As an avid baker, I see many parallels between baking and science. My overarching goal is for students to see science as a process and apply the principles of thinking like a scientist to their own lives. To achieve this goal, I recognize three requirements are needed: instruction that mirrors the process of science; assessments to provide authentic opportunities for students to show what they know rather than what I want them to know; courses that change based on the students in my classes and the environment they are in. My classroom and my lab are comfortable spaces to test ideas and learn science by doing science.

If you read students a recipe, you can't expect them to bake a flawless loaf of bread. To learn and to repeat the process of making bread, you need to get your hands dirty, and use multiple senses to assess your progress. This applies to my classroom because I provide students opportunities to practice science by encouraging them to try new things, design their own experiments, and guide their instruction without doing all the thinking for them. For example, my experience with a botany course that emphasizes experiential learning gave my students the opportunity to answer a question using various methods: which is stronger, gravitropism or phototropism? They pulled information from their lecture to make predictions and to decide which materials to use to answer this question. The class collectively came up with an experimental design, carried it out, and we revisited the results during the next lab period. This activity was informative and engaging because students had their hands on something and when allowed to choose their own direction, their learning process mirrored the process of science.

Just like bakers, I believe students should be assessed on their ability to demonstrate their knowledge and skills in ways that matter to their life outside the classroom. My instruction needs to build them up to complete a task. With the recipe example, I can't tell them how to do something, I also can't show them how to do something and expect them to recreate it perfectly. I also can't expect them to produce flawless examples on their first try. They need guidance, feedback, and multiple chances to master a skill or idea. When I co-wrote a writing intensive curriculum for a plant systematics course, I made sure that our assignments would build students skills and that they would use writing for more than just fulfilling a requirement. Science requires high proficiency in summarizing primary literature and sharing ideas with colleagues and with nonexperts. My co-teacher and I designed their assignments to give them practice reading, summarizing, and producing a paper that has the same components of scientific output. To provide opportunities for feedback and improvement, we built in two or three drafts for every assignment, one of which was reviewed by their peers in the class. We also conferenced individually with each student after their first draft to point out good examples and what they needed to work on for the next draft. In science, everything we write goes through multiple rounds of edits and much of it is assessed by our peers. These assignments showed the students the process of science writing and gave us a better idea of the students' understanding than we would have received from reading one version. In sum, authentic tasks and assessments better prepare students and give instructors a more holistic picture of what students learn.

My last parallel between baking and science is the need to be flexible. Each student comes into the classroom with different experiences and conceptions of how the world works. I see it as a necessary part of my role to change the content or the pace or the structure of the class to suit my current students rather than setting it up once and moving on. Part of this requires constant reflection and feedback. In the beginning of a course or a unit, I like to include pre-test or survey

questions to gauge what misconceptions students have. In the middle of the semester I send students a survey to see if my instruction is meeting their expectations and to learn if I can improve in certain areas. Both strategies provide me a more accurate picture of what my students need so I can tailor instruction and let them know I am listening to and valuing their input.

My goal for all my students is to learn more about their world, learn more about how we can learn about our world, and apply these ideas to their own critical lens. To that end, I don't have any one method to help teach to the diversity of my students but I continually work to remove as many barriers to instruction as I can. For example, when I learn my students' names, I also learn their pronouns so I can address them properly. My experience with first-generation students in the FRIPS program has showed me how much energy it requires to navigate college and the unique financial and familial responsibilities these students face. I know that I need to increase representation of scientists of color and scientists of other minority groups so that all my students internalize that they can be scientists or professionals in their field. More than any science concept, I want my students to know that I accept and value them as individuals.

The best way to become a master of your craft is to apprentice under an expert. I've had the pleasure to mentor/apprentice two hardworking and talented students. Beyond teaching them lab techniques, I aim to help my mentees reach their goals. One of my mentees was an Engineering major who happened to love mycology. She learned how to maintain the fungal collection and got a general sense of how to study fungi. Her goal though was to use her engineering training to help solve environmental problems. She decided to leave the lab and pursue research related to this goal. This did not mean I stopped being her mentor. I helped her identify a summer REU, wrote letters of recommendation, and I continually support her with advice and encouragement. Beyond being an extra pair of hands, the undergraduates in my lab have challenged my thinking, offered innovative strategies, and made the process of research so much more rewarding. I become more myself when I have undergraduates in the lab.

I believe science teaching should mimic the process of science which means my students have hands-on experience making predictions and generating hypotheses, carrying them out. Students are also assessed in a way that shows what skills they have gained rather than what facts they remember. My classroom is a place for the real world to shine through to show them that science does matter to their lives in a very real way. College is a formative time in many people's lives and I see my role as molding their potential and helping them to realize how they want to make a difference in the world. A kitchen is just like a lab and just like my science classroom; a warm place to try ideas and learn the fundamental basics of putting ideas and ingredients together.