

2019-2020 Florida Job Growth Grant Fund Workforce Training Grant Proposal

Proposal Instructions: The Florida Job Growth Grant Fund Proposal (this document) must be completed and signed by an authorized representative of the entity applying for the grant. Please read the proposal carefully as some questions may require a separate narrative to be completed. If additional space is needed, attach a word document with your entire answer.

Entity Information

Name of Entity: Florida Atlantic University Lab Schools

Federal Employer Identification Number (if applicable): ██████████

Primary Contact Name: Dr. Joel Herbst

Title: Assistant Dean, PK-12 Schools and Ed. Programs & Superintendent of Schools, FAU Lab Schools

Mailing Address: 777 Glades Road Building 26

Boca Raton, Florida 33431

Phone Number: 561-297-6978

Email: jherbst1@fau.edu

Secondary Contact Name: Gracie Diaz

Title: Director, Programs and Policy Development

Phone Number: 561-297-0140

Workforce Training Grant Eligibility

Pursuant to 228.101, F.S., the Florida Job Growth Grant Fund was created to promote economic opportunity by improving public infrastructure and enhancing workforce training. This includes workforce training grants to support programs offered at state colleges and state technical centers.

Eligible entities must submit proposals that:

- Support programs and associated equipment at state colleges and state technical centers.
- Provide participants with transferable and sustainable workforce skills applicable to more than a single employer.
- Are offered to the public.
- Are based on criteria established by the state colleges and state technical centers.
- Prohibit the exclusion of applicants who are unemployed or underemployed.

1. Program Requirements:

(If additional space is needed, attach a word document with your entire answer.)

Each proposal must include the following information describing how the program satisfies the eligibility requirements listed on page 1.

- A.** Provide the title and a detailed description of the proposed workforce training.

Research and Workforce Development Project

See attached Appendix

- B.** Describe how this proposal supports programs at state colleges or state technical centers.

See attached Appendix

- C.** Describe how this proposal provides participants transferable, sustainable workforce skills applicable to more than a single employer.

See attached Appendix

- D.** Describe how this proposal supports a program(s) that is offered to the public?

See attached Appendix

- E.** Describe how this proposal is based on criteria established by the state colleges and state technical centers.

See attached Appendix

- F.** Does this proposal support a program(s) that will not exclude unemployed or underemployed individuals?

Yes

No

- G.** Describe how this proposal will promote economic opportunity by enhancing workforce training. Please include the number of program completers anticipated to be created from the proposed training. Further, please include the economic impact on the community, region, or state and the associated metrics used to measure the success of the proposed training.

See attached Appendix

2. Additional Information:

(If additional space is needed, attach a word document with your entire answer.)

- A.** Is this an expansion of an existing training program? Yes No
 If yes, please provide an explanation for how the funds from this grant will be used to enhance the existing program.

-
- B.** Does the proposal align with Florida’s Targeted Industries? Yes No
 (View Florida’s Targeted Industries here.)

If yes, please indicate the specific targeted industries with which the proposal aligns.
 If no, with which industries does the proposal align?

See attached Appendix

- C.** Does the proposal align with an occupation(s) on the Statewide Demand Occupations List and/or the Regional Demand Occupations List? (View Florida’s Demand Occupations List here.) Yes No

If yes, please indicate the specific occupation(s) with which the proposal aligns.
 If no, with which occupation does the proposal align?

See attached Appendix

- D.** Indicate how the training will be delivered (e.g., classroom-based, computer-based, other).
 If in-person, identify the location(s) (e.g., city, campus, etc.)
 where the training will be available.
 If computer-based, identify the targeted location(s) (e.g. city, county, statewide
 where the training will be available.

See attached Appendix

- E.** Indicate the number of anticipated annual enrolled students and completers in the proposed program.

See attached Appendix

- F.** Indicate the length of program (e.g., quarters, semesters, weeks, etc.), including anticipated beginning and ending dates.

Begin Date: 09/01/2019

End Date: 06/30/2023

See attached Appendix

- G.** Describe the plan to support the sustainability of the program after grant completion.

See attached Appendix

- H.** Identify any certifications, degrees, etc. that will result from the completion of the program. Please include the Classification of Instructional Programs (CIP) code and the percent of completer in each code, corresponding with Section E.

See attached Appendix

- I.** Does this project have a local match amount?

Yes No

If yes, please describe the entity providing the match and the amount (Do not include in-kind).

See attached Appendix

J. Provide any additional information or attachments to be considered for the proposal.

See attached Appendix

3. Program Budget

(If additional space is needed, attach a word document with your entire answer.)

Estimated Costs and Sources of Funding: Include all applicable workforce training costs and other funding sources available to support the proposal.

1.) **Total Amount Requested** \$ 3,243,500
 Florida Job Growth Grant Fund

2.) Other Workforce Training Project Funding Sources:

City/County \$ _____

Private Sources \$2,200,000

Other (grants, etc.) \$ _____

Please Specify: Attached

Total Other Funding \$2,200,000

3.) Workforce Training Project Costs:

Equipment \$523,000

Personnel \$ _____

Facilities \$2,720,500

Tuition \$ _____

Training Materials \$ _____

Other \$ _____

Please Specify: Attached

Total Project Costs \$3,243,500

Note: The total amount of the project should equal the total amount requested plus the total other funding.

- 4.) Provide a detailed budget narrative, including the timing and steps necessary to obtain the funding, how equipment purchases will be associated with the training program, if applicable, and any other pertinent budget-related information.

The proposed project budget includes planning, design, construction, and equipment for the facility to house the proposed new research and workforce training project. This request will support renovating an existing FAU Lab School 7,000 square foot facility, constructed as a media center in 2001 at the cost of approximately \$1 million, into a state-of-the-art research lab facility. Funding details include: \$549,500 for planning and design; \$2,171,000 for construction and \$523,000 for furnishings and equipment. See attached budget for more details.

4. Approvals and Authority

(If additional space is needed, attach a word document with your entire answer.)

- A. If entity is awarded grant funds based on this proposal, what approvals must be obtained before it can execute a grant agreement with the Florida Department of Economic Opportunity (e.g., approval of a board, commission or council)?

This project will be presented to FAU's Board of Trustees (BOT) as a capital project. Upon FAU BOT approval, the University and FAU Lab Schools may proceed with executing the grant agreement.

- B. If approval of a board, commission, council or other group is needed prior to execution of an agreement between the entity and the Florida Department of Economic Opportunity:
- i. Provide the schedule of upcoming meetings for the group for a period of at least six months.
 - ii. State whether entity is willing and able to hold special meetings, and if so, upon how many days' notice.

Florida Atlantic University's Board of Trustees generally meet on a monthly basis.

- C. Attach evidence that the undersigned has all necessary authority to execute this proposal on behalf of the entity. This evidence may take a variety of forms, including but not limited to: a delegation of authority, citation to relevant laws or codes, policy documents, etc.

FAU's President, Dr. John Kelly, and FAU Lab Schools' Superintendent of Schools, Dr. Joel Herbst, have authority to execute this proposal.

I, the undersigned, do hereby certify that I have express authority to sign this proposal on behalf of the above-described entity and to the best of my knowledge, that all data and information submitted in proposal is truthful and accurate and no material fact has been omitted.

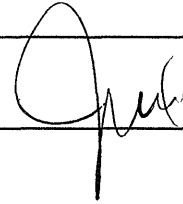
Florida Atlantic University and Florida Atlantic University Lab Schools

Name of Entity: _____

Dr. John Kelly, FAU Pres. & Dr. Joel Herbst, Supt.

Name and Title of Authorized Representative: _____

Representative Signature: _____



Signature Date: _____

7/8/19

Florida Atlantic University Lab Schools Research and Workforce Development Project

Appendix

1. Program Requirements:

A. Provide the title and a detailed description of the proposed workforce training.

Florida Atlantic University (FAU) and FAU Lab Schools propose the Research and Workforce Development Project to inspire and facilitate high school and undergraduate student engagement in STEM research and STEM careers, particularly by underrepresented minorities (URMs) including racial and ethnic minorities, first generation college students, low-income students and women. The Research and Workforce Project intends to renovate and expand a building to create state-of-the-art designated research facilities on the campus at FAU's Lab School early college high school, FAU High School (FAUHS). Labs in the new facility will focus on four strategic areas, including Big Data, Imaging, Genomic Research, and Neuroscience, bringing together high school and undergraduate researchers, faculty mentors, and community professionals into one research hub that supplies equipment and technologies from a variety of disciplines to facilitate convergence research to promote innovation in STEM.

The Research and Workforce Development Project intends to be well positioned to cultivate the young research and skilled talent to foster a workforce poised to fill high-skilled employment gaps and to tackle some of the great scientific questions of our time. These challenges cannot be overcome through the work of just one discipline alone, instead they require cooperation, a convergence of ideas, approaches and technologies.

FAU Lab Schools is a Title I school district with 35% of students of low-socioeconomic status and 59% students of color. FAU is a Hispanic-Serving Institution, ranked by US News and World Report as one of the most ethnically diverse universities in the United States (2018). The Research and Workforce Development Project offers a solution that fills both the need for increased access to postsecondary education and opportunity for under-represented minorities to enter the pipeline toward STEM careers in desperate need of more, and more diverse, applicants.

Although much effort has been made to encourage URMs and females to pursue STEM careers, according to the U.S. News, the STEM workforce is no more diverse. In fact, less than 15% of all undergraduate degrees in physical science, math and engineering were earned by African Americans, Latinos, or Native Americans (Denson, 2017). And there is a notable absence of women in STEM fields, with females making up only 26% of computing jobs, 20% of Chief Information Officers, and 23% of AP computer science test-takers (Shein, 2018). Student interest in the sciences shows a downward trend from primary through secondary education (Savelsbergh, Prins, Rietbergen, Fechner, Vaessen, Draijer & Bakker, 2016), and of those students who do enter college with a STEM major,

more transfer out of that major than from any other major (National Science Board, 2015). This reality has led some to say that broadening the participation of underrepresented populations in the STEM fields is a matter of national security (Strayhorn, 2015).

B. Describe how this proposal supports programs at state colleges or state technical centers.

FAU's Research and Workforce Development Project will not only provide the infrastructure needed to enhance the existing research program at FAU Lab Schools, but afford access to Broward College, Palm Beach State College, and the greater FAU research and workforce training community, bringing together educators and researchers from many disciplines into one space to conduct research, share ideas, train, and mentor the next generation of highly-skilled workers and problem solvers.

The Research and Workforce Development Project goal is to create transformational change within FAU, FAU Lab Schools, Broward College and Palm Beach State College by serving as an example of collaboration and change for other universities, colleges and public school systems by nurturing and developing a pipeline of potential researchers and graduates from a pool of under-represented minorities (URMs) in the STEM fields ready to fill positions in highly-skilled STEM fields.

C. Describe how this proposal provides participants transferable, sustainable workforce skills applicable to more than a single employer.

The Research and Workforce Development Project will leverage several FAU partnerships such as Boca Raton Regional Hospital and Max Planck Institute to design and build labs that will train a high-skilled and needed workforce in allied health fields and neuroscience. Boca Raton Regional Hospital is planning and designing a 278,000 square-foot expansion. With this expansion comes the need for increased medical staff and trained medical technicians. The Research and Workforce Development Project will assist in constructing a facility poised to prepare future technicians and researchers to support the needs of the hospital and local medical biotech and software companies within the local area such as Modernizing Medicine, ACCOY Pharmaceuticals, Abberior Instruments America, Akron Biotechnology, Breckenridge Pharmaceutical, Noble Life Sciences Partners, and Vycor Medical Inc.

In 2017, FAU contracted the services of Hanover Research to conduct a labor assessment and portfolio review of FAU's degree programs to identify potential program expansions and reductions based on labor trends and needs. The findings indicate that healthcare and engineering represent the most promising potential program areas due to projected growth in multiple occupations in these fields. The Hanover team also found that exposure and learning in research has cross-applications in business and the STEM fields, offering many avenues for programs that could support local and State workforce development. Using data compiled from the Florida Department of Economic Opportunity and the Standard Occupational Classification (SOC) taxonomy code system,

the project plan designs and equips a research and laboratory facility to prepare students for the growing fields in healthcare support occupations, healthcare practitioners and technicians as well as in the fields of physical and social science occupations, and engineering occupations. The proposed Research and Workforce Development Project supports the training and preparation of high school and undergraduate students in a unique laboratory environment designed to address these careers.

D. Describe how this proposal supports a program(s) that is offered to the public.

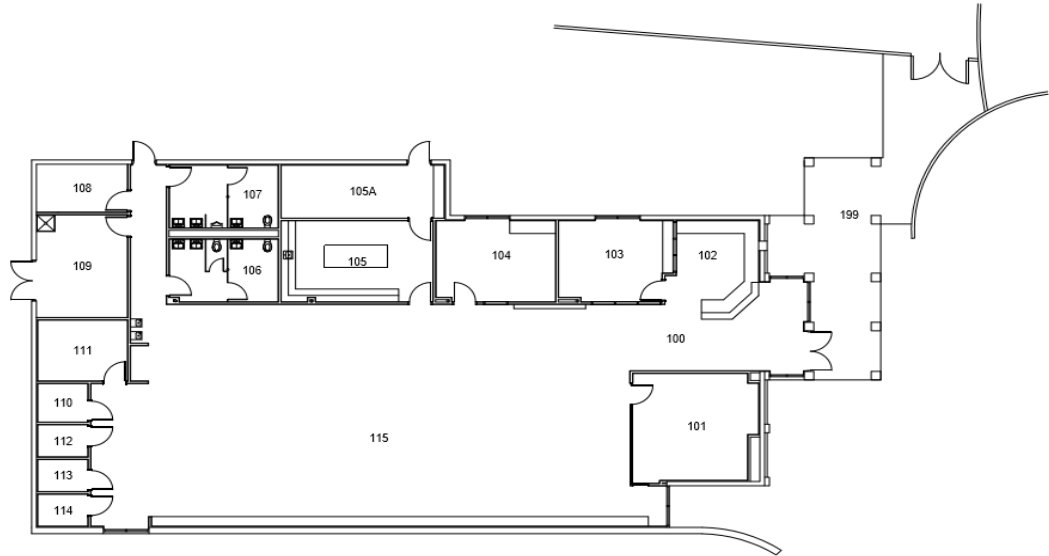
FAU Lab Schools is proposing a renovation and expansion of a building to create a publicly, accessible hub for innovation: Research and Workforce Development Project. The project proposes to renovate an existing 7,000 square foot media center on the FAUHS campus, creating designated research facilities and workforce training space co-located between FAUHS and the main FAU campus at Boca Raton. The renovated facility will be in partnership with Broward College and Palm Beach State College and serve as a public infrastructure and innovation incubator bringing together strategic STEM foci of Life Sciences and Infotech fields identified by Enterprise Florida-Qualified Targeted Industries for Incentives. The project will establish laboratories and workspace specifically focused on developing research and employability skills for high school, college and university students to be trained in and hone their skills in Big Data, Imaging, Genomic Research, and Neuroscience.


These proposed renovations will attract students to enter FAU Lab Schools' high school, provide a state-of-the-art local research facility accessible to the public, and train and develop undergraduate students through faculty and industry partner mentorship. In addition, the labs will enable new research courses to be offered in each of the strategic foci, as well as a general lab methods course that will help bridge students' technical skills gaps.

Figure 1 is a sketch of the proposed infrastructure enhancements. The research and computer labs and workspace will be outfitted for learning and practice in data applications accessible to career and technical education students to practice the skills necessary for employment to seek high-skill and high-wage occupations. FAU High School students and undergraduates from Broward College, Palm Beach State College and FAU will also engage in training and research opportunities to support jobs in allied health using the latest equipment in imaging, genomic research applications and neuroscience. The equipment and materials used in each of these specific applications will serve an interdisciplinary purpose and will also be used more broadly for a variety of scientific studies and employability skills.

The facility will be open to any and all interested local educators and researchers whose work could benefit from its use, however, workforce development and research activities will be in partnership with Broward College, Palm Beach State College, and FAU's College of Science, College of Engineering and Computer Science, College of Nursing, College of Medicine, Harbor Branch Oceanographic Institute at FAU, SeaTech - The Institute for Ocean and Systems Engineering, and the FAU Brain Institute.

Figure 1



PAGE #	FLORIDA ATLANTIC UNIVERSITY	Bldg. Code & No.	Building Name:	Floor	Revised Date		SCALE:
66	BOCA RATON CAMPUS	HS - 26C	A. D. HENDERSON SCHOOL - MEDIA CENTER	1 of 1	01/29/2015		1" = 16'-0"

E. Describe how this proposal is based on criterial established by the state colleges and state technical centers.

The establishment of the Research and Workforce Development Project is aligned with the pillars and platforms of Florida Atlantic University’s Strategic Plan and the mission and vision of FAU’s Lab School District. Additionally, the project supports the mission of the State Board of Education as outline in Section 1008.31, Florida Statute, “The mission of Florida’s K-20 education system is to increase the proficiency of all students within one seamless, efficient system, by allowing them the opportunity to **expand their knowledge and skills through learning opportunities and research** valued by students, parents, and communities.”

Through the development of an enhanced research laboratory and workforce facility, students will engage in mentorship, research, and learning and skill development leading to STEM undergraduate degrees at our local college partners and FAU. Goal 3 of the Florida State Board of Education’s Strategic Plan encourages K-12 school systems to expand STEM related educational opportunities in high-demand areas and increase career and technical educational opportunities. Furthermore, its goals include the K-20 institutions should increase college readiness and success while preparing students for careers. The Research and Workforce Development Project meets all of these goals.

F. Yes, the proposal will not exclude unemployed or underemployed individuals.

G. Describe how this proposal will promote economic opportunity by enhancing workforce training.

The project will promote economic enhancement of a targeted industry by promoting job growth in the following areas as defined in the North American Industry System (NAICS Scientific Research and Development Services: (#5417), Research and Development in the Physical; Engineering and Life Sciences (#54171); Research and Development in Biotechnology (#541714); All Other Professional, Scientific, and Technical Services (#54199), Medical Research and Development Laboratories or Services (#541715). The types of jobs that the new Research and Workforce Development Project will generate are in the scientific research and technical services fields. Curricula offered in the facility will be varied and encompass training for technical careers including the use of computer assisted software such as CAD 3d, and programming for Computerized Numerical Control machinery leveraging our Haas CNC Mini-mill as indicated by our letter of support from Mr. Wayne Huizenga, Jr., CEO of Rybovich Yachts. Additionally, given that the Bureau of Labor and Statistics reports the need for mathematical science occupations is projected to grow 27.9% through 2026 resulting in 50,400 nationally, a focus on careers in Big Data machine learning, data mining and statistical analysis will be offered to address the local job needs for research analysts, statisticians and mathematicians to support business and government utilization, tracking and storing of information.

The Research and Workforce Development Project offers a solution that fills both the need for increased access to workforce training, postsecondary education and opportunity for URMs to enter the pipeline toward STEM careers in desperate need of more, and more diverse, applicants. This project provides the facility for cross-institutional utilization and optimization to support workforce training, development and interest in fields that will meet the employment needs of our community and local businesses and is expected to initially train and prepare 50-75 highly-skilled employees in jobs categorized by the North American Industry System (NAICS Scientific Research and Development Services: (#5417), Research and Development in the Physical; Engineering and Life Sciences (#54171); Research and Development in Biotechnology (#541714); All Other Professional, Scientific, and Technical Services (#54199), Medical Research and Development Laboratories or Services (#541715).

Additionally, in a 2017 brief released by Hanover Research, they identified employment projections for the local area. Overall, the Hanover group indicated that there is a 12.2% growth for all occupations in Broward and Palm Beach. Moreover, FAU and FAU Lab Schools can positively impact the workforce in our local community if we increase programs and degree offerings in the high-need and highly technical fields.

Below represents a synopsis of the Hanover Research workforce projections:

Local Area Occupation Projections			
SOC Code	Largest and/or Fastest Growing Occupation	% Growth	Openings
310000 Healthcare Support Occupations	Fastest and Smallest	18.6%	22,917
2900000 Healthcare Practitioners and Technical Occupations	Fastest and Largest	16.1%	44,974
190000 Life, Physical, and Social Science Occupations	Fastest and Smallest	15.1%	3,596
170000 Architecture and Engineering Occupations	Fast and Smallest	13.2%	7,006

*Hanover Research. Labor Assessment and Portfolio Review. February 2017

2. Additional Information:

A. Is this an expansion of an existing training program? No

B. Does the proposal align with Florida’s Targeted Industries? Yes

North American Industry System (NAICS Scientific Research and Development Services: (#5417), Research and Development in the Physical; Engineering and Life Sciences (#54171); Research and Development in Biotechnology (#541714); All Other Professional, Scientific, and Technical Services (#54199), Medical Research and Development Laboratories or Services (#541715)

C. Does the proposal align with an occupation on the Statewide Demand Occupations List and/or Regional Demand Occupations List? Yes

The four strategic focus areas of research being supported by the Research and Workforce Development Project reflect direct industry needs, gaps in existing research programs in South Florida, including at Broward College and Palm Beach State College, and careers in which students are likely to find good job prospects upon graduation. The United States Department of Labor Statistics predicts that jobs in STEM research like Biochemists and Biophysicists, Computer and Information Research Scientists,

Biomedical Engineers, Chemists and Materials Scientists, and Medical Scientists will have growth between 7% and 19% between 2016 and 2026 (Division of Occupational Employment Statistics, 2017). Average growth is 7%, meaning that each of these careers is projected to grow at or above the rate of other careers (Division of Occupational Employment Statistics, 2017). Participation in undergraduate research at FAU, Broward College, Palm Beach State College, and FAUHS will set students on a path to pursuing a career in a growing STEM field.

The training programs facilitated by the Research and Workforce Development Project will support training and development in the following fields:

Standard Occupational Classification (SOC)	Occupation
3100000	Healthcare Support Occupations
2900000	Healthcare Practitioners and Technical Occupations
1900000	Physical, and Social Science Occupations
1700000	Architecture and Engineering Occupations

D. Indicate how the training will be delivered. If in-person, identify location where the training will be available.

Courses will be facilitated in classrooms and the renovated facility at the FAU Lab Schools’ facility on FAU’s Boca campus. The renovated facility will house the laboratory space that will support the training programs and development of skills and knowledge necessary for highly-skilled careers in the STEM fields.

To further support the students’ development, FAU’s research program as a whole also offers a unique and inventive approach to mentoring students. The research program centers around a two-tiered mentorship model in which students engage in both a one-to-one mentor relationship while simultaneously receiving group mentoring as part of the research program’s courses. In addition to working one-to-one with a mentor to conduct undergraduate research and develop their skills in their preferred STEM field, the program offers a second tier of mentor support for students. The once a week class meeting allows the instructor to check in with students about their research, discuss successes, and talk through any issues or questions students may have. The content covered in the classes removes some burden from the direct mentor. For example, students learn how to write a grant proposal for their research project as part of the research sequence courses. This structure benefits the students because they engage in undergraduate research experiences armed with more knowledge and skills, and it benefits the mentor by making the job easier and allowing the one-to-one mentoring to focus on discipline-specific content and techniques rather than basic research skills.

To date, there have been 64 FAU mentors of FAUHS students and, 458 unique faculty members (over 40% of all faculty) have participated in Office of Undergraduate Research and Inquiry related initiatives as mentors and in other capacities like curriculum based

research. Mentors are drawn from all ten colleges and many departments within the University including Computer and Electrical Engineering and Computer Science, Ocean & Mechanical Engineering, Biomedical Science, Nursing, Biological Sciences, Chemistry & Biochemistry, Geosciences, Mathematical Sciences, Psychology, Veterinary Medicine, the Brain Institute, and the Harbor Branch Oceanographic Institute. FAU uses a Research Hub app that serves as a matchmaker between faculty researchers and student collaborators. Additionally, students have opportunities to collaborate with researchers outside the university at Broward College, Palm Beach State College, Boca Regional Hospital, Christine Lynn Cancer Institute, United Technologies, and Scripps and the Max Planck Institute.

E. Indicate the number of anticipated annual enrolled students and completers in the proposed program.

Currently, over 150 FAU HS students are engaged in research in the high school research program. Annually, the students graduate with an average of 94 college credits. Fifty percent (78%) of the graduates complete their bachelor's degrees at FAU and of those students, 50% pursue degrees in a STEM field such as pre-med, nursing, medical research, health administration, biology and engineering.

The Research and Workforce Development Project will provide the means and facility to increase exposure and collaboration with Palm Beach State and Broward College to expand the number of students completing degrees in the STEM fields. We anticipate that 60-80 FAUHS students annually would be served by this project. Through the engagement of Broward and Palm Beach State colleges, we anticipate another 50-75 students would utilize the facility and engage in the training programs.

F. Indicate the length of program including anticipated beginning and ending dates.

The beginning date September 1, 2019 and ending date is June 30, 2023.

After we obtain the FAU Board of Trustees approval, the design and development of the plans for the facility will be conducted to begin renovations by July 2020 with a target completion date of August 2021.

The research and degree programs are currently underway and will be expanded to include Broward and Palm Beach State colleges when the facility can be renovated to accommodate the lab and classroom space and equipment.

The Research and Workforce Development Project consists of a curricular program and individualized mentoring that guides and supports students through learning basic, widely-used research skills, helping them find a faculty mentor, and through their research experience with that mentor.

The project includes five research courses designed to encourage students to pursue and complete bachelor's degrees in the STEM fields. The project courses planned are:

Exploring Research: In this introductory course, students learn to find, read, and analyze research articles, begin to explore their own academic interests, listen to researchers from across the state present on their research through the guest lecturer series, and conduct a group research project.

Introduction to Research: This course exposes students to research and experts in the various disciplines, and begins to fine tune the skills taught in the Exploring Research course. As part of this class students will improve their skills in literature review, search and analysis, create a professional grade bibliography, hear STEM researchers talk about their research in the guest lecture series, explore the world of research ethics, hone their personal research interests, and begin finding and contacting research mentors.

Research Methods I: In Research Methods 1, students begin building common research skills and receive guidance in finding a STEM faculty research mentor. Students will build on the skills they acquired in Introduction to Research and will continue finding and contacting research mentors and lab opportunities, while learning about resume writing, project idea development, and will have exposure to internships, and other opportunities to develop their skills to pursue careers in STEM fields.

Research Methods 2: Research Methods 2 supports students as they work with mentors on projects. Students will learn to write research proposals and abstracts, find and apply for grants, and will gain experience and skill in project presentation.

Research Methods 3: Research Methods 3 continues supporting students as they work with mentors on projects, presentations, and grants. Students present their research at research symposia, and learn to write research theses for potential publication. They will also receive support in data analysis, research poster creation, abstract and thesis writing, and research presentation. Students will learn about and receive support in continuing their research in graduate school, finding faculty, and applying to graduate programs.

One-on-one mentoring is also provided to guide students as they explore their research interests, search for and secure a mentor, conduct their research, present at conferences, apply for grants, publish papers, and apply for positions in the STEM fields.

G. Describe the plan to support the sustainability of the program after grant completion.

FAU and FAU Lab Schools will maintain the new infrastructure through the existing facilities maintenance unit within the physical plant at FAU. Additionally, FAU Lab Schools has in-house staff who work hand in hand with the maintenance unit to maintain the buildings and infrastructure on campus. This structure is already capable of dealing with ongoing operations and any issues that may arise within the renovated space.

In addition to having a robust infrastructure for maintenance, the Research and Workforce Development Project facility will fall under the Public Education Capital

Outlay (PECO). PECO is state funds that are made available to maintain infrastructure in education in the state of Florida. FAUHS’s current facilities receive \$1 million per year. A portion of the PECO monies will be used to maintain the renovated facilities.

Research and Workforce Development Project has the ability to leverage the University’s resources such as endowment monies and funds from the Office of Undergraduate Research to keep the new labs equipped with the resources required to function. A pre-proposal for the Research and Workforce Development Project has also been submitted for the National Science Foundation Mid-Scale Infrastructure grant to support the costs for the design of the lab and workspace facility. Should the grant application be awarded, FAU will continue to pursue additional STEM and workforce development funding to support the project and enhance the partnership activities with Broward College and Palm Beach State College.

H. Identify any certifications, degrees, etc. that will result from the completion of the program.

Due to the design of the FAU Lab Schools’ high school program, the students engaging in the project and specialized training in the renovated facility will be completing degrees in the following colleges:

College	Degrees
College of Business	Big Data Analysis Health Administration Healthcare Information Systems
College of Engineering and Computer Science	Bioengineering Civil Engineering Computer Engineering and Computer Science Electrical Engineering Environmental Engineering Geomatics Engineering Mechanical Engineering
College of Medicine	Biomedical Sciences
College of Nursing	Family Nurse Practitioner
College of Science	Biological Sciences and Biotechnology Chemistry Environmental Science Integrative Biology Mathematical Sciences Medical Physics Neuroscience Physics Pre-Health Professions Studies

I. Does the project have a local match amount?

Yes, FAU Lab Schools has secured outside funding to support the project. The school district is leveraging funding from a \$1,000,000 gift from Dan Cane, CEO of Modernizing Medicine, \$200,000 from the Henderson Foundation, and a \$1,000,000 pledge from Wayne Huizenga Jr. and the Huizenga Family Foundation.

J. Additional Information:

FAU’s Research and Workforce Development Project has the potential to significantly advance the nation’s research infrastructure because it provides an easily replicable model for building interdisciplinary research hubs that bring students and researchers from universities, colleges, public schools and communities to one space for collaboration. College campuses across the nation could easily adapt a faculty and business partner mentoring program and offer the ability to access labs to researchers willing to mentor and train the next generation.

Project Management

The Research and Workforce Development Project will be overseen by FAU and FAU Lab Schools’ leadership at all stages of the project. The construction will be coordinated under the University’s existing Capital Project Construction Process and overseen by the Facilities and Design Department, with signing authority for design, permitting, inspection and contract administration designated to the Vice President for Operations at FAU. All key personnel will meet monthly during the grant period to ensure the project is progressing according to timeline and on budget, and to make course corrections based on data.

FAU’s Capital Construction Process requires a detailed facilities program that defines the project scope, analyzes the physical site and infrastructure needs, provides a detailed schedule, and establishes the project budget. The approved facilities program serves as the primary document for soliciting proposals for design and construction services and serves as the document for soliciting competitive proposals for architectural consultants. Construction delivery may be either through competitive bid or construction management at risk services. For lab intensive remodels, like those planned for Research and Workforce Development Project, the University recommends utilizing construction management at risk services to ensure adequate coordination and cost estimation through the design process. Implementation of the construction project from the start of construction through occupancy falls to the University’s Design and Construction Services, and a project manager will be assigned to work with all selected contractors, architectural consultants, and engineers to maintain the scope, schedule and budget throughout each phase of the project. As a self-permitting agency, plans review, permits and inspection for construction projects is coordinated through the University’s Building Code Official. For major projects, plans review and inspections may be coordinated through a third party to ensure timely issuance of permits and scheduling of

inspections. All state projects require review and approval by the State Fire Marshal; coordinated through the Building Code Official.

Ongoing Operations and Maintenance Plans

FAU and FAU Lab Schools will maintain the new infrastructure through the existing facilities maintenance unit within the physical plant at FAU. Additionally, FAU Lab Schools has in-house staff who work hand in hand with the maintenance unit to maintain the buildings and infrastructure on campus. This structure is already capable of dealing with ongoing operations and any issues that may arise within the new space.

Project: AD HENDERSON - MEDIA CENTER RENOVATION

Created: 4/4/2019

WORKSHEET FOR SECTION XV, PROJECT BUDGET SUMMARY

Fill in the Yellow shaded area only
Automatic entry in Light Green

Return to: [XV, Summary](#)
[IX, Program](#)

Worksheets: [Schedule Program](#)

PROJECT SPACE AND BUDGET SUMMARY (Reference: SUS CM-N-04.00-09/97, Attachment 3)

SPACE SUMMATION (from Section IX of Facilities Program)

Program Space Type (Renovation)	NASF	Factor	Existing GSF	\$ / GSF *	\$
Research Laboratories - RENOVATION OF MEDIA CENTER		1.5	7,008	249.42	\$1,747,935.36
Total Construction Cost	-	#DIV/0!	7,008		\$1,747,900.00
* Rnovation \$/GSF as % of new construction cost					60 %

1 CONSTRUCTION COSTS (Reference: SUS CM-D-38.00-09/97, Attachment 1-B) Modify, add, or delete as required.

a. Building Construction Cost	Units	Unit Cost	\$
New Construction Cost	- GSF	#DIV/0!	\$0.00
Sub-Total Construction Costs		Round to 100	\$1,747,900.00
b. Additional/Extraordinary Construction Cost	Units	Unit Cost	\$
Telecommunications - Internal Wiring	1 Allowance	\$250,000.00	\$250,000.00
Telecommunications / External Infrastructure	1 Allowance	\$100,000.00	\$100,000.00
Sub-Total Telecommunication Cost		Round to 100	\$350,000.00
Inflation Adjustment			\$160,900.00
TOTAL CONSTRUCTION COSTS		Round to 100	\$2,258,800.00

2 OTHER PROJECT COSTS Add or delete following items as required.

a. Land/Existing Facility Acquisition	Purchase or Budget	\$0.00	Round to 100	\$0.00
b. Professional Fees				
A/E Fees (Curve A: Renovation)	0.09 %	\$156,236.21		\$156,200.00
Civil & Engineering Fee (10% of A/E Fee)	10.00 %	\$ 15,623.62		\$ 15,600.00
Landscape Design Fee (5% of A/E fee)	5.00 %	\$ 7,811.81		\$ 7,800.00
Master Planning	1 Allowance	\$ 15,000.00		\$15,000.00
C/M Pre-Construction Services Fee	1.00 %	22588		\$22,600.00
Sub-Total Professional Fees		Round to 100		\$217,200.00
c. State Fire Marshal Review and Inspection	0.25 %		Round to 100	\$5,600.00
d. Inspection Services				
Roofing Inspection	1 Allowance	7 Weeks \$1,800.00		\$11,700.00
Code Compliance Inspection (weekly)	1 Allowance	\$20,000.00		\$20,000.00
Plan Review (Code Compliance Inspection)	1 Allowance	\$40,000.00		\$40,000.00
Sub-Total Inspection Services		Round to 100		\$71,700.00
e. Risk Management / Insurance Consultant	0.06 %		Round to 100	\$1,400.00
f. Surveys & Tests				
Topographical/Site Survey	1 Allowance	\$7,000.00		\$7,000.00
Geotechnical Testing	1 Allowance	\$18,000.00		\$18,000.00
Sub-Total Surveys & Tests		Round to 100		\$25,000.00
g. Permit/Impact/Environmental Fees				
Environmental (SFWM)	1 Allowance	\$500.00		\$500.00
Sub-Total Permits/Impact Fees		Round to 100		\$500.00
h. Art in State Building (Section 255.043, F.S.)	0 %		Round to 100	\$0.00
i. Movable Furniture & Equipment				
Furniture	5 %			\$184,200.00
Equipment	15 %			\$338,800.00
Sub-Total Furniture & Equipment		Round to 100		\$523,000.00
j. Project Contingency	7 %		Round to 100	\$140,300.00
TOTAL OTHER PROJECT COSTS			Round to 100	\$984,700.00
TOTAL PROJECT BUDGET COST ESTIMATE				\$3,243,500.00

Project Budget Summary

ESTIMATED BUDGET SUMMARY						
1	Construction Costs					
	a. Construction Costs					\$1,747,900.00
	b. Additional/Extraordinary Construction Costs					\$510,900.00
	Sub Total Construction Costs					\$2,258,800.00
2	Other Project Costs					
	a. Land/existing facility acquisition					\$0.00
	b. Professional Fees					\$217,200.00
	c. Fire Marshal Fees					\$5,600.00
	d. Inspection Services					\$71,700.00
	e. Insurance Consultant					\$1,400.00
	f. Surveys and Tests					\$25,000.00
	g. Permit/Impact/Environmental Fees					\$500.00
	h. Art Work					\$0.00
	i. Movable Furnishings & Equipment					\$523,000.00
	j. Project Contingencies					\$140,300.00
	Sub Total Other Project Costs					\$984,700.00
	TOTAL PROJECT BUDGET					\$3,243,500.00



**ALEXANDER D. HENDERSON &
FLORIDA ATLANTIC UNIVERSITY HIGH SCHOOL**
A STATE OF FLORIDA DEVELOPMENTAL RESEARCH SCHOOL

**A.D. HENDERSON & FAU HIGH SCHOOL
IS RANKED**

#1 **DEVELOPMENTAL
RESEARCH SCHOOL
IN FLORIDA AS CALCULATED
BY THE FLORIDA
DEPARTMENT OF EDUCATION**

& #2 **PUBLIC ELEMENTARY
SCHOOL IN THE USA
(NICHE.COM RANKING)**

100%
HIGH SCHOOL
GRADUATION RATE



100%
OF GRADUATES ENROLL IN
BACHELOR'S OR GRADUATE PROGRAMS

51 RESEARCH GRANTS
AWARDED TO FAU
HIGH SCHOOL STUDENTS

26 STUDENT PUBLICATIONS
IN PEER-REVIEWED
JOURNALS INCLUDING
THE NEW ENGLAND
JOURNAL OF MEDICINE

&
3 STUDENT WRITTEN, AND
PUBLISHED NOVELS
BEING SOLD WORLD-WIDE

#8

PUBLIC MIDDLE SCHOOL
IN THE USA
(NICHE.COM RANKING)

#15 AMERICA'S TOP
YOUNG SCIENTIST

TWO-TIME
FLORIDA SCHOOL
OF EXCELLENCE

LOCAL, STATE & NATIONAL IMPACT



**2018 NATIONAL
BLUE RIBBON
SCHOOL
OF EXCELLENCE**

39 STUDENTS RECOGNIZED IN
THE 2019 NATIONAL MERIT
SCHOLARSHIP COMPETITION

FAU & MAX PLANCK SOCIETY &
MAX PLANCK FLORIDA INSTITUTE
FOR NEUROSCIENCE LAUNCH

MAX PLANCK ACADEMY

(OPENING IN 2020)

**OUR GOAL IS TO
REPLICATE
OUR UNIQUE
MODEL
THROUGHOUT
THE STATE
AND NATION.**

**OUR MISSION IS
TO RESHAPE
PUBLIC
EDUCATION
IN AMERICA.**

Our program goes beyond the schoolhouse gates to educate and equip all students, regardless of financial circumstances, gender, or race, with the skills they need for careers in an ever-evolving job market. Our partnership with FAU means our students can simultaneously earn their high school diploma and a cost-free bachelor's degree.

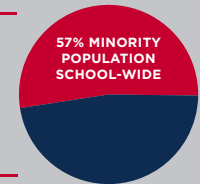
We've made strides for students in South Florida — now we're ready to expand our impact. As an incubator for the STEM workforce and researchers of tomorrow, we are a driving force for social mobility and economic development. Imagine the change we will see once we replicate this innovative model of tomorrow, creating a network of schools throughout the country delivering education with a tried and proven platform.

TITLE I

TITLE I SCHOOL STATUS ALLOWS US TO
IMPROVE THE ACADEMIC ACHIEVEMENT
OF THE FINANCIALLY DISADVANTAGED.

57% A.D. HENDERSON &
FAU HIGH SCHOOL
MINORITY POPULATION

57% MINORITY
POPULATION
SCHOOL-WIDE



FAUHIGH.FAU.EDU



#OWLSSIGNITE



FLORIDA ATLANTIC UNIVERSITY

Office of the President

June 14, 2019

Dear Enterprise Florida and the Florida Department of Economic Opportunity:

It is my great pleasure to support the FAU Developmental Lab School District's Research and Workforce Development Project application for the Workforce Training Grant. FAU's Developmental Lab School District serves approximately 2,500 students in grades K-12 and distinguishes itself through cutting-edge research and STEM programs. Our A.D. Henderson University School was recognized as a 2018 National Blue Ribbon School of Excellence, and both A.D. Henderson and FAU High School were named 2019 National Green Ribbon Schools for their efforts to reduce environmental impact and improve sustainability efforts.

FAU Lab Schools' research program provides students with valuable skills for the future and serves as a pipeline for state colleges and universities. The program's focus is preparing students for the workforce in fields such as environmental science, medicine, material science, and computer and information sciences. More than 400 FAU High School students participate in the research program. They have co-authored more than 30 peer-reviewed publications, secured 55 grants, and delivered more than 165 presentations.

Additionally, partnerships with local state colleges, businesses, and other entities are leveraged to provide internships and other experiences that prepare students for success in STEM-related careers. One such partnership is with the Max Planck Florida Institute for Neuroscience. The FAU Max Planck Academy, slated to open in fall 2020, will give students the unique opportunity to collaborate with leading scientists and engage in world-class research and discovery. Many other exceptional research and workforce development experiences are being cultivated at FAU Lab Schools, as well.

Funds from the Workforce Training Grant would assist with the development of additional laboratory and classroom space needed to expand FAU Lab Schools' research and workforce development program, and ultimately provide the state of Florida with more highly trained students who are well-equipped to enter the workforce. I can think of no greater return on investment that funding this one-of-a-kind research program.

Sincerely,



John Kelly
President



Office of the Provost and Senior Vice President for
Academic Affairs and Student Services
Willis Holcombe Center
111 East Las Olas Boulevard, Fort Lauderdale, FL 33301
Phone 954-201-7067

DATE: July 10, 2019

TO: Enterprise Florida and the Florida Department of Economic Opportunity

FROM: Dr. Marielena DeSanctis

RE: Florida Job Growth Grant Fund Workforce Training Grant Proposal

Broward College enthusiastically supports the Workforce Training Grant Proposal provided by the Florida Atlantic University Developmental Lab School District.

This infrastructure project will create a much-needed hub for the development of both students and faculty as they pursue translational research in the STEM fields. The grant will support the expansion and development of facilities and create a pipeline for high school students entering state colleges' and universities' STEM curriculum. These students will be well-equipped to enter pre-health as well as engineering programs. Both student interns and faculty of Broward College would benefit from a dedicated space in which to pursue research projects that will teach job-ready skills to enter the workforce.

Broward College looks forward to developing a Memorandum of Understanding with the Florida Atlantic University Developmental Lab School District once funding is secured through this infrastructure grant.

Please strongly consider funding this Workforce Training Grant Proposal by the Florida Atlantic University Developmental Lab School District. We feel confident that through this program we can collaborate on closing the skills gap for our local industries.

Sincerely,

Dr. Marielena DeSanctis
Provost and Senior Vice President of
Academic Affairs and Student Services, Broward College



June 20, 2019

RE: Florida Job Growth Grant Fund Workforce Training Grant Proposal

Dear Enterprise Florida and the Florida Department of Economic Opportunity:

Palm Beach State College enthusiastically supports the Workforce Training Grant Proposal provided by the Florida Atlantic University Development Lab School District.

This infrastructure project will create a much-needed hub for the development of both students and faculty as they pursue translational research in the STEM fields. The grant will support the expansion and development of facilities and create a pipeline for high school students entering state colleges and universities STEM curriculum. These students will be well-equipped to enter pre-health as well as engineering programs. Both student intern and faculty of Palm Beach State College would benefit from a dedicated space in which to pursue research projects that will teach job-ready skills to enter the workforce.

Palm Beach State college looks forward to developing a Memorandum of Understanding with the Florida Atlantic University Developmental Lab School District once funding is secured through this infrastructure grant.

Please strongly consider this proposal as we seek to impact the job skills gap in our local counties as well as state-wide.

Sincerely,

David A Rutherford, M.A., CFRE
Vice President, Institutional Advancement & Executive Director, Foundation



June 10, 2019

Re: Florida Job Growth Grant Fund Workforce Training Grant Proposal

Dear Enterprise Florida and Florida Department of Economic Opportunity:

The Research Park at Florida Atlantic University® enthusiastically supports the Job Growth Grant Fund Workforce Training Grant Proposal submitted by the Florida Atlantic University Developmental Lab School District.

The Research Park at FAU provides opportunities for the students attending the Florida Atlantic University Developmental Lab School District: our partnerships provide a unique opportunity for students to study robotics, autonomous vehicles, CAD, 3D printing as well as other developmental programs designed to ready high school students to pursue careers as well as matriculate at our local state colleges and universities.

We are excited to partner with Florida Atlantic University Developmental Lab School as they are focused on providing the skills necessary to fulfill the job growth needs for Palm Beach, Broward, Collier, De Soto, and Indian River counties. These growth areas include medical and health service managers, registered nurses, engineers, physician assistants, environmental scientists, chemist and material scientists, biological technicians, computer and information research scientists and medical scientists.

The research program at Florida Atlantic University Lab school district is tried and proven. FAU High School students have collaborated with researchers and professors to publish over 20 articles in peer-reviewed journals which have been reviewed by over 100,000 researchers. Additionally, students have been invited to national and international conferences to present their research.

This grant affords us the opportunity to support an outstanding program that embeds research throughout its teaching and learning. The Research Park at FAU urges you to support the Infrastructure Grant Proposal submitted by the Florida Atlantic University Developmental Lab School District.

Yours faithfully,

A handwritten signature in blue ink that reads "Andrew Duffell".

Andrew Duffell, MBA
President

**Florida Atlantic Research and
Development Authority**

Bob Swindell – Chair
Daniel C. Flynn, Ph.D. – Vice Chair
Michael I. Daszkal, CPA
Lonnie H. Maier, MBA
Hon. Robert D. Parks, Ed.D.
Bruce C. Rosetto, Esq.

President
Andrew Duffell, MBA

Troy M. McLellan, CCE, FCCP
President & CEO

June 10, 2019

Re: Florida Job Growth Grant Fund Workforce Training Grant Proposal

Dear Enterprise Florida and the Florida Department of Economic Opportunity:

The Boca Raton Chamber of Commerce enthusiastically supports the Workforce Training Grant Proposal provided by the Florida Atlantic University Developmental Lab School District.

The public infrastructure grant will provide for the future development of Florida Atlantic University Developmental Lab School District's translational research program. This current program and its subsequent expansion addresses critical future workforce demands of our surrounding communities and creates the much-needed STEM pipeline from high school to state colleges and universities. The program is focused on developing translation research processes so desperately needed in engineering, health, computer science, biology, data and the myriad of other fields in STEM.

This program has irrefutable results demonstrated by one hundred percent high school graduation rates coupled with students earning an average of one hundred college credits prior to completing their high school diploma. Additionally, these same students have been published in over 20 peer reviewed journals expanding upon their impact throughout our state and nation.

On behalf of the Boca Raton Chamber of Commerce, please support the Florida Atlantic University Developmental Lab School District Workforce Training Grant Proposal.

Sincerely,



Troy M. McLellan
President and CEO

Janet Weinthal
17733 Crooked Oak Avenue
Boca Raton FL, 33487
April 20, 2019

Dear Members of the Florida Job Growth Grant Fund Committee,

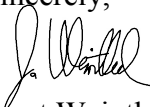
It is with great gratitude that I would like to tell you how the STEM (Science, Technology, Engineering, and Mathematics) Program at Florida Atlantic University High School (FAUHS) has prepared me for a career in the engineering workforce. I was very fortunate to attend FAUHS, where my classmates and I were fully dual-enrolled at the university in the 10th – 12th Grades, allowing us to quickly progress towards our college degrees and career goals. As much as I learned in university engineering courses, it was the FAUHS STEM Program that helped me to find a passion for engineering, taught me the technical and leadership skills to excel, and gave me the foundation to begin a career in electrical engineering.

FAUHS first drew me into the world of engineering in the 9th Grade when the STEM teacher asked a me and a few friends to help build an underwater robot for a competition. Our first robot sunk to the bottom of the pool, but we worked hard to build a better robot. Ultimately, our team went all the way to the National SeaPerch Championship in 2013, winning a prize for the most innovative robot design. That first taste of innovation and victory set me on the path of engineering, giving me the impetus and inspiration to pursue a degree in Electrical Engineering.

From then on, the FAUHS STEM Program nurtured me, teaching me the skills to excel in engineering. Building robots taught me vital technical skills, including 3D Printing, soldering, and computer programming. More importantly, I learned leadership skills by running multiple engineering clubs, serving as the president of the SeaPerch Underwater Robotics Club and the Females in STEM club. Upon graduating high school, I already had years of experiencing in designing systems and leading others.

The skills that I learned in the FAUHS STEM Program helped me to progress at the university towards the professional world. I used the programming skills I had learned to work as an undergraduate research assistant in FAU's College of Engineering, and the leadership skills to serve as president of FAU's chapter of the Tau Beta Pi Engineering Honor Society. In turn, these experiences have made me attractive to engineering companies. In this last year before I graduate college, I received eight job offers after interviewing with more than 15 companies. Upon graduating this August 2019, I will enter the workforce fulltime at Northrop Grumman Corporation, where I interned last summer. From high schooler with a robot to almost college graduate with a promised job, the FAUHS STEM Program gave me the foundation of skills and inspiration to start a career in engineering.

Sincerely,



Janet Weinthal

FAU High School 2016

B.S. Electrical Engineering August 2019, Florida Atlantic University

Christopher Minasi
RSI Post Baccalaureate Student



220 Longwood Avenue
Boston, Massachusetts 02115
Minasi@g.harvard.edu

Dear members of the Florida Job Growth Grant Fund Committee,
My name is Christopher Minasi and I am an alumnus of FAU High School. I graduated from FAU High in Spring of 2016 and graduated from FAU in Spring of 2017. Now I am a post baccalaureate student at Harvard University, working on my research project in the Neurobiology Department under Dr. Pascal Kaeser.

Neuroscience has been a passion of mine since high school biology, when I first started to learn about the anatomy and systems within the complex organ that shapes our perception of the world around us and the world within. I am driven by my curiosity and by the belief that there is no more impactful way to spend my time than in researching the brain, because our brains are the core of every problem that awaits humanity and every solution that is to come. As the Russian author and philosopher Leo Tolstoy wrote in the early 1800's, "Everyone thinks of changing the world, but no one thinks of changing himself". I believe that neuroscience research can one day provide the information necessary to give the world the tools to effectively repair and enhance our minds, both for the minds afflicted by disease and for the minds of everybody else. After all, few can escape the affliction of the human condition.

But to say that I have felt this way about neuroscience since high school biology might be an exaggeration. Truly, it was the entire four-year journey through FAU High's unique program that ignited this fire within me and provided me with the experience necessary to succeed in my current program.

The first year is really the most unique aspect of FAU High's program. For me, it served as a buffer year between middle school and college where the classes were often more challenging than university classes, making me well prepared for all the classes I would take in the years to come at FAU. It also served as a buffer year to allow more time to decide on a major and to interact with the other FAU High School students before we were spread across a rather large campus. As you can imagine, this all played into my confidence in allowing me to be comfortable in a college campus starting at the age of 15. I knew I was intellectually prepared, I knew that I had direction, and I had a web of connections with other students my age (which was particularly helpful during sophomore year). In addition to this, even while at the college campus, I was still welcome to seek advice from the faculty at the high school, and this proved to be useful on multiple occasions.

During my years at the university, in terms of courses, I had the same flexibility that any other college student would have. I loved this, because I was able to start exploring all kinds of different subjects within and beyond neuroscience, and over the years I could really consolidate in my mind what I was truly interested in.

In addition to this, I was also encouraged by my advisers at FAU High to do research while at FAU. So, in my junior year of high school I began working in Dr. Wei's lab.

Dr. Wei's lab was a molecular neuroscience lab that focused on Huntington's disease (HD), and my project's main aim was to explore the role of the huntingtin (htt) protein in HD. Our initial hypothesis was that the htt protein would be important in mitochondrial trafficking in neuronal cells. Upon analysis of the data, however, it became clear that htt loss of function (emulated by htt knockout[KO]) had a less significant impact on mitochondrial transport than we expected. So, we began a new, albeit similar, experiment in my senior year of high school.

Based on research suggesting lysosomal positioning's (LysP's) role in HD, our new hypothesis was that htt would affect LysP in neuronal cells. Since both experiments used similar techniques, they were familiar, allowing me more independence from the start. We began by creating a htt KO cell line, then used a transfected plasmid containing a fluorescent marker protein to distinguish and separate the cells that had successfully undergone CRISPR-KO of htt from those that had not. During this time, I wrote a detailed grant proposal including the objective, methodology, anticipated outcome, timeline, and budget of our research. We then replicated cells and confirmed the KO of htt using PCR/qPCR to compare their DNA/mRNA with the wildtype (WT) cell cultures'. While doing this, I was awarded the OURI grant, helping fund the final portion of the experiment where we labeled each cell line's lysosomes using immunofluorescent tagging and compared the LysP under confocal microscopy. Nearing the end of Fall 2017, I presented the background, methodology, data, and results of our experimentation. The results showed that, on average, the lysosomes were further from the nucleus in the htt KO cells than in the WT cells. This suggested that htt either had a role in enhancing retrograde movement or inhibiting anterograde movement in neuronal cells, backing our hypothesis.

From the process of having to modify our experiment and hypothesis to the experience of presenting the data that supported our new hypothesis, this experience was integral to giving me a first glimpse of what working on a neuroscience research project is like.

Though I initially was not interested in research, since I thought I wanted to go to medical school to become a psychiatrist, this experience doing neuroscience research in Dr. Wei's lab for a few semesters allowed me to discover my latent interest in research.

From what I have described, it is clear that FAU High was the perfect program for me to not only earn my bachelor's degree at the age of 18, but to develop as a young mind and discover my interests. Additionally, graduating at a young age allowed me to take a year to study for my MCAT, and provided me valuable time to delve deep into neuroscience literature and to further understand the field of psychiatry. In doing so, I realized how large the gap in our knowledge in neuroscience is, especially in regard to psychiatric care. Having come acquainted to this gap in our knowledge, I couldn't help but come to the realization that my true career path was to help fill this gap.

Because of my initial choice to pursue a career in psychiatry, research was not my focus during my undergraduate years, and though my first research project was a perfect introduction to neuro research, I knew I needed something more to get into the very competitive PhD programs.

So, to gain more experience, I decided to apply for the Research Scholarship Initiative (RSI) Post Baccalaureate Program at Harvard University. In this program, I am currently working as a full time postbac student on an independent research project under Dr. Kaeser to gain additional research experience.

My current project focuses on the active zone in the presynapse of neurons. I find this project interesting because the active zone is key to mediating and regulating neurotransmitter release at synapses, making it integral to the computational power of neurons on a molecular level. It is key to transmission since it has been shown to be responsible for priming and docking vesicles to allow for quick release of neurotransmitters, and controls other presynaptic release functions such as recruitment of voltage gated Ca^{2+} channels, localization of other pre and postsynaptic specializations, and plays a part in controlling short and long-term presynaptic plasticity in synapses. This protein dense complex called the active zone is composed of a variety of proteins, and in my experiment, I am focusing on one of those protein families: ELKS (encoded as multiple isoforms by two genes, *Erc1* and *Erc2*). This research direction towards studying ELKS is rooted in the observation that knockout of two active zone proteins families, ELKS and RIM, completely disrupts the structure and

function of the active zone complex by significantly reducing or eliminating the presence of all major active zone proteins near the presynaptic membrane except one. However, knocking out ELKS or RIM individually has not shown nearly as profound of an effect. This indicates that ELKS is an important active zone scaffold. My experiment explores the mechanisms of ELKS in active zone assembly by performing rescue experiments. This involves the disruption of the active zone through conditional knockout of RIM and ELKS in cultured hippocampal neurons, followed by rescuing phenotypes by re-introducing the ELKS proteins using viral strategies. This setup allows for us to observe the function of this protein in mice past fetal development, since constitutive deletion of these proteins is lethal.

Because of FAU High, I will be able to spend two years at Harvard doing full time research and taking the courses I'd like to take, and still get to start my PhD at the same age as most people on an ordinary high school to college to PhD track. And this is assuming they never changed direction like I did, which is an unlikely scenario for college students. Additionally, by the end of my two years at Harvard, I will have far more intensive experience over multiple years, providing me a significant advantage over many applicants. This coming spring semester I will be applying to various neuroscience PhD programs around the United States. The program that I am in is specifically designed to help me get into a top PhD program, and I have excellent advisors, with extensive experience in admission committees such as Harvard's. Beyond graduate school, I plan on continuing in academia with neuroscience research. However, I remain open to other possibilities, especially as advances in neurotechnology and artificial intelligence continue to create many interesting job prospects.

Had it not been for FAU High School, however, I strongly doubt that I would be where I am right now or envision my future as I do now. FAU High's program is perfect for anybody who wants to take a leap forward in their education, and for anyone who wants to prepare themselves for the real world before anyone else even has the chance.

Sincerely,

Christopher Minasi



Charles E. Schmidt College of Medicine
777 Glades Road, BC71
Boca Raton, FL 33431
tel: 561.297.2894
www.fau.edu/medicine

April 22, 2019

To The Florida Job Growth Grant Fund Committee -

I am writing in support of the FAU High School Program. My name is Sarah Palumbo, and I graduated from FAU High School in May 2017, summa cum laude and as a National Merit Scholar. Three months later, I was fortunate to graduate from FAU with a Bachelor of Science, summa cum laude, in Neuroscience and Behavior. I now take part in two programs at Florida Atlantic University, the FAU Brain Institute Research Scholars Program and the FAU High School Medical Pipeline Program. For the last two years, the programs have granted me the amazing opportunity to conduct research at the Charles E. Schmidt College of Medicine under Dr. Janet Robishaw, Ph.D., Senior Associate Dean for Research, focusing on the clinical and genetic predictors of Opioid Use Disorder, looking at ways to combat the growing opioid epidemic in our country. Beginning in August 2019, I will be attending the Charles E. Schmidt College of Medicine working toward my medical degree.

I am so grateful for the many incredible experiences during my time at FAU High School. In my senior year, I was encouraged to apply to the newly established FAU High School Medical Pipeline Program, a new opportunity for an elite group of FAU High School students to be conditionally admitted to the Schmidt College of Medicine following graduation. I was ultimately accepted into the inaugural class for this program and as such, was offered another incredible opportunity to spend two gap years, between the completion of my undergraduate education and the beginning of my medical education, conducting research. Through the Brain Institute Research Scholars program, I have been afforded the opportunity to work with world-renowned scholar, Dr. Robishaw, and her amazing lab. I also have been able to meet with many visiting scientists and lecturers when they visit the Boca Raton campus. Over the last two years, I have given an international talk on my research at the International Narcotics Research Conference in San Diego, as well as had posters accepted at two conferences through the National Institute on Drug Abuse (NIDA) and the National Institutes of Health (NIH). I will be giving another presentation in June at the meeting of the Society for Epidemiologic Research in Minneapolis. Furthermore, I have submitted papers to notable peer-review journals which are under review for publication. Additionally, I am proud to pay it forward by going back to FAU High School on a weekly basis to help mentor the next group of students who are enrolling in the programs of which I am currently a part. None of this would have been possible without FAU High School's continual support of my education and educational interests.

In my view, the most important aspects of the FAU High School Program are the opportunities and support the School provides its students, allowing for various opportunities in all fields throughout the University. After students graduate from high school, FAU High School continues to support alumni by organizing programs, such as the two I am a part of, that allow us to fulfill our goals for the future. To have the opportunity to attend medical school with a scholarship and to have had two amazing years to conduct ground-breaking research with a world-renowned scientist is unfathomable in most places in the United States, but not at FAU. Regarding my goals, many ask me why I want to be a doctor. For this, I will take a note from my personal statement from my medical school application: *Medicine is as specialized as it is universal; a combination of my love for the field, the*

importance of physicians in providing both care and compassion, and the wide-ranging impact of medicine make me want to become a physician. The same can be said for FAU High School. They work for their students both generally and individually. Additionally, staff members and administration truly care about what happens to their students after high school. In regard to care and compassion, the high school provides its students with both personal and academic support, and lastly, they have an impact across the board whether it be facilitating the research of diseases or helping create doctors to cure them.

Without FAU High School, the FAU Brain Institute, and the Charles E. Schmidt College of Medicine at FAU, I would not be where I am today, and I am eternally grateful for the opportunities I have been given. I am looking forward to the future both with this school and beyond, and I hope that students after me will be able to have the same amazing opportunities that I have had.

Thank you so much for your time and consideration.

Regards,

A handwritten signature in blue ink that reads "Sarah Palumbo". The signature is written in a cursive, flowing style.

Sarah Palumbo



Sylvia Frydman
Research Associate
Department of Drug
Development
H. Lee Moffitt Cancer Center &
Research Institute
Phone: 813 745 5619
sylvia.frydman@moffitt.org

Dear Florida Job Growth Grant Fund Committee,

My name is Sylvia Frydman, and I am a proud FAU High School graduate. In my senior year of high school, I was accepted into the Harriet L. Wilkes Honors College of FAU, a liberal arts and sciences college with an all-honors curriculum. This campus was unique in that it had two world-renown research facilities - The Scripps Research Institute and Max Planck Florida Institute for Neuroscience - at walking distance. Because of the foundation I built at FAU High, I was accepted to work at a lab in The Scripps Research Institute (TSRI) in my first year of undergrad at the Honors College. I began conducting research in the Department of Molecular Medicine under Dr. Laura Niedernhofer. For the two years I worked at TSRI, my research focused on aging and metabolism. Upon graduating with a Bachelor of Science with a major in Liberal Arts and Sciences, I wanted to continue research but with a different focus. With recommendations from my mentors at FAU High, Dr. Tricia Meredith and Dr. Ken Dawson Scully, and my mentor from Scripps, Dr. Niedernhofer, I accepted a position as a Research Associate at the Moffitt Cancer Center in the Department of Drug Discovery focusing on studying the role of small kinase inhibitors of biological and therapeutic interest under Dr. Derek Duckett.

Being an FAU High graduate made all these opportunities possible. At FAU High, I was exposed to countless opportunities in academics, and meaningful extracurricular activities at both the high school and college level. During my years at FAU High School, I was able to start the Student-Athlete Leadership Team and hold leadership roles in other clubs as well. These specific experiences along with being surrounded by like-minded individuals and encouraging mentors, gave me the skills necessary to accomplish my goals. At FAU High I learned invaluable lessons and developed many skills including, time-management, goal setting, and leadership. FAU High establishes foundational qualities in students that are not only involved in high school and college extracurricular activities, but also in their communities.

It's surreal that I graduated from FAU High School three years ago. I still feel a part of the community and remain in contact with the faculty and many of my classmates. This connection continues to show how interested faculty remains in the students achieving their goals. Not only are they interested in hearing about how you are doing, but they are also eager to help provide resources. Being surrounded by like-minded individuals, encouraging faculty and countless resources have helped to shape me into the person I am today. These foundational qualities I developed in high school have led me to where I am today and I will be forever indebted to FAU and FAU High School.

Kind Regards,

A handwritten signature in black ink that reads "Sylvia Frydman". The signature is written in a cursive, flowing style.

Sylvia Frydman

To Whom It May Concern,

Florida Atlantic University High School is a true pioneer in the field of laboratory schools and schools for high achieving students. Separate from its numerous awards and continuous recognition by state and national organizations as one of the best High Schools in the country, it is truly an ideal incubator for the future innovators and leaders of the world. As a proud alum of this program, I credit FAU High with giving me a platform and the tools necessary to propel myself to success in my chosen field, medicine. At the age of 18, I was the first student to be admitted to medical school in the 2015-16 application cycle out of all applicants at Florida Atlantic University. This highlights FAU High's position as a component of our education that acts synergistically with the University to create better graduates than either program would on its own.

The beauty of FAU High is not that it prepares us to get high test scores or construct stellar applications to graduate or professional school, it is that it parlays each student's unique abilities and passions into opportunities that prepare us to compete with the best of the best in the field of our choosing. This focus on enriching our high school and college experience was instrumental in my path to medical school – I was able to involve myself in numerous biomedical research projects that resulted in 4 manuscripts published in peer-reviewed journals by the time I applied to medical school, one of which was published in *The New England Journal of Medicine*. As a result of the information and skills I learned in college courses and extracurricular experiences, I began medical school with advanced knowledge of biochemistry, molecular biology, anatomy, physiology, epidemiology, and research methods, which proved invaluable in learning and retaining the vast amounts of knowledge we are expected to acquire.

The program's focus on the individual was crucial for me during my transition from middle school to high school. During middle school, I elected to work ahead of my grade level and complete multiple high school courses on Florida Virtual School. Little did I know that this would become an issue when it was time to enroll in a High School – no nearby public school would accommodate my completed credits and allow me to only take the classes I needed to graduate from High School. Fortunately, I found out about FAU High School and decided to apply. In meeting with David Kelly, the school's former guidance counselor and current president, I knew that the program's freedom from many bureaucratic limitations was a true blessing for me. I was given the flexibility to begin taking college courses during my first year of high school and as a result was able to graduate from college at the age of 17. I was able to take the courses of my choosing without worries for financial implications, and had access to resources at both the university and the high school to help me succeed.

I am forever grateful for the opportunities afforded to me by this unique program, and believe it is of utmost importance to ensure that FAU High continues to provide the highest quality education to some of the brightest students in South Florida.

Best Regards,
John Sousa



Third Year Medical Student, University of Florida College of Medicine



Florida Job Growth Grant Fund Committee
107 East Madison Street
Caldwell Building
Tallahassee, Florida 32399-4120

April 22, 2019

To Whom It May Concern:

My name is Denise, and I am a 2015 alumna of the Florida Atlantic University High School program. Since graduating from Florida Atlantic University High School, I have graduated from Florida Atlantic University with a Bachelor of Science in Computer Science, and I will be graduating from Georgia Institute of Technology with a Master of Science in Computer Science this upcoming May. Within my industry, I am affiliated with Intel Corporation as a Deep Learning Software Engineer, and with LucyLabs @ Georgia Institute of Technology as an Educational Technology Researcher.

Florida Atlantic University High School has provided me with significant traction towards my current career path. As someone who had been interested in Computer Science from a young age, the Florida Atlantic University High School program allowed me to immerse myself academically into the STEM field much earlier than any other program would have. Additionally, the extracurricular activities that Florida Atlantic University High School offered allowed me to collaborate with college students and industry professionals, providing me with valuable networking experience.

Florida Atlantic University High School is a top-notch program for Florida students, and I have recommended the program to numerous prospective students and parents. I urge you to provide your highest level of funding towards the Florida Atlantic University High School program. This program paves the way for Florida's next generation of talented researchers and industry professionals, and it is of utmost importance to invest in these students' futures.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink that reads "Denise Kutnick". The signature is written in a cursive, flowing style.

Denise G. Kutnick
denise@gatech.edu



Brain Institute
777 Glades Road
Boca Raton, FL 33431
tel: 561.297.4989

Dear Florida Job Growth Grant Fund Committee,

My name is Nadia Sial, and I am a graduate of FAU High. In my senior year of high school, I was accepted into the M.D. Direct Medical Pipeline, a program that allows high school students to earn an accelerated degree and early conditional admission to FAU's College of Medicine. Upon graduating with my B.Sc. in Neuroscience and Behavior at the age of eighteen, I was accepted into the Brain Institute Post-Baccalaureate Research Scholars Program, where I began research in the Department of Biological Sciences under Dr. Ken Dawson-Scully. Currently, my research focuses on genetic and pharmacological mechanisms of neuroprotection during acute oxidative stress. In August of this year, I will be matriculating into the FAU College of Medicine with a full scholarship, taking the first step in my lifelong goal of becoming a physician.

Without FAU High, none of this would have been possible. Attending FAU High exposed me to countless opportunities in academics, research, and meaningful extracurricular activities. My years at the high school gave me the skills necessary to excel in all avenues of my life; time-management, focus, and leadership are a few of the many virtues FAU High instills within its students. FAU High students surpass all expectations in that they excel in their academics, volunteer in their communities, and engage in cutting-edge research.

FAU High is not just a school – it is a community. The high school helps students achieve their goals and aspirations by ensuring that each individual has access to resources even after they have graduated. My time in the FAU High community has given me the insight and experience I will need to achieve my ultimate goal of becoming a well-rounded, research-guided physician whose breadth of work and achievements will hopefully benefit the lives of many.

Thank you.

Best Regards,

Nadia Sial

A handwritten signature in black ink that reads 'Nadia Sial' in a cursive, flowing script.

6100 Main Street
Abercrombie Building
Houston, TX 77005

April 22, 2019

Dear Florida Job Growth Grant Fund committee,

My name is Ben Coleman and I am a graduate of FAU High School and a STEM program alumnus. I completed high school in 2016 and graduated with my electrical engineering degree in 2017. While in high school, I worked at Asghar Nanotechnology Lab, where I developed algorithms and devices to diagnose HIV and Zika. My first job was a summer internship as a mechanical design engineer with MWI Pumps, a local pump manufacturer in Deerfield Beach. In 2017, I was a software engineer at Aventusoft LLC, a healthcare startup in Boca Raton. I left Florida in 2018 to pursue my PhD at Rice University in Houston, where I currently develop compression techniques for efficient machine learning in the DSP group. Regarding my short-term career plans, I will move to California in one month to work at Amazon as an applied scientist intern. My long-term plan is to finish my PhD and continue to work in the technology industry.

I arrived at FAU High the same year the STEM program started. It was my first introduction to computer science and engineering. I developed many of the practical skills I use every day through the program. For instance, I learned to use SolidWorks, which directly led to my internship at MWI Pumps. At Asghar Lab, I was able to design microscopes and nanoparticle actuators because of my experience with CAD modeling. Most importantly, I wrote my first few lines of code at FAU High. The STEM program gave me a space to develop my programming skills through trial and error until I became confident as a software developer. I later used my skills to contribute at Asghar Lab and Aventusoft LLC. It should be noted that the electrical engineering curriculum at FAU does not teach software development; these skills came directly from my involvement in the STEM program. I continue to use my programming skills every day and I expect to rely on them heavily during my time at Amazon.

Sincerely,

Benjamin Coleman
Department of Electrical and Computer Engineering
Rice University