

PREPARED FOR :
TRIUMPH GULF COAST



PHASE II: IHMC CENTER FOR HUMAN HEALTHSPAN, RESILIENCE AND PERFORMANCE

Project #233 Modification

September 2022



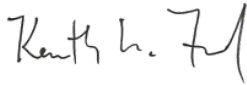
September 23, 2022

Ms. Cori Henderson
Grant Administrator
Triumph Gulf Coast, Inc.
PO Box 12007
Tallahassee, FL 32317

Dear Ms. Henderson,

Please note IHMC is requesting a Phase II to its project (#233) and thus a modification to its agreement titled *Florida Institute for Human & Machine Cognition, Inc. (IHMC), IHMC Center for Human Healthspan, Resilience and Performance (the Center)* awarded on 03/23/2021. Please accept this letter and the content of Modification #1 as requested updates to our agreement.

Respectfully,



Dr. Kenneth Ford
Director/Chief Executive Officer



Modification

Project: #233 - IHMC Center for Human Healthspan, Resilience and Performance (the Center) Phase II

Summary

The Florida Institute for Human & Machine Cognition (IHMC) is requesting a modification to its existing agreement with Triumph Gulf Coast (Project #233) to execute Phase II and allow it to leverage the success it's had to date in establishing a Center of Excellence focused on expanding work in the cutting-edge field of Human Healthspan, Resilience and Performance (HHRP). Over the past few years IHMC has expanded its focus areas of research excellence to foster this burgeoning program and the seed funding provided by IHMC's Triumph grant has allowed it to make significant progress in this critical research area. IHMC leveraging Triumph Gulf Coast funds to drive significant new research funding to our region and plans to reach its competitively awarded match metric ahead of schedule. Indeed, so much progress has been made that IHMC is planning Phase II which will include significant investment in the construction of a new, state of the art research facility in downtown Pensacola aimed at leveraging its current success, hastening its ability to meet its grant requirements, and expanding the capabilities of the HHRP cluster in our region. The new facility will be a one-of-a-kind, leading-edge, multi-story research center that is poised to be a national capstone of research excellence in NW Florida with a transformational impact on scientific advances. The Center's mission is to lead high-impact scientific advances that improve the health, resilience, and performance of people across their lifespan. The addition of the new facility will increase the total project size from \$31,039,813 to approximately \$79,000,000.

IHMC is requesting the following modification to its existing agreement:

- Extending the contract period of performance to December 31, 2034
- Increase of \$5,889,324 to its existing Triumph request budget for additional equipment
- Increase total match requirement by \$17,000,000 from \$18,000,000 to \$35,000,000

This funding increase raises the total Triumph grant amount from \$6,078,795 to \$11,968,119. This impact reduces the overall percentage of the Triumph grant component of the project from 19.58% to 15.17%.

New federally funded programs awarded, in part due to the Triumph funding, have provided additional opportunities requiring additional equipment resources. This new facility will provide the square footage necessary to house new, modern equipment. Due to the fast-moving pace of technology, there is now new equipment not previously contemplated that will provide IHMC additional capabilities allowing for further research grant opportunities, and associated funding, to flow into our region. In addition, the new facility and equipment will provide opportunities to compete on additional federal grants and contracts. This new funding associated with Phase II will lead to the creation of new high-wage jobs to conduct this cutting-edge research as well as required support roles.

Amended Metrics

The additional equipment housed in a new state of the art facility will allow IHMC to drive significantly more external federal grant funding to our region. As such, IHMC is increasing its dollar amount for the competitively awarded research grant associated with Performance Metric #1.

(Modified) Performance Metric #1: As of December 31, 2034, Grantee shall have been awarded not less than thirty-five million dollars (\$35,000,000) in competitively awarded research grants that support the broader objectives of the Project

Equipment

As a new, approximately 38,000 sq ft HHRP building is being built to support this research area, IHMC has identified significant equipment required to maximize its research capabilities in the new facility. In addition, the impact of new programs coming online requires augmenting our existing plan for equipment purchases.

One of the key components of these equipment needs will be modular partition and associated equipment for use in specific lab space. IHMC has had great success integrating these components in the past (the Levin Center) and plans to do so again in this new facility. These modular components allow for rapid changes in lab space which will likely be required to adapt to new/future funded research projects. These components also empower rapid manufacturing and efficient installation to speed up construction timelines by as much as 30%. The faster IHMC can begin utilizing the spaces, the sooner it can successfully compete for more funded research projects and create more high paying jobs.



The equipment described within this application would create multiple research cores to include a state-of-the-art, Multiomic Phenotyping Core within the HHRP Cluster. Multiomic analyses allows for unparalleled high-throughput and high-resolution molecular profiling of blood and tissue using next generation technologies. These platforms, either alone or when combined, have become the basis for identifying biological mechanisms of the benefits of exercise, rehabilitation, and the underpinnings of disease. The proposed Novaseq6000 with Olink technology would allow for next generation sequencing capacity to better understand genetics, genomics, epigenetics and RNA biology, as well as targeted high-throughput proteomics, for competitively awarded/funded research studies. Additionally, the proposed LC/GC-MS/MS system would allow for complex untargeted analyses of the metabolome, proteome and phospho-proteome. Our team has extensive backgrounds in multiomic profiling across a wide variety of human participants, model species and pathobiology. Because of the specialized nature of these analyses, IHMC has had to subaward millions of funding dollars to collaborators at other institutions to complete funded projects. The creation of a Multiomic Phenotyping Core would help keep a substantial amount of external funding within the local NW Florida economy, create high-paying scientific and technical positions, and increase the scientific visibility of our region.

Additional equipment details can be found in appendix A.

Appendix A: Sample Equipment

In addition to the above lab-specific modular and ancillary components, below contains sample equipment targeted for use of Triumph grant funds. Changes to this equipment is possible based on technology evolution as well as future grant requirements.

Confocal Microscope - The confocal laser scanning microscopes meets some of the most difficult challenges in modern science. Featuring the high sensitivity and speed required for live cell imaging as well as deep tissue observation, the FV3000 confocal microscope enables a wide range of imaging modalities, including macro-to-micro imaging, super resolution microscopy, and quantitative data analysis.

Seahorse Cell Metabolic Analyzer - Seahorse Analyzers measure the oxygen consumption (OCR) and extracellular acidification rate (ECAR/PER) of live cells in a 96-well format. The XF Pro Analyzer features better OCR precision at low rates, verified instrument performance and repeatability specifications, optimized temperature control, and is automation enabled. OCR and ECAR or PER are key indicators of mitochondrial respiration and glycolysis as well as ATP production rate. Together, these measurements provide a systems-level view of cellular metabolic function in cultured cells and ex vivo samples.

NanoSight NS300 - The NanoSight NS300 Instrument provides an easy-to-use, reproducible platform for nanoparticle characterization. The NS300 allows rapid analysis of the size distribution and concentration of all types of nanoparticles from 0.01 - 1 μm^* in diameter, depending on the instrument configuration and sample type. With the ability to be supplied with interchangeable laser modules and the introduction of a motorized filter wheel means different fluorescent labels can be analyzed. Sample temperature is fully programmable through the Nanoparticle Tracking Analysis (NTA) software.

Thermocycler for targeted RT gene expression - Thermocyclers are integral to life science research. In molecular biology they are used for DNA sequencing, generation of probes, quantification of DNA and RNA, studying patterns of gene expression, detection of sequence-tagged sites, and many more techniques. Thermocycler use extends beyond simple PCR and the amplification of nucleic acids to include both random and site-directed mutagenesis as well as the in vitro construction of recombinant DNA sequences. The fine temperature control and ability to hold a precisely set temperature with little fluctuation is also applicable to other techniques in which high-accuracy temperature control increases reproducibility between experiments. A thermocycler can be used in protocols where very strict temperature control is required such as heating tissue slides for in situ hybridization. The controlled temperature ramping provided by a thermocycler enables the study of temperature-dependent kinetics; for example, in addition to optimizing a PCR protocol, a thermocycler with a gradient feature allows for the determination of the optimum temperature for any enzymatic activity

NovaSeq 6000 - The NovaSeq 6000 System unleashes a new era in sequencing with groundbreaking innovations, providing users with the throughput, speed, and flexibility to complete projects faster and more economically than ever before. Leveraging proven Illumina next-generation sequencing (NGS) technology, multiple flow cell types, two library loading workflows, and various read length combinations, the NovaSeq 6000 System enables effective throughput scaling to suit virtually any study needs. With unmatched scalable throughput, tremendous flexibility for a range of applications, and streamlined operation, the NovaSeq 6000 System is the most powerful high-throughput Illumina

sequencing system to date, perfectly positioned to help users uncover more about the genome than ever before. Included with this equipment is the Olink technology using SPT Dragonfly and Mosquito micropipetting equipment. Olink is a high-throughput targeted proteomics technology that requires precise, semi-automated small volume pipetting to allow for repeatable and reliable downstream analysis. Coupling Olink with the SPT Dragonfly and Mosquito sample processing pipeline allows for high-throughput hardware integration for the Novaseq6000. It is an innovative and cost-effective alternative to traditional liquid chromatography and mass spectrometry systems.

Appendix B: Budget

Exhibit A
IHMC Center for Human Healthspan, Resilience and Performance (the Center)
Budget

		Supplies & Equipment	Personnel	Facilities	External Match	Total
Project Total						
2020	732,621.72	2,937,445.23	-	-	-	3,670,066.95
2021	805,060.00	1,021,841.68	7,560.00	-	-	1,834,461.68
2022	748,615.33	1,519,543.76	3,780.00	828,730.25	-	3,100,669.34
2023	5,460,074.33	1,927,763.50	20,000,000.00	-	-	27,387,837.83
2024	1,976,480.33	1,777,011.06	5,000,000.00	-	-	8,753,491.39
2025	-	-	-	-	-	-
2026	-	-	-	2,171,269.75	-	2,171,269.75
2027	-	-	-	-	-	-
2028	-	-	-	-	-	-
2029	-	-	-	-	-	-
2030	-	-	-	-	-	-
2031	-	-	-	15,000,000.00	-	15,000,000.00
2032	-	-	-	-	-	-
2033	-	-	-	-	-	-
2034	-	-	-	17,000,000.00	-	17,000,000.00
Project Total	9,722,851.72	9,183,605.23	25,011,340.00	35,000,000.00	-	78,917,796.95
Triumph						
2020	-	-	-	-	-	-
2021	805,060.00	614,800	-	-	-	1,419,860.00
2022	748,615.33	837,696	-	-	-	1,586,311.67
2023	5,460,074.33	837,696	-	-	-	6,297,770.67
2024	1,976,480.33	687,696	-	-	-	2,664,176.67
2025	-	-	-	-	-	-
2026	-	-	-	-	-	-
2027	-	-	-	-	-	-
2028	-	-	-	-	-	-
2029	-	-	-	-	-	-
2030	-	-	-	-	-	-
2031	-	-	-	-	-	-
2032	-	-	-	-	-	-
2033	-	-	-	-	-	-
2034	-	-	-	-	-	-
Triumph Total	8,990,230.00	2,977,889.00	-	-	-	11,968,119.00
Grantee						
2020	732,621.72	1,937,445.23	-	-	-	2,670,066.95
2021	-	407,041.68	7,560.00	-	-	414,601.68
2022	-	681,847.42	3,780.00	-	-	685,627.42
2023	-	1,090,067.17	\$ 20,000,000.00	-	-	21,090,067.17
2024	-	1,089,314.72	\$ 5,000,000.00	-	-	6,089,314.72
2025	-	-	-	-	-	-
2026	-	-	-	-	-	-
2027	-	-	-	-	-	-
2028	-	-	-	-	-	-
2029	-	-	-	-	-	-
2030	-	-	-	-	-	-
2031	-	-	-	-	-	-
2032	-	-	-	-	-	-
2033	-	-	-	-	-	-
2034	-	-	-	-	-	-
Grantee Total	732,621.72	5,205,716.23	25,011,340.00	-	-	30,949,677.95

Exhibit A
IHMC Center for Human Healthspan, Resilience and Performance (the Center)
Budget

		Supplies & Equipment	Personnel	Facilities	External Match	Total
Private Donor	2020		1,000,000.00			1,000,000.00
	2021					-
	2022					-
	2023					-
	2024					-
	2025					-
	2026					-
	2027					-
	2028					-
	2029					-
	2030					-
	2031					-
	2032					-
	2033					-
	2034					-
Match Source 1 Total		-	1,000,000.00	-	-	1,000,000.00
External Match	2020					-
	2021					-
	2022				828,730.25	828,730.25
	2023					-
	2024					-
	2025					-
	2026				2,171,269.75	2,171,269.75
	2027					-
	2028					-
	2029					-
	2030					-
	2031				15,000,000.00	15,000,000.00
	2032					-
	2033					-
	2034				17,000,000.00	17,000,000.00
Match Source 2 Total		-	-	-	35,000,000.00	35,000,000.00

Appendix C: Letter of Support

T: 850.898.2201
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floridawesteda.com



July 25, 2022

Dr. Ken Ford
40 S. Alcaniz
Pensacola, FL 32502

Dear Dr. Ken Ford:

The FloridaWest Economic Development Alliance (FloridaWest) fully supports the Florida Institute for Human & Machine Cognition, Inc. (IHMC) as it expands on its original Triumph funded program to establish a Center of Excellence focused on expanding work in the cutting-edge field of Human Healthspan, Resilience, and Performance.

FloridaWest understands IHMC has been utilizing its existing Triumph grant funds to seed the acquisition of personnel and equipment required to support these efforts. Furthermore, FloridaWest is aware of IHMC's plans to further expand this research area via its investment in the construction of a new research facility in downtown Pensacola.

It is FloridaWest's understanding that this new modification of IHMC's existing agreement is aimed at leveraging its success to date in establishing the center of excellence and requesting additional grant funds to allow it to purchase additional equipment to be utilized in the new, state of the art research facility.

FloridaWest appreciates the opportunity to support this request and believes it will significantly benefit economic development in our region. Please don't hesitate to let us know how we may be of further assistance in this initiative.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Luth".

Scott Luth
CEO, FloridaWest Economic Development Alliance