\$0	
095A-23	Dr. Xueyan Liu	Mathematics	University of New Orleans	3 Years	Novel distribution-based clustering and co-localization methods for spatial point processes	\$56,989	\$61,488	\$60,031	
096A-23	Dr. Abdullah Nur	Computer and Information Sciences	University of New Orleans	3 Years	AS Level Collaborative Defense Against DDoS Attacks	\$53,189	\$52,803	\$52,434	\$158,426
097A-23	Dr. Abdullah Al Redwan Newaz	Computer and Information Sciences	University of New Orleans	3 Years	A Cooperative Intelligent Multi-Robot Planning Framework for Disaster Recovery	\$55,334	\$63,478	\$62,175	\$180,987
098A-23	Dr. Elnaz Safapour	Engineering A [Chemical, Civil, Electrical, etc.]	University of New Orleans	3 Years	Improving Adaptability and Resiliency of Rural Communities: Development of an ANP-Based Decision Support System for Post-Hurricane Recovery Activities	\$53,585	\$54,429	\$55,296	\$163,310
099A-23	Dr. Cheng Shi	Biological Sciences I	University of New Orleans	3 Years	Regulation of somatic aging and lipid metabolism by the hyperactive germline	\$66,766	\$64,255	\$64,758	\$195,779

Total Funds Requested for First Year	\$5,298,569
Total Funds Requested for Second Year	\$4,600,530
Total Funds Requested for Third Year	\$3,736,681
Total Funds Requested	\$13,234,709