Biomedical Research Advisory Council

William G. “Bill” Bankhead Jr., and David Coley Cancer Research Program

James and Esther King Biomedical Research Program

Live Like Bella Pediatric Cancer Research Initiative

2023-2024 Annual Report

Ron DeSantis
Governor

Joseph A. Ladapo, MD, PhD
State Surgeon General

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Biomedical Research Program Introduction

Since 2001, the Florida Legislature has recognized the need to support vital research conducted in both academic and private institutions through the William G. "Bill" Bankhead Jr. and David Coley Cancer Research Program (Bankhead-Coley) (s. 381.922, Florida Statutes), the Live Like Bella Pediatric Cancer Research Initiative (Live Like Bella) (s. 381.922, Florida Statutes) and the James and Esther King Biomedical Research Program (King Program) (section 215.5602, Florida Statutes). During Fiscal Year (FY) 2023-24, $18,443,749 was awarded to Bankhead-Coley, Live Like Bella, and King Program grantees. FY 2023-24 funding provided for 17 Bankhead-Coley, eight Live Like Bella and nine James and Esther King new research grants made to universities and cancer research centers across the state to support researchers working to improve cancer prevention, diagnosis, and treatment.

Biomedical research grants are awarded through a competitive peer review process. Awards are based on scientific merit, as determined by independent peer review by experts who are (1) located outside Florida, and (2) free from conflicts of interest. Full-time researchers at any Florida-based university or established research institution are eligible to apply. All awardees provide regular updates that are included in this annual report. In addition, a Long-Term Impact Survey was conducted in 2023 where previous grant recipients from 2012-2014 were asked to identify the long-term impacts resulting from their research studies. For additional details on grants, see Appendices A through R.

Per statutory requirements, this report includes the following information:

- Florida's rank relative to other states along with its total National Institutes of Health (NIH) biomedical research funding.
- Progress toward programmatic goals, particularly in the prevention, diagnosis, treatment, and cure of diseases related to tobacco use, including cancer, cardiovascular disease, stroke, and pulmonary disease.
- Recommendations to further the mission of the programs.
- A list of recipients of program grants or fellowships.
- For each research project supported by grants or fellowships awarded under the program, the report includes:
    - A summary of the research project and results or expected results of the research.
    - The status of the research project, including whether the project has concluded or the estimated date of completion.
    - The amount of the grant or fellowship awarded and the estimated or actual cost of the research project.
    - A list of principal investigators under the research project.
    - The title, citation, and summary of findings of a publication in a peer-reviewed journal resulting from the research.
    - The source and amount of any federal, state, or local government grants or donations or private grants or donations generated because of the research project.
    - The status of a patent, if any, generated from the research project and an economic

analysis of the impact of the resulting patent.

A list of postsecondary educational institutions involved in the research project, a description of each postsecondary educational institution's involvement in the research project, and the number of students receiving training or performing research under the research project.

Biomedical Research Advisory Council Membership and Goals

The Biomedical Research Advisory Council (BRAC) advises the State Surgeon General regarding the direction and scope of the biomedical research program (section 215.5602(4), Florida Statutes). BRAC's responsibilities include, but are not limited to:

- Providing advice on program priorities and emphases.
- Providing advice on the overall program budget.
- Participating in periodic program evaluation.
- Assisting in the development of guidelines to ensure fairness, neutrality, and adherence to the principles of merit and quality in the conduct of the program.
- Assisting in the development of appropriate linkages to nonacademic entities, such as voluntary organizations, health care delivery institutions, industries, government agencies, and public officials.
- Developing criteria and standards for the award of research grants.
- Developing guidelines relating to solicitation, review, and award of research grants and fellowships, to ensure an impartial, high-quality peer review system.
- Reviewing reports of peer review panels and making recommendations for research grants and fellowships.
- Developing and providing oversight regarding mechanisms for the dissemination of research results.
- Selecting, by majority vote, six members of the council who must combine with seven members of the Florida Cancer Control and Research Advisory Council to form a joint committee to develop performance measures, a rating system, a rating standard, and an application form for the Cancer Center of Excellence Award (section 381.925, Florida Statutes).

The BRAC comprises 11 members including the Chief Executive Officer of the Florida Division of the American Cancer Society, or a designee; the Chief Executive Officer of the Greater Southeast Affiliate of the American Heart Association, or a designee; and the Chief Executive Officer of the American Lung Association of Florida, or a designee. The remaining eight members are appointed by the Governor (four appointees), the Senate President (two appointees) and the Speaker of the House (two appointees). The BRAC members, as of July 2024, are listed below. (Biographical statements or curriculum vitae available upon request):

- Daniel Armstrong, PhD (Chair), Professor and Special Senior Advisor to the Chair, Pediatrics, Director, Mailman Center for Child Development, University of Miami Miller School of Medicine Seat: American Cancer Society

- Stephen Black, PhD, Director, Center for Translational Science, Florida International University; Seat: Governor
- Nicole de Lara Puente, Chief Executive Officer, Live Like Bella Childhood Cancer Foundation; Seat: Governor
- Shaye Moskowitz, PhD, Neurosciences Medical Director, Broward Health Physicians Group, Seat: Governor
- Akram Shibani, MD, Ascension Medical Group, St. Vincent's Lung Institute; Seat: Governor
- Jennifer I. Vidrine, PhD. MS, Assistant Center Director of Research Community Partnerships, Senior Member, Department of Health Outcomes and Behavior, Moffitt Cancer Center, Professor, Department of Psychology and Oncologic Sciences University of South Florida, Seat: Senate
- Julianne M. Serovich, PhD, Dean of the College of Behavioral and Community Services, University of South Florida, Seat: Senate.
- Guilherme Oliveira, MD, MBA, Professor of Medicine, Vice-President and Chief, Heart and Vascular Institute, and Chief of the Division of Cardiovascular Sciences, Tampa General Hospital; Seat: House of Representatives
- Roxana S. Dronca, MD, Director, Mayo Clinic Comprehensive Center; Seat: House of Representatives
- Vacant Seats: American Lung Association and American Heart Association

Biomedical Research Strategic Goals

The BRAC maintains a strategic plan for Florida's biomedical research funding that defines the objectives to be accomplished in specific time frames. The strategic plan focuses on the health impact of research and making Florida a destination for cancer care and research. The 10-year cycle for the current strategic plan ends in 2024 and will be updated to align with current statewide cancer priorities. The strategic goals are included in the annual funding opportunity announcement (FOA).

Biomedical Research Awards for the 2023-24 Funding Cycle

Awards for the Bankhead-Coley, King Program, and Live Like Bella research grants for FY 2023-24 are presented in Exhibit 1:

Exhibit 1: Biomedical Research Awards by type and program source, FY 2023-24

Award Type	Description[1]	Number of Awards and Funding Source
Prevention and Treatment	This research focuses on research related prevention and improved treatment or care delivery that contributes to a reduction in deaths in at least one of the following types of cancers: pediatric, lung, breast, prostate, colon, or melanoma.	13 Bankhead-Coley 7 King 8 Live Like Bella
Screening	This research focuses on improving screening accuracy and detection for high-risk subgroups, and/or improved implementation of a cancer screening program that results in an increase in early detection or prevention of at least one of the cancers listed above.	1 Bankhead-Coley
Treatment-Related Morbidities	This research expands upon research that improves scientific understanding of causes and subsequent impact of cancer/cancer-treatment related morbidities in other systems (e.g., cardiovascular, pulmonary, endocrine, lymphatic, Central Nervous System, reproductive, developmental impairment, graft-versus-host disease).	1 Bankhead-Coley 2 King
Obesity	This research enhances the understanding of the relationship between obesity, healthy weight, and at least one of the cancers listed above.	2 Bankhead-Coley

[1]For the FY 2023-24 award cycle, no awards were made in two remaining categories: Technology Transfer Feasibility and Disproportionately Impacted Communities.

Florida's research infrastructure for cancer and tobacco-related diseases continues to expand. Table 1 includes a list of the institutions and organizations that have received research funding to create and build the research infrastructure.

Table 1: Awarded Institutions

All Children's Research Institute	Florida State University	Saneron CCEL Therapeutics
Ave Maria University	Haley VA Hospital	Sanford-Burnham Presby
Bay Pines VA Health Care System	M.D. Anderson Cancer Center	South Florida Veterans Affairs Foundation
Carlos Albizu University	Mayo Clinic	The Scripps Research Institute
Edward Waters College	Miami Cancer Institute Baptist Health South Florida	Torrey Pines Institute
Florida Agricultural and Mechanical University	Moffitt Cancer Center	University of Central Florida
Florida Atlantic University	Nano Discovery, Inc.	University of Florida
Florida Hospital Cancer Institute	Nemours Children's Clinic	University of Miami
Florida Institute of Technology	Nova Southeastern University	University of South Florida
Florida International University	Roskamp Institute	University of West Florida

Appendix A: William G. "Bill" Bankhead, Jr., and David Coley Cancer Research Program

Program Overview

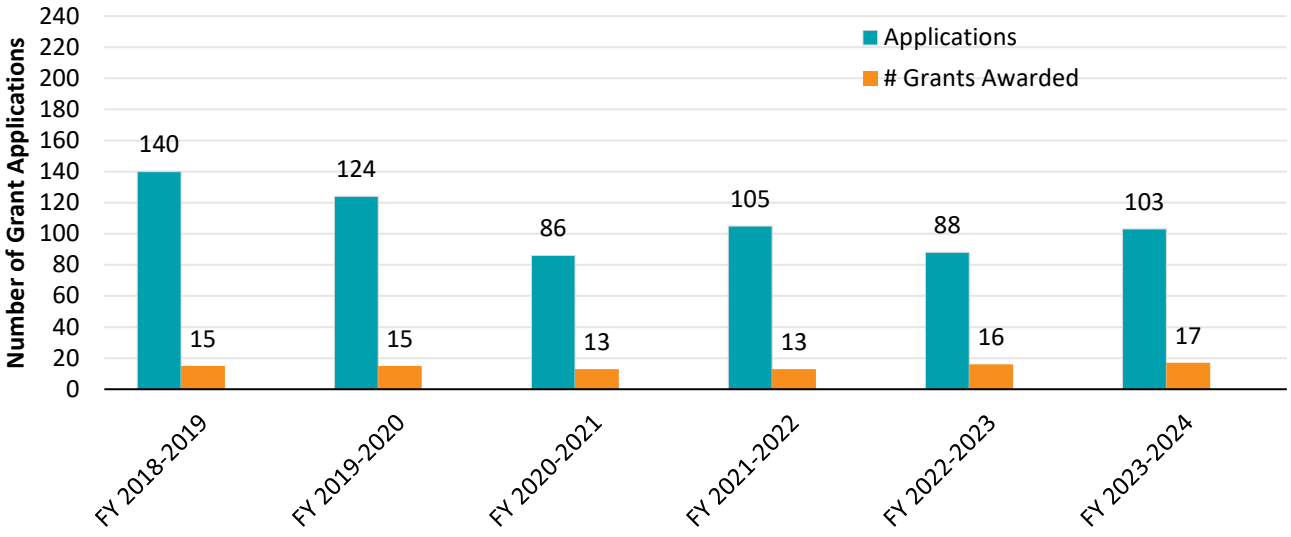
The Bankhead-Coley Program advances progress toward cures for cancer. Cancer is the second leading cause of death for Floridians, after heart disease. Funding through this program aims to improve cancer research and treatment in the state by:

- Attracting new research talent and grant-producing researchers.
- Funding proposals that demonstrate the greatest ability to attract federal research grants.
- Encouraging the development of bioinformatics to allow researchers to exchange information.
- Facilitating technical collaboration, business development, and support for intellectual property related to research.

Aiding multi-disciplinary research through greater participation in clinical trials networks and reducing the disparate impact of cancer on certain groups

In FY 2023-24, 88 applications were submitted in response to the Bankhead-Coley FOA and 16 cancer research projects were awarded.

Exhibit 2: Bankhead-Coley Program Applications and Funded Projects



Source: Department Biomedical Research Section Records, https://www.floridahealth.gov/provider-and-partner-resources/brac/reports-and-publications.htm

Table 2: Fiscal Year 2023-24 Newly Awarded Active Bankhead-Coley Program Grants

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
24B01	Mayo Clinic Jacksonville	Pooja Advani, MD	$288,000.00	Therapeutic Modulation of De Novo Lipogenesis to Enhance Immunogenicity of Triple Negative Breast Cancer	3/31/2027	No	No	No
24B02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Uwe Rix, PhD	$576,000.00	Novel Combination Approaches for Targeting Oncogenic Signaling Dependencies in POU2F3-driven small cell lung cancer	4/30/2027	No	No	No
24B03	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Ana Patriciada Silva Gomes, PhD	$576,000.00	Metabolic Factors that Condition Breast Cancer Metastasis	4/30/2028	No	No	No
24B04	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Keiran Smalley, PhD	$576,000.00	Optimizing Immunotherapy Strategies for Melanoma Brain Metastases	4/30/2027	No	No	No
24B05	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Shannon Christy, PhD	$1,427,911.00	Multilevel Action Toward Colorectal Cancer and Hepatitis C Education and Screening (MATCHES)	4/30/2028	No	No	No
24B06	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Nicholas Lawrence, PhD	$576,000.00	Developing ULK3 Inhibitors for the Treatment of Multiple Myeloma	4/30/2027	No	No	No
24B07	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Peter Forsyth, MD	$ 575,998.00	Using Dendritic Cell Therapy to Enhance the Adaptive Immune Response in Leptomeningeal Disease from Breast Cancer is an Effective Treatment and Prevention Against LMD Recurrence	3/31/2027	No	No	No
24B08	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Florian Karreth, PhD	$100,000.00	Defining the Non-Canonical Functions of MYBL2 in Melanoma Progression	12/31/2024	No	No	No
24B09	Nova Southeastern University	Dmitriy Minond, PhD	$100,000.00	In Vivo and SAR Studies of Novel Anti-Prostate Cancer Compounds	12/31/2024	No	No	No
24B10	University of Florida	Young-Rock Hong, PhD, MPH	$284,943.00	Understanding the Impact of Obesogenic Environments on the Incidence of Colorectal Cancer	12/31/2024	No	No	No
24B11	University of Florida	Weizhou Zhang, PhD	$100,000.00	Proteolysis Targeting Chimera Against Nuclear Receptor NR4A1 for Melanoma Therapy	12/31/2024	No	No	No
24B12	University of Miami	David Lombard, MD, PhD	$576,000.00	Targeting the Chromatin Scaffold Menin to Overcome Resistance to Targeted Therapy in Melanoma	5/31/2027	No	No	No
24B13	University of Miami	Zhipeng Meng, PhD	$576,000.00	Role and Therapeutic Potential of the MAP4K-Hippo Pathway in Nonalcoholic Fatty Liver Disease and Liver Cancer	5/31/2027	No	No	No
24B14	University of Miami	Tongyu Wikramanayake, PhD	$576,000.00	Pathogenesis and Prevention of Taxane-Induced Permanent Chemotherapy-Induced Alopecia	5/31/2027	No	No	No
24B15	University of Miami	Justin Taylor, MD	$576,000.00	Novel Therapeutic Targeting of Covalent and Non-Covalent BTK Inhibitor Resistance	5/31/2027	No	No	No
24B16	All Children's Research Institute, Inc./Johns Hopkins University	Ranjan Perera, PhD	$576,000.00	Therapeutic and Diagnostic Potential of Urine-Enriched Molecular Markers for High-Risk Prostate Cancer	4/30/2027	No	No	No

Table 3: Bankhead-Coley Program Awards Funded Fiscal Year 2022-2023

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
23B01	University of Florida	Lizi Wu, PhD	$587,097.00	Elucidating and Targeting INSL4 Signaling in Lung Cancer	3/31/2026	No	No	No
23B02	University of Florida	Chengguo Xing, PhD	$294,300.00	AB-Free Kava in Lung Cancer Chemoprevention	3/31/2025	No	No	No
23B03	University of Florida	Brian K. Law, PhD	$100,000.00	Optimizing Novel Small Molecule Activators of Death Receptor 5 for Breast Cancer Therapy	9/30/2023	No	Yes	No
23B04	University of Florida	Samsun Lampotang, PhD, FSSH, FAIMBE	$100,000.00	3D Perspective Visualization for Increasing Prostate Biopsy Accuracy	9/30/2023	No	No	No
23B05	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Joseph Markowitz, MD, PhD	$588,600.00	IFx-Hu2.0 Facilitates Immune Responses in Melanoma	3/31/2026	No	No	Yes
23B06	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Paulo Rodriguez, PhD	$100,000.00	Mitochondrial Stress-Related Proteins Regulate Myeloid Subsets in Lung and Melanoma Tumors	9/30/2023	No	No	No
23B07	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Michael Jain, MD, PhD	$1,471,500.00	A Clinical Trial of Pirtobrutinib and Brexucabtagene Autoleucal in Patients with Relapsed or Refractory Mantle Cell Lymphoma	9/30/2027	No	No	No
23B08	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Jose Guevara-Pantino, MD, PhD	$294,300.00	CD3z-Independent Signaling Module for CAR-T Cell Therapies Against Solid Cancer	3/31/2026	No	No	No
23B09	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Ahmad Tarhini, MD, PhD	$535,908.00	Inherited Genetic Variation as a Predictor of the Risk of Immune Related Adverse Events and the Likelihood of Clinical Benefit	3/31/2026	No	No	No
23B10	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Lixin Wan, PhD	$588,600.00	Resotring FZR1 Tumor Suppressor Function in Human Cancers	3/31/2026	No	No	No
23B11	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Eric Lau, PhD	$294,600.00	Modulating Dendritic Cell (DC) Polarization and Biology with L-Fucose to Enhance DC Vaccine Efficacy	5/31/2026	No	No	Yes
23B12	Florida Atlantic University	Esther Guzman, PhD	$588,600.00	Cutting Fuel Lines to Ras Driven Cancers with Marine Natural Products	3/31/2026	No	No	No
23B13	University of Central Florida	Deborah A. Altomare, PhD	$588,600.00	Translational Utility of Tumor-Derived FGF19 in a Novel Blood-Based Endocrine Suppression Approach	3/32/2026	No	No	No
23B14	University of Central Florida	Otto Phanstiel, PhD	$588,600.00	Potentiating Immunotherapies via Polyamine Blocking Therapy	3/31/2026	No	No	No
23B15	University of Miami	Barbara Bedogni, PhD	$588,600.00	Notch1 Selective Targeting to Overcome Immunotherapy Resistance	3/31/2026	No	No	No
23B16	University of Miami	Stephan C. Schurer, PhD	$1,471,500.00	Next-Generation Biomedical Big Data Platform for Cancer Research and Collaboration Across Florida	3/31/2026	No	No	No

Table 4: Bankhead Coley Program Awards Funded Fiscal Year 2021-2022

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
22B01	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Susan Vadaparampil, PhD	$1,424,806.00	HPV MISTICS: HPV Multilevel Intervention Strategies Targeting Immunization in Community Settings	9/30/2026	No	No	Yes
22B02	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Eric K. Lau, PhD	$573,000.00	The Trouble with Testosterone: Delineating How Androgen Drives Melanoma Invasiveness and Metastasis via Fucosylation-Regulated Cellular Adhesion	11/30/2025	No	No	Yes
22B03	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Jose R. Conejo-Garcia, MD, PhD	$1,432,499.00	Heterogeneity of Metastatic Small Cell Lung Cancer: Implications for the Design of Effective Immunotherapies	9/30/2026	No	No	No
22B05	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Joseph Kissil, PhD	$573,000.00	Establishing the Functional Differences Between Variant Oncogenic KRAS Alleles and Identification of Allele-Selective Inhibitors	3/31/2025	No	No	No
22B06	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Brandon Manley, MD	$716,250.00	Establishing the Role of Aberrant Splice Variants as a Clinical Biomarker in Clear Cell Renal Cell Carcinoma	9/30/2026	No	No	No
22B07	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Vincent Luca, PhD	$573,000.00	Structure-Guided Engineering of LAG3 Immunomodulatory Function	3/31/2025	No	No	No
22B08	Mayo Clinic Jacksonville	E. Aubrey Thompson, PhD	$573,000.00	Spatial Analysis of the Immune Landscape of Stage 4 Triple Negative Breast Cancer	3/31/2025	No	No	No
22B09	Nova Southeastern University	Dmitriy Minond, PhD	$573,000.00	Spliceosomal Modulation for Regulation of Melanoma Immunogenicity	3/31/2025	No	No	Yes
22B10	University of Florida	Jonathan Licht, MD	$573,000.00	Mitochondrial Modulators of Multiple Myeloma Growth and Therapy Resistance	3/31/2025	Yes	No	Yes
22B12	University of Miami	Antonio Barrientos, PhD	$573,000.00	Targeting Mitochondrial Protein Synthesis to Combat Blood Malignancies	3/31/2025	No	No	No
22B13	University of Miami	Jonathan Schatz, PhD	$573,000.00	Inhibition of the Cell-Cycle Kinase GAK, a Novel Therapeutic Target in Diffuse Large B-Cell Lymphoma	3/31/2025	No	No	No
22B14	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Alvaro Monteiro, PhD	$200,000.00	The Role of WDR43 in ER-Negative Breast Cancer	5/31/2024	No	No	No

Table 5: Bankhead Coley Program Awards Funded Fiscal Year 2020-2021

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
21B01	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Kenneth Y. Tsai, MD, PhD	$530,900.00	Sensitizing Melanoma to Immunotherapy	4/30/2024	No	No	No
21B02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Brian Czwmiecki, MD, PhD	$1,327,221.00	Overcoming Resistance in HER2 Breast Cancer through a Novel Immunotherapy Approach	4/30/2026	No	No	No
21B03	University of Miami	Thomas Malek, PhD	$530,880.00	CD4+ T Effector Cells in Cancer Immunotherapy	4/30/2024	No	No	Yes
21B04	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Florian Karreth, PhD	$530,880.00	Elucidating PTEN Tumor Suppression in Melanoma	6/30/2024	No	No	Yes
21B05	University of Florida	Andrew Judge, PhD	$530,880.00	Ursolic Acid as a Countermeasure to Cancer Cachexia	4/30/2024	Yes	No	No
21B06	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Gina DeNicola, PhD	$530,880.00	Pyridine Nucleotides: Missing Link Between Aging and Lung Tumorigenesis	4/30/2024	No	No	No
21B07	University of South Florida	Rex M. Philpot, PhD	$528,130.00	Cholinergic Mechanisms Underlying Cognitive Deficits During and Following Chemotherapy for Breast Cancer	4/30/2024	No	No	Yes
21B09	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Kathleen M. Egan, ScD	$1,327,120.00	Biobanking for Breast Cancer Prevention and Disparity Research in Florida	4/30/2024	No	No	No
21B10	University of Miami	Noula Shembade, PhD	$530,470.00	Mechanisms of Oncogenic Virus-Mediated Chronic Inflammation and Tumorigenesis	4/30/2024	No	No	No
21B11	Florida State University	Jerome Irianto, PhD	$265,440.00	Impact of the Microenvironment on Breast Cancer Genomic Instability	10/31/2024	Yes	No	Yes
21B12	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Matthew Schabath, PhD	$1,327,180.00	Non-Invasive Radiomic Biomarkers to Predict Treatment Response for Immunotherapy of Lung Cancer	4/30/2026	No	No	Yes
21B13	University of Florida	Zhijian Qian, PhD	$530,880.00	The Role of ALKBH5 in Leukemogenesis	4/30/2024	No	No	No

Table 6: Bankhead Coley Program Awards Funded Fiscal Year 2019 – 2020

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
20B08	H. Lee Moffitt Cancer Center & Research Institute, Inc.	John M. Koomen, PhD	$253,555.00	Proteogenomics of Metastatic Heterogeneity and Therapeutic Resistance in Lung Cancer	11/30/2023	No	No	No
20B13	University of Miami	Jaime R. Merchan, MD	$636,610.00	Tumor and Stromal Targeted Oncolytic Virus Based Biotherapies for Colorectal Cancer	11/30/2023	No	No	No
20B15	University of Miami	Lluis Morey, PhD	$636,610.00	Mechanisms of Polycomb Complexes in Luminal Breast Cancer	11/30/2023	Yes	No	Yes
20B16	University of Miami	Paulo S. Pinheiro, PhD	$750,000.00	Risk, Etiology and Mortality for Highly Fatal Cancers in Diverse Florida: Unique Impact on African Americans, Afrocaribbeans, Puerto Ricans and other Hispanics	11/30/2023	No	No	Yes

Table 7: Bankhead Coley Program Awards Funded Fiscal Year 2018-2019

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
9BC07	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Gina M. DeNicola, PhD	$1,335,000.00	Therapeutic Strategies for KEAP1/NRF2 Mutant Lung Cancer	5/31/2024	Yes	No	Yes
9BC08	H. Lee Moffitt Cancer Center and Research Institute, Inc.	Nelli Bejan Yan, MD	$1,335,000.00	Donor γδ T-Cell Infusion for Treatment of High-Risk Leukemia	3/31/2024	Yes	No	Yes

Appendix B: James and Esther King Biomedical Research Program

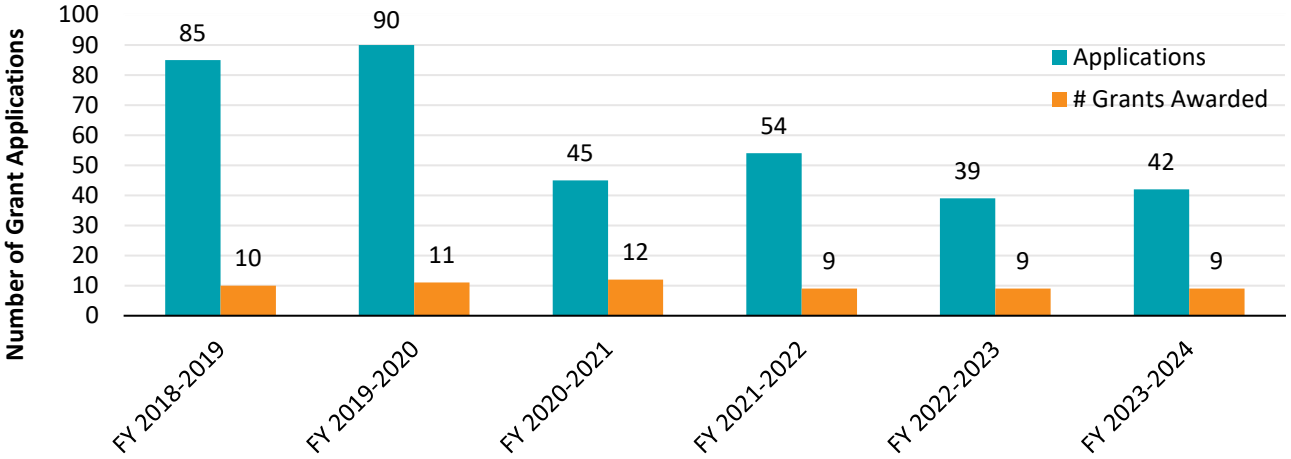
Program Overview

The purpose of the King Program is to advance cures and treatment options for tobacco-related diseases. The King Program funds research initiatives that seek new insights and innovative solutions in the prevention, diagnosis, treatment, and cure of Floridians afflicted by tobacco-related diseases including cardiovascular disease, stroke, lung disease, and tobacco-related cancers. The long-term goals of the program include:

- Improving the health of Floridians by researching better prevention, diagnoses, treatments, and cures for cancer, cardiovascular disease, stroke, and pulmonary disease.
- Expanding the foundation of biomedical knowledge relating to the prevention, diagnosis, treatment, and cure of diseases related to tobacco use, including cancer, cardiovascular disease, stroke, and pulmonary disease.
- Improving the quality of the state's academic health centers by bringing the advances of biomedical research into the training of physicians and other health care providers.
- Increasing the state's per capita funding for research by undertaking new initiatives in public health and biomedical research that will attract additional funding from outside the state.
- Stimulating economic activity in the state in areas related to biomedical research, such as the research and production of pharmaceuticals, biotechnology, and medical devices.

For FY 2023-24, 42 grant applications were submitted in response to the King Program FOA, and nine grants were awarded.

Exhibit 3: King Program Applications and Funded Projects



Source: Department Biomedical Research Section Records, https://www.floridahealth.gov/provider-and-partner-resources/brac/reports-and-publications.html.

Table 8: Fiscal Year 2023-2024 Newly Awarded Active Grants

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
24K01	Mayo Clinic Jacksonville	Panagiotis Anastasiadis, PhD	$599,999.00	Targeting the p120/PLEKHA7 Axis in Lung Cancer	3/31/2027	No	No	No
24K02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Matthew Schabath, PhD	$1,414,252.00	Infrastructure Expansion for an Enduring Rapid Tissue Donation Program	5/31/2027	No	No	No
24K03	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Jennifer Permuth, PhD, MS	$600,000.00	Comparing the Morphology and Molecular Profile of Skeletal Muscle Tissue and the Influence of Tobacco and Obesity on Pancreatic Cancer Outcomes in a Diverse Cohort of Floridians	5/31/2027	No	No	No
24K04	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Jad Chahoud, MD	$300,000.00	Progressive Immune Dysfunction with Advancing Disease Stage and Immune Changes Post Therapy in Penile Carcinoma	5/31/2027	No	No	No
24K05	University of Miami	Zheng Chen, MD, PhD	$600,000.00	Elucidating the Impact of Smoking on Immune Suppression and Therapy Resistance in Esophageal Adenocarcinoma	5/31/2027	No	No	No
24K06	University of Miami	Shanta Dhar, PhD	$600,000.00	Self-Therapeutic Nanoparticles for Managing Cardiovascular Risk in Type 1 Diabetes	5/31/2027	No	No	No
24K07	Florida State University	Pradeep Bhide, PhD	$600,000.00	E-Cigarette Use During Pregnancy and the GABA NeuroTransmitter System	5/31/2027	No	No	No
24K08	Florida State University	Gloria Salazar, PhD	$600,000.00	Modulation of the Gut-Vascular Axis by E-Cigarette and Menthol	4/30/2027	No	No	No
24K09	Florida International University	Elisa Trucco, PhD	$1,489,646.00	Developing an E-Cigarette Intervention for Hispanic/Latina(o) Youth in Florida	4/30/2028	No	No	No

Table 9: James and Esther King Program Awards Funded Fiscal Year 2022-2023

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
23K01	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Damon J. Vidrine, DrPH, MS	$1,427,441.00	Creation of an Infrastructure to Support Delivery of mHealth Interventions for Cancer Patients Throughout Florida	3/31/2026	No	No	No
23K02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	William Douglas Cress, PhD	$569,400.00	Understanding the Mechanisms by which STK11 Loss in Lung Cancer Leads to Immune Invasion	3/31/2026	No	No	No
23K03	University of Florida	Daiqing Liao, PhD	$569,400.00	Oncogenic Signaling that Promotes Lipid Synthesis and Resistance to Ferroptosis	3/31/2026	No	No	No
23K04	University of Florida	Scott Thomas Robinson, MD, PhD	$569,400.00	The Impact of E-Cigarette Exposure on Skeletal Muscle Function in Peripheral Arterial Disease	3/31/2026	No	No	No
23K05	University of Florida	Satya Narayan, PhD	$569,400.00	Novel Therapeutic Development for Breast Cancer	3/31/2026	No	No	No
23K06	University of Florida	Brian K. Law, PhD	$568,499.00	Reducing Racial Disparity in Breast Cancer Survival with a Novel Synthetic-Lethal Strategy	5/31/2026	No	Yes	No
23K07	University of Florida	Shahabeddin Vahdat, PhD	$565,489.00	The Function of Spinal Cord-Brain Pathways in Spasticity After Stroke	3/31/2026	Yes	No	No
23K08	University of Miami	Taghrid Asfar, MD, MSPH	$1,426,500.00	Expanding the Role of the Safety Manager to Implement a Workplace Smoking Cessation Program in the Construction Sector	9/30/2027	No	No	No
23K09	Mayo Clinic Florida	Alan P. Fields, PhD	$569,400.00	Protein Kinase C Iota Mediated Immune Suppression in Lung Squamous Cell Carcinoma	3/31/2026	No	No	No

Table 10: James and Esther King Program Awards Funded Fiscal Year 2021-2022

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
22K01	Mayo Clinic Jacksonville	Owen Ross, PhD	$1,453,280.00	Creating a Florida Cerebrovascular Disease Biorepository and Genomics Center	3/31/2025	No	No	No
22K02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Jennifer I. Vidrine, PhD	$1,451,330.00	Enhancing Long-Term Smoking Abstinence Among Cervical Cancer Survivors	9/30/2026	No	No	Yes
22K03	University of Florida	Bently Doonan, MD, MS	$1,458,000.00	Novel RNA-Nanoparticle Vaccine for Treatment of Early Melanoma Recurrence Following Adjuvant Anti-PD1 Antibody Therapy	9/30/2026	No	Yes	Yes
22K05	University of Florida	Daiqing Liao, PhD	$583,200.00	Development of First-in-Class HDAC3-selective Degraders for Breast Cancer Therapy	3/31/2025	No	No	No
22K06	University of Miami	Nagaraj Nagathihalli, PhD	$583,200.00	Targeting CREB to Improve Response to Immunotherapy in Pancreatic Cancer	3/31/2025	No	No	No
22K07	University of Miami	Roberto Vazquez-Padron, PhD	$583,200.00	The Impact of Smoking in the Venous Cellular Ecosystem and its Consequences for Arteriovenous Fistula Maturation in CKD Patients	3/31/2025	No	No	Yes
22K08	University of South Florida	Ji Li, PhD	$583,200.00	Sirtuin 1 and Cardiovascular Impairment by Cigarette Smoking	3/31/2025	No	No	No

Table 11: James and Esther King Program Awards Funded Fiscal Year 2020-2021

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
21K02	University of Miami	Robert Starke, MD	$535,840.00	Defining Role of FANCA in Genome Instability	4/30/2024	No	No	No
21K03	University of Florida	Daiqing Liao, PhD	$535,840.00	Novel Mechanism of Action and Translational Potential of the HDAC Inhibitor SR-4370 for Treating Breast Cancer	4/30/2024	Yes	Yes	Yes
21K04	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Christine H. Chung, PhD	$1,339,540.00	Effects of Hypoxia in Tumor Immune Microenvironment in Tobacco-Related Head and Neck Squamous Cell Carcinoma	4/30/2026	No	No	No
21K05	University of Miami	Carlos Moraes, PhD	$535,840.00	Mechanisms of Mitochondrial DNA Deletion Formation	4/30/2024	No	No	Yes
21K06	University of Miami	Helen M. Bramlett, PhD	$535,840.00	Post-Stroke Combination of Therapeutic Hypothermia (TH) and Whole-Body Vibration (WBV) Improves Cognition in Nicotine-Exposed Rats	5/31/2024	Yes	No	Yes
21K07	University of Miami	Scott W. Welford, PhD	$535,840.00	Chemerin: A Link Between Obesity, Smoking, and Renal Cancer	4/30/2024	No	No	Yes
21K08	University of Florida	Michelle Gumz, PhD	$535,840.00	Endothelial Circadian Clock Protein PER1 Modulates Salt-Sensitive Hypertension	4/30/2024	No	No	Yes
21K09	Florida International University	Hoshang Unwalla, PhD	$535,680.00	Pathophysiological Mechanisms and Therapeutics for Chronic Lung Inflammation in Smokers and in COPD	12/31/2024	No	No	No
21K11	University of Florida	Chengguo Xing, PhD	$1,114,480.00	Reducing Tobacco-Associated Lung Cancer Risk: A Randomized Clinical Trial of AB-Free Kava	4/30/2026	Yes	No	No
21K12	Florida State University	Michelle S. Parvatiyar, PhD	$535,396.00	Determining How Tobacco Use and Obesity Exacerbates a Novel Cardiovascular Risk Factor	12/31/2024	Yes	No	Yes

Table 12: James and Esther King Program Awards Funded Fiscal Year 2019 – 2020

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
20K06	University of Florida	Gilbert R. Upchurch, Jr. MD	$626,708.00	Role of Myeloid-Derived Suppressor Cells in Aortic Aneurysms and Rupture	11/30/2023	No	No	No
20K07	University of Florida	Daiqing Liao, PhD	$626,708.00	Molecular Mechanisms and Pharmacologic Targeting of Lipogenesis in Breast Cancer	11/30/2023	Yes	Yes	Yes
20K08	University of Florida	Dorian K. Roase, PT, MS, PhD, FAPTA	$688,940.00	Augmenting a Post-Stroke Wellness Program with Respiratory Muscle Training: A Randomized Controlled Trial	5/31/2025	No	No	No
20K09	University of Miami	Ami P. Raval, PhD, MSPH	$626,710.00	Nicotine Alters Brain Metabolism and Exacerbates Ischemic Brain Damage	11/30/2023	Yes	No	Yes
20K10	University of Miami	Taghrid Asfar, MD, MSPH	$1,253,415.00	Developing and Testing Waterpipe-Specific Health Warning Labels Targeting Young People in Florida	4/30/2025	No	No	Yes

Table 13: James and Esther King Program Awards Funded Fiscal Year 2018 – 2019

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
9JK03	Baptist Health South Florida	John Diaz, MD	$1,187,224.00	Assessment of Efficacy of Immunotherapy in Combination with PARP Inhibition in Advanced Cervical Cancer Patients Functionally Competent or Deficient for the Fanconi Anemia Repair Pathway	12/31/2024	No	No	No

Appendix C: Live Like Bella Pediatric Research Initiative Program

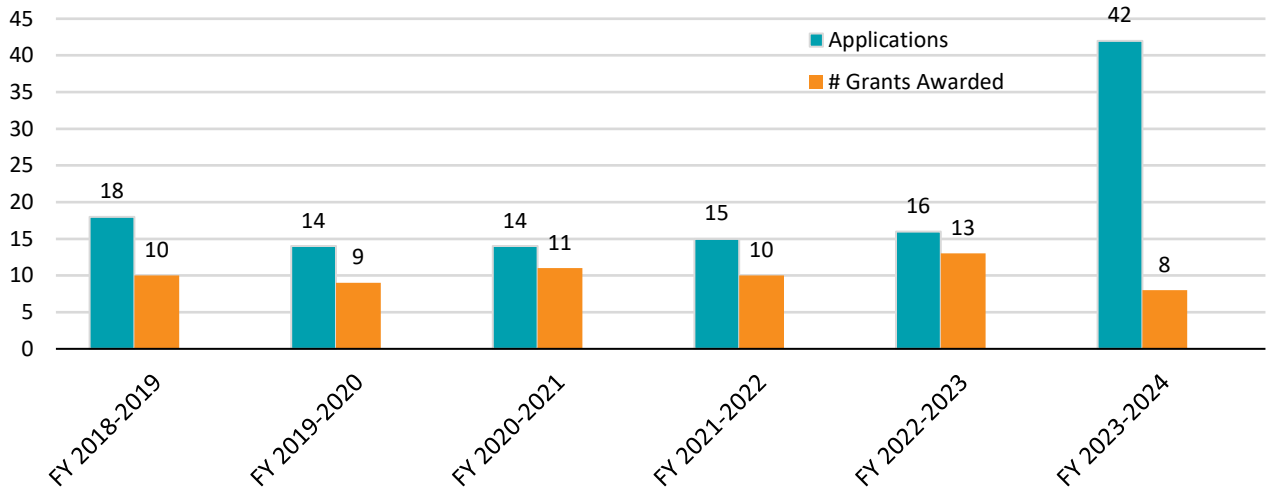
Program Overview

The purpose of the Live Like Bella Initiative is to advance progress toward curing pediatric cancer through grants awarded through a peer-reviewed, competitive process. The Live Like Bella Initiative will provide grants for research to further the search for cures for pediatric cancer, by pursuing the following goals:

- Expanding pediatric cancer research capacity in Florida.
- Improving both research and treatment through greater pediatric enrollment in clinical trial networks.
- Reducing the impact of pediatric cancer on disparate groups.

For FY 2023-24, 42 grant applications were submitted in response to the Live Like Bella FOA, and 13 pediatric cancer research projects were awarded. As the program continues to become established, more grant applications will be submitted.

Exhibit 4: Live Like Bella Applications and Funded Projects



Source: Department Biomedical Research Section Records, https://www.floridahealth.gov/provider-and-partner-resources/brac/reports-and-publications.html.

Table 14: Fiscal Year 2023-2024 Live Like Bella Program Newly Awarded Active Grants

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
24L01	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Andrew Brohl, MD	$120,000.00	Towards Targeting the Chromosome 19 microRNA Cluster in Undifferentiated Embyonal Sarcoma of the Liver	5/31/2026	No	No	No
24L02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Andrii Monastyrskyi, PhD	$240,000.00	Development of EWS/FLI Targeted Therapies for Ewing Sarcome	5/31/2027	No	No	No
24L03	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Jonathan Metts, MD	$893,956.00	Metastatic Ewing Sarcoma Trial Testing Schedule Enhancements to Improve Outcomes	5/31/2028	No	No	No
24L04	University of Florida	Duane Mitchell, MD, PhD	$864,000.00	CHAMP1ON – Combinatorial Hematopoietic Stem Cell and Monoclonal Antibody PD-1 Blockade Phase 1 "Window of Opportunity" Trial for Recurrent Pediatric High-Grade Glioma	5/31/2028	No	No	No
24L05	The Wertheim UF Scripps Institute	Michalina Janiszewska, PhD	$287,937.00	Oncofetal Protein as a Therapeutic Target in Pediatric Brain Tumors	5/31/2027	No	No	No
24L06	University of Miami	Julio Barredo, MD	$240,000.00	AMP Activated Protein Kinase (AMPK) Regulates Survival Responses at the Convergence of Energy Metabolism and Epigenetics in Acute Lymphoblastic Leukemia	5/31/2027	No	No	No
24L07	University of Miami	Surinder Kumar, PhD	$288,000.00	SIRT7 as a Novel Therapeutic Target in Ewing Sarcoma	5/31/2027	No	No	No
24L08	University of Central Florida	Griffith Parks, PhD	$96,107.00	Incucyte ® Real-Time Pediatric Cancer Cell Analysis Equipment	3/31/2025	No	No	No

Table 15: Live Like Bella Program Awards Funded Fiscal Year 2022-2023

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
23L01	University of Florida	Jianping Huang, MD, PhD	$297,634.00	Phase I/II Clinical Trial for Malignant Pediatric Gliomas Using 8R-70CAR T Cells	3/31/2027	No	No	Yes
23L02	University of Florida	Jordan B. Milner, MD	$124,025.00	Utilization of Alpha/Beta T Cell and B Cell Depletion in Allogenic Stem Cell Transplantation in Malignant Diseases	3/31/2026	Yes	No	No
23L03	University of Florida	Brent Reynolds, PhD	$248,050.00	Intranasal Delivery of BMP-4 Using Plant-Derived Extracellular Vesicles for Treatment of Pediatric Glioma	3/31/2025	No	No	No
23L04	University of Florida	Steven Bruner, PhD	$248,029.00	Functional Role of the SRP54 Gene in Pediatric Leukemia and Bone Marrow Failure Syndromes	3/31/2025	No	No	Yes
23L05	University of Florida	Hugh Fan, PhD	$248,035.00	Towards Liquid Biopsy for Pediatric Sarcoma	3/31/2026	No	No	Yes
23L06	Florida State University	Jerome Irianto, PhD	$124,025.00	Evaluation fo LARP6 Inhibitor for the Treatment of Pediatric Glioblastoma	3/31/2026	No	No	No
23L07	University of Central Florida	Annette Khaled, PhD	$248,050.00	Targeting Chaperonin-Containing TCP-1 for the Treatment of Neuroblastoma	3/31/2025	No	No	No
23L08	Florida Atlantic University	Patrick Grant, PhD	$248,050.00	Identification of Epigenetic Mechanisms of Resistance to Chemotherapy in Pediatric Acute Lymphoblastic Leukemia	3/31/2025	No	No	No
23L09	H. Lee Moffitt Center Center & Research Institute, Inc.	Conor C. Lynch, PhD	$248,049.00	Identifying How HDAC Suppression of SLC17A7 Drives Osteosarcoma Progression and Metastasis	3/31/2026	No	No	Yes
23L10	H. Lee Moffitt Center Center & Research Institute, Inc.	Timothy Shaw, PhD	$122,714.00	Targeting ER Stress in Pediatric Acute Myeloid Leukemia	3/31/2026	No	No	Yes
23L11	H. Lee Moffitt Center Center & Research Institute, Inc.	Jonathan Metts, MD	$297,629.00	Feasibility of Generating Novel Translational and Therapeutic Strategies Based on a Multicenter, Pediatric and AYA Evolutionary Tumor Board	3/31/2027	No	No	No
23L12	University of Miami	Anis Ahmad, PhD	$248,050.00	Preventing Treatment-Induced Nephrotoxicity in Pediatrics Cancer Survivors	3/31/2026	Yes	No	Yes
23L13	University of Miami	Warren Alperstein, MD	$297,660.00	Investigating the Impact of Demographic Factors on the Development of GVHD	3/31/2025	No	No	No

Table16: Live Like Bella Program Awards Funded Fiscal Year 2021-2022

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
22L01	Baptist Health South Florida	Matthew Hall, MD	$250,000.00	Personalizing Radiotherapy Dose Using Genomic Markers of Radiosensitivity to Predict Tumor Response and Normal Tissue Toxicity in Pediatric Malignancies	3/31/2024	No	No	No
22L02	The Nemours Foundation	Tamarah Westmoreland, MD, PhD	$250,000.00	Treatment of Diffuse Intrinsic Pontine Glioma with the Oncolytic Zika Virus	3/31/2025	No	No	No
22L03	University of Florida	Jonathan Licht, MD	$250,000.00	Elucidation and Targeting of Epigenetic Changes Resulting in Glucocorticoid Resistance in Pediatric Acute Lymphoblastic Leukemia	3/31/2025	No	No	Yes
22L04	University of Central Florida	Alicja Copik, PhD	$250,000.00	Edited Natural Killer Cells as an Immunotherapeutic Approach for the Treatment of Pediatric Cancers	3/31/2025	No	No	Yes
22L05	University of Central Florida	Griffith Parks, PhD	$250,000.00	Oncolytic Virus in Combination with NK Cells for Treatment of Pediatric Cancers	3/31/2025	No	No	No
22L10	University of Florida	Ramzi Salloum, PhD	$100,104.00	Co-Opting TME Lactate Signal to Benefit T Cell Therapy	9/30/2024	No	No	No

Table 17: Live Like Bella Program Awards Funded Fiscal Year 2020-2021

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
21L03	University of Florida	Mingyi Xie, PhD	$247,000.00	Target RNAs Induce microRNA Degradation in Apoptotic T-cell Acute Lymphoblastic Leukemia Cells	4/30/2024	Yes	No	Yes
21L04	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Uwe Rix, PhD	$247,000.00	Characterization of PARP16 as a Novel Target in Ewing's Sarcoma	4/30/2024	No	No	No
21L05	University of Florida	Jonathan Licht, MD	$247,000.00	NSD2 Mutation as Driver of Brain Invasion in Acute Lymphoblastic Leukemia	4/30/2024	Yes	No	No
21L06	University of Florida	Lan B. Hoang-Minh, PhD	$247,000.00	Combination Immunotherapy for Pediatric Brain Tumors	4/30/2024	No	No	No
21L07	University of Miami	Paulo S. Pinheiro, PhD	$247,000.00	The Role of Prenatal Exposures and Specific Ethnicity on Childhood Cancer Disparities in Florida	4/30/2024	No	No	Yes
21L08	University of Miami	Regina Graham, PhD	$247,000.00	Carbon Dot Derivative for Bimodal Imaging and Targeted Drug Delivery to Pediatric High-Grade Gliomas	12/31/2023	No	No	No
21L09	University of Florida	Raymond Mailhot, MD, PhD	$247,000.00	Measuring the Effects of Brain Radiotherapy and Tumor on Scholastic Outcome	10/31/2024	Yes	No	Yes
21L10	Florida State University	Q.X. Amy Sang, PhD	$246,510.00	Modeling Human Pediatric Brain Tumor Microenvironment	4/30/2024	No	No	Yes

Table 18: Live Like Bella Program Awards Funded Fiscal Year 2019 – 2020

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
20L02	H. Lee Moffitt Cancer Center & Research Center, Inc.	Jonathan Metts, MD	$787,272.00	Evolutionary Inspired Therapy for Newly Diagnosed, Metastatic, Fusion Positive Rhabdomyosarcoma	4/30/2024	No	No	Yes
20L05	University of Central Florida	Cristina M. Fernandez-Valle, PhD	$218,572.00	Development of an Early Diagnostic Test for Malignant Tumors in Children with NF1	11/30/2023	No	No	No
20L06	University of Central Florida	Li-Mei Chen, MD, PhD	$109,569.00	Exosome-Mediated Activation of Matriptase Targeting B Cell Lymphoma	11/30/2023	Yes	No	Yes
20L07	University of Florida	Elias J. Sayour, MD, PhD	$788,897.00	Multi-Center Phase I Study Evaluating Lipid-Nanoparticle Vaccines Against Pediatric High-Grade Glioma	11/30/2023	Yes	No	No
20L08	University of Florida	Coy D. Helderman, MD, PhD	$219,138.00	Novel Immunologic Therapy of Soft Tissue Sarcoma	11/30/2023	No	No	No

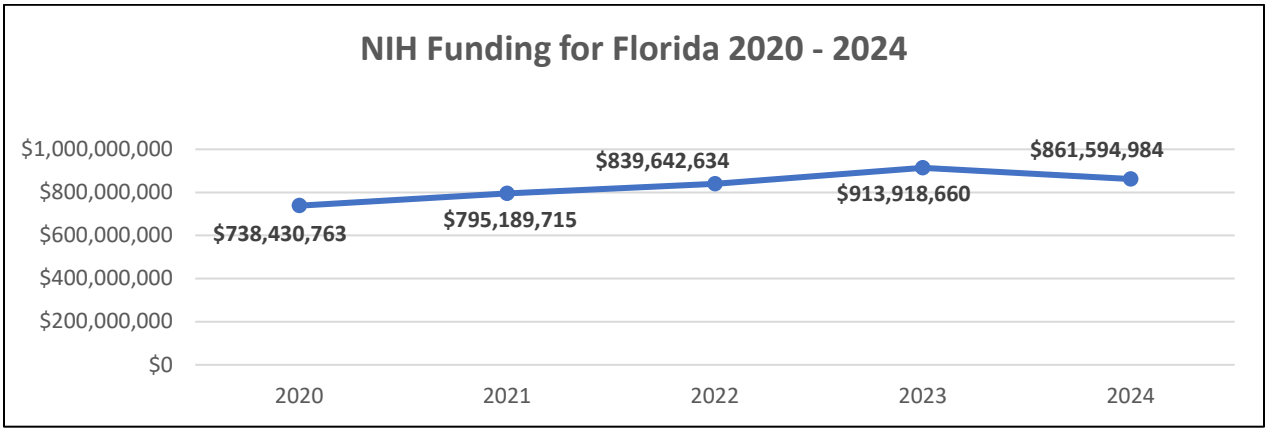
Table 19: Live Like Bella Program Awards Funded Fiscal Year 2018 – 2019

Grant #	Organization	Principal Investigator	Award Amount	Project Title	End Date	Follow-on Funding	Patents	Publications
9LA02	H. Lee Moffitt Cancer Center & Research Institute, Inc.	Mihaela Druta, MD	$784,733.00	A Phase IIb/II Study to Evaluate the Safety, Feasibility and Efficacy of Nivolumab in Combination with Azacitidine in Patients with Recurrent, Resectable Osteosarcoma	9/30/2023	No	No	No

Appendix D: National Institutes of Health (NIH) Research Funding

In FY 2023-24, the state saw a decrease in total NIH funding from $913 million to $861 million (see Exhibit 6). Florida ranked 13th in the nation for total number of biomedical grants awarded (see Table 2).

Exhibit 5: NIH Research Funding Received by Florida Researchers Decreased but Increased in Total Number of Grants Funded.



Source: NIH Research Portfolio Online Reporting Tools (RePORT) Data as of 10/04/2023. "Data will include R&D contracts, fellowships, other grant awards not yet past their budget start date." www.report.nih.gov/award/index.cfm.

As shown in Table 2, Florida ranks 13th in NIH research funding compared to other states, despite ranking 3rd in total population.

Table 20: Top 20 Recipients for NIH Research

National Institutes of Health Biomedical Research State Funding and Rankings 2024			
State	**# of Award**	**Total Funding**	**Rank**
California	8714	$4,997,040,165	1
New York	6124	$3,477,047,975	2
Massachusetts	5704	$3,340,117,905	3
Pennsylvania	4059	$2,167,974,705	4
Texas	3625	$1,875,252,729	5
North Carolina	2707	$1,802,372,165	6
Maryland	2363	$1,403,635,588	7
Illinois	2309	$1,244,490,665	8
Washington	1743	$1,192,973,909	9
Michigan	1962	$998,597,513	10
Ohio	1978	$985,280,290	11
Missouri	1516	$878,413,694	12
Florida	**1598**	**$861,594,984**	**13**
Tennessee	1297	$797,461,344	14
Connecticut	1501	$780,604,785	15
Georgia	1526	$752,984,052	16
Minnesota	1284	$708,217,929	17
Wisconsin	1025	$586,713,599	18
Colorado	1273	$528,763,674	19
Virginia	1006	$509,264,029	20

(*Source: NIH Research Portfolio Online Reporting Tools (Report).* "Data as of 11/12/2024. Data will include R&D contracts, fellowships, other grant awards not yet past their budget start date." www.report.nih.gov/award/index.cfm.