Application Summary

Competition Details

Competition Title:	2020 Eichholtz Faculty Teaching Award
Category:	Institutional Awards - CTL
Award Cycle:	2020
Submission Deadline:	03/02/2020 at 11:59 PM

Application Information

Submitted By:	Jung Choi
Appplication ID:	4322
Application Title:	Shana Kerr
Date Submitted:	02/28/2020 at 5:07 PM

Personal Details

Applicant First Name:	Jung
Applicant Last Name:	Choi
Email Address:	jung.choi@biology.gatech.edu
Phone Number:	

Primary School or Department
School of Biosciences

Primary Appointment Title:	Associate Professor

Application Details

Proposal Title
Shana Kerr

Dr. Joyce Weinsheimer

Dear Dr. Weinsheimer, I am pleased to nominate Dr. Shana Kerr for the Geoffrey G. Eichholz Faculty Teaching Award. Dr. Kerr is in her eighth year as an Academic Professional in the School of Biological Sciences where she teaches regularly in all four of our Biology Introductory courses (BIOL 1510/1511/1520/1521), Biology core courses (Cell and Molecular Biology Lab, Genetics, Communicating Biological Research), and Bioethics (fulfills ethics requirement for engineering majors). Dr. Kerr is also an integral part of the TA training program (CETL 2000 and BIOL 4697). She is a member of the Introductory Biology Committee, and spearheaded an initiative to create a detailed set of learning objectives for each lecture in our two-semester sequence of Biological Principles (BIOL 1510/1511) and Organismal Biology (BIOL 1520/1521). Dr. Kerr's dedication to excellence in teaching, her development in student-centered learning approaches, and her compassion when working tirelessly with students makes her an outstanding candidate for the Eichholz award.

Dr. Kerr exhibits extraordinary efforts in the classroom. She began her work in the Georgia Tech Biology program by teaching in the small honors introductory courses, where she rapidly rejected a lecture-only approach and embraced interactive teaching using first clickers and then Learning Catalytics, an online, interactive student response system. She began to modify and improve on in-class activities, structuring class sessions such that students engage with the material themselves to facilitate deeper student learning. In her second semester she adapted a phylogenetic "Tree Thinking" exercise that a colleagues brought back from a workshop and had students in the small honors class take an entire class period to work through an analogy to solidify the biological connections to how species are related to each other. She scaled-up the activity when she later taught a 70-seat summer section of BIOL 1510. Since 2014, she has moved into the larger-format courses BIOL 1510 (250 seats) and BIOL 1520 (110 seats), where she has continued to adapt and use active learning strategies to retain the intimacy of a smallscale classroom. She also transformed an upper level elective, Bioethics (BIOL 4650) from a student presentation-based course to a case-based analysis course where students apply moral reasoning to real-life bioethical problems. Students also benefit in their learning from her laboratory expertise in the project-based Cell Biology Lab (BIOL 3451) and in senior Research Project Lab (BIOL 4590), where students work collaboratively to answer authentic biological questions. Dr. Kerr shows teaching excellence in introductory and upper-level core courses in both lecture and laboratory settings.

Dr. Kerr transfers her enthusiasm and inspiration to students with lasting impact on student development. Her enthusiasm in the classroom keeps students engaged, and her efforts to transform the classroom into an active learning environment have directly benefited students in their academic and career development. A student in the case-based Bioethics course told her at the end of the semester that the course should be "required for anyone going to medical school." Dr. Kerr's revisions to the Cell lab course to incorporate a project-based research experience are an important part of the focus on authentic research experiences within the Biology major curriculum, and have contributed to student decisions to switch their career focus from practicing medicine to conducting scientific research. Such engagement with authentic research experiences in the classroom can lead to career-changing impacts for students.

Dr. Kerr is intimately involved in curriculum innovations as a member of the Introductory Biology Committee and the Biology Undergraduate Committee, spreading the impact of her teaching ideas to a broader audience of faculty and their students. After participation in the CETL Teaching Scholar's program for 2013-14, Dr. Kerr initiated an effort to vertically align the content and skills learned in the Introductory Biology curriculum with the expected foundational knowledge for Biology upper-level

core courses in Ecology, Genetics, Evolution, and Cell and Molecular Biology. This project has formalized curricular conversations among faculty teaching in the core and planning for new Biology electives. Dr. Kerr also sparked curricular innovation by encouraging an effort to develop student learning objectives for all content in the introductory biology curriculum. The learning objectives project has had two overwhelming effects on students: it provides a powerful study guide for success in the courses and it was the tipping point to remove the traditional textbook from large-enrolment introductory course Biological Principles (BIOL 1510), replacing that expensive text with website materials for Biological Principles. Dr. Kerr was one of three contributors to the development and implementation of the web-based open education resources for BIOL 1510. She is now spearheading a similar transformation in the second semester large-enrollment introductory biology course, Introduction to Organismal Biology (BIOL 1520). Curricular discussions have a broad effect on student learning in the Biology program, as ideas are disseminated to multiple faculty to reach a larger proportion of students in biology courses.

Dr. Kerr steps in when students need additional support. When students aren't performing up to their potential, Dr. Kerr notices, and she takes action. She invites students to office hours, she checks in with their academic advisors, and she makes referrals to the Dean of Students when necessary. Much of this sensitivity and connectedness with her students comes from her role as an academic advisor, providing her an additional vehicle for making a difference in students' lives outside the classroom. I recognize from discussions with her and her advisees that Dr. Kerr is fastidious and thorough as she advises students. She connects with her advisees in the classroom, leveraging this main advantage of being a faculty advisor to provide additional academic support to students who are working through both personal and academic issues.

Dr. Kerr engages with students outside of the classroom. Dr. Kerr recently reinitiated the Biology Student Advisory Committee (BSAC), an undergraduate Biology major organization focused on student engagement within the Biology program. Under her guidance, last fall the organization hosted a registration advising session for first year Biology majors, collected feedback from current majors regarding the Biology program, and assisted in recruitment of prospective students. As part of building a strong identity and community among Biology majors, Dr. Kerr also wrote a successful funding proposal to print Georgia Tech Biology Major t-shirts, distributed at the majors' Fall Kickoff BBQ for new and returning students. Support and engagement with students outside of the classroom plays an important role in their personal and professional development. Now, every time I see one of our majors wearing their Biology t-shirt, it brings a smile to my face and prompts me to interact with our majors anywhere on campus, even if I didn't personally know them before that moment.

Dr. Kerr's extraordinary effort toward and passion for teaching and learning is evident in so many of these initiatives. She brings her enthusiasm, dedication, and attention to detail into all of her work at Tech. Her strong impact on student learning makes her truly deserving of the Geoffrey G. Eichholz Faculty Teaching Award, and I am pleased to nominate her for consideration by the committee.

Sincerely,

Todd Streelman
Chair, School of Biological Sciences

Teaching Reflection

In my first teaching experience as a graduate TA for an undergraduate intro biology lab, I quickly realized two things. First, the feeling of helping someone learn was much more satisfying for me than performing the most successful experiment. And second, while my thoughtful, time-intensive PowerPoint lectures certainly helped *me* learn the material, they seemed to be almost completely ineffective for my *students*. This realization prompted me to explore and practice evidence-based, student-centered pedagogies, and I have worked hard to effectively implement them in the classroom throughout my career at Tech.

Providing students with clear understanding of what they need to do to be successful, and creating the time for them to practice it, can engage and support students even in large introductory classes. In summer 2013, I helped lead what would become a year-long, committee-based project to develop learning objectives for each lecture in the introductory biology course sequence, Biological Principles (BIOL 1510) and Organismal Biology (BIOL 1520). Learning objectives are an essential element of "backward design," where the instructor first articulates learning objectives for a class session, then develops formative and summative assessment questions, and finally designs in-class activities to help students achieve those goals. This approach provides students the opportunity to practice what they need to do to be successful in the course. Alongside this effort, I began implementing a "flipped class" approach, an evidence-based pedagogy where students read or watch course materials and complete a short online homework before class, practice working in groups with the information in class, and finally complete homework assignments based on the material after class. A strong complement to backward design, the flipped class creates time in class for students to work with and integrate information they have already been exposed to before class, rather than passively listening to a lecture on information they are hearing and seeing for the first time. One Organismal Biology student commented on CIOS that "I have never enjoyed in-class activities in the past, but Dr. Kerr did a great job of using these to encourage us to interact with our peers. The questions she asked were always thought provoking and helpful for exam preparation."

Authentic research experiences in laboratory courses can improve the student experience and foster engagement in science. Beginning in spring of 2015, I restructured BIOL 3451, Cell and Molecular Biology lab, around authentic, semester-long research projects to investigate the effects of putative immunomodulatory compounds on immune cell function. I also redesigned course assignments to better scaffold student work, including replacing laboratory reports with informal "project updates," adding annotated bibliography and literature review assignments to help students build background knowledge, and synthesizing these components in a final research paper to help students recognize how individual experimental results build into a cohesive research story. While these changes may seem superficial, they resulted in a meaningful shift in student satisfaction with the course while also helping successfully meet expectations of the final research paper assignment. One student observed in the supplemental end-of-course survey that "this is the only lab I've taken at GT where I felt like I was conducting actual research."

I have sought other opportunities to integrate authentic experiences in courses, including experiences outside of research. In Fall 2015, I had the opportunity to teach Bioethics for the first time. This course serves a diverse population of students: it fulfills a major elective for Biology majors, and it is also frequently taken by engineering majors to fulfill their Institute Ethics requirement. During my first semester teaching the course, I reformatted the course to feature current, real-life bioethical case studies from the popular media instead of weekly student presentations on various bioethical topics. Students used these case studies to grapple with application of moral theories and principles to real-life scenarios where the stakes are high for both individual and often society at large, rather than abstract and academic. In addition to in-class case study analysis, the course also features weekly reading assignments including essays that analyze and apply moral theories, principles and values. These readings are often quite dense, but they are necessary for students to be able to analyze the in-class cases. In response to student feedback on a mid-semester course evaluation, I eliminated weekly quizzes on these assigned readings, and instead created "reading response" assignments where students had the opportunity to reflect on an synthesize their weekly reading assignments and share their thoughts in response to the assigned readings. These assignments alleviated student anxiety about weekly quizzes, while also ensuring that students read and thought deeply about the readings before class. In fact, when I later co-taught the class with a colleague and used the reading responses instead of quizzes, he commented to me at the

end of the term that he felt that student answers on the exam essay questions showed deeper reflection than was typical in his experience teaching the course.

Close interactions with students can be difficult to achieve in a large class, but these interactions can have the most impact on students both academically and personally. The in-class team activities I implement in the large introductory courses can foster student engagement, and I actively circulate among the class to check in with different groups. But one-on-one interactions can mean the difference between success and failure for a struggling student. After the first exam in the introductory courses, I reach out to students who did not perform well to invite them to meet and discuss their situation one-on-one. I have had the great satisfaction of seeing dramatic turnarounds in performance after these discussions. I recall one student who did not respond to the initial invitation, but, after performing poorly on the second exam, did finally accept the invitation to meet. As we talked through his study habits and I offered suggestions for alternative approaches, he seemed to appreciate not just the guidance but also the fact that his instructor had not 'given up' on him. He then dramatically and consistently improved his performance to ultimately earn a far better grade than his earlier exam performance would have suggested. He later told me that he credited this conversation for much of his subsequent academic success in other classes.

It is these personal and individual successes that truly inspire me to continue revising – and hopefully improving - my teaching approaches. In writing this reflection for my nomination for the Geoffrey G. Eichholz Faculty Teaching Award, I am reminded both of how far I have come in my classroom approach, and how much more I can do to continue embracing student-centered, evidence-based approaches in the classroom. I am honored by my colleagues' decision to nominate me for this award, and I look forward to continuing my efforts to improve my teaching and classroom environment for the sake of my current and future students.

Illustrations of Teaching Excellence and Impact on Student Learning

1. **Learning Objectives in Biological Principles**
In summer 2013, I was selected to attend the National Academies Southeast Summer Institute (SSI) on Undergraduate Education, a week-long, intensive group work-based workshop on using "backward design" to articulate Learning Objectives, develop summative and formative assessment questions, and finally design in-class activities to help students achieve those learning goals. The backward design approach, which includes explicitly communicating learning objectives to students and ensuring that all formative and summative assessments align with these learning objectives, is extremely effective for students to practice what they need to do to be successful in the course. After the SSI experience, I helped initiate and co-led a year-long project among her colleagues in the School of Biological Sciences to develop learning objectives for every lecture in the intro bio sequence for both majors and non-majors. The resulting Learning Objectives were approved by the Introductory Biology Committee and are now actively used to design in-class activities and assessment questions by all faculty who teach in the introductory biology sequence.

   Sample Learning Objectives from Biological Principles Genetics Module:
   1. Describe the chromosomal makeup of a cell using the terms chromosome, sister chromatid, homologous chromosome, diploid, haploid, and tetrad
   2. Recognize the function and products of mitosis and meiosis
   3. Compare and contrast the behaviors of chromosomes in mitosis and meiosis
   4. Recognize when cells are diploid vs. haploid
   5. Predict DNA content of cells in different phases of mitosis and meiosis
   6. Recall and describe the phases of the cell cycle
   7. Relate the cell cycle stages to changes in DNA content

2. **Flipped Class Approach for Biological Principles and Organismal Biology**
Following development of the Learning Objectives for the introductory biology sequence, I helped revise the course structures of the intro bio sequence to implement a "flipped classroom" approach, a research-supported pedagogy where students first read or watch course materials and complete a short online homework before class ("incoming knowledge evaluation," or IKE), then practice working in groups with the information during in-class activities ("team in-class activities," or TICAs), and finally complete homework assignments (HWs)

based on the material after class. This approach complements and enhances the backward design model, creating time in the classroom for students to integrate concepts and practice testing themselves on the information they have already been exposed to before class, rather than passively listening to a lecture on information they are being exposed to for the first time. In collaboration with Jung Choi and Chrissy Spencer, colleagues who both teach in the introductory biology sequence, I redesigned existing and developed new IKE and TICA materials to implement the flipped classroom model in Biological Principles, using both a commercial textbook and the course website as pre-class readings (http://bio1510.biology.gatech.edu). I subsequently took this same approach in Organismal Biology by identifying online videos, tutorials, and other resources as pre-class assignments, as well as adapting resources previously identified by Linda Green for this purpose. In both courses, I utilized class time for "lecturettes" and team activities delivered via both Learning Catalytics and paper handouts to achieve higher-order Learning Objectives. This approach is now regularly employed by most of the faculty who teach in both courses of the introductory biology sequence.

Sample pre-class IKE questions, aligned with the Biological Principles Genetics Learning Objectives listed above in #1

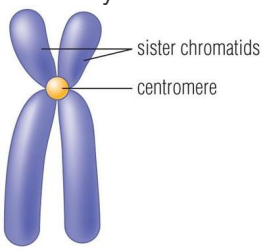
1. multiple choice

If you counted 36 chromosomes in the nucleus of a cell, you would expect to see *how many* chromosomes in the cells produced at the end of mitosis, and *how many* chromosomes at the end of meiosis.

1. 9; 18
2. 18; 36
3. **36; 18**
4. 72; 36
5. 36; 36

2. multiple choice

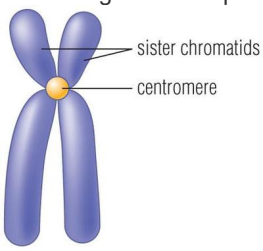
How many chromosomes are shown below?



1. one unreplicated chromosome
2. **one replicated chromosome**
3. two unreplicated chromosomes
4. two replicated chromosomes

3. multiple choice

If the image below represented the *entire genome* of a particular cell, what would the ploidy of that cell be?



1. **haploid (1N)**
2. diploid (2N)
3. triploid (3N)
4. tetraploid (4N)

4. multiple choice

Prophase chromosomes consist of two replicated sister chromatids joined at a centromere. Each individual sister chromatid contains:

1. A single strand of DNA
2. **A DNA duplex (double-stranded DNA molecule) identical to the other sister chromatid**
3. A DNA duplex from one parent; its sister chromatid has the homologous DNA duplex from the other parent
4. Two DNA duplexes identical to each other
5. Two homologous DNA duplexes, one from each parent

5. multiple choice
All of the following are associated with meiosis, except
1. crossing over
2. duplication of DNA followed by two divisions
3. produces gametes
4. **results in four cells, each identical to the original cell**
5. homologous chromosomes separating into two cells
6. reduction in the chromosome number from diploid to haploid

6. many choice
Meiosis results in the formation of four new nuclei, each with half the chromosomes present in the parental nucleus. Which of the steps takes place in both mitosis and meiosis?
1. Alignment of pairs of homologous chromosomes in duplicated form at the metaphase plate.
2. **Separation of sister chromatids.**
3. Separation of the homologous chromosomes.
4. Synapsis; pairs of homologous chromosomes each consisting of two sister chromatids associate with each other indicating that crossing over has occurred.

7. long answer
Now that you've completed the website reading, videos, and IKE, what questions do you have about this material that you hope will be answered during class?

The following are comments collected via a supplemental anonymous course surveys administered at the end of Fall 2016, Summer 2016, Fall 2015 Summer 2018, and Summer 2019 in Biological Principles, in response to the question "What specific things would you KEEP about this course, and why?"

- I really really liked the flipped classroom style. I was way more interested in solving a case of cyanide poisoning and diagnosing genetic disorders than I would have been in a standard lecture
- Keep the readings and IKEs before class, it motivates me to do the readings and ultimately is one of the major factors that led to my success in class
- I would keep the same the requirement of the IKE and TICA sessions, as they were very helpful to immediately reinforce the material learned in class and it was very helpful to be able to review them.
- I really enjoy the flipped classroom approach to this class. It helps you to remember to read before class starts so that you have an idea as to what will be covered in class.
- the in class TICAs are helpful because a lot of times in class I thought I understood something but then there would be an aspect of it that I didn't catch, and having the professor there to explain it really helped

The following are from CIOS and anonymous supplemental survey comments on the flipped class in Spring 2015 and Spring 2016 in Organismal Biology:

- I could tell she put in a lot of effort in the class, by coming up with videos to watch before-hand and questions to answer before had [sic] and of course answering the questions/worksheets in class. The videos really helped, and i want to thank you for putting in time to find good ones for us to watch (sometimes reading the textbook doesn't help).
- I have never enjoyed in-class activities in the past, but Dr. Kerr did a great job of using these to encourage us to interact with our peers. The questions she asked were always thought provoking and helpful for exam preparation.
- I liked the videos a lot! The learning catalytic questions were also very helpful and made me think about the material in a way I normally wouldn't: much more conceptually based than memorization and I liked that.
- The TICA's, class participation was important in my understanding the material
- I liked the structure of class in the classroom. It was helpful to have the teacher give an overview of the specific lesson and then allow us to do the TICA in a group

3. Open Education Resources for Biological Principles and Organismal Biology

When implementing the flipped class approach in Biological Principles, my colleagues and I recognized that the required textbook did not always align with the learning objectives for a given class period. In addition, the lengthy reading assignments often included details that distracted students from the main concepts, and were often so long that students did not complete them before class. Thus Jung Choi, Chrissy Spencer, and I collaborated to write and developed an open education resource (OER) in the form of a course website to fully

replace the commercial textbook for the course. This effort was funded in 2015 through a competitive Affordable Learning Georgia (ALG) grant and an anonymous donation to the Georgia Tech College of Sciences. Each page on the Biological Principles website (http://bio1510.biology.gatech.edu/) lists the learning objectives for the day and presents concepts concisely, with embedded images and videos, all either developed by the course instructors or curated from free, publicly available sources. Importantly, the website content is tailored to the learning objectives of the class, making it far easier for students to successfully complete the pre-class assignment and thus arrive to class well-prepared for the discussion of critical course concepts and in-class activity. The online textbook has now been adopted by all faculty who teach in the course. The College of Sciences featured a news story on these OER materials (http://www.cos.gatech.edu/hg/item/589322).

Responses on an anonymous, supplemental course survey at the end of the Fall 2015 semester in Biological Principles overwhelmingly indicated that students found the 1510 website useful for their enjoyment of and success in the course, with 58% of respondents indicating the website was "Very helpful" and 29% indicating it was "Somewhat helpful." Following additional revisions to the website content for Fall 2016, 65% of respondents indicated that the website was "Very helpful" and 21% indicated it was "Somewhat helpful" at the end of Fall 2016.

The following comments were collected via a supplemental anonymous course survey administered at the end of Fall 2016, Summer 2016, Fall 2015 Summer 2018, and Summer 2019 in Biological Principles, in response to the question "What specific things would you KEEP about this course, and why?"

- The website in place of a book was wonderful. Sometimes, when reading a textbook with a lot of material I have a hard time finding what is the most important concepts and try to memorize it all for the tests. The website was in depth enough that I felt well versed in each subject without having way too much info thrown in my face. The videos were also helpful becase [sic] I am a visual learner and hearing someone say something while also having a visual to look at helped me understand some concepts.
- Videos and the website were extremely easy to use and helped me understand things very quickly. I would never want to go back to a textbook after this.
- The online blogs are fantastic. I've never actually enjoyed reading about a subject until this class. They seem like they actually help me learn, rather than just being confused by reading a textbook.
- I liked the website textbook, it saved me money and it was easier to take notes with and follow. I wish more professors could use textbooks in this format

Student satisfaction and performance with the OER Bio1510 website and the flipped model of instruction prompted me to initiate the same process for the second semester course, Organismal Biology. I spearheaded this project in collaboration with David Garton, a colleague who also regularly teaches this course, and led the effort to successfully acquire funding from a second ALG grant to develop an Organismal Biology OER website in the summer of 2017 (http://bio1520.biology.gatech.edu). These instructor-developed materials were used for the first time in Fall 2017 to replace the commercial textbook, and the online textbook has now been adopted by all faculty who teach in the course.

The following are from an anonymous supplemental survey in Fall 2017 in Organismal Biology in response to the question "Compare the overall quality of the online reading for this course with a traditional textbook that you have used in your other college courses, and explain your answer"

- This was the same quality as textbooks, but in this case it was very easy to navigate, I did not have to buy a book, and all the information I needed was plainly stated; I did not have to fish through multiple sections of a textbook to find what I needed to learn.
- I found it much more interesting and less wordy than regular books.
- It was free, had all the information I needed, and allowed me to easily search the page for whatever I was looking for because it was online (i.e. it was awesome).
- I much preferred having an online textbook. This one was also written by the biology department professors, so it included only the information relevant to this course.
- The online text is free and integrated with resources and videos. The content is high quality and the text is easily accessible.

- The price of my textbooks are often overwhelming, therefore I appreciate the free alternative. The course readings conveyed to me all the information necessary for the course and added engaging multimedia (videos, pictures, etc).
- Compared to other texts, I would say this is one of the best I've used so far. The couple of videos in each were very helpful

4. **Cell and Molecular Biology Lab: Authentic Research, Equipment Upgrades, and Course Website**
Since Fall 2012, I have written or co-written five successful Technology Fee Funds proposals and one Instructional Lab Refreshment proposal to both replace outdated equipment and purchase new equipment to bring new techniques to the lab so students could perform more sophisticated, modern-day cell and molecular assays in this core laboratory course. Since Spring 2015, I have restructured the course around authentic, semester-long research projects in collaboration with the Georgia Tech Urban Honey Bee Project to investigate the effects of different honeybee-derived compounds and pollen on immune cell function. In addition, I have restructured course assignments to simulate a research laboratory experience, replacing laboratory reports with "project updates" (analogous to informal, regular updates a graduate student would report to his or her research mentor), adding annotated bibliography and literature review assignments (analogous to the background research a graduate student would perform in becoming familiar with his or her research project), and synthesizing of these components in a final research paper at the end of the semester to help students recognize how individual experimental results build into a cohesive research story. In Spring 2017, I developed a course website, http://bio3451.biology.gatech.edu/, to host and better organize all course materials.

   The following are excerpts from student comments via email and CIOS on the authentic research in Cell and Molecular Biology Lab:
   - …everything you taught me in that Cell Bio Lab is directly applicable to my new job. […] …the prior knowledge has proven invaluable.
   - This is the only lab I've taken at GT where I felt like I was conducting actual research and I loved that.
   - I learned so much that will be useful for my career. The experiments were actually interesting and I felt like my results meant something unlike most science labs where you are just performing a procedure to justify something learned in lecture.
   - I liked the concept of a research-oriented lab because most other labs function on a weekly basis with little or no connection between experiments.
   - The layout of the class was more project based then any other lab I've had.

5. **Bioethics: Case Studies, Reflective Writing Assignments and Project**
Originally structured around weekly student presentations, I revised this course in Fall 2015 to emphasize application of moral theories and moral principles in analysis of modern bioethical issues, and to regularly incorporate current, real-life case studies, in-class team work, and out-of-class reflective writing assignments. These changes were subsequently adopted and adapted by Michael Goodisman, with whom I co-taught the course in Fall 2016. Elements of these course revisions were subsequently incorporated into a new course developed by Mira Brockett, Foundations in Bioethics. When I taught the course again in Fall 2017, and with support from Georgia Tech's Serve-Learn-Sustain initiative, I developed a Reflective Journaling Project project rooted in service, community, and identity where students first volunteered with a community partner of their choice and subsequently interviewed a working professional in their career area of interest in order to identify and internalize the ways that bioethical theory plays out in real-world scenarios and their intended career path.

   Responses on an anonymous, supplemental course survey at the end of the Fall 2015 semester overwhelmingly indicated that student interest in medical ethics and ethics in general increased, with 100% of respondents indicating that they were now "more interested in medical ethical issues" than they were at the start of the course. Responses to a similar anonymous survey at the end of Fall 2016 revealed that 100% of respondents found the emphasis on real-life case analysis to be "Very helpful" to their success and understanding in the class.

   The following are excerpts from student comment via CIOS and anonymous supplemental survey in Fall 2015 and Fall 2016, and Fall 2019:

- This course made me introspect... I began to question my stances on some of the world's most challenging issues. I wouldn't say many of my thoughts changed but I began to understand WHY/ HOW I felt the way I do about the world.
- The early emphasis on moral theories was good, keeping my opinion out of my evaluations of morality and teaching me to think from multiple viewpoints. I enjoyed the main readings and reading responses, I believe I became a much more persuasive writer by the end of the semester. The class discussions were always fun.
- [the Reflective Journaling Project] added value to my experience in the course, as I was able to see ethical dilemmas play out in the real world.

6. **Biology of Sex and Death Lab: Graphing and Scientific Literacy**
In Fall of 2018, I became the Laboratory Coordinator for Biology of Sex and Death Lab. This course is typically taken by non-science majors and fulfills the Core D Laboratory Science requirement. The lab utilizes an inquiry model, where students perform literature searches on a topic of interest, develop their own hypotheses, design their own experiments to test their hypothesis, collect and analyze their data, interpret their results, and share their findings with their peers in the class. In my two semesters coordinating the course, I have built upon the excellent laboratory curriculum which was collaboratively crafted by Chrissy Spencer, Aakanksha Angra (former postdoctoral fellow, now faculty at GSU), and Alison Onstine (Laboratory Manager in Biological Sciences).

   One of the goals of the course is to improve scientific literacy, and so I added a modified Test of Scientific Literacy (Gromally 2012) pre- and post-test in Fall 2018 to measure scientific literacy learning gains, and to identify areas of strength and opportunities for improvement in the course design toward meeting this goal. The instrument revealed that graph-making was the weakest skill on average for incoming students (55% pre-test mean score), and, while they showed strong improvement by the end of the course (75% post-test mean score), the final improvement was not as high as in some other areas of assessment. I was motivated to improve this outcome in my next semester teaching the course.

   In fall 2018, the course featured four graph-making assignments over the semester and four graph-evaluation assignments where students assessed graphs made by their peers. Anonymous student feedback on a supplemental course evaluation survey indicated that a) they felt that they could not properly evaluate peer-made graphs because they were all making similar mistakes as novices; b) they perceived they would benefit from evaluation of their peer reviews by an expert (e.g. course instructor or TA). In response to this feedback, I altered the graph evaluation assignment in three ways for Fall 2019: 1) students evaluated expert-made graphs from published literature instead of peer-made graphs, 2) after students completed and submitted their evaluations, the course TAs lead a class-wide discussion and debrief to discuss noteworthy issues in the graph, and 3) the number of assignments was increased from 4 to 8 over the semester. While the pre-test assessment indicated that Fall 2019 students came in with stronger graphing skills on average than Fall 2018 students (64% pre-test mean score), they also showed, on average, higher learning gains by the end of the term (88% post-test mean score), suggesting that these curricular changes positively impacted student learning gains in this area.

   The following are excerpts from student comment via CIOS and anonymous supplemental survey in Fall 2019 in response to the question regarding the Course's best aspect:
   - We did EDWs (experimental design worksheets) and graph evaluations every week which helped us truly learn how to analyze and present data because we consistently practiced and improved upon our skills
   - learned a lot of things about statistical testing, reliability of graphs, and how to go through the scientific process
   - learned a lot of things about statistical testing, reliability of graphs, and how to go through the scientific process

7. **Scientist Spotlight assignments in Biological Principles and Organismal Biology**
   In 2019, the Introductory Biology Committee adopted a series of new assignments for the introductory biology courses called "Scientist Spotlights" (Schinske 2016). These assignments feature non-stereotypical examples of scientists from diverse backgrounds, and are themed based on research area to match topics covered during the class. I have authored or adapted three new Scientist Spotlights and implemented these

assignments in four courses over three semesters so far, and I plan to continue including them in the future. Informal discussions with Biology majors during advising meetings suggest that these assignments contribute to both appreciation of diversity in science and also help first-year Biology majors begin to find their identity as biologists.

The following are student comments on the Scientist Spotlights from Biological Principles (Summer 2019) and Honors/Majors Organismal Biology (Spring 2019):

- I LOVED them. …I thought it was important to see how the information we learned in class was used outside the classroom. I also appreciated seeing the diversity in biology which I think is really important in promoting more interest in research and STEM. I am not a biology major, but the Scientist Spotlights have made me more excited to pursue my own research in my major.
- I am so glad that they were a part of the course. I think they pretty much all focused on highlighting scientists who are often forgotten or overlooked due to their background, and I am as passionate about inclusivity as I am about biology, so it was great!
- I liked writing the scientist spotlights since I believe the keys to success in science and in all things are pretty similar, and I really enjoy reading people's "stories" - it is such a great way to connect with humanity.

8. CIOS scores (Interpolated Median) for all undergraduate BIOL courses, past 5 years

Course/Term	Clarity	Communicated how to succeed	Respect for students	Enthusiasm	Stimulates interest	Availability	Feedback helpfulness	Overall effectiveness
BIOL 1220 lab, Fall 2019	4.7	4.4	4.5	4.7	4.5	4.5	4.4	4.5
BIOL 4651, Fall 2019	4.9	4.6	4.8	4.8	4.7	4.8	4.3	4.8
BIOL 1510, Summer 2019	4.8	4.8	4.9	4.9	4.7	4.7	4.7	4.9
BIOL 1520, Spring 2019	4.5	4.5	4.7	4.8	4.3	4.6	4.2	4.5
BIOL 1521, Spring 2019	4.8	4.8	4.9	4.8	4.6	4.7	4.5	4.8
BIOL 3451, Spring 2019	4.2	4.3	4.8	4.8	4.1	4.6	4.4	4.6
BIOL 1220 lab, Fall 2018	4.3	4.5	4.4	4.2	3.9	4.4	4.4	4.5
BIOL 1510, Sum 2018	4.9	4.8	5	5	4.8	4.7	4.7	5
BIOL 1520, Spring 2018	4.1	4.2	4.5	4.5	3.7	4.4	4.1	4.1
BIOL 1521, Spring 2018	4.3	4.3	4.7	4.7	4.1	4.6	4.2	4.5
BIOL 3451, Spring 2018	4.8	4.6	4.6	4.8	4.5	4.6	4.6	4.7
BIOL 1220, Fall 2017	4.3	4.3	4.6	4.7	4.1	4.4	4.2	4.3
BIOL 4651, Fall 2017	4.8	4.8	5	4.9	4.8	4.5	4.5	4.9
BIOL 1520, Spring 2017	4.2	4.1	4.5	4.6	3.9	4.3	4.1	4.2
BIOL 3451, Spring 2017	4.8	4.8	4.9	5	4.7	4.5	4.7	4.8
BIOL 1510, Fall 206	4.5	4.4	4.6	4.7	4.3	4.5	4.3	4.5
BIOL 4650, Fall 2016	4.9	4.7	4.9	4.9	4.8	4.7	4.6	4.8
BIOL 1510, Summer 2016	4.8	4.8	4.9	4.8	4.6	4.8	4.7	4.8
BIOL 1520, Spring 2016	4.2	4.3	4.6	4.7	4.1	4.4	3.9	4.3
BIOL 3451, Spring 2016	4.4	4.4	4.9	5	4.7	4.7	4.3	4.8
BIOL 1511, Fall 2015	4.2	4	4.4	4.7	4.1	4.2	3.7	4.1
BIOL 4650, Fall 2015	4.8	4.8	4.9	5	4.7	4.8	4.6	4.8
BIOL 4460, Summer 2015	5	5	5	5	3	4.5	5	5
BIOL 4590, Summer 2015	5	4	5	5	4	5	5	5
BIOL 1520, Spring 2015	4.6	4.4	4.6	4.7	4.4	4.3	4	4.4
BIOL 1521, Spring 2015	4.9	4.6	4.8	4.8	4.6	4.7	4.7	4.6
BIOL 3451, Spring 2015	4.2	4.1	4.7	4.8	4.1	4.3	4.4	4.2

9. **Selected Presentations and Abstracts**
   - Kerr, S. Georgia Tech Academic Advisors Network Summer Symposium, Atlanta, GA 2018, invited panelist
   - Spencer, C., Choi, J., and Kerr, S. Creating Open Educational Resources for Biology: Making Learning Affordable, Accessible, Engaging, and Effective. Georgia Tech CTL Teaching with Technology Spotlight, Atlanta, GA, 2017, speaker
   - Poproski, R.A., Miller, M.C., Yang, B.B. Hutter, E., Kerr, S.C., Lin, Z. Mayer, G.S., Samford, R.K., Steinbart, E.M., Valk, A.E., Yu, J.T. Gathering and Responding to Feedback on Teaching. Georgia Tech Celebrating Teaching Day., Atlanta GA. 2017, poster
   - Kerr, S. Chutes or ladders: assessing vertical alignment in the GT Biology Curriculum. National Academies Southeast Summer Institute on Undergraduate Education Network Meeting, UGA, Athens, GA, 2016, speaker
   - Kerr, S. Using Learning Catalytics for Classroom Engagement. Georgia Tech CETL Brown Bag, Atlanta, GA, 2015, speaker
   - Kerr, S. Vertical Cohesion in our Major. Georgia Tech Biology Teaching Retreat, Pine Mountain, GA, 2015, speaker
   - Kerr, S. and Spencer, C. Using Technology in Student Projects. Project Kaleidoscope Atlanta Regional Network Fall Meeting, Georgia Tech, Atlanta, GA, 2013, speaker

10. **Selected Conferences and Professional Development**
   - ASCB Regional Meeting on Teaching Tomorrow's Scientists, UGA, Athens, GA, 2019
   - Chancellor's Learning Scholars Faculty Learning Community, Georgia Tech, 2019 Member
   - Georgia Tech Safe Space Training, 2019
   - Georgia Tech CTL Workshop on Grading: are both equity and rigor possible?, 2019
   - Georgia Tech CTL Course Design Studio, 2019
   - Georgia Tech CTL True Grit at GT: Building Student Resilience, 2019
   - Georgia Tech Deliberate Innovation Workshop, 2019
   - Georgia Tech Implicit Bias Workshop, 2018
   - Georgia Tech CTL Teaching Scholars, Faculty Learning Community on Teaching as Research Faculty Learning Community, co-facilitator, 2018
   - AAC&U/PKAL Transforming STEM Higher Education conference, Atlanta, GA, 2018
   - Georgia Tech CTL Workshop on A New Solution to the Teaching Conundrum of What to Do with Student Writing, 2018
   - Georgia Tech CTL Workshop on Getting and Keeping Student Attention, 2018
   - Georgia Tech CTL Course Design Studio, 2018
   - Georgia Tech QPR Suicide Prevention Training, 2017
   - Georgia Tech CTL Workshop on Dealing with the Unexpected, 2017
   - Georgia Tech CTL Faculty Learning Community on Responding to Feedback, 2016
   - Georgia Tech CTL Workshop on Helping Students Struggle, 2016
   - Georgia Tech Annual Diversity Symposium, Georgia Tech, 2016
   - Georgia Tech CETL Workshop on Size Matters: Teaching Your Small Class, 2015
   - Georgia Tech CETL Class of 1969 Teaching Scholar, 2013

11. **Selected unsolicited communications from students**

Biology of Sex and Death Lab, Fall 2019; email

"A few weeks ago, I had an interview and could not attend the lab and you helped me a lot to make it work. I wanted to thank you so much because I got that job (Software Quality Engineering at Mastercard) I was interviewing for. Thank you so much for being flexible and understanding. If I had to choose between the lab and the interview, I could have missed the interview and this amazing opportunity. I also wanted to write you because it means a lot to us-students- when our instructors try to help and understand us. Tech has a stressful

environment but also a great community because of understanding instructors like you. I really appreciate your help!"

Cell and Molecular Biology Lab, Spring 2019; email
"I just wanted to thank you for BIOL3451 Spring 2019! This summer, I did a research fellowship at UT Southwestern Medical Center, and I was able to get some great data and produce a poster! I don't think I would have been able to do as well as I had like if I had not taken your class first and learned so much about writing papers, analyzing results, and learning techniques!"

GT 1000, Biology Majors Section, Fall 2018; nominations (two) for GT 1000 Instructor of the Year Award (excerpts)
She is very motivation and inspiring. She's always ben very helpful with questions and finds someone to answer the question if she can't. She's become one of my favorite professors here and I plan on taking many more courses with her? She made me feel welcomed at Tech.

…she puts in so much energy during each class for GT 1000. She takes each activity so seriously and really invests in it, so that we are able to take away something from the class. She always has a smile on her face and wants us to succeed as much as possible. She has made GT 1000 an essential class for incoming first-year students because she genuinely cares about how we are adapting our first semester…"

Honors/Majors Biological Principles, Fall 2015; email (excerpt)
I very much enjoyed and benefitted from your teaching style--both the interesting, engaging lectures and Learning Catalytics. I also really appreciated how interactive you made the class; although it was a large class, you managed to make it highly interactive and personalized. I particularly liked the interesting case studies--such as that of Molly Nash--that you introduced to the class. In fact, I so enjoyed Biology 1511 that I intend to pursue a biology minor or the Biotech track within the Chemical and Biomolecular Engineering major.

Honors/Majors Organismal Biology, Spring 2013; Thank-A-Teacher Note (excerpt)
"You were easily the best professor I had at Georgia Tech. You showed genuine interest in my studies and making my experience the best possible. [...] You also taught me to be assertive in group situations and I now carry this trait with me wherever I go. You also took so much time giving us feedback on our assignments. Your dedication to your students is out of this world! To me you are more than a biology professor; you are a great mentor and a role model!

Cell and Molecular Biology Lab, Spring 2012; email
"I just wanted to let you know that I really enjoyed your class! Before this semester, I honestly had been dreading taking Cell Bio lab because writing about these lab techniques and experiments seemed SO overwhelming as compared to other lab courses I've taken, but you and [the TAs] were such great instructors! Not only were your teaching methods extraordinary, but your passion for biology and for helping students REALLY learn this difficult material was inspiring. Although I still have much to learn, I truly believe I have become a better writer, researcher, and scientist because of this course and because of you. I've already been able to apply a good deal of what I learned in this lab to my project in Undergrad Research as well as to how I approach researching, reading, interpreting, and analyzing scientific articles and reviews."

12. Selected CIOS comments (2012-2019), in response to the question on instructor's greatest strength

Biological Principles and Honors/Majors Biological Principles

- In office hours, I felt that she really cared about if I understood the material or not. She asked me questions about what I was asking questions about so that I can think though the problem with her, and I gained a better understanding with her providing that active learning environment. She seemed very concerned for my individual success in the course. Lectures were interesting and kept me constantly paying attention.
- Dr. Kerr is extremely clear in explaining difficult concepts and is always available to help. She also made sure to give ample opportunities for students to let her know what topics we were confused about.
- She always included a section on the IKEs/TICAs for us to talk about what we still had trouble with so that we could go over it in more detail.

- Dr. Kerr cares about all of her students and really wants everyone to succeed. Her concern for her students is really emphasized during her lectures.
- Geared us to understand the why's and not just memorize the answer.
- Giving students an understanding of the "big picture" rather than teaching us small portions of the material at a time and letting us piece it together
- Dr. Kerr is a very vibrant and lively lecturer. She speaks clearly and concisely in her presentation and manages to work in modern applications of a lot of the stuff we learned as well as memorable analogies.
- She is very inviting and very enthusiastic about what she is teaching. I'm never scared to ask a question
- Always seemed to look out for the students needs. From the beginning, Dr. Kerr would suggest how we should study, what we should focus on, etc.
- Always available even outside office hours
- I really liked how every idea was explicitly applied towards examples through case studies. Dr. Kerr's bright and optimistic attitude really facilitates learning in the course.
- Uses real-life cases a lot. Applications are something I need to understand the material further, so this rocks.
- Presented concepts in lecture in a way that encourages students to apply what they have learned to different situations. This kept the course fresh and interesting.
- Dr. Kerr made it her top priority that our understanding of the material was solid. She helped test our knowledge with great questions and provided great real world examples of each topic.
- She is very accessible to students. I absolutely love how you can tell that she is rooting for us to succeed.
- Dr. Kerr is very enthusiastic and always willing to help student with questions. She genuinely wants us to learn during the lecture.
- Dr. Kerr clearly cares about seeing students improve and learn. She is very patient and understanding. … She also is very helpful with being clear about what effort it takes to do well in the course.
- Always inquiring what the students don't understand, making sure there are multiple modes (website, videos, online textbook, powerpoint) available for us comprehend the material
- I like that she often answers questions by asking the student a leading question so they figure it out on their own

Organismal Biology and Majors/Honors Organismal Biology

- Dr. Kerr is very willing to do whatever she can to help us improve, including compiling questions on learning catalytics so that we can practice the problems. She also was very attentive to feedback based on our studying habits and willing to adjust the class accordingly.
- Dr. Kerr was fantastic. She was very enthusiastic which made me enthusiastic, and she was always willing to answer questions and offer help no matter how trivial the question. She was also super down to earth and approachable.
- Excellent at explaining concepts and relating them to each other. Very easy to understand. Seemed genuinely excited to help and engage students in class.
- Really engaging in class. I appreciated how succinctly she went over information without glazing over heavier content.
- Her teaching was very straight forward as were her slides. I loved having the LC questions before class and the group work that we did in lecture.
- Really in-depth conversations and a great communicator. Always answered my emails and gave great advice concerning exams.
- Dr. Kerr was extremely interesting to listen to and was both friendly and approachable. I loved going to class and hearing her anecdotes and funny take on some of the concepts.
- She made herself available to answer any questions and go over the material. I also liked her pre-class videos to help explain concepts before class.
- I really liked how we were able to use class time to answer learning catalytic questions. I really like Dr. Kerr's group rounds, they made us think and work together, which was really, really helpful.
- Kerr is incredibly involved and very easy to speak with. I appreciated the materials that she'd pass out to increase class involvement and how she'd return them with notes in the next lesson.

- Dr. Kerr is very passionate about the course materials which inspires the students to have the same attitude towards the course materials. She is also very willing to help the students to do everything in their power to succeed in the course.
- Dr. Kerr is very enthusiastic about this course, and she knows how to teach the material very well. Because of her teaching, I was able to easily understand complicated processes and information that would have been much more difficult to learn on my own or with a less effective professor.
- Dr. Kerr is an amazing lecturer. She is infectiously enthusiastic and able to explain difficult material in concise and easy to understand ways.

Cell and Molecular Biology Lab

- Professor Kerr was always very approachable and willing to explain confusing details as well as help foster our thinking processes to allow us to essentially solve our own problems.
- …she really challenges you to think about things and try to answer your own questions.
- Professor Kerr really makes time for her students, she even allowed me to come back into another lab section on a later date just to sit and work since I didn't really understand what had happened the previous day! I like the way she incrementally broke the experiments down into Experimental Design, Data Analysis, and then the Final Lab Report.
- Dr. Kerr made it clear how the lab-related assignments translate into skills that are an absolute necessity for a modern scientist.
- Dr. Kerr was my favorite professor this semester. She's really nice and really helpful and knowledgeable, and she's the kind of professor you can really approach if you have any questions and she will help you understand it instead of making you feel dumb.
- Although Dr. Kerr is very well-versed in the subject, she chooses not to hold her head high and look down upon those of us who know less. Instead, she walks among us, encouraging us to ask questions and provide feedback at every turn. She possesses such humility that I sometimes forget just how much knowledge that she has to share, and it makes me respect her even more.
- Learning about assays really helped in understanding why experiments are done the way they are.

Bioethics/Foundations of Bioethics

- Seems truly interested in helping students grow and think critically. Great communication skills and delivery of information as well.
- I had Dr. Kerr for the first time and last time at tech and I feel like she is one of the best professors that I ever had here at tech. The way she delivers the main point is very concise, straightforward and easy to follow. She has clear instructions and her feedback on the short report always made me to think twice or more about the topic. She tried to facilitate the class in every different methods [sic] possible (small/large group discussion, debate, etc.)
- I thought the class was set up and run very well. I think that despite the fact we talked about a lot of controversial issues, the class felt very comfortable and I think this is in large part because of the way the professor handled things
- Awesome use of case studies that were relevant and recent
- You definitely see how excited she was to teach. This made me excited to learn
- Covered interesting topics in an engaging way and made students challenge their own viewpoints by setting up classroom discussions to facilitate this. Showed interest in the subject matter and was able to give good feedback and response to student responses, lending to a nice discussion-based atmosphere in class. I also liked the randomized groups - made it possible to meet more people.

Citations

Gormally, C., Brickman, P., and Lutz, M. (2012). Developing a Test of Scientific Literacy Skills (TOSLS): Measuring Undergraduates' Evaluation of Scientific Information and Arguments. *CBE Life Sciences Education*. 11(4), 364-377.

Shinske, J.M., Perkins, H., Snyder, A., and Wyer, M. (2016). Scientist Spotlight Homework Assignments Shift Students' Stereotypes of Scientists and Enhance Science Identity in a Diverse Introductory Science Class. *CBE Life Sciences Education*. 15(3):ar47

Review of Dr. Shana Kerr's teaching

I had the pleasure of co-teaching Biol 1510 Principles of Biology, and Biol 1511, the Honors version, with Dr. Shana Kerr in Fall 2014 and again in Fall 2016 with Biol 1510. We sat in each other's class sessions, observed and assisted with groups of students working on case studies, problems and discussion questions. We also worked, together with Dr. Chrissy Spencer, to author and refine Biol 1510 web pages as an open-education resource to replace the expensive ($270) commercial textbook bundle we had previously required students to purchase.

Dr. Kerr develops innovative lessons using analogies and case studies. For example, she used a journey from Disney World in Orlando to Georgia Tech, a trip familiar to many Georgia Tech students, to provide perspective to the 4.5-billion year timeline of Earth history. Translating time to distance, this analogy makes the point quite powerfully that by the time humans evolved, we have already arrived at the Tech campus, and the last 11,000 years of recorded human history covers the final 6 feet within the lecture hall to the student's seat. She taught cell division and basic genetics using a recent real-life case of a couple who had a child with Fanconi's anemia. This couple used *in vitro* fertilization and pre-implantation genetic testing to conceive a sibling who would be a suitable stem cell donor to cure the afflicted child. Thus Dr. Kerr deftly wove modern biotechnology and ethics into lessons on foundational genetics concepts. These are just two examples of her attention to student perspectives and willingness to try and adapt new approaches to teaching.

Dr. Kerr also has a passion for evaluating and assessing how her teaching affects student learning and attitudes. She uses Learning Catalytics, a web-based student response system, as formative assessment to inform her as to which concepts pose difficulties for students. She then responded as necessary, by adjusting lessons and class activities to address such sticking points. She collaborated with her co-instructors to survey students and gather qualitative data on student perceptions and study behaviors after we switched from the commercial textbook bundle to our own custom web pages. These data help us to refine the web pages to better serve student learning and to assess the impact of our innovation on student study practices, preferences and attitudes. The point is that Dr. Kerr practices a cycle of continuous improvement via experiment, assessment, and refinement.

Dr. Kerr is thoroughly familiar with recent discipline-based pedagogical research and active-learning principles. She attended the National Academies Summer Institute with Brian Hammer in the summer of 2013. She partnered with Chrissy Spencer and myself in our Affordable Learning Georgia proposal to teach Biol 1510 with no-cost materials. She has

authored and refined some of the web pages we now use in lieu of a costly commercial textbook, and has spearheaded the development of learning objectives for both intro biology courses (1510/11 and 1520/21). And undaunted by the amount of work the Biol 1510 web pages took to complete, she embarked on a project to construct web pages for Biol 1520, the second semester of the Introductory Biology sequence, so students will not have to buy commercial textbook bundles (at $270) for either semester.

In the classroom and lecture hall, Dr. Kerr is always prepared and organized, and explains complex concepts clearly. She develops a strong rapport with her students because she can see course topics and concepts from their viewpoint as novices, and she finds ways to make course concepts interesting and relevant to their lives.

As a result, Dr. Kerr's CIOS scores are consistently high (>4.5) for enthusiasm, respect for students, stimulates interest, and clarity. She gets these high scores despite the strong dislike some students express for the "flipped" format of the Biol 1510 lectures. Average CIOS scores for overall effectiveness tend to be lower for Biol 1510 instructors (about 0.2-0.3 lower on average after adoption of the flipped format from mostly lecture format) because some students express strong negative opinions about the flipped format, while others praise the flipped format as highly effective. Although she would undoubtedly get even higher CIOS scores by lecturing, she employs the flip because she has evidence, in the form of student performance on exams, that the flipped format improves student success.

Dr. Kerr mentors individual students who go to her office hours, to teach and foster effective study skills and metacognitive habits, and shows endless patience until students learn concepts to her satisfaction. Students flock to her office hours because they see that she respects them, while helping them to attain high standards of learning.

I have also seen Dr. Kerr in action as part of the School of Biosciences Undergraduate Curriculum Committee. She has identified potential issues and solutions and brought them to the committee, with cases and data from her academic advising (she was named the Outstanding Academic Advisor award for the Georgia Tech campus in 2017, and the Outstanding Advising Award Winner—Faculty Role in the 2017 NACADA Global Awards Program). The members of the committee regularly turn to her for recommendations and to catch errors and anticipate unintended consequences. Dr. Kerr has repeatedly demonstrated attention to details that matter.

This review of Dr. Kerr's accomplishments would be incomplete without also mentioning that she has helped develop and teach the CETL courses that prepare Biosciences TAs, both undergraduate and graduate, for their first teaching assignments. She partnered with CETL staff and other Biosciences

Academic Professionals to develop the curriculum and teach novice TAs about effective teaching practices and management of courses, the classroom and student issues.

Dr. Shana Kerr is an exceptional teacher, a practitioner of evidenced-based pedagogies, a great colleague, a thoughtful mentor for novice teaching assistants, and an enthusiastic leader in both teaching and academic advisement.

Jung Choi
Associate Professor
Director of Teaching Effectiveness, School of Biology

To whom it may concern,

Dr. Kerr has made a tremendous impact on not only my education at Georgia Tech, but also my life, and I owe her so much for what she has done for me in my short time here.

I first met Dr. Kerr in my GT 1000 class where we didn't get very close, but through her actions, volunteering her time to teach us success strategies, researching and preparing lessons for us, etc., I could tell that she really cared about us. Surprisingly enough I had Dr. Kerr again the next semester. She co-taught my biology class during my second semester and it was good to see a friendly face, and it was even better when she was able to teach in a way that helped not only me, but the whole class understand the material. As a student I can honestly say that Dr. Kerr is an excellent professor who is approachable and willing to go into depth to help students understand complex ideas and topics.

Luckily for me, my interactions with Dr. Kerr did not stop there. I ended up deciding to TA a biology lab the first semester of my second year at Tech and I ended up in a class with Dr. Kerr as an instructor. As a student I had already seen the "magic" that Dr. Kerr could bring to the classroom with her well designed lesson plans and engaging lectures, but as a TA I was able to get a look at what happens back-stage and I can safely say that a lot of work goes into creating material that is both engaging and informative for students. We spent hours every week going over what we would be teaching and what activities we should work on with the students and debating back in forth which would be the most helpful to the students, and to me that's the crazy thing. It was always about the students. It was never, "What's going to be easiest for us to teach" or "Let's just do what we've done in the past to make it easy". It inspired me how positive Dr. Kerr remained throughout the whole semester, and how her determination for helping those students and us as TA's never wavered. Personally, Dr. Kerr helped me to become much more

confident in myself. She affirmed my good habits and constructively criticized some behavior that I might want to change in the future that made me feel entirely adequate, and I could tell that she had the exact same effect on my co-TA's who both appreciated Dr. Kerr as much as I do.

While the classroom is important, what I've seen Dr. Kerr do for me and other students outside of the classroom goes above and beyond all expectations. She is the advisor and basically runs the Biology Student Advisory Committee which exposes undergraduate biology students to enriching programs such as mentoring and socials to network with others in the major. The amount of work that goes into running these types of events is tremendous and the benefit is solely for the students. She also helped me get nominated for an extremely rigorous scholarship opportunity. After I was nominated I was excited but also very nervous and unsure of myself, but Dr. Kerr was there for me every step of the way. She told me exactly what I needed to do, wrote me letters of recommendation and helped me reach out to others for their recommendations, edited and revised my resume and essays, put me in contact with another student who had been through the same process, and even pointed me towards the campus closet so that I could wear a suit during my interview. I ended up getting the scholarship, which has changed my life in the best way possible, and I have Dr. Kerr to thank for that.

When I was asked to write this letter of recommendation for Dr. Kerr I didn't hesitate for a moment because I know that there is no one cares more, who does more, and who deserves this recognition more than Dr. Kerr. She truly is both a strong pillar of support for her students outside the classroom bettering the Georgia Tech community and also a diligent, willing resource inside the classroom.

Sincerely,

Noah Arnold

Second Year Biology Major (He/Him)

Dear Dr. Joyce Weinsheimer,

I would like to express my support in nominating Dr. Kerr for the Geoffrey G. Eicholz Faculty Teaching Award. Dr. Kerr has served me as both a phenomenal advisor and instructor and is very deserving of this award. She provides exceptional advice while being hands on and passionate about her job. I love how Dr. Kerr cares and has an incredibly positive outlook on life, and she has been an instrumental mentor to me during my time at Georgia Tech. She is excited about what she does, supportive to her students, and has been an excellent professor and club advisor – she is definitely deserving of this award.

One thing I really love about Dr. Kerr is simply her positivity. As a Biology student at Georgia Tech, life is not always easy, but Dr. Kerr is always there for sound advice, optimism, and a listening ear. I still remember during my freshmen year that even when she had a new baby, I was still able to get her input and assistance, and she definitely dedicates time and truly cares about her students. I always feel listened to and my voice and opinions heard as well, which is a balance that Dr. Kerr has mastered. Multiple times I have come to her in trying to decide whether I want to pursue a PhD or medical school, and she has not only given me advice but also contacts of people to talk to and questions for me to think about. She introduced me to the Center for Career Development, and for every question I ask, Dr. Kerr always either has an answer or finds someone who knows the answer. Navigating college and trying to make life decisions is not easy, and I am so beyond glad to have had Dr. Kerr to help me and am appreciative for all she has provided me with in terms of advice and support thus far.

I also love Dr. Kerr's ability as a professor to truly peak student interest and convey information in new and innovative ways. I have had Dr. Kerr as a professor for both Organismal Biology and Cell and Molecular Biology lab and have had great experiences with both. Dr. Kerr definitely challenges students, but she did so in a way that made me really think and grasp the material that was taught. I still remember how when I didn't do as well as I would have liked on my first test and came to her for advice, she was more than willing to talk with me and strategize on ways to improve, and I ended up getting an A in the class. In her roles as an advisor and as a professor, she exemplifies these qualities of attentiveness, empathy, and encouragement. Dr. Kerr was always more than willing to clarify anything I was confused on, and she goes above and beyond what most professors do in terms of this as well. She truly is dynamic in her interactions with the class and has an obvious passion for biology. Dr. Kerr really created an dynamic and encouraging environment in which I learned a ton and really grew as a student.

Dr. Kerr has also been my advisor for the Biology Student Advisory Council that I am a part of. We work as an organization towards improvement of the Biology Program, and through this I have also seen Dr. Kerr in her element. I don't even know how to fully express the extent of her passion for her Biology students and job, but she truly exudes this optimism and passion every day. Dr. Kerr even volunteers time talking to prospective Biology students, which I have assisted with before, and she is heavily involved in the School of Biology as a whole. Hearing her talk to these prospective students about all that is going on in the School of Biological Sciences at

Georgia Tech just shows even more the in depth knowledge she has about what our school of Georgia Tech has to offer and of the Biology program as a whole.

Dr. Kerr has truly been one of my favorite professors at Georgia Tech so far and is an excellent representative of the School of Biology and of someone who truly loves what they do. She made me excited to come to class and to her advisement meetings and really incited in me a passion for biology. She truly is an amazing advisor as someone who simply cares, and I honestly look up to her as a mentor. I have gotten to where I am today with Dr. Kerr helping me every step of the way, and she would be an excellent candidate for this award.

Best,

Megen Wittling

February 17,2020

To whom it may concern,

I am writing this letter with enthusiastic support for Dr. Shauna Kerr's nomination for the 2020 Geoffrey G. Eichholz Faculty Teaching Award. I have had the pleasure to be taught under the instruction of Dr.Kerr for three semesters and have the opportunity to have her as an advisor for my minor in Health and Medical Sciences. Expecting to struggle through the vast information freshman and upper-level biological sciences classes offer I was greeted with a professor passionate in teaching her students a love for Biology and eager to help us succeed with her continued enthusiasm and interactive teaching style.

I had last seen Biology three years prior, in the 10th grade, before taking Dr.Kerr's Bio 1510 course. Needless to say, I was very anxious about my ability to succeed in college level class given the years that had passed. I was also intimidated by seeing my friends take Bio 1510 the semester prior and all the information they had to learn. I was so worried that I dropped the class and put it off till the summer semester. I truly believe this was the best plan for me. On the first day of class Dr.Kerr outlined how to succeed and the best way to learn in her class. I enjoyed her flipped classroom teaching style. As someone who struggles with paying attention and often needs to reread things, I enjoyed doing a portion of learning outside of class and then being tested on our incoming knowledge with her IKEs on learning catalytic. Then in class, she would facilitate group discussions using TICAs and highlight key information often making it relevant to the real world. After class, she was always very receptive to my follow up questions. Her continued support and intriguing lectures inspired me minor in HMED.

I had the opportunity to take two more classes with Dr.Kerr with one of my favorite being Bioethics. The class was co-taught by two other professors, but what stuck out with Dr. Kerr's lectures was her ability to promote real-world relevance. Each article she assigned prior to class for discussion was often from the current news or journals that were very relevant to social health issues prevalent today. In many classes, it can be hard to see the real application. I enjoyed her choice of material as it highlighted the importance of being aware of the history and proactive in today's health decisions.

Dr.Kerr is dedicated and spirited about biology and student success. Her intertwining of biology to the natural world pushes an interest and love for the subject. Her interactions with students and interactive teaching style make me all the more certain the Dr.Kerr is absolutely deserving of this year's Geoffrey G. Eichholz Faculty Teaching Award.

Kindest Regards,

Kusona Fortingo

B.S. Neuroscience 2021