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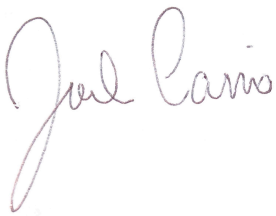
GT Faculty:

Frank Stewart
Associate Professor
School of Biological Sciences
Georgia Institute of Technology

A handwritten signature in blue ink that reads "Frank Stewart".

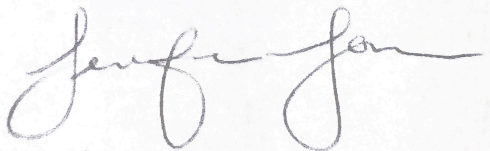
GT Student:

Darren Joshua Parris
Ph.D. Student
School of Biological Sciences
Georgia Institute of Technology

A handwritten signature in black ink that reads "Darren Parris".

Georgia Teacher:

Jennifer Jones Ed.S.
Chemistry Teacher
Rockdale County High School

A handwritten signature in black ink that reads "Jennifer Jones".



School of Biological Sciences
Atlanta, Georgia 30332-0230 USA
Phone: (404) 863-7455
Email: todd.streelman@biology.gatech.edu

January 25, 2018

RE: Frank Stewart – Faculty Award for Academic Outreach letter of support

It is my pleasure to provide this letter of support for Dr. Frank Stewart, an Associate Professor in the School of Biological Sciences. Frank's innovative Summer Workshop in Marine Science (SWiMS) program, which he has developed since coming to Georgia Tech in 2011, has impacted many Metro Atlanta K-12 teachers and their students. He is indeed worthy of consideration for this award.

Frank conceived his SWiMS program in 2012 as a component of an NSF CAREER award proposal. The core of the project is a week-long workshop designed with active participation from CEISMC to help middle and high school teachers in lower performing Atlanta area schools develop curricular material to teach marine science. The program was piloted with GIFT support for two high school teachers who help develop the activities for a set of teaching modules. Frank applied for and received Georgia Improving Teacher Quality (ITQ) funds to launch the program in 2015. Since that date, dozens of educators from "high need" Atlanta school districts have participated. Each summer, about 15 teachers participate in the 5-day workshop, receiving both a stipend and professional learning units. A majority of the teachers confirm that they have used the SWiMS material beyond the first year they implemented it. Frank has also worked with CEISMC to conduct pre- and post- assessments that demonstrate increases in teacher knowledge of the material. Frank also complements the program with trips to the schools of participating teachers, like letter writers Ms. Thai, Mr. Leach and Mr. Bartlett; often bringing his lab members with him, which makes it an enriching experience for all involved.

One notable way that SWiMS goes beyond normal outreach is the variety of venues - the program literally extends from Georgia Tech to the Georgia coast. The first 3 days of SWiMS are on campus followed by 2 days at the Georgia Marine Institute on Sapelo Island. In both locales, teachers get their hands dirty, by participating in hands-on activities. The on-campus lab exercises are accompanied by guest lectures from faculty. The Sapelo Island experience include a trip to a salt marsh ecosystem and another module on biological sampling that culminates with an excursion off the coast on a shrimp trawler. Each adventure is accompanied by discussion of timely marine ecology issues like oil spills and simple low-cost activities the teachers can bring back to their schools. Frank has noted that many of the teachers, though born and raised in Georgia, had never seen the ocean until participating in his program. The SWiMS program is making a difference here in Atlanta.

Faculty Award for Academic Outreach is given to recognize those GT faculty making impact beyond the classroom - Frank Stewart is an excellent choice.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Todd Streelman", written over a white background.

J. Todd Streelman
Professor & Chair
School of Biological Sciences
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Outreach Activities Statement

Frank Stewart, Associate Professor, School of Biological Sciences

As a marine microbiologist, I am invested in promoting an understanding of ocean science and microbiology in the public and educational arenas. Fostering involvement in science, technology, engineering and math (STEM) requires efforts at all professional and educational levels. To help meet that goal, I established and direct the annual *Summer Workshop in Marine Science (SWiMS)* at Georgia Tech: <https://swimsgatech.wordpress.com/>

SWiMS is a teacher training program that uses hands-on exercises focused on marine topics to enhance middle and high school science education. *SWiMS* has been the primary forum for my outreach activities, and is described in detail below.

Vision

Marine science is front-page news. Oil spills, coral reef collapse, sea level rise, ocean acidification - these are some of the most pressing science topics facing researchers, policymakers, and the general public. A basic understanding of these issues is critical to the overall protection of environmental capital, ecosystem services, and society as a whole. The interdisciplinary scientific principles underlying these topics are fundamental to a broad education in the Life and Earth Sciences.

To foster these principles in local classrooms, I proposed in 2012 to create a *Summer Workshop in Marine Science* at Georgia Tech. ***My overarching goal was to use marine science to enhance earth and life science education in middle and high schools, specifically targeting those in high needs (academically underperforming) districts in Fulton County.*** I proposed a 5-day workshop focusing on developing curricula and project-learning exercises for teaching middle and high school marine science in the context of global change. *SWiMS* would leverage the expertise and resources of the strong community of marine scientists at Georgia Tech, with curriculum development facilitated by collaboration with local educators in Atlanta and learning scientists at Georgia Tech's Center for Education Integrating Science, Mathematics, and Computing (CEISMC). Participant teachers would leave *SWiMS* with a set of marine science

teaching modules, with each consisting of lesson plans, informational resources, and instructions for hands-on lab or classroom exercises. Moreover, participants would become part of a network of educators and scientists that could be leveraged to develop future learning opportunities.

Development

The idea for *SWiMS* was incorporated into my proposal to NSF's CAREER program in 2012, with the goal of developing learning modules (lab/field exercises) in years 1 and 2 of the grant, and then seeking funds from the Georgia Improving Teacher Quality (ITQ) Program to implement the workshop beginning in year 3 (2015). NSF funded the CAREER grant. This enabled me to recruit local high school science teachers (Ms. LaTrice Swain, Arabia Mountain High School; Willa Mcgriff, Miller Grove High school) through the Georgia Intern Fellowship for Teachers (GIFT) program to work in my lab in the summer to help develop curriculum-appropriate lab exercises. This development phase (which to some extent is ongoing) involved brainstorming and testing new concepts in our lab, as well as reaching out to other marine scientists at Tech for both content knowledge and ideas for practical hands-on exercises. This also involved input from three graduate students and four postdocs from my group, several of whom have since worked each year to help implement the workshop. Using the developed modules, I submitted an ITQ grant in collaboration with a CEISMC administrator (Gustavia Evans) to fund *SWiMS* for 2015, with an initial partnership involving Fulton County Schools and the Ivy Preparatory Academy, a free public charter school authorized by the State Charter Schools Commission of Georgia that serves DeKalb and Gwinnett Counties. This proposal was successful, allowing *SWiMS* to be offered for the first time in 2015. We have subsequently received renewal funding for *SWiMS* in 2016 and 2017 (please see below).

Workshop structure and content

SWiMS is intended to promote marine science research as a platform for disseminating state and national standards in Life and Earth Sciences education. We therefore designed the curriculum to highlight and develop the "Disciplinary Core Ideas" in the Next Generation Science Standards and the Georgia Performance Standards in the Life and Earth sciences, within the context of marine ecosystem change. Notably, topics relating to *Matter and Energy Transfer in Ecosystems*, *Human Impacts on Earth Systems* and *Global Climate Change*, including ocean warming and marine biodiversity loss, are key standards in both Earth/Space Sciences and Life Sciences. Such topics relate directly to research by Georgia Tech scientists, including research in my lab and by scientists representing diverse fields in the Schools of Biological Sciences, and Earth and Atmospheric Sciences.

The workshop emphasizes these topics over 5 days each June and supports a maximum of 16 teachers, with each receiving 5 professional learning units and a \$500 stipend. The application process is selective and is prioritized to recruit middle or high school educators from partner high need schools in Fulton County, as facilitated by a partnership with Dr. Donna Barrett-Williams, the STEM director for Fulton County schools. The first three days of the workshop are held in Clough at Georgia Tech and involve a combination of hands-on lab exercises, lunchtime guest lectures by external scientists, and breakout discussion sessions. The workshop activities and lectures emphasize marine issues linked to human activity, for example the Deepwater Horizon oil spill and coral reef decline due to overfishing. The activities also highlight scientific

Frank James Stewart
School of Biological Sciences
Georgia Institute of Technology

exploration; for example, during one session in 2016, the group watched real-time video from a remotely-operated submersible 10,000 feet below the ocean's surface, while communicating live with the submersible operator (deep-sea scientist Dr. Peter Girguis, Harvard).

These and other *SWiMS* topics span diverse fields, including ecology, chemistry, atmospheric sciences, and the interface of technology (e.g., remote sensing) with biology, and therefore serve as examples of the cross-disciplinary training necessary for solving contemporary questions in science and other fields that require critical problem solving skills. At the end of each day during the workshop, participants convene with program administrators (Stewart, and learning scientists from CEISMC) to discuss the day's activities and to begin crafting lesson plans for use in upcoming semesters. Our goal with the latter is to help teachers take important first steps of actually shaping the *SWiMS* modules to meet the challenges of implementation in individual classrooms. The demonstration of *SWiMS* modules typically involves participation by Georgia Tech graduate students and postdocs (over 10 thus far), ***thereby creating opportunities for young scientists to become involved with science education.***

The *SWiMS* curriculum also provides a gateway through which students learn science by spending time in nature or participating in simple lab-based learning exercises. To help meet this goal, the final two days of the workshop are held at the Georgia Marine Institute at Sapelo Island, where administrators demonstrate field and lab activities through which students learn to think critically about marine ecosystems, their biological, physical, and chemical components, and their capacity for change. Learning activities at Sapelo introduce tools for biological collection (which are also appropriate for class activities at non-marine sites) and inexpensive learning projects that examine the effects of rising sea levels and oil spills on aquatic animals and plants. A primary goal of the Sapelo trip is to challenge teachers to integrate seemingly disparate subject areas into lesson plans framed around an important topic in marine science (i.e., developing "crosscutting" concepts) and integrating active learning exercises. For example, one learning module focuses on salt marsh ecosystems (abundant at Sapelo), challenging students to debate the benefits of marshes as storm buffers, breeding grounds, and biological filters, versus their management for economic and recreational goals (e.g., fishing, oil extraction). Publicly available satellite images can be included in the lesson to engage students in measuring marsh area over time. Moreover, ***the Sapelo trip creates an opportunity for participants to engage with nature,*** which can provide inspiration for designing science learning initiatives.

Assessment and Impact

SWiMS continues to build momentum and evolve. The workshop has been offered annually from 2015-2017 and ***has involved over 50 educators, with the vast majority from high needs or predominantly African American districts in Atlanta.*** Each iteration of *SWiMS* has involved teacher representatives from a different set of partner schools. Each year, of the 16 invited participant teachers (selected from pools of ~20-40 applicants), 15-16 were in attendance for all 5 days, with 50% of these teachers representing partner schools. The response from the teachers has been overwhelmingly positive, with demonstrated future classroom use of *SWiMS* material by >60% of the participants. Indeed, three of the 2015 teachers and two of the 2016 teachers participated as mentors in the next year's workshop, providing practical advice on how best to implement *SWiMS* exercises.

Teacher content knowledge increases significantly over the course of the workshop (evaluated by pre and post testing), and based on exit surveys, almost all of the teachers agree that the summer workshop provided them with strategies to transfer increased content knowledge into classroom practices. As one teacher (Agy Obi, Price Middle School) stated, "SWiMS is one of the best professional development opportunities I have attended. Thanks for the wonderful lessons and hands on activities at your campus. Additionally, I truly appreciate the opportunity to explore the wild lives at Sapelo Island. You planned it very well and I am very grateful for the great experience. Keep up the good work!" Another participant commented, "I appreciate that the staff didn't assume the teachers had adequate marine knowledge. Each module began with background information on the specimens and procedures used. Great summer professional learning experience."

Many of the teachers have begun incorporating *SWiMS* modules into their school year curricula. This implementation is evaluated by follow-up surveys and through a half-day meeting in the following spring. During this meeting, *SWiMS* teachers reconvene at Georgia Tech to discuss *SWiMS* content implementation and discuss improvements for future workshops, thereby playing an active role in shaping the evolving *SWiMS* curriculum.

Future

We view *SWiMS* as a starting point for future engagement between local teachers and Tech scientists and professionals. Indeed, ***SWiMS has created a network that has led to other opportunities for promoting science in local schools.*** For example, members of our lab routinely visit the classrooms of *SWiMS* teachers to give presentations and lead exercises. Most recently, a grad student, a postdoc, and I visited Northwestern Middle School to give six guest lectures focused on the human body's beneficial microbes. Our lab is also currently (winter 2018) involved in designing and judging oceanography class projects at Central Gwinnet High School (via *SWiMS* participant Tiffany Thai). We also recently worked with oceanography teacher Ken Leach (a *SWiMS* 2017 teacher from North Gwinnett High School,) to propose a project that would involve high school students in cultivating microbes from corals – this project idea was submitted in a collaborative proposal to NSF's Biological Oceanography program. Furthermore, based partly on contacts made through *SWiMS* (notably Ken Leach), there is interest at Georgia Tech in creating an introductory oceanography course that would enroll both GT freshmen and advanced high school students from the targeted *SWiMS* districts. Marion Usselman (Associate Director for Federal Outreach and Research at CEISMC) and I have been discussing this effort. As a result, and in concert with a scientist in the College of Computing, we recently (January 2018) submitted a Strategic Plan Advisory Group (SPAG) pre-proposal to develop an augmented reality-based learning tool (focused on microbial interactions) that could be used in such a course.

We anticipate that similarly positive and diverse opportunities will continue to arise as a result of *SWiMS*. Indeed, although the ITQ program was cancelled in 2018, we will continue *SWiMS* in 2018 by integrating the workshop into an existing NSF-funded teacher development program in place at CEISMC (PI Marion Usselman). I look forward to continuing to use *SWiMS* as a foundation for STEM outreach and collaboration at Georgia Tech.

CENTRAL GWINNETT HIGH SCHOOL

564 W. CROGAN STREET, LAWRENCEVILLE, GEORGIA 30046

(770) 963-8041 FAX: (678) 442-5152

www.centralgwinnett.net



BLACK KNIGHTS

January 18, 2018

Dear Academic Outreach Selection Committee:

I would like to express my sincere and enthusiastic support for the nomination of Dr. Frank Stewart for the Faculty Award for Academic Outreach. This past summer, I participated in the Georgia Institute of Technology SWiMS program, a program created by Dr. Stewart. The overall goal of the program is to train high school teachers in the field of Oceanography and Marine Biology. Oceanography is a course that is offered at most high schools throughout the state, but for which there is almost no training. The only requirement to teach the course is a certificate in broad field science which is obtained by receiving a passing score on a state test of basic science knowledge. The vast majority of Oceanography teachers sadly have no training in Oceanography whatsoever. I include myself in this group. Having obtained my PhD in Physiology in 2009, I decided to change careers and teach science in August of last year and was surprised when I was assigned to a field very different from my own. With no training in Oceanography and no experience as a teacher, my first year of teaching was very difficult. I was very excited when I was selected to participate in the SWiMS program. During the program, Dr. Stewart and his lab modelled some Oceanography labs and activities that we could do in our classrooms, taught us some basics of Marine Biology, allowed us time to collaborate and make connections, and took us to the Sapelo Island Marine Institute where we were able to collect samples to take back to our schools. The hands on training and experience that Dr. Stewart has given me has been unlike any that I have received anywhere else. The school system does not provide any sort of materials or opportunities for Oceanography teachers. We are given a list of topics, but no guidelines or sample labs. The course is often overlooked because there is no state mandated test for it. There is nowhere else that we could receive this training and the program is a necessity to our field.

Dr. Stewart's commitment to Oceanography and Marine Biology education does not stop at training teachers, however. After participating in the program, I reached out to Dr. Stewart for several reasons. Having been trained in physiology, I am at a loss as to how to guide the students in my class who wish to become marine biologists. (and there are a few). In addition, I lack the real world experience that excites my students. Dr. Stewart and I have developed a project for my students to research and perform experiments on alternative fertilizers to decrease algal bloom formation in the ocean but still produce enough food to sustain the growing world population. Dr. Stewart will spend two days at my school introducing the topic to the students in a way that only a real Marine Biologist can and giving them feedback on practicality (or lack thereof) of their proposals. Our school is a Title I school and around 80% of our students are minorities from socioeconomically disadvantaged backgrounds. I am aware of the striking lack of minorities in science. Many of our students have never met a real scientist before and are unaware of how to pursue a career in science. Many of them even think that because of their financial status, they could never be successful in this type of career. Dr. Stewart's visit to our school will give these students a role model and a contact to help them be successful. Not all of my students want to be scientists, however, but all of them require an awareness of the issues plaguing the Earth and its oceans. Not all of them will be scientists, but they will all be voters. The serious issues plaguing our planet today will never be solved unless our children are educated about the dire need to address them. Dr. Stewart's presence at our school will not only inspire future marine biologists and

oceanographers, but will educate their generation in issues like global warming, overpopulation, and chemical pollution so that when they become consumers and voters, they can be more wise than the generation that came before.

The Oceanography program at Central Gwinnett High School owes a huge debt to Dr. Stewart and the work that he has done to help our students. I sincerely hope that you will consider the impact that he has made on our lives when considering whom to select as the recipient of this award.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tiffany L. Thai', written over a horizontal line.

Tiffany L Thai, PhD
Science Teacher
Central Gwinnett High School
Lawrenceville, GA

NORTH GWINNETT HIGH SCHOOL
20 LEVEL CREEK ROAD, NE, SUWANEE, GEORGIA 30024

PHONE: (770) 945-9558

“All Students Can Be Leaders”



J. ALVIN WILBANKS
 CEO/SUPERINTENDENT

NATHAN BALLANTINE
 Principal

MR. DAVID STRICKLAND
 Community School Director

MS. KIRSTEN BAKER
MR. DOUG BRITTEN
DR. JILL CHALK

DR. MATTHEW CHAMPITTO
MS. KRISTA HERRON

MS. EMILY LOUGH
MS. TERESA SIEBENBRUNER
MR. BRADLEY SIEGFRIED
MS. LIN THORNTON
 Assistant Principals

To whom in may concern:

This letter is to give Frank Stewart and his development of the SWiMS program, my highest recommendation for the Faculty Award for Academic Outreach. I am an oceanography teacher in Gwinnett County and have been teaching for 33 years. As a season veteran, I always think, “I know it all” so when I started this workshop I did not know what to expect. I was definitely surprised by all of the new content I was exposed to. Dr. Stewart created a program, which exposes teaches to background knowledge, current research, and then allows the participants to explore modules that use the information provided and lab experience that reinforce the information. I love the SWiMS format because it provides teachers with useable lessons and labs and allows us time to practice them and ask questions if needed. The modules are all scalable so any teacher can use them in a manner that is acceptable for whichever grade level they teach. Dr. Stewart also introduced me to world-renowned researchers in ocean science. During lunch, we listened to the researchers and their current research experiences in the field. We learned about chemosynthesis, whale sharks and the Deepwater Horizon disaster. After finishing the module portion of the workshop, we actually went to the ocean and saw how the content that we talked about the previous three days applied to the state in which we teach. This allowed us to gain more experience on the topics and examples to tell our students. The SwiMS program definitely taught me a lot and gave me real-life experiences that have already made it back to my students at North Gwinnett High School. SWiMS = A great program created by a great teacher for teachers. I recommend Dr. Stewart to the highest for this great outreach workshop.

Ken Leach

Oceanography teacher

North Gwinnett High School

Benjamin Banneker High School



Dr. Duke Bradley, Principal
 Dr. Ava Debro, Asst. Principal
 Ramon Garner, Asst. Principal
 Doroiane Gunter, Asst. Principal
 Damon Smith, Asst. Principal

6015 Feldwood Road
 College Park, GA 30349
 January 26, 2018

To Whom It May Concern:

I am very pleased to write this recommendation on behalf of Dr. Frank Stewart. As a participant in the 2015 Summer Workshop in Marine Science (SWiMS), I have had numerous occasions to work with him as a teacher at Benjamin Banner High School. Dr. Stewart has been an amazing director of this program and has a strong foundation in biological sciences. Dr. Stewart, without doubt, is an exceptional leader. He has designed this program to be one of the best that I've ever experienced in my 8 years of teaching secondary education science. Through lectures by faculty, break-out discussions and strategic lesson planning sessions, and hands-on lab and field exercises, this 5-day SWiMS course gave me confidence that I could implement the modules, knowledge, and experiences that I gained into my classroom.

Behind every great team is a great leader. Dr. Stewart, built an outstanding SWiMS Team at Georgia Tech. This team consisted of graduate students and other professors who provided support and knowledge about marine science not only during the 5-day workshop, but the entire academic school year. I have observed Dr. Stewart's leadership style as being high task and high relationship. He works well with others and appears to handle stress and difficulties with great composure.

Dr. Stewart is a very focused and conscientious director of SWiMS. He has maintained a great level of achievement throughout this program, which is evident in the science classrooms in and outside of the state of Georgia. I'm convinced that he has the attitude and mental prowess of an excellent leader. He is the change agent for teachers like myself that has given me the opportunity to give my students long-life experiences in the field of science.

I'm personally impressed with Dr. Frank Stewart and feel that he is most deserving of your consideration for the Faculty Award for Academic Outreach. It is individuals like Dr. Stewart that give me confidence in the future of our society.

Sincerely,

Cordara L. Taylor
 Biology Teacher
 Benjamin Banneker High School

"Excellence without Excuses"



School of Biological Sciences
310 Ferst Drive
Atlanta, Georgia 30332-0230

February 28, 2018

Dear awards committee,

I am writing to briefly highlight the value of the academic partnerships fostered through the Summer Workshop in Marine Science (SWiMS), which have collectively broadened the scope of earth and life science curricula available to Atlanta-area teachers. The specific collaboration involving GT student Josh Parris and Rockdale teacher Jennifer Jones is emblematic of the benefits of working across educational levels to enhance outreach, and has been particularly instrumental to my growth as an educator.

The SWiMS partnership with Josh and Jennifer is now in its 4th year, and both partners have been vital to the continuing growth of the program. Josh's work in creating and testing SWiMS learning modules, and then in leading exercises during the workshop, has created the foundation on which SWiMS curriculum is based. It's not an exaggeration to say that much of the content and success of the workshop is due to Josh – indeed, he has been my right hand throughout the program. This of course has been incredibly helpful in allowing me to delegate key responsibilities and also to grow as a mentor. More importantly, it has been an honor to watch Josh mature as a lecturer and leader. In my opinion, he has emerged as one of the most informed, articulate, and capable instructors in his peer group. I know he has ambitions of continuing his role in education beyond Georgia Tech - it has been a particular pleasure to know that SWiMS is playing a small role in his professional development.

It has been a similar privilege to work with Jennifer during SWiMS. Her contributions as a workshop participant in year 2015, as a returning mentor in 2016, and then as an education consultant in 2017, have been vital to program development. Specifically, her vetting of the SWiMS modules in 2016 helped us identify and troubleshoot obstacles to moving certain lab exercises into actual classrooms. In 2017, she also played an important role in translating the curricula into targeted lesson plans, and in helping other teachers develop classroom-specific plans. Indeed, her role as a mentor for SWiMS teachers created vertical continuity in the program and has enabled other teachers to overcome barriers to classroom use. Importantly, her motivation, intellectual curiosity, and positive energy throughout the program have been motivation for participants and instructors alike.

The broader SWiMS network, now involving over 50 educators, depends on individuals like Josh and Jennifer. Their efforts to sustain our partnership are noteworthy, not only because they have helped grow SWiMS into a success, but also because they exemplify how single individuals can create networks of opportunity. Through their work at SWiMS, Jennifer and Josh have fostered connections to other educators, many of which have led to opportunities to bring Tech-affiliated scientists into local schools, most recently on March 2, 2018 through a visit by Josh and our collaborator Lisa Hoopes (Georgia Aquarium) to Amana Academy (Fulton County). These offshoot activities allow us to reach a much broader audience and are a direct result of relationships initiated at SWiMS, made possible by the dedicated work of our partners.

Sincerely,

A handwritten signature in blue ink that reads 'Frank Stewart'.

Frank Stewart
SWiMS Director

D. Joshua Parris, PhD Candidate
Georgia Institute of Technology
Marine microbial ecology, Stewart Lab
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Education Partnership Statement

I am a 5th year PhD student and for the past 3 summers I have helped lead, organize, and teach the week-long Summer Workshop in Marine Science (SWIMS) at Georgia Tech. The idea for this workshop was conceived in 2012 by our lab PI, Dr. Frank Stewart, and funded as part of his NSF CAREER grant with additional funding from the Georgia Improving Teacher Quality (ITQ) program. Our lab's mission with SWIMS is to promote marine science as a topic area for learning and satisfying many of the Georgia middle and high school science learning standards. We aim to do this in a fun, collaborative environment using hands on lab activities that will get students motivated about science. During SWIMS teachers from local high schools participated in lab modules from marine science subject areas including elemental cycling by marine microbes, the contribution of human activities to algal blooms and coral stress, and the chemical ecology of behavior (to name a few). Being involved from the start of SWIMS, I was able to help draft content, design, supply, and teach many of these modules. For example, I created an experimental activity using peppermint shrimp to quantify organismal response to physical and chemical cues in the environment. Over the final two days of the SWIMS workshop, we take teachers on a two-day learning/field excursion to Sapelo Island to link the marine science principles they've learned in the lab with practical applications in the field. In addition to general workshop logistics, I have also been heavily involved with coordinating this annual trip. Most importantly, the long-term goal of SWIMS is for teachers from the program to implement what they've learned in their own classrooms. I have had the opportunity to visit the classrooms of SWIMS participants as a guest lecturer and observe firsthand the impact SWIMS has had on local middle and high school students.

I have gained a great deal personally because of involvement in the SWIMS workshop early in my graduate program. From a practical perspective the SWIMS program enhanced my leadership and teaching skills by giving me an additional venue to act as an instructor. It challenged my creativity through the crafting of new, engaging learning modules. It has taught me to be organized and motivated since the success of many workshop days depended directly on me. The SWIMS program also instilled the importance of productive collaboration as I worked with Dr. Stewart, lab mates, local educators, and facilitators from CETL at Georgia Tech to achieve a common goal (developing marine science lab content to address Georgia learning standards). Our lab has built lasting partnerships with workshop participants as a result of these collaborations. Finally, I do not believe science exists in a bubble and it is incumbent upon scientists to share their knowledge with others. The success of the scientific community as a whole depends on an understanding of our research by the public and nurturing of future scientists. The SWIMS platform has given me a venue for sharing my own thesis research and knowledge with local educators and students. I owe a major debt of gratitude to Dr. Stewart and all SWIMS participants for allowing me to be a part of this program.

Sincerely,
D. Joshua Parris



School of Biological Sciences
310 Ferst Drive
Atlanta, Georgia 30332-0230

February 20, 2018

Dear awards committee,

I am writing to offer my unequivocal support for Josh Parris' nomination for the Education Partnership Award for his role in the *Summer Workshop in Marine Science* (SWiMS). As Josh's Ph.D. advisor and the director of SWiMS, I have had the pleasure of knowing Josh for over five years and of observing firsthand his crucial participation in developing and administering SWiMS. To put it bluntly, this program would likely not be possible without Josh. The following is a *short* list of his contributions:

-He wrote, edited, and tested several of the education modules used in SWiMS. These modules consist of background material, step-by-step instructions for hands on lab or classroom exercises, lists of target education standards, and questions for homework assignments or classroom discussion. Most recently, for SWiMS 2017, Josh crafted a module in which students design experiments to test how marine animals (shrimp) respond behaviorally to chemical cues. In developing this exercise, Josh spent weeks designing and testing the chambers used in the assay to optimize cost effectiveness (i.e., using readily available plastic supplies) and ease of use, as well as testing various animals and experimental questions. This module was among the most popular during the 2017 workshop.

-He served as an instructor in each of the past three workshops. As an instructor, he prepared and staged the module materials, lectured to introduce module content and background knowledge, guided the teachers through the associated lab exercises, and worked with them to reshape module activities to meet the goals of specific classrooms. The preparation step was often particularly time and energy-consuming. For example, several of the modules required Josh to maintain live animals for days prior to SWiMS and to collect materials from the field (e.g., sediments from a local pond). Josh was always the first to volunteer for these tasks (I think he secretly really enjoys playing around in the mud – a true biologist).

-He served as the primary field team leader for the Sapelo trip in each of the past three workshops. This involved (among other duties) arranging van transport to the coast, driving the teachers, and leading instructional sessions in the field. Josh, in particular, has a deep knowledge of marine fish. He therefore was tasked to lead the fish survey that takes place on the final day of the workshop (conducted using a small boat and trawl net). During the survey, Josh works with the teachers to identify the caught species and to challenge them to discuss the ecology of Georgia coastal ecosystems. This involves distilling specialized information to participants from diverse knowledge backgrounds. He is consistently patient, informative, and engaging – I can't think of anyone more suited for the task.

-He continues to engage with teachers after the workshop. This involves fielding email questions during the school year, preparing module materials (when available and requested) for use by the teachers in their classrooms, and traveling to local schools to give informational lectures or help in SWiMS-based learning activities. Most recently (Feb 2018), Josh visited Central Gwinnet High School for a day to lecture about marine pollution and to help oceanography students design experiments to test the effects of fertilizers in seawater. Josh is a thoughtful and articulate speaker (as also evidenced by his lectures during the workshop itself), and his talks are consistently popular.

Again, this is a subset of Josh's contributions. In short, he is one of the rocks on which SWiMS is built. I am already ruing the day when he will no longer be my right hand in making this program such a rewarding experience. Please contact me if you have any questions, and thank you for considering Josh for this award.

Sincerely,

Frank Stewart
Associate Professor



Rockdale County High School
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Conyers, Georgia 30012
(770) 483-8754



Georgia School of Excellence

Frank Daniels, Principal
 John April, Assistant Principal
 Pheneik Baskett, Assistant Principal
 Stacy Clark, Assistant Principal
 Jimmy Fields, Assistant Principal

Dear Education Partnership Awards Committee,

As a veteran teacher of 16 years I have had the honor of participating in the SWiMS program for three consecutive years. During this time the SWiMS program has provided many experiences that have enhanced my instruction in the classroom as well as my personal quest in a lifetime of learning. The program gave me key science phenomena that were able to span various areas of science, not just marine science. I was able to alter and tweak these phenomena and science activities to fit the needs of my students. As an educator of students in Title I schools it is imperative to engage and expose students to areas of science that may never be offered or available to them. My students were able to understand that topics in science have cross cutting relationships with one another, hence marine science touched earth science, which touched environmental science, which touched chemistry, etc. Not only were my students able to see this and make those connections, I was able to redevelop my instruction to provide those moments to discuss that. Those moments were cultivated by SWiMS and harvested over the fall and spring with the opportunities that were offered to me.

One of the most powerful activities that I got from the program was the use of the Winogradsky column that I created in the 2015 summer program. By learning to create and utilize the columns as a teaching tool, I was able to constantly refer to the microbial processes and interactions that the students could see develop over time. The following year I was able to expand on what I learned by implementing it as an Ongoing Observation and Inquiry lab with student-created variables within the Winogradsky Column. During the 2015 SWiMS summer program, I was able to learn and explore deeper content-rich topics through lectures from experts from the field such as Al Dove- GA Aquarium, Dr. Cavanaugh- Harvard University, and Dr. Joel Kostka- Ga Tech. I believe this shows extraordinary effort to bridge the gap between experts, educators, and students; I still share some of these stories of what I learned during these lectures with my students.

During the next year of SWiMS, I was asked to return as a teacher mentor in the summer 2016 program and consultant for the 2017 year. During this time I was able to give back to the program by assisting in recruiting and guiding new teachers on the expectations of the Summer Program. Most importantly, I was able to spearhead discussions and lesson planning with teachers on how to simulate and modify their experiences from the program to applicable lessons in the classroom for middle and secondary students in all content areas. In 2017 I was chosen to participate in the Atlanta Science Festival. During the festival, we were able to demonstrate some of the modules that we learned and implemented in our classroom to other teachers that were visiting. Being able to pass on a nugget or gem of science phenomena for other teachers that didn't have the opportunity to experience SWiMS was one of the most satisfying experiences by allowing a chance to give back to the program as it has given unto me. I am truly grateful for all the participants, post-doctoral students, lecturers and leaders; they have inspired me to explore and expand depths of my teaching so that students may experience science in a memorable way.

Jennifer Jones Ed.S.
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Georgia School of Excellence

Frank Daniels, Principal
John April, Assistant Principal
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Jimmy Fields, Assistant Principal

February 26, 2018

Dear Education Partnership Awards Committee,

I highly recommend Ms. Jones for The Teacher Partner- Education Partnership Award from Georgia Tech- Center for Teaching and Learning. During her teaching career, Ms. Jones has served as a new teacher mentor and teacher leader in Science instruction. She has proudly represented Rockdale County Public Schools at professional developments within and outside the district. She has proven that the knowledge gained from these opportunities shape and improve her classroom instruction in ways that are exemplary and serve to assist other teachers within the district. Ms. Jones is an honorable candidate and has the support of her instructional staff supervisors as well as school leaders.

Stacey Clark
Assistant Principal
Rockdale County High School
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