NOMINATION COVER SHEET
2016 Virginia Outstanding Faculty Awards

1. NAME

Full (Legal): April LaDawn Hill

Preferred First Name: April

2. INSTITUTIONAL INFORMATION

Institution: University of Richmond

Rank/Position Title: Professor

Year Rank/Title Attained: 2013

Years at Institution: 11

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3. PROFESSIONAL INFORMATION

Academic Discipline: Biology

Specialization/Field: Genetics, Evolutionary Developmental Biology

Type of Terminal Degree: Ph.D.

Year Awarded: 1995

Awarding Institution: University of Houston

4. PERSONAL INFORMATION

Please check only one box:

RESEARCH/DOCTORAL INSTITUTION NOMINEE: ☐
MASTERS/COMPREHENSIVE INSTITUTION NOMINEE: ☐
BACCALAUREATE INSTITUTION NOMINEE: X
TWO-YEAR INSTITUTION NOMINEE: ☐
TEACHING WITH TECHNOLOGY NOMINEE: ☐
RISING STAR NOMINEE: ☐

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Signature (President or Chief Academic Officer) _____

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Excerpts from Mission Statement

The mission of the University of Richmond is to sustain a collaborative learning and research community that supports the personal development of its members and the creation of new knowledge. A Richmond education prepares students to live lives of purpose, thoughtful inquiry, and responsible leadership in a global and pluralistic society. The strategic plan in support of this mission calls for:

- A learning environment unlike any other in higher education, offering students an extraordinary combination of traditional strengths in the liberal arts with law, business, leadership studies, and continuing education

- A distinctly integrated student experience, coordinating a rich and innovative life for students inside and outside of the classroom, with excellent programs as varied as international study, arts, and athletics

- A defining spirit of opportunity and welcome to excellent students, faculty, and staff of all means and backgrounds, sustained through a bold program of financial aid, a dedication to fairness in all that we do, and an authentic culture of inclusivity that seeks and prizes diversity of experience, belief, and thought

- A determination to engage as a meaningful part of the Richmond community, of the nation, and of the world, drawing on our long commitment and well-established foundations for such work

Summary of Accomplishments

Teaching

Dr. Hill is a nationally recognized leader in STEM education. She has been the recipient of several University of Richmond teaching awards including the Distinguished Educator Award, the Advisor Excellence Award, and the Outstanding Mentor Award. She was also selected among the top tier of national nominees for the Robert Cherry Award of Great Teaching from Baylor University last year and was in the final selection round of nominees for the 2014 SCHEV Outstanding Faculty Award. She teaches at the introductory, mid-level and upper-level of the undergraduate science curriculum, and engages a large number of undergraduates in cutting edge research as members of her active laboratory. She is dedicated to helping increasing the number of underrepresented and minority students in the sciences and to improving the college STEM experiences and future career prospects for all STEM students. To this end, Dr. Hill recently led the University of Richmond's participation in the White House "College Opportunity Day of Action" where Richmond committed to increasing STEM degree access, preparation and completion for more students from low income and underserved backgrounds as well as students traditionally underrepresented in STEM. Evidence of her superior accomplishments in teaching that distinctly support the University of Richmond mission include:

Creation of courses and curricula that support a collaborative and student-engaged learning community where the creation of new knowledge is a key aspect of learning goals:

- Dr. Hill's leadership in creating courses and curricula that support a collaborative and student-engaged learning community was recently featured in the prestigious journal, *Nature* (M. Baker (2015) "Inner Scientists Unleashed." *Nature*. 523: 276-278). This article highlighted Dr. Hill's role in the development and implementation of a nationally recognized interdisciplinary science course funded by the Howard Hughes Medical Institute (HHMI) called *Integrated Quantitative Science (*IQS*)*. This course creates a learning environment unlike any other in higher education today, and Dr. Hill has co-authored two peer-reviewed pedagogical publications on the design and impact of the IQS course. The course centers on the idea that solving the most challenging global problems will require collaborations among multiple disciplines. University of Richmond science faculty designed IQS as a year-long course integrating first semester concepts in biology, chemistry, computer science, mathematics, and physics. IQS consists of two units of lecture, plus a weekly lab and workshop. To leverage the expertise of participating faculty, and to allow for a broad range of interdisciplinary as well as the necessary disciplinary topics, the faculty selected *antibiotic resistance* and *communication/cell signaling* as themes for each semester of the course. The main goal for IQS is to engage students through an integrated and interdisciplinary course that enables them to solve real-world problems using multiple methods including quantitative and research approaches. Dr. Hill took the lead in designing a series of investigation-based laboratories involving novel research so students could directly study antibiotic resistance while trying to find real-world solutions to the problem. This course has provided course-embedded research opportunities for students, and has exposed faculty to different pedagogies, interdisciplinary approaches to their teaching, and new interdisciplinary areas of scholarship. The majority of IQS students continue undergraduate research beyond the first funded summer. Over the past six years 99% of students completing IQS have gone one to take additional STEM courses, 92% have become STEM majors and 100% have graduated in four years with 30% entering interdisciplinary STEM Ph.D. programs.
- Dr. Hill recently co-developed a new course that represents a natural outgrowth of the successes in IQS. This course, Science Math and Research Training (SMART), is an integrated course in first year biology, chemistry and calculus. Like IQS, the course is

taught around big themes and problems (e.g., HIV). The SMART course targets students who are very interested in science, but who do not have high school backgrounds in these areas that have prepared them for the rigors of a course like IQS (e.g., no calculus in high school). The goal of SMART is to provide students with the key concepts and skills necessary for success in future STEM courses while also helping them discover the excitement of authentic research. The course is unique because through active pedagogy, student engagement and mentorship, as well as creation of a learning community, students in SMART finish their first year at the same place in the curriculum as their peers. Thus far, 98% of the students completing SMART have gone on to additional STEM courses and 95% who have declared majors and minors are in STEM. Dr. Hill is often invited to give workshops about the pedagogical innovations and learning outcomes of the courses, and SMART and IQS have inspired the development of interdisciplinary science courses at several other colleges and universities.

- Dr. Hill routinely teaches Biology courses to first and second year students (e.g., Introduction to Biological Thinking; Genetics). Her courses are always fully enrolled and receive some of the highest evaluations in the sciences. She uses active learning pedagogies that represent high-impact practices in STEM education. Her first and second year students often take her upper level courses. Dr. Hill consistently revises her courses to reflect the latest trends in biology research and education. She has also invested considerable time and effort to help her department colleagues develop clear learning goals and expected outcomes for students in the first and second year curriculum during ongoing curricular revisions and assessments over the past few years. She is committed to student engaged learning with authentic research opportunities in the teaching labs.
- Dr. Hill teaches three different upper-level Biology courses: Evolutionary Developmental Biology, Genomics, and Epigenetics. Each course centers on multi-disciplinary perspectives that help students build crucial skill sets. She aims to have students increase their ability to critically evaluate the primary literature, and communicate scientific findings effectively in written and oral form. The Evolutionary Developmental Biology laboratory focuses on a semester-long research project where groups of students work on novel questions about the evolution of animal body plans. The laboratory experience culminates with a written scientific journal style article involving class peer-review. In Epigenetics and in Genomics, the courses rely entirely on student-led discussions of the topics, and their evaluation of primary literature and associated experiments. The students also have frequent writing assignments and oral presentations. In all of her upper-level courses, 100% of the students agree or strongly agree that the course stimulated their critical and analytical thinking, that the course was more challenging than others, that the quality of teaching was very good and that they would recommend Dr. Hill to others.

A distinctly integrated student experience, coordinating a rich and innovative life for students inside and outside of the classroom

- Mentored research is often one of the most important teaching experiences faculty can offer undergraduates. In the laboratory, Dr. Hill provides students with experiences where they obtain firsthand knowledge of the scientific process from the inception of ideas, development of experiments to test their ideas, analysis of data, and to the writing, revision and publication of manuscripts. These experiences are especially important for students wishing to enter graduate programs in the sciences. This type of teaching requires a large amount of time, but is the most gratifying aspect of her work with students. Dr. Hill typically mentors 6-8 students per semester, and each student spends 6-12 hours per week working in her lab. She mentors many of these students each summer for 10 weeks (40 hours per week). She also has mentored HHMI-supported pre-first year students for the past nine years as part of a summer bridge

initiative for underrepresented students in STEM. Finally, she has advised high school students from the local Richmond school system who participated in the University of Richmond's Math Science Investigators Program. In sum, since arriving at Richmond in 2004 she has mentored or co-mentored over 50 undergraduate research students - most have spent 2-4 years in her lab.

- To support this high level of student engagement, Dr. Hill has obtained external funding from a number of sources (e.g., NSF, Jeffress, CUR, Merck/AAAS, Beckman, HHMI). She has also helped her students obtain internal funding for summer work, supplies and travel. Her students have taken part in numerous scientific presentations (talks and posters) at regional, national, and international meetings. Seven of her research students have written honors theses. Thirty-six different research students have been co-authors on 19 publications with her throughout her career. Her students have gained entry to excellent graduate and medical programs. The vast majority of her students have continued their education in graduate or medical school. Her research students have won departmental awards as well as college honors. Several of her students have won special awards from prestigious graduate programs or gained entry to highly competitive programs. Three of her students won the James B. Duke Fellowship at Duke University, which aims to attract outstanding young scholars to Duke Ph.D. programs. Another student won the Michael A. Debakey Scholarship for outstanding applicant for the Graduate School of Biomedical Sciences at Baylor College of Medicine. Another was accepted to the highly selective Developmental and Chromosomal Biology Program at Oxford. Yet another was one of 15 students from around the world accepted to Stanford University School of Medicine's Genetics Program. Most recently, three graduating seniors went to Ph.D. programs at MIT, Duke, and Vanderbilt and one was selected for Teach for America. Of the HHMI pre-first year students who worked in her lab and have now graduated, all have gone on to graduate or medical programs. While at the University of Richmond, 42% of the students Dr. Hill has mentored are from backgrounds traditionally underrepresented in the sciences.

A defining spirit of opportunity and welcome to excellent students, faculty, and staff of all means and backgrounds, sustained through a bold program of financial aid, a dedication to fairness in all that we do, and an authentic culture of inclusivity that seeks and prizes diversity of experience, belief, and thought

- As part of her role as director of the University of Richmond's HHMI Undergraduate Program, Dr. Hill led the development of the University of Richmond Integrated Science Experience (URISE) summer program, designed to remove barriers that impede the persistence, retention, and success of underrepresented students in STEM. Dr. Hill directs URISE, and recruits a group of 15-20 incoming first year students to spend 5 weeks during the summer in instructional sessions that help them build skills and competencies in science, math, writing and communication. URISE students also benefit from community building and career development experiences. Students who participated in URISE indicate that the experience helped them feel more prepared for courses (e.g., lab and quantitative skills, oral communication, study skills), made meaningful connections with faculty and other students, and provided opportunities to learn more about what the University of Richmond offers its students. Thus far, 100% of URISE students have gone on to conduct research in summers after their first and second year of college, and 100% have taken either SMART or IQS courses. Of the students who have declared a major, 93% are STEM.

Discovery

Dr. Hill uses marine and freshwater sponges as model systems to ask questions about the genetics and development of animal evolution and symbioses. Sponges are ancient animals

that retain characteristics of an early experiment in multicellularity while also sharing some highly conserved features with other animals. Research in her lab focuses on the role of conserved developmental control genes and gene networks that originated prior to the advent of animal adaptations such as tissues and nervous systems. She also works on elucidating the genetic pathways involved in the evolution of animal symbioses using sponges as a model.

All of Dr. Hill's research provides undergraduate students with access to cutting edge ideas. In the context of that sophisticated environment, she aims to convey key skills to her students while they participate in authentic discovery and the creation of new knowledge. Indeed, many of the research experiments students conduct in her courses also integrate questions and hypotheses involving her primary research.

- Dr. Hill has consistently secured external funding for her research program since 2007. Her funding included two grants from different divisions of the National Science Foundation. One of those grants was funded by Biological Oceanography and was an interdisciplinary collaboration with three colleagues to study "Stability and structure of temperate and tropical marine sponge symbiont communities in response to climate change." The other NSF grant was from the Division of Environmental Biology Assembling the Tree of Life Program for "PorToL: The Porifera Tree of Life." This grant involved collaboration with an international team of scientists to generate a well-supported molecular and morphological phylogeny of the sponges. The stated goal of that program was to improve understanding of early animal evolution. Dr. Hill has also received funding from the Thomas F. and Kate Miller Jeffress Memorial Trust to study *"Development of a 'Model Sponge System' to Study the Evolution of Early Animal Body Plans and Sensory Systems*". Another successful grant with a colleague in Germany was awarded from the Deutsches Elektronen-Synchrotron (German Electron Synchrotron; DESY), and permitted the use of new high brilliance 3rd Generation Synchrotron Radiation Source -Petra III to study "Integrative functional genetic study of developmental genes in early evolved multicellular animals." Most recently, Dr. Hill's lab received research funding from the Evo-Devo-Eco Network of The National Science Foundation to host a graduate student from France to study *"The Rho/Rock pathway: a metazoan conserved molecular toolkit for epithelial morphogenesis."* In spring of 2015, Dr. Hill learned that her pre-proposal submitted to the NSF Division of Integrative Organismal Systems was invited to submit a full proposal for the next stage of competition (only 25% of pre-proposals were invited to the next stage). The number and scope of external grants that Dr. Hill has obtained is exceptional at a liberal arts school like the University of Richmond.
- Dr. Hill has co-authored sixteen peer-reviewed, primary research papers, three book chapters, one comprehensive review, and two pedagogical papers at the University of Richmond. She has another primary research paper currently in review. She publishes papers at a rate (≈ 2 papers per year) that is well above the national rate in biology at primarily undergraduate institutions (0.46 papers per year, *Academic Excellence*, 2001). The majority of her papers have been published with undergraduate student co-authors who contributed to all aspects of the research. Furthermore, her publications include collaborations with scientists from around the world. One of her recent manuscripts described the development of a gene knockdown technology for sponges (the first of its kind), and was cited as a "highly accessed" article within a few weeks of publication.
- Over the past decade, Dr. Hill has been a leader in the development of emerging sponge model systems that allow the scientific community to study basic developmental processes fundamental to all animals. Furthermore, these model systems have the potential to inform studies on disease related processes associated with animal multicellularity (e.g., cancer, autoimmune disease). To this end, another significant outcome of her work has involved the recent sequencing of the genome for a model freshwater sponge. She is a principal investigator on the Sister Sponge Species

Genome Sequencing Initiative. As part of this project she attended and presented at a meeting in Germany regarding the initial organization, was able to obtain Next Generation DNA Sequencing at Baylor College of Medicine for *Ephydatia* that could be contributed to the genome project, and secured her place as a PI with several faculty around the world (all of whom work at R1 level research institutions in Canada, Germany, France, Croatia, Norway, and Japan). She took two students with her to Croatia for the first sponge genome workshop where they presented data from her lab and then learned bioinformatic approaches for genome assembly and annotation. This work also led to a grant submission to the Centre de Synthèse et d'Analyse sur la Biodiversité (CESAB) in France with our international collaborative group. The *Ephydatia* genome sequence will be a significant asset to the scientific community and will allow her lab to conduct new and exciting experiments.

- Dr. Hill's work on the evolution of intracellular symbioses is also generating important insights into important biological questions. She was responsible for producing transcriptomic databases for sponges involved in different stages of infection with photosynthetic symbionts. Students working in her lab have developed and implemented computer programming and molecular genetic skills to build resources that will be used by the broader scientific community.
- Dr. Hill and her students routinely present their work at local, national, and international meetings, presenting more than 50 talks or posters at scientific meetings over the past eleven years. She has been invited to present her work at several institutions in the U.S. and abroad. In recognition of her research accomplishments and dedication to student training, she was recently elected to the Executive Committee of the Society for Integrative and Comparative Biology.

Knowledge Integration

Dr. Hill is a recognized leader in life sciences curricular development. In addition to developing, teaching and continually revising her own set of innovative courses, she is part of a national dialog on undergraduate curricular reform driven by evidence-based teaching pedagogies. She is also strongly committed to social justice in the sciences and combines her knowledge of biology to increase understanding of issues around race. Her work and leadership in this area recently led the Howard Hughes Medical Institute to ask for her help in implementing their new *Inclusive Excellence* grant initiative.

- Dr. Hill is a national *Vision and Change Leadership Fellow* of the Partnership for Undergraduate Life Sciences Education (PULSE). The 40 PULSE Fellows were selected and are supported by a jointly funded program by the Howard Hughes Medical Institute, the National Institutes of Health – NIGMS, and the National Science Foundation. The charge of the Leadership Fellows is to lead a national conversation to develop effective strategies for the sustained implementation of the *Vision and Change in Undergraduate Biology Education: A Call to Action* recommendations. As one of the 40 inaugural Leadership Fellows in the U.S., Dr. Hill helps lead efforts to catalyze change at the departmental level by identifying effective strategies for institutions across the higher education landscape. In a letter to the University of Richmond Dean and Provost, leaders at NIH, NSF and HHMI indicated that in the first year of Dr. Hill's fellowship – "demonstrated extraordinary commitment to this effort, all while maintaining the balance of your responsibilities at your home institution...contributions of V&C Leadership Fellows has significantly impacted the national discourse on science education reform."
- Dr. Hill is currently a Co-PI on two grants funded by NSF that relate to her PULSE Leadership Fellow role. Both grants support work to help life science departments implement the recommendations of *Vision and Change*.
- Dr. Hill has presented workshops and talks at both regional and national meetings about curricular reform efforts. She has presented on the development and implementation of

the IQS course, best practices in STEM education, and on retaining diverse undergraduate students in STEM. For example, this year the INSPIRE-IRACDA Postdoctoral Program selected her for their keynote speaker on Scientific Teaching.

- In her role as director of the University of Richmond's HHMI Undergraduate Program, Dr. Hill oversees cross-disciplinary course/curricular development and assessment of learning outcomes for the IQS course, SMART course, and other interdisciplinary science and math courses in the Integrated Quantitative Science minor. She also co-developed a new Science Leadership Fellows Program with faculty in the Jepson School of Leadership Studies that will provide students with the opportunity to study leadership in the context of scientific pursuits, the ethical challenges associated with the way science is conducted, and the impact that science has on the global community.
- Dr. Hill is part of University of Richmond's Terms of Racial Justice Faculty Knowledge Community geared at advancing public understanding of racial justice. As a member of this group, she has given public talks on the myth of Biological Race and is involved in contributing to written and oral archives in a public forum (http://www.richmond.edu/racial-justice/).
- Dr. Hill was twice elected by her science peers to an endowed chair; the Clarence E. Denoon Jr. Professor of Science (2009-2015).

Service

Dr. Hill has a very strong record of service at departmental, institutional, community and professional levels. Over the past several years, her service has focused on a particular aspect of the University of Richmond's mission and strategic plan. She is committed to creating a "defining spirit of opportunity and welcome to excellent students ... of all means and backgrounds, sustained through ... a dedication to fairness in all that we do, and an authentic culture of inclusivity that seeks and prizes diversity of experience, belief, and thought."

- Dr. Hill co-authored and now directs a $1.4 million grant program funded by the HHMI to, among other initiatives, address institutional and national issues around the lack of persistence of particular groups of students (i.e., black, Hispanic, Native American, Pell Eligible) in STEM disciplines. She has studied local and national barriers to persistence and helped develop a series of programs and partnerships to address the needs of this important group of talented students. To this end, she has worked extensively with many offices across campus to recruit and support STEM students.
- In addition to her work on three HHMI funded grants (now in the 11th year of 12 years of funding), Dr. Hill has helped secure three continuously funded Beckman Scholars Awards and one Merck/AAAS Award to support student research.
- Dr. Hill has served on the Undergraduate Admissions Committee, the Enrollment Management Diversity Group, the Boatwright Scholars Committee, and the Oliver Hill Scholar Committee where she has used her knowledge and passion for inclusivity to help Richmond recruit a diverse student body.
- Dr. Hill served twice on, and chaired, the Tenure and Promotion Committee.
- Dr. Hill served on the Ad Hoc Curriculum Task Force and First Year Experience Committee that developed plans for First Year Seminars at the University of Richmond.
- Dr. Hill served on numerous search committees at departmental and institutional levels - including the recent search for a Vice President of Enrollment Management.
- Dr. Hill routinely serves the campus community with public talks. She gave the keynote address at the opening of the Gottwald Science Center, she gave the Honors Convocation address in 2011 and she recently gave the address to the new *Pathways Program* for incoming first generation college students.
- Dr. Hill serves as a reviewer for numerous journals and granting agencies. She is also an editor of an upcoming volume of the Encyclopedia of Molecular Life Sciences.

Personal Statement

My approach to teaching was forged and has evolved in the context of the genome revolution. I started graduate school the year the Human Genome Project began and worked on that project for my Ph.D. I try to bring to my classes the passion and wonder that I have about the natural world, and use the explosion in genome science to provide students a mechanism to feel excitement about the revolution that continues to take place in the biological sciences. I create opportunities for students to experience authentic modern scientific inquiry, which is a significant challenge that requires a large amount of creativity, background work, and time. I use this pedagogical approach to build my student's skills evaluating and interpreting scientific data, and I help students strengthen their ability to ask appropriate scientific questions and find answers to their questions through the scientific method. I also want my students to understand important biological concepts. I have many "spaces" where I can teach students that include the classroom, the teaching lab, my research laboratory, and other informal and formal venues. In all cases, I try to engage my students through active learning where they are participants in all aspects of the learning process. In the classroom, students might be conducting case studies, evaluating complex data sets, or presenting scientific papers. In the laboratory they brainstorm experimental ideas, design, conduct and troubleshoot experiments, analyze results, and learn to present their data in a broader context by drawing important conclusions.

The focus of my research program is to study the evolution of genetic regulatory pathways that govern development of animal form and function. All of my work is done with undergraduate students (and sometimes visiting graduate students and postdocs). Ultimately, I am interested in questions like, Where did eyes come from? Where did our sensory systems originate? I have worked with animals as complex as humans and mice as well as animals with simple, yet elegant bodies, like the sponges. Sponges (Phylum Porifera) are our most evolutionarily-distant relatives, and as such, hold important clues about basic developmental processes like stem cell specification and body plan and sensory system formation. The conserved pathways and developmental programs that evolved with the sponges are found in all animals including humans. The genomes of sponges are remarkable because they possess an extensive set of animal-specific genes that first appeared at the dawn of animal multicellularity. These genomes continued to expand and diversify as the animals evolved ever-increasing levels of complexity. Thus, the ancestral sponge 'genetic toolkit' contained genes that are crucial for setting up pathways for growth, differentiation, cell specification, adhesion, innate immunity, symbioses and self/non-self recognition for all animals. I use the lens of genome evolution and gene regulation to help students understand both the unity (What genetic programs and features are shared by all the animals?) and the diversity (What changes to genetic programs have resulted in the array of animals on the planet?) of life.

All of my teaching and research is firmly centered in a belief that an interdisciplinary approach to learning is important if students are going to be prepared to face real world problems. I think that the best pedagogies draw from multiple perspectives and I try to show students how any biological question may require mathematics, computer science, physics, chemistry, social science or a humanities perspective. I enjoy teaching classes that center on big questions or problems rather than surveys of a discipline. I believe that I am able to provide students with the crucial "content" they need to move forward while also engaging them in meaningful inquiry that excites them. I am certain that most students can do far more than we ever ask of them, however, the right environment has to be created for this to happen. I try to create that inclusive community environment in my classroom and in my research laboratory. The students I teach today give me hope for the future.

Students come to me from many different places and backgrounds. If I am to meet their educational needs completely, I need to understand them. I need to hear them respond in and out of class, and come up with ways to evaluate their work so that I can discover their needs. If a student has a desire to learn science, then I believe that it is my job to help them build skills,

fill gaps in their knowledge and importantly, gain confidence, so they can achieve these goals. This, however, is a significant challenge and I continue to work on finding best practices that I can use to address the needs of all of my students. To this end, I have found that I am interested in serving in capacities that directly engage questions of student recruitment and retention. I am particularly concerned about ensuring all students have access to excellent science instruction and that barriers to full participation at the institutional level are removed. I am passionate about increasing diversity in the sciences and developing curricula and programs that will make sure that all students are able to pursue science if this is what they choose to do. I am also highly interested in aspects of the curriculum that can support retaining students from diverse backgrounds, especially as it relates to revising pedagogies, integrated teaching and interdisciplinary learning. This work has become a cornerstone of my vocation and I have spent much of the past four years working to create learning communities for students who may have entered college without all the benefits that have been afforded to other students in terms of educational background and obtaining of skill sets. My work in this arena has been recognized externally. I have conducted numerous workshops at regional and national meetings as well as consultations at other colleges and universities. This past month, the Director of the Undergraduate Science Education Program at Howard Hughes Medical Institute asked me to partner as a national thought leader in promoting student persistence and success in STEM by helping implement their new undergraduate science education grant program, *Inclusive Excellence*. I am very excited to help shape the national discussion on inclusivity in STEM.

I am fortunate to work at an institution where the integration of teaching, scholarship, discovery and service can be forged in such a way that the activities are often seamless and synergistic. To this end, I have assumed several leadership roles at my institution, and balance my inter-related interests. I serve as director of our HHMI Undergraduate Research Program, which is a multi-faceted position. I teach HHMI-supported courses, I run a summer program for pre-freshman from underrepresented groups, and I provide mentorship to students in my research laboratory. I link my service, teaching, and research through work in admissions and STEM student retention. As part of a positive feedback loop, I help my colleagues recruit talented students who enter HHMI-sponsored classes, and then engage in high-impact research experiences in and out of the classroom. I try to scaffold my discovery-based projects. For example, I might pilot a set of novel experiments in a teaching lab (at the first year level or the upper-level) that leads to a project that students work on in my laboratory. I might read new primary literature articles in an upper level biology course that inform my research program or help me gain insights for a grant I am writing. I try to have students at all levels (first year to postbac) in my lab so that peer mentoring can take place in the training of new research students. I expect my students to become more and more independent, and by the time they graduate, they are ready to enter top tier graduate programs. In my mind, this is because I treat my students like partners in our work. They develop the necessary skills because they are fully invested in the process. I have also hosted two minority postdoctoral fellows. I mentor these individuals in both teaching and research, and they help mentor and teach students in my lab. My first postdoc is now a faculty member at another liberal arts college in California. I believe in collaboration, and find that it is possible to travel much farther together than alone. I collaborate with colleagues to develop courses (IQS, SMART, Genetics), and I have an extensive set of collaborators from around the world that I work with in interdisciplinary research.

I am fortunate to have the career of a university professor. It is a privilege to play a role in educating the next generation of scientists. I am able to pursue knowledge in the form of scientific discovery, a dream that is made possible by generous funds made available by my institution, several foundations, and the government. I am humbled to be nominated for an award that acknowledges the work I’ve done, but it is important to note that the honor is shared with students and colleagues who work with me in these joint endeavors as we attempt to understand the natural world and make it a better place for those who come after us.

April Hill

Summary Vita

Education:
Ph.D., University of Houston, 1995
B.S., University of North Texas, 1990

Experience:
Professor of Biology and Clarence E. Denoon Jr, Professor of Science, 2013-2015
Associate Professor of Biology and Clarence E. Denoon Jr, Professor of Science, 2009-2013
Associate Professor of Biology and the Coston Family Fellow in Molecular Biology, 2004-2009
Associate Professor of Biology, Fairfield University, 2002-2004; Assistant Professor 1997-2002
Associate Research Scientist, Yale University, 2001-2003
Postdoctoral Research Fellow, Harvard Medical School, 1995-1997

Courses Taught at Richmond:
Integrated Quantitative Science (IQS) & Science, Math and Research Training (SMART)
Introduction to Biological Thinking: The Animal Genetic Toolkit
Genetics, Epigenetics, & Genomics
Evolutionary Developmental Biology

Selected Publications (authors with * are undergraduates):

Q. Schenkelaars, L. Fierro-Constain, E. Renard, A. Hill, C. Borchiellini (2015) Insights in Frizzled evolution and new perspectives. *Evolution and Development*. 17: 160-169.

A. Riesgo, K. Peterson*, C. Richardson*, T. Heist*, B. Strehlow*, M. McCauley*, C. Cotman*, M. Hill, A. Hill (2014) Transcriptomic analysis of differential host gene expression upon uptake of symbionts: as case study with Symbiodinium and the major bioeroding sponge *Cliona varians*. *BMC Genomics*. 15: 376.

E. Poppell, J. Weisz, L. Spicer, A. Massaro*, A. Hill, M. Hill (2014) Ecological structure of bacterial symbiont communities in high- & low-microbial abundance sponges and their effect on sponge heterotrophic capacity. *Marine Ecology*. DOI: 10.1111/maec.12098.

B. Thacker, A. Hill, M. Hill, N. Redmond, A.G. Collins, C. Morrow, L. Spicer, C. Hall*, D. Pohlmann*, C. Carmack, M. Zappe, P. Bangalore (2013) Nearly complete 28S rRNA gene sequences confirm new hypotheses of sponge evolution. *Integrative and Comparative Biology*. 53: 373-387. (journal cover)

A. Rivera, I. Winters*, A. Rued*, S. Ding*, D. Posfai*, B. Cieniewicz*, K. Cameron, L. Gentile, A. Hill (2013) The evolution and function of the Pax/Six regulatory network in sponges. *Evolution and Development* 15: 198-208.

Hill, M. Hill, A., Lopez, ...Danka*, E., DeLaine*,...& Collins, A. (2013). “Reconstruction of Family-Level Phylogenetic Relationships within Demospongiae (Porifera) Using Nuclear Encoded Housekeeping Genes.” *PLoS ONE.* 8: e50437.

Richardson*, C., Hill, M., Marks, C., Runyen-Janecky, L., & Hill, A. (2012). “Experimental Manipulation of Sponge: Bacterial Symbiont Community Composition with Antibiotics: Sponge Cell Aggregates as a Unique Tool to Study Animal: Microbe Symbiosis.” *FEMS Microbiology Ecology*. *81*: 407-418.

Hill, M., & Hill, A. (2012). “The Magnesium Inhibition and Arrested Phagosome Hypotheses: New Perspectives on the Evolution and Ecology of Symbiodinium Symbioses.” *Biological Reviews*. *87*: 804-821.

Leys, S., & Hill, A. (2012). “The Physiology and Molecular Biology of Sponge Tissues.” *Advances in Marine Biology - Advances in Sponge Science: Physiology, Chemical and Microbial Diversity, Biotechnology, 62*: 1-56.

Gentile, L., Caudill, L., Fetea, M., Hill, A., Hoke, K., Lawson, B., Lipan, O., Kerckhove, M., Parish, C., Stenger, K., & Szajda, D. (2011). “Challenging Disciplinary Boundaries in the First-Year: A New Introductory Integrated Science Course for STEM majors.” *Journal of College Science Teaching*. *41*: 44-50.

Rivera, A., Hammel, J., Haen, K., Danka*, E., Cieniewicz*, B., Winters*, I., Posfai*, P.,

Wörheide, G., Lavrov, D., Knight, S., Hill, M., Hill, A., & Nickel, M. (2011). "RNA Interference in Marine and Freshwater Sponges: Actin Knockdown in *Tethya wilhelma* and *Ephydatia muelleri* by Ingested dsRNA Expressing Bacteria." *BMC Biotechnology*, *11*: 67.

Selected Presentations (authors with * are undergraduates):

3rd Annual INSPIRE Scientific Teaching Seminar Keynote Speaker. May 2015 (Rutgers University, NJ) "What is your vision for change?: Harnessing the capacity and creativity of life science departments to transform student learning experiences. A. Hill

2nd International Symposium on Sponge Microbiology. October 2014 (Baltimore, MD) "Modeling establishment of intracellular symbiont populations: a case study informed by sponge:*symbiodinium* relationships." T. Heist*, C. Hughes*, A. Hill, B. Lawson, M. Hill

XVII Iberian Symposium on Marine Biology. September 2014 (Gijón, Asturias) "Effects of ROCK Inhibitor on the Rho-Rock Pathway in E. muelleri." Q. Schenkelaars, L. Fierro-Constain, E. Renard, C. Borchiellini, A. Hill

Dartmouth College, Invited Seminar. August 2014 (Hanover, NH) "The Evolution and Function of Animal Specific Gene Regulatory Networks in Sponges."

Evolution Conference. June 2014 (Raleigh, NC) "Identification of downstream targets of the *Pax* gene in the sponge *Ephydatia muelleri."* A. Rivera, N. Haberkern*, A. Arul Nambi Rajan*, D. Posfai*, A. Hill.

Annual Biomedical Research Conference for Minority Students. November 2013 (Nashville, TN) "Evolutionary and ecological significance of sponge-*Symbiodinium* symbioses: genetic regulation of uptake and maintenance in sponges." M. Hill, A. Hill, C. Cotman*, S. Friday*, T. Heist*, M. McCauley*, K. Peterson*, C. Richardson*, A. Riesgo, B. Strehlow.*

University of Alberta, Invited Seminar. March 2013 (Alberta, Canada) "The evolution and function of the PSED gene regulatory network in sponges."

Society for Integrative and Comparative Biology. January 2013 (San Francisco, CA) "The freshwater sponge as a model to study the evolution of developmental regulatory programs." A. Hill, A. Rivera, I. Winters*, A. Rued*, S. Ding*, D. Posfai*, L. Gentile, E. Webb*, W. Trok*.

Professional Affiliations:

Council on Undergraduate Research, Society for Developmental Biology, Society for Integrative and Comparative Biology, Sigma Xi, The Scientific Research Society, Faculty for the 21st Century: PKAL, Partnership for Undergraduate Life Sciences Education National Fellow

Service (selected):

University

Tenure and Promotion Committee, Chair 2011-12
Undergraduate Admissions Committee; Diversity Working Group Enrollment Management
Richmond Scholars and Oliver Hill Scholars Committees
Ad Hoc Curriculum Task Force and First Year Experience Committee
HHMI Steering Committee and Director HHMI Undergraduate Program

Professional

Reviewer, Scientific Journals such as *Bioessays*, *Evolution and Development*, *Developmental Dynamics*, *Integrative and Comparative Biology* and *Molecular Biology and Evolution,* NSF

Selected Awards:

Vision and Change Leadership Fellow, 2012-present.
NSF. "Assembling the Tree of Life: The Porifera Tree of Life Project." Co-PI. 2008-2013.
Howard Hughes Medical Institute, Science Education Program, 2008-2012; 2012-2016.
Beckman Scholars Program. Faculty Mentor. 2006-2009, 2009-2012, 2012-2015.
Merck/AAAS Undergraduate Science Research Program. (Co-PI with 8). 2007-2009.
NSF, BIO OCE: "RUI: Stability and structure ... climate change.," Co-PI. 2007-2011.

Letters of Support (Excerpted)

Dr. April Hill is an extraordinarily effective and creative educator and an outstanding faculty leader at the University of Richmond. She has maintained an excellent quality of teaching, curriculum development, scholarly productivity, and service over eleven years at Richmond. In 2008, she received a University of Richmond Distinguished Educator Award. In 2012, she was named one of 40 National *Vision and Change Fellows* in the PULSE program (Partnership for Undergraduate Life Sciences Education), a combined effort of the National Institutes of Health, National Science Foundation, and the Howard Hughes Medical Institute (HHMI). She currently serves as Director of the HHMI Undergraduate Science grant and program at Richmond and served on numerous committees in leadership roles.

The Immediate Past President of the University of Richmond writes:

Professor April Hill has earned a reputation as an outstanding teacher and mentor who has contributed her time, talents, and energy to educating the next generation of scientists. She is fully deserving of national recognition as an outstanding educator who models her values for students and colleagues, not only within our University but also within the larger scientific community.

The Dean of the School of Arts & Sciences writes:

Prof. Hill is a truly extraordinary educator. When I think of the best teachers I have met in my life, she immediately comes to mind. I have seen colleagues get tears in their eyes when they talk about Prof. Hill's unfailing commitment to foster scientists and science education among underrepresented students. She is unfailingly brave and dedicated. She accompanies students through the most discouraging times and she weathers discouraging contexts herself without shrinking. She is a wonderful scientist, while her pursuit of knowledge is always calibrated to enhance scientific capability for the next generation. We have been exceptionally fortunate to benefit from her leadership on campus.

Her faculty colleagues in various departments write:

> *"She is able to convey information in ways that are accessible to everyone, and she opens herself up to others, allowing students to trust her and increasing their willingness to work hard and take intellectual risks."*
>
> *"Students in her lab are taught how to think like scientists, but more importantly, they are inspired to take complete ownership of their projects."*
>
> *"In all my years of teaching and learning, I have yet to encounter another professor who even comes close to having April's exceptional ability to foster successful education experiences for all students:*
>
> *"To say that she is enthusiastic about what happens in her classroom and excellent at what she does is an understatement."*
>
> *"As a widely respecrted campus leader, April's expertise and advice is often sought by others, and her judgement is tempered in the wisdom that comes from a deep understanding that science is but one lens to understanding the world, and that humanistic and social ways of knowing are equally important."*

Dr. Hill approaches all of her courses with a similar teaching philosophy: to provide interactive lectures, use in-class activities, create opportunities for students to solve problems and analyze and interpret data, ensure that students have opportunities to design experiments, and

communicate scientific findings effectively. Results show that Dr. Hill achieves strong student engagement, stimulates their passion for science, and teaches them important biological concepts in a student-centered environment. Her students write:

> *"I was completely blown away when April ran our genetics lab session using the sponge as a model organism. In a short fifteen-minute introduction, April turned these simple creatures into the coolest organisms in the world that will unlock the secrets to animal evolution."*
>
> *"The way April teaches her classes leaves students feeling not only like they have learned a great deal about the most interesting topics in biology, but that they have learned this material at the very cutting edge of the field. And they have. In this class I was challenged to think beyond what I had learnt in high school, and more than that I was required to do real science in the lab."*
>
> *"…I have to add that this class did test my critical thinking. On one hand, since I was taking the class to simply fulfill the gen-ed, I wish I took an easier class. On the other hand, I am glad that I took it because I learned a lot of things and this class answered a lot of questions that I had for years about how diversity in animals and how life in general came about. I went to the Natural History museum in DC over the break, and was able to see things differently and applied what I learned, and even answered my friend's questions!"*

Dr. Hill's insight, thoughtful deliberation on how students learn, and leadership on approaches to retain talented science students within the STEM disciplines are unmatched at the University of Richmond. She currently serves as Director of the HHMI undergraduate science grant at UR and co-developed the Integrated Quantitative Science (IQS) and Science, Math, and Research Training (SMART) program which links concepts from five disciplines into one year long course so that first year students are stimulated to think beyond traditional boundaries and methodologies. Course assessments are encouraging for the impact on student learning. Students who wrote about Dr. Hill's impact on interdisciplinary teaching say:

> *"Dr. Hill really encourages us to go outside of the box and ask our own questions about science - the whole point of IQS. Of the 5 professors, I feel she is the best at integrating everything and getting us to think critically, possibly because biology is at the center of our overall theme? She tries to make everything easy to understand and goes through class briskly, which is good because most of the information we already know."*
>
> *"Dr. Hill does a great job explaining biology as a series of progressive experiments that build off of prior knowledge. Understanding biology like it actually happened makes it more interesting and generates an appreciation for the information that we know about biology. It also gets students to think in a way that will help them to identify experiments and ideas that could solve unkown* [sic] *questions which is a central idea of IQS."*
>
> *"Dr. Hill is very well educated in her field and she did a really good job of connecting all of the gaps, providing research that was relevant and interesting, and then pointing out the importance of this in the real world."*

Dr. Hill has mentored or co-mentored the research projects of 70 research students (>50 at Richmond), many of whom have presented papers or posters at regional, national, or international meetings, or have been co-authors on published papers. Many of these students have been inspired to pursue a career in science (27 PhD, 11 MD, others in science education, public health, biotechnology, etc). Her former research students write (excerpts below):

"Working with April gave me confidence to come up with my own scientific ideas and share them. She has guided me on every step along the path to becoming an independent investigator."

"April has the remarkable ability of guiding students towards success while treating them as colleagues along the way."

"I attribute my success thus far to the tremendous quantity and quality of time that April dedicated to teaching and mentoring me. There is no doubt that April fundamentally changed the trajectory of my academic and scientific career, allowing me to reach goals I previously thought to be unattainable."

"It is because of working in April's lab that I fell in love with scientific research and decided to devote myself to the advancement of scientific knowledge."

"With her guidance, I wrote three proposals, obtained funding for three summers to conduct research in her lab, gave four poster presentations (including one international meeting), presented four oral presentations, worked with multiple collaborators, completed one honors project, published one paper, and was accepted at multiple graduate schools. What makes these numbers remarkable is this level of student success is normal for the students she mentors."

Dr. Hill is a recognized scholar in her field. She has authored or co-authored 15 peer-reviewed scientific publications since joining the faculty at the University of Richmond. The main focus of her work is the evolution of gene networks used in animals use as they develop, using sponges as a model organism and her second interest is in symbiosis. She has also co-authored two reviews of sponge biology, two on gene regulation, and one theoretical work on symbiosis. She regularly receives invitations to present her work at national and international scientific conferences including recent seminars at the World Sponge Conference (Australia, 2013), the Yosemite Symbiosis Institute (2013), and the Northwest Regional Society for Developmental Biology (2013). She is an active collaborator on an international scholarly project (PorTOL, Porifiera Tree of Life) that seeks to better understand the evolutionary relationships among sponges. Since 2007, Dr. Hill has been a co-principal investigator on grants from the National Science Foundation and the principal investigator on a grant from the Jeffress Memorial Trust. Excerpts from letters received from external reviewers attest to her record of scholarly work:

"Dr. Hill has presented a high quality and high impact set of publications that are important contributions to our understanding of sponge biology, our understanding of symbiotic relationships and our understanding of evolutionary relationships among metazoans."

"April Hill has made very significant contributions to sponge biology and most importantly, has recently introduced RNAi for the study of sponge genes. She has written several thorough book chapters and reviews, which now become widely cited and recognized. Thus, in one word, Dr. Hill has become an authority."

"By clarifying some of the key developmental processes that were likely present in common ancestor of all animals, Dr. Hill's research provides an important reference point for one of the most active areas of research in the field of evolutionary developmental biology, namely the evolution of regulatory gene function and its relationship to major evolutionary innovations in animal body plans."

Additional Documentation.

Summary Numerical Course Evaluations: Representative Introductory & Upper-Level Courses

Question	BIOL199 F08	BIOL190 F09	BIOL190 F10	BIOL190 F11	BIOL190 F12	BIOL192 F13, S14, F14, S15
	IBT	**IQS**	**IQS**	**IQS**	**IQS**	**SMART**
Sample Size	*15*	*19*	*20*	*19*	*20*	*18-24*
Stimulate critical thinking	93%	89%	100%	84%	100%	100%
Quality of teaching very good	93%	100%	95%	86%	100%	100%
Recommend to others	87%	100%	95%	93%	100%	100%

Question	BIO 201 F04	BIO 201 F05	BIO 201 F07	BIO 201 F07
	Genetics	**Genetics**	**Genetics**	**Genetics**
Sample Size	*46*	*38*	*17*	*14*
Stimulate critical thinking	87%	82%	100%	100%
Quality of teaching very good	91%	95%	100%	86%
Recommend to others	89%	94%	94%	86%

Question	BIO 352 S12	BIO 351 F11, F12	BIO 351 F14	BIOL 351 S15
	EvoDevo	**Epigenetics & Genomics**	**Epigenetics**	**Genomics**
Sample Size	*16*	*11*	*12*	*16*
Effectively guide discussions	100%	100%	100%	100%
Stimulate critical & analytical thinking	100%	100%	100%	100%
Quality of teaching very good	100%	100%	100%	100%
Recommend to others	100%	100%	100%	100%
Connections between lab/lecture clear	100%			
Educational value of lab significant	100%			

Yearly Merit Review Ratings

	Teaching	Scholarship	Service
2004-05	Outstanding	Outstanding	Outstanding
2005-06	Outstanding	More than Satisfactory	Outstanding
2006-07	Outstanding	Outstanding	More than satisfactory
2007-08	Outstanding	Outstanding	Outstanding
2008-09	Outstanding	Outstanding	Outstanding
2009-10	Outstanding	Outstanding	Outstanding
2010-11	Outstanding	Outstanding	Outstanding
2011-12	Outstanding	Outstanding	Outstanding
2012-15	Exceptional	Exceptional	Exceptional

Rating Categories 2004-2011: Unsatisfactory, Generally Satisfactory, More Than Satisfactory, Outstanding, No Rating.
New Rating Categories 2012: Inadequate, Adequate, Good, Excellent, Exceptional

***Science, Math and Research Training*:** National course survey instrument (Classroom

Undergraduate Research Experience; CURE) evaluating courses and research experiences from first year through graduate level and many institutions. SMART learning gains are higher in most categories than all other students who did the survey. Note: Nearly all students in this course are from groups traditionally underrepresented in STEM (e.g., Black/African American, Hispanic, Native American, First Generation, PELL Eligible or Low Socioeconomic Means).

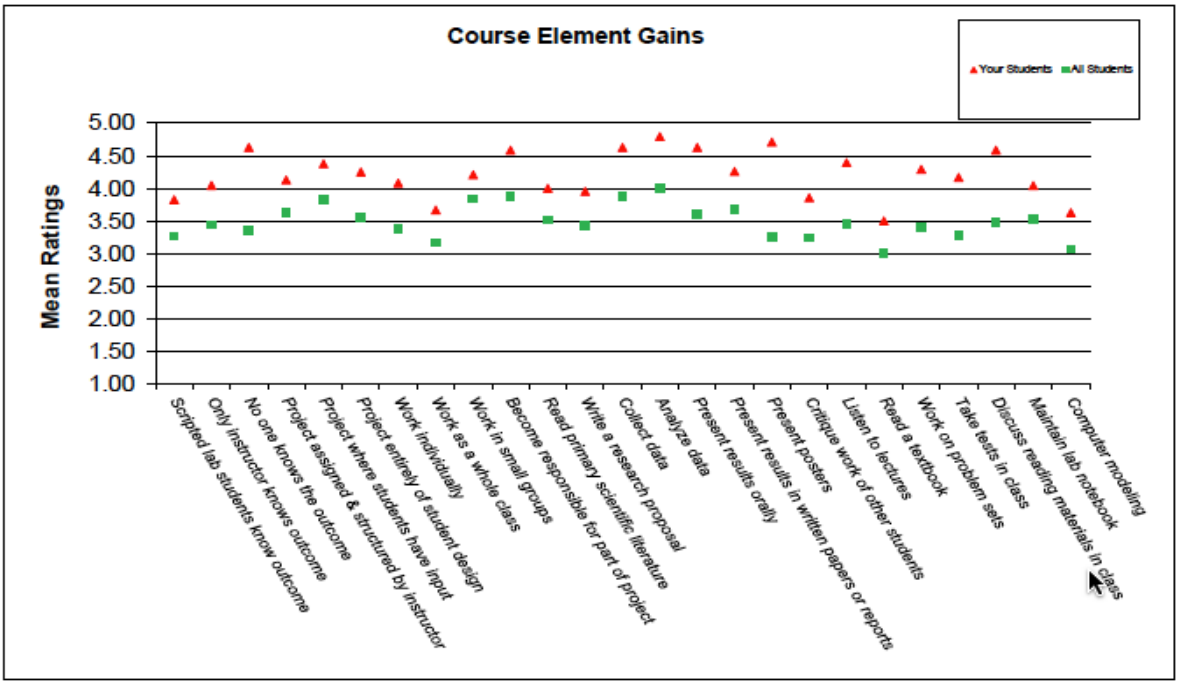

Figure 1. The figure illustrates the mean ratings by students of gains in 25 areas corresponding to the course elements above.

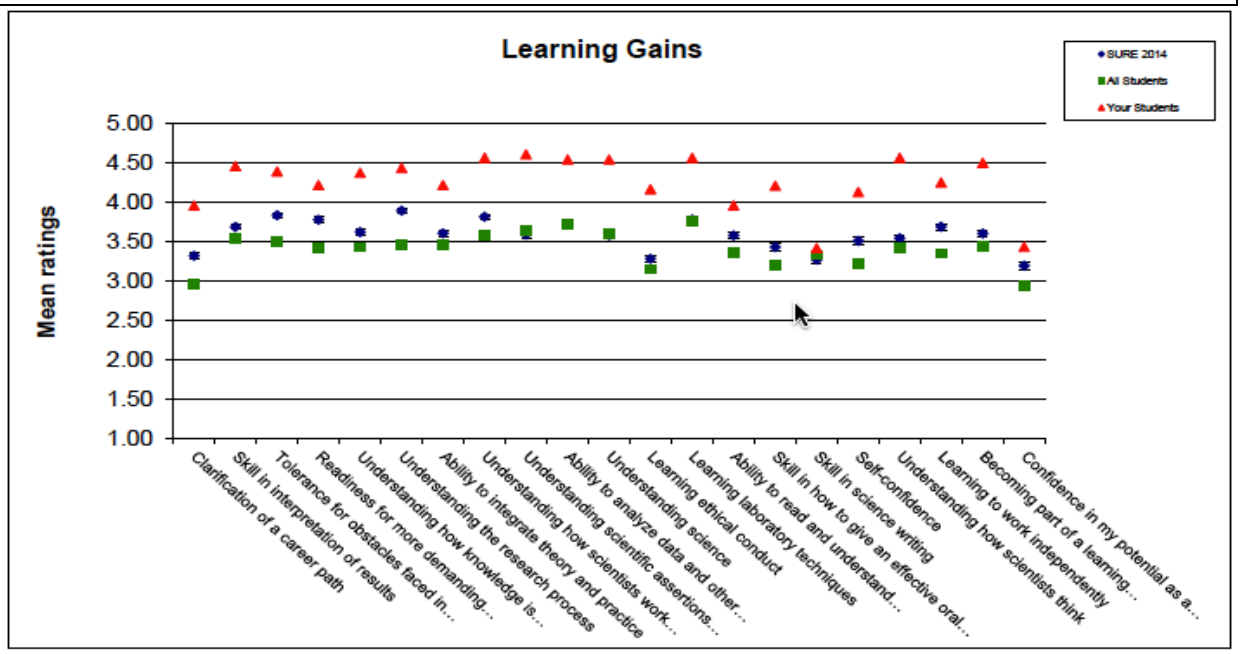

Figure 2. The figure illustrates the mean ratings by students of gains in 21 areas, corresponding to the areas above. As these same items are evaluated by students who participate in summer undergraduate research, the recent results of the Summer Undergraduate Research Experience (SURE) survey are presented for reference. Also presented (green squares) are the overall mean ratings by the reference cohort of students who completed the CURE survey. The vertical lines around the SURE means represent 2 standard errors above and below. *Note:* Data from students who completed the pre-course survey and those who did not are indistinguishable.

Summary Comments from SMART students in the Student Assessment of Learning

Gains (SALG) Survey.

Please comment on how this class CHANGED YOUR ATTITUDES toward the subject
"I feel very confident talking to people about science with people after doing my first poster presentation. At first, I was nervous of course, but then all of the related material that we discussed during the labs began to start flowing out naturally."

"Well, now I have a better understanding on how much scientists can make a difference for real world issues, and how much we need more brilliant scientists. I also understand how much time and effort in takes to discover new things and that failure is a big part of science but also an important part. "

"Before taking this class, I planned on majoring in a business discipline. After going through the course, I have a confidence and enthusiasm for chemistry and I think that I will want to major in chemistry. Having to work on lab experiments in biology that matched up with many of the things that we learned in class, makes me think that I will be able to survive in upper level biology courses."

"In high school we just learned the material and crammed for the test in order to get a good grade. There was no desire to study the information in order to learn and use it in the real world. But this course has taught me that I need to learn the information in order to use in my future career. By doing more advanced and current research, I developed a passion for learning in the hopes that in my future career I will be able to utilize this knowledge. I want to have as many skills and as much knowledge about the sciences as possible so I can have a wide range of opportunities available to me. "

What will you CARRY WITH YOU into other classes or other aspects of your life?
"I actually find myself using some of the reasoning I use in science to help me write papers in the social sciences. I can also relate a lot of the things I learned in this class, to my life, especially health related aspects. "

"The critical thinking and analyzing skills I learned in this class can be applied to all aspects of your life. I feel that I have gained knowledge on how to look at things in different ways. "

"In SMART we went beyond the material in the textbooks and applied it to our everyday lives. We were able to learn science and math and actually see how the subject relates to the world, which is something I will be able to take onto my other classes. This class has prepared me to take on upper level classes with confidence. "

"The ability to troubleshoot when problems arise during any situation and also be able to manipulate and analyze problems without making general assumptions about data or knowledge. "

"This class gave me the confidence and mindset to connect patterns and analyze data. These skills can be carried to any class science or non-science. Also, the scientific mindset allows me to make conclusions and carry out experiments like I've never been able to before. "

Please comment on how the INSTRUCTIONAL APPROACH helped your learning
"The instructional approach is ingenious. I am shocked by how much material that I was able to learn under the approach. "

"The teachers lecture at times, but they also give us case studies to work on in groups and videos to discuss. Which helped me because I can't always learn from a lecture but I lean well with small group activities and hands on approaches. "

“Every class was connected. The course was well structured. By having read the material before class, I found that I understood the material better. By knowing the information before hand, we covered more material and were able to go more into depth with the subject.”

“The learning environment allowed the collective minds of the students to prosper and grow. Professors were very gifted in allowing a push-and-pull dynamic from their knowledge of the subject and our introductory grasp to the subject material.”

“I think just having such a supportive and helpful team of people helped me have confidence that I could learn complex subject matter.”

“After learning a topic in science, we apply the knowledge in lab. Before lab, we go over the procedures, which help us understand what we are doing in lab and how it relates to this topic we are learning.”

“By integrating the material, you see more of how it applies. This makes the retention much easier because then you apply the scientific thinking and material to areas that someone would typically say have no scientific component. Along the same lines, the ability to bring the math component in to analyze the data made turning the scientific process and lab experiments into a fascinating story easier. I think one of the successes in the course is that I became enthusiastic about class and lab because I could understand what was going on.”

“It was integrated; also the material connected and applied to situations around me. I was able to see how it affected me and the world I lived in so it gave me a greater incentive to understand the material.”

“I liked how we would have to read a piece of real scientific literature or watch a scientific lecture video then come into class and discuss it. In the discussions we would break it down so that it made sense to everyone.”

“The class was very close knit so I was comfortable asking clarifying questions. More importantly though, I was comfortable asking questions that might go beyond the content we were learning because I knew the professor would love to answer.”

How has this class CHANGED THE WAYS YOU LEARN/STUDY?

“I now always come to class with some knowledge of the topic being discussed.”

“After taking this course, my study habits have changed tremendously. The professors gave many great tips on how to successfully take notes and study for exams. They truly care about our success in SMART, as well as our other classes.”

“I definitely take more time to study throughout the week which is different form before when I waited a night or two before a test to study. After every class I would go over my notes and also consult problems with different students in the class. ”

“I now place a larger emphasis on preparing for class, and paying attention in class. My personal notes are my most valuable study tool, so I am very attentive during lecture. I study from my own notes, and do practice problems to prepare for exams.”

“I've started reviewing material learned in class that very night in order to better solidify the information. I never used to do this before, but this approach has been very helpful”