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December 1, 2016

Dear Members of the Selection Committee,

I write in enthusiastic support of the nomination of Dr. Miriam Segura-Totten for a 2017 Felton Jenkins, Jr. Hall of Fame Faculty Award. Dr. Segura-Totten, Professor of Biology and Harry B. Forester Eminent Scholars Chair, was the recipient of the University of North Georgia's Distinguished Teaching Award, the highest honor we bestow to recognize significant contributions at the University of North Georgia (UNG), across our state, and at the national level. Dr. Segura-Totten embodies our highest aspirations for teaching excellence for her instruction of students, mentoring of faculty, and contributions to national efforts associated with undergraduate research, a cornerstone of the Association of American Colleges and Universities' Liberal Education and America's Promise (LEAP) initiative.

Dr. Segura-Totten fosters opportunities for students and faculty to engage in what George Kuh has termed "high-impact educational practices." In 2015 and 2016 she served as facilitator for the Council on Undergraduate Research (CUR) "Beginning a Research Program at a Primarily Undergraduate Institution" (PUI) Institute. In this role, she participated in the design and implementation of the Institute, presented clinics, and led interactive professional development sessions for career faculty interested in doing research with undergraduates. In addition to serving as Editor-in-Chief of *Papers and Pubs*, an undergraduate research journal, she has been a member of the Planning Committee for the Georgia Undergraduate Research Conference and assisted in conceptualizing and planning the first statewide undergraduate research conference. Dr. Segura-Totten has directed the Center for Undergraduate Research and Creative Activities (CURCA) at UNG.

Dr. Segura-Totten's exemplary work emerges, in part, out of her research into teaching effectiveness. She is eligible for a reduced teaching load provided to endowed chairs, but negotiated an increase in teaching responsibilities. The increased teaching supports her inquiry into effective classroom practices, such as her current project examining the differences between traditionally-formatted courses and those that involve deeper engagement. Further, she was awarded a grant from the Howard Hughes Medical Institute, supporting the development of a two-semester, intensive, inquiry-based lab sequence for freshman biology majors. With this SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) grant, Dr. Segura-Totten has designed and is collaboratively implementing the sequence at UNG. Colleagues in and out of the sciences have benefited from her research and mentoring as they pursue more engaging and immersive classroom designs. As an instructor, researcher, and administrator, she provides colleagues and students with opportunities to pursue stimulating co-inquiry.

Dr. Segura-Totten's dedication to student learning grows out of and influences her scholarly activities. Dr. Segura-Totten has a noteworthy publication history in peer-reviewed volumes, including discipline-specific journals, Scholarship of Teaching and Learning (SoTL) journals, and inter-disciplinary journals, such as *Journal of Microbiology and Biology Education*, *Experimental Cell Research*, *Proceedings of the National Academy of Sciences*, *Trends in Cell Biology*, *Journal of Structural Biology*, *Journal of Cell Science*, *The Journal of Cell Biology*, and *Science Magazine*. In addition, she has been the recipient of internal and external grants, totaling \$1,660,092.00 in

Cumming Dahlonega Gainesville Oconee

funding for academic work. Her focus on inter- and multi-disciplinary inquiry is commendable, and her contributions to our institution have been significant and far-reaching for her students and colleagues. She sets the example for highly-skilled professors who balance research, service, and exceptional instruction.

All of these contributions to teaching in and beyond the classroom are evidence of her distinguished teaching career, and these efforts are echoed by the excellent evaluations that her students give. They write that she encourages students to draw conclusions independently by posing thought-provoking questions and providing instruction on research methods. One former student wrote that Dr. Segura-Totten inspires students to “understand the reasoning behind why biological phenomena exist or act,” rather than asserting that they simply exist or act. Students note that she is approachable and available beyond the classroom and that she inspires them with her passion for her field. She teaches a range of courses from introductory biology to honors research methods. Across this spectrum, students assert that her instruction causes them to think more creatively, beyond typical structures, so that they can begin to synthesize and apply knowledge in innovative ways. She also brings a multicultural dimension to her relationships with students. Born and raised in Puerto Rico, she invites students to converse with her in Spanish and learn more about her culture. She enriches student learning through her interest in them as individuals and her passion for scientific inquiry. A former student, now a graduate student in Biochemistry, Cell and Molecular Biology at The Johns Hopkins School of Medicine, explains that Dr. Segura-Totten is “building futures for her students.”

Though only touching on the highlights of Dr. Segura-Totten’s distinguished teaching career, this letter suggests the innovation, value, and reach of her work as an educator. Dr. Segura-Totten exemplifies the high standards and student-centered teaching at the heart of the University System of Georgia. She has brought undergraduate research opportunities to faculty and students across the campuses of UNG, our state, and even our nation. I am proud to recommend Dr. Segura-Totten for a USG 2017 Felton Jenkins, Jr. Hall of Fame Faculty Award.

Sincerely,



Tom Ormond, Ph.D.
Provost and Senior Vice President for Academic Affairs

November 26, 2016

Dear University System of Georgia Regents' Teaching Excellence Award Committee,

I am writing to enthusiastically nominate Dr. Miriam Segura-Totten for the Georgia Regents' Teaching Excellence Award. I have worked closely with Miriam for over 6 years as a research collaborator and fellow Biology department faculty as she has mentored others and myself through implementing cutting edge pedagogy. Due to these unique and varied experiences, I feel I am well qualified to speak on her behalf. It is my belief that Miriam teaching career exemplifies the qualities and qualifications this award is designed to celebrate.

Miriam has a diverse repertoire of courses that she has both developed and modified at UNG. These courses range from 1000 level non-biology major and biology major courses to mid level and upper division courses for biology majors. Demonstrating this further is Miriam's ability to successfully design and teach a fully online topic based course and being recruited by the Honor's program to teach their Research Methods (HNRS 3000) course. Additionally, Miriam has directed several independent studies with research students that represent a one-on-one teaching universally recognized as a high-impact practice in education. Her ability to maintain high academic standards coupled with excellent student evaluations is a clear indication of her teaching excellence through such a diverse teaching portfolio. Furthermore, through teaching such a diversity of courses, she has a far-reaching impact on so many students across our campus and beyond.

Miriam brings unique and varied learning opportunities focused on engaged student learning in the diversity of classes she teaches. Because of this, our students seek her classes out. It should be noted that the advancements in her teaching are not blind attempts for the sake of change. In fact, Miriam has a well-documented resume of careful assessment and validation of the changes she makes. I have benefited from her efforts through the incorporation of primary literature in BIOL 3240K (Cell Biology), which I also teach. This has led to a complete change in the course curriculum across all BIOL 3240K sections taught in our department. Miriam also utilizes the innovative "flipped" classroom teaching technique very effectively in upper division, BIOL 4126 (Cell Biology of the Nucleus) and HNRS 3000 (Honors Research Methods) and lower division, BIOL 1107 (Principles of Biology I) courses. This pedagogy requires students to take a completely different approach to the learning environment of the classroom. Although this can be an intimidating technique to use, especially in a freshman course, student evaluations clearly demonstrate that Miriam's success in providing students with a sense of ownership in their own educational experience combined with an excitement for learning.

Miriam is recognized by her peers for inciting excitement for learning, and she is also recognized as an expert scientist who brings a knowledge base to the classroom illustrated in her courses. Miriam's development of an online non-biology majors course, BIOL1101 (Introductory Biology), provided her the opportunity to share her diverse scientific knowledge through the use of a topics based approach to the class. In fact, one of the novel case studies she developed on stem cells has now been published. This form of teaching requires her to get students excited about learning biology through a vast knowledge of diverse biological topics that are scientifically relevant but also engaging. This expert scientific knowledge is also showcased by her development of a new upper division biology courses, BIOL 4126 (Cell Biology of the Nucleus) and BIOL 4250 (Advanced Cell Biology), which provide students unique opportunities to gain insight into topics unique to her expertise. It should be noted that these courses she developed are always in high demand by our students when they are offered because of the effectiveness in developing critical thinking skills necessary for many students' future careers. It is often the case that I will recommend to students these courses and hear back from them just how much they learned beyond the content of the course.

Miriam provides avenues for faculty to participate and use the pedagogy she has pioneered in her tenure at UNG. Miriam has published SoTL work connected with the inclusion of primary literature in the BIOL 3240K (Cell Biology) course, but also included all the other faculty teaching that course in the analysis of her work. This year Miriam and I were awarded a Howard Hughes Medical Institute Award, which includes training and resources to conduct a novel yearlong lab experience for freshman Biology students. Under Miriam's expert leadership as the primary investigator of the application, we developed an assessment plan to inform us of the effectiveness of this lab for our students, which will begin in the fall of 2016. The implementation of this lab provides a unique learning experience in its own right, but the additional SoTL opportunities this award will provide are exciting. As usual, Miriam has already included two additional faculty in the training and workshops this award provides. This demonstrates Miriam's desire to include others and analytically approach teaching to inform not only our Biology department but to academia at large.

Department of Biology

I believe it will be apparent in Miriam's application that she has accumulated and sustained a distinguished career of teaching excellence. It is my hope that this nomination provides additional support for her application through my observations of her true desire to maximize students' excitement for learning. I believe Miriam's efforts are more than worthy to be celebrated as an example of excellence, and therefore, it is without hesitation and with my highest of enthusiasm that I nominate Miriam Segura-Totten for the Georgia Regents' Teaching Excellence Award.

Sincerely,



Ryan Shanks, PhD
Professor
Department of Biology
UNG – Dahlonega Campus
Dahlonega, GA 30597
Ryan.Shanks@ung.edu

28 November, 2016

To: The University System of Georgia Teaching Excellence Awards Committee

I am writing this letter to enthusiastically support Dr. Miriam Segura – Totten’s nomination for the 2016 Distinguished Teaching Award. Miriam is a true innovator who puts an enormous amount of thought and effort into her teaching. She has moved away from traditional lecture – based teaching and instead encourages her students to participate in more hands – on, inquiry based group work. As someone who has dabbled in this sort of pedagogy, I know how time consuming it is to develop challenging and engaging course materials. Based on student performance, which Miriam has assessed relative to student performance in traditionally formatted classes, student analytical thinking showed substantive gains. For example, Miriam and I led (really, she led and I tagged along) a study comparing different approaches to reading and analyzing scientific literature. The resulting paper was recently published in *Journal of Microbiology & Biology Education*. Miriam has continued to focus her research on understanding the perceived barriers students have when approaching primary literature. These projects demonstrate Miriam’s commitment to effective teaching and learning.

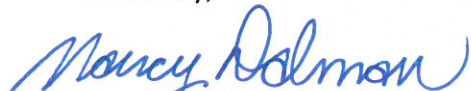
Miriam has an endowed chair position in the biology department that fosters undergraduate research. As a result, her teaching load is reduced. However, because Miriam is such an effective teacher, we worked together to adjust her job responsibilities to increase her teaching requirements. In particular, we were eager to have her try her approach in our freshmen majors’ course, where attrition is typical high. She taught our first semester majors’ course this past fall. Although we have not yet assessed the learning gains nor impact on retention of her learner - centered approach, we hope to do so in the future, after we have a larger sample size.

One other noteworthy demonstration of Miriam’s dedication to teaching and learning is the grant Miriam recently received from the Howard Hughes Medical Institute. With her colleague Dr. Ryan Shanks, Miriam was awarded a SEA – PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) grant. This grant supports the development of a two semester intensive inquiry – based lab sequence for freshmen biology majors. The program is currently running at over 70 colleges and universities in the United States and the data students collect is often novel and archived in a central database. Miriam and Ryan will attend a workshop this summer and then begin the process of designing the

courses to implement in our honors section this fall. It will be exciting to see this course in action!

I'm so pleased Miriam has decided to apply for this award. I cannot think of a more worthy recipient in the biology department. She is a departmental leader in pedagogy and I foresee her effectiveness in this area continue to grow and spread throughout the department. Please do give her application the serious consideration it deserves and do not hesitate to contact me if I can be of further assistance.

Sincerely,



Nancy Dalman, Ph.D.

Professor and Department Head of Biology

CONDENSED CURRICULUM VITAE

EDUCATION

Princeton University, Princeton, NJ. AB in Molecular Biology. 1998

Johns Hopkins School of Medicine, Baltimore, MD. Ph.D. in Biochemistry, Cell and Molecular Biology. 2003

ACADEMIC APPOINTMENTS

2015-present	Professor of Biology and Harry B. Forester Eminent Scholars Chair in Biological Sciences, University of North Georgia, Dahlonega, GA
2009-2014	Associate Professor of Biology and Harry B. Forester Eminent Scholars Chair in Biological Sciences, University of North Georgia (previously North Georgia College & State University), Dahlonega, GA
2006-2009	Assistant Professor, The College of New Jersey, Ewing, NJ
2003-2006	Assistant Professor, Universidad Metropolitana, San Juan, PR

ADMINISTRATIVE APPOINTMENTS TO IMPROVE STUDENT EDUCATION

2012-2015	Editor-in-Chief, <i>Papers and Publications</i> Undergraduate Research Journal
2010-2013	Director, Center for Undergraduate Research and Creative Activities (CURCA), University of North Georgia, Dahlonega, GA

SELECTED SERVICE ACTIVITIES IN SUPPORT OF STUDENT EDUCATION

CUR Councilor, Biology Division. Spring 2010 – present.

As a councilor, I work on projects that support and advance undergraduate research at the national level. At yearly business meetings, I contribute ideas and strategies to move forward the role of the Biology division as a resource on undergraduate research for biology faculty, post-doctoral fellows and students.

Member of the Planning Committee for the Georgia Undergraduate Research Conference. 2012-2013. I helped to conceptualize and plan the first statewide undergraduate research conference. I worked with faculty from Columbus State University, Georgia Southern and Dalton State College to create the program for the conference, determine the conference activities, recruit programs for a graduate careers expo at the conference, identify judges, organize panels and a poster session and publicize the conference.

Coordinator of the Biology Department Internship Program. Spring 2014 – present.

I oversee all interns participating in the program at the Dahlonega campus. I designed record-keeping and student evaluation materials. I pair students with a UNG faculty mentor, and I assign students a final grade based on their performance on the different evaluation components. I supervise and oversee internship coordinators at the Gainesville campus.

Facilitator, CUR “Beginning a Research Program at a primarily undergraduate institution (PUI)” institute. Fall 2015 and 2016. I participated in the design and implementation of this institute. I presented on different topics related to beginning a research program. I led interactive professional development sessions for career faculty interested in doing research with undergraduates at a PUI.

SELECTED PEER-REVIEWED PUBLICATIONS (§ indicates the corresponding author.)

Segura-Totten M[§], Dalman D.E. (2013) The CREATE method does not result in greater gains in critical thinking than a more traditional method of analyzing the primary literature. *J Microbiol Biol Educ.* 14(2), 166-75.

Segura-Totten M. (2012) Initiating Undergraduate Research Through a Task Force. In J. Kinkaid and L. Blockus (Ed.), *Undergraduate Research Offices & Programs: Models & Practices* (pp. 214-219). Washington, DC: Council on Undergraduate Research.

Segura-Totten M.[§] (2012) Jim and the forgotten embryos: a case study on stem cell-based therapy. Retrieved August 21, 2012, from http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=628&id=628

Tift K, **Segura-Totten M**, Lee KK, and Wilson KL. (2006) BAF-Like: A proposed regulator of BAF. *Exp Cell Res.* 312, 478-87.

Segura-Totten M and Wilson KL. (2004) BAF: roles in chromatin, nuclear structure and retrovirus integration. *Trends Cell Biol.*, 14: 261-6.

Liu J, Lee KK, **Segura-Totten M**, Neufeld E, Wilson KL, and Gruenbaum Y. (2003) MAN1 and emerin have overlapping function(s) essential for chromosome segregation and cell division in *C. elegans*. *Proc. Natl. Acad. Sci. USA*, 100:4598-603.

Segura-Totten M, Kowalski AK, Craigie R, and Wilson KL. (2002) Barrier-to-autointegration factor: major roles in chromatin decondensation and nuclear assembly. *J. Cell Biol.*, 158:475-85.

Segura-Totten M and Wilson KL. (2001) Virology. HIV--breaking the rules for nuclear entry. *Science*, 294:1016-7.

AWARD-WINNING STUDENT PRESENTATIONS AT ACADEMIC CONFERENCES (* indicates undergraduate researcher.)

Vincent J*, and **Segura-Totten M.** (2014). Barrier-to-Autointegration Factor-Like (BAF-L) interacts with Histones. Oral presentation session in Cell, Organismal and Developmental Biology at the Beta Beta Beta Undergraduate Biology Honor Society National Convention. June 2014, Erie, PA. [This presentation received the second place award.](#)

Vincent J*, and **Segura-Totten M.** (2014). Barrier-to-Autointegration Factor-Like (BAF-L) interacts with Histones. Presented at the Beta Beta Beta oral presentation session at the annual meeting for the

Association of Southeastern Biologists (ASB) meeting, April 2014, Spartanburg, SC. This presentation obtained the Frank G. Books award for top oral presentation.

Vincent J*, and **Segura-Totten M. (2013)**. Interactions between Barrier-to-Autointegration Factor-Like (BAF-L) and Histones. Poster presentation at the North Georgia Annual Research Conference, April 2013, Dahlonega, GA. This presentation obtained the top award for poster presentation.

Vincent J*, and **Segura-Totten M. (2013)**. Interactions between Barrier-to-Autointegration Factor-Like (BAF-L) and Histones. Presented at the Beta Beta Beta poster session at the annual meeting for the Association of Southeastern Biologists (ASB) meeting, April 2013, Charleston, WV. This presentation obtained the second place award.

Lei J*, Wiebe M, O'Brien L, Wiese C, Traktman P, **Segura-Totten M. (2008)** Regulation of Barrier-to-Autointegration Factor (BAF) Function during Nuclear Assembly Through Phosphorylation. Presented at the Northeast District 2 convention of the Bet Beta Beta Biology Honor Society.

Parks KA*, Fuchs A*, Hirsh DJ, **Segura-Totten M. (2008)** Mapping the Binding Region for Histone H3 on Barrier-to-autointegration Factor (BAF). Presented at the 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences, October 11, 2008 University of Maryland Baltimore County.

Verba K*, **Segura-Totten M**, Burhman G., and Mattos C. (2008) Multiple Solvent Crystallization of BAF. Presented at the 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences, October 11, 2008 University of Maryland Baltimore County.

GRANT FUNDING TO SUPPORT STUDENT EDUCATION AND SUCCESS

External

Co-PI—NSF S-STEM 0807107

“PERSIST in Biology and Chemistry (Program to Enhance Retention of Students In Science Trajectories in Biology and Chemistry)”

7/02/08 – 6/30/12; \$599,960

Co-PI -- NSF CCLI 0511357

“Multidisciplinary Approach to the Study of Molecular and Cellular Biology”

08/15/05-07/31/08; \$149,900

Internal

UNG PRESIDENTIAL SUMMER SCHOLAR AWARD: “Understanding how undergraduates read and analyze primary literature.”; \$10,000

Faculty Development Grant, School of Science and Health Professions, UNG. “Determining the effect of dissecting primary literature on students’ critical thinking skills and attitudes towards science.”

Spring 2010. \$970.00

Student Technology Fee Innovation Project, UNG. “Acquisition of a CCD microscope camera bundle for live fluorescence imaging of cells within biology course laboratories”. April 2010. \$11,600

TEACHING PHILOSOPHY

I. One of the main goals of an undergraduate education should be to forge students who are critical thinkers. While it is essential that students gain cutting-edge content knowledge in their major area, if they are able to “think on their feet” to solve challenges, they will be successful in whatever career they pursue.

II. Undergraduates should interact with their community and society as a whole, so they become engaged and informed citizens.

III. While students should be challenged intellectually, it is important to do this within a support structure that targets the needs of all student constituencies within a particular institution.

Inclusiveness in education is not only key to student success, but to the success of the institution.

IV. Practicing evidence-based teaching is essential to maintaining currency in the classroom.

This includes adapting approaches that are known to enhance student learning as well as modifying one’s own teaching in response to formal and informal assessments.

Personal teaching goals that stem from the overarching principles

1. Nurture analytical, free-thinking undergraduates.
2. Forge informed, responsible and engaged citizens.
3. Mentor and support all students, with special attention to groups underrepresented in biology.
4. Maintain currency in pedagogical best practices and incorporate appropriate evidence-based teaching approaches into courses.

Specific examples of the practice of my teaching philosophy

A. Directly and indirectly infusing the curriculum with high-impact practices, like community engagement and research, which improve student retention and increase critical thinking (Goals 1 - 4). Examples of inclusion of these practices in the curriculum: 1) designing two courses based on my cell biology research, one of which has an inquiry-based, research intensive lab component, 2) leading the incorporation of the HHMI-funded SEA PHAGES research course into Introductory Biology at the University of North Georgia (UNG), and 3) engaging 35 undergraduates in research projects during my academic career. As director of the Center for Undergraduate Research and Creative Activities (CURCA) at UNG, I facilitated and promoted research projects with a community engagement component and created University-wide programs to support faculty and student research.

B. Promoting critical thinking in the classroom (Goals 1, 3, 4). Efforts to increase this important skill in students include: 1) leading the incorporation of the analysis of primary research articles into core courses within the UNG Biology Department, such as Cell Biology. We previously determined that article analysis in the classroom increases students’ critical thinking [1]; 2) teaching introductory biology using the “Integrating Concepts in Biology” textbook, which increases critical thinking and scientific reasoning in students [2]; and 3) the use of active learning approaches in all my courses, including think-pair-share, clicker questions, case studies, and group problems which require analytical skills.

C. Educating engaged and informed citizens (Goals 1-2). One of the classes I enjoy teaching the most is Biology-A Human Perspective, which is geared towards non-majors. I teach this class (both in-person and fully online) using an issues-based approach. Through the use of case

studies, discussions based on recent news stories, and the analysis of scientific articles from reputable sources geared towards the general public, students understand the importance of biology in their daily lives. An overarching theme of this course is scientific literacy. By the end of the semester, students who take my course should be able to determine if the science behind a particular news story is reputable.

D. Promoting an environment of inclusiveness and student support (Goal 3). 1) There are differences in learning and academic achievement between students from low and high socioeconomic status, as well as between minority and majority students. High-structure teaching approaches have been shown to close this gap, which is why I use high-structure teaching methods in Principles of Biology I, a majors course that has a high D/F/W rate; 2) Establishing a support system with peer and faculty mentors, tutoring and other academic resources, and activities to help students “fit in”, like my colleagues and I did at The College of New Jersey (TCNJ; my previous institution) through the NSF-funded PERSIST program, is important for closing the achievement gap; 3) A group of colleagues and I recently submitted a proposal to the Department of Education (DOE) to adapt the TCNJ PERSIST program to increase the recruitment and retention of low-income and Hispanic students from nearby high schools into STEM education majors at UNG. Although this proposal was reviewed well but not funded, we are currently planning to revise our DOE submission to craft a proposal for the NSF Robert Noyce Teacher Scholarship Program.

E. Including evidence-based teaching in the classroom (Goal 4). My teaching has followed this progression: from teaching by strictly lecturing, to the incorporation of published best-practices that increase student learning in my courses, to the development of such best practices [3], to contributing to the Scholarship of Teaching and Learning (SoTL) literature in biology [1]. Currently, I use best-practices in all my courses, am developing reading guides in my introductory biology course after learning that they improve student performance in exams at the 2016 meeting for the Society for the Advancement of Biology Education Research, and am finalizing a research project detailing the approaches that undergraduates follow to understand the primary literature.

TEACHING ARTIFACTS AND PRACTICES

Since my teaching practice is driven by my teaching philosophy, I have included the teaching goals (from the teaching philosophy above) addressed by each of the artifacts and practices mentioned below, which are geared to promote:

1. Critical thinking in the classroom (Teaching philosophy goals 1, 3, 4). Since I want the learning goal of increasing critical thinking to be concrete and measurable, I selected one of the published definitions for critical thinking to develop artifacts: “Higher-order cognitive skills necessary for analysis and evaluation of data, as well as synthesis of information to create new knowledge or inferences” [4]. To develop critical thinking in my students, I have them complete in-class group problems that are designed at the analysis, evaluation, and synthesis levels of Bloom’s taxonomy (see an example of a problem on pp. 7-8), the levels defined as critical thinking in my adopted definition [5]. My exams are also purposefully designed with questions

at these levels so I can assess if students are progressing in the development of their critical thinking skills.

2. The development of engaged and informed citizens through the evaluation of evidence and information (Teaching philosophy goals 1-2). A. I built into BIOL 1101 – Biology – a Human Perspective (biology for non-majors) several assignments that require students to research a question or a concept (for example, bacterial resistance to antibiotics) using reputable sources of information appropriate for people who are not experts in biology (like the Centers for Disease Control or the National Institutes of Health websites). These assignments prompt students to evaluate the quality of evidence around a scientific idea. B. I believe that it is important to contextualize biology concepts so that students understand the importance of the discipline, and can become more engaged in the course. For this reason, I developed and teach BIOL 1101 in an issues-based way. The way I have structured the course, students learn key biology concepts like DNA mutation and human development in the context of interesting topics like DNA fingerprinting in crime and stem cell research. I designed, published, and use in BIOL 1101 the case study “Jim and the Forgotten Embryos” [3], which leads students through the controversial issue of stem cell treatments in an accessible and interesting way. C. In HNRS 3000 – Honors Research Methods, students have to complete a research project around a broad topic that has public health implications (for example, researching common claims on vaccination). As part of this project, they must use reputable sources to arrive at a conclusion of whether a particular claim is true or bogus (see pp. 8-9 for student instructions for this project).

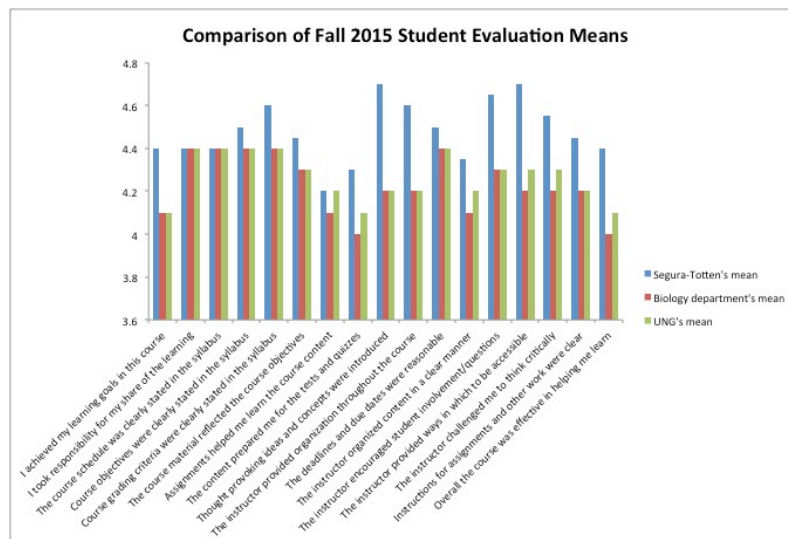
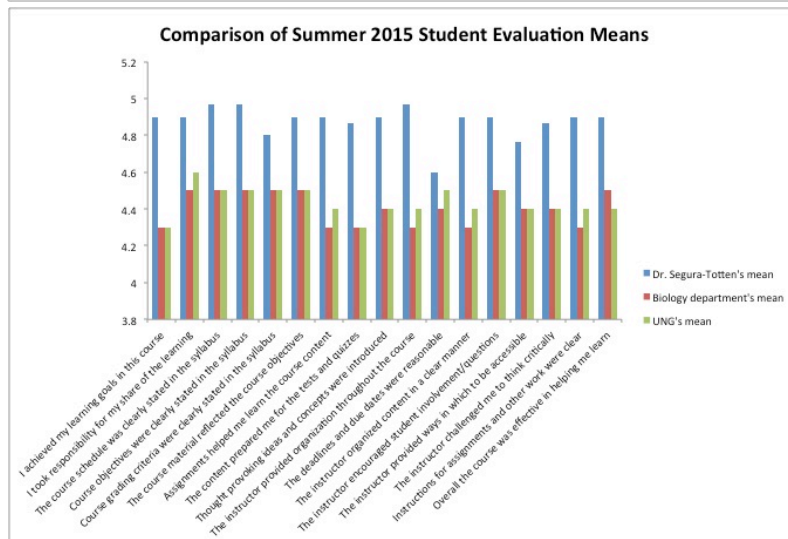
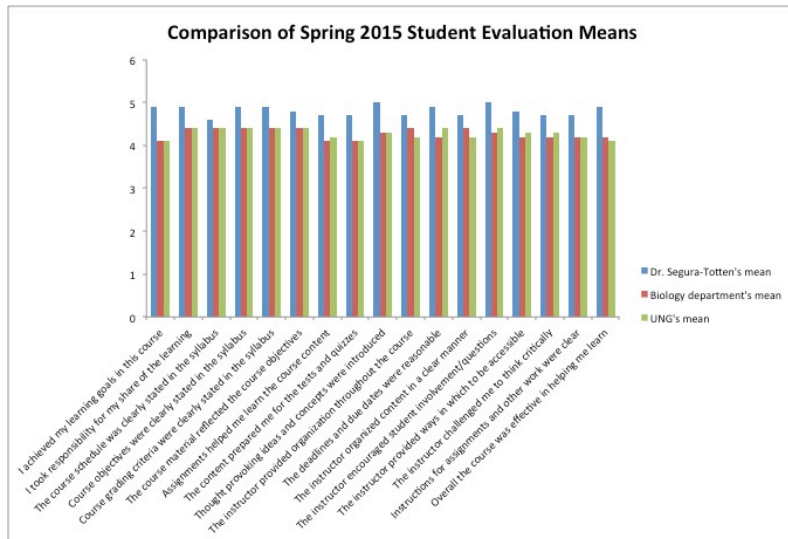
EVIDENCE OF TEACHING EXCELLENCE

A. Evidence of increased student learning

As I mentioned in my teaching philosophy, I am invested in increasing critical thinking in my students. I had observed that students who read the primary literature in my courses seemed to think more critically. However, I wanted to empirically confirm this observation. To do this, my colleague Dr. Nancy Dalman and I conducted a study comparing two types of approaches for reading the primary literature: a more “traditional” approach that I had used for years, and the CREATE method, which had been shown to increase critical thinking in students [6], but is more time consuming and onerous for both students and faculty. While we found that both sets of students have gains in critical thinking at the end of the semester, the CREATE students did not experience a significantly higher gain in critical thinking than students in the more traditional comparison group [1]. We published the results of this study in a peer-reviewed journal in 2013 [1]. Thus, I have rigorously demonstrated that the primary literature analysis approach that I use in my courses (and which has been incorporated into other core courses in my department) increases student learning, in particular students’ critical thinking skills.

B. Student evaluation scores

The three graphs on the next page show a comparison of an average of my student evaluation means (blue) for each category compared to the means of the UNG Biology Department (red) and that of UNG as a whole (green). The average of the means for all classes I taught in a given semester were above those for the department and the university (Spring and Summer 2015), and at or above the department and university means in Fall 2015. In 2015, I taught two upper-level



courses for biology majors, a non-majors introductory biology course, an introductory biology course for majors, and a research methods course for honors students from different disciplines. Thus, I think that the excellent numerical scores I received in student evaluations show that I demonstrate excellence in teaching across discipline and stage in college (freshmen versus upper-level students).

C. Evidence of innovative teaching approaches

1. Group problems to develop higher order thinking. I spend a large amount of time designing group problems for my courses, for two reasons: 1) to provide students with practice problems that help to develop the skills I will assess on exams, and 2) these group problems are designed at higher levels of Bloom's taxonomy, and thus help develop higher order thinking in my students.

Below is an example of a group problem I used in the Advanced Cell Biology course I designed:

As we discussed in class, a very important goal of investigating the dependency of cancer cells on particular cyclin-dependent kinases (CDKs) is to potentially develop therapeutic agents against certain types of cancer. Yu and colleagues, in their seminal 2001 paper, looked into whether disabling cyclin D1 can protect against breast cancer.

To do this, the investigators constructed mice that had breast cancer backgrounds brought about by different mutations (in the *myc*, *ras*, *Wnt-1*, or *neu* genes). They then looked at the tumor incidence in mice of these backgrounds where the cyclin D gene was either inactivated (-/-) or remained active (+/+). Figure 2 of their paper is shown below.

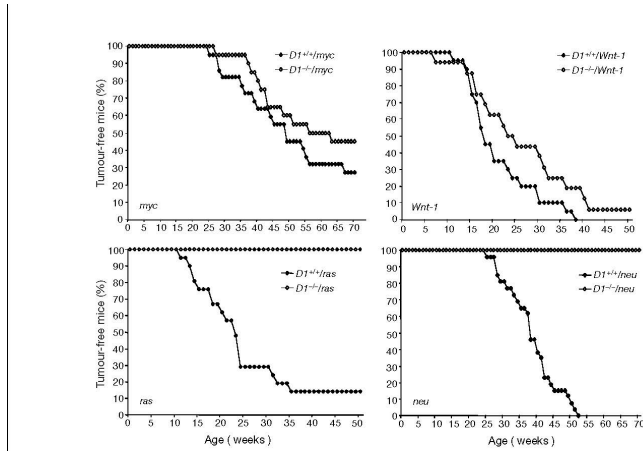


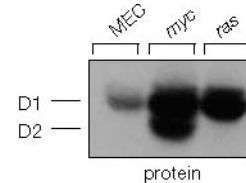
Figure 2 The occurrence of breast cancers in cyclin *D1*^{+/+} and cyclin *D1*^{-/-} transgenic mice. *myc*, MMTV-*c-myc* transgene; *Wnt-1*, MMTV-*Wnt-1* transgene; *ras*, MMTV-*v-Ha-ras* transgene; *neu*, MMTV-*c-neu* transgene.

a. Given the data in this figure, what should the authors conclude about whether loss of cyclin D1 can “protect” against breast cancer? (5 points)

b. Would you recommend that cyclin D1 inhibitors be used as therapeutic agents against all types of breast cancer, or just certain types (which)? Explain your answer. (2.5 points)

c. In this same article, the authors show that the specific *ras* mutation

tested causes the overexpression of cyclin D1 protein (“D1” in the western blot on the right), but not overexpression of cyclin D2 (“D2” in the western blot). Given the results shown in Figure 2 (above), would you expect a western blot of cells with the *neu* mutation studied to look more like the *myc* or *ras* panel below? Why? (2.5 points).



2. Assignments designed to develop scientific literacy and research skills. As stated in my teaching philosophy, I am committed to developing my students into informed, responsible, and engaged citizens. An integral part of being an informed citizen is having the literacy and research skills necessary to determine if the information one encounters on a daily basis is fact or fiction. Although I design assignments that target literacy skills in all my courses, the example below is for the Honors Research Methods course I teach. The vaccination project prompts students to look into vaccination claims found in the community, and to research whether these claims are scientifically true. This project also develops students’ oral and written communication skills, since they have to put together a brochure on their findings and deliver an oral presentation. The instructions for this project are detailed below. The project was graded using a detailed rubric I designed, but due to space constraints, I am unable to include it in the portfolio.

Vaccination project guidelines

You will work in a group of 3-4 persons to complete this project. For this project, you will research the validity of claims about vaccination that exist in the general community.

Researching the claims. This part of the project will be done individually. You can look on the Internet, interview people in your community, or find out what these claims are in another way that appeals to you. You will bring a list of claims to class. We will discuss these claims and come up with a consolidated list.

Forming groups. I will not decide the exact composition of the groups. However, each group must have at least one biology student who will be the biology expert for the team. This person will be the authority on the biology behind the vaccine claims. Since you will need expertise from several disciplines to do well on this project, I suggest that each group is composed of people from different majors.

The Project. As a group you will pick two of the claims to concentrate your research on. You will then meet in class and outside of class to research the validity of these claims using reliable sources of information (*Note to portfolio reviewers: at this point in the semester, the students had completed several assignments designed to teach them how to find reliable sources of information*). You will compile information on each claim and decide as a group whether the claim is valid.

The Product. You will put together an informational handout or pamphlet written for a general audience which outlines the particular vaccine claims, whether they are valid or a myth, and why. The quality of this pamphlet will determine your final grade. This handout will contain cites to the sources you used to research the claims, as well as a reference list. If you used additional sources that do not appear on the handout, you will need to submit those in a separate sheet labeled "Additional References".

The Presentation. You will make a group presentation on the information on the handout you produced. This presentation will also be geared towards a general audience.

D. Peer teaching evaluation

Below, I have included an excerpt from a letter of support that Dr. Frank Corotto, a Professor in the Biology Department at UNG, wrote as part of my application for promotion to Professor. I think it reflects my dedication to teaching with active learning methods that develop critical thinking and scientific literacy, as well as my ability to reach students from different majors. I could not include the original letter due to space constraints, but I am happy to provide a PDF of the original letter if needed.

“Miriam's excellence in teaching is evident in her continuous pursuit improved teaching methods. Her curriculum vitae documents many cases where she experimented with novel pedagogies. In each case, her approach was carefully tailored to nature of her students. In Biol 1101 lecture (then 1010), she helped redesign the course so that it focused key topics that are relevant to non-majors. Her "lectures" combined instruction with group activities. When I sat in on a class, I saw that students participated eagerly with several enthusiastically offering their own input without any prompting. I've taught Biol 1010. The audience is usually a tough one. Miriam found a pedagogical approach that worked with that audience.

Miriam also combines traditional with non-traditional approaches when she teaches upperclassmen. As an experiment with pedagogy, she and Nancy Dalman replaced labs in Cell Biology with discussions of the literature. Again, I sat in on one session. I have never seen our students display such a high level of scientific literacy. Miriam gave them no choice. Each

student was required to turn in a detailed analysis of the paper before the discussion began. They had to identify all the variables, comparison groups, and controls. They had to make diagrams that explained all the figures. Consequently, the students arrived prepared. The session was highly structured with Miriam asking questions, noting who answered the questions (to assign a grade), and calling on students who were reluctant to speak up (to assign a grade). All of our graduates should achieve the level of scientific literacy I witnessed. Due to her success, discussions of the literature are now a regular part of the Cell Biology course, along with inquiry-based labs.

While Miriam's use of non-traditional pedagogy is documented on her curriculum vitae, what is not so easily documented is her genuine enthusiasm towards experimenting with new teaching methods. For example, she is developing a course to help students prepare for the new MCAT, which will be very different from the current one. When I pitched the course to Miriam, I mentioned the need to cover a lot of ground, from biochemical pathways to molecular biology and advanced cell biology. Then I added that she could include a 1-hour activities-based component. Her face lit up. She realized that paper discussions, active learning sessions, a flipped classroom, or anything she might like could be part of the course. She realized that she could have fun teaching it! So, when Miriam experiments with non-traditional pedagogy, it is not to add a few lines to her promotion portfolio. She does it for fun. She enjoys watching students learn.”

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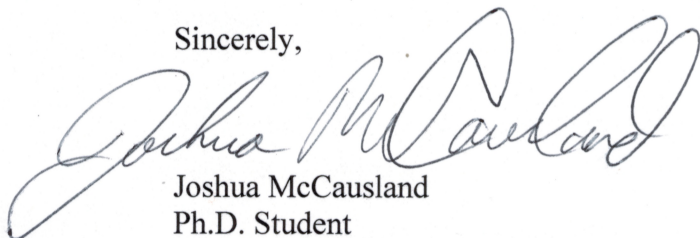
To The University System of Georgia Regents' Teaching Excellence Award Committee:

I feel honored to recommend Dr. Miriam Segura-Totten for the University System of Georgia Award. As a 2015 alum of the University of North Georgia, and a former Biology major, I can think of no other professor during my time as a student who deserves this recognition. Dr. Segura-Totten's unique pedagogy goes beyond lecture recitation; she inspires her students to actively engage in class material and understand the reasoning behind *why* biological phenomena exist or act. Although I have since graduated, her mentorship still influences me today in how I approach my work at Johns Hopkins University.

Dr. Segura-Totten's teaching philosophy pushed students like me to do more than learn the facts of biology; instead, she constantly motivated us to synthesize knowledge and apply it to a bigger context. I feel fortunate to have taken her for Advanced Cell Biology, an upper level course that detailed cancer biology. She aspired to have students learn content not through text books or through a traditional lecture, but through actively reading and discussing primary literature. She spent several hours poring through the appropriate fields to find recent, comprehensive review articles that built a foundation for our current topic. Not only would we read and discuss these reviews, but she would also regularly host "paper discussions," where the class read a recent scientific paper, dissected it, and gave group presentations figure-by-figure. By immersing us in the modern scientific theories of molecular and cellular biology, Dr. Segura-Totten built a strong "tool box" of analytical skills. As a graduate student, this familiarity with primary literature continually proves to be invaluable training for my current studies.

However, these acquired analytical skills originate from more than Dr. Segura-Totten's finesse at contextualizing biology. Reading extensive primary literature resulted in several assignments addressing the strengths and flaws of every paper. She expected us, as a class, to actively probe into every scientific paper and address *why* the authors included points, figures, or results. Even when we were just reviewing material, she never just gave us facts. She would present multiple ideas, theories, and/or hypotheses and have us work together to integrate this knowledge. By framing all the minutiae to a bigger picture and critically analyzing all content, I took away more from this class than many other courses. She trained me to better think in biology, which continues to reward me even though I specialize in bacteria, not cancer. Therefore, I reiterate what a strong educator, mentor, and coach she is. Dr. Segura-Totten aims to achieve much more than instructing what a test will cover; she commits to building futures for her students.

Sincerely,



Joshua McCausland
Ph.D. Student
Biochemistry, Cellular and Molecular Biology
The Johns Hopkins University School of Medicine

Award Selection Committee,

As an Honors student, I consider a good, qualified, and innovative professor to be a key to success in any area of study. Personally, I have been a student in the Georgia State University's Honors College, and now I am an active student in the University of North Georgia's Honors Program. Amongst the twenty-five plus professors I have worked with in two drastically different universities/cities of, my experience with Dr. Miriam Segura-Totten has been one of the best.

I have had the pleasure of being in two of Dr. Segura-Totten's classes; one was titled "Honors Research Methods." That cross-disciplinary course focused on developing each individual student's Honors Thesis project. There were eight people in the class with six different majors and areas of interest. Dr. Segura-Totten did an exceptional job of creating lectures and assignments that benefitted each student for their project. As a woman who holds high standards for herself, it is only fitting that she holds high standards for her students and holds us accountable for our own success and knowledge making the finished products of our assignments work to be proud of. In fact, I applied for two Honors Research Conferences with a paper and presentation assignment that I did in her class, and I was accepted to both conferences. This February, I presented these materials with confidence that my work was well done with many thanks to Dr. Segura-Totten's class.

Currently I am a student in Dr. Segura-Totten's Cell Biology course. As a Psychology major with a biology minor, this class is challenging for me but also imperative for my post-undergraduate plans to apply to Physician's Assistant school. By nature, this class is intimidating and mentally draining, but Dr. Segura-Totten's passion for the subject is contagious. She makes the class something to look forward to rather than something to dread. Furthermore, the way that she teaches her courses encourages students to think critically and individually. She takes the time to post two separate powerpoint presentations for the lectures so that students can follow along with the lecture, but are also pushed to answer her leading questions so that we draw conclusions and make connections on our own. Her current research revolves around fostering critical thinking skills in students and she applies her findings in her lectures in order to help her students be successful.

Lastly, Dr. Segura-Totten truly cares about her students as people as well as their academic success. I have approached her for several personal issues that I have had the past couple of semesters, and she has been more than happy to help me. Rather than being elusive and distant like some professors, Dr. Segura-Totten is always available and eager to help in whatever way she can. Furthermore, she has spoken in class about her love of teaching the non-biology majors introductory biology course because she wants to make a lasting impression on these students for the importance of biology. This exhibits her interest and passion for biology, and her desire to share that enthusiasm with her students.

It is because of these reasons that I have the distinct honor of recommending Dr. Segura-Totten for the Distinguished Teaching Award.

Thank you for your consideration,



Abbey Grey

Junior Representative for the Honors Program at University of North Georgia

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To The University System of Georgia Regents' Teaching Excellence Award Committee,

As a Biology major, I have been through many biology classes but none has had the distinct impact on me like that of Dr. Miriam Segura- Totten's courses. I have had the privilege of being a part of her Cell biology course and her advanced Cell Biology course. I first met Dr. ST in advanced cell biology, where upon meeting here I didn't know what to expect. The first thing that stood out to me was how she approached teaching a new course that was extremely intimidating to me. She informed us on the first day that this course was not an easy one, and in order for us to be successful we were going to have to put in a tremendous amount of outside work. Her honesty about what to expect is what made me accept the challenge that this class would bring. This class supported her teaching philosophy of increasing critical thinking and problem solving.

Dr. ST structured the class around cancer and how it works. Along with taking traditional notes, we read a tremendous amount of primary literature in which we had to read, comprehend and discuss the paper. After our class discussions she would then challenge us to come up with a future experiment with full controls and treatment groups. These assignments forced me to think outside of the box, it required careful analysis of the paper to see what direction to take. By incorporating primary literature into the class she was training us to be better critical thinkers. During her lecture she would have random questions throughout her presentations that would force us to stop, think and to apply it to the bigger concepts. In Cell Biology, she had the same approach with wanting her students to be able to think critically and to be able to apply everything we had learned. Even her exams forced us to critical think. She created exams that forced us to take the information that she had taught us, apply it, and to see how the small bits of information fit into the big picture. Her classes were challenging but in my opinion they were worth it.

Upon completing her courses, I not only learned the required information but, I learned how to critical think, I learned how to read primary literature, I learned how to solve problems, and I learned how to approach the more difficult papers and how to thoroughly analyze data. Even though her classes are not a walk in the park, she made it enjoyable, and interesting. She was able to keep us engaged and it was because of her passion to get us to think that made me look forward to her classes. Her classes have benefitted me in many different ways, but the most important is that her class has helped prepare me for the MCAT. Dr. Segura- Totten is a phenomenal professor, her passion for teaching and to get her students to critical think rather memorize a ton of information, is what sets her classes apart from others.

Sincerely,

Khadene Scott