Some know instructors may anticipate or experience skepticism about the choice to include this unit in their curriculum.

We strongly encourage instructors experiencing skepticism to listen openly to the concerns expressed by skeptics. What are their concerns, really? Behind the concern and emotion are likely legitimate fears and worries that deserve acknowledgement. Moreover, understanding the skepticism expressed may help you to identify effective ways to address it, keeping those concerns from being fatal to this work. Given that much of that skepticism may be reflected in your students, too, understanding it may even be an asset.

That said, we also encourage instructors hearing skepticism to be resilient. Sometimes skepticism is a sign that learning needs to happen, and the URC is designed both to include all students - regardless of their views - and expose them to ideas that might differ from their own. When in doubt, we encourage instructors to consider prioritizing the needs of the marginalized over the needs of the majority.

The document below is an attempt to identify common skepticisms and offer some ways of addressing them that we have found useful. Reading through an articulation of the value and need for this work may also help, as well as familiarizing yourself with scientific research that supports the value of lessons like these. We have included some representative outcomes, as well, to help you illustrate to skeptics the value of this work to other students of this work.

Skeptical Students

1) Isn't this taking away from the science we should be learning?
    - National science standards recognize that learning science includes learning about scientists.
    - Students who have experienced the URC have appreciated it and reported afterwards that it was a worthwhile use of their time.

2) How will this help me in college/job market?
    - If you want to continue in a scientific field, knowing the culture of the field is important. This unit will give you a better sense of what it's like to be a scientist in this field.
    - In an increasingly diverse world, being able to discuss challenging topics is as important a skill as being able to solve more traditional scientific problems

3) Will I be graded for my opinions? Will others judge me?
    - You will definitely not be graded for your opinions. In fact, views outside the mainstream are crucial: one goal of this unit is to have interesting discussions about complex issues, and these discussions require diverse opinions. You may be graded on whether or not you complete the homework assignments and your engagement in class, but not on the opinions you have.
    - We will work hard to establish an atmosphere in which everyone treats their peers with respect. We know that conversations about equity leave many people feeling uncomfortable, and that's OK, but we'll make sure that you don't feel too uncomfortable to engage.

4) This makes me uncomfortable.
    - That makes sense, because many people don't have much prior experience having these conversations, and because they can leave us vulnerable. Like with any learning, though, taking courageous steps towards the things you don't know is the best way to grow.
    - You might also wonder: why does it make you uncomfortable? Is there something, unique to you, that you would benefit from learning more about or practicing?
    - Fair enough, because it's a change from what science class often includes. Does that necessarily mean that science class shouldn't? If we don't explore diversity and underrepresentation here, where will we?

Skeptical Families (see also A Letter to Families)

1) This doesn't belong in a science class
    - Modern science standards say it should. Teaching science should now include teaching the culture of science: traditions, assumptions, and habits of mind that are part of the discipline. This is well-aligned with the NGSS's requirement that instructors illustrate how "science is a human endeavor", showing how "scientists' backgrounds, theoretical commitments, and fields of endeavor influence the nature of their findings" and that "science and engineering are influenced by society."
    - This unit's exploration of underrepresentation in this unit is done by employing the tools of science: data analysis, formation of hypotheses, revisiting and modifying those hypotheses, and developing a model of how the world works. Students will be practicing and using science skills as they investigate science itself.

2) Won't this leave students underprepared?
    - Depends on how you define "preparation". Students may learn several days fewer of traditional content, but we are deepening their understanding of the scientific field and of society. If this added understanding is included as "preparation' - and we believe it should be - our students will gain more preparation than they lose. (And previous students confirm this.)
    - Moreover, the ability to be able to discuss challenging topics is an important skill. Students who have done this unit in other classrooms have demonstrated measurable gains in these areas.

3) Aren't you just injecting your own agenda?
    - The underrepresentation discussed in this unit is an empirical fact (references depend on your field and topic), as are the topics discussed within: the value of diversity in science, the myth of meritocracy, implicit bias, stereotype threat, etc.
    - Extensive research clearly shows that implicit and institutional biases, and underrepresentation, negatively affect science. As science instructors, we cannot ignore this aspect of our field (and are uniquely positioned to affect change in this area).
    - All presentations of science - whether it be this one or a more traditional curriculum - include bias of one sort or another based on what they include or exclude. For example: if we never mention a scientist by name, we suggest to students that science is not influenced by the scientists who do it; if we name only men, we suggest implicitly that women have less of a place in science. By directly addressing underrepresentation, we simply present our students with a more accurate and honest presentation of science.

Skeptical instructors:

1) This will make students uncomfortable
    - instructors who have taught this unit before have found that their students state strongly that the time spent was worthwhile and enjoyable.
    - Students from underrepresented groups often feel uncomfortable and disconnected from traditional scientific curricula. Research in science education has shown that the inclusion of diverse scientists and discussion of underrepresentation has significant affective benefits for these students,
    - Science classes are known to be challenging, for good reason: discomfort is often associated with opportunities for growth. We make students

productively uncomfortable all year long, and this unit is no exception. (In fact, research suggests that it's *because they're uncomfortable* that discussions of underrepresentation are powerful agents of change:

> "Most of the students who raised conflicting views or experienced frustration during the discussion were ones for whom a more conscious link to personal or vicarious experiences became apparent."

Just because students are uncomfortable, within reason, doesn't mean the topic should be avoided.

2) This makes me uncomfortable
   - This is a common response, in part because these conversations can be challenging, and in part because we science instructors (as opposed to some colleagues in the humanities) have little preparation in this area. Like any area where we are underprepared, though, if we know that our students would benefit from learning on our part, we have an obligation to expand our repertoire beyond the limits of our comfort.
   - Learning to do this takes time. By combining high standards for ourselves and our fields with patience and understanding, we can reach new heights.
   - The existence of implicit bias and stereotype threat, and their effect on scientists, has been repeatedly documented, and is well-established and accepted. While these topics may make us uncomfortable, they are fact.
   - Science education itself is subject to the same biases and distortions as science and society. We are not exempt, and must view our classrooms as a place in which to do better.
   - There is a community of science instructors ready to support you and learn right alongside you. We will connect you with this online comfort who can help you do this work without being too uncomfortable.

3) How does this diversity stuff relate to science?
   - Research shows that more diverse groups do more impactful science, so steps that science instructors can take to improve diversity contribute to strengthening science.
   - Many of the discipline-specific teaching professional organizations have made statements articulating the the importance of teaching *all* students
     - Science: AAPT, NABT, ACT
     - Mathematics: NCSM and TODOS, AMTE, NCTM
   - This work is well-aligned with disciplinary teaching standards.

Skeptical Administrators:

1) Isn't your job to teach science?
    - Yes, of course. But national standards now include teaching about the nature of science, the culture of the scientific field, and about scientists and humans as part of what it means to teach science.
    - The exploration of underrepresentation in this unit is done by employing the tools of science: data analysis, formation of hypotheses, revisiting and modifying those hypotheses, and developing a model of how the world works. Students will be practicing and using science skills as they investigate science itself.
    - Research shows that conversations like this help to build scientific identity in students. By bringing these conversations to my students, I am doing exactly what science instructors are supposed to be doing.
    - [If your school mission includes language about 'improving the world' or reaching 'all students', etc.: A unit like this is entirely consistent with our school's goal of _____. By integrating this unit into my curriculum, I am better able to teach in accordance with our goals.